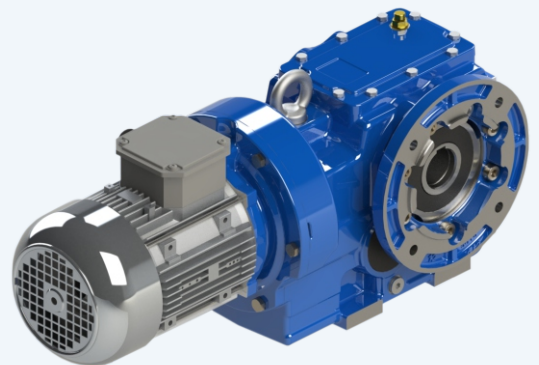
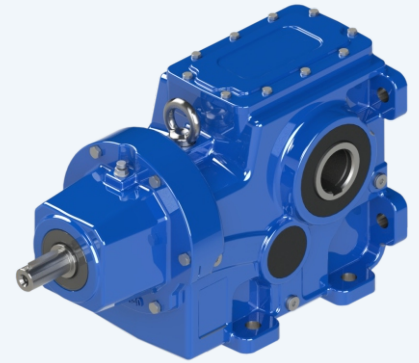
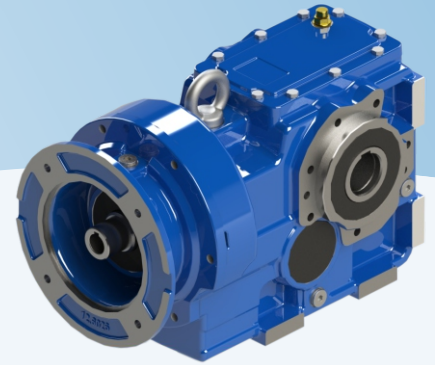
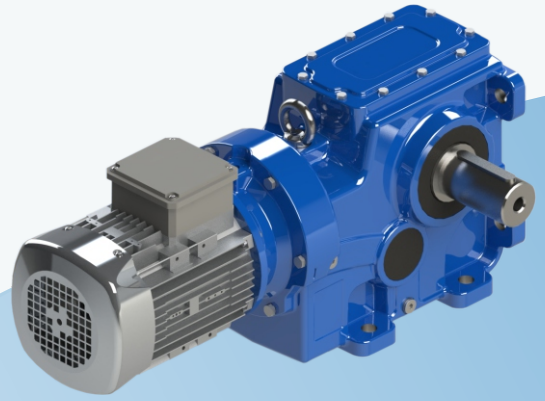


NRW®

DRIVE TECHNOLOGIES

K SERIE



*Kegelstirradtriebmotoren
Helical Bevel Geared Motors
Helisel Konik Dişlili Redüktör
Motoriduttori Ortogonali
Motoréducteurs Orthogonaux
Motorreductores Ortogonales*



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DRIVE TECHNOLOGIES



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DE ZEICHEN

EN SYMBOLS

TR SEMBOLLER

IT SIMBOLOGIA

FR SYMBOLES

ES SIMBOLOGIA

Zeichen

P = Leistung in (kW)	1 = Antriebswelle
M = Drehmoment in (Nm)	2 = Abtriebswelle
n = Drehzahl in (rpm)	R = Radial
i = Übersetzung	A = Axial
F = Kraft in (N)	s = Statisch
m = Masse in (kg)	d = Dynamisch
f_B = Betriebsfaktor	max = Maximal
	min = Minimal

Symbols

P = Power (kW)	1 = Input shaft
M = Torque (Nm)	2 = Output shaft
n = Speed (rpm)	R = Radial
i = Reduction ratio	A = Axial
F = Load (N)	s = Static
m = Weight (kg)	d = Dynamic
f_B = Service factor	max = Maximum
	min = Minimum

Semboller

P = Güç (kW)	1 = Giriş Şaftı
M = Moment (Nm)	2 = Çıkış Şaftı
n = Devir (d/d)	R = Radyal
i = Tahvil Oranı	A = Eksenel
F = Kuvvet (N)	s = Statik
m = Ağırlık (kg)	d = Dinamik
f_B = Servis Faktörü	max = Maksimum
	min = Minimum

Simbologia

P = Potenza (kW)	1 = Albero ingresso
M = Momento torcente (Nm)	2 = Albero uscita
n = Numero giri (giri / 1')	R = Radiale
i = Rapporto di riduzione	A = Assiale
F = Forza (N)	s = Statico
m = Peso (kg)	d = Dinamico
f_B = Fattore di servizio	max = Massimo
	min = Minimo

Symboles

P = Puissance (kW)	1 = Arbre d'entrée
M = Moment de torsion (Nm)	2 = Arbre de sortie
n = Nombre de tours (tours/min)	R = Radial
i = Rapport de réduction	A = Axial
F = Force (N)	s = Statique
m = Poids (kg)	d = Dynamique
f_B = Facteur de service	max = Maximum
	min = Minimum

Simbologia

P = Potencia (kW)	1 = Eje de entrada
M = Momento torsor (Nm)	2 = Eje de salida
n = Número de revoluciones (rpm)	R = Radial
i = Relación de reducción	A = Axial
F = Fuerza (N)	s = Estático
m = Peso (kg)	d = Dinámico
f_B = Factor de servicio	max = Máximo
	min = Mínimo

DE TECHNISCHE INFORMATIONEN

Für die korrekte Auswahl eines Getriebes oder eines Getriebemotors müssen einige grundsätzliche Daten bekannt sein, wie:

- A.** Die Antriebsdrehzahl am Getriebeeingang (n_1) und die gewünschte Abtriebsdrehzahl (n_2).
Mit diesen beiden Werten kann das Übersetzungsverhältnis (i) des Getriebes mit der folgenden Formel ausgerechnet werden:

$$i = \frac{n_1}{n_2}$$

- B.** Das für die Anwendung erforderte Drehmoment (MH)
Wenn diese Daten bekannt sind, kann mit der Auswahl des Getriebemotors oder des Getriebes fortgefahren werden.

Auswahl der Getriebemotoren

Dieser Ratgeber führt in wenigen Schritten durch die Auswahl des geeigneten Antriebes:

1. Den Betriebsfaktor der Anwendung bestimmen (f_b) Dieser Parameter ist eine Funktion aus der Belastungsart der angetriebenen Maschine, der Anzahl der Anläufe pro Stunde und der Betriebsstundenzahl (siehe Absatz "Betriebsfaktor" S.8)
2. Die Eingangsleistung P_H über das erforderliche Drehmoment M_H , die Geschwindigkeit n_2 und den dynamischen Wirkungsgrad ermitteln.
Der Wert des dynamischen Wirkungsgrads hängt von der Art des Getriebes und von der Anzahl der Übersetzungsstufen ab. Für die Kegelmotordgetriebe der Serie K gilt ein mittlerer Wert von: (η_d) K..3 Übersetzungsstufen = 0,9

$$P_H = \frac{M_H \cdot n_2}{9550 \cdot \eta_d}$$

- 3.** Eine genormte Leistung P_1 aus der Tabelle der Getriebemotorenleistungen aussuchen, die höher ist als die erforderliche P_H , sodass:

$$P_1 \geq P_H$$

- 4.** Nach dem Ermitteln der geeigneten genormten Leistung den Getriebemotor auswählen, die der Antriebsdrehzahl zur Verfügung stellt, die der gewünschten n_2 am nächsten kommt, und der einen gleich hohen oder größeren Betriebsfaktor f_b besitzt als durch die Anwendung gefordert.

In den Auswahltabellen der Getriebemotoren sind die Kombinationen mit 50Hz - Motoren mit 2, 4 oder 6 Polen dargestellt. Für abweichende Antriebsgeschwindigkeiten berücksichtigen Sie bitte die Daten aus den Getriebetabellen.

EN TECHNICAL INFORMATION

For correctly selecting a gear reducer or geared motor, several essential pieces of data are required:

- A.** The rotational input speed to the gear reducer (n_1) and the rotational output speed (n_2).
Through these two values it is possible to calculate the reduction ratio (i) of the gear reducer using the following formula:

$$i = \frac{n_1}{n_2}$$

- B.** The torque required by the application (MH) The geared motor or gear reducer can be selected once this data is known.

Geared motor selection

This guide indicates a brief sequence of steps for selecting a suitable product:

1. Determine the application's actual service factor (f_b) This parameter depends on the type of load of the powered machine, the number of starts per hour and the hours of operation (refer to the "Service factor" paragraph on page 8)
2. Calculate the input power P_H using the required torque value M_H , the speed n_2 and dynamic efficiency value. The dynamic efficiency value depends on the type of gear reducer and on the number of gear reduction stages. K - range helical bevel gear reducers have an average value equal to: (η_d) K..3 stages = 0,9

$$P_H = \frac{M_H \cdot n_2}{9550 \cdot \eta_d}$$

- 3.** Consult the geared motor performance tables and identify a normalised power value P_1 exceeding the required power P_H , such that:

$$P_1 \geq P_H$$

- 4.** Once the suitable normalised power has been identified, select the geared motor capable of generating the rotational speed closest to the desired n_2 value and with service factor f_b greater or equal to that required by the application.

In the geared motor selection tables the combinations include 2-pole, 4-pole and 6-pole motors powered at 50Hz; for different drive speeds refer to the nominal data provided for the gear reducers.

TR TEKNİK BİLGİLER

Doğru ürünü seçebilmek için, Redüktörün belirlenmiş olan verilerinin bilinmesi gerekir

- A.** Redüktörün giriş devri (n_1) ve istenilen çıkış devri (n_2), ise kullanılması gereken tahvil (i) tahvil formülü ile hesaplanır:

$$i = \frac{n_1}{n_2}$$

- B.** Kullanılacak yer için istenilen Moment (MH) bilinmeli ve böylece redüktör seçimine devam edebilirsiniz.

Redüktör seçimi

Bu kılavuz size birkaç adımda doğru redüktör seçiminde yardımcı olacaktır.

1. Kullanılacak uygulamalarda Servis faktörünün (f_b) belirlenmesi; Servis faktörünün belirlenmesi redüktörün kullanımına bağlı, yani hareket ettirdiği makinenin yük tipi, bir saatteki start-stop sayısı ve çalışma saatidir ("servis faktörü" S.8 bkz).
2. Giriş gücü (P_H) gerekli olan Moment (MH), çıkış devri n_2 ve dinamik verimlilik derecesini bilmek gerekir.
Dinamik verimlilik değeri redüktörün tipi ve dişli kademe-lerine bağlıdır. K serisi Helisel konik dişli redüktörlerde verim (η_d) yaklaşık olarak:
K..3 kademe = 0,9.

$$P_H = \frac{M_H \cdot n_2}{9550 \cdot \eta_d}$$

- 3.** Tablodan Redüktör için Normlanmış güç P_1 , gerekli olan P_H den daha yüksek olacak şekilde seçiniz, böylece:

$$P_1 \geq P_H$$

- 4.** Motorlu redüktörler için belirlenmiş standart güçler ile redüktörü seçebilirsiniz. İstenilen çıkış devrine yakın olan değer seçilir. Fakat servis faktörü istenilen ile aynı, veya daha büyük olmalıdır. (Kullanım alanı için gerekli olan servis faktörü f_b)

Motorlu seçim sayfalarında, verilen değerler 50Hz'de 2, 4 ve 6 kutuplu motorları içermektedir. Diğer motor devirleri için motorların nominal verilerini gözönüne alınız.

IT INFORMAZIONI TECNICHE

Per la corretta selezione di un riduttore o di un motorriduttore occorre disporre di alcuni dati fondamentali quali:

- A.** La velocità angolare in entrata al riduttore (n1) e la velocità angolare in uscita (n2).
Attraverso questi due valori è possibile calcolare il rapporto di riduzione (i) del riduttore attraverso la formula:

$$i = \frac{n1}{n2}$$

- B.** Il momento torcente richiesto dall'applicazione (MH).
Noti questi dati, si può procedere nella selezione del motorriduttore o del riduttore.

Selezione dei motorriduttori

Questa guida conduce alla selezione del prodotto attraverso pochi passi:

1. Determinare il fattore di servizio effettivo dell'applicazione (fb). Questo parametro è funzione del tipo di carico della macchina azionata, del numero di azionamenti per ora e del numero di ore di funzionamento (vedi paragrafo "Fattore di servizio" pag. 9).
2. Ricavare la potenza in entrata PH mediante il momento torcente richiesto MH, la velocità n2 e il rendimento dinamico.
Il valore di rendimento dinamico dipende dalla tipologia del riduttore e dal numero di stadi d'ingranaggi di riduzione. I riduttori ortogonali della serie K presentano un valore medio pari a:
(nd) K..3 stadi = 0,9

$$P_H = \frac{M_H \cdot n_2}{9550 \cdot \eta_d}$$

3. Consultare le tabelle delle prestazioni dei motorriduttori ricercando una potenza normalizzata P1 superiore a quella richiesta PH tale che:

$$P_1 \geq P_H$$

4. Individuata la potenza normalizzata idonea, selezionare dunque il motorriduttore in grado di sviluppare la velocità angolare più vicina a quella n2 desiderata e con fattore di servizio fb. maggiore o uguale richiesto dall'applicazione.

Nelle tabelle di selezione dei motorriduttori gli abbinamenti sono realizzati con motori 2,4,6 poli alimentati a 50Hz, per velocità di azionamento diverse riferirsi ai dati nominali forniti per i riduttori.

FR INFORMACION TECNICA

Pour choisir correctement un réducteur ou un motoréducteur, il est nécessaire de disposer de certaines données fondamentales telles que:

- A.** La vitesse angulaire en entrée du réducteur (n1) et la vitesse angulaire en sortie (n2).
Grâce à ces deux valeurs, il est possible de calculer le rapport de réduction (i) du réducteur en utilisant la formule:

$$i = \frac{n1}{n2}$$

- B.** Le moment de torsion requis par l'application (MH).
Une fois ces données, il est possible de procéder au choix du motoréducteur ou du réducteur.

Selection des motoréducteur

Ce guide permet de procéder à la sélection du produit en suivant quelques étapes:

1. Déterminer le facteur de service effectif de l'application (fb). Ce paramètre dépend du nombre d'actions par heure et du nombre d'heures de fonctionnement (voir paragraphe "Facteur de service" page 9).
2. Déterminer la puissance en entrée PH à l'aide du moment de torsion requis MH de la vitesse n2 et du rendement dynamique.
La valeur du rendement dynamique dépend du type de réducteur et du nombre de trains d'engrenages de réduction. Les réducteurs orthogonaux de la série K présentent une valeur moyenne égale à: (nd)
K..3 trains = 0,9

$$P_H = \frac{M_H \cdot n_2}{9550 \cdot \eta_d}$$

3. Consulter le tableau des performances des motoréducteurs en recherchant une puissance normalisée P1 supérieure la puissance PH demandée telle que:

$$P_1 \geq P_H$$

4. Une fois identifiée la puissance normalisée adéquate, sélectionner le motoréducteur en mesure de développer la vitesse angulaire la plus proche de la vitesse n2 désirée et présentant un facteur de service fb. supérieur ou égal à celui demandé par l'application.

Dans les tableaux de sélection des motoréducteurs, les combinaisons sont réalisées avec des moteurs 2,4,6 pôles alimentés à 50Hz. Pour des vitesses d'actionnement différentes, se référer aux données nominales fournis par les réducteurs

ES INFORMACIÓN TÉCNICO

Para la correcta selección de un reductor o de un motorreductor es necesario disponer de algunos datos fundamentales como:

- A.** La velocidad angular a la entrada del reductor (n1) y la velocidad angular a la salida (n2). A través de reducción (i) del reductor utilizando la fórmula:

$$i = \frac{n1}{n2}$$

- B.** El momento de torsión requerido por la aplicación (MH).
Conocidos estos datos, se puede proceder a la selección del motorreductor o del reductor.

Selección de los motorreductores

Esta guía conduce a la selección del producto a través de unos pocos pasos:

1. Determinar el factor de servicio efectivo de la aplicación (fb). Este parámetro es función del tipo de carga de la máquina accionada, del número de accionamientos por hora y de la cantidad de horas de funcionamiento (ver el párrafo "Factor de servicio" pag. 9)
2. Obtener la potencia a la entrada PH utilizando el momento de torsión requerido MH, la velocidad n2 el rendimiento dinámico.
El valor del rendimiento dinámico depende del tipo de reductor y del número de etapas de engranajes de reducción. Los reductores ortogonales de la serie K presentan un valor medio igual a: (nd)
K..3 trenes = 0,9

$$P_H = \frac{M_H \cdot n_2}{9550 \cdot \eta_d}$$

3. Consultar las tablas de las prestaciones de los motorreductores buscando una potencia normalizada P1 superior a la requerida PH tal que:

$$P_1 \geq P_H$$

4. Una vez identificada la potencia normalizada adecuada, seleccionar el motorreductor capaz de desarrollar la velocidad angular más cercana a la n2 deseada y con un factor de servicio fb mayor o igual que el necesario para la aplicación

En las tablas de selección de los motorreductores, las combinaciones se realizan con motores de 2, 4, 6 polos alimentados con 50Hz. Para velocidades de accionamiento diferentes, consultar los datos nominales suministrados para los reductores.

DE TECHNISCHE INFORMATIONEN

Auswahl der Getriebe

1. Den Betriebsfactor der Anwendung bestimmen (fb) (siehe Absatz "Betriebsfactor" S.8).
2. Das benötigte Übersetzungsverhältnis i aus der erforderlichen Abtriebsdrehzahl n2 und der Antriebsdrehzahl n1 bestimmen.

$$i = \frac{n1}{n2}$$

3. Das Drehmoment MG für die Auswahl des Getriebes über das von der Anwendung erforderliche Drehmoment Mr2 und den Betriebsfaktor f.s. ermitteln:

$$MG = MH \cdot (fb)$$

4. Das Getriebe mit dem Übersetzungsverhältnis aus der tabelle der Getriebedaten auswählen, das dem bestimmten Übersetzungsverhältnis am nächsten kommt und über ein ausreichendes Nenndrehmoment M2 verfügt, sodass:

$$M2 \geq Mg$$

Überprüfungen

Nach der Auswahl des Getriebes oder des Getriebemotors ist es ratsam, die folgenden Überprüfungen durchzuführen:

A. Thermische Leistung

Die thermische Leistung des Getriebes muss gleich oder größer als die installierte mechanische Leistung sein oder als die von der Anwendung gemäß den im Abschnitt anhaltenen Angaben erforderliche Leistung (siehe Abschnitt "thermische Leistung" S.12).

B. Maximales Drehmoment

Grundsätzlich darf das maximale Drehmoment (momentane Spitzenbelastung), das an das Getriebe angewendet werden kann, nicht mehr als 200% des Nenndrehmoments betragen.

C. Radiale Belastungen

Überprüfen Sie bitte das die radialen Belastungen auf den Eingangs - und / oder Ausgangswellen die zu gelassenen Katalogwerte nicht überschreiten.

Wenn diese größer sind, bitte die Getriebegröße anpassen oder die Auslegung für die externe Last anpassen.

In der Prüfphase berücksichtigen bitte berücksichtigen, dass die im Katalog angegebenen Werte sich auf Lasten beziehen, die auf die Mittelachse des Wellenüberstands wirken. Daher ist es notwendig mit den entsprechenden Formeln die zugelassene Last in der gewünschten Position zu bestimmen, falls diese in einer davon abweichenden Position angebracht wird (siehe Absatz "Radiale Belastungen S. 20).

EN TECHNICAL INFORMATION

Gear reducer selection

1. Determine the application's service factor (fb) (consult to the "Servico factor" paragraph on page 8).
2. Calculate the reduction ratio i from the requested output speed n2 and from the input speed n1.

$$i = \frac{n1}{n2}$$

3. Calculate the torque MG for selecting the gear reducer through the torque required by the application Mr2 and the service factor s.f.:

$$MG = MH \cdot (fb)$$

4. Consult the gear reducer performance tables and identify the gear reducer that - with a reduction ratio closest to the calculated ratio - has a nominal torque M2 such that

$$M2 \geq Mg$$

Checks

Once the gear reducer or geared motor has been selected, the following checks should be performed:

A. Thermal Power

The gear reducer's thermal power must be equal to or greater than the installed mechanical power, or the power required by the application according to the indications contained in the section (refer to the "Thermal power" paragraph on page 12).

B. Maximum Torque

Generally, the maximum torque (peak instantaneous load) that can be applied to the gear reducer must not exceed 200% of the nominal torque.

C. Radial Loas

Verify that the loads acting on the input and/or output shaft are within with the values indicated in the catalogue. If they exceed these values, increase the size of the gear reducer or modify the external load capacity.

During the checking phase, it is important to remember that the values indicated in the catalogue refer to loads acting on the mid-point of the shaft protrusion, therefore, if the load is applied to a different position, appropriate formulas must be used to calculate the admissible load in the desired position (refer to the "Radial loads" paragraph on page 20).

TR TEKNİK BİLGİLER

Redüktör seçimi

1. Uygulama alanı için servis faktörünü (fb) belirleyiniz. (Sayfa 8 "servis faktörü" bakınız)
2. Giriş (n1) ve çıkış (n2) devirlerinden hesaplanan tahvilin belirlenmesi.

$$i = \frac{n1}{n2}$$

3. Redüktörün momenti ve uygulama için gerekli olan moment ve servis faktörünü belirleyiniz.

$$MG = MH \cdot (fb)$$

4. İstemiş olduğunuz tahvile ve moment (M2) değerine yakın olan redüktörü performans tablolarından seçiniz. Böylece;

$$M2 \geq Mg$$

Kontrol ediniz

Redüktör veya motorlu redüktör seçiminin sonra, altta sıralanmış maddeleri kontrol etmenizi tavsiye ederiz.

A. Termik Güç

Redüktörün termik gücü, mekanik güç ile aynı ve daha büyük olmalıdır veya aplikasyona uygun olarak verilen değerler kısmında belirlenmiş verilere uygun olmalı (Sayfa 12 termik güç kısmına bakınız)

B. Maximum Moment

Redüktöre uygulanabilen genelde maximum moment (Anlık pik moment), %200 den daha fazla olmamalıdır.

C. Radyal Yük

Lütfen giriş ve çıkış millerinde radyal yüklerin katalog değerlerinin dışına çıkmaması için kontrol ediniz. Eğer yük daha büyük ise redüktörün büyüklüğünü ona göre seçiniz veya dış yükü ona göre uygulayınız.

Kontrol aşamasında katalogta verilen radyal yüklerin çıkış millerinin orta noktasına geldiğine dikkat ediniz. Bu nedenle yükü uygun formüller ile istenilen pozisyona getirmeniz gerekir. Eğer yük pozisyonunuz uygun değil ise sayfa 20 "Radyal yükler" kısmına bakınız.

IT INFORMAZIONI TECNICHE

Selezione dei riduttori

1. Determinare il fattore di servizio dell'applicazione (f_b) (vedi paragrafo "Fattore di servizio" pag. 9)
2. Calcolare il rapporto di riduzione i dalla velocità in uscita n_2 richiesta e dalla quella in entrata n_1 .

$$i = \frac{n_1}{n_2}$$

3. Ricavare il momento torcente M_G per la selezione del riduttore attraverso la coppia richiesta dall'applicazione M_{r2} ed il fattore di servizio f.s.:

$$M_G = M_H \cdot (f_b)$$

4. Consultare le tabelle delle prestazioni dei riduttori cercando il riduttore che, col rapporto di riduzione più prossimo a quello calcolato, dispone di una coppia nominale M_2 tale che:

$$M_2 \geq M_G$$

Verifiche

Esguita la selezione del riduttore o del motoriduttore è opportuno effettuare le seguenti verifiche:

A. Potenza Termica

La potenza termica del riduttore deve essere uguale o maggiore della potenza meccanica installata o della potenza richiesta dall'applicazione secondo le indicazioni contenute nella sezione (vedi paragrafo "Potenza termica" pag 13).

B. Coppia Massima

Generalmente la coppia massima (picco di carico istantaneo) che può essere applicata al riduttore non deve superare il 200% della coppia nominale.

C. Carichi radiali

Verificare che i carichi radiali agenti sugli alberi di entrata e/o di uscita rispettino i valori ammessi a catalogo. Se superiori, aumentare la grandezza del riduttore o modificare la supportazione del carico esterno.

Nella fase di verifica occorre tenere conto che i valori indicati a catalogo si riferiscono a carichi agenti sulla mezzeria della sporgenza dell'albero per cui, nel caso il carico sia applicato in posizione diversa è necessario determinare con le apposite formule il carico ammissibile nella posizione desiderata (vedi paragrafo "Carichi Radiali" pag 21).

FR INFORMACION TECNICA

Sélection des réducteurs

1. Déterminer le facteur de service de l'application (f_b) (voir paragraphe "Facteur de service" page 9).
2. Calculer le rapport de réduction (i) à partir de la vitesse n_2 requise en sortie et de la vitesse en entrée n_1

$$i = \frac{n_1}{n_2}$$

3. Déterminer le moment de torsion M_G pour la sélection du réducteur à l'aide du couple M_{r2} requis par l'application et du facteur de service f.s.:

$$M_G = M_H \cdot (f_b)$$

4. Consulter les tableaux des performances des réducteurs en recherchant le réducteur disposant du rapport de réduction le plus proche du rapport calculé et présentant un couple nominal M_2 tel que:

$$M_2 \geq M_G$$

Vérifications

Une fois sélectionné le réducteur ou le motoréducteur, il convient d'effectuer les vérifications suivantes:

A. Puissance Thermique

La puissance thermique doit être égale ou supérieure à la puissance mécanique installée, ou à la puissance requise par l'application, conformément aux indications contenues dans la section (voir paragraphe "Puissance thermique" page 13).

B. Couple Maximal

Généralement, le couple maximal (pic de charge instantanée) pouvant être appliqué au réducteur, ne doit pas dépasser 200% du couple nominal.

C. Charges Radiales

Vérifier que les charges radiales agissant sur les arbres d'entrée et/ou de sortie respectent les valeurs admises dans le catalogue. Si elles sont supérieures, augmenter la taille du réducteur ou modifier le palier de la charge extérieure.

Durant la phase de vérification, il est nécessaire de tenir compte du fait que les valeurs indiquées dans le catalogue se réfèrent à des charges agissant sur la moitié de la partie saillante de l'arbre; par conséquent, en cas d'application de la charge dans une position différente, il est nécessaire de déterminer la charge admissible dans la position désirée à l'aide des formules spéciales (voir paragraphe "Charges radiales" page 21).

ES INFORMACIÓN TÉCNICA

Selección de los reductores

1. Determinar el factor de servicio de la aplicación (f_b) (ver el párrafo "Factor de servicio" pág. 9).
2. Calcular la relación de reducción i entre la velocidad de salida n_2 requerida y la de entrada n_1

$$i = \frac{n_1}{n_2}$$

3. Obtener el momento de torsión M_G para seleccionar el reductor a través del par necesario para la aplicación M_{r2} y el factor de servicio f.s.:

$$M_G = M_H \cdot (f_b)$$

4. Consultar las tablas de las prestaciones de los reductores buscando el reductor que, con la relación de reducción más próxima a la calculada, disponga de un par nominal M_2 tal que:

$$M_2 \geq M_G$$

Verificaciones

Una vez realiza la selección del reductor o del motorreductor es conveniente efectuar las siguientes verificaciones:

A. Potencia Térmica

La potencia térmica del reductor debe ser mayor o igual que la potencia mecánica instalada o que la potencia requerida por la aplicación según las indicaciones contenidas en la sección (ver el párrafo "Potencia térmica" pág 13).

B. Par Máximo

Generalmente el par máximo (pico de carga instantáneo) que se puede aplicar al reductor no debe superar el 200% del par nominal.

C. Cargas Radiales

Verificar que las cargas radiales que actúan sobre los árboles de entrada y/o de salida respeten los valores admitidos según el catálogo. Si son mayores, aumentar el tamaño del reductor o modificar la capacidad de soportar la carga externa. En la fase de verificación, es necesario tener en cuenta que los valores indicados en el catálogo se refieren a carga está aplicada en una posición diferente, es necesario determinar la carga admisible en la posición deseada con las fórmulas correspondientes (ver el párrafo "Cargas Radiales" pág. 21).

DE BETRIEBSFAKTOR

Der Betriebsfaktor (f_b) hängt von den Betriebsbedingungen ab, unter denen das Getriebe betrieben wird. Die Parameter, die für eine korrekte Auswahl des Betriebsfaktors zu berücksichtigen sind, sind folgende:

- Belastungsart der angetriebenen Maschine: **U - M - H**
- Tägliche Betriebsdauer: **Std./Tag**
- Anlaufrequenz: **Anl./Std.**

LAST :	U - Gleichförmig	$mfa \leq 0.3$
	M - Mittlere Überlast	$mfa \leq 3$
	H - Hohe Überlast	$mfa \leq 10$

mfa = Je/Jm

- mfa Massenträgheitswert
 - Je (kgm^2) äußeres Trägheitsmoment reduziert auf die Motorwelle
 - Jm (kgm^2) Motor-Trägheitsmoment
- Bei $mfa > 10$ bitte mit unserem Kundendienst Kontakt aufnehmen.

U- Schneckenförderer für Leichtmaterial, Gebläse, Montagebänder, Bandförderer für Leichtmaterial, kleine Rührwerke, Kleinlastenaufzüge, Kreiselpumpen, Hebebühnen, Reinigungsmaschinen, Abfüllmaschinen, Prüfmaschinen, Bandförderer.

M- Wickelmaschinen, Vorrichtungen zur Zuführung bei Holzbearbeitungsmaschinen, Lastaufzüge, Auswuchtmaschinen, Gewindeschneidmaschinen, mittlere Rührwerke und Mischer, Bandförderer für schwere Materialien, Winden, Schiebetore, Dünger Abkratzer, Verpackungsmaschinen, Betonmischmaschinen, Kranfahrund Kranhubwerke, Fräsmaschinen, Biegemaschinen, Zahnrad-pumpen, Hubstapler, Drehtische.

H- Rührwerke für schwere Materialien, Scheren, Pressen, Schleudern, Winden und Aufzüge für schwere Materialien, Schleifmaschinen, Steinbrecher, Kettenbecherwerke, Bohrmaschinen, Hammermühlen, Exzenterpressen, Biegemaschinen, Drehtische, Scheuertrommeln, Vibrationsrüttler, Schneidmaschinen, Stanzen, Walzwerke, Zementmühlen.

EN SERVICE FACTOR

The service factor (f_b) depends on the operating conditions the reduction unit is subjected to.

The parameters that need to be taken into consideration to select the most adequate service factor correctly comprise:

- Type of load of the operated machine: **U - M - H**
- Length of daily operating time: **hours/day**
- Start-up frequency: **starts/hour**

TYPE OF LOAD :	U - Uniform	$mfa \leq 0.3$
	M - Moderate shocks	$mfa \leq 3$
	H - Heavy shocks	$mfa \leq 10$

mfa = Je/Jm

- mfa factor of inertia
 - Je (kgm^2) moment of reduced external inertia at the drive-shaft
 - Jm (kgm^2) moment of inertia of motor
- If $mfa > 10$ call our Technical Service.

U- Screw feeders for light materials, fans, assembly lines, conveyor belts for light materials, small mixers, lifts, cleaning machines, fillers, control machines.

M- Winding devices, woodworking machine feeders, goods lifts, balancers, threading machines, medium mixers, conveyor belts for heavy materials, winches, sliding doors, fertilizer scrapers, packing machines, concrete mixers, crane mechanisms, milling cutters, folding machines, gear pumps.

H- Mixers for heavy materials, shears, presses, centrifuges, rotating supports, winches and lifts for heavy materials, grinding lathes, stone mills, bucket elevators, drilling machines, hammer mills, cam presses, folding machines, turntables, tumbling barrels, vibrators, shredders.

TR SERVİS FAKTÖRÜ

Servis faktörü (f_b) redüktörün maruz kaldığı çalışma koşullarına göre değişkenlik gösterir. En etkin servis faktörünü seçmek için göz önüne alınması gereken parametreler aşağıdaki hususlara bağlıdır:

- Çalışan makinadaki yükün tipi : **U-M-H**
- Günlük çalışma süresi : **saat / gün**
- Start-Stop sıklığı : **başlangıç / saat**

YÜK TİPİ :	U - Uniform yükler:	$mfa \leq 0.3$
	M - Orta seviyeli şoklar:	$mfa \leq 3$
	H - Ağır şoklar:	$mfa \leq 10$

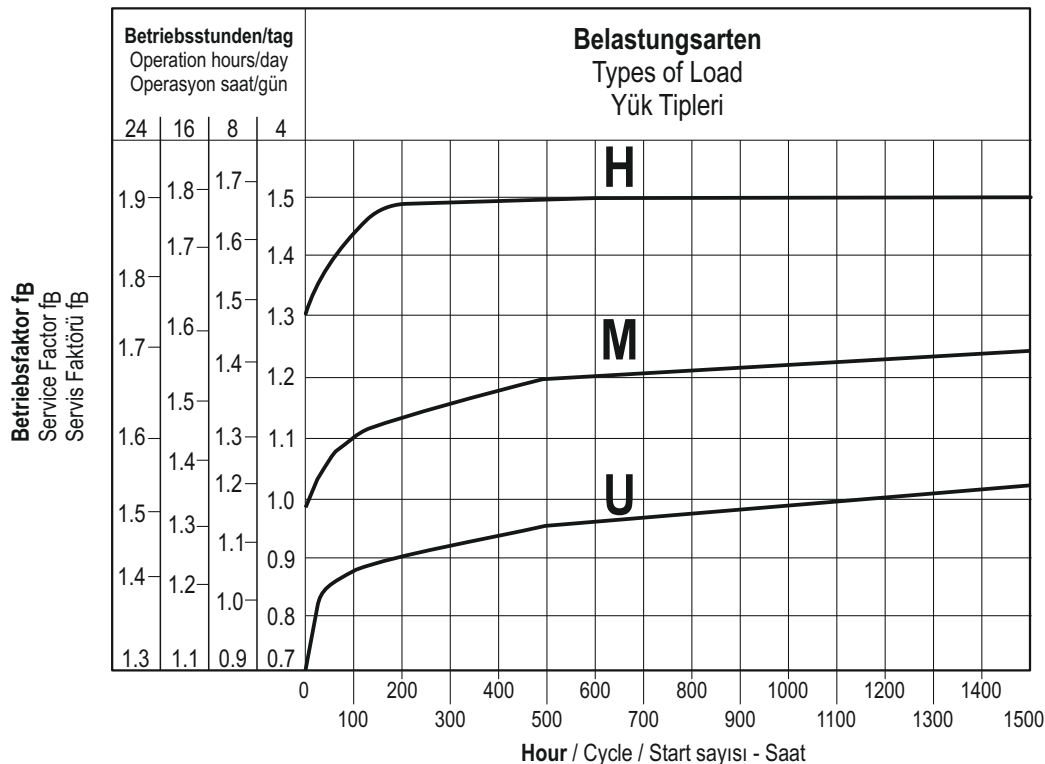
mfa = Je / Jm

- mfa Kuvvet hız faktörü
 - Je (kgm^2) Tahrik milindeki indirgenmiş harici atalet momenti
 - Jm (kgm^2) motor atalet momenti
- Eğer mfa değeri >10 ise durumu Teknik Servisimize bildirin

U- Hafif malzemeler için vida besleme aparatları, fanlar, montaj hatları, hafif malzemeler naklinde kullanılan kemerler, küçük mikserler, lifter, temizleme makinaları, dolgu makinaları, kontrol makinaları.

M- Helezonlar, ağaç işleme makinaları, besleme aparatları, malzeme lift makinaları, balans makinaları, pafta makinaları, orta boy mikserler, ağır malzeme naklinde kullanılan kemerler, vinçler, raylı kapılar, suni gübre sıyırıcısı, paketleme makinaları, beton mikserleri, vinç mekanizmaları, freze makinaları, bükme-kıvrırma makinaları, dişli pompalar.

H- Ağır malzemeler için mikserler, kırma makası, presler, santrifüj makinaları, ayna destek aparatları, ağır malzemeler için lift ve vinçler, taşlama tezgahları, bileme taşları, pistonlu asansörler, matkap tezgahları, çekiç milleri, mil dirsek presleri, bükme-kıvrırma makinaları, döner levhalar, yuvarlanma tamburları, vibratörler, kağıt öğütücüler.



IT **FATTORE DI SERVIZIO**

Il fattore di servizio (fb) dipende dalle condizioni di funzionamento alle quali il riduttore è sottoposto. I parametri che occorre considerare per una corretta selezione del fattore di servizio più adeguato sono:

- Tipo del carico della macchina azionata: **U-M-H**
- Durata di funzionamento giornaliero: ore/giorno
- Frequenza di avviamento: avv/ora

TIPO DEL CARICO : **U** - Uniforme mfa ≤ 0.3
M - Medio mfa ≤ 3
H - Forte mfa ≤ 10

mfa = Je/Jm

- mfa fattore d'inerzia
 - Je (kgm²) momento d'inerzia esterno ridotto all'albero motore
 - Jm (kgm²) momento d'inerzia motore
- Se mfa > 10 interpellare il ns. Servizio Tecnico.

U- Coclee per materiali leggeri, ventole, linee di montaggio, nastri trasportatori per materiali leggeri, piccoli agitatori, elevatori, macchine pulitrici, macchine riempitrici, macchine per il controllo, nastri trasportatori.

M- Dispositivi di avvolgimento, apparecchi per l'alimentazione delle macchine per il legno, montacarichi, equilibratrici, filettatrici, agitatori medi e mescolatori, nastri trasportatori per materiali pesanti, verricelli, porte scorrevoli, raschiatore di concime, macchine per l'imballaggio, betoniere, meccanismi per il movimento delle gru, frese, piegatrici, pompe a ingranaggi.

H- Agitatori per materiali pesanti, cesoie, prese, centrifughe, supporti rotanti, verricelli ed ascensori per materiali pesanti, torni per la rettifica, frantoi da pietre, elevatori a tazze, perforatrici, mulini a martello, presse as eccentrico, piegatrici, tavole rotanti, barilatrici, vibratori, trinciatrici.

FR **FACTEUR DE SERVICE**

Le facteur de service (fb) est subordonné aux conditions de fonctionnement auxquelles le réducteur est soumis. Les paramètres qu'il faut considérer pour un choix correct du facteur de service adéquat sont les suivants:

- Type de charge de la machine actionnée: **U-M-H**
- Durée de fonctionnement journalière: **heures / jour**
- Fréquence de démarrage: **dém / heure**

TYPE DE CHARGE : **U** - Uniforme mfa ≤ 0.3
M - Surcharge moyenne mfa ≤ 3
H - Surcharge forte mfa ≤ 10

mfa = Je/Jm

- mfa facteur d'inertie
 - Je (kgm²) moment d'inertie extérieur ramené à l'arbre-moteur
 - Jm (kgm²) moment d'inertie moteur
- En cas de mfa > 10, contacter notre S.c.e Technique.

U- Vis d'Archimède pour matériaux légers, ventilateurs, lignes de montage, convoyeurs pour matériaux légers, petits agitateurs, élévateurs, machines à nettoyer, machines à remplir, machines pour le contrôle, convoyeurs.

M- Dispositifs d'enroulement, appareils pour l'alimentation des machines pour le bois, montecharges, équilibreuses, taraudeuses, agitateurs moyens et mélangeurs, convoyeurs pour matériaux lourds, treuils, portes coulissantes, racleurs d'engrais, machines à emballer, plieuses, pompes à engrenages.

H- Agitateurs pour matériaux lourds, cisailles, presses, centrifugeuses, supports rotatifs, treuils et ascenseurs pour matériaux lourds, tours pour la rectification, concasseurs de pierres, élévateurs à godets, perceuses, moulins à marteaux, presses à excentrique, plieuses, tables tournantes, polisseuses, vibrateurs, machines à hacher.

ES **FACTOR DE SERVICIO**

El factor de servicio (fb) depende de las condiciones de funcionamiento a las cuales está sometido el reductor. Los parámetros que deben ser considerados para una correcta selección del factor de servicio más adecuado son:

- Tipo de carga de la máquina accionada: **U-M-H**
- Duración de funcionamiento diario: **horas/día**
- Frecuencia de arranques: **arr/hora**

TIPO DE CARGA : **U** - Uniforme mfa ≤ 0.3
M - Sobrecarga media mfa ≤ 3
H - Sobrecarga fuerte mfa ≤ 10

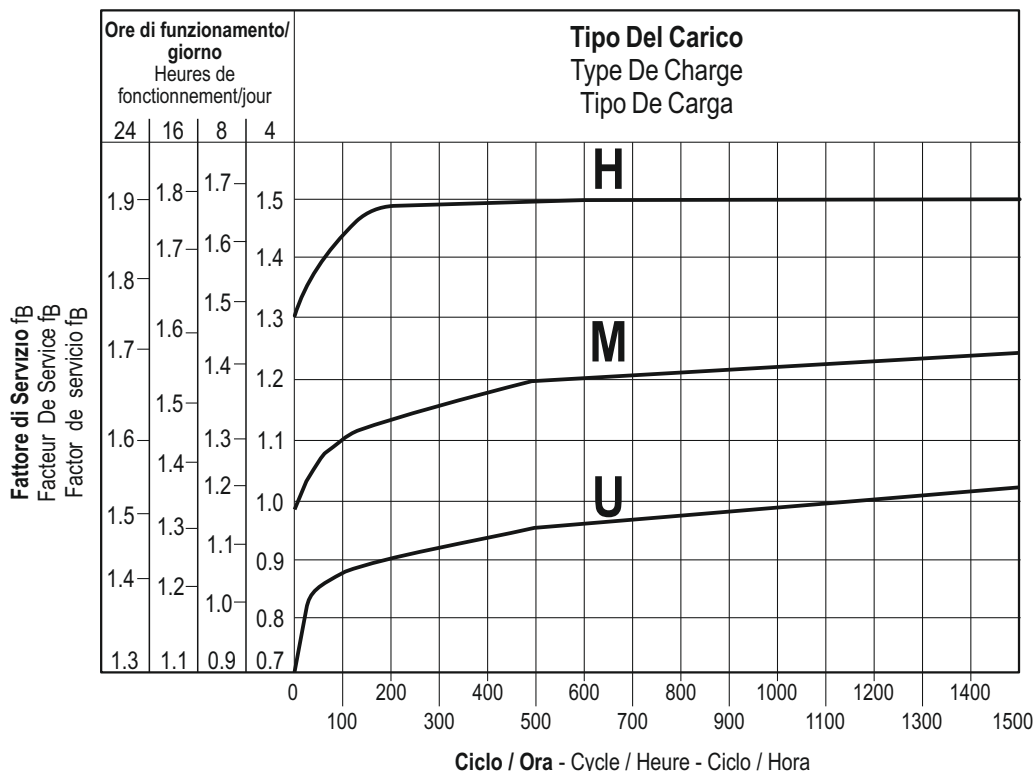
mfa = Je/Jm

- mfa factor de inercia
 - Je (kgm²) inercia externa reducida al eje motor
 - Jm (kgm²) inercia motor
- En caso de mfa > 10, ponerse en contacto con nuestro Servicio Técnico.

U- Tornillos de Arquímedes para materiales ligeros, ventiladores, líneas de montaje, cintas transportadoras para materiales ligeros, pequeños agitadores, elevadores, máquinas limpiadoras, máquinas llenadoras, máquinas comprobadoras, cintas transportadoras.

M- Dispositivos de enrollado, alimentadores de las máquinas para la madera, montacargas, equilibradores, roscadoras, agitadores medios y mezcladores, cintas transportadoras para materiales pesados, cabrestantes, puertas corredizas, raspadores de abono, máquinas empaquetadoras, puertas corredizas, raspadores de abono, máquinas empaquetadoras, hormigoneras, mecanismos para el movimiento de las grúas, fresadoras, plegadoras, bombas de engranajes.

H- Agitadores para materiales pesados, cizallas, prensas, centrifugadoras, soportes rotativos, cabrestantes y elevadores para materiales pesados, tornos para la rectificación, molinos de piedras, elevadores de cangilones, perforadoras, moledores a percusión, prensas de excéntrica, plegadoras, mesas giratorias, pulidoras, vibradores, cortadoras.



DE KRITISCHE ANWENDUNGEN

Die im Katalog aufgeführten Leistungsdaten gelten für die Einbaulage M1 oder gleichwertig, wenn das Ritzel nicht völlig mit Öl geschmiert wird. Für andere Einbaulagen und/oder besondere Antriebsdrehzahlen sind die Tabellen zu beachten, die verschiedene kritische Zustände für jede Getriebegröße darstellen. Darüber hinaus sind nachstehende Anwendungen zu beachten und eventuell sollte mit unserem Kundendienst Kontakt aufgenommen werden:

- Nicht verwendbar als Übersetzungsgetriebe
- Anwendungen, die bei Bruch des Getriebes für den Menschen gefährlich sein könnten.
- Anwendungen mit sehr hohen Trägheitsmomenten.
- Einsatz als Hebewinde.
- Anwendungen mit hohen dynamischen Beanspruchungen auf Getriebegehäuse.
- Einsatz bei Umgebungstemperaturen unter -5°C oder über 40°C.
- Einsatz in Verbindung mit aggressiven chemischen Substanzen.
- Einsatz unter Salzwassereinwirkung.
- Nicht im Katalog vorgesehene Einbaulagen.
- Einsatz unter radioaktiver Strahlung.
- Einsatz unter einem Druck, der nicht dem normalem Luftdruck entspricht.

Anwendungen, bei denen das Eintauchen der Getriebe in Wasser vorgesehen ist (auch teilweise), sollen vermieden werden.

Das max. zulässige Drehmoment (*) der Getriebe, darf nicht den zweifachen Wert des in der Leistungstabelle angegebenen nominalen Wert des Drehmomentes ($f_B=1$) übersteigen. (*) Hierbei sind Überlasten gemeint, welche durch Anlaufen unter Vollast, Bremsungen, Stöße und weiter dynamische Ursachen, hervorgerufen werden.

EN CRITICAL APPLICATIONS

The performance given in the catalogue correspond to mounting position M1 or similar, ie. when the first stage is not entirely immersed in oil. For other mounting positions and/or particular input speeds, refer to the tables that highlight different critical situations for each size of reduction unit. It is also necessary to take due consideration of and carefully assess the following applications by calling our Technical Service:

- To avoid the use as multiplier
- Use in services that could be hazardous for people if the reduction unit fails.
- Applications with especially high inertia.
- Use as a lifting winch.
- Applications with high dynamic strain on the case of the reduction unit.
- In places with T° under -5°C or over 40°C.
- Use in chemically aggressive environments.
- Use in a salty environment.
- Mounting positions not envisaged in the catalogue.
- Use in radioactive environments.
- Use in environments pressures other than atmospheric pressure.

Avoid applications where even partial immersion of the reduction unit is required.

The maximum torque (*) that the gear reducer can support must not exceed two times the nominal torque ($f_B=1$) stated in the performance tables. (*) intended for momentary overloads due to starting at full load, braking, shocks or other causes, particularly those that are dynamic.

TR KRİTİK UYGULAMALAR

Katalogta verilen performans değerleri M1 montaj pozisyonu ve buna benzer durumlar içindir.

Örneğin: İlk kademe, komple yağ içinde olmadığı durumlarda. Diğer montaj pozisyonları değişik giriş hızları ve her bir redüktör gövdesi için kritik uygulama durumları tabloda sunulmuştur. Aşağıdaki uygulamalar için de teknik servisimize danışılması gerekir.

- Hız artışı durumunda.
- Redüktör arızasında canlılara zarar verebileceği uygulamalar
- Yüksek ataletli uygulamalar.
- Kaldırma vinci olarak kullanım.
- Redüktörde yüksek dinamik gerilmelere sebep olabilecek uygulamalar.
- -5°C altında veya 40°C üzerindeki iş ortamında yapılan uygulamalar.
- Kimyasal aşındırıcı çevrelerde kullanım.
- Tuzlu ortamlarda kullanım.
- Katalogta belirtilmeyen montaj pozisyonlarında kullanım.
- Radyoaktif ortamlarda kullanım.
- Atmosferik basınçtan farklı basınç tiplerinin bulunduğu ortamlarda kullanım.

Redüktör ünitesinin batırılması gerektiği uygulama ortamlarından sakının.

Redüktörün dayanabileceği maksimum tork değeri (*) performans tablolarında belirtilen nominal tork değerinin ($f_B=1$) iki katı bir değeri aşmamalıdır. (*) Max. kapasiteli yük değerleri ile yapılan başlatmalarda, frenlemelerde, özellikle dinamik olan şok ve diğer nedenlerle momente bağlı aşırı yüklerde geçerlidir.

K	35390	40390	50390	60390	70390	90390	100390
2000 < n1 < 3000	-	-	-	P	P	P	P
M2	P	P	P	P	P	P	P
n1 > 3000	P	P	P	P	X	X	X
... L : M5 - M6	P	P	P	P	P	P	P

X Nicht empfohlene Anwendung
Application not recommended
Uygulama yapılması tavsiye edilmez

P Anwendung überprüfen und/oder mit unserem Kundendienst Kontakt aufnehmen.
Check the application and/or call our technical service.
Yapılan uygulamayı kontrol edin ve/veya Teknik Servisimize durumu bildirin.

IT **APPLICAZIONI CRITICHE**

Le prestazioni indicate a catalogo corrispondono alla posizione M1 o similari, quando cioè il primo stadio non è interamente immerso in olio. Per situazioni di pizamento diverse e/o velocità di ingresso particolari attenersi alle tabelle che evidenziano situazioni critiche diverse per ciascuna taglia di riduttore. Occorre anche tenere nella giusta considerazione e valutare attentamente le seguenti applicazioni consultando il ns. Servizio Tecnico:

- Evitare l'utilizzo come moltiplicatore.
- Utilizzo in servizi che potrebbero risultare pericolosi per l'uomo in caso di rottura del riduttore.
- Applicazioni con inerzie particolarmente elevate.
- Utilizzo come argano di sollevamento.
- Applicazioni con elevate sollecitazioni dinamiche sulla cassa del riduttore.
- Utilizzo in ambiente con T° inferiore a -5°C o superiore a 40°C.
- Utilizzo in ambiente con presenza di aggressivi chimici.
- Utilizzo in ambiente salmastro.
- Posizioni di piazzamento non previste a catalogo.
- Utilizzo in ambiente radioattivo.
- Utilizzo in ambiente con pressione diversa da quella atmosferica.

Evitare applicazioni dove è prevista l'immersione, anche parziale, del riduttore.

La coppia massima (*) sopportabile dal riduttore non deve superare il doppio della coppia nominale ($f_b=1$) riportata nelle tabelle delle prestazioni.

(*) intesa come sovraccarico istantaneo dovuto a avviamenti a pieno carico, frenature, urti ed altre cause soprattutto dinamiche.

FR **APPLICATIONS CRITIQUES**

Les performances indiquées sur le catalogue correspondent à la position M1 ou similaires, lorsque le premier train d'engrenage n'est pas entièrement immergé dans l'huile. Pour les combinaisons d'assemblage différentes et/ou les vitesses d'entrée particulières, se conformer aux tableaux qui mettent en évidence les différentes situations critiques pour chaque taille de réducteur.

Il faut aussi prendre en considération et évaluer attentivement les applications suivantes, en consultant notre S.ce Technique:

- Eviter l'utilisation comme multiplicateur.
- Emploi en services qui pourraient être dangereux pour l'homme en cas de rupture du réducteur.
- Applications avec inerties particulièrement élevées.
- Emploi comme treuil, en cas de soulèvement.
- Applications avec sollicitations dynamiques sur la carcasse du réducteur.
- Emploi en milieu avec température au-dessous de -5°C ou au-dessus de 40°C.
- Emploi en milieu en présence d'agents chimiques agressifs.
- Emploi en milieu saumâtre.
- Positions de montage non prévues sur le catalogue.
- Emploi en milieu radioactif.
- Emploi en milieu ayant une pression différente de celle atmosphérique.

Eviter les applications dans lesquelles l'immersion du réducteur, même si partielle, est prévue.

Le couple maximum (*) supporté par le réducteur ne doit pas être supérieur au double du couple nominal ($f_b=1$) suivant notre table de prestation.

(*) Entendu comme surcouple instantané dû à démarrages en pleine charge, freinages, chocs et autres causes surtout dynamiques.

ES **APLICACIONES CRITICAS**

Las prestaciones indicadas en el catálogo corresponden a la posición M1 o similares, cuando el primer tren de engranajes no está completamente inmerso en el aceite. Para posiciones de montaje distintas y/o de velocidades particulares a la entrada, atenerse a las tablas que ponen en evidencia las distintas situaciones críticas por cada tamaño de reductor.

Además es necesario considerar y evaluar cuidadosamente las siguientes aplicaciones, poniéndose en contacto con nuestro Servicio técnico:

- Evitar la utilización como multiplicador.
- Utilización en servicios que, en caso de ruptura del reductor, podrían resultar peligrosos para el hombre.
- Aplicaciones con inercias particularmente elevadas.
- Utilización como cabrestante de levantamiento.
- Aplicaciones con esfuerzos dinámicos elevados sobre la carcasa del reductor.
- Utilización en ambiente con T° inferior a -5°C o superior a 40°C.
- Utilización en ambiente con presencia de agentes químicos agresivos.
- Utilización en ambiente salino.
- Posiciones en montaje no previstas en el catálogo.
- Utilización en ambiente radioactivo.
- Utilización en ambiente con presión distinta de la atmosférica.

Evitar aplicaciones donde está prevista la inmersión, aún parcial, del reductor.

El par máximo (*) soportable por el reductor no debe superar el doble del par nominal ($f_b=1$) indicado en la tabla de prestaciones.

(*) Entendida como sobrecarga instantánea debida a puestas en marcha a plena carga, frenadas, impactos y otras causas sobretodo dinámicas.

K	35390	40390	50390	60390	70390	90390	100390
2000 < n1 < 3000	-	-	-	P	P	P	P
M2	P	P	P	P	P	P	P
n1 > 3000	P	P	P	P	X	X	X
... L : M5 - M6	P	P	P	P	P	P	P

X Applicazione sconsigliata
Application non conseillée
Aplicación desaconsejada

P Verificare l'applicazione e/o contattare il ns. servizio tecnico.
Verifier l'application et/ou contacter notre s.ce technique.
Controlar la aplicación y/o ponerse en contacto con nuestro servicio técnico.

DE THERMISCHE LEISTUNG Pt [kW]

Die folgende Tabelle enthält die Werte der thermischen Nennleistung in kW unter den folgenden Referenzbedingungen:

- Montageposition M1
- Dauerbetrieb mit Eingangsgeschwindigkeit <=1500rpm
- Umgebungstemperatur von 25°C
- Höhe über dem Meeresspiegel
- Geschwindigkeit der Luft im Getriebeinneren >=1/s
- Abwesenheit von radialen und/oder axialen externen Belastungen

EN THERMAL POWER Pt [kW]

The table below list the nominal thermal power values expressed in kW, in the following reference conditions:

- mounting position M1
- continuous operation at input speed <=1500 rpm
- ambient temperature 25°C
- sea level altitude
- air speed near the gear reducer >=1m/s
- absence of external radial and/or axial loads

TR TERMAL GÜÇ Pt [kW]

Tabloda referans verilen koşullara göre termal güç olarak belirtilmiştir.

- Montaj pozisyonu M1
- Sürekli çalışma 1500 rpm
- Çevre sıcaklığı 25 derece
- Deniz seviyesinin üzerindeki yükseklik
- Redüktör üzerindeki rüzgar hızı >=1m/s
- Radyal ve/veya aksel kuvvetin olmaksızın

Thermische Leistungen bei 1500 rpm / Thermal power values at 1500 rpm / 1500d/d Termal güç	
Getriebe / Gear reducer / Redüktör	Pt [kW]
K35390	10.5
K40390	11.0
K50390	12.5
K60390	19.0
K70390	22.5
K90390	38.0
K100390	55.0

Durch die Anwendung einer die Pt nicht übersteigenden Leistung an das Getriebe wird eine ausreichende Schmierung und eine gute Funktionsweise des Getriebes gewährleistet.

Applying a power level not exceeding Pt at the above mentioned reference conditions guarantees the correct lubrication and efficient operation of the gear reducer.

Redüktöre uygulanan Pt değerlerin üzerine çıkmaz ise yeterli yağlama ile redüktörün düzenli çalışması garanti edilir.

Prüfung der Anwendung

Mit Ausnahme von durchgängigen Betriebszeiten unter zwei (2) Stunden und anschließenden Pausen, bei denen das Getriebe auf die Umgebungstemperatur abkühlt, ist es ratsam bei jeder Anwendung die thermische Grenze des Getriebes mit der folgenden Formel zu überprüfen:

$$P1 < Pt * Fc * Fv * Fa$$

dabei ist:

P1 = Eingangleistung des Getriebes 1400 rpm (Motor mit 4 Polen)

Pt = Thermische Leistung unter Referenzbedingungen (siehe Tabelle oben)

Fc = Korrekturfaktor für Umgebungstemperatur und Betrieb

Fv = Korrekturfaktor für Belüftung

Fa = Korrekturfaktor für Höhe über NN

Die Korrekturfaktoren beziehen sich auf Betriebsbedingungen, die von den Referenzbedingungen abweichen und werden in den folgenden ISO14179 Tabellen aufgeführt:

Application check

Except for continuous operating times below two (2) hours and successive pauses capable of bringing the gear reducer back to ambient temperature, for each application it is advisable to verify the gear reducer's thermal limit according to the following formula:

$$P1 < Pt * Fc * Fv * Fa$$

where:

P1= input power to the gear reducer at 1.400 rpm (4-pole motors)

Pt = thermal power at reference conditions (see above table)

Fc = ambient and operating temperature correction factor

Fv = ventilation correction factor

Fa = altitude correction factor

The correction factors refer to different operating conditions compared to the reference conditions, and are provided by following ISO 14179 tables:

Kullanımın kontrolü

Sürekli çalıştırma dışında, yani 2 saat altında çalıştırma durumunda ve ardından gelen dinlendirme, böylece redüktör çevre sıcaklığı ile soğuması, her bir uygulama için redüktörün termal sınırını aşağıdaki formül ile kontrol etmenizi tavsiye ederiz.

$$P1 < Pt * Fc * Fv * Fa$$

P1= Redüktörün giriş gücü 1400 d/d (4 kutuplu Motor)

Pt = Referans verilen termal güç (yukarıdaki tabloya bakınız)

Fc= Çevre sıcaklığı ve kullanım düzeltme faktörü

Fv= Fan düzeltme faktörü

Fa= Rakım düzeltme faktörü (Sıfır seviyesi).

Düzeltilme faktörleri çalışma şartlarına göre, ancak referans verilen şartlara göre değişiklik gösteren değerler ISO14179- tabloda gösterilir.

IT POTENZA TERMICA Pt [kW]

La seguente tabella riporta i valori di potenza termica nominale espressa in kW nelle seguenti condizioni di riferimento:

- posizione di montaggio M1
- funzionamento continuo con velocità di entrata <=1500 rpm
- temperatura ambiente di 25°C
- altitudine pari al livello del mare
- velocità dell'intorno del riduttore >=1m/s
- assenza di carichi radiali e/o assiali esterni

FR PUISSANCE THERMIQUE Pt [kW]

Le tableau suivant présente les valeurs de puissance thermique nominale exprimées en kW dans les conditions de référence suivantes:

- position de montage M1
- fonctionnement continu avec vitesse d'entrée <= 1500tr/min
- température ambiante de 25°C
- altitude égale au niveau de la mer
- vitesse de l'air à proximité du réducteur >= 1m/s
- absence de charges radiales et/ou axiales externes

ES POTENCIA TÉRMICA Pt [kW]

La siguiente tabla contiene los valores de potencia térmica nominal expresada en kW en las siguientes condiciones de referencia:

- posición de montaje M1
- funcionamiento continuo con velocidad de entrada <=1500rpm
- temperatura ambiente de 25°C
- altura sobre el nivel del mar
- velocidad del aire en torno al reductor >=1m/s
- ausencia de cargas radiales y/o axiales externas

Potenza termiche a 1500rpm / Puissances theramiques à 1500 rpm / Potencias térmicas a 1500 rpm	
Riduttore / Réducteur / Reductor	Pt [kW]
K35390	10.5
K40390	11.0
K50390	12.5
K60390	19.0
K70390	22.5
K90390	38.0
K100390	55.0

Applicando al riduttore, nelle suddette condizioni di riferimento una potenza non superiore a Pt, risultano garantiti una corretta lubrificazione ed il buon funzionamento del riduttore.

Verifica della applicazione

Fatta eccezione per tempi di funzionamento continuo inferiori a due (2) ore e successive pause in grado di riportare il riduttore a temperatura ambiente, per ogni applicazione è consigliabile eseguire la verifica del limite termico del riduttore, secondo la seguente formula:

$$P1 < Pt * Fc * Fv * Fa$$

dove:

P1 = potenza in ingresso al riduttore a 1400 rpm (motori a 4 poli)

Pt = potenza termica in condizioni di riferimento (vedi tabella sopra)

Fc = fattore correttivo di temperatura ambiente e servizio

Fv = fattore correttivo di aerazione

Fa = fattore correttivo dell'altitudine

I fattori correttivi sono relativi a condizioni operative differenti da quelle di riferimento, e sono forniti dalle seguenti tabelle ISO14179:

L'application au réducteur d'une puissance inférieure à la Pt, dans les conditions de référence indiquées ci-dessus, garantit une lubrification correcte et le bon fonctionnement du réducteur.

Vérification de l'application

À l'exception de périodes de fonctionnement continu inférieures à deux (2) heures et de pauses successives permettant au réducteur de redescendre à une température ambiante pour toute application, il est conseillé d'effectuer une vérification de la limite thermique du réducteur, selon la formule suivante

$$P1 < Pt * Fc * Fv * Fa$$

où:

P1 = puissance d'entrée au réducteur à 1400tr/min (moteurs à 4 o-pôles)

Pt = puissance thermique dans les conditions de référence (voir tableau ci-dessus)

Fc = facteur de correction de température ambiante et de service

Fv = facteur de correction d'aération

Fa = facteur de correction de l'altitude

Les facteurs de correction correspondent à des conditions de fonctionnement différentes de celles de référence, et sont fournis par les tableaux ISO14179 suivants:

En las condiciones de referencia mencionadas, aplicando al reductor una potencia no mayor que la Pt, se garantiza una correcta lubricación y el buen funcionamiento del reductor.

Controlar la aplicación

Salvo cuando los tiempos de funcionamiento continuo menores que dos (2) horas y se producen pausas capaces de llevar el reductor a la temperatura ambiente, para cada aplicación es aconsejable realizar la verificación del límite térmico del reductor, según la siguiente fórmula:

$$P1 < Pt * Fc * Fv * Fa$$

donde:

P1 = potencia a la entrada del reductor a 1400rpm (motores de 4 polos)

Pt = potencia térmica en condiciones de referencia (ver la tabla de arriba)

Fc = factor de corrección de la temperatura ambiente y servicio

Fv = factor de corrección de aireación

Fa = factor de corrección de la altitud

Los factores de corrección son relativos a condiciones operativas diferentes a las de referencia y se encuentran en las siguientes tablas ISO14179:

DE THERMISCHE LEISTUNG Pt [kW]

EN THERMAL POWER Pt [kW]

TR TERMAL GÜÇ Pt [kW]

Fc		Betriebszeit in % pro Stunde / Duty per hour of operation % / Çalışma saati % olarak saatte				
		100	80	70	40	20
Umgebungstemperatur Ambient temperature Ortam sıcaklığı	10°C	1.15	1.21	1.32	1.55	2.07
	18°C	1.07	1.12	1.23	1.44	1.93
	25°C	1.00	1.05	1.15	1.35	1.80
	30°C	0.93	0.98	1.07	1.26	1.67
	40°C	0.83	0.87	0.95	1.12	1.49
	43°C	0.75	0.79	0.86	1.01	1.35
	50°C	0.67	0.70	0.77	0.90	1.21

Geschwindigkeit der Umgebungsluft / Ventilation correction factor / Havalandırma düzeltme faktörü	Fv
Stehende Luft (<0,5 m/s) / Stagnant air (<0,5 m/s) / Durgun hava (<0,5 m/s)	0.75
Installation in geschlossenen Räumen mit geringer Luftzirkulation / Indoor installation with slight ventilation / Kapalı alandaki kurulum düşük hava sirkülasyonu	1
Installation in geschlossenen Räumen mit guter Luftzirkulation (>1,4 m/s) / Indoor installation with good ventilation (>1,4 m/s) / Kapalı alandaki kurulum iyi hava sirkülasyonu (>1,4 m/s)	1.4
Installation im Freien (>3,7 m/s) / Outdoor installation (>3,7 m/s) / Serbest alanda kurulum (>3,7 m/s)	1.9

Höhe über NN / Altitude correction factor / Rakım düzeltme faktörü	Fa
0*	1
750	0.95
1500	0.90
2250	0.85
3000	0.81

* Meeresniveau

* Sea level

* Deniz seviyesi

Im Fall eines Betriebs mit Eingangsgeschwindigkeiten über 2000 rpm oder bei Umgebungstemperaturen über 40°C wird empfohlen, den Kundendienst zu kontaktieren

In case of operation at input speeds exceeding 2000 rpm, or ambient temperatures greater than 40°C it is advisable to contact our technical department.

Giriş devrinin 2000 d/d olması durumunda veya çevre sıcaklığının 40°C'nin üstünde olduğu durumlarda teknik departmanımıza danışmanızı tavsiye ederiz.

IT POTENZA TERMICA Pt [kW]

FR PUISSANCE THERMIQUE Pt [kW]

ES POTENCIA TÉRMICA Pt [kW]

Fc		Servizio a carico ora di funzionamento % / Facteur de marche par heure de fonctionnement % / Servicio con carga por hora de funcionamiento %				
		100	80	70	40	20
Temperatura ambiente	10°C	1.15	1.21	1.32	1.55	2.07
	18°C	1.07	1.12	1.23	1.44	1.93
	25°C	1.00	1.05	1.15	1.35	1.80
Température ambiante	30°C	0.93	0.98	1.07	1.26	1.67
	40°C	0.83	0.87	0.95	1.12	1.49
Temperatura ambiente	43°C	0.75	0.79	0.86	1.01	1.35
	50°C	0.67	0.70	0.77	0.90	1.21

Velocità dell'aria ambientale / Vitesse de l'air ambiant / Velocidad del arie ambiental	Fv
Aria stagnante (<0,5 m/s) / Air stagnant (<0,5 m/s) / Aire estancado (<0,5 m/s)	0.75
Installazione al chiuso con lieve aerazione / Installation en intérieur avec une légère aération / Instalación cubierta con poca aireación	1
Installazione al chiuso con aerazione (>1,4 m/s) / Installation en intérieur avec une aération correcte (>1,4 m/s) / Instalación cubierta con buena aireación (>1,4 m/s)	1.4
Installazione all'aperto (>3,7 m/s) / Installation en extérieur (>3,7 m/s) / Instalación al aire libre (>3,7 m/s)	1.9

Altitudine / Altitude / Altitud	Fa
0*	1
750	0.95
1500	0.90
2250	0.85
3000	0.81

*Livello del mare

* Niveau de la mer

* Nivel del mar

In caso di funzionamento con velocità di ingresso maggiori di 2000 rpm, o temperature ambiente maggiori di 40°C è consigliabile contattare il ns servizio di assistenza.

En cas de fonctionnement avec des vitesses d'entrée supérieures à 2000 tr/min ou en présence de températures ambiantes supérieures à 40°C, il est conseillé de contacter notre service d'assistance.

En el caso de funcionamiento con velocidades de entrada mayores que 2000 rpm o temperaturas ambiente mayores que 40°C es aconsejable llamar a nuestro servicio de asistencia técnica.

DE MONTAGE DES MOTORS AN DEN
PAM-IEC FLANSCH B5

Bei Getrieben, welche ohne motor geliefert werden, sind folgende Vorsichtsmaßnahmen zu beachten, um eine korrekte Montage des Elektromotors zu gewährleisten. Übereinstimmung der Toleranzen von Welle und Motorflansch überprüfen.

Diese sollten mindestens DIN 42955 N entsprechen. Welle, Passung und Flanschfläche sind sorgfältig von Schmutz, Späne oder Lackresten zu säubern.

Halbkupplung auf Motor (sehen Bild) einsetzen, andernfalls sind die korrekte Ausrichtung und die Toleranz der Paßfeder zu überprüfen. In jedem Fall sind solche Montageverfahren anzuwenden, die Schäden an den Motorlagern ausschließen.

Motor anbauen, wobei es zuerst darauf beachtet werden muß, dass die Halbkupplung auf dem Motor und der elastische Zwischenring auf der Getriebehalbkupplung frei eingreifen können.

Keine Anpassung der Motorpaßfeder ist in diesem Fall erforderlich.

EN MOTOR MOUNTING WITH PAM-IEC
FLANGE B5

When the unit is supplied without motor, it is necessary to follow these recommendation to ensure the correct assembly of the electric motor. Assembly of flange mounting motors to the gear unit with the PAM flange uses a coupling.

Check that the tolerances for the motor shaft and flange correspond to the standard. Carefully clean the shaft, spigot and surfaces of the flange removing traces of paint and dirt, and confirm the key is fitted correctly.

Fit the half coupling to the motor shaft (see picture) taking care to ensure the motor shaft and bearings are not damaged by avoiding excessive force and where necessary using assembly equipment.

Place the couplings elastic element onto the motor half coupling and position the motor up to the gear unit ensuring the coupling element is aligned with the driven half coupling. Complete the assembly using the fixing bolts. Key-ways with tightened tolerances.

TR PAM-IEC B5 FLANŞI İLE MOTOR MONTAJI

Redüktör motorsuz olarak tedarik edildiğinde elektrik motorunun doğru olarak montaj edildiğinden emin olmak için aşağıdaki tavsiyelere uyulmak zorundadır. Akuplajlı bir PAM flanşı ile flanş montajlı motorların redüktör kısmına takılması;

Motor şaftı ve flanş toleranslarının standartla uygun olup olmadığını kontrol edin. Dikkatlice şaftı, tapayı ve flanş yüzeylerini, boyadan arta kalan parçacıkları ve tozları temizleyip, kamanın doğru olarak yerleştirilip yerleştirilmediğini teyit edin. Flanş montajlı motorun Pam flanşı redüktöre montajında kaplin kullanılır.

Gerekli montaj ekipmanı kullanıp motor milinin ve rulmanları zedelenmesinin önlenmesi sağlanarak motor şaftına kaplin montaj edilir.

Kaplinin elastik elemanı motor milinde bulunan yarım kapline yerleştirilir ve motor dikey pozisyonda yarım kaplini, sürücü çevirilerek kaplin elemanı hizalanır. Kama kanalları toleransla montajlanmalıdır.

IT MONTAGGIO MOTORE SU FLANGE
PAM-IEC B5

Quando il gruppo viene fornito senza motore occorre osservare le seguenti raccomandazioni per garantire un corretto montaggio del motore elettrico.

Controllare che le tolleranze dell'albero e della flangia motore siano corrispondenti almeno a una classe di qualità "normale". Pulire accuratamente l'albero, il centraggio ed il piano della flangia da sporco o tracce di vernice.

Procedere al montaggio del semigiunto (vedi figura) sull'albero del motore elettrico che deve avvenire senza eccessiva forzatura in caso diverso controllare la corretta posizione e la tolleranza della linguetta motore; utilizzare comunque opportuni sistemi che garantiscano un corretto montaggio senza rischiare il danneggiamento dei cuscinetti motore. Procedere quindi al montaggio del motore completo di semigiunto facendo i denti di trascinamento del semigiunto lato motore con quelli dell'elemento elastico presente sul semigiunto fisso lato riduttore.

Non è previsto nessun adattamento della linguetta motore.

FR INSTALLATION MOTEUR SUR BRIDE
PAM-IEC B5

Quand le groupe est fourni sans moteur, observez les recommandations suivantes pour garantir un montage correct du moteur électrique.

Contrôler que les tolérances de l'arbre et de la bride du moteur correspondent au moins à une classe de qualité «normale».

Nettoyer soigneusement l'arbre, le centrage et le plan de la bride des traces de saleté et de peinture.

Procéder au montage de demi-accouplement sur l'arbre moteur électrique sans forcer (voir image), dans le cas contraire, vérifier la position correcte et la tolérance de la clavette du moteur.

Utiliser, toutefois, des systèmes appropriés qui garantissent un montage correct sans risquer de détériorer les roulements du moteur.

Procéder de la même façon pour le montage du moteur avec le demiaccouplement coté moteur avec de l'élément élastique du demiaccouplement coté réducteur. Rainures clavette moteur avec tolérances réduites.

ES GUÍA PARA LA SELECCIÓN DEL
PRODUCTO

Sie al equipo se suministra sin motor es preciso observar las siguientes recomendaciones para garantizar un correcto montaje del motor eléctrico.

Verificar que la tolerancia del eje y de la brida motor se correspondan al menos a una clase de calidad "normal".

Limpiar cuidadosamente el eje, el centrado y el plano de asiento de restos de barniz o suciedad.

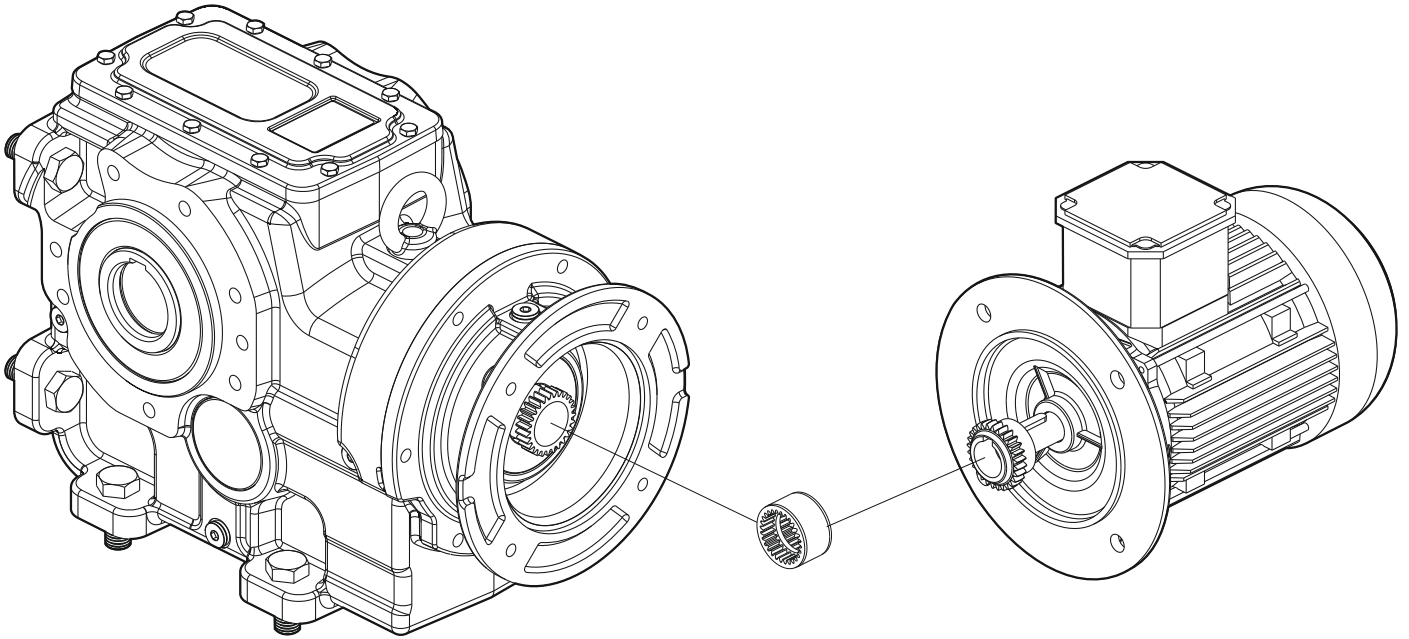
Proceder al montaje del semiacoplamiento en el eje del motor eléctrico sin excesiva fuerza, si no entra con suavidad verificar la correcta tolerancia de la chaveta del motor (ver imagen), utilizar en cualquier caso métodos de montaje que no dañen los rodamientos del motor.

Proceder a continuación al montaje del motor con el semiacoplamiento en el reductor, evitando la interferencia de los dientes del acoplamiento.

No se prevé ninguna adaptación de la chaveta del motor.

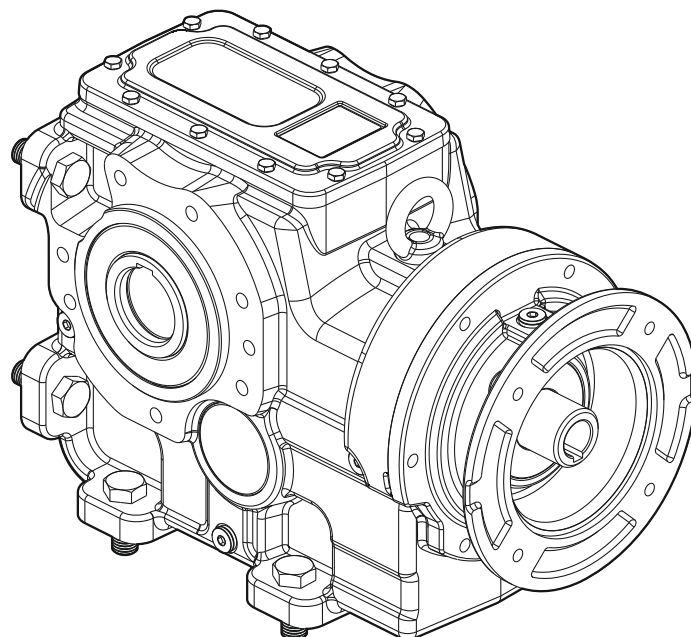
ELASTISCHE KUPPLUNG / FLEXIBLE JOINT / IEC BAĞLANTILI / GIUNTO ELASTICO / ACCOUP. ÉLASTIQUE / ACOPL. ELÁSTICO

K ... - DA/B14 - IEC



PAM BUCHSE / PAM SLEEVE / PAM BAĞLANTILI / MANICOTTO PAM / MANCHON PAM / MANGUÍTO PAM

K ... - DA/B14 PAM



DE MONTAGE

Für die Montage des Getriebes sind nachstehende Anweisungen zu beachten:

- Die Befestigung an der Maschine muß absolut stabil sein, um jegliche Vibrationen zu vermeiden.
- Vor der Montage des Getriebes an der Maschine ist die Abtriebswelle des Getriebes auf die richtige Drehrichtung zu prüfen.
- Nach besonders langer Einlagerung (4/6 Monate) ist zu überprüfen, ob die Wellendichtringe vom Schmiermittel des Getriebes vollständig benetzt wurden; andernfalls ist ein Austausch anzuraten, da die Dichtlippe auf der Welle festkleben kann oder die zum einwandfreien Betrieb notwendige Elastizität nicht mehr vorhanden ist.
- Bei Umgebungstemperaturen vor Sonneneinstrahlung u.a. Witterungseinflüssen geschützt werden.
- Die Motorkühlung muß durch eine gute Belüftung auf der Seite des Lüfters gewährleistet werden.
- Bei Umgebungstemperaturen < -5°C oder > +40°C setzen Sie sich bitte mit dem Kundendienst in Verbindung.
- Zur Montage der unterschiedlichen Anbauteile (Riemenscheiben, Zahnräder, Kupplungen, Wellen usw.) auf den Hohl- oder Vollwellen sind die vorgesehenen Gewindebohrungen oder Aufziehvorrichtungen zu verwenden. Diese gewährleisten eine einwandfreie Montage, ohne die Lager oder die Außenteile des Getriebes zu beschädigen. Die in Berührung kommenden Passungen und Oberflächen der Wellen sind zu fetten/ölen, um ein Festfressen durch Passungsrost zu vermeiden.
- Bei Lackierung ist darauf zu achten, daß alle Gummitteile und fallweise die in den Entlüftungsdeckeln vorhandenen Bohrungen nicht überlackiert werden.
- Bei Getrieben mit Ölstopfen ist die zum Transport verwendete Verschlusschraube durch die beigelegte Entlüftungsschraube zu ersetzen.
- Der Schmierölstand ist an der Füllstandsanzeige zu überprüfen, sofern vorhanden.
- Der Antrieb ist stufenweise in Betrieb zu nehmen, wobei zunächst mit Teillast angefahren werden sollte.
- Sind unter dem Antrieb Geräteteile oder Materialien angeordnet, die durch geringe Mengen austretenden Öls beschädigt werden könnten, so ist eine geeignete Schutzvorrichtung vorzusehen.

EN INSTALLATION

To install the reduction unit it is necessary to note the following Recommendations:

- The mounting on the machine must be stable to avoid any vibration
- Check the correct direction of rotation of the gear reducer output shaft before fitting the unit to be the machine.
- In the case of particularly lengthy periods of storage (4/6 months), if the oil seal is not immersed in the lubricant inside the unit, it is recommended to change it since the rubber could stick to the shaft or may even have lost the elasticity it needs to function properly.
- Whenever possible, protect the reduction unit against solar radiation and bad weather.
- Ensure the motor cools correctly by assuring good passage of air from the fan side.
- In the case of ambient temperatures < -5°C or > +40°C call the Technical Service.
- The various parts (pulleys, gear wheels, couplings, shafts, etc.) must be mounted on the solid or hollow shafts using special threaded holes or other systems that anyhow ensure correct operation without risking damage to the bearings or external parts of the units. Lubricate the surfaces in contact to avoid seizure or oxidation.
- Painting must definitely not go over rubber parts and the holes on the breather plugs, if any.
- For units equipped with oil plugs, replace the closed plug used for shipping with the special breather plug.
- Check the correct level of the lubricant through the indicator, if there is one.
- Starting must take place gradually, without immediately applying the maximum load.
- When there are parts, objects or materials under the motor drive that can be damaged by even limited spillage of oil, special protection should be fitted.

TR MONTAJ

Redüktörü monte etmek için aşağıdaki verilen tavsiyeleri uygulamanız gerekmektedir.

- Yapılacak olan montaj işleminde makinada olabilecek bir titreşimi engellemek için sabit olmalıdır.
- Cihazı makınaya monte etmeden önce redüktör çıkış şaftının dönme yönünün doğru olup olmadığını kontrol edin.
- Belirgin düzeyde uzun süreli olarak yapılacak depolama işlemlerinde (4/6 ay) şayet yağ keçesi redüktör içindeki yağa batık konumda değilse kauçuk parçanın şafta yapışma riski bulunduğundan veya doğru olarak çalışmasını engelleyebilecek şekilde elastikliğini kaybetme riski bulunduğundan parçanın değiştirilmesini tavsiye ederiz.
- Mümkün olduğunca redüktörü güneş ışınlarından kaynaklanan radyasyondan ve kötü hava koşullarından koruyunuz.
- Fan kısmından iyi bir hava akışı sağlanarak motor soğutmasının uygun bir şekilde yapıldığından emin olun.
- < -5 C° veya > +40 C° gibi aşırı ısı değerlerinin bulunduğu ortamda Teknik Servise başvurunuz.
- Değişik parçalar (makaralar, şanzuman, kaplin, şaft vb.) özel olarak açılmış kılavuzlar kullanılarak rulman yatağı veya dış parçalarına zarar vermeyecek şekilde tasarlanmış sistemler kullanmak suretiyle hasar riski olmadan mil yada delik mili üzerine monte edilmelidir. Birbirleriyle temas eden yüzeyleri aşınma veya paslanma riskine karşı yağlayınız.
- Yapılacak boyama işlemi kesinlikle keçe (kauçuk) parçaların alt kısımlarına nüfuz edecek şekilde veya varsa havalandırma deliklerini kapatacak şekilde olmamalıdır.
- Yağ tapası ile gönderilen redüktörlerin sevkiyatı için kullanılan kör tapa özel havalandırma tapası ile değiştirilmelidir.
- Mümkünse yağ seviyesini indikatörle kontrol ediniz.
- Başlatma işi kademeli olarak maksimum güç yüklemesine hemen geçilmeden yapılmalıdır.
- Sınırlı düzeyde bile olsa yağ sızıntısı ile hasara uğrayabilecek motor altında parçalar, nesnelere veya malzemeler olması halinde bu durum için özel koruma takılmalıdır.

IT

INSTALLAZIONE

Per l'installazione del riduttore è consigliabile attenersi alle seguenti indicazioni:

- Il fissaggio sulla macchina deve essere stabile per evitare qualsiasi vibrazione.
- Verificare il corretto senso di rotazione dell'albero di uscita del riduttore prima del montaggio del gruppo sulla macchina.
- In caso di periodi particolarmente lunghi di stoccaggio (4/6 mesi) se l'anello di tenuta non è immerso nel lubrificante contenuto all'interno del gruppo si consiglia la sua sostituzione in quanto la gomma potrebbe essersi incollata all'albero o addirittura aver perso quelle caratteristiche di elasticità necessarie al corretto funzionamento.
- Quando possibile proteggere il riduttore dall'irraggiamento solare e dalle intemperie.
- Garantire un corretto raffreddamento del motore assicurando un buon passaggio d'aria dal lato ventola.
- Nel caso di temperature ambiente < -5°C o > +40°C contattare il servizio Assistenza Tecnica.
- Il montaggio dei vari organi (pulegge, ruote, dentate, giunti, alberi, ecc.) sugli alberi pieni o cavi deve essere eseguito utilizzando appositi fori filettati o altri sistemi che comunque garantiscano una corretta operazione senza rischiare il danneggiamento dei cuscinetti o delle parti esterne dei gruppi. Lubrificare le superfici a contatto per evitare grippaggi o ossidazioni.
- La verniciatura non deve assolutamente interessare le parti in gomma e i fori esistenti sui tappi di sfiato, quando presenti.
- Per i gruppi provvisti di tappi per olio sostituire il tappo chiuso utilizzato per la spedizione con l'apposito tappo di sfiato.
- Controllare il corretto livello del lubrificante tramite, quando prevista l'apposita spia.
- La messa in funzione deve avvenire in maniera graduale, evitando l'applicazione immediata del carico massimo.
- Quando sotto alla motorizzazione sono presenti organi, cose o materiali danneggiabili dall'eventuale fuoriuscita, anche limitata, di olio è opportuno prevedere un'apposita protezione.

FR

INSTALLATION

Pour l'installation du réducteur, il faut se conformer aux indications suivantes:

- La fixation sur la machine doit être stable pour éviter toute vibration.
- Avant le montage du groupe sur la machine, vérifier que le sens de rotation de l'arbre de sortie du réducteur soit correct.
- En cas de périodes de stockage particulièrement longues (4/6 mois), si la bague d'étanchéité n'est pas immergée dans le lubrifiant contenu à l'intérieur du groupe, on conseille son remplacement, car le caoutchouc pourrait être collé à l'arbre ou avoir perdu les caractéristiques d'élasticité nécessaires à un fonctionnement correct.
- Si possible, protéger le réducteur des rayons du soleil et des intempéries.
- Vérifier que le refroidissement du moteur soit suffisant, en assurant un bon passage d'air du côté ventilateur.
- En cas de températures ambiante < -5°C ou > +40°C, contacter le Service techniques.
- Le montage de différents organes (poulies, roues dentées, accouplements, arbres, etc.) sur les arbres pleins ou creux doit être effectué en utilisant les trous filetés ou d'autres systèmes assurant de toute façon une opération correcte, sans risquer d'endommager les roulements ou les parties extérieures des groupes. Lubrifier les surfaces en contact, afin d'éviter le grippage ou l'oxydation.
- La peinture ne doit absolument pas toucher les parties en caoutchouc et, si présents, les trous sur les bouchons d'évent.
- Pour les groupes avec bouchons d'huile, remplacer le bouchon, utilisé lors de l'expédition, par le bouchon d'évent.
- Contrôler, grâce au voyant (si prévu), que le niveau du lubrifiant correspond.
- La mise en marche doit s'effectuer d'une façon graduelle, en évitant l'application immédiate de la charge maximale.
- Si des organes, des choses ou des matériels pouvant être endommagés par l'éventuelle sortie d'huile, même si limitée, sont présents sous la motorisation, il faut prévoir une protection adéquate.

ES

INSTALACIÓN

Para la instalación del reductor, atenerse a las siguientes indicaciones:

- Para evitar las vibraciones, la fijación sobre la máquina tiene que ser estable.
- Antes del montaje del grupo sobre la máquina, controlar que el sentido de rotación del eje de salida del reductor sea correcto.
- En caso de periodos de almacenamiento muy largos (4/6 meses), si el retén no está sumergido en el lubricante contenido en el grupo, se aconseja su reemplazo porque la goma podría estar pegada al eje o haber perdido las características de elasticidad necesarias para un funcionamiento correcto.
- Siempre que sea posible, proteger el reductor contra los rayos del sol y la intemperie.
- Controlar que la refrigeración del motor sea suficiente, asegurando una correcta transferencia de aire del lado ventilador.
- En caso de temperatura ambiente de < -5°C o > +40°C, ponerse en contacto con el Servicio técnico.
- El montaje de distintos órganos (poleas, ruedas dentadas, acoplamientos, ejes, etc.) sobre los ejes llenos o huecos debe ser efectuado utilizando los agujeros roscados correspondientes u otros sistemas, asegurando de todas maneras una operación correcta sin correr el riesgo de dañar los cojinetes o las partes externas de los grupos. Lubricar las superficies en contacto para evitar los grippados o las oxidaciones.
- La pintura no debe cubrir las partes de goma y los agujeros de los posibles tapones-respiraderos.
- Para los grupos equipados de tapones de aceite, reemplazar el tapón cerrado, utilizado durante el transporte, por el tapón respiradero.
- Controlar el correcto nivel de lubricante mediante la mirilla (si la hay).
- La puesta en marcha se debe producir de manera gradual evitando la aplicación súbita de la carga máxima.
- Si bajo el reductor hay mecanismos, cosas o materiales que puedan dañarse por una eventual pérdida de aceite, deberá preverse una protección adecuada.

DE QUERBELASTUNGEN -
TECHNISCHE BESCHREIBUNGEN

Der Wert der zulässigen Querbelastrung (N) wird in den Tafeln über die Leistungen des betreffenden Getriebes aufgeführt und ist die Kraft, die auf die Mittellinie der Wellen unter ungünstigsten Bedingungen wie Anwendungswinkel und Drehrichtung einwirkt.

Die zulässigen Axialbelastungen betragen 1/5 der aufgeführten Querbelastrungen, wenn diese gleichzeitig einwirken.

Die Tafeln über die Abtriebswellen geben den für die Lager bzw. das Gehäuse zulässigen Höchstwert an; dieser Wert darf nie überschritten werden.

Falls die im Katalog aufgeführten Grenzwerte doch überschritten werden sollen, setzen Sie sich bitte mit unserem Kundendienst in Verbindung und nennen Sie ihm alle Anwendungsdaten wie Belastungsrichtung, Drehrichtung der Welle, Anwendungsart.

Sofern die Anwendung mit einer beiseitigen Einleitung der Querkraft arbeitet, ist die Anwendung hinsichtlich der Einsatzbedingungen zu überprüfen. Hierzu kontaktieren Sie bitte unser technisches Büro.

Querbelastrungen

Die Querbelastrung (Querkraft) auf der Welle wird durch nachstehende Formel berechnet:

$$FR_{XL} = \frac{2000 \cdot M \cdot fz}{D} \leq FR_1 \text{ o } FR_2$$

FR_{XL} (N)
Resultierende Querkraft
M (Nm)
Wellendrehmoment
D (mm)
Durchmesser des an der Welle montierten Antriebsselements
FR (N)
Max. zul. Querkraft (siehe entspr. Tafel)

fz = 1,1 Zahnrad
1,4 Rad für Kette
1,7 Flanschscheibe
2,5 Flachriemenscheibe

Wenn die Querkraft nicht auf die Mitte der Welle bezogen ist, ist die effektive Kraft durch nachstehende Formel zu berechnen:

$$FR_X = \frac{FR_1 \cdot 2 \cdot a}{(b + x)}$$

a, b = siehe Tafeln auf Seite 22
X = Abstand der Querkraft zur Wellenschulter

EN RADIAL LOADS -
TECHNICAL DESCRIPTIONS

The value of the admissible radial load (N) is given in the tables relating to the performance of the reduction unit at issue. It is related to the load applied on the centre line of the shaft and in the most unfavourable conditions of angle of application and direction of rotation.

The maximum admissible axial loads are 1/5 of the value of the given radial load when are applied in combination with the radial load.

The tables relating to the output shafts give the maximum admissible value.

This value must never be exceeded since it relates to the strength of the case.

Particular conditions of radial load higher than the limits of the catalogue may occur. In this case, call our Technical Service and provide details on the application: direction of the load, direction of rotation of the shaft, type of service.

In case of double extension shafts with radial load applied on both ends, the max. admissible radial loads must be defined according to the specific running conditions, in this case call our Technical Service.

Radial Loads

The radial load on the shaft is calculated with the following formula:

$$FR_{XL} = \frac{2000 \cdot M \cdot fz}{D} \leq FR_1 \text{ o } FR_2$$

FR_{XL} (N)
Resulting radial load
M (Nm)
Torque on the shaft
D (mm)
Diameter of the transmission member mounted on the shaft
FR (N)
Value of the maximum admitted radial load (see relative tables)

fz = 1,1 gear pinion
1,4 chain wheel
1,7 v-pulley
2,5 flat pulley

When the resulting radial load is not applied on the centre line of the shaft it is necessary to calculate the effective load with the following formula:

$$FR_X = \frac{FR_1 \cdot 2 \cdot a}{(b + x)}$$

a, b = values given in the tables on page 22
X = distance from the point of application of the load to the shaft shoulder

TR RADYAL YÜKLER - TEKNİK TANIMLAR

Kabul edilebilir Radyal yük (N) değeri motorlu seçim sayfalarında ilgili tablolarda verilmiştir.

Bu şaftın merkez hattına binen yüklerle ve en uygunsuz durumlarda uygulama açısı ve yönü ile ilgili bir olgudur.

Kombinasyonlu uygulamalarda max. müsaade edilen ekselel yük radyal yükün 1/5'i kadar olmalıdır.

Çıkış şaftları ile ilgili olarak hazırlanan tablolarda max. kabul edilebilir değerler verilmiştir.

Gövde mukavemeti ile ilgili olduğundan bu değer çok aşılmamalıdır. Bazı istisnai durumlarda katalogta verilen yük değerleri aşılabılır. Bu durumda Teknik Servisimiz uygulama ile ilgili detay sağlar; yükün yönü, şaftın dönüş yönü, verilecek servisin tipi.

Çalıştırıldığında iki türlü enine kuvvet geldiği takdirde, kurulum çalışma koşuluna göre kontrol ediniz.

Bu durum için teknik departmana başvurunuz.

Radial Yükler

Şaft üzerindeki radyal yük aşağıdaki formülle hesaplanır:

$$FR_{XL} = \frac{2000 \cdot M \cdot fz}{D} \leq FR_1 \text{ o } FR_2$$

FR_{XL} (N)
Radyal yük
M (Nm)
Şaft üzerindeki tork
D (mm)
Şaft üzerine monte edilmiş transmisyon elemanının çapı
FR (N)
Uygulanan maksimum radyal yük değeri (ilgili tablolara bakınız)

fz = 1,1 Dişliler
1,4 Dişli zinciri
1,7 v-makarası
2,5 Düz makara

Sonuç radyal yük şaftın merkez hattına uygulanmadığında aşağıdaki formülle etkin yükün hesaplanması gerekir:

$$FR_X = \frac{FR_1 \cdot 2 \cdot a}{(b + x)}$$

a, b = Sayfa 22'deki tablolarda verilen değerler
X = Şaftın faturasından, yükün uygulanacağı nokta arasındaki mesafedir.

IT CARICHI RADIALI -
DESCRIZIONI TECNICHE

Il valore del carico radiale (N) ammissibile viene riportato nelle tabelle relative alle prestazioni del riduttore in esame, ed è relativo al carico applicato sulla mezzeria dell'albero e nelle condizioni più sfavorevoli come angolo di applicazione e senso di rotazione.

I carichi assiali massimi ammissibili sono 1/5 del valore del carico radiale indicato quando sono applicati in combinazione col carico radiale stesso.

Nelle tabelle relative agli alberi di uscita viene indicato il valore massimo ammissibile, questo valore non deve mai essere superato in quanto è relativo alla resistenza della cassa. Possono essere verificate condizioni particolari di carico radiale superiori ai limiti di catalogo, in questo caso contattare il ns.

Servizio Tecnico e fornire tutti i dati applicativi: direzione del carico, senso di rotazione dell'albero, tipo di servizio.

Nel caso di alberi bisorgenti e cavi in cui è previsto l'applicazione di carichi radiali su entrambe le estremità, i carichi massimi ammissibili sono da definire in funzione delle condizioni di esercizio specifiche, in questo caso contattare il ns. Servizio Tecnico.

Carichi Radiali

Il carico radiale sull'albero si calcola con la seguente formula:

$$FR_{XL} = \frac{2000 \cdot M \cdot fz}{D} \leq FR_1 \text{ o } FR_2$$

FR_{XL} (N)

Carico radiale risultante

M (Nm)

Momento torcente sull'albero

D (mm)

Diametro dell'elemento di trasmissione montato sull'albero

FR (N)

Valore di carico radiale massimo ammesso FR₁-FR₂ (ved. tab. relative)

fz = 1,1 Pignone dentato
1,4 Ruota per catena
1,7 Puleggia a gola
2,5 Puleggia piana

Quando il carico radiale risultante è applicato in mezzeria dell'albero occorre correggere il carico radiale ammissibile FR₁₋₂ con la seguente formula:

$$FR_X = \frac{FR_{1-2} \cdot a}{(b + x)}$$

a, b = Valori riportati nelle tabelle pag. 22

X = distanza del punto di applicazione del carico da spallamento albero

FR CHARGES RADIALES -
DESCRIPTIONS TECHNIQUES

La valeur de la charge radiale (N) admissible est indiquée dans les tableaux concernant les performances du réducteur examiné et correspond à la charge appliquée sur la ligne médiane de l'arbre, dans les conditions les plus défavorables au niveau de l'angle d'application et du sens de rotation.

Les charges axiales maximales admissibles sont 1/5 de la valeur de la charge radiale indiquée, au cas où elles seraient appliquées en combinaison avec la charge radiale même.

Les tableaux concernant les arbres de sortie indiquent la valeur maximale admissible, valeur qui ne doit jamais être dépassée car elle correspond à la résistance de la carcasse. Des conditions particulières de charges radiales supérieures aux limites de catalogue peuvent être vérifiées; dans ce cas, contacter notre S.c.e Technique en donnant toutes les données d'application: direction de la charge, sens de rotation de l'arbre, type de service.

Dans le cas d'arbre double avec une charge radiale appliquée aux deux extrémités, la charge radiale maxi admissible doit être définie selon les conditions de fonctionnement spécifiques, dans ce cas contacter notre, service technique.

Charges Radiales

La charge radiale sur l'arbre doit être calculée selon la formule suivante:

$$FR_{XL} = \frac{2000 \cdot M \cdot fz}{D} \leq FR_1 \text{ o } FR_2$$

FR_{XL} (N)

Charge radiale résultante

M (Nm)

Moment de torsion sur l'arbre

D (mm)

Diamètre de l'élément de transmission monté sur l'arbre

FR (N)

Valeur de charge radiale maximum admise (voir tableaux correspondants)

fz = 1,1 pignon denté
1,4 roue pour chaîne
1,7 pouille à gorge
2,5 pouille plate

Lorsque la charge radiale résultante n'est pas appliquée sur la ligne médiane de l'arbre, il faut calculer celle effective selon la formule suivante:

$$FR_X = \frac{FR_{1-2} \cdot a}{(b + x)}$$

a, b = valeurs indiquées dans les tableaux à page 22.

X = distance entre le point d'application de la charge et l'épaulement de l'arbre

ES CARGAS RADIALES -
DESCRIPCIONES TÉCNICAS

El valor de carga radial (N) admisible es las indicado en las tablas relacionadas a las prestaciones del reductor examinado y se refiere a la carga aplicada sobre la línea de centro del eje y en las condiciones más desfavorables como ángulo de aplicación y sentido de rotación.

Las cargas axiales máximas admisibles son 1/5 del valor de carga radial indicado, cuando están aplicadas en combinación con la carga radial misma.

En las tablas relacionadas a los ejes de salida se indica el valor máximo admisible; nunca se debe superar este valor, porque se refiere a la resistencia de la carcasa.

Podrían presentarse condiciones particulares de carga radial superiores a los límites de catálogo; en este caso, ponerse en contacto con nuestro Servicio técnico e indicar todos los datos de la aplicación: dirección de carga, sentido de rotación del eje, tipo de servicio. En caso de ejes dobles o huecos sobre los que se prevea la aplicación de cargas radiales sobre ambos extremos, las cargas máximas admisibles se deben definir en función de las características de la aplicación, en ese caso contactar a nuestro Servicio Técnico.

Cargas Radiales

La carga radial sobre el eje se calcula con la siguiente fórmula:

$$FR_{XL} = \frac{2000 \cdot M \cdot fz}{D} \leq FR_1 \text{ o } FR_2$$

FR_{XL} (N)

Carga radial resultante

M (Nm)

Par de torsión sobre el eje

D (mm)

Diámetro del elemento de transmisión montado sobre el eje

FR (N)

Valor de carga radial máximo admitido (ver tablas correspondientes)

fz = 1,1 Piñon dentado
1,4 Piñon de cadena
1,7 Polea para correa trapezoidal
2,5 Polea plana

Si la carga radial resultante no está aplicada sobre la línea da centro del eje, es necesario calcular la efectiva con la siguiente fórmula:

$$FR_X = \frac{FR_{1-2} \cdot a}{(b + x)}$$

a, b = valores indicados en las tablas pag. 22

X = distancia desde el punto de aplicación de la carga hasta la base del eje

DE QUERBELASTUNGEN - TECHNISCHE BESCHREIBUNGEN

IT CARICHI RADIALI - DESCRIZIONI TECNICHE

Antriebswellen

Sofern die radiale Querkraft nicht auf die Mitte der Welle bezogen ist, ist die effektive zulässige Kraft FR_2 durch Formel zu berechnen:

Alberi In Uscita

Con carico radiale risultante non in mezzzeria dell'albero, correggere il carico radiale ammissibile FR_2 con la formule:

EN RADIAL LOADS - TECHNICAL DESCRIPTIONS

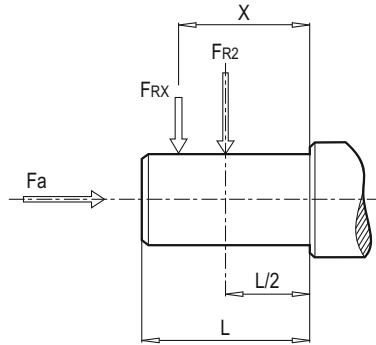
FR CHARGES RADIALES - DESCRIPTIONS TECHNIQUES

Output Shafts

When the radial load is not on the centre line of the shaft it is necessary to adjust the admissible radial load FR_2 with the following formula:

Arbres De Sortie

Quand la charge radiale n'est pas au milieu de l'arbre, il est nécessaire de corriger la charge radiale admissible FR_2 avec la formula suivante:



TR RADYAL YÜKLER - TEKNİK TANIMLAR

ES CARGAS RADIALES - DESCRIPCIONES TECNICAS

Çıkış Şaftı

Radyal kuvvet çıkış şaftının orta noktasına gelmediğinde kabul edilebilir radyal kuvvet FR_2 aşağıdaki formül ile hesaplanır.

Ejes De Salida

Si la carga radial resultante no se aplica sobre el cenro del eje, corregir la carga radial admisible FR_2 mediante la siguiente fórmula:

$$FRX = \frac{FR_2 \cdot a}{(b + x)} \text{ (N)}$$

K	35390	40390	50390	60390	70390	90390	100390
a	129	190	225	262	306	348	468
b	100	150	175	202	236	278	363
D-S-P (FR_2 max)	12000	18000	22000	30000	40000	65000	80000
C(FR_2 max**)	8000	12000	15000	20000	40000	65000	65000

Antriebswellen

Sofern die radiale Querkraft nicht auf die Mitte der Welle bezogen ist, ist die effektive zulässige Kraft FR_1 durch Formel zu berechnen:

Alberi In Entrata

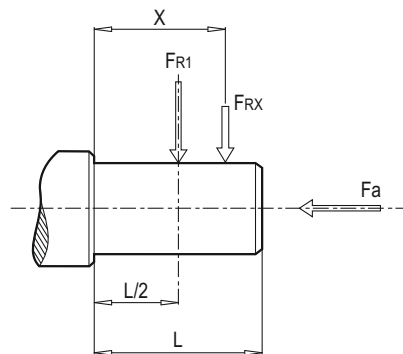
Con carico radiale risultante non in mezzzeria dell'albero, correggere il carico radiale ammissibile FR_1 con la formule:

Input Shafts

When the radial load is not on the centre line of the shaft it is necessary to adjust the admissible radial load FR_1 with the following formula:

Arbres D'entree

Quand la charge radiale n'est pas au milieu de l'arbre, il est nécessaire de corriger la charge radiale admissible FR_1 avec la formula suivante:



Giriş Şaftı

Radyal kuvvet giriş şaftının orta noktasına gelmediğinde kabul edilebilir radyal kuvvet FR_1 aşağıdaki formül ile hesaplanır.

Ejes De Entrada

Si la carga radial resultante no se aplica sobre el cenro del eje, corregir la carga radial admisible FR_1 mediante la siguiente fórmula:

$$FRX = \frac{FR_1 \cdot a}{(b + x)} \text{ (N)}$$

K	K35390	K40390	K50390	K60390	K70390	K90390	K100390
a	105	137	137	175	175	225	221
b	80	108	108	135	135	170	166
FR_1 max**	2200	2500	3200	4200	7000	10000	12000

(FR_1 - FR_2) Entspricht dem max. zulässigem Wert; bitte beachten Sie den max. Wert der Tabelle.

(FR_1 - FR_2) Max. admissible value of the reducer; verify max. admissible value on performances tables.

(FR_1 - FR_2) Redüktörün maximum izin verilen değeri; performans tablolarında bulunan maximum izin verilen değerler ile doğrulanabilir.

(FR_1 - FR_2) Valore massimo ammesso dal riduttore; Verificare valore massimo ammesso su tabelle di prestazioni.

(FR_1 - FR_2) Valeur maximale admissible du réducteur; vérifier la valeur maxi admissible dans les tableaux de performances.

(FR_1 - FR_2) Valor máximo admisible por el reductor; verificar el valor máximo admisible en las tablas de prestaciones.

DE TRÄGHEITSMOMENTE

Die angegebenen Werte sind Richtwerte und beziehen sich auf Getriebe mit IEC Eingangsflansch.
Die angegebenen Werte beziehen sich jeweils auf das max. Massenträgheitsmoment.

EN MOMENTS OF INERTIA

Following values are indicative only and refer to gear reducers fitted with input PAM.
These values refer to maximum moment of inertia.

TR ATALET MOMENTİ

Aşağıdaki değerler sadece gösterge niteliğindedir ve PAM girişli redüktörler içindir. Bu değerler, maximum atalet momentini ifade eder.

IT MOMENTI D'INERZIA

I seguenti valori sono solo indicativi. Sono riferiti a riduttori già predisposti con l'attacco motore PAM.
I valori in tabelle sono riferiti al massimo di quelli calcolati.

FR MOMENTS D'INERTIE

Les valeurs suivantes sont seulement indicatives et se rapportent à des réducteurs de vitesse équipés avec l'entrée PAM.
Ces valeurs sont relatives au moment d'inertie maximum.

ES MOMENTOS DE INERCIA

Los valores siguientes son sólo indicativos y se refieren a los reductores con PAM de entrada.
Estos valores están referidos al momento de inercia máximo.

K...	J*1E-4 [Kg*m2]
K 35390	1.1
K 40390	2.5
K 50390	7.0
K 60390	10.4
K 70390	23.0
K 90390	34.8
K 100390	92.9

DE SCHMIERUNG

Bei in der Tafel nicht vorgesehenen Umgebungstemperaturen setzen Sie sich bitte mit unserem Kundendienst in Verbindung.

Bei Temperaturen unter -30°C oder über 60°C werden Dichtringe aus besonderen Elastomeren benötigt.

Bei Betrieb mit Temperaturen unter 0°C ist folgendes zu berücksichtigen:

- 1- Die Motoren müssen für den Betrieb mit der vorgesehenen niedrigen Raumtemperatur geeignet sein.
- 2- Die Leistung des Elektromotors muß so ausgelegt werden, daß die höheren benötigten Anlaufdrehmomente aufgebracht werden können.
- 3- Bei Getriebegehäusen aus Guß sind die Stoßbelastungen zu beachten, weil der Guß bei Temperaturen unter -15°C verbröckeln könnte.
- 4- Bei Betriebsbeginn könnten Schmierungsprobleme infolge der hohen Ölviskosität auftreten, daher ist es sinnvoll, für einige Minuten einen Leerlauf auszuführen.

Je nach Umgebungsbedingungen und Betriebsart ist nach etwa 10.000 Betriebsstunden ein Ölwechsel durchzuführen. Die Getriebe ohne Ölstopfen sind langzeitgeschmiert und benötigen daher keine weiteren Wartungsarbeiten.

EN LUBRICATION

In cases of ambient temperatures not envisaged in the table, call our Technical Service.

In the case of temperatures under -30°C or over 60°C it is necessary to use oil seals with special properties.

For operating ranges with temperatures under 0°C it is necessary to consider the following:

- 1- The motors need to be suitable for operation at the envisaged ambient temperature.
- 2- The power of the electric motor needs to be adequate for exceeding the higher starting torques required.
- 3- In case of cast-iron gear reducers, pay attention to impact loads since cast iron may have problems of fragility at temperatures under -15°C .
- 4- During the early stages of service, problems of lubrication may arise due to the high level of viscosity taken on by the oil and so it is wise to have a few minutes of rotation under no load.

The oil needs to be changed after approximately 10,000 hours. This period depends on the type of service and the environment where the reduction unit works. For unit supplied without oil plugs, lubrication is permanent and so they need no servicing.

TR YAĞLAMA

Tabloda belirtilmeyen aşırı ısı ortamlarında Teknik Servisimizi arayınız.

-30°C altındaki bir ısı değerinde veya 60°C üzerindeki bir ısı değerinde hassas özelliklere sahip yağ keçesi kullanılmak gerekir.

0°C 'nin altındaki sıcaklık değerlerinde çalışmak gerekiyorsa aşağıdakileri göz önünde tutmak gerekir:

- 1- Motorlar tahmin edilen ortam sıcaklıklarındaki operasyonlara uygunluk gerektirir.
- 2- Elektrik motorunun gücü gerekli olan yüksek başlama tork değerlerini aşabilmesi için yeterli olmalıdır.
- 3- Redüktörlerin dökme demirden imal edildiği durumlarda -15°C sıcaklığın altında dökme demirin kırılma riski bulunduğundan darbe yüklerine özen gösterin.
- 4- Servis hizmetinin ilk aşamalarında yağın sahip olduğu aşırı akışkanlık olayından dolayı birtakım yağlama problemleri meydana gelebilir, bu durumda yüksüz olarak birkaç dakika boyunca çalıştırmak gerekir.

Yağ değişimi yaklaşık 10.000 saatlik kullanımdan sonra yapılmalıdır. Bu süre servis tipine ve redüktörün çalıştığı ortama göre değişir. Yağ tapalarıyla birlikte verilen redüktörler için, yağlama kalıcıdır ve bu nedenle servis gerektirmez.

IT LUBRIFICAZIONE

Nei casi con temperature ambiente non previste in tabella contattare il ns. Servizio Tecnico.

In caso di temperature inferiori a -30°C o superiori a 60°C occorre utilizzare anelli di tenuta con mescole speciali.

Per i campi di funzionamento con temperature inferiori a 0°C occorre considerare quanto segue:

- 1- I motori devono essere idonei al funzionamento con temperatura ambiente prevista.
- 2- La potenza del motore elettrico deve essere adeguata al superamento delle maggiori coppie di avviamento richieste.
- 3- Nel caso di riduttori con cassa in ghisa prestare attenzione ai carichi d'urto in quanto la ghisa può presentare problemi di fragilità a temperature inferiori ai -15°C .
- 4- Durante le prime fasi di servizio possono insorgere problemi di lubrificazione cause l'elevata viscosità che assume l'olio e quindi è opportuno procedere ad alcuni minuti di rotazione a "vuoto".

Il cambio olio deve essere eseguito dopo circa 10.000 ore, questo periodo è in funzione del tipo di servizio e dell'ambiente in cui opera il riduttore.

Per i gruppi forniti senza tappi per l'olio la lubrificazione si intende permanente e quindi non hanno necessità di alcuna manutenzione.

FR LUBRIFICATION

En cas de températures ambiantes non prévues dans le tableau, contacter notre S.ce Technique.

En cas de température au-dessous de -30°C ou au-dessus de 60°C , il faut utiliser des bagues d'étanchéité avec mélanges spéciaux.

Pour les champs de fonctionnement avec température au-dessus de 0°C , il faut considérer ce qui suit:

- 1- Les moteurs doivent être aptes au fonctionnement à la température ambiante prévue.
- 2- La puissance du moteur électrique doit être au dépassement de la plupart des couples de démarrage demandés.
- 3- En cas de réducteurs avec carcasse en fonte, faire attention aux charges de choc, car la fonte peut présenter des problèmes de fragilité à températures au-dessous de -15°C .
- 4- Lors des premières phases de service, des problèmes de lubrification dus à la viscosité élevée, que l'huile assume, pourraient se vérifier; il faut donc procéder à une rotation "à vide" de quelques minutes.

Le changement d'huile doit être effectué après 10,000 heures environ; cette période est en fonction du type de service et du milieu dans lequel le réducteur travaille. Pour les groupes livrés sans bouchons d'huile, la lubrification est permanente et ils ne nécessitent donc aucun entretien.

ES LUBRICACIÓN

En caso de temperaturas no previstas en la tabla, ponerse en contacto con nuestro Servicio técnico.

En caso de temperaturas inferiores a -30°C o superiores a 60°C , es necesario utilizar anillos de retén con mezclas especiales. Para los campos de funcionamiento con temperaturas inferiores a 0°C , es necesario cumplir con lo que sigue:

- 1- Los motores tienen que ser idóneos al funcionamiento con la temperatura ambiente prevista.
- 2- La potencia del motor eléctrico tiene que ser idónea para superar los mayores pares de arranque pedidos.
- 3- En caso de reductores con carcasa de fundición, cuidado con las cargas de choque porque la fundición puede presentar problemas de fragilidad con temperaturas inferiores a los -15°C .
- 4- Durante las primeras fases de servicio podrían surgir unos problemas de lubricación debidos a la elevada viscosidad del aceite y es por lo tanto oportuno efectuar una rotación en "vacío" por algunos minutos.

El cambio de aceite tiene que ser efectuado aproximadamente después de 10.000 horas; claramente, este periodo es en función del tipo de ambiente en el que trabaja el reductor. En los grupos entregados sin tapones, el lubricante es permanente y por lo tanto no necesitan ningún mantenimiento.

DE	SCHMIERUNG
IT	LUBRIFICAZIONE

EN	LUBRICATION
FR	LUBRIFICATION

TR	YAĞLAMA
ES	LUBRICACIÓN

Mineralöl / Mineral Oil / Mineral Yağ / Olio Minerale / Huile Minérale / Aceite Mineral							
	T°C ISO SAE...	ENI	SHELL	ESSO	MOBIL	CASTROL	BP
K 35390-100390	(-5) / (+40) ISO VG220	BLASIA 220	OMALA OIL220	SPARTAN EP220	MOBILGEAR 600 XP220	ALPHA MAX 220	ENERGOL GR-XP220
	(-15) / (+25) ISO VG150	BLASIA 150	OMALA OIL150	SPARTAN EP150	MOBILGEAR 600 XP150	ALPHA MAX 150	ENERGOL GR-XP150

- Spezifische Schmierstoffangabe erfragen Sie bei NRW Drive Technologies.
- Specifications of lubricants recommended by NRW Drive Technologies.
- Yağlayıcılar ile ilgili özellikler NRW Drive Technologies tarafından tavsiye edilmektedir.
- Specifiche dei lubrificanti consigliati da NRW Drive Technologies.
- Especificaciones de lubricante aconsejados por NRW Drive Technologies.
- Spécification des lubrifiants suivant NRW Drive Technologies.
- Für die Ölmengen siehe die Seiten. (Seite 26)
- For the quantity of oil, please refer to the pages relating. (page 26)
- Yağ miktarı için ilgili sayfalara bakınız. (sayfa 26)
- Per le quantità di olio si rimanda alle pagine relative. (pagina 26)
- Pour les quantités d'huile, voir pages concernant. (page 26)
- Para las cantidades de aceite, ver a las páginas. (página 26)

Spezielschmierstoffe / Special lubricants / Özel yağlayıcılar / Lubrificanti speciali / Lubrifiants spéciaux / Lubricantes especiales			
		*T°C	Synthetisches Öl / Synthetic oil / Sentetik yağ / Olio sintetico / Huile synthétique / Aceite sintético
Öle für niedrige Temperaturen Oils for low temperature Düşük sıcaklık için yağlar Oli per basse temperature Huiles pour basse température Aceites para bajas temperaturas	ENI	(-25) ÷ (+20)	BLASIA 150 S (ISO VG150)
	KLUBER	(-35) ÷ (+10)	KLUBERSYNTH GH 6-80 (ISO VG68)
	MOBIL	(-40) ÷ (+5)	SCH 624 (ISO VG32)
	KLUBER	(-40) ÷ (+5)	KLUBERSYNTH GH 6-32 (ISO VG32)
Öle für niedrige Temperaturen - Food-Sektor Oils for low temperature - Food sector Düşük sıcaklık için yağlar - Gıda sektörü Oli per basse temperature - Settore alimentare Huiles pour basse température - Secteur de l'alimentation Aceites para bajas temperaturas - Sector alimentario	KLUBER	(-30) ÷ (+10)	KLUBERSYNTH UH1-6 100 (ISO VG100)
	KLUBER	(-10) ÷ (+50)	KLUBERSYNTH GH 6-460 (ISO VG460)
Öle für hohe Temperaturen / Oils for high temperature / Yüksek sıcaklık için yağlar / Oli per alte temperature / Huiles pour haute température / Aceites de alta temperatura	KLUBER	(-10) ÷ (+70)	KLUBERSYNTH GH 6-680 (ISO VG680)
	KLUBER	(-15) ÷ (+40)	KLUBERSYNTH UH1-6 460 (ISO VG460)
Food-Sektor / Food sector / Gıda sektörü / Settore alimentare / Secteur de l'alimentation / Sector alimentario	KLUBER	(-15) ÷ (+40)	KLUBERSYNTH UH1-6 220 (ISO VG220)

Falls spezielles Öl verwendet werden soll kontaktieren sie bitte unseren Kundendienst
If 'special' lubricant is required please contact for Technical Assistance
'Özel' yağlayıcı gerekiyorsa Teknik Yardım için lütfen irtibata geçiniz
Per l'utilizzo di lubrificanti speciali, contattare l'assistenza tecnica
Si un Lubrifiant spécial est demandé, merci de contacter notre service technique.
Para el uso de lubricantes especiales contactar con la asistencia técnica

- * Betriebsumgebungstemperatur
- * Working ambient temperature
- * Çalışma ortam sıcaklığı
- * Temperatura ambiente di funzionamento
- * Température ambiante de fonctionnement
- * Temperatura ambiente de funcionamiento

DE SCHMIERUNG

- Für die Getriebe der Serie K ist die Einbaulage anzugeben.
- K 35390, werden mit Schmiermittel befüllt geliefert. Die Getriebe bedürfen keinerlei Wartung und sind werkseitig mit einem Verschlussstopfen versehen.
- Die Getriebe der Serie K in den Baugrößen 40390, 50390, 60390, 70390, 90390, 100390 werden werkseitig mit Schmieröl, sowie Öl-schaugläsern ausgeliefert.
Die erforderliche Ölmenge und die Positionen der Öl-schaugläsern entsprechen der werkseitig vorgeschlagenen Position.
Vor der Inbetriebnahme sind die Verschlussstopfen, durch entsprechende Entlüftungsventile, gemäß der Einbaulage, auszutauschen.
Die angegebenen Öl-mengen sind Richtwerte. Diese müssen je nach Einbaulage, über Öl-schaugläser, Ölstandsbohrungen der Öl-messstäbe (je nach Type) regelmässig überprüft werden.
Ölstandsunterschiede können aus verschiedenen Einbaulagen bei Applikationen resultieren. Nach jeder Montage, sind alle Ölstände sind zwingend zu prüfen und gegebenenfalls anzupassen.

EN LUBRICATION

- For the reduction units K series it is always necessary to specify the mounting position.
- K 35390, are supplied complete with lubricant, have no oil plugs and need no maintenance
- The gear reducer K series sizes 40390, 50390, 60390, 70390, 90390, 100390 are supplied complete with lubricant and are fitted with oil plugs to suit any mounting position included in the catalogue.
It is recommended, after installation, to replace the closed plug used for transportation with the supplied breather plug. Lubricant quantities are only indicative, For correct filling always refer to the sight glass or the dipstick, when this is supplied.
Any oil level differences can be caused by constructive tolerances but also on the mounting position or the assembly scheme of the customer Therefore it is very important for the customer to check oil level and if necessary to add the necessary quantity.

TR YAĞLAMA

- K serisi redüktörlerin montaj pozisyonu verilmelidir.
- K serisi 35390 gövde redüktörler yağ içine konmuş vaziyette gönderilir. Redüktörler herhangi bir bakıma gerek duymamakta ve fabrika çıkışlı yağ tapası ile verilir.
- K serisi redüktörlerin 40390, 50390, 60390, 70390, 90390, 100390 gövde büyüklükleri montaj pozisyonları istenildiği gibi yapılabilir.
İstek üzerine redüktörler tarafımızca gres yağlı verilebilir, bu durumda yağ tapası ile gönderilen redüktörü havalandırma tapası ile değiştirmesini tavsiye ederiz. Redüktör yağsız istendiğinde istenilen montaj pozisyonuna göre yağ dolumu yapılmalıdır, bu tabloları katalogta bulabilirsiniz veya bize danışınız.
Verilen yağ miktarları montaj pozisyonuna göre değişiklik gösterir ve yağ göstergesi, yada yağ çubuğu (tipe göre) ile sürekli kontrol edilmesi gerekir. Yağ seviye değişikliği farklı montaj pozisyonlarına göre değişir. Montaj-demontaj dan sonra yağ seviyeleri kontrol edilmeli ve duruma göre ilave yağ konulması gerekebilir.

IT LUBRIFICAZIONE

- Per i riduttori serie K occorre sempre specificare la posizione di piazzamento prevista.
- K35390, vengono forniti completi di lubrificante sono sprovvisti dei tappi olio e non hanno necessità di alcuna manutenzione
- I riduttori serie K nelle grandezze 40390, 50390, 60390, 70390, 90390, 100390 vengano forniti completi di lubrificante a dei tappi olio necessari a garantire la corretta lubrificazione nella posizione si piazzamento richiesta.
Si raccomanda, effettuata l'installazione, di sostituire il tappo chiuso utilizzato per il trasporto con il tappo di sfiato fornito a corredo.
Le quantità di olio in tabella sono solo indicative e per il corretto riempimento si dovrà fare riferimento al tappo o all'astina di livello, se presente.
Eventuali scostamenti di livello possono dipendere da tolleranze costruttive ma anche dal piazzamento del riduttore o dal piano di montaggio presso cliente. Per tale motivo è opportuno che il cliente verifichi e, se necessario, ristabilisca il livello a riduttore installato.

FR LUBRIFICATION

- Pour les réducteurs série K il faut toujours spécifier la position de montage.
- K 35390, sont fournis avec lubrifiant et sans bouchons et ne nécessitent, donc, aucun entretien.
- Les réducteurs série K pour les grandeurs 40390, 50390, 60390, 70390, 90390, 100390 sont fournis avec tous les bouchons nécessaires pour garantir toutes les positions de montage prévues au catalogue.
On recommande, après l'installation, de changer le bouchon livré pour le transport contre celui fourni avec trou d'évent.
Les quantités d'huile indiquées en tableau sont seulement indicatives et pour un remplissage correct il faut faire référence au bouchon de niveau ou à la jauge à huile, si présents.
Toutes les différences de niveau d'huile peuvent être causées par des tolérances de constructions, ou par la position de montage, ou le schéma d'assemblage du client. Par conséquent il est très important que le client vérifie le niveau d'huile et au besoin ajoute la quantité nécessaire.

ES LUBRICACIÓN

- Para los reductores serie K es necesario especificar siempre la posición de montaje.
- K 35390, se suministran con lubricante, no disponen de tapón aceite y no necesitan ningún mantenimiento .
- Los reductores serie K en los tamaños 40390, 50390, 60390, 70390, 90390, 100390 se suministran con lubricante y disponen de tapones para todas las posiciones de montaje previstas en el catálogo.
Es necesario, una vez instalado el reductor en la máquina, sustituir el tapón cerrado, utilizado durante el transporte, por el tapón respiradero que se adjunta.
Las cantidades de lubricante en la tabla son indicativas y para un correcto llenado hay que tomar de referencia el centra del visor o del asta de nivel si están instaladas.
Eventuales diferencias del nivel de aceite pueden depender de tolerancias constructivas perotambién de la posición de montaje o del esquema de montaje del cliente. Por tanto es muy importante que el cliente compruebe el nivel de aceite y si es necesario agregue la cantidad adecuada.

K	35390	40390	50390	60390	70390	90390	100390
M1	1.4	2.7	4.3	6.8	13.2	22	33.1
M2	1.4	3.3	4.5	7.5	13	21.5	37.4
M3	1.5	3.2	4.6	8.5	14.5	23	43
M4	2	4	6.4	9.9	19.5	31	54.6
M5	1.5	3.5	6	8.5	16.5	29	43.1
M6	1.7	3.2	5.5	7.8	14.8	24	30.1

- Ölmenge (Liter) ~
- Quantity of oil in litres ~
- Litre cinsinden yağ miktarı ~
- Quantità olio in litri ~
- Quantité d'huile en litres ~
- Cantidad de aceite en litros ~

DE EINBAULAGE
IT PIAZZAMENTO

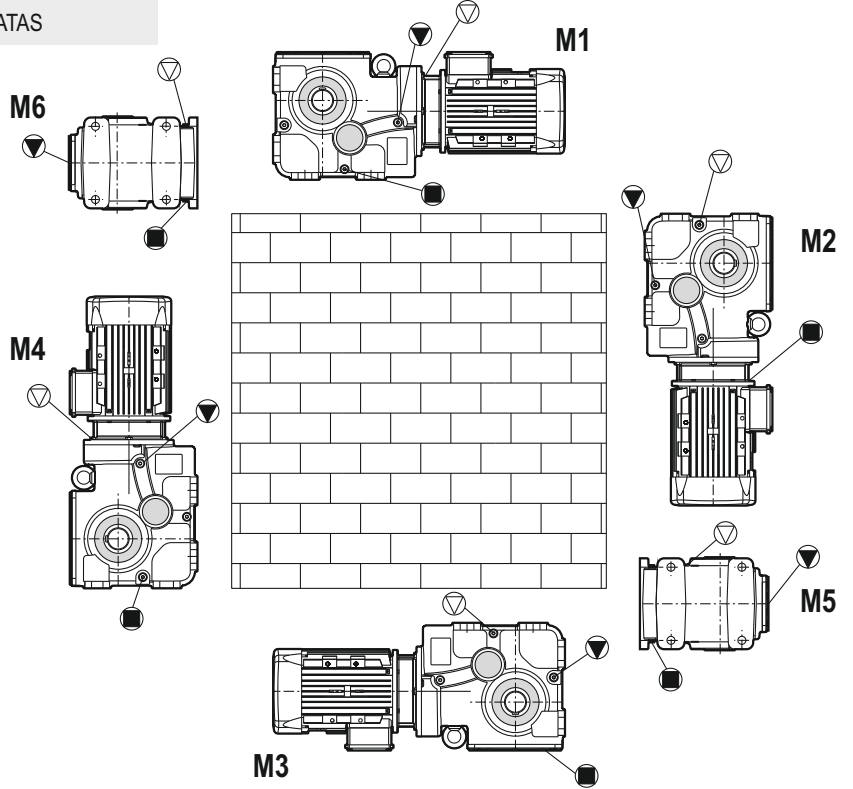
EN MOUNTING POSITIONS
FR POS. DE MONTAGE

TR MONTAJ POZİSYONLARI
ES POS. DE MONTAJE

FUßBEFESTIGUNG / FOOT MOUNTING / AYAK MONTAJLI / FISSAGGIO PIEDE / FIXATION À PATTES / FIJACIÓN POR PATAS

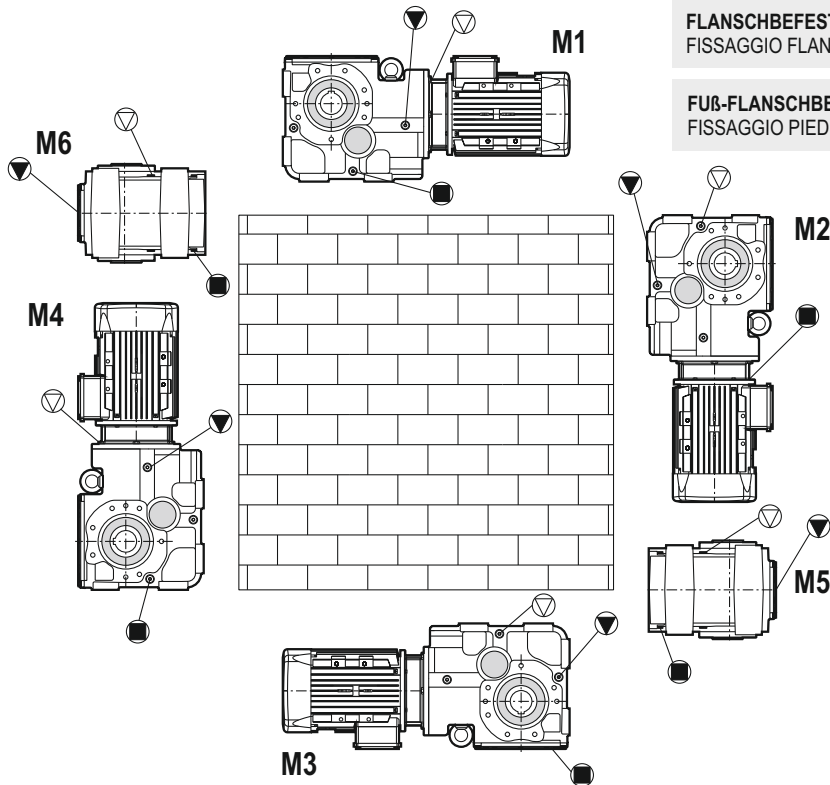
K...A

K35390
K40390
K50390
K60390



FLANSCHBEFESTIGUNG / FLANGE MOUNTING / FLANŞ MONTAJLI / FISSAGGIO FLANGIA / FIXATION À BRIDE / FIJACIÓN N PO R BRIDA

FUß-FLANSCHBEFESTIGUNG / FOOT-FLANGE MOUNTING / AYAK-FLANŞ MONTAJLI / FISSAGGIO PIEDE-FLANGIA / FIXATION À PAAES ET BRIDE / FIJACIÓN PATAS-BRIDA



K...AF

K35390
K40390
K50390
K60390
K70390
K90390
K100390

K...F

K35390
K40390
K50390
K60390

⊕ **Entlüftung / Vent plug / Havalandırma tapası /**
Tappo di sfiato / Évnt / Ventilación

● **Ölablass / Drain plug / Boşaltma tapası / Tappo di**
scarico dell'olio / Vidange d'huile / Vaciado de aceite

⊖ **Ölstand / Oil level / Yağ Seviye tapası / Tappo di livello**
dell'olio / Niveau d'huile / Nivel de aceite

DE EINBAULAGE

- Für die vertikalen einbaulagen siehe seite 10-11.
- Falls nicht anders angegeben, sind M1 die standard einbaulagen.
- Für nicht angegebene einbaulagen setzen sie sich bitte mit unserem kundendienst in verbindung.

EN MOUNTING POSITIONS

- For vertical positions, check with pages 10-11.
- Unless specified otherwise, the standard positions are M1.
- For positions not envisaged, it is necessary to call our Technical Service.

TR MONTAJ POZİSYONU

- Dikey pozisyonlar için, 10-11. sayfalarda verilen bilgileri kontrol ediniz.
- Herhangi bir seçenek sunulmazsa standart pozisyonumuz M1'dir.
- Farklı montaj pozisyonu belirtildiği takdirde, Teknik Servisimize başvurmanız gerekmektedir.

IT PIAZZAMENTO

- Per le posizioni di piazzamento verticali verificare quanto detto a pag. 10-11.
- Se non diversamente specificato le posizioni standard sono M1.
- Per le posizioni di piazzamento non previste occorre rivolgersi al ns. Servizio tecnico.

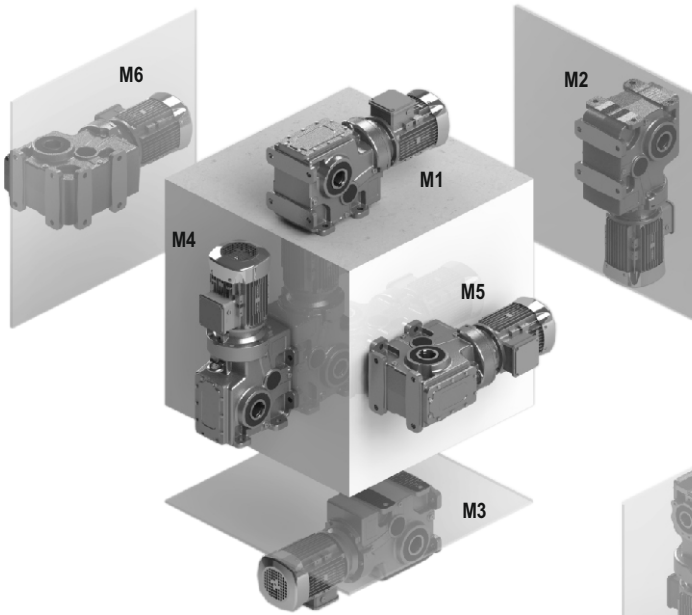
FR POS. DE MONTAGE

- Pour les positions de montage verticales, voir pages 10 et 11.
- Si non spécifié, les positions standard sont M1.
- Pour les positions de montage non prévues, contacter notre Service technique.

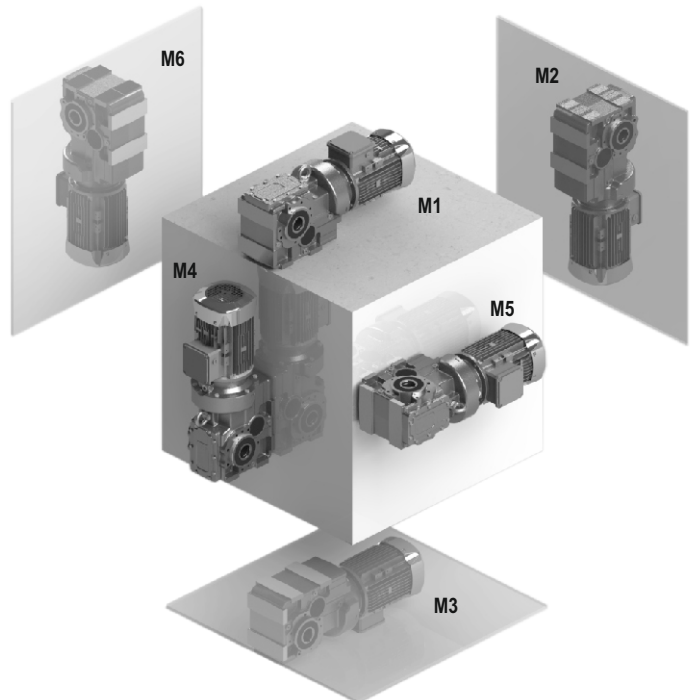
ES POS. DE MONTAJE

- Para las posiciones de montaje verticales, ver las páginas 10-11.
- Si no se especifica el contrario, las posiciones estándar son M1.
- Para las posiciones de montaje no previstas, es necesario ponerse en contacto con nuestro Servicio técnico.

K-DA / TMA / ÇMA



K-DG / TMG / ÇMG



DE EINBAULAGE

- Im Falle von sonderanforderungen ist bei Auftragserteilung die Lage des Klemmenkastens gemäß dem schema genau anzugeben.
- Sofern nichts gegenteiliges angegeben, wird der schneckengetriebemotor mit klemmkastenlage 1 geliefert.

EN MOUNTING POSITIONS

- In the case of specific requirements, when ordering, specify the position of the terminal box as shown in the diagram.
- Unless other wise specified, the gear reducer is supplied with terminal box in position 1.

TR MONTAJ POZİSYONU

- Sipariş sırasında özel istekleriniz olacaksa şekilde gösterildiği üzere terminal kutusunun pozisyonunu belirtiniz.
- Aksi belirtilmediği takdirde redüktörlerin klemens kutusu pozisyonu 1 olarak verilir.

IT PIAZZAMENTO

- Nel caso di particolari esigenze specificare in fase di ordine la posizione della morsetteria come da schema.
- Se non diversamente specificato, il gruppo viene fornito con morsetteria in pos. 1.

FR POS. DE MONTAGE

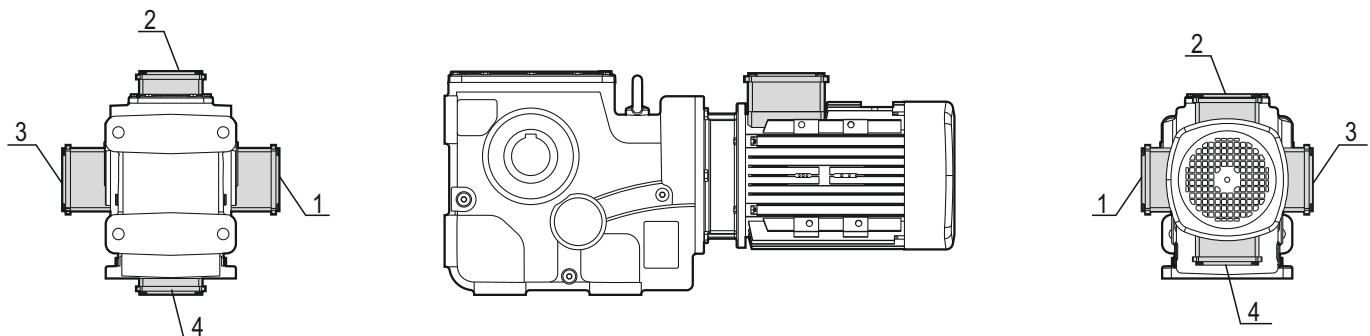
- En cas d'exigences particulières, spécifier, lors de la commande, la position du bornier comme d'après le schéma.
- Sauf indications contraires, le réducteur est fourni avec boîte à borne en position 1.

ES POS. DE MONTAJE

- En caso de exigencias particulares, detallar en el pedido, la posición de la caja de bornes según el esquema.
- Si non esta diferentemente especificado, el motorreductor se monta con la caja de bornes en posición 1.

M1	M6	M4	M2
M3	M5		

Klemmenkastenlage / Position of terminal box / Terminal kutusunun pozisyonu / Posizione morsettieria / Position du bornier / Posición caja de bornes



DE MODULARES BAUKASTENSYSTEM
IT MODULARITA

EN MODULARITY
FR MODULARITE

TR MODÜLER SİSTEM
ES MODULARIDAD

..... / PAM

- Ausführungen zum anbau von PAM - Motoren.
- Fitted for motor coupling version (PAM).
- PAM bağlantılı versiyon.
- Versione con predisposizione per attacco motore PAM.
- Version avec prédisposition pour moteur PAM.
- Versión motorreductor (PAM).

..... / MOTOR

- Ausführungen mit kompakt elektro motoren.
- Compact electric motor versions.
- Akuple elektrik motor versiyonu.
- Versioni con motore elettrico compatto.
- Version avec moteur électrique compact.
- Versión motorreductor compacto.

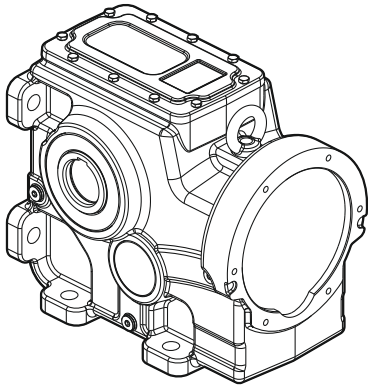
..... / W

- Ausführungen mit antriebsvollwelle.
- Input shaft versions.
- Serbest giriş millî versiyon.
- Versioni con albero maschio in ingresso.
- Version avec arbre en entrée.
- Versión con eje macho de entrada.

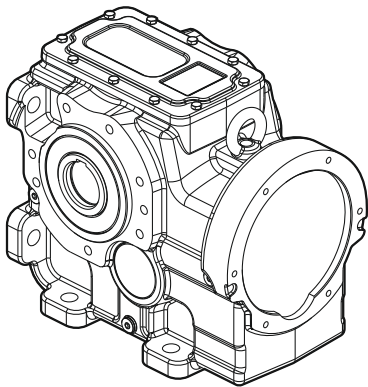
..... / IEC

- Die verbindung motor getriebe erfolgt über kupplung.
- Fitted for motor mounting with flexible coupling.
- Kaplinli motor bağlantısı.
- Predisposto per attacco motore con giuntu.
- Prédisposé pour montage moteur avec joint.
- Predisposto para montaje motor con acoplamiento.

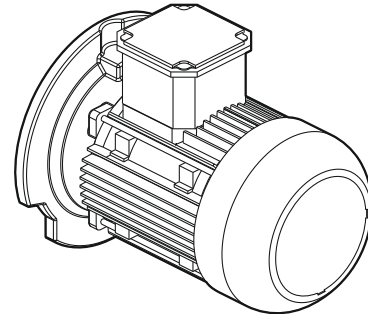
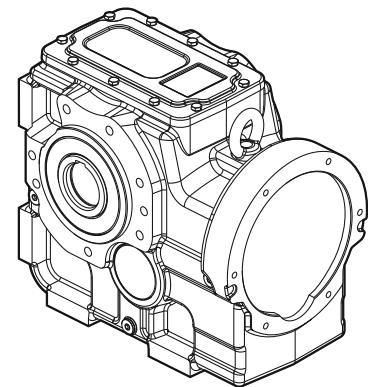
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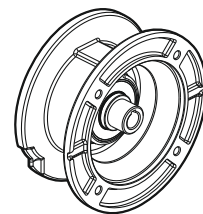
K-DA/B14



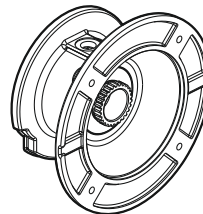
K-DG/B14



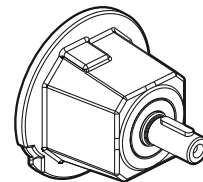
MOTOR...



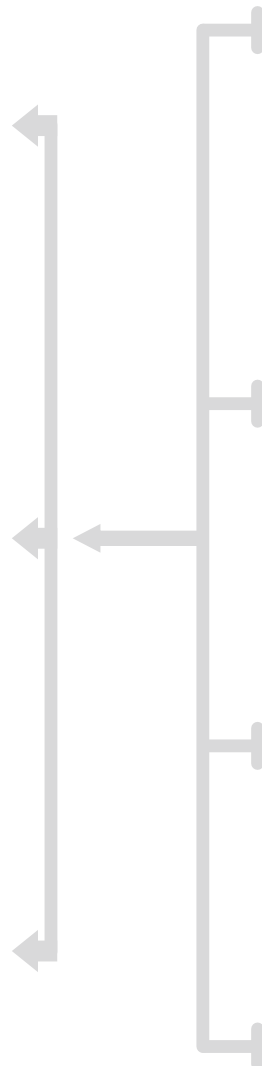
PAM...



IEC...



W...

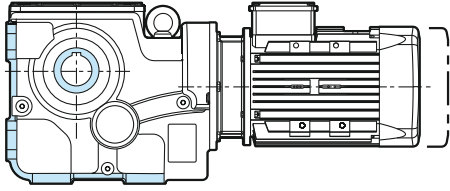
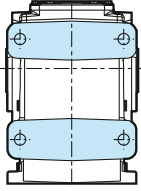
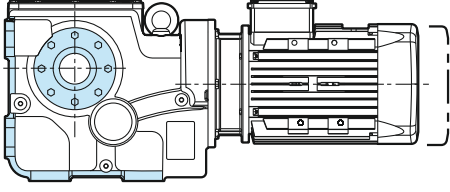
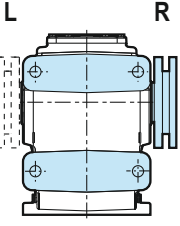
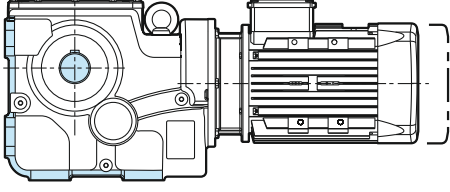
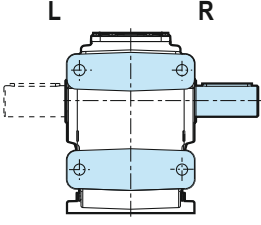
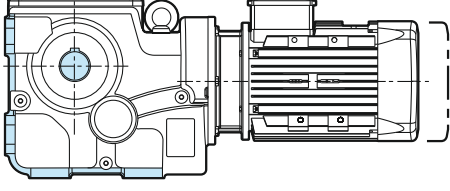
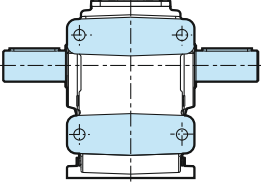


DE PRODUKTE
IT PRODOTTI

EN PRODUCTS
FR PRODUITS

TR ÜRÜNLERİMİZ
ES PRODUCTOS

35390 - 40390 - 50390 - 60390

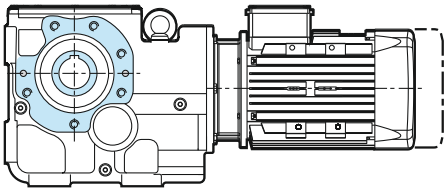
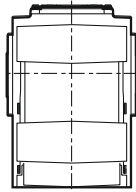
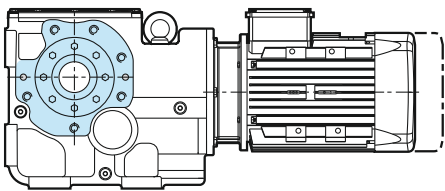
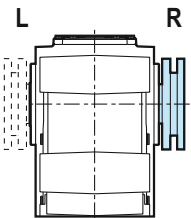
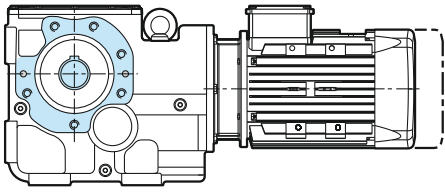
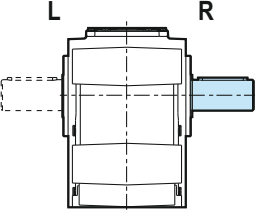
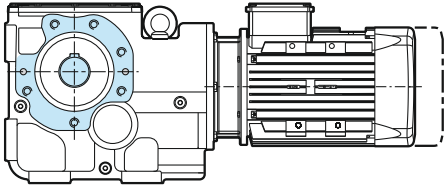
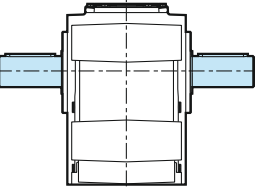
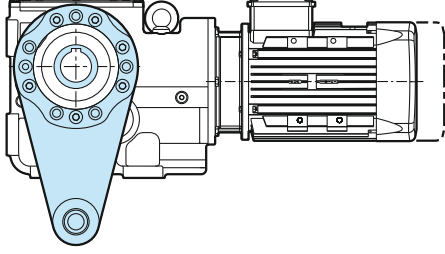
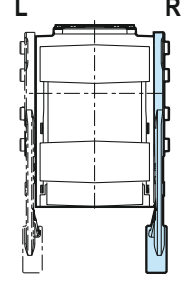
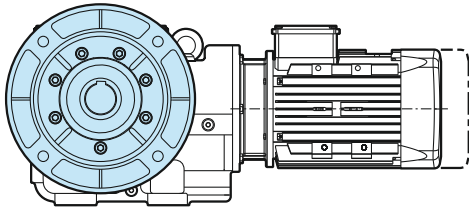
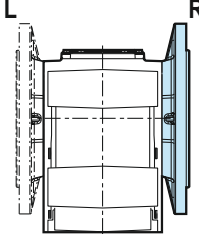
		<p>K ... DA</p> <p>Fußbefestigung / Hohlwelle. Foot mounting / hollow shaft. Ayak montajlı / Delik millî Fissaggio piede / albero cavo. Fixation à pattes / arbre creux. Fijación por patas / eje hueco.</p>
		<p>K ... DA-KS</p> <p>Fußbefestigung / Schrumpfscheibe. Foot mounting / shrink disc shaft. Ayak montajlı / konik sıkırtmalı Fissaggio piede / albero calettatore. Fixation à pattes / arbre avec frette Fijación por patas / eje hueco con aro de apriete</p>
		<p>K ... TMA</p> <p>Fußbefestigung / Vollwelle. Foot mounting / solid shaft. Ayak montajlı / Mil çıkışlı Fissaggio piede / albero pieno Fixation à pattes / arbre en Fijación por patas / eje macizo</p>
		<p>K ... ÇMA</p> <p>Fußbefestigung / doppelte Abtriebswelle Foot mounting / double output shaft. Ayak montajlı / Çift mil çıkışlı Fissaggio piede / albero doppio. Fixation à pattes / arbre double. Fijación por patas / eje doble.</p>

DE	PRODUKTE
IT	PRODOTTI

EN	PRODUCTS
FR	PRODUITS

TR	ÜRÜNLERİMİZ
ES	PRODUCTOS

35390 - 40390 - 50390 - 60390

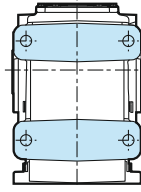
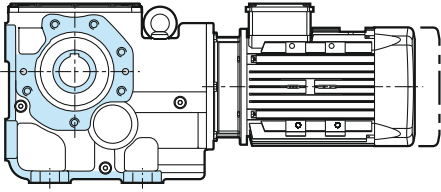
		<p>K ... DG - B14</p> <p>Flanschbefestigung / Hohlwelle. Flange mounting / hollow shaft. Flanş montajlı / Delik millî Fissaggio flangia / albero cavo. Fixation à bride / arbre creux. Fijación por brida / eje hueco.</p>
		<p>K ... DG-KS - B14</p> <p>Flanschbefestigung / Schrumpfscheibe. Flange mounting / shrink disc shaft. Flanş montajlı / konik sıkırtmalı Fissaggio flangia / albero calettatore. Fixation à bride / arbre avec frette Fijación por brida / eje hueco con aro de apriete</p>
		<p>K ... TMG - B14</p> <p>Flanschbefestigung / Vollwelle Flange mounting / solid shaft Flanş montajlı / Mil çıkışlı Fissaggio flangia / albero pieno Fixation à bride / arbre en Fijación por brida / eje macizo</p>
		<p>K ... ÇMG - B14</p> <p>Flanschbefestigung / doppelte Abtriebswelle Flange mounting / double output shaft. Flanş montajlı / Çift mil çıkışlı Fissaggio flangia / albero doppio. Fixation à bride / arbre double. Fijación por brida / eje doble.</p>
		<p>K ... DG-TK</p> <p>Flanschbefestigung / drehmomentsstütze Flange mounting / torque arm Flanş montajlı / tork kolları Fissaggio flangia / Braccio di reazione Fixation à bride / Bras de réaction Fijación por brida / Brazo de reacción</p>
		<p>K ... DG-B5</p> <p>Flanschbefestigung / Hohlwelle. Flange mounting / hollow shaft. Flanş montajlı / Delik millî Fissaggio flangia / albero cavo. Fixation à bride / arbre creux. Fijación por brida / eje hueco.</p>
<p>Falls nicht anders vereinbart, wird das Getriebe mit Flansch in Position R, auf die M1- Einbaulage bezogen, geliefert.</p> <p>Se non diversamente specificato il riduttore viene fornito con flangia in pos. R riferito alla posizione di piazzamento M1.</p>	<p>Unless specified otherwise, the reduction unit is supplied with the flange in pos. R referred to position M1.</p> <p>Si non différemment spécifié, le réducteur est livré avec bride en pos. R correspondant à la position de montage M1.</p>	<p>Eğer müşteri bildirmez ise redüktörün flanş bağlantısı R tarafında olur ve montaj pozisyonu M1 olarak kabul edilir.</p> <p>Si no diversamente especificado, el reductor se entrega con brida en pos. R, relacionado a la posición de montaje M1.</p>

DE PRODUKTE
IT PRODOTTI

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FR PRODUITS

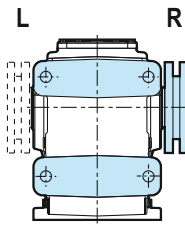
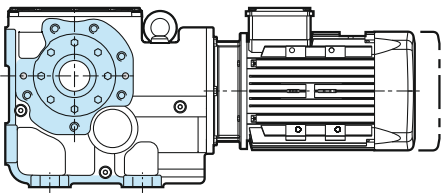
TR ÜRÜNLERİMİZ
ES PRODUCTOS

35390 - 40390 - 50390 - 60390 - 70390 - 90390 - 100390



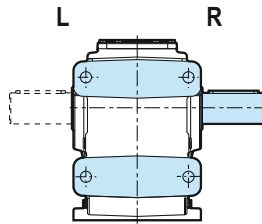
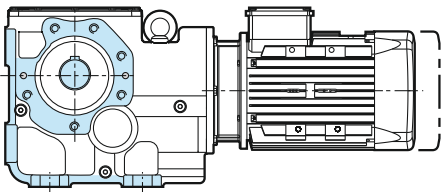
K ... DA - B14

Fuß-Flanschbefestigung / Hohlwelle.
Foot-flange mounting / hollow shaft.
Ayak-flanş montajı / Delik millî
Fissaggio piede-flangia / albero cavo.
Fixation à paaes et bride / arbre creux.
Fijación patas-brida / eje hueco.



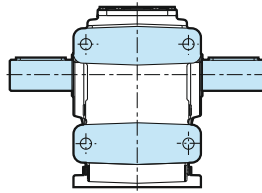
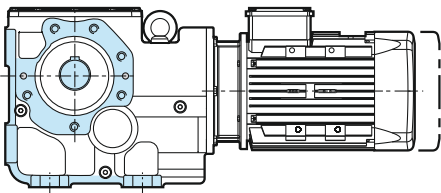
K ... DA-KS - B14

Fuß-Flanschbefestigung / Schrumpfscheibe.
Foot-Flange mounting / shrink disc shaft.
Ayak-Flanş montajı / konik sıkırtmalı
Fissaggio piede - flangia / albero calettatore.
Fixation à pattes bride / arbre avec frette
Fijación patas brida/ eje hueco con aro de apriete



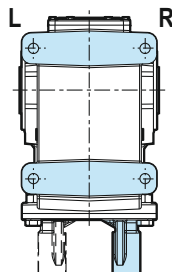
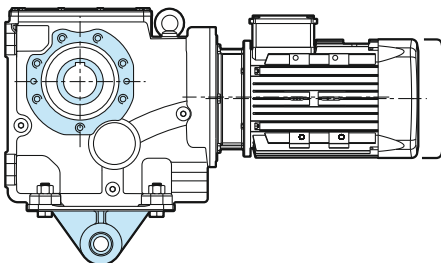
K ... TMA - B14

Fuß-Flanschbefestigung / Vollwelle
Foot-flange mounting / solid shaft
Ayak-flanş montajı / Mil çıkışlı
Fissaggio piede-flangia / albero pieno
Fixation à pattes et bride / arbre en
Fijación patas-brida / eje macizo



K ... ÇMA - B14

Fuß-Flanschbefestigung / doppelte Abtriebswelle
Foot-flange mounting / double output shaft.
Ayak-Flanş montajı / Çift mil çıkışlı
Fissaggio piede-flangia / albero doppio.
Fixation à pattes bride / arbre double.
Fijación patas-brida / eje doble.



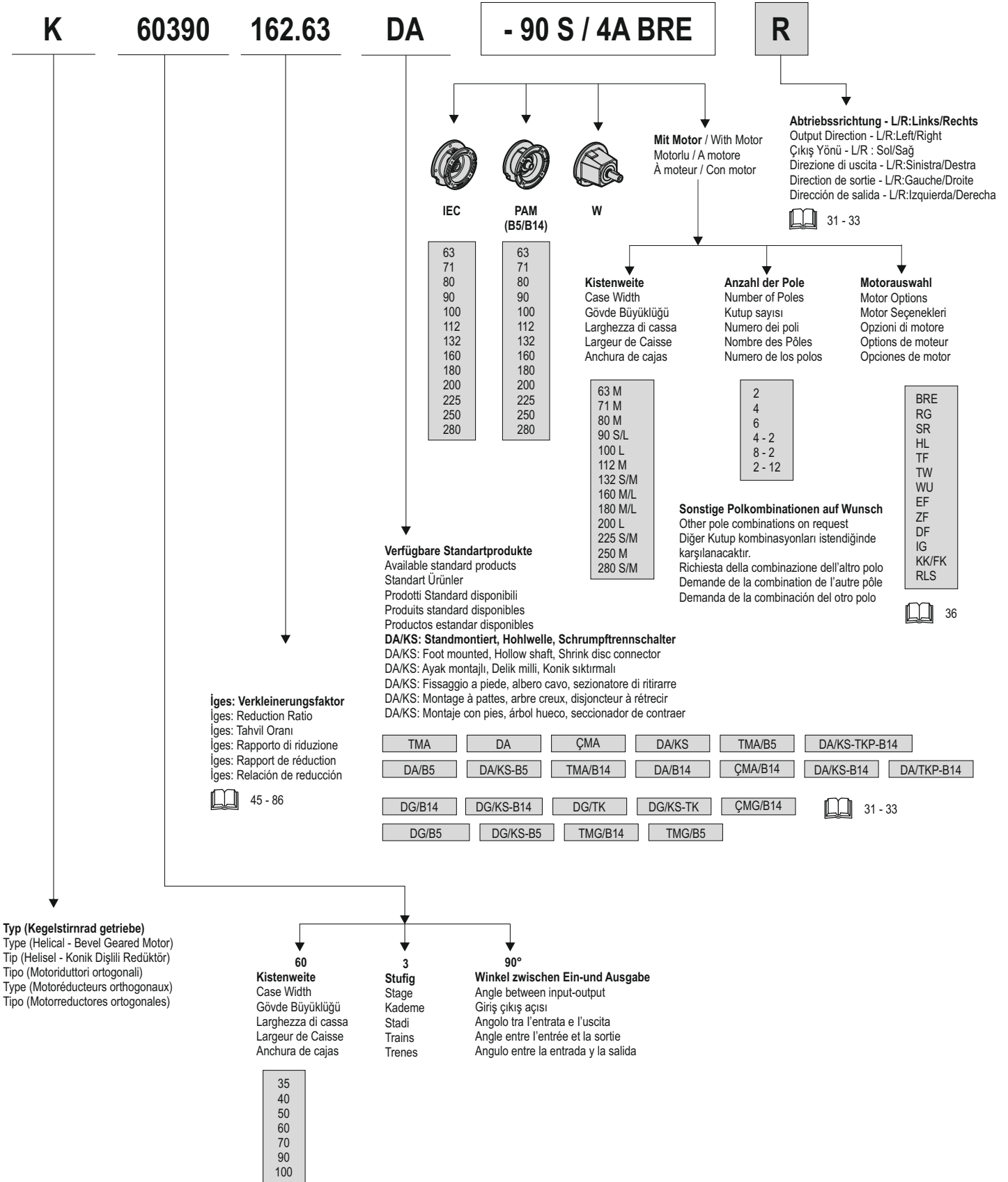
K ... DA - TKP - B14

Fuß-Flanschbefestigung / drehmomentkonsole
Foot-flange mounting / Torque console
Ayak-Flanş montajı / Tork kolu platformu
Fissaggio piede-flangia / Braccio di reazione
Fixation à pattes bride / Bras de réaction
Fijación patas-brida / Brazo de reacción

DE BEISPIEL BESTELLBESCHREIBUNG
IT ESEMPIO DI ORDINAZIONE

EN EXAMPLE FOR ORDERING
FR EXEMPLE DE COMMANDE

TR SİPARİŞ ÖRNEĞİ
ES EJEMPLO ORDEN DE COMPRA



DE	BEZEICHNUNG	EN	DESIGNATION	TR	TASARIM
IT	DESIGNAZIONE	FR	DÉSIGNATION	ES	DESIGNACIÓN

K

K	Kegelstirnradgetriebmotoren und Kegelstirnrad getriebe Helical bevel geared motors and gear units Helisel konik dişli ve motorlu redüktörler Motorriduttori e riduttori ortogonali a coppia conica Motorréducteurs et réducteurs à axes orthogonaux Motorreductores y reductores de ejes ortogonales		
40390	Baugröße 40 - 3 Übersetzungsstufen - Ausführung in grauguss Size 40, 3 reduction stages, cast iron series Gövde büyüklüğü 40, 3 kademeli - Gri demir döküm serisi Grandezza 40, 3 stadi di riduzione, serie in ghisa Grandeur 40, 3 trains d'engrenages, série en fonte Tamaño 40, 3 trenes de engranajes, gama de fundición		
FA - FB - FC	Abtriebsflansch Output flange Çıkış flanşı Flangia di uscita Bride de sortie Brida de salida		
42.28	Übersetzungsverhältnis Reduction ratio Tahvil oranı Rapporto di riduzione Rapport de réduction Relación de reducción		
M1	Einbaulage Mounting position Montaj Pozisyonu Posizione di piazzamento Position de montage Posición de montaje		
Abmessungen antriebsseitig / Input dimensions / Giriş ölçüleri / Dimensioni di entrata / Dimensions d'entrée / Dimensiones de entrada			
PAM	Für motoranbau vorbereitet Fitted for motor coupling Motor bağlantısı için Predisposto per attacco motore Prédisposé pour montage moteur standard Predispuesto para montaje motor		
250	Motorflansch - Durchmesser Motor flange diameter Motor flanş çapı Diametro flangia motore Diamètre bride moteur Diámetro brida motor	28	Motorwellen - Durchmesser Drive - shaft diameter Motor giriş şaftı çapı Diametro albero motore Diamètre arbre moteur Diámetro eje motor
Abmessungen abtriebsseitig / Output dimensions / Çıkış ölçüleri / Dimensioni di uscita / Dimensions de sortie / Dimensiones de salida			
300	Durchmesser Abtriebsflansch Output flange diameter Çıkış flanşı çapı Diametro flangia uscita Diamètre de la bride de sortie Diámetro brida de salida	40	Durchmesser abtriebsschwelle Output shaft diameter Çıkış mili çapı Diametro albero uscita Diamètre de l'arbre de sortie Diámetro eje de salida

DE	NOMENKLATUR	EN	NOMENCLATURE	TR	KULLANILAN TERİMLER
IT	NOMENCLATURA	FR	NOMENCLATURE	ES	NOMENCLATURA

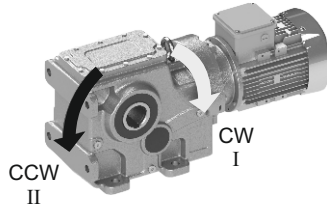
<p>Eingabeoptionen Input Options Giriş Aksamları opzioni di ingresso options d'entrée opciones de entrada</p>	<p>W = Ausführungen mit antriebsvollwelle / Input shaft versions / Motorsuz girişli redüktörler için aksam / Versioni con albero maschio in ingresso / Version avec arbre en entrée / Versiön con eje macho de entrada.</p> <p>IEC = Die Verbindung Motor Getriebe erfolgt über Kupplung. / Fitted for motor mounting with flexible coupling. DIN 42677' ye göre standart motorlar için aksamlar / Predisposto per attacco motore con giunto. Prédisposé pour montage moteur avec joint. / Predispuesto para montaje motor con acoplamiento.</p> <p>T = Turbokupplung / Turbo coupling / Turbo kaplin / Turbogiuunto / Coupleur hydraulique / Turboacoplador</p>
<p>Motor Motor Motor Motore Moteur Motor</p>	<p>Drehstrommotor Motorgröße 63 - 280 / Three phase motor Motor size 63 - 280 / Üç fazlı motor, Motor boyutu 63 - 280 / Motori trifase, Grandezze 63 - 280 / Motore thriphasé, taille moteur 63 - 280 / Motores trifásicos, Tamaño de carcasas 63 - 280</p>
<p>Anzahl der Pole Number of Poles Kutup Numarası Numero dei poli Nombre des Pôles Numero de los polos</p>	<p>2 = 2 Pole / 2 Poles / 2 Kutuplu / 2 Poli / 2 Pôles / 2 Polos</p> <p>4 = 4 Pole / 4 Poles / 4 Kutuplu / 4 Poli / 4 Pôles / 4 Polos</p> <p>6 = 6 Pole / 6 Poles / 6 Kutuplu / 6 Poli / 6 Pôles / 6 Polos</p> <p>Sonstige Polkombinationen auf Wunsch / Other pole combinations on request / Diğer Kutup kombinasyonları istendiğinde karşılanacaktır. / Richiesta della combinazione dell'altro polo / Demande de la combinaison de l'autre pôle / Demanda de la combinación del otro polo</p>
<p>Motorauswahl Motor Options Motor Seçenekleri Opzioni di motore Options de moteur Opciones de motor</p>	<p>BRE = mit Bremsen / With brake / Frenli / Freno / avec frein / Freno</p> <p>EF = Separate Lüfter, einphasig / Separate fan, single phase / Tek fazlı, fanlı / Ventilatore separato, monofase / Ventilateur séparé, une phase / Ventilador por separado de una sola fase</p> <p>ZF = Separate Lüfter, Doppel-phase / Separate fan, double phase / Çift fazlı, fanlı / Ventilatore separato, doppia fase Ventilateur séparé, double-phase / Ventilador por separado, de doble fase</p> <p>DF = Separate Lüfter, drei-phase / Separate fan, three phase / Üç fazlı, fanlı / Ventilatore separato, trifase / Ventilateur séparé, trois phases / Ventilador por separado, tres de fase</p> <p>IG = mit Encoder / With encoder / Enkoderli / Con encoder / avec codeur / con codificador</p> <p>KK/FK = Kupplungs / With clutches / Debriyajlı / Con frizioni / embrayage / embrague</p> <p>SR = Bremsstaub - Nachweis / Brake dust - proof / Toza karşı korumalı fren / Freno a prova di polvere / Frein à l'épreuve de la poussière / De frenos a prueba de polvo</p> <p>TF = Thermistor / Thermistor / Termistörülü / Termistore / Thermistance / Termistor</p> <p>RG = Bremse auf Korrosion geschützt / Brake corrosion - protected / Korozyon korumalı frenli / Freno resistente alla corrosione / Frein à la corrosion protégées / Freno protegida contra la corrosión</p> <p>WU = Soft-start-rotor / Soft start rotor / Yumuşak kalkışlı rotor / Soft start rotore / Démarrage en douceur du rotor Soft desde el rotor</p> <p>B = Rücklaufsperr / Backstop / Geri dönmeye karşı kilitti / Bloccato contro il ritorno / Verrouillé contre le retour Bloqueado en contra de devolución</p> <p>TW = Eine wärmeempfindliche / Thermal trip / Isıya duyarlı / Un sensible al calore / A sensible à la chaleur / Un sensible al calor</p> <p>HL = Handbremsmotoren / Brake motor with hand release / Manuel frenli motor / Motore autofrenante mano / Moteur de frein à main / motores freno manuales</p>

DE ZUBEHÖR
IT ACCESSORI

EN ACCESSORIES
FR ACCESSOIRES

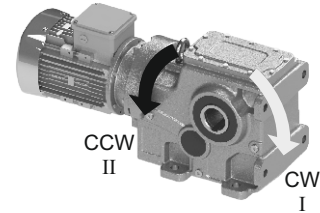
TR AKSESUARLAR
ES ACCESORIOS

A
K / DA-DG-TMA-TMG-ÇMA-ÇMG



Ausgangseite / Output side / Çıkış tarafı /
Lato uscita / Côté sortie / Lado de salida

B
K-KS



Ausgangseite / Output side / Çıkış tarafı /
Lato uscita / Côté sortie / Lado de salida

Rücklaufsperre

Das Getriebe ist mit Rücklaufsperre auf der Antriebswelle erhältlich. Die Rücklaufsperre verhindert die Rotation in die falsche Drehrichtung. Entsprechend der Größe ist sie im Antriebsflansch oder dem Motor integriert. Wichtig ist die Angabe der gewünschten abtriebsdrehrichtung.

Backstop device

The gear reducer can be supplied with backstop device on input shaft. Backstop device allows output shaft rotation in only one sense of direction; according to the size, it is available in the input flange or in the motor with the same dimensions. It is important to specify the required sense of direction on the order.

Kilit

Kilit redüktörün giriş miline takılabilir. Kilit çıkış Şaftının istenilmeyen yöne doğru dönmesini engeller. Redüktörün büyüklüğüne göre kilit giriş flanşında veya motora takılır. İstenilen çıkış dönüş yönü bilgisi verilmelidir.

Dispositivo antiretro

Il riduttore può essere fornito munito di dispositivo antiretro sull'asse veloce. L'antiretro permette la rotazione degli alberi in un solo senso, a seconda della grandezza è disponibile nella flangia PAM oppure nel motore, senza ingombri aggiuntivi. E' molto importante, in fase di ordine, specificare il senso di rotazione richiesto.

Système antidéviour

Le réducteur de vitesse peut être fourni avec le dispositif anti-retour sur l'axe d'entrée. Le dispositif anti retour permet la rotation des arbres de sortie dans un seul sens; selon la taille, il est disponible dans la bride d'entrée ou dans le moteur avec les mêmes dimensions. Il est important de spécifier le sens de la direction demandé sur l'ordre.

Dispositivo antirretorno

El reductor puede suministrarse con un dispositivo antirretorno en el eje veloz. El antirretorno permite la rotación de los ejes en un solo sentido, según el tamaño está disponible en la brida PAM o en el motor, sin incremento de dimensiones. Es muy importante especificar en el pedido el sentido de rotación requerido.

Motor	063	071	080	090	100 - 112	132	160	180	200	225	250	280
Grösse / Size / Gövde Boyutu / Grandezza / Taille / Tamaño	140x11	160x14	200x19	200x24	250x28	300x38	350x42	350x48	400x55	450x60	550x65	550x75
35390	B5	B5	B5	B5	B5							
40390			B5	B5	B5	B5						
50390			B5	B5	B5	B5	B5					
60390				B5	B5	B5	B5	B5				
70390					B5	B5	B5	B5	B5			
90390						B5	B5	B5	B5	B5		
100390							B5	B5	B5	B5	B5	B5

Drehsinn

Die Kegelfradgetriebe werden mit Drehrichtung gemäß folgendem Schema seriemaßig geliefert. Auf Anfrage kann die Drehrichtung umgekehrt werden; in diesem Fall ist bei Auftragserteilung "umgekehrte Drehrichtung" anzugeben. Die im Katalog angegebene Drehrichtung ist bei den Baugrößen 50390 nicht lieferbar.

Direction of rotation

Helical bevel reduction units are supplied as "standard" with rotation as shown in the below diagram. On request the direction of rotation can be reversed; in this case it is necessary to specify "opposite rotation to catalogue" when ordering. The "opposite rotation to catalogue" is not possible for sizes 50390.

Dönüş yönü

Konik dişli redüktörün dönme yönü alta verilen resme göre seri üretimi yapılmaktadır. Ancak istek üzerine bu dönme yönünün tersi de yapılabilir, bu durum için belirtmeniz gerekir. Gövde büyüklüğü 50390 için mümkün değildir.

Senso di rotazione

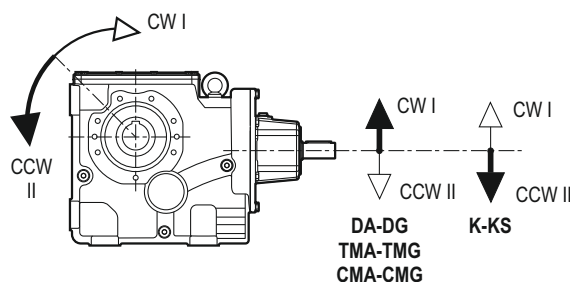
I riduttori ortogonali vengono forniti "di serie" con rotazione come da schema sotto riportato. A richiesta il senso di rotazione può essere invertito, in questo caso occorre specificare in fase di ordine: rotazione opposta a catalogo. La "rotazione opposta a catalogo" non è possibile nelle grandezze 50390.

Sens de rotation

Les réducteurs orthogonaux sont livrés "de série" avec rotation comme d'après le schéma. Sur demande, le sens de rotation peut être inversé; dans ce cas, il faut spécifier lors de la commande: rotation inversée par rapport à celle du catalogue. Le sens de rotation opposée à celui du catalogue n'est pas possible pour les tailles 50390.

Sentido de rotación

Los reductores ortogonales son entregados "de serie" con rotación según el esquema abajo mencionado. Bajo pedido el sentido de rotación puede ser invertido; en este caso, es necesario detallar en caso de pedido: rotación contraria a la indicada en el catálogo. El sentido de rotación opuesto al del catálogo no es posible en los tamaños 50390.



DE ZUBEHÖR

EN ACCESSORIES

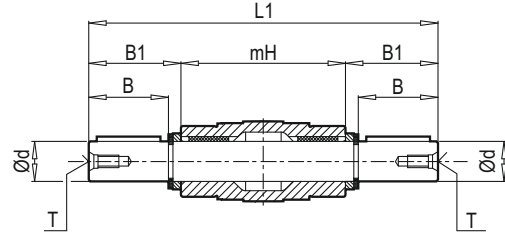
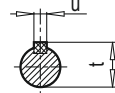
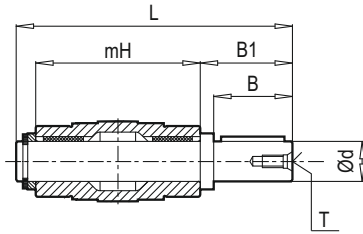
TR AKSESUARLAR

IT ACCESSORI

FR ACCESSOIRES

ES ACCESORIOS

Abtriebswellen / Low speed shafts / Çıkış şaftları / Alberi lenti / Arbres pv / Ejes lentos

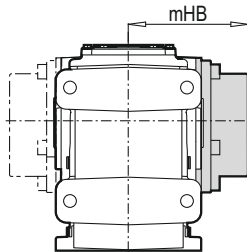


TMA - TMG

ÇMA - ÇMG

	Ød h6	B	B1	mH	L	L1	T	u	t
K35390	35	58	62	140	210.5	264	M12	10	38
K40390	40	80	84.25	180	273	348.5	M16	12	43
K50390	50	100	105	210	325	420	M16	14	53.5
K60390	60	120	125	240	375	490	M20	18	64
K70390	70	140	146	300	458	592	M20	20	74.5
K90390	90	170	176.5	350	540	703	M20	25	95
K100390	100	210	217.5	445	677	880	M20	28	106

Wellenabdeckung / Protection cover / Koruma kapağı / Coperchio di protezione / Couvercle de protection / Tapa de protección (KK)



KK	mHB
K35390	118
K40390	135
K50390	150
K60390	175
K70390	218
K90390	257
K100390	302

DE ZUBEHÖR

EN ACCESSORIES

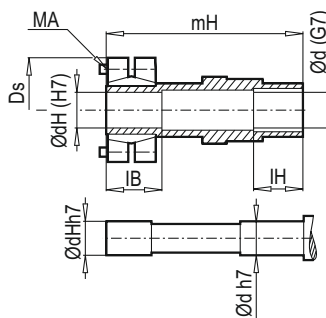
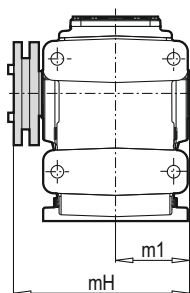
TR AKSESUARLAR

IT ACCESSORI

FR ACCESSOIRES

ES ACCESORIOS

Schrumpfscheibe / Shrink disc / Konik sıkırma / Calettatore / Frette d'accouplement / Aro de apriete



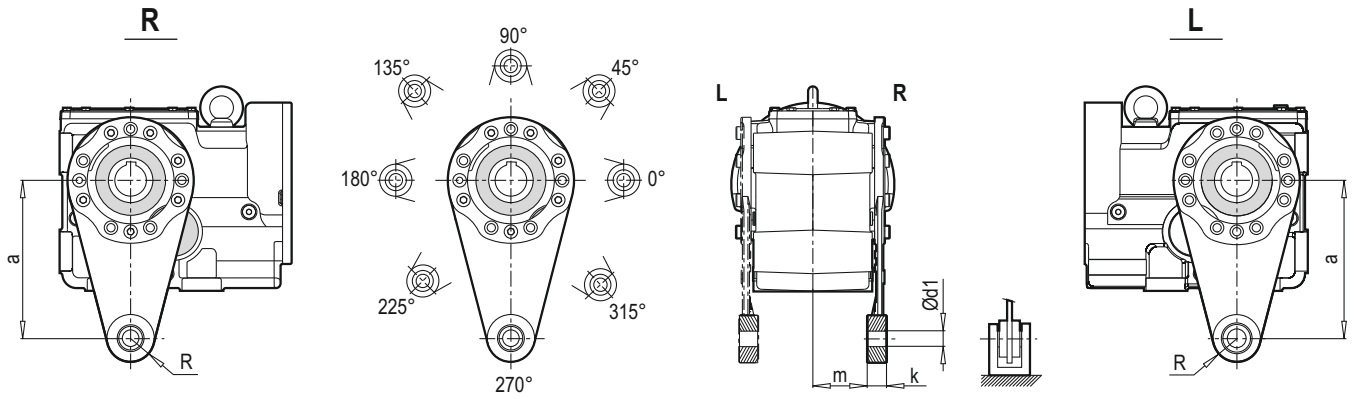
	ØdH	Ød	mH	m1	IH	IB	Ds	MA 12.9 (Nm)
K35390	35	36	173	70	40	35	80	15
K40390	40	41	217	90	50	40	100	15
K50390	50	51	248	105	55	40	115	15
K60390	60	61	282	120	60	50	145	40
K70390	70	72	356	150	70	65	170	50
K90390	90	92	415	175	80	75	185	70
K100390	100	102	512	222.5	100	100	215	70

DE ZUBEHÖR
IT ACCESSORI

EN ACCESSORIES
FR ACCESSOIRES

TR AKSESUARLAR
ES ACCESORIOS

Drehmomentstütze / Torque arm / Tork kolu / Braccio di reazione / Bras de réaction / Brazo de reacción



	a	m	Ød1	k	R
35390-F	200	62	20	25	30
40390-F	200	68.5	20	25	30
50390-F	250	83	25	30	35
60390-F	300	91.5	25	40	40
35390-AF	200	62	20	25	30
40390-AF	200	78,5	20	25	30
50390-AF	250	95	25	30	35
60390-AF	300	103,5	25	40	40

Drehmomentkonsole / Torque console / Tork kolu platformu / Braccio di reazione / Bras de réaction / Brazo de reacción



	AA	a	m	Ød1	k	R
K70390	45	350	40	30	60	45
K90390	45	450	45	30	60	45
K100390	60	550	7.5	40	110	65

DE ZUBEHÖR
IT ACCESSORI

EN ACCESSORIES
FR ACCESSOIRES

TR AKSESUARLAR
ES ACCESORIOS

Masse des Befestigungsbauteils / Dimensions of fixing element / Çektirme elemanı ölçüleri / Dimensioni degli elementi di fissaggio / Dimensions des élément de fixation / Dimensionos de los elementos de fijación (Ç)

Typ / Type / Tip Tipo / Type / Tipo	1 L	2	3	4	5	6		7		8 d x mH	9		
						d2	s	d3	s3		a	D	
K 35390 DA-DG	110	A12	l 35 x 1.5	M16	M12 X 55	34.9	3	34.9	16	M16	35 x 140	24.5	45
K 40390 DA-DG	150	A16	l 40 x 2.0	M16	M16 X 70	39.9	4	39.9	16	M16	40 x 180	25	55
K 50390 DA-DG	170	A16	l 50 x 2.5	M20	M16 X 70	49.9	4	49.9	20	M20	50 x 210	26	65
K 60390 DA-DG	195	A20	l 60 x 3.0	M24	M20 X 90	59.9	5	59.9	24	M24	60 x 240	31	75
K 70390 DA	255	A20	l 70 x 3.0	M24	M20 X 90	69.9	5	69.9	24	M24	70 x 300	32	78
K 90390 DA	305	A24	l 90 x 4.0	M30	M24 X 110	89.9	8	89.9	22	M30	90 x 350	36	102
K 100390 DA	390	A24	l 100 x 4.0	M30	M24 X 110	99.9	8	99.9	30	M30	100 x 445	36.5	120

Die auf der Tafel aufgeführten Zahlen werden auf Seite 42 erläutert
The numbers which are specified at table are explained on Page 42
Tabloda belirtilen numaralar Sayfa 42' de açıklanmaktadır.
I numeri che si trovano nella tabella sono espressi sulla pagina 43
Les numéros qui se trouvent dans le tableau sont expliqués sur la page 43
Los numeros que se halan en la tabla son expresados sobre la pagina 43

DE ZUBEHÖR

Befestigungsbauteile

Dies wird für wellenbefestigte Ausführungen verwendet und ist bei der Bestellung anzugeben, da bestimmte Anwendungsbedingungen vorliegen.

Anwendungsbedingungen:

- Die Mittenbohrung muss angemessen bearbeitet sein DIN 332/2.
- Feste Motorwelle kann entweder mit einer Wellenachsel (II) oder ohne Wellenachsel (I) montiert werden.
- Feste Motorwelle ohne Wellenachsel wird anhand Halterungsring (A) montiert.
- Fest Motorwelle mit Wellenachsel wird ohne Abstandshalter montiert.

Fixing elements

This is used for shaft mounted designs and it should be specified when ordering because there are some requirements for use.

Using conditions:

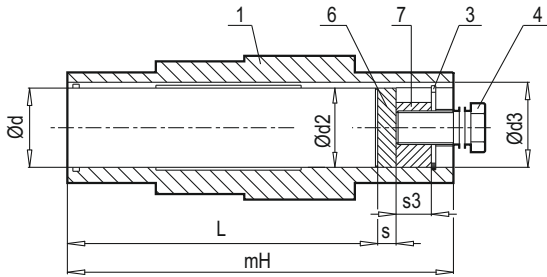
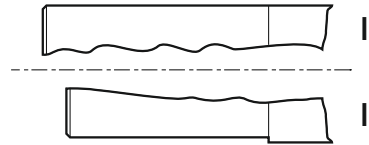
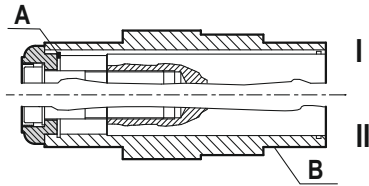
- Centre bore must be machined appropriately DIN 332/2.
- Solid shaft could be mounted either with a shaft shoulder (II) or without shaft shoulder (I)
- Solid shaft which is without shaft shoulder is mounted with using retainin ring (A)
- Solid shaft which is with shaft shoulder is mounted with using spacer

Çektirme elemanları

Çektirme elemanlar, şaft montajlı dişli ünitelerinde opsiyonel olarak bulunur.

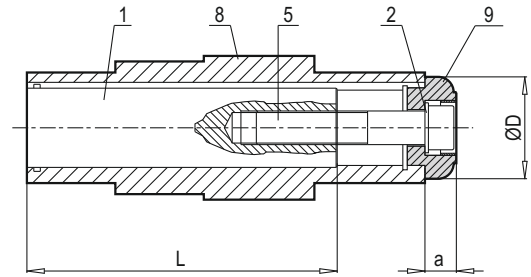
Kullanım Şartları:

- Kullanılacak milin merkezinde DIN 332/2 standardında bir delik açılmalı.
- Mil, faturalı yada faturasız olsa da, çektirme elemanları ile sabitlenebilir.
- I 'deki montaj kullanıldığında, mil, şaftın içinde bulunan segman ile tutturulur. (Parça A)
- II 'deki montaj kullanıldığında, milin üzerinde bulununan bilezik (manşon) kullanılarak doğrudan delik mil üzerine tutturulur. (Parça B)



**DEMONTAGE / DISASSEMBLY /
DEMONTAJ**

**L= max. länge der Kundenwelle
L= maximum length of the solid shaft
L= max. kullanıcı şaft boyu**



**MONTAGE / ASSEMBLY /
MONTAJ**

- 1) Kunden - Welle
- 2) Federring DIN 127
- 3) * Sicherungsring DIN 472
- 4) * Abdrückschraube
- 5) Zylinderschraube DIN 912
- 6) * Druckscheibe
- 7) * Abdrückmutter
- 8) Hohlwelle
- 9) Scheibe

*Vorschlag, gehört nicht zum Lieferumfang

- 1) Customer's shaft
- 2) Washer DIN 127
- 3) * Circlip DIN 472
- 4) * Jacking screw
- 5) Socket head screw DIN 912
- 6) * Thrust washer
- 7) * Jacking nut
- 8) Hollow shaft
- 9) Disc

*Star signs are shown this item are not provided by NRW

- 1) Kullanıcı mili
- 2) Rondela DIN 127
- 3) * İç Segman DIN 472
- 4) * Çektirme civatası
- 5) Alyan başlı civata DIN 912
- 6) * Yaylı rondela
- 7) * Somun
- 8) Delik mil
- 9) Disk

*Dikkat, yıldızlı ürünler NRW tarafından temin edilmez.

DEMONTAGE:

- 1) Lösen der Zyl.-Schraube (5)
- 2) Abnehmen der Scheibe (9)
- 3) Druckscheibe (6) einlegen
- 4) Abdrückmutter (7) einsetzen
- 5) Sicherungsring (3)
- 6) Durch Einschrauben der Abdrückschraube (4) Kund.- Welle aus der Hohlwelle lösen.

VORAUSSETZUNG:

Die Kund.- welle muß mit einer Zentr. - Bohrg. DIN 332/2 versehen sein. Die kund. - Welle darf max. "L" überschreiten, sonst ist die Verwendung der Abdrückelemente (pos. 5,6,7) nicht möglich

MONTAGE:

- 1) Kunden-Welle in die Hohlwelle (pos.8) einführen
- 2) Scheibe (pos.9) in die Hohlwelle einsetzen
- 3) Scheibe mittels Zyl.-schr (pos.2) und Federring (pos.5) befestigen

Die aufgeführten Maße gelten für Kegelradgetriebe Typ W, Typ IEC und Kegelradgetriebemotoren

DISASSEMBLING:

- 1) Loosen the socket head screw (5)
- 2) Remove disc (9)
- 3) Immerse thrust washer (6)
- 4) Tuck jacking nut (7)
- 5) Mount circlip (3)
- 6) Remove solid shaft from hollow shaft with using jacking screw (4)

REQUIREMENTS:

Solid shaft which is connected to the hollow shaft, must have machined with a centre bore according to DIN 332/2. Consider that 'Lmax' length is important for jacking not using solid shaft's length must not greater than 'Lmax'.

ASSEMBLING:

- 1) Immerse customer shaft to the hollow shaft (8)
- 2) Mount disc to the hollow shaft (9)
- 3) Fasten disc and washer (2) by tightening socket head screw (5)

Dimensions which are shown above of this page are used for all type of helical - bevel gear units. (Type W, IEC adapter and helical - bevel geared motor.)

DEMONTAJ:

- 1) Alyanbaşı civatayı sökünüz. (poz.5)
- 2) Diski çıkarınız. (poz.9)
- 3) Yaylı rondelayı takınız. (poz.6)
- 4) Somunu yerleştiriniz. (poz.7)
- 5) Segmanı takınız. (poz.3)
- 6) Çektirme civatasını basarak çevirerek kullanıcı milini şafttan ayırınız. (poz.4)

KOŞULLAR:

Kullanıcı mili DIN 332/2' e göre merkezine dış açılmış delik gerekmektedir. Müşteri mili "L" uzunluğunu geçmemelidir aksi halde çektirme elementi uygulanamaz. (poz. 5,6,7)

MONTAJ:

- 1) Kullanıcı milini şaftın içerisine yerleştiriniz. (poz.8)
 - 2) Diski (poz.9) şaftın içerisine yerleştiriniz.
 - 3) Disk ile alyan başlı civata ve rondelayı sabitleyiniz. (poz.2-5)
- Yukarıdaki bütün ölçüler helisel konik dişli - Tip W, Tip IEC ve Helisel konik dişli motorları için geçerlidir.

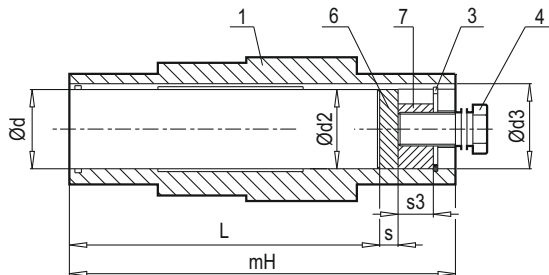
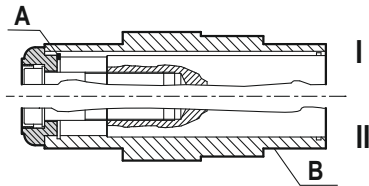
IT ACCESSORI

Elementi di fissaggio

Questo è utilizzato per il disegno di ingranaggi montati. Deve essere indicato quando se lo ordina in quanto esistono le esigenze per l'utilizzo

Condizioni di utilizzo

- La perforazione centrale deve essere adeguatamente macchinata DIN332/2
- L'albero sporgente deve essere montato sia con spallamento dell'albero (II) che senza spallamento dell'albero (I)
- L'albero sporgente senza spallamento dell'albero è montato utilizzando la ghiera di fermo (A)
- L'albero sporgente con spallamento dell'albero è montato utilizzando la ghiera distanziatrice



SMONTAGGIO / DISASSEMBLING /
DESMONTAJE

L= lunghezza massima dell'albero sporgente
L= Longueur max. de l'arbre à entraîner
L= longitud máxima del eje macizo

- 1) l'albero del cliente
- 2) Rondella DIN 127
- 3) * Anello di sicurezza DIN 472
- 4) * Vite di alzare
- 5) Vite a testa esagonale DIN 912
- 6) * Rondella reggispinta
- 7) * Dado di alzare
- 8) Albero cavo
- 9) Disco

*Gli articoli segnati con la stella non sono forniti da NRW

SMONTAGGIO

- 1) Allentare la vite a testa esagonale (5)
- 2) Rimuovere il disco (9)
- 3) Immergere la rondella reggispinta (6)
- 4) Introdurre il dado di martinetto (3)
- 5) Montare l'anello di sicurezza (3)
- 6) Rimuovere l'albero sporgente dall'albero cavo utilizzando la vite di estrazione

ESIGENZE

L'albero sporgente connesso all'albero cavo deve essere macchinato con la perforazione centrale secondo DIN 332/2. Considerare che la lunghezza "Lmax" è importante per alzare. La lunghezza dell'albero sporgente non deve essere più grande della "Lmax".

MONTAGGIO

- 1) Immergere l'albero del cliente nell'albero cavo (8)
- 2) Montare il disco all'albero cavo (9)
- 3) Fissare il disco e la rondella (2) stringendo la vite a testa esagonale (5)

Le dimensioni sopraccitate su questa pagina non si utilizzano per ogni tipo di ingranaggi elicoidalmussatura. (Tipo W, IEC adattore ed elicoidale -reuctor conico)

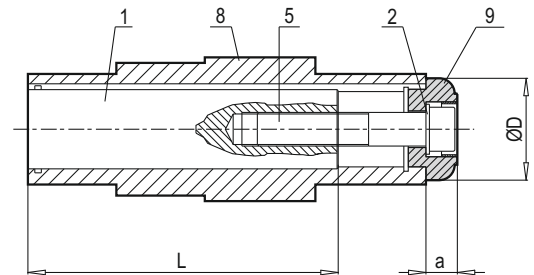
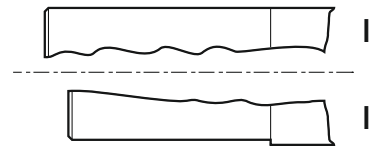
FR ACCESSOIRES

Éléments de fixation

Ceci est utilisé pour le dessin d'engrenages montés Il doit être indiqué lorsque l'on commande parce qu'il y a des exigences pour l'utilisation

Conditions d'utilisation

- Le forage central doit être machiné de façon appropriée DIN 332/2
- L'arbre plein doit être monté soit avec l'épulement de l'arbre (II) soit sans l'épulement de l'arbre
- L'arbre plein sans l'épulement de l'arbre est monté en utilisant la bague d'arrêt(A)
- L'arbre plein avec l'épulement de l'arbre est monté en utilisant la bague distancieuse



MONTAGGIO / MONTAGE /
MONTAJE

- 1) Arbre à entraîner
- 2) Rondelle à ressort DIN 127
- 3) * Circlip DIN 472
- 4) * Vis de démontage
- 5) Vis à tête cylindrique DIN 912
- 6) * Rondelle de pression
- 7) * Écrou de démontage
- 8) Arbre creux
- 9) rondelle

*Ne font pas partie de la livraison, fournis en supplément

DISASSEMBLING:

- 1) Dévisser la vis à tête cylindrique (pos.5)
- 2) Démontez la rondelle (pos 9)
- 3) Mettre en place la rondelle de pression (pos.6)
- 4) Mettre en place l'écrou de démontage (pos.7)
- 5) Mettre en place le circlip (pos 3)
- 6) En vissant la vis de démontage (pos.4) sortir l'arbre à entraîner de l'arbre creux.

CONDITION:

L'arbre à entraîner doit être pourvu d'un alésage de centrage DIN 332/2.L'arbre à entraîner ne doit pas dépasser la cote "L" sinon l'utilisation des éléments de demontage (pos.5,6,7) devient impossible.

MONTAGE:

- 1) Introduire l'arbre à entraîner (pos.8) dans l'arbre creux.
- 2) Placer la rondelle (pos.9) dans l'arbre creux.
- 3) Fixer la rondelle avec la vis à tête cylindrique (pos.2) et la rondelle à ressort (pos.5)

Toutes les dimensions indiquées sont valables pour les réducteurs à couple conique en exécution W et IEC, et pour les motoréducteurs à couple conique.

ES ACCESORIOS

Elementos de fijación

Este se utiliza para el diseño de engranajes montados. Debe indicarse cuando se pide por que existen los requisitos para el uso

Condiciones de uso

- La perforación central debe ser apropiadamente maquinada DIN332/2
- El eje macizo debe montarse con el soporte del eje (II) o sin soporte del eje (I)
- El eje macizo sin soporte del eje se monta utilizando el anillo de retención (A)
- El eje macizo con el soporte del eje se monta utilizando el anillo distanciador

- 1) El eje del cliente
- 2) Arandela DIN 127
- 3) * Anillo de seguridad DIN 472
- 4) * Tornillo extracción
- 5) Tornillo con cabezal hexagonal DIN 912
- 6) * Arandela de empuje
- 7) * Tuerca de levantamiento
- 8) Eje hueco
- 9) Disco

*Los artículos señalados con la estrella no son suministrados por NRW.

DESMONTAJE

- 1) Aflojar el tornillo con cabezal hexagonal (5)
- 2) Quitar el disco (9)
- 3) Sumergir la arandela de empuje (6)
- 4) Introducir la tuerca de levantamiento (7)
- 5) Montar el anillo de seguridad (3)
- 6) Quitar el eje macizo desde el eje hueco utilizando el tornillo de extracción (4)

REQUISITOS

El eje macizo conectado el eje hueco debe ser maquinado con la perforación central según DIN332/2. Considerar que la longitud "Lmax" es importante para levantar. La longitud del eje macizo debe ser más grande que "Lmax"

MONTAJE

- 1) Sumergir el eje del cliente en el eje hueco (8)
- 2) Montar el disco al eje hueco (9)
- 3) Fijar el disco y la arandela (2) apretando el tornillo con cabezal hexagonal (5)

Las dimensiones arriba enunciadas en esta pagina no se utilizan para cada tipo de engranajes helicoidales- reductores conicos (Tipo W, IEC adaptador y helicoidale - reductor conino)



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**Auswahltabellen der
Getriebemotoren**

Selection Tables of
Gearedmotors

Motorlu Seçim Tabloları

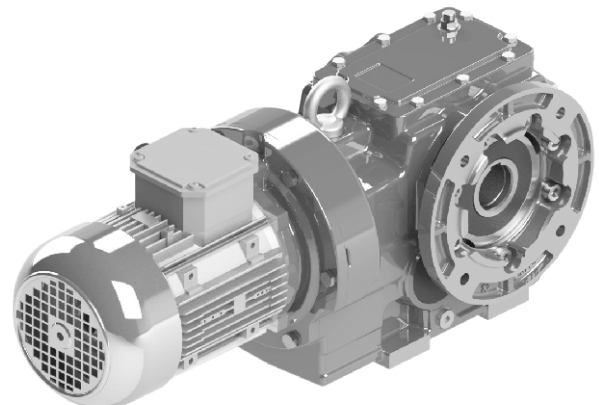
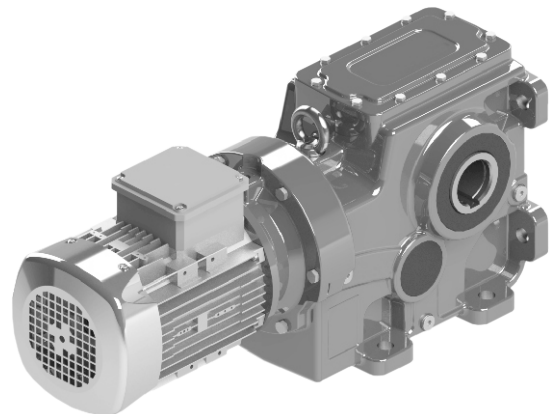
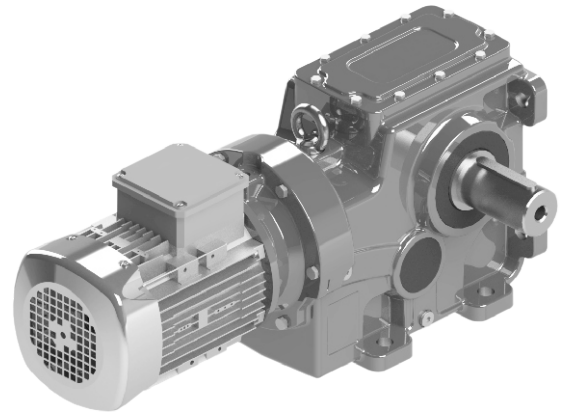
Tabelle di selezione dei
motoriduttori

Tables de Gearedmotors de
sélection

Tablas de selección de
gearedmotors

K...

K...
K35390 - K100390



DE TECHNISCHE BESCHREIBUNGEN
IT DESCRIZIONI TECNICHE

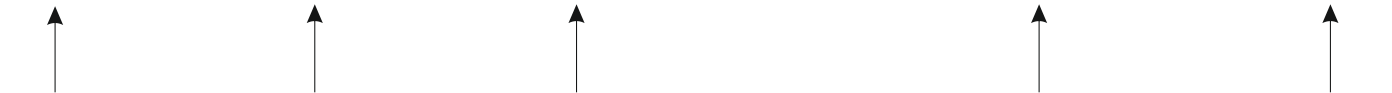
EN TECHNICAL DESCRIPTIONS
FR DESCRIPTIONS TECHNIQUES

TR TEKNİK TANIMLAR
ES DESCRIPCIONES TECNICAS

Mitteilung über Leistungstafeln für Getriebemotor
Notify about performance tables for Geared motor.
Motorlu redüktör performans tablalarının yapısı
Notificare sulle tabelle di performance per i motoriduttori
Aviser sur les tableaux de performance pour le motoréducteur
Notificar sobre la tabla de performance para los motoreductores.

0.37 kW → **Getriebemotorleistung**
Gear unit motor power
Redüktör motor gücü
Potenza del motore con ingranaggi
Puissance nominale du moteur
Potencia del motor con engranajes

Motornennleistung Rated motor power Motor gücü Potenza nominale del motore Puissance du moteur à engengages Potencia nominal del motor	Abtriebsdrehmoment Output torque Çıkış momenti Momento di uscita Moment de sortie Momento de salida	Verkleinerungsfaktor Reduction ratio Tahvil oranı Rapporto di riduzione Rapport de réduction Relación de de reducción	Getriebemotortyp Gear unit motor type Redüktör tipi Tipo del motore con ingranaggi Type du moteur à engengages Tipo del motor con engranajes	Zeichnungsseite Drawing page Ölçü sayfaları Pagina di disegno Page de dessin Pagina de diseño
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P₁ [kW]	n₂ [Min ⁻¹]	M₂ [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	Kg	mm
0.37	6.5	497	1.8	142.18	18.0	11.6	K40390 - 80M/6A	37	92
	7.4	435	2.1	124.46	18.0	11.2			
	8.1	399	2.2	114.17	18.0	10.9			
	8.9	361	2.5	103.40	18.0	10.6			
	9.3	345	2.6	98.70	18.0	10.4			
	10.2	316	2.8	90.52	18.0	10.1			
	11.6	277	3.2	79.26	18.0	9.7			
	12.8	251	3.6	71.78	18.0	9.4			
	13.6	237	3.8	67.78	18.0	9.3			
	14.7	218	4.1	62.47	18.0	9.0			



Leistungsgeschwindigkeit
Output speed
Çıkış devri
Velocità di uscita
Vitesse de sortie
Velocidad de salida

Betriebsfaktor
Service factor
Servis faktörü
Fattore di servizio
Facteur de service
Factor di servizio


Zulässige Radialkraft
Permissible radial force
Müsaade edilebilir radyal yükler
Forza radiale ammissibile
Force radiale admissible
Fuerza radial aceptable



P_1 [kW]	n_2 [Min ⁻¹]	M_2 [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	 Kg	 mm		
0.12	5.5	190	3.3	158.67	12.0	8.1	K35390 - 63M/6B	28	90		
	6.2	168	3.8	140.25	12.0	7.8					
0.15	5.7	228	2.8	158.42	12.0	8.0	K35390 - 63M/6C	28	90		
	6.5	202	3.1	140.25	12.0	7.7					
	7.2	180	3.5	125.18	12.0	7.4					
	8.1	162	3.9	112.63	12.0	7.2					
0.18	8.8	176	3.4	158.67	12.0	6.9	K35390 - 63M/4B	27	90		
	9.9	156	3.8	140.25	12.0	6.7					
0.22	5.7	274	2.3	158.67	12.0	7.9	K35390 - 71M/6A	31	90		
	6.5	242	2.6	140.25	12.0	7.6					
	7.2	216	2.9	125.18	12.0	7.4					
	8.1	194	3.2	112.63	12.0	7.1					
	8.9	176	3.6	102.00	12.0	6.9					
0.25	8.8	214	2.8	158.67	12.0	6.9	K35390 - 71M/4	27	90		
	10.0	189	3.2	140.25	12.0	6.6					
	11.2	169	3.6	125.18	12.0	6.4					
	12.4	152	3.9	112.63	12.0	6.2					
0.37	17.8	117	3.9	158.67	12.0	5.5	K35390 - 63M/2B	28	90		
	8.8	243	2.5	158.67	12.0	6.8					
	10.0	215	2.8	140.25	12.0	6.6	K35390 - 71M/4A K35390 - 63M/4C	30	90		
	11.2	192	3.1	125.18	12.0	6.4					
	12.4	173	3.5	112.63	12.0	6.2					
	13.7	156	3.8	102.00	12.0	6.0	K35390 - 71M/6B	33	90		
	5.8	376	1.7	158.67	12.0	7.8					
	6.5	332	1.9	140.25	12.0	7.5					
	7.3	297	2.1	125.18	12.0	7.3					
	8.1	267	2.4	112.63	12.0	7.1					
	9.0	242	2.6	102.00	12.0	6.8					
	10.1	216	2.9	91.04	12.0	6.6	K35390 - 71M/2A K35390 - 63M/2C	30	90		
	11.7	185	3.4	78.09	12.0	6.3					
13.2	165	3.8	69.70	12.0	6.1						
17.8	173	2.6	158.67	12.0	5.5	K35390 - 71M/4B				32	90
20.1	153	3.0	140.25	12.0	5.3						
22.5	136	3.3	125.18	12.0	5.1						
25.1	123	3.7	112.63	12.0	4.9						
8.8	360	1.7	158.67	12.0	6.7						
10.0	318	1.9	140.25	12.0	6.5						
11.2	284	2.1	125.18	12.0	6.3						
12.4	256	2.3	112.63	12.0	6.1	K35390 - 80M/6A K35390 - 71C/6	32	90			
13.7	232	2.6	102.00	12.0	5.9						
15.4	207	2.9	91.04	12.0	5.7						
17.9	177	3.4	78.09	12.0	5.4						
20.1	158	3.8	69.70	12.0	5.2						
5.8	550	1.1	158.67	12.0	7.6						
6.6	486	1.3	140.25	12.0	7.3						
7.4	434	1.5	125.18	12.0	7.1						
8.2	391	1.6	112.63	12.0	6.9	K40390 - 80M/6A	37	92			
9.1	354	1.8	102.00	12.0	6.7						
10.2	316	2.0	91.04	12.0	6.5						
11.9	271	2.3	78.09	12.0	6.2						
13.3	242	2.6	69.70	12.0	6.0						
16.2	199	3.2	57.38	12.0	5.6						
18.1	178	3.5	51.21	12.0	5.5						
6.5	497	1.8	142.18	18.0	11.6	K50390 - 80M/6A	63	94			
7.4	435	2.1	124.46	18.0	11.2						
8.1	399	2.2	114.17	18.0	10.9						
8.9	361	2.5	103.40	18.0	10.6						
9.3	345	2.6	98.70	18.0	10.4						
10.2	316	2.8	90.52	18.0	10.1						
11.6	277	3.2	79.26	18.0	9.7						
12.8	251	3.6	71.78	18.0	9.4						
13.6	237	3.8	67.78	18.0	9.3						
14.7	218	4.1	62.47	18.0	9.0						
5.7	564	3.4	161.23	22.0	15.0						
6.5	493	3.8	141.14	22.0	14.4						
7.1	453	4.2	129.64	22.0	13.9						

P_1 [kW]	n_2 [Min ⁻¹]	M_2 [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	 Kg	 mm			
0.55	17.9	255	1.8	158.67	12.0	5.4	K35390 - 71M/2B	32	90			
	20.3	225	2.0	140.25	12.0	5.2						
	22.7	201	2.3	125.18	12.0	5.0						
	25.2	181	2.5	112.63	12.0	4.8						
	27.9	164	2.8	102.00	12.0	4.7						
	31.2	146	3.1	91.04	12.0	4.5						
	36.4	126	3.6	78.09	12.0	4.3						
	40.8	112	4.1	69.70	12.0	4.2						
	8.9	532	1.1	158.67	12.0	6.5				K35390 - 80M/4A K35390 - 71M/4C	31	90
	10.1	470	1.3	140.25	12.0	6.3						
	11.3	419	1.4	125.18	12.0	6.1						
	12.5	377	1.6	112.63	12.0	5.9						
	13.8	342	1.8	102.00	12.0	5.7						
	15.5	305	2.0	91.04	12.0	5.6						
	18.1	262	2.3	78.09	12.0	5.3						
	20.2	234	2.6	69.70	12.0	5.1						
	24.6	192	3.1	57.38	12.0	4.9						
	27.6	172	3.5	51.21	12.0	4.7						
	7.4	645	1.0	125.18	12.0	6.8	K35390 - 80M/6B	34	90			
	8.2	581	1.1	112.63	12.0	6.6						
	9.1	526	1.2	102.00	12.0	6.5						
	10.2	469	1.3	91.04	12.0	6.3						
	11.9	403	1.6	78.09	12.0	6.0						
	13.3	359	1.8	69.70	12.0	5.8						
	16.2	296	2.1	57.38	12.0	5.5						
	18.1	264	2.4	51.21	12.0	5.3						
	21.3	225	2.8	43.56	12.0	5.1						
	23.8	200	3.1	38.88	12.0	4.9						
	27.5	174	3.6	33.70	12.0	4.7						
	9.8	480	1.8	142.18	18.0	10.0				K40390 - 80M/4A	36	92
	11.2	420	2.0	124.46	18.0	9.6						
	12.3	386	2.2	114.17	18.0	9.3						
	13.5	349	2.4	103.40	18.0	9.1						
	14.2	333	2.6	98.70	18.0	8.9						
	15.5	306	2.8	90.52	18.0	8.7						
	17.7	268	3.2	79.26	18.0	8.4						
19.5	242	3.5	71.78	18.0	8.1							
20.7	229	3.7	67.78	18.0	8.0							
22.4	211	4.0	62.47	18.0	7.8							
6.5	739	1.2	142.18	18.0	11.3	K40390 - 80M/6B	39	92				
7.4	647	1.4	124.46	18.0	10.9							
8.1	593	1.5	114.17	18.0	10.6							
8.9	537	1.7	103.40	18.0	10.3							
9.3	513	1.7	98.70	18.0	10.2							
10.2	470	1.9	90.52	18.0	9.9							
11.6	412	2.2	79.26	18.0	9.6							
12.8	373	2.4	71.78	18.0	9.3							
13.6	352	2.5	67.78	18.0	9.1							
14.7	325	2.7	62.47	18.0	8.9							
15.6	306	2.9	58.81	18.0	8.7							
16.9	283	3.2	54.43	18.0	8.5							
18.3	261	3.4	50.17	18.0	8.3							
20.5	233	3.8	44.78	18.0	8.0							
21.8	220	4.1	42.28	18.0	7.9							
8.7	544	3.3	161.23	22.0	12.9	K50390 - 80M/4A	62	94				
9.9	477	3.8	141.14	22.0	12.3							
5.7	838	2.3	161.23	22.0	14.7	K50390 - 80M/6B	65	94				
6.5	733	2.6	141.14	22.0	14.1							
7.1	674	2.8	129.64	22.0	13.8							
7.8	610	3.1	117.49	22.0	13.4							
8.2	582	3.3	111.93	22.0	13.2							
8.9	534	3.5	102.86	22.0	12.8							
10.2	468	4.0	90.00	22.0	12.3							



P₁ [kW]	n₂ [Min ⁻¹]	M₂ [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	Kg 	 mm			
0.75	18.0	345	1.3	158.67	12.0	5.2	K35390 - 80M/2A K35390 - 71M/2C	31	90			
	20.4	305	1.5	140.25	12.0	5.1						
	22.9	273	1.7	125.18	12.0	4.9						
	25.4	245	1.9	112.63	12.0	4.7						
	28.1	222	2.1	102.00	12.0	4.6						
	31.4	198	2.3	91.04	12.0	4.5						
	36.7	170	2.7	78.09	12.0	4.3						
	41.1	152	3.0	69.70	12.0	4.1						
	49.9	125	3.7	57.38	12.0	3.9						
	55.9	111	4.1	51.21	12.0	3.8						
	10.1	641	0.9	140.25	12.0	6.0				K35390 - 80M/4B	33	90
	11.3	572	1.0	125.18	12.0	5.9						
	12.5	515	1.2	112.63	12.0	5.7						
	13.8	466	1.3	102.00	12.0	5.6						
	15.5	416	1.4	91.04	12.0	5.4						
	18.1	357	1.7	78.09	12.0	5.2						
	20.2	318	1.9	69.70	12.0	5.0						
	24.6	262	2.3	57.38	12.0	4.8						
	27.6	234	2.6	51.21	12.0	4.6						
	32.4	199	3.0	43.56	12.0	4.4						
	36.3	178	3.4	38.88	12.0	4.3	K35390 - 80C/6	36	90			
	41.9	154	3.9	33.70	12.0	4.1						
	10.2	636	1.0	91.04	12.0	6.1	K35390 - 90S/6A K35390 - 80C/6	36	90			
	11.9	546	1.2	78.09	12.0	5.8						
	13.4	487	1.3	69.70	12.0	5.7						
	16.2	401	1.6	57.38	12.0	5.4						
	18.2	358	1.8	51.21	12.0	5.2						
	21.4	305	2.1	43.56	12.0	5.0						
	24.0	272	2.3	38.88	12.0	4.8						
	27.7	236	2.7	33.70	12.0	4.6						
	33.0	198	3.2	28.25	12.0	4.4						
	35.5	184	3.4	26.30	12.0	4.3						
	41.3	158	4.0	22.50	12.0	4.1						
	20.0	312	2.1	142.18	18.0	8.0	K40390 - 80M/2A	36	92			
	22.8	273	2.4	124.46	18.0	7.7						
	24.9	251	2.6	114.17	18.0	7.5						
	27.5	227	2.8	103.40	18.0	7.3						
	28.8	217	3.0	98.70	18.0	7.2						
	31.4	199	3.3	90.52	18.0	7.0						
	35.8	174	3.7	79.26	18.0	6.7						
	39.6	157	4.1	71.78	18.0	6.5						
	9.8	655	1.3	142.18	18.0	9.8	K40390 - 80M/4B	38	92			
	11.2	573	1.5	124.46	18.0	9.4						
	12.3	526	1.6	114.17	18.0	9.2						
	13.5	476	1.8	103.40	18.0	8.9						
14.2	454	1.9	98.70	18.0	8.8							
15.5	417	2.0	90.52	18.0	8.6							
17.7	365	2.3	79.26	18.0	8.2							
19.5	331	2.6	71.78	18.0	8.0							
20.7	312	2.7	67.78	18.0	7.9							
22.4	288	3.0	62.47	18.0	7.7							
23.8	271	3.1	58.81	18.0	7.5							
25.7	251	3.4	54.43	18.0	7.4							
27.9	231	3.7	50.17	18.0	7.2							
7.4	877	1.0	124.46	18.0	10.6	K40390 - 90S/6A K40390 - 80C/6	41	92				
8.1	804	1.1	114.17	18.0	10.4							
8.9	729	1.2	103.40	18.0	10.1							
9.4	695	1.3	98.70	18.0	10.0							
10.2	638	1.4	90.52	18.0	9.7							
11.7	558	1.6	79.26	18.0	9.4							
12.9	506	1.8	71.78	18.0	9.1							
13.6	478	1.9	67.78	18.0	9.0							
14.8	440	2.0	62.47	18.0	8.8							
15.7	414	2.2	58.81	18.0	8.6							
17.0	384	2.3	54.43	18.0	8.4							
18.4	354	2.5	50.17	18.0	8.2							
20.7	316	2.8	44.78	18.0	7.9							
21.9	298	3.0	42.28	18.0	7.8							
23.7	275	3.3	38.97	18.0	7.6							
27.2	239	3.7	33.95	18.0	7.3							
29.6	221	4.0	31.29	18.0	7.1							

0.75 kW
0.92 kW


P₁ [kW]	n₂ [Min ⁻¹]	M₂ [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	Kg ~		
0.75	17.6	354	3.9	161.23	22.0	10.3	K50390 - 80M/2A	62	94	
	8.7 9.9 10.8 11.9 12.5 13.6	742 650 597 541 515 474	2.4 2.8 3.0 3.3 3.5 3.8	161.23 141.14 129.64 117.49 111.93 102.86	22.0 22.0 22.0 22.0 22.0 22.0	12.7 12.2 11.9 11.5 11.4 11.1	K50390 - 80M/4B	64	94	
	5.7 6.6 7.1 7.9 8.3 9.0 10.3 11.3 12.0 13.1 13.8 14.5	1136 995 914 828 789 725 634 575 542 499 471 450	1.7 1.9 2.1 2.3 2.4 2.6 3.0 3.3 3.3 3.6 3.8 4.0	161.23 141.14 129.64 117.49 111.93 102.86 90.00 81.57 76.87 70.84 66.83 63.93	22.0 22.0 22.0 22.0 22.0 22.0 22.0 22.0 22.0 22.0 22.0 22.0	14.5 13.9 13.6 13.2 13.0 12.7 12.2 11.8 11.6 11.3 11.1 10.9	K50390 - 90S/6A K50390 - 80C/6	67	94	
	5.1 5.7 6.3 7.0	1290 1146 1033 930	2.8 3.2 3.6 4.0	183.08 162.63 146.59 131.96	30.0 30.0 30.0 30.0	20.8 20.1 19.5 19.0	K60390 - 90S/6A	88	96	
	0.92	12.6 13.9 15.6 18.2 20.4 24.8 27.8 32.6 36.6 42.2 50.3	627 568 507 435 388 319 285 242 216 187 157	1.0 1.1 1.2 1.4 1.5 1.9 2.1 2.5 2.8 3.2 3.8	112.63 102.00 91.04 78.09 69.70 57.38 51.21 43.56 38.88 33.70 28.25	12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0	5.6 5.4 5.3 5.1 4.9 4.7 4.5 4.3 4.2 4.0 3.8	K35390 - 80M4	33	90
		9.9 11.3 12.4 13.6 14.3 15.6 17.8 19.6 20.8 22.6 24.0 25.9 28.1 31.5 33.3 36.2	797 698 640 580 554 508 444 403 380 350 330 305 281 251 237 219	1.1 1.2 1.3 1.5 1.5 1.7 1.9 2.1 2.2 2.4 2.6 2.8 3.0 3.4 3.6 3.9	142.18 124.46 114.17 103.40 98.70 90.52 79.26 71.78 67.78 62.47 58.81 54.43 50.17 44.78 42.28 38.97	18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0	9.6 9.3 9.0 8.8 8.7 8.5 8.2 7.9 7.8 7.6 7.5 7.3 7.1 6.9 6.8 6.6	K40390 - 80M/4	38	92
		8.7 10.0 10.9 12.0 12.6 13.7 15.7 17.3 18.3	904 792 727 659 628 577 505 457 431	2.0 2.3 2.5 2.7 2.9 3.1 3.6 3.9 3.9	161.23 141.14 129.64 117.49 111.93 102.86 90.00 81.57 76.87	22.0 22.0 22.0 22.0 22.0 22.0 22.0 22.0 22.0	12.6 12.1 11.8 11.4 11.3 11.0 10.5 10.2 10.1	K50390 - 80M/4	64	94

P_1 [kW]	n_2 [Min ⁻¹]	M_2 [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	 Kg	 mm		
1.10	22.9	398	1.1	125.18	12.0	4.7	K35390 - 80M/2B	31	90		
	25.5	358	1.3	112.63	12.0	4.6					
	28.2	325	1.4	102.00	12.0	4.5					
	31.6	290	1.6	91.04	12.0	4.3					
	36.8	248	1.8	78.09	12.0	4.2					
	41.2	222	2.1	69.70	12.0	4.0					
	50.1	183	2.5	57.38	12.0	3.8					
	56.1	163	2.8	51.21	12.0	3.7					
	65.9	139	3.3	43.56	12.0	3.5					
	73.9	124	3.7	38.88	11.9	3.4					
15.6	606	1.0	91.04	12.0	5.2	K35390 - 80M/4C	33	90			
18.2	520	1.2	78.09	12.0	5.0	K35390 - 90S/4A K35390 - 80M/4C	33	90			
20.4	464	1.3	69.70	12.0	4.8						
24.8	382	1.6	57.38	12.0	4.6						
27.8	341	1.8	51.21	12.0	4.5						
32.6	290	2.1	43.56	12.0	4.3						
36.6	259	2.3	38.88	12.0	4.1						
42.2	224	2.7	33.70	12.0	4.0						
50.3	188	3.2	28.25	12.0	3.8						
54.0	175	3.4	26.30	12.0	3.7						
63.0	150	4.0	22.50	12.0	3.5						
16.4	582	1.1	57.38	12.0	5.1	K35390 - 90L/6B	40	90			
18.4	519	1.2	51.21	12.0	5.0						
21.6	442	1.4	43.56	12.0	4.8						
24.2	394	1.6	38.88	12.0	4.7						
28.0	342	1.8	33.70	12.0	4.5						
33.4	287	2.2	28.25	12.0	4.3						
35.8	267	2.4	26.30	12.0	4.2						
41.8	229	2.8	22.50	12.0	4.0						
55.0	174	3.6	17.08	12.0	3.7						
61.6	155	4.0	15.25	12.0	3.6						
20.0	456	1.4	142.18	18.0	7.8	K40390 - 80M/2B	38	92			
22.9	399	1.6	124.46	18.0	7.5						
25.0	366	1.8	114.17	18.0	7.3						
27.6	332	1.9	103.40	18.0	7.1						
28.9	317	2.0	98.70	18.0	7.0						
31.5	290	2.2	90.52	18.0	6.9						
36.0	254	2.5	79.26	18.0	6.6						
39.7	230	2.8	71.78	18.0	6.4						
42.0	217	3.0	67.78	18.0	6.3						
45.6	200	3.2	62.47	18.0	6.1						
48.5	189	3.4	58.81	18.0	6.0						
52.4	175	3.7	54.43	18.0	5.9						
56.8	161	4.0	50.17	18.0	5.7						
11.3	835	1.0	124.46	18.0	9.1				K40390 - 90S/4A K40390 - 80M/4C	41	92
12.4	766	1.1	114.17	18.0	8.9						
13.6	693	1.2	103.40	18.0	8.7						
14.3	662	1.3	98.70	18.0	8.6						
15.6	607	1.4	90.52	18.0	8.4						
17.8	531	1.6	79.26	18.0	8.0						
19.6	481	1.8	71.78	18.0	7.8						
20.8	454	1.9	67.78	18.0	7.7						
22.6	419	2.0	62.47	18.0	7.5						
24.0	394	2.2	58.81	18.0	7.4						
25.9	365	2.3	54.43	18.0	7.2						
28.1	336	2.5	50.17	18.0	7.1						
31.5	300	2.8	44.78	18.0	6.8						
33.3	284	3.0	42.28	18.0	6.7						
36.2	261	3.3	38.97	18.0	6.5						
41.5	228	3.7	33.95	18.0	6.3						
45.1	210	4.1	31.29	18.0	6.1						



P_1 [kW]	n_2 [Min ⁻¹]	M_2 [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	Kg	mm
1.10	10.3	925	1.0	90.52	18.0	9.4	K40390 - 90L/6B	45	92
	11.8	810	1.1	79.26	18.0	9.1			
	13.0	734	1.2	71.78	18.0	8.8			
	13.8	693	1.3	67.78	18.0	8.7			
	15.0	639	1.4	62.47	18.0	8.5			
	15.9	601	1.5	58.81	18.0	8.4			
	17.2	556	1.6	54.43	18.0	8.2			
	18.6	513	1.7	50.17	18.0	8.0			
	20.9	458	1.9	44.78	18.0	7.7			
	22.1	432	2.1	42.28	18.0	7.6			
24.0	398	2.2	38.97	18.0	7.4	K50390 - 80M/2B	62	94	
27.5	347	2.6	33.95	18.0	7.2				
29.9	320	2.8	31.29	18.0	7.0				
32.3	296	3.0	28.92	18.0	6.8				
35.7	268	3.3	26.19	18.0	6.6				
41.7	229	3.9	22.40	18.0	6.3				
17.7	517	2.6	161.23	22.0	10.1				
20.2	453	3.0	141.14	22.0	9.7				
22.0	416	3.3	129.64	22.0	9.5				
24.3	377	3.6	117.49	22.0	9.2				
25.5	359	3.8	111.93	22.0	9.1				
27.7	330	4.1	102.86	22.0	8.8				
8.7	1081	1.7	161.23	22.0	12.4	K50390 - 90S/4A K50390 - 80M/4C	67	94	
10.0	946	1.9	141.14	22.0	11.9				
10.9	869	2.1	129.64	22.0	11.7				
12.0	788	2.3	117.49	22.0	11.3				
12.6	751	2.4	111.93	22.0	11.2				
13.7	690	2.6	102.86	22.0	10.9				
15.7	603	3.0	90.00	22.0	10.5				
17.3	547	3.3	81.57	22.0	10.2				
18.3	515	3.3	76.87	22.0	10.0				
19.9	475	3.6	70.84	22.0	9.7				
21.1	448	3.8	66.83	22.0	9.6				
22.1	429	4.0	63.93	22.0	9.4				
5.8	1648	1.1	161.23	22.0	14.0	K50390 - 90L/6B	71	94	
6.6	1443	1.3	141.14	22.0	13.5				
7.2	1325	1.4	129.64	22.0	13.2				
8.0	1201	1.6	117.49	22.0	12.8				
8.4	1144	1.7	111.93	22.0	12.7				
9.1	1052	1.8	102.86	22.0	12.4				
10.4	920	2.1	90.00	22.0	11.9				
11.5	834	2.3	81.57	22.0	11.6				
12.2	786	2.3	76.87	22.0	11.4				
13.2	724	2.5	70.84	22.0	11.1				
14.0	683	2.6	66.83	22.0	10.9				
14.6	654	2.7	63.93	22.0	10.7				
16.4	582	3.1	56.96	22.0	10.4				
18.1	528	3.4	51.63	22.0	10.1				
19.1	500	3.6	48.89	22.0	9.9				
20.1	476	3.7	46.59	22.0	9.8				
21.3	449	4.0	43.91	22.0	9.6				
5.1	1872	2.0	183.08	30.0	20.0	K60390 - 90L/6B	92	96	
5.7	1663	2.2	162.63	30.0	19.4				
6.4	1499	2.5	146.59	30.0	18.9				
7.1	1349	2.7	131.96	30.0	18.4				
7.7	1241	3.0	121.39	30.0	18.0				
8.6	1107	3.3	108.31	30.0	17.4				
7.7	1228	2.9	183.08	30.0	17.8	K60390 - 90S/4A	88	96	
8.7	1090	3.2	162.63	30.0	17.3				
9.6	983	3.6	146.59	30.0	16.8				
10.7	885	4.0	131.96	30.0	16.3				

P₁ [kW]	n₂ [Min ⁻¹]	M₂ [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	Kg 	 mm			
1.50	21.7	599	1.1	43.56	12.0	4.6	K35390 - 100L/6A	44	90			
	24.4	535	1.2	38.88	12.0	4.5						
	28.1	464	1.4	33.70	12.0	4.3						
	33.5	389	1.6	28.25	12.0	4.1						
	36.0	362	1.7	26.30	12.0	4.1						
	42.0	311	2.0	22.50	12.0	3.9						
	55.3	236	2.7	17.08	12.0	3.6						
	61.9	210	2.9	15.25	12.0	3.5						
	71.5	182	3.4	13.21	11.8	3.4						
	76.1	171	3.6	12.41	11.6	3.3						
	85.2	153	3.7	11.08	11.2	3.2						
	91.6	142	3.8	10.31	11.0	3.1						
	102.6	127	3.8	9.20	10.7	3.0						
	128.4	102	3.6	7.36	10.0	2.8						
	136.6	95	3.7	6.91	9.8	2.8						
	164.5	79	3.8	5.74	9.2	2.6						
	28.3	441	1.0	102.00	12.0	4.3	K35390 - 80M/2C	37	90			
	31.7	394	1.2	91.04	12.0	4.2						
	36.9	338	1.4	78.09	12.0	4.0	K35390 - 90S/2A K35390 - 80M/2C	37	90			
	41.4	301	1.5	69.70	12.0	3.9						
	50.2	248	1.8	57.38	12.0	3.7						
	56.3	221	2.1	51.21	12.0	3.6						
	66.2	188	2.4	43.56	12.0	3.4						
	74.1	168	2.7	38.88	11.7	3.3						
	85.5	146	3.1	33.70	11.2	3.2						
	102.0	122	3.7	28.25	10.6	3.0						
	109.6	114	4.0	26.30	10.4	3.0						
	20.5	628	1.0	69.70	12.0	4.6	K35390 - 90L/4A	38	90			
	24.9	517	1.2	57.38	12.0	4.4						
	27.9	461	1.3	51.21	12.0	4.3						
	32.9	392	1.5	43.56	12.0	4.1						
	36.8	350	1.7	38.88	12.0	4.0						
	42.5	304	2.0	33.70	12.0	3.9						
	50.7	255	2.4	28.25	12.0	3.7						
	54.4	237	2.5	26.30	12.0	3.6						
	63.4	203	3.0	22.50	12.0	3.5						
	83.5	154	3.9	17.08	11.2	3.2						
	15.0	866	1.0	62.47	18.0	8.2	K40390 - 100L/6A	50	92			
	16.0	816	1.1	58.81	18.0	8.1						
	17.3	755	1.2	54.43	18.0	7.9						
	18.7	696	1.3	50.17	18.0	7.8						
	21.0	621	1.4	44.78	18.0	7.5						
	22.2	586	1.5	42.28	18.0	7.4						
	24.1	540	1.7	38.97	18.0	7.3						
	27.7	471	1.9	33.95	18.0	7.0						
	30.0	434	2.1	31.29	18.0	6.8						
	32.6	400	2.2	28.83	18.0	6.7						
	36.0	362	2.5	26.11	18.0	6.5						
	42.0	311	2.9	22.40	18.0	6.2						
	52.3	249	3.6	17.98	18.0	5.8						
	57.7	226	4.0	16.29	18.0	5.7						
	23.0	542	1.2	124.46	18.0	7.4				K40390 - 90S/2A K40390 - 80M/2C	42	92
	25.1	498	1.3	114.17	18.0	7.2						
	27.7	451	1.4	103.40	18.0	7.0						
	29.0	430	1.5	98.70	18.0	6.9						
	31.6	394	1.6	90.52	18.0	6.7						
	36.1	345	1.9	79.26	18.0	6.5						
	39.8	313	2.1	71.78	18.0	6.3						
	42.2	295	2.2	67.78	18.0	6.2						
	45.8	272	2.4	62.47	18.0	6.0						
	48.6	256	2.5	58.81	18.0	5.9						
	52.5	237	2.7	54.43	18.0	5.8						
	57.0	219	2.9	50.17	18.0	5.7						
	63.9	195	3.3	44.78	18.0	5.5						
	67.6	184	3.5	42.28	18.0	5.4						
	73.4	170	3.8	38.97	18.0	5.2						



P_1 [kW]	n_2 [Min ⁻¹]	M_2 [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	Kg	mm	
1.50	14.4	896	0.9	98.70	18.0	8.3	K40390 - 90L/4A	43	92	
	15.7	822	1.0	90.52	18.0	8.1				
	17.9	720	1.2	79.26	18.0	7.8				
	19.8	652	1.3	71.78	18.0	7.6				
	21.0	615	1.4	67.78	18.0	7.5				
	22.7	567	1.5	62.47	18.0	7.3				
	24.1	534	1.6	58.81	18.0	7.2				
	26.1	494	1.7	54.43	18.0	7.1				
	28.3	456	1.9	50.17	18.0	6.9				
	31.7	407	2.1	44.78	18.0	6.7				
	33.6	384	2.2	42.28	18.0	6.6				
	36.4	354	2.4	38.97	18.0	6.4				
	41.8	308	2.8	33.95	18.0	6.2				
	45.4	284	3.0	31.29	18.0	6.0				
	49.3	262	3.2	28.83	18.0	5.9				
	54.4	237	3.6	26.11	18.0	5.7				
		6.7	1957	1.0	141.14	22.0	13.1	K50390 - 100L/6A	76	94
		7.3	1798	1.1	129.64	22.0	12.8			
		8.0	1629	1.2	117.49	22.0	12.5			
		8.4	1552	1.2	111.93	22.0	12.3			
		9.1	1426	1.3	102.86	22.0	12.0			
		10.4	1248	1.5	90.00	22.0	11.6			
		11.5	1131	1.7	81.57	22.0	11.3			
		12.2	1066	1.7	76.87	22.0	11.1			
		13.3	982	1.8	70.84	22.0	10.9			
		14.1	927	1.9	66.83	22.0	10.7			
		14.7	887	2.0	63.93	22.0	10.5			
		16.5	790	2.3	56.96	22.0	10.2			
		18.2	716	2.5	51.63	22.0	9.9			
		19.2	678	2.6	48.89	22.0	9.8			
		20.2	646	2.8	46.59	22.0	9.6			
		21.4	609	2.9	43.91	22.0	9.5	K50390 - 90S/2A K50390 - 80M/2C	68	94
		23.2	561	3.2	40.46	22.0	9.2			
	26.6	490	3.6	35.30	22.0	8.9				
	28.9	451	4.0	32.54	22.0	8.6				
	31.7	411	4.1	29.67	22.0	8.4				
	40.4	309	4.2	26.11	22.0	8.1				
	8.8	1464	1.2	161.23	22.0	12.1	K50390 - 90L/4A	69	94	
	10.1	1281	1.4	141.14	22.0	11.7				
	11.0	1177	1.5	129.64	22.0	11.4				
	12.1	1067	1.7	117.49	22.0	11.1				
	12.7	1016	1.8	111.93	22.0	10.9				
	13.8	934	1.9	102.86	22.0	10.7				
	15.8	817	2.2	90.00	22.0	10.3				
	17.4	741	2.4	81.57	22.0	10.0				
	18.5	698	2.4	76.87	22.0	9.8				
	20.0	643	2.6	70.84	22.0	9.6				
	21.2	607	2.8	66.83	22.0	9.4				
	22.2	580	2.9	63.93	22.0	9.3				
	24.9	517	3.3	56.96	22.0	9.0				
	27.5	469	3.6	51.63	22.0	8.7				
	29.0	444	3.8	48.89	22.0	8.6				
	30.5	423	4.0	46.59	22.0	8.4				

P₁ [kW]	n₂ [Min ⁻¹]	M₂ [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	Kg ~	
1.50	5.1	2539	1.4	183.08	30.0	19.1	K60390 - 100L/6A	95	96
	5.8	2255	1.6	162.63	30.0	18.6			
	6.4	2033	1.8	146.59	30.0	18.2			
	7.1	1830	2.0	131.96	30.0	17.7			
	7.7	1683	2.2	121.39	30.0	17.4			
	8.7	1502	2.4	108.31	30.0	16.9			
	9.3	1405	2.6	101.29	30.0	16.6			
	10.3	1266	2.9	91.30	30.0	16.1			
	11.6	1126	3.3	81.18	30.0	15.7			
	12.4	1048	3.5	75.60	30.0	15.4			
	13.3	979	3.5	70.62	30.0	15.1			
	14.8	883	3.9	63.65	30.0	14.6			
	15.6	837	4.0	60.34	30.0	14.4			
	7.8	1662	2.1	183.08	30.0	17.3			
	8.7	1477	2.4	162.63	30.0	16.7			
	9.7	1331	2.6	146.59	30.0	16.3			
	10.8	1198	2.9	131.96	30.0	15.9			
	11.7	1102	3.2	121.39	30.0	15.5			
	13.1	983	3.6	108.31	30.0	15.0			
	15.6	798	3.3	183.08	30.0	14.4	K60390 - 90S/2A	89	96
	17.6	709	3.8	162.63	30.0	13.9			
	5.1	2542	2.1	183.27	45.0	45.0	K70390 - 100L/6A	140	98
	5.8	2260	2.3	162.98	45.0	45.0			
	6.4	2030	2.6	146.38	45.0	45.0			
	7.0	1852	2.8	133.53	45.0	45.0			
	7.7	1691	3.1	121.96	45.0	45.0			
	8.6	1519	3.5	109.54	45.0	45.0			
	9.0	1452	3.6	104.68	45.0	45.0			
10.1	1291	4.1	93.09	45.0	45.0				
1.85	24.5	656	1.0	38.88	12.0	4.3			
	28.3	569	1.1	33.70	12.0	4.2			
	33.7	477	1.3	28.25	12.0	4.0			
	36.2	444	1.4	26.30	12.0	4.0			
	42.2	381	1.7	22.50	12.0	3.8			
	55.6	289	2.2	17.08	12.0	3.6			
	62.3	258	2.4	15.25	12.0	3.5			
	71.9	224	2.8	13.21	11.6	3.3			
	76.5	210	2.9	12.41	11.4	3.3			
	85.7	188	3.0	11.08	11.1	3.2			
	92.1	175	3.1	10.31	10.9	3.1			
	103.2	156	3.1	9.20	10.5	3.0			
	129.0	125	2.9	7.36	9.9	2.8			
	137.4	117	3.1	6.91	9.7	2.8			
	165.4	97	3.1	5.74	9.2	2.6			
	24.8	642	0.9	57.38	12.0	4.3	K35390 - 90L/4	38	90
	27.8	573	1.0	51.21	12.0	4.2			
	32.6	487	1.2	43.56	12.0	4.0			
	36.6	435	1.4	38.88	12.0	3.9			
	42.2	377	1.6	33.70	12.0	3.8			
	50.3	316	1.9	28.25	12.0	3.6			
	54.0	294	2.0	26.30	12.0	3.6			
	63.0	253	2.4	22.50	11.9	3.4			
	82.9	192	3.1	17.08	11.1	3.2			
	92.9	171	3.4	15.25	10.7	3.1			
	107.2	148	4.0	13.21	10.3	2.9			
	17.4	926	1.0	54.43	18.0	7.7			
	18.8	854	1.0	50.17	18.0	7.6			
	21.1	762	1.2	44.78	18.0	7.4			
	22.3	719	1.2	42.28	18.0	7.3			
	24.3	663	1.3	38.97	18.0	7.1			
	27.8	578	1.5	33.95	18.0	6.9			
	30.2	532	1.7	31.29	18.0	6.7			
	32.7	492	1.8	28.83	18.0	6.6			
	36.2	444	2.0	26.11	18.0	6.4			
	42.2	381	2.3	22.40	18.0	6.1			
	52.5	306	2.9	17.98	18.0	5.8			
	58.0	277	3.2	16.29	18.0	5.6			
	67.0	240	3.5	14.11	18.0	5.4			
	83.4	193	4.1	11.33	17.6	5.0			
	92.1	175	3.9	10.26	17.1	4.9			
	120.9	133	3.9	7.82	15.6	4.5			

P_1 [kW]	n_2 [Min ⁻¹]	M_2 [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	Kg	mm
1.85	17.8	894	1.0	79.26	18.0	7.6	K40390 - 90L/4	43	92
	19.6	809	1.1	71.78	18.0	7.4			
	20.8	764	1.1	67.78	18.0	7.3			
	22.6	704	1.2	62.47	18.0	7.2			
	24.0	663	1.3	58.81	18.0	7.1			
	25.9	614	1.4	54.43	18.0	6.9			
	28.1	566	1.5	50.17	18.0	6.8			
	31.5	505	1.7	44.78	18.0	6.6			
	33.3	477	1.8	42.28	18.0	6.5			
	36.2	439	1.9	38.97	18.0	6.3			
	41.5	383	2.2	33.95	18.0	6.1			
	45.1	353	2.4	31.29	18.0	5.9			
	48.9	325	2.6	28.83	18.0	5.8			
	54.0	294	2.9	26.11	18.0	5.7			
	63.0	253	3.4	22.40	18.0	5.4			
	8.4	1904	1.0	111.93	22.0	12.0	K50390- 100L/6	76	94
	9.2	1750	1.1	102.86	22.0	11.7			
	10.5	1531	1.2	90.00	22.0	11.4			
	11.6	1388	1.4	81.57	22.0	11.1			
	12.3	1308	1.4	76.87	22.0	10.9			
	13.3	1205	1.5	70.84	22.0	10.7			
	14.1	1137	1.6	66.83	22.0	10.5			
	14.8	1088	1.6	63.93	22.0	10.4			
	16.6	969	1.8	56.96	22.0	10.1			
	18.3	878	2.0	51.63	22.0	9.8			
	19.3	832	2.1	48.89	22.0	9.6			
	20.3	793	2.3	46.59	22.0	9.5			
	21.5	747	2.4	43.91	22.0	9.3			
	23.4	688	2.6	40.46	22.0	9.1			
	26.8	601	3.0	35.30	22.0	8.8			
	29.0	554	3.2	32.54	22.0	8.5			
	31.9	505	3.3	29.67	22.0	8.4			
	36.8	436	3.6	25.65	22.0	8.0			
	40.6	396	3.7	23.26	22.0	7.7			
	8.7	1818	1.0	161.23	22.0	11.8	K50390 - 90L/4	69	94
	10.0	1592	1.1	141.14	22.0	11.4			
	10.9	1462	1.2	129.64	22.0	11.2			
	12.0	1325	1.4	117.49	22.0	10.9			
	12.6	1262	1.4	111.93	22.0	10.7			
13.7	1160	1.6	102.86	22.0	10.5				
15.7	1015	1.8	90.00	22.0	10.1				
17.3	920	2.0	81.57	22.0	9.8				
18.3	867	2.0	76.87	22.0	9.7				
19.9	799	2.1	70.84	22.0	9.5				
21.1	754	2.3	66.83	22.0	9.3				
22.1	721	2.4	63.93	22.0	9.2				
24.8	642	2.6	56.96	22.0	8.9				
27.3	582	2.9	51.63	22.0	8.6				
28.8	551	3.1	48.89	22.0	8.5				
30.3	525	3.2	46.59	22.0	8.3				
32.1	495	3.4	43.91	22.0	8.2				
34.8	456	3.7	40.46	22.0	8.0				
5.2	3115	1.2	183.08	30.0	18.3	K60390 - 100L/6	97	96	
5.8	2767	1.3	162.63	30.0	17.9				
6.4	2494	1.5	146.59	30.0	17.5				
7.2	2245	1.6	131.96	30.0	17.1				
7.8	2065	1.8	121.39	30.0	16.8				
8.7	1843	2.0	108.31	30.0	16.4				
9.3	1723	2.1	101.29	30.0	16.1				
10.4	1553	2.4	91.30	30.0	15.7				
11.6	1381	2.7	81.18	30.0	15.3				
12.5	1286	2.9	75.60	30.0	15.0				
13.4	1201	2.9	70.62	30.0	14.8				
14.8	1083	3.2	63.65	30.0	14.4				
15.7	1027	3.3	60.34	30.0	14.2				
17.1	940	3.6	55.28	30.0	13.8				
18.7	860	3.9	50.56	30.0	13.5				
20.7	775	4.1	45.57	30.0	13.1				



P₁ [kW]	n₂ [Min ⁻¹]	M₂ [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	Kg 	 mm				
1.85	7.7	2065	1.7	183.08	30.0	16.7	K60390 - 90L/4	90	96				
	8.7	1834	1.9	162.63	30.0	16.3							
	9.6	1653	2.1	146.59	30.0	15.9							
	10.7	1488	2.4	131.96	30.0	15.5							
	11.6	1369	2.6	121.39	30.0	15.2							
	13.0	1221	2.9	108.31	30.0	14.7							
	17.4	915	3.8	81.18	30.0	13.6							
	5.2	3118	1.7	183.27	45.0	45.0	K70390 - 100L/6	142	98				
	5.8	2773	1.9	162.98	45.0	45.0							
	6.5	2490	2.1	146.38	45.0	45.0							
	7.1	2272	2.3	133.53	45.0	45.0							
	7.7	2075	2.5	121.96	45.0	45.0							
	8.6	1864	2.8	109.54	45.0	45.0							
	9.0	1781	2.9	104.68	45.0	45.0							
	10.2	1584	3.3	93.09	45.0	45.0							
	11.3	1423	3.7	83.66	45.0	45.0							
	12.4	1298	4.0	76.27	45.0	45.0							
	2.20	32.6	580	1.0	43.56	12.0				3.9	K35390 - 100L/4A	45	90
		36.6	517	1.2	38.88	12.0				3.8			
42.2		448	1.3	33.70	12.0	3.7							
50.3		376	1.6	28.25	12.0	3.5							
54.0		350	1.7	26.30	12.0	3.5							
63.0		300	2.0	22.50	11.7	3.3							
82.9		228	2.6	17.08	10.9	3.1							
92.9		204	2.9	15.25	10.6	3.0							
107.2		176	3.3	13.21	10.2	2.9							
114.1		166	3.5	12.41	10.0	2.9							
127.9		148	3.7	11.08	9.7	2.8							
137.4		138	3.8	10.31	9.5	2.7							
153.9		123	3.7	9.20	9.2	2.6							
192.5		98	3.6	7.36	8.6	2.4							
205.0		92	3.7	6.91	8.4	2.4							
246.7		77	3.8	5.74	7.9	2.3							
36.2		528	1.2	26.30	12.0	3.8	K35390 - 112M/6A	54	90				
42.2		453	1.4	22.50	12.0	3.7							
55.6		344	1.8	17.08	12.0	3.5							
62.3		307	2.0	15.25	11.9	3.4							
71.9		266	2.3	13.21	11.4	3.3							
76.5		250	2.4	12.41	11.2	3.2							
85.7		223	2.5	11.08	10.9	3.1							
92.1		208	2.6	10.31	10.7	3.1							
103.2		185	2.6	9.20	10.4	3.0							
129.0		148	2.5	7.36	9.7	2.8							
137.4		139	2.6	6.91	9.6	2.7							
165.4		116	2.6	5.74	9.1	2.6							
50.2		364	1.3	57.38	12.0	3.6	K35390 - 90L/2A	39	90				
56.3		325	1.4	51.21	12.0	3.5							
66.2		276	1.7	43.56	11.7	3.3							
74.1		247	1.8	38.88	11.3	3.2							
85.5		214	2.1	33.70	10.9	3.1							
102.0		179	2.5	28.25	10.4	3.0							
109.6		167	2.7	26.30	10.2	2.9							
127.7		143	3.2	22.50	9.7	2.8							
20.8		909	0.9	67.78	18.0	7.2	K40390 - 100L/4A	50	92				
22.6		838	1.0	62.47	18.0	7.0							
24.0		789	1.1	58.81	18.0	6.9							
25.9		730	1.2	54.43	18.0	6.8							
28.1		673	1.3	50.17	18.0	6.7							
31.5		600	1.4	44.78	18.0	6.5							
33.3		567	1.5	42.28	18.0	6.4							
36.2		523	1.6	38.97	18.0	6.2							
41.5		455	1.9	33.95	18.0	6.0							
45.1	420	2.0	31.29	18.0	5.9								
48.9	387	2.2	28.83	18.0	5.7								
54.0	350	2.4	26.11	18.0	5.6								
63.0	300	2.8	22.40	18.0	5.3								
78.4	241	3.5	17.98	17.5	5.0								
86.6	218	3.9	16.29	17.0	4.9								



P_1 [kW]	n_2 [Min ⁻¹]	M_2 [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	Kg	mm
2.20	27.8	687	1.3	33.95	18.0	6.7	K40390 - 112M/6A	59	92
	30.2	633	1.4	31.29	18.0	6.6			
	32.8	583	1.5	28.83	18.0	6.5			
	36.2	528	1.7	26.11	18.0	6.3			
	42.2	453	2.0	22.40	18.0	6.0			
	52.5	364	2.5	17.98	18.0	5.7			
	58.0	330	2.7	16.29	18.0	5.5			
	67.0	285	3.0	14.11	18.0	5.3			
	83.4	229	3.4	11.33	17.4	5.0			
	92.1	208	3.3	10.26	16.9	4.8			
109.5	175	3.6	8.63	16.0	4.6				
120.9	158	3.3	7.82	15.5	4.4				
	31.6	579	1.1	90.52	18.0	6.5	K40390 - 90L/2A	44	92
	36.1	507	1.3	79.26	18.0	6.3			
	39.8	459	1.4	71.78	18.0	6.1			
	42.2	433	1.5	67.78	18.0	6.0			
	45.8	399	1.6	62.47	18.0	5.9			
	48.6	376	1.7	58.81	18.0	5.8			
	52.5	348	1.9	54.43	18.0	5.7			
	57.0	321	2.0	50.17	18.0	5.5			
	63.9	286	2.3	44.78	18.0	5.3			
	67.6	270	2.4	42.28	18.0	5.3			
73.4	249	2.6	38.97	18.0	5.1				
84.2	217	3.0	33.95	17.2	4.9				
91.4	200	3.2	31.29	16.8	4.8				
99.2	184	3.5	28.83	16.5	4.7				
109.5	167	3.9	26.11	16.0	4.6				
	10.0	1893	1.0	141.14	22.0	11.1	K50390 - 100L/4A	76	94
	10.9	1739	1.0	129.64	22.0	10.9			
	12.0	1576	1.1	117.49	22.0	10.7			
	12.6	1501	1.2	111.93	22.0	10.5			
	13.7	1379	1.3	102.86	22.0	10.3			
	15.7	1207	1.5	90.00	22.0	10.0			
	17.3	1094	1.6	81.57	22.0	9.7			
	18.3	1031	1.6	76.87	22.0	9.5			
	19.9	950	1.8	70.84	22.0	9.3			
	21.1	896	1.9	66.83	22.0	9.2			
	22.1	857	2.0	63.93	22.0	9.0			
	24.8	764	2.2	56.96	22.0	8.8			
	27.3	692	2.5	51.63	22.0	8.5			
	28.8	656	2.6	48.89	22.0	8.4			
	30.3	625	2.7	46.59	22.0	8.3			
	32.1	589	2.9	43.91	22.0	8.1			
34.8	543	3.1	40.46	22.0	7.9				
39.9	473	3.6	35.30	22.0	7.6				
43.3	436	3.9	32.54	22.0	7.4				
47.5	398	4.0	29.67	22.0	7.3				
	13.3	1433	1.2	70.84	22.0	10.5	K50390 - 112M/6A	85	94
	14.1	1352	1.3	66.83	22.0	10.3			
	14.8	1293	1.4	63.93	22.0	10.2			
	16.6	1152	1.5	56.96	22.0	9.9			
	18.3	1044	1.7	51.63	22.0	9.6			
	19.3	989	1.8	48.89	22.0	9.5			
	20.3	943	1.9	46.59	22.0	9.4			
	21.5	888	2.0	43.91	22.0	9.2			
	23.4	819	2.2	40.46	22.0	9.0			
	26.8	714	2.5	35.30	22.0	8.7			
	29.0	658	2.7	32.54	22.0	8.5			
	31.9	600	2.8	29.67	22.0	8.3			
	36.8	519	3.0	25.65	22.0	7.9			
	40.6	470	3.1	23.26	22.0	7.7			
	50.5	378	3.9	18.70	22.0	7.2			
	64.5	296	4.3	14.65	22.0	6.7			

P_1 [kW]	n_2 [Min ⁻¹]	M_2 [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	 Kg	 mm			
2.20	17.7	1030	1.3	161.23	22.0	9.7	K50390 - 90L/2A	70	94			
	20.3	902	1.5	141.14	22.0	9.3						
	22.1	829	1.7	129.64	22.0	9.1						
	24.3	751	1.8	117.49	22.0	8.9						
	25.6	715	1.9	111.93	22.0	8.8						
	27.8	657	2.1	102.86	22.0	8.5						
	31.8	575	2.4	90.00	22.0	8.2						
	35.1	521	2.6	81.57	22.0	8.0						
	37.2	491	2.6	76.87	22.0	7.8						
	40.4	453	2.9	70.84	22.0	7.7						
	42.8	427	3.0	66.83	22.0	7.5						
	44.7	409	3.2	63.93	22.0	7.4						
	50.2	364	3.5	56.96	22.0	7.2						
	55.4	330	3.9	51.63	22.0	7.0						
	58.5	312	4.1	48.89	22.0	6.8						
	7.7	2455	1.4	183.08	30.0	16.2				K60390 - 100L/4A	98	96
	8.7	2181	1.6	162.63	30.0	15.8						
	9.6	1966	1.8	146.59	30.0	15.5						
	10.7	1770	2.0	131.96	30.0	15.1						
	11.6	1628	2.1	121.39	30.0	14.8						
13.0	1453	2.4	108.31	30.0	14.4							
13.9	1358	2.6	101.29	30.0	14.2							
15.4	1224	2.9	91.30	30.0	13.8							
17.4	1089	3.2	81.18	30.0	13.4							
18.6	1014	3.5	75.60	30.0	13.2							
20.0	947	3.5	70.62	30.0	12.9							
22.2	854	3.9	63.65	30.0	12.5							
23.4	809	4.0	60.34	30.0	12.4							
6.4	2966	1.2	146.59	30.0	16.9	K60390 - 112M/6A	105	96				
7.2	2670	1.4	131.96	30.0	16.6							
7.8	2456	1.5	121.39	30.0	16.3							
8.7	2191	1.7	108.31	30.0	15.9							
9.3	2049	1.8	101.29	30.0	15.7							
10.4	1847	2.0	91.30	30.0	15.3							
11.6	1642	2.2	81.18	30.0	14.9							
12.5	1530	2.4	75.60	30.0	14.7							
13.4	1429	2.4	70.62	30.0	14.4							
14.8	1288	2.7	63.65	30.0	14.1							
15.7	1221	2.8	60.34	30.0	13.9							
17.1	1118	3.0	55.28	30.0	13.6							
18.7	1023	3.3	50.56	30.0	13.3							
20.7	922	3.4	45.57	30.0	12.9							
22.9	835	3.5	41.26	30.0	12.6							
26.8	713	4.1	35.25	30.0	12.0							
15.6	1170	2.3	183.08	30.0	13.9	K60390 - 90L/2A	91	96				
17.6	1039	2.6	162.63	30.0	13.5							
19.5	937	2.8	146.59	30.0	13.1							
21.7	843	3.2	131.96	30.0	12.7							
23.6	776	3.4	121.39	30.0	12.4							
26.4	692	3.8	108.31	30.0	12.0							
7.7	2458	2.0	183.27	45.0	45.0	K70390 - 100L/4A	143	98				
8.7	2186	2.3	162.98	45.0	45.0							
9.6	1963	2.5	146.38	45.0	45.0							
10.6	1791	2.8	133.53	45.0	45.0							
11.6	1636	3.1	121.96	45.0	45.0							
12.9	1469	3.4	109.54	45.0	45.0							
13.5	1404	3.6	104.68	45.0	45.0							
15.1	1248	4.0	93.09	45.0	45.0							
5.2	3708	1.4	183.27	45.0	45.0	K70390 - 112M/6A	150	98				
5.8	3297	1.6	162.98	45.0	45.0							
6.5	2962	1.8	146.38	45.0	45.0							
7.1	2702	1.9	133.53	45.0	45.0							
7.7	2467	2.1	121.96	45.0	45.0							
8.6	2216	2.4	109.54	45.0	45.0							
9.0	2118	2.5	104.68	45.0	45.0							
10.2	1883	2.8	93.09	45.0	45.0							
11.3	1693	3.1	83.66	45.0	45.0							
12.4	1543	3.4	76.27	45.0	45.0							
13.6	1409	3.7	69.66	45.0	45.0							
14.9	1282	4.1	63.37	45.0	45.0							


P_1 [kW]	n_2 [Min ⁻¹]	M_2 [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	Kg	mm			
3.00	66.9	373	1.2	43.56	11.2	3.2	K35390 - 100L/2A	45	90			
	74.9	333	1.4	38.88	10.9	3.1						
	86.4	288	1.6	33.70	10.5	3.0						
	103.1	242	1.9	28.25	10.1	2.9						
	110.8	225	2.0	26.30	9.9	2.8						
	129.1	193	2.4	22.50	9.5	2.7						
	170.0	147	3.1	17.08	8.8	2.5						
	190.4	131	3.4	15.25	8.5	2.4						
	219.7	113	4.0	13.21	8.2	2.3						
	233.9	107	4.1	12.41	8.0	2.3						
	42.2	611	1.0	33.70	12.0	3.5				K35390 - 100L/4B	48	90
	50.3	513	1.2	28.25	11.8	3.4						
	54.0	477	1.3	26.30	11.6	3.3						
	63.0	410	1.5	22.50	11.2	3.2						
	82.9	311	1.9	17.08	10.5	3.0						
92.9	278	2.1	15.25	10.2	2.9							
107.2	241	2.5	13.21	9.9	2.8							
114.1	226	2.6	12.41	9.7	2.8							
127.9	202	2.7	11.08	9.4	2.7							
137.4	188	2.8	10.31	9.2	2.6							
153.9	168	2.7	9.20	8.9	2.6							
192.5	134	2.6	7.36	8.4	2.4							
205.0	126	2.7	6.91	8.3	2.4							
246.7	105	2.8	5.74	7.8	2.2							
42.6	611	1.0	22.50	12.0	3.5	K35390 - 132S/6B	56	90				
56.2	464	1.4	17.08	11.6	3.3							
62.9	414	1.5	15.25	11.3	3.2							
72.6	359	1.7	13.21	11.0	3.1							
77.3	337	1.8	12.41	10.8	3.1							
86.6	301	1.9	11.08	10.5	3.0							
93.0	280	1.9	10.31	10.3	3.0							
104.2	250	1.9	9.20	10.1	2.9							
130.4	200	1.8	7.36	9.5	2.7							
138.8	188	1.9	6.91	9.3	2.7							
167.1	156	2.0	5.74	8.9	2.5							
42.6	585	1.1	67.78	18.0	5.8				K40390 - 100L/2A	51	92	
46.3	539	1.2	62.47	18.0	5.7							
49.1	507	1.3	58.81	18.0	5.6							
53.1	469	1.4	54.43	18.0	5.5							
57.6	433	1.5	50.17	18.0	5.4							
64.5	386	1.7	44.78	18.0	5.2							
68.3	365	1.8	42.28	18.0	5.1							
74.2	336	1.9	38.97	17.6	5.0							
85.1	293	2.2	33.95	16.9	4.8							
92.4	270	2.4	31.29	16.5	4.7							
100.2	249	2.6	28.83	16.2	4.6							
110.7	225	2.9	26.11	15.7	4.5							
129.0	193	3.3	22.40	15.0	4.3							
160.7	155	4.2	17.98	14.0	4.0							
28.1	917	0.9	50.17	18.0	6.4	K40390 - 100L/4B	54	92				
31.5	819	1.0	44.78	18.0	6.2							
33.3	773	1.1	42.28	18.0	6.1							
36.2	713	1.2	38.97	18.0	6.0							
41.5	621	1.4	33.95	18.0	5.8							
45.1	572	1.5	31.29	18.0	5.7							
48.9	527	1.6	28.83	18.0	5.6							
54.0	477	1.8	26.11	18.0	5.4							
63.0	410	2.1	22.40	18.0	5.2							
78.4	329	2.6	17.98	17.2	4.9							
86.6	298	2.9	16.29	16.7	4.8							
99.9	258	3.1	14.11	16.0	4.6							
124.4	207	3.6	11.33	15.0	4.3							
137.4	188	3.5	10.26	14.6	4.2							
163.3	158	3.8	8.63	13.8	3.9							
180.3	143	3.5	7.82	13.4	3.8							



P₁ [kW]	n₂ [Min ⁻¹]	M₂ [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	Kg	mm																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
3.00	30.5	854	1.0	31.29	18.0	6.3	K40390 - 112M/6	74	92																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
	33.1	787	1.1	28.83	18.0	6.2					36.6	713	1.3	26.11	18.0	6.1	K40390 - 132S/6B K40390 - 112M/6	74	92		42.6	611	1.5	22.40	18.0	5.8		53.1	491	1.8	17.98	18.0	5.5		58.6	445	2.0	16.29	18.0	5.4		67.7	385	2.2	14.11	18.0	5.2		84.3	309	2.5	11.33	17.1	4.9		93.1	280	2.4	10.26	16.6	4.7		110.6	236	2.7	8.63	15.7	4.5		122.2	213	2.5	7.82	15.2	4.4		20.5	1217	1.1	141.14	22.0	9.1	K50390 - 100L/2A	77	94		22.3	1118	1.2	129.64	22.0	8.9		24.6	1013	1.3	117.49	22.0	8.6		25.8	965	1.4	111.93	22.0	8.5		28.1	887	1.5	102.86	22.0	8.3		32.1	776	1.8	90.00	22.0	8.0		35.4	703	1.9	81.57	22.0	7.8		37.6	663	1.9	76.87	22.0	7.7		40.8	611	2.1	70.84	22.0	7.5		43.2	576	2.2	66.83	22.0	7.4		45.2	551	2.3	63.93	22.0	7.3		50.7	491	2.6	56.96	22.0	7.1		56.0	445	2.9	51.63	22.0	6.9		59.1	422	3.1	48.89	22.0	6.7		62.0	402	3.2	46.59	22.0	6.6		65.8	379	3.4	43.91	22.0	6.5		71.4	349	3.7	40.46	22.0	6.4		81.9	304	4.2	35.30	21.3	6.1		13.7	1881	1.0	102.86	22.0	9.9	K50390 - 100L/4B	80	94		15.7	1646	1.1	90.00	22.0	9.6		17.3	1492	1.2	81.57	22.0	9.4		18.3	1406	1.2	76.87	22.0	9.2		19.9	1296	1.3	70.84	22.0	9.0		21.1	1222	1.4	66.83	22.0	8.9		22.1	1169	1.5	63.93	22.0	8.8		24.8	1042	1.6	56.96	22.0	8.5		27.3	944	1.8	51.63	22.0	8.3		28.8	894	1.9	48.89	22.0	8.2		30.3	852	2.0	46.59	22.0	8.1		32.1	803	2.1	43.91	22.0	7.9		34.8	740	2.3	40.46	22.0	7.8		39.9	646	2.6	35.30	22.0	7.5		43.3	595	2.9	32.54	22.0	7.3		47.5	543	2.9	29.67	22.0	7.1		55.0	469	3.2	25.65	22.0	6.8		60.6	425	3.3	23.26	22.0	6.6		75.4	342	4.1	18.70	21.7	6.2		14.9	1745	1.0	63.93	22.0	9.8	K50390 - 112M/6	100	94		16.8	1555	1.1	56.96	22.0	9.5		18.5	1409	1.3	51.63	22.0	9.3	K50390 - 132S/6B K50390 - 112M/6	100	94		19.5	1335	1.3	48.89	22.0	9.2		20.5	1272	1.4	46.59	22.0	9.1		21.8	1199	1.5	43.91	22.0	8.9		23.6	1105	1.6	40.46	22.0	8.7		27.1	964	1.9	35.30	22.0	8.4		29.4	888	2.0	32.54	22.0	8.2		32.2	810	2.1	29.67	22.0	8.1		37.2	700	2.2	25.65	22.0	7.8		41.1	635	2.3	23.26	22.0	7.5		51.1	510	2.9	18.70	22.0	7.1		56.4	463	3.2	16.95	22.0	6.9		65.2	400	3.2	14.65	22.0	6.6		81.1	322	3.3	11.78	21.6	6.2		89.4	291	3.6	10.68	20.9	6.0		106.4	245	3.9	8.98	19.7	5.6		117.4	222	3.8	8.13	19.1	5.5						
	36.6	713	1.3	26.11	18.0	6.1	K40390 - 132S/6B K40390 - 112M/6	74	92																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
	42.6	611	1.5	22.40	18.0	5.8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	53.1	491	1.8	17.98	18.0	5.5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	58.6	445	2.0	16.29	18.0	5.4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	67.7	385	2.2	14.11	18.0	5.2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	84.3	309	2.5	11.33	17.1	4.9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	93.1	280	2.4	10.26	16.6	4.7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	110.6	236	2.7	8.63	15.7	4.5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	122.2	213	2.5	7.82	15.2	4.4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	20.5	1217	1.1	141.14	22.0	9.1				K50390 - 100L/2A	77	94																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	22.3	1118	1.2	129.64	22.0	8.9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	24.6	1013	1.3	117.49	22.0	8.6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	25.8	965	1.4	111.93	22.0	8.5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	28.1	887	1.5	102.86	22.0	8.3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	32.1	776	1.8	90.00	22.0	8.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	35.4	703	1.9	81.57	22.0	7.8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	37.6	663	1.9	76.87	22.0	7.7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	40.8	611	2.1	70.84	22.0	7.5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	43.2	576	2.2	66.83	22.0	7.4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	45.2	551	2.3	63.93	22.0	7.3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	50.7	491	2.6	56.96	22.0	7.1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	56.0	445	2.9	51.63	22.0	6.9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	59.1	422	3.1	48.89	22.0	6.7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	62.0	402	3.2	46.59	22.0	6.6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	65.8	379	3.4	43.91	22.0	6.5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	71.4	349	3.7	40.46	22.0	6.4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	81.9	304	4.2	35.30	21.3	6.1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	13.7	1881	1.0	102.86	22.0	9.9	K50390 - 100L/4B	80	94																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
	15.7	1646	1.1	90.00	22.0	9.6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	17.3	1492	1.2	81.57	22.0	9.4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	18.3	1406	1.2	76.87	22.0	9.2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	19.9	1296	1.3	70.84	22.0	9.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	21.1	1222	1.4	66.83	22.0	8.9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	22.1	1169	1.5	63.93	22.0	8.8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	24.8	1042	1.6	56.96	22.0	8.5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	27.3	944	1.8	51.63	22.0	8.3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	28.8	894	1.9	48.89	22.0	8.2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	30.3	852	2.0	46.59	22.0	8.1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	32.1	803	2.1	43.91	22.0	7.9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	34.8	740	2.3	40.46	22.0	7.8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	39.9	646	2.6	35.30	22.0	7.5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	43.3	595	2.9	32.54	22.0	7.3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	47.5	543	2.9	29.67	22.0	7.1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	55.0	469	3.2	25.65	22.0	6.8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	60.6	425	3.3	23.26	22.0	6.6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	75.4	342	4.1	18.70	21.7	6.2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	14.9	1745	1.0	63.93	22.0	9.8	K50390 - 112M/6	100	94																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
	16.8	1555	1.1	56.96	22.0	9.5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	18.5	1409	1.3	51.63	22.0	9.3	K50390 - 132S/6B K50390 - 112M/6	100	94																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
	19.5	1335	1.3	48.89	22.0	9.2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	20.5	1272	1.4	46.59	22.0	9.1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	21.8	1199	1.5	43.91	22.0	8.9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	23.6	1105	1.6	40.46	22.0	8.7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	27.1	964	1.9	35.30	22.0	8.4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	29.4	888	2.0	32.54	22.0	8.2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	32.2	810	2.1	29.67	22.0	8.1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	37.2	700	2.2	25.65	22.0	7.8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	41.1	635	2.3	23.26	22.0	7.5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	51.1	510	2.9	18.70	22.0	7.1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	56.4	463	3.2	16.95	22.0	6.9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	65.2	400	3.2	14.65	22.0	6.6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	81.1	322	3.3	11.78	21.6	6.2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	89.4	291	3.6	10.68	20.9	6.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	106.4	245	3.9	8.98	19.7	5.6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	117.4	222	3.8	8.13	19.1	5.5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															


P_1 [kW]	n_2 [Min ⁻¹]	M_2 [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	 Kg	 mm
3.00	15.8	1579	1.7	183.08	30.0	13.3	K60390 - 100L/2A	98	96
	17.8	1403	1.9	162.63	30.0	13.0			
	19.7	1264	2.1	146.59	30.0	12.6			
	21.9	1138	2.3	131.96	30.0	12.3			
	23.8	1047	2.5	121.39	30.0	12.1			
	26.7	934	2.8	108.31	30.0	11.7			
	28.5	874	3.0	101.29	30.0	11.5			
	31.7	787	3.4	91.30	30.0	11.2			
	35.6	700	3.8	81.18	30.0	10.8			
	38.2	652	4.1	75.60	30.0	10.6			
	7.7	3348	1.0	183.08	30.0	15.1	K60390 - 100L/4B	101	96
	8.7	2974	1.2	162.63	30.0	14.8			
	9.6	2681	1.3	146.59	30.0	14.6			
	10.7	2413	1.5	131.96	30.0	14.3			
	11.6	2220	1.6	121.39	30.0	14.1			
	13.0	1981	1.8	108.31	30.0	13.7			
	13.9	1852	1.9	101.29	30.0	13.5			
	15.4	1670	2.1	91.30	30.0	13.2			
	17.4	1485	2.4	81.18	30.0	12.9			
	18.6	1383	2.5	75.60	30.0	12.7			
	20.0	1291	2.6	70.62	30.0	12.5			
	22.2	1164	2.8	63.65	30.0	12.1			
	23.4	1103	2.9	60.34	30.0	12.0			
	25.5	1011	3.2	55.28	30.0	11.7			
27.9	925	3.5	50.56	30.0	11.5				
30.9	833	3.6	45.57	30.0	11.1				
34.2	755	3.7	41.26	30.0	10.8				
	7.2	3602	1.0	131.96	30.0	15.3	K60390 - 112M/6	121	96
	7.9	3314	1.1	121.39	30.0	15.1			
	8.8	2957	1.2	108.31	30.0	14.8	K60390 - 132S/6B K60390 - 112M/6	121	96
	9.4	2765	1.3	101.29	30.0	14.7			
	10.5	2492	1.5	91.30	30.0	14.4			
	11.8	2216	1.7	81.18	30.0	14.1			
	12.6	2064	1.8	75.60	30.0	13.9			
	13.5	1928	1.8	70.62	30.0	13.7			
	15.0	1738	2.0	63.65	30.0	13.4			
	15.8	1647	2.0	60.34	30.0	13.3			
	17.3	1509	2.2	55.28	30.0	13.0			
	18.9	1379	2.4	50.56	30.0	12.8			
	21.0	1243	2.5	45.57	30.0	12.5			
	23.1	1126	2.6	41.26	30.0	12.2			
	27.1	961	3.1	35.25	30.0	11.7			
	30.1	867	3.4	31.77	30.0	11.4			
30.4	857	3.4	31.39	30.0	11.3				
34.0	767	3.8	28.11	30.0	11.0				
36.3	718	4.1	26.31	30.0	10.8				
	15.8	1581	2.4	183.27	45.0	45.0	K70390 - 100L/2A	143	98
	17.7	1406	2.7	162.98	45.0	45.0			
	19.7	1262	3.0	146.38	45.0	45.0			
	21.6	1152	3.3	133.53	45.0	45.0			
	23.7	1052	3.6	121.96	45.0	45.0			
	26.4	945	4.0	109.54	44.9	44.9			
	27.6	903	4.2	104.68	44.1	44.1			
	7.7	3352	1.5	183.27	45.0	45.0	K70390 - 100L/4B	145	98
	8.7	2980	1.7	162.98	45.0	45.0			
	9.6	2677	1.9	146.38	45.0	45.0			
	10.6	2442	2.0	133.53	45.0	45.0			
	11.6	2230	2.2	121.96	45.0	45.0			
	12.9	2003	2.5	109.54	45.0	45.0			
	13.5	1914	2.6	104.68	45.0	45.0			
	15.1	1702	2.9	93.09	45.0	45.0			
	16.9	1530	3.3	83.66	45.0	45.0			
	18.5	1395	3.6	76.27	45.0	45.0			
20.2	1274	3.9	69.66	45.0	45.0				
	5.2	5003	1.0	183.27	45.0	45.0	K70390 - 112M/6	153	98
	5.9	4449	1.2	162.98	45.0	45.0			

P₁ [kW]	n₂ [Min ⁻¹]	M₂ [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	Kg 	 mm			
3.00	6.5	3996	1.3	146.38	45.0	45.0	K70390 - 132S/6B K70390 - 112M/6	166	98			
	7.2	3645	1.4	133.53	45.0	45.0						
	7.8	3329	1.6	121.96	45.0	45.0						
	8.7	2990	1.8	109.54	45.0	45.0						
	9.1	2858	1.8	104.68	45.0	45.0						
	10.3	2541	2.1	93.09	45.0	45.0						
	11.4	2284	2.3	83.66	45.0	45.0						
	12.5	2082	2.5	76.27	45.0	45.0						
	13.7	1902	2.8	69.66	45.0	45.0						
	15.1	1730	3.0	63.37	45.0	45.0						
	16.4	1592	3.3	58.32	45.0	45.0						
	17.7	1474	3.6	53.98	45.0	45.0						
	18.4	1417	3.7	51.92	45.0	45.0						
	20.0	1304	4.0	47.78	45.0	45.0						
	21.9	1191	4.2	43.64	45.0	45.0						
	5.7	4602	1.8	168.56	65.0	65.0				K90390 - 132S/6B	231	100
	6.3	4152	2.0	152.10	65.0	65.0						
	7.0	3737	2.2	136.87	65.0	65.0						
	7.6	3426	2.4	126.23	65.0	65.0						
	9.1	2871	2.9	105.17	65.0	65.0						
	10.1	2591	3.2	94.90	65.0	65.0						
10.7	2426	3.5	88.87	65.0	65.0							
11.2	2335	3.6	85.54	65.0	65.0							
12.1	2150	3.9	78.76	65.0	65.0							
4.00	86.4	384	1.2	33.70	10.1	2.9	K35390 - 100L/2C	54	90			
	103.1	322	1.4	28.25	9.7	2.8						
	110.8	300	1.5	26.30	9.5	2.7	K35390 - 112M/2A K35390 - 100L/2C	54	90			
	129.1	258	1.8	22.50	9.2	2.6						
	170.0	196	2.3	17.08	8.6	2.4						
	190.4	175	2.6	15.25	8.3	2.4						
	219.7	151	3.0	13.21	8.0	2.3						
	233.9	142	3.1	12.41	7.9	2.2						
	262.1	127	3.2	11.08	7.6	2.2						
	281.6	118	3.3	10.31	7.5	2.1						
	315.5	105	3.3	9.20	7.2	2.1						
	394.7	84	3.2	7.36	6.8	1.9						
	420.1	79	3.3	6.91	6.6	1.9						
	505.7	66	3.4	5.74	6.3	1.8						
	54.8	627	1.0	26.30	10.9	3.1				K35390 - 112M/4B	56	90
	63.9	538	1.1	22.50	10.6	3.0						
	84.1	409	1.5	17.08	10.0	2.9						
	94.2	365	1.6	15.25	9.8	2.8						
	108.7	316	1.9	13.21	9.5	2.7						
	115.7	297	2.0	12.41	9.4	2.7						
	129.7	265	2.0	11.08	9.1	2.6						
	139.3	247	2.1	10.31	8.9	2.6						
	156.1	220	2.1	9.20	8.7	2.5						
	195.3	176	2.0	7.36	8.2	2.3						
	207.9	165	2.1	6.91	8.1	2.3						
	250.2	137	2.1	5.74	7.7	2.2						
	57.6	577	1.1	50.17	18.0	5.2	K40390 - 100L/2C	59	92			
	64.5	515	1.3	44.78	17.7	5.1						
	68.3	486	1.3	42.28	17.5	5.0						
74.2	448	1.4	38.97	17.1	4.9							
85.1	390	1.7	33.95	16.5	4.7	K40390 - 112M/2A K40390 - 100L/2C	59	92				
92.4	360	1.8	31.29	16.1	4.6							
100.2	332	1.9	28.83	15.8	4.5							
110.7	300	2.2	26.11	15.4	4.4							
129.0	258	2.5	22.40	14.7	4.2							
160.7	207	3.1	17.98	13.8	4.0							
177.4	187	3.3	16.29	13.4	3.8							
204.8	162	3.5	14.11	12.9	3.7							
281.6	118	4.2	10.26	11.7	3.3							



P_1 [kW]	n_2 [Min ⁻¹]	M_2 [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	Kg	mm				
4.00	42.1	816	1.0	33.95	18.0	5.6	K40390 - 112M/4B	61	92				
	45.7	752	1.1	31.29	18.0	5.5							
	49.6	693	1.2	28.83	18.0	5.4							
	54.8	628	1.4	26.11	18.0	5.2							
	63.9	538	1.6	22.40	17.7	5.0							
	79.5	432	2.0	17.98	16.7	4.8							
	87.8	392	2.2	16.29	16.3	4.7							
	101.4	339	2.4	14.11	15.7	4.5							
	126.2	272	2.8	11.33	14.8	4.2							
	139.4	247	2.6	10.26	14.3	4.1							
165.7	208	2.9	8.63	13.6	3.9								
182.9	188	2.7	7.82	13.2	3.8								
	42.9	811	1.1	22.40	18.0	5.6	K40390 - 132M/6A	81	92				
	53.4	651	1.4	17.98	18.0	5.3							
	58.9	590	1.5	16.29	18.0	5.2							
	68.0	511	1.7	14.11	17.6	5.0							
	84.7	410	1.9	11.33	16.6	4.7							
	93.6	372	1.8	10.26	16.2	4.6							
	111.2	313	2.0	8.63	15.4	4.4							
	122.8	283	1.9	7.82	14.9	4.3							
		28.1	1183	1.2	102.86	22.0				8.1	K50390 - 100L/2C	85	94
		32.1	1035	1.3	90.00	22.0				7.8			
35.4		938	1.5	81.57	22.0	7.6							
37.6		884	1.5	76.87	22.0	7.5							
	40.8	815	1.6	70.84	22.0	7.3	K50390 - 112M/2A K50390 - 100L/2C	85	94				
	43.2	768	1.7	66.83	22.0	7.2							
	45.2	735	1.8	63.93	22.0	7.1							
	50.7	655	2.0	56.96	22.0	6.9							
	56.0	594	2.2	51.63	22.0	6.7							
	59.1	562	2.3	48.89	22.0	6.6							
	62.0	536	2.4	46.59	22.0	6.5							
	65.8	505	2.6	43.91	22.0	6.4							
	71.4	465	2.8	40.46	21.9	6.3							
	81.9	406	3.2	35.30	21.0	6.0							
	88.8	374	3.5	32.54	20.5	5.9							
	97.4	341	3.6	29.67	20.1	5.7							
	112.7	295	3.9	25.65	19.2	5.5							
	124.3	267	4.0	23.26	18.6	5.3							
	20.2	1703	1.0	70.84	22.0	8.7	K50390 - 112M/4B	87	94				
	21.4	1607	1.1	66.83	22.0	8.6							
	22.4	1537	1.1	63.93	22.0	8.5							
	25.1	1370	1.2	56.96	22.0	8.2							
	27.7	1241	1.4	51.63	22.0	8.1							
	29.3	1175	1.4	48.89	22.0	7.9							
	30.7	1120	1.5	46.59	22.0	7.8							
	32.6	1056	1.6	43.91	22.0	7.7							
	35.3	973	1.7	40.46	22.0	7.6							
	40.5	849	2.0	35.30	22.0	7.3							
	44.0	782	2.2	32.54	22.0	7.1							
	48.2	713	2.2	29.67	22.0	7.0							
	55.8	617	2.4	25.65	22.0	6.7							
	61.5	559	2.5	23.26	22.0	6.5							
	76.5	450	3.1	18.70	21.4	6.1							
	84.4	407	3.4	16.95	20.8	5.9							
	97.6	352	3.4	14.65	19.9	5.7							
	121.4	283	3.5	11.78	18.6	5.3							
133.9	257	3.9	10.68	18.1	5.2								
	19.6	1770	1.0	48.89	22.0	8.8	K50390 - 132M/6A	107	94				
	20.6	1687	1.1	46.59	22.0	8.7							
	21.9	1590	1.1	43.91	22.0	8.6							
	23.7	1465	1.2	40.46	22.0	8.4							
	27.2	1278	1.4	35.30	22.0	8.1							
	29.5	1178	1.5	32.54	22.0	8.0							
	32.4	1074	1.6	29.67	22.0	7.8							
	37.4	929	1.7	25.65	22.0	7.6							
	41.3	842	1.7	23.26	22.0	7.3							
	51.3	677	2.2	18.70	22.0	6.9							
	56.6	614	2.4	16.95	22.0	6.7							
	65.5	531	2.4	14.65	22.0	6.5							
	81.5	427	2.5	11.78	21.2	6.1							
	89.9	387	2.7	10.68	20.6	5.9							
	107.0	325	2.9	8.98	19.5	5.6							
	118.0	295	2.9	8.13	18.9	5.4							

P₁ [kW]	n₂ [Min ⁻¹]	M₂ [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	Kg ~		
4.00	15.8 17.8	2105 1870	1.3 1.4	183.08 162.63	30.0 30.0	12.6 12.3	K60390 - 100L/2C	105	96	
	19.7 21.9 23.8 26.7 28.5 31.7 35.6 38.2 40.9 45.4 47.9 52.3	1686 1517 1396 1246 1165 1050 934 869 812 732 694 636	1.6 1.8 1.9 2.1 2.3 2.5 2.8 3.1 3.1 3.4 3.5 3.8	146.59 131.96 121.39 108.31 101.29 91.30 81.18 75.60 70.62 63.65 60.34 55.28	30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0	12.1 11.8 11.6 11.3 11.1 10.8 10.5 10.3 10.1 9.9 9.7 9.5	K60390 - 112M/2A K60390 - 100L/2C	105	96	
	9.8 10.8 11.8 13.2 14.1 15.7 17.6 18.9 20.3 22.5 23.7 25.9 28.3 31.4 34.7 40.6 45.0	3524 3173 2918 2604 2435 2195 1952 1818 1698 1530 1451 1329 1216 1096 992 847 763	1.0 1.1 1.2 1.3 1.4 1.6 1.8 1.9 1.9 2.2 2.2 2.4 2.6 2.7 2.8 3.3 3.7	146.59 131.96 121.39 108.31 101.29 91.30 81.18 75.60 70.62 63.65 60.34 55.28 50.56 45.57 41.26 35.25 31.77	30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0	13.4 13.2 13.1 12.9 12.7 12.5 12.2 12.1 11.9 11.6 11.5 11.3 11.1 10.8 10.5 10.1 9.8	K60390 - 112M/4B	107	96	
	9.5 10.5 11.8 12.7 13.6 15.1 15.9 17.4 19.0 21.1 23.3 27.2 30.2 30.6 34.2 36.5 41.2 45.7 50.7 61.3	3668 3306 2940 2738 2557 2305 2185 2002 1831 1650 1494 1276 1150 1137 1018 953 843 760 685 567	1.0 1.1 1.3 1.3 1.4 1.5 1.5 1.7 1.8 1.9 2.0 2.3 2.6 2.6 2.9 3.1 3.5 3.5 3.4 3.9	101.29 91.30 81.18 75.60 70.62 63.65 60.34 55.28 50.56 45.57 41.26 35.25 31.77 31.39 28.11 26.31 23.27 21.00 18.92 15.67	30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0 30.0	13.4 13.3 13.1 13.0 12.9 12.7 12.5 12.3 12.1 11.9 11.6 11.2 11.0 10.9 10.6 10.5 10.1 9.9 9.6 9.1	K60390 - 132M/6A	128	96	
	15.8 17.7 19.7 21.6 23.7 26.4 27.6 31.0 34.5	2108 1874 1683 1536 1402 1260 1204 1071 962	1.8 2.0 2.3 2.5 2.7 3.0 3.2 3.5 3.9	183.27 162.98 146.38 133.53 121.96 109.54 104.68 93.09 83.66	45.0 45.0 45.0 45.0 44.9 43.7 43.0 41.7 40.6	45.0 45.0 45.0 45.0 44.9 43.7 43.0 41.7 40.6	K70390 - 112M/2A K70390 - 100L/2C	151	98	



P_1 [kW]	n_2 [Min ⁻¹]	M_2 [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	 Kg	 mm	
4.00	7.8	4406	1.1	183.27	45.0	45.0	K70390 - 112M/4B	153	98	
	8.8	3918	1.3	162.98	45.0	45.0				
	9.8	3519	1.4	146.38	45.0	45.0				
	10.7	3210	1.6	133.53	45.0	45.0				
	11.7	2932	1.7	121.96	45.0	45.0				
	13.1	2633	1.9	109.54	45.0	45.0				
	13.7	2517	2.0	104.68	45.0	45.0				
	15.4	2238	2.2	93.09	45.0	45.0				
	17.1	2011	2.5	83.66	45.0	45.0				
	18.7	1834	2.7	76.27	45.0	45.0				
	20.5	1675	3.0	69.66	45.0	45.0				
	22.6	1524	3.3	63.37	45.0	45.0				
	24.5	1402	3.6	58.32	44.1	44.1				
	26.5	1298	3.9	53.98	43.2	43.2				
	27.5	1248	4.0	51.92	42.9	42.9				
		6.6	5300	1.0	146.38	45.0	45.0	K70390 - 132M/6A	173	98
		7.2	4835	1.1	133.53	45.0	45.0			
		7.9	4416	1.2	121.96	45.0	45.0			
		8.8	3966	1.3	109.54	45.0	45.0			
		9.2	3791	1.4	104.68	45.0	45.0			
		10.3	3371	1.6	93.09	45.0	45.0			
		11.5	3029	1.7	83.66	45.0	45.0			
		12.6	2762	1.9	76.27	45.0	45.0			
		13.8	2522	2.1	69.66	45.0	45.0			
		15.1	2295	2.3	63.37	45.0	45.0			
		16.5	2112	2.5	58.32	45.0	45.0			
		17.8	1955	2.7	53.98	45.0	45.0			
		18.5	1880	2.8	51.92	45.0	45.0			
		20.1	1730	3.0	47.78	45.0	45.0			
		22.0	1580	3.2	43.64	45.0	45.0			
		24.4	1422	3.5	39.27	44.7	44.7			
		26.5	1311	3.8	36.20	43.7	43.7			
		29.8	1165	4.2	32.18	42.5	42.5			
	5.7	6104	1.4	168.56	65.0	65.0	K90390 - 132M/6A	238	100	
	6.3	5508	1.5	152.10	65.0	65.0				
	7.0	4956	1.7	136.87	65.0	65.0				
	7.6	4571	1.8	126.23	65.0	65.0				
	9.1	3808	2.2	105.17	65.0	65.0				
	10.1	3436	2.4	94.90	65.0	65.0				
	10.8	3218	2.6	88.87	65.0	65.0				
	11.2	3097	2.7	85.54	65.0	65.0				
	12.2	2852	2.9	78.76	65.0	65.0				
	13.3	2613	3.2	72.16	65.0	65.0				
	14.8	2348	3.6	64.83	65.0	65.0				
	15.4	2253	3.7	62.21	65.0	65.0				
	16.4	2118	4.0	58.50	65.0	65.0				
	17.3	2008	4.2	55.45	65.0	65.0				
4.80	64.5	639	0.9	22.50	10.1	2.9				K35390 - 112M/4
	85.0	485	1.2	17.08	9.7	2.8				
	95.2	433	1.4	15.25	9.5	2.7				
	109.9	375	1.6	13.21	9.2	2.6				
	117.0	353	1.6	12.41	9.1	2.6				
	131.0	315	1.7	11.08	8.9	2.5				
	140.8	293	1.8	10.31	8.7	2.5				
	157.7	262	1.8	9.20	8.5	2.4				
	197.3	209	1.7	7.36	8.0	2.3				
	210.1	196	1.7	6.91	7.9	2.3				
	252.9	163	1.8	5.74	7.5	2.2				
		46.2	893	1.0	31.29	18.0	5.3	K40390 - 112M/4	63	92
		50.1	823	1.0	28.83	18.0	5.2			
		55.3	745	1.1	26.11	17.8	5.1			
		64.5	639	1.3	22.40	17.2	4.9			
		80.3	513	1.7	17.98	16.3	4.7			
		88.7	465	1.8	16.29	15.9	4.6			
		102.4	403	2.0	14.11	15.4	4.4			
		127.5	323	2.3	11.33	14.5	4.1			
		140.8	293	2.2	10.26	14.1	4.0			
		167.4	246	2.4	8.63	13.4	3.8			
	184.8	223	2.2	7.82	13.0	3.7				



P₁ [kW]	n₂ [Min ⁻¹]	M₂ [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	Kg ~	
4.80	25.4	1626	1.0	56.96	22.0	8.0	K50390 - 112M/4	89	94
	28.0	1474	1.2	51.63	22.0	7.8			
	29.6	1396	1.2	48.89	22.0	7.7			
	31.0	1330	1.3	46.59	22.0	7.6			
	32.9	1254	1.4	43.91	22.0	7.5			
	35.7	1155	1.5	40.46	22.0	7.4			
	40.9	1008	1.7	35.30	22.0	7.1			
	44.4	929	1.8	32.54	22.0	7.0			
	48.7	847	1.9	29.67	22.0	6.9			
	56.3	732	2.0	25.65	22.0	6.6			
	62.1	664	2.1	23.26	22.0	6.4			
	77.3	534	2.6	18.70	21.1	6.0			
	85.3	484	2.9	16.95	20.5	5.9			
	98.6	418	2.9	14.65	19.7	5.6			
	122.7	336	3.0	11.78	18.5	5.3			
	135.3	305	3.3	10.68	17.9	5.1			
	161.0	256	3.5	8.98	16.9	4.8			
	177.6	232	3.4	8.13	16.4	4.7			
	11.0	3768	0.9	131.96	30.0	12.4	K60390 - 112M/4	108	96
	11.9	3466	1.0	121.39	30.0	12.3			
	13.3	3092	1.1	108.31	30.0	12.2			
	14.3	2892	1.2	101.29	30.0	12.1			
	15.8	2607	1.3	91.30	30.0	11.9			
	17.8	2316	1.5	81.18	30.0	11.7			
	19.1	2159	1.6	75.60	30.0	11.6			
	20.5	2016	1.6	70.62	30.0	11.5			
	22.7	1817	1.8	63.65	30.0	11.2			
	23.9	1723	1.9	60.34	30.0	11.1			
	26.1	1578	2.0	55.28	30.0	10.9			
	28.6	1444	2.2	50.56	30.0	10.7			
	31.7	1301	2.3	45.57	30.0	10.5			
	35.0	1178	2.4	41.26	30.0	10.2			
	41.0	1006	2.8	35.25	30.0	9.9			
	45.5	907	3.1	31.77	30.0	9.6			
	54.9	751	3.7	26.31	30.0	9.2			
7.9	5233	1.0	183.27	45.0	45.0	K70390 - 112M/4	153	98	
8.9	4653	1.1	162.98	45.0	45.0				
9.9	4179	1.2	146.38	45.0	45.0				
10.8	3812	1.3	133.53	45.0	45.0				
11.8	3482	1.4	121.96	45.0	45.0				
13.2	3127	1.6	109.54	45.0	45.0				
13.8	2989	1.7	104.68	45.0	45.0				
15.5	2658	1.9	93.09	45.0	45.0				
17.3	2388	2.1	83.66	45.0	45.0				
18.9	2178	2.3	76.27	45.0	45.0				
20.7	1989	2.5	69.66	44.8	44.8				
22.8	1809	2.8	63.37	44.0	44.0				
24.8	1665	3.0	58.32	43.0	43.0				
26.8	1541	3.2	53.98	42.3	42.3				
27.8	1482	3.4	51.92	42.0	42.0				
30.2	1364	3.7	47.78	41.0	41.0				
33.1	1246	3.9	43.64	40.1	40.1				
5.50	111.2	411	1.1	26.30	9.0	2.6	K35390 - 132S/2A	54	90
	129.5	353	1.3	22.50	8.7	2.5			
	170.6	268	1.7	17.08	8.2	2.3			
	191.1	239	1.9	15.25	8.0	2.3			
	220.5	207	2.2	13.21	7.7	2.2			
	263.0	174	2.4	11.08	7.4	2.1			
	396.0	115	2.3	7.36	6.6	1.9			
	421.6	108	2.4	6.91	6.5	1.9			
	85.4	535	1.2	33.95	15.9	4.5	K40390 - 132S/2A	59	92
	92.7	493	1.3	31.29	15.6	4.5			
	100.6	454	1.4	28.83	15.3	4.4			

P_1 [kW]	n_2 [Min ⁻¹]	M_2 [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	Kg	mm			
5.50	111.1	411	1.6	26.11	14.9	4.3	K40390 - 132S/2A K40390 - 112M/2C	72	92			
	129.5	353	1.8	22.40	14.3	4.1						
	161.2	283	2.3	17.98	13.5	3.9						
	178.0	257	2.5	16.29	13.1	3.8						
	205.5	222	2.8	14.11	12.6	3.6						
	256.0	179	3.2	11.33	11.9	3.4						
	282.6	162	3.1	10.26	11.5	3.3						
	335.9	136	3.4	8.63	10.9	3.1						
	370.9	123	3.1	7.82	10.6	3.0						
	53.4	895	1.0	17.98	17.5	5.0				K40390 - 132M/6B	86	92
	58.9	811	1.1	16.29	17.2	4.9						
	68.0	702	1.2	14.11	16.7	4.8						
	84.7	564	1.4	11.33	15.9	4.6						
	93.6	511	1.3	10.26	15.6	4.5						
	111.2	430	1.5	8.63	14.8	4.2						
	122.8	389	1.3	7.82	14.5	4.1						
	55.3	854	1.0	26.11	17.4	5.0	K40390 - 132S/4C	77	92			
	64.5	733	1.2	22.40	16.8	4.8						
	80.3	588	1.4	17.98	16.0	4.6						
	88.7	533	1.6	16.29	15.7	4.5						
	102.4	462	1.8	14.11	15.1	4.3						
	127.5	371	2.0	11.33	14.3	4.1						
	140.8	336	1.9	10.26	14.0	4.0						
	167.4	282	2.1	8.63	13.2	3.8						
	184.8	256	2.0	7.82	12.9	3.7						
	40.9	1116	1.2	70.84	22.0	7.1				K50390 - 112M/2C	98	94
	43.4	1053	1.2	66.83	22.0	7.0						
	45.4	1007	1.3	63.93	22.0	6.9						
	50.9	898	1.4	56.96	22.0	6.7						
	56.2	814	1.6	51.63	22.0	6.5	K50390 - 132S/2A K50390 - 112M/2C	98	94			
	59.3	770	1.7	48.89	22.0	6.4						
	62.2	734	1.8	46.59	22.0	6.3						
	66.1	692	1.9	43.91	21.8	6.2						
	71.7	638	2.0	40.46	21.4	6.1						
	82.1	556	2.3	35.30	20.6	5.9						
	89.1	513	2.5	32.54	20.1	5.7						
	97.7	468	2.6	29.67	19.7	5.6						
	113.1	404	2.8	25.65	18.9	5.4						
	124.7	366	2.9	23.26	18.3	5.2						
	155.1	295	3.6	18.70	17.1	4.9						
	171.1	267	4.0	16.95	16.6	4.8						
	197.9	231	4.0	14.65	15.9	4.6						
246.2	186	4.1	11.78	14.9	4.3							
27.2	1758	1.0	35.30	22.0	7.7	K50390 - 132M/6B				112	94	
29.5	1620	1.1	32.54	22.0	7.6							
32.4	1477	1.1	29.67	22.0	7.5							
37.4	1277	1.2	25.65	22.0	7.2							
41.3	1158	1.3	23.26	22.0	7.1							
51.3	931	1.6	18.70	22.0	6.7							
56.6	844	1.7	16.95	22.0	6.5							
65.5	729	1.7	14.65	22.0	6.3							
81.5	587	1.8	11.78	20.7	5.9							
89.9	532	2.0	10.68	20.2	5.8							
107.0	447	2.1	8.98	19.1	5.5							
118.0	405	2.1	8.13	18.6	5.3							
28.0	1689	1.0	51.63	22.0	7.7		K50390 - 132S/4C	103	94			
29.6	1599	1.1	48.89	22.0	7.6							
31.0	1524	1.1	46.59	22.0	7.5							
32.9	1436	1.2	43.91	22.0	7.4							
35.7	1324	1.3	40.46	22.0	7.2							
40.9	1155	1.5	35.30	22.0	7.0							
44.4	1064	1.6	32.54	22.0	6.9							
48.7	971	1.6	29.67	22.0	6.7							
56.3	839	1.8	25.65	22.0	6.5							
62.1	761	1.8	23.26	22.0	6.3							
77.3	612	2.3	18.70	20.9	6.0							
85.3	554	2.5	16.95	20.3	5.8							
98.6	479	2.5	14.65	19.5	5.6							
122.7	385	2.6	11.78	18.3	5.2							
135.3	349	2.9	10.68	17.8	5.1							
161.0	294	3.1	8.98	16.8	4.8							
177.6	266	3.0	8.13	16.3	4.7							

P₁ [kW]	n₂ [Min ⁻¹]	M₂ [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	Kg 	 mm
5.50	19.8	2310	1.2	146.59	30.0	11.2	K60390 - 112M/2C	119	96
	22.0	2079	1.3	131.96	30.0	11.0			
	23.9	1913	1.4	121.39	30.0	10.9			
	26.8	1707	1.6	108.31	30.0	10.7	K60390 - 132S/2A K60390 - 112M/2C	119	96
	28.6	1596	1.7	101.29	30.0	10.5			
	31.8	1439	1.8	91.30	30.0	10.3			
	35.7	1279	2.1	81.18	30.0	10.1			
	38.4	1191	2.2	75.60	30.0	9.9			
	41.1	1113	2.3	70.62	30.0	9.7			
	45.6	1003	2.5	63.65	30.0	9.5			
	48.1	951	2.6	60.34	30.0	9.4			
	52.5	871	2.8	55.28	30.0	9.2			
	57.4	797	3.1	50.56	30.0	9.0			
	63.6	718	3.2	45.57	30.0	8.7			
	70.3	650	3.3	41.26	29.8	8.5			
	82.3	555	3.8	35.25	28.6	8.2			
	12.7	3764	1.0	75.60	30.0	11.6	K60390 - 132M/6B	133	96
	13.6	3516	1.0	70.62	30.0	11.5			
	15.1	3169	1.1	63.65	30.0	11.5			
	15.9	3004	1.1	60.34	30.0	11.4			
	17.4	2752	1.2	55.28	30.0	11.3			
	19.0	2517	1.3	50.56	30.0	11.2			
	21.1	2269	1.4	45.57	30.0	11.0			
	23.3	2054	1.4	41.26	30.0	10.9			
	27.3	1755	1.7	35.25	30.0	10.6			
	30.2	1582	1.9	31.77	30.0	10.4			
	30.6	1563	1.9	31.39	30.0	10.3			
	34.2	1399	2.1	28.11	30.0	10.1			
	36.5	1310	2.2	26.31	30.0	10.0			
	41.2	1159	2.5	23.27	30.0	9.7			
	45.7	1046	2.5	21.00	30.0	9.5			
	50.7	942	2.5	18.92	30.0	9.3			
	61.3	780	2.8	15.67	30.0	8.8			
	67.8	705	3.1	14.15	30.0	8.6			
	75.3	635	3.3	12.75	29.3	8.4			
	90.9	526	4.0	10.56	27.9	8.0			
	99.7	479	3.9	9.63	27.3	7.8			
	120.5	397	4.0	7.97	25.9	7.4			
	13.3	3543	1.0	108.31	30.0	11.6	K60390 - 132S/4C	124	96
	14.3	3314	1.1	101.29	30.0	11.5			
	15.8	2987	1.2	91.30	30.0	11.4			
	17.8	2656	1.3	81.18	30.0	11.3			
	19.1	2473	1.4	75.60	30.0	11.2			
	20.5	2310	1.4	70.62	30.0	11.1			
	22.7	2082	1.6	63.65	30.0	10.9			
	23.9	1974	1.6	60.34	30.0	10.8			
	26.1	1808	1.8	55.28	30.0	10.6			
	28.6	1654	1.9	50.56	30.0	10.4			
31.7	1491	2.0	45.57	30.0	10.2				
35.0	1350	2.1	41.26	30.0	10.0				
41.0	1153	2.4	35.25	30.0	9.7				
45.5	1039	2.7	31.77	30.0	9.5				
46.0	1027	2.7	31.39	30.0	9.4				
51.4	919	3.0	28.11	30.0	9.2				
54.9	861	3.3	26.31	30.0	9.0				
62.1	761	3.7	23.27	30.0	8.7				
68.8	687	3.6	21.00	29.8	8.5				
76.4	619	3.6	18.92	29.0	8.3				
15.8	2888	1.3	183.27	45.0	45.0	K70390 - 112M/2C	164	98	
17.8	2568	1.5	162.98	45.0	45.0				
19.8	2307	1.6	146.38	44.6	44.6	K70390 - 132S/2A K70390 - 112M/2C	164	98	
21.7	2104	1.8	133.53	43.7	43.7				
23.8	1922	2.0	121.96	42.9	42.9				
26.5	1726	2.2	109.54	41.9	41.9				
27.7	1650	2.3	104.68	41.3	41.3				
31.2	1467	2.6	93.09	40.2	40.2				
34.7	1318	2.9	83.66	39.3	39.3				
38.0	1202	3.2	76.27	38.3	38.3				
41.6	1098	3.5	69.66	37.4	37.4				
45.8	999	3.8	63.37	36.6	36.6				
49.7	919	4.1	58.32	35.7	35.7				



P_1 [kW]	n_2 [Min ⁻¹]	M_2 [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	Kg	mm			
5.50	9.2	5212	1.0	104.68	45.0	45.0	K70390 - 132M/6B	178	98			
	10.3	4635	1.1	93.09	45.0	45.0						
	11.5	4165	1.3	83.66	45.0	45.0						
	12.6	3797	1.4	76.27	45.0	45.0						
	13.8	3468	1.5	69.66	45.0	45.0						
	15.1	3155	1.7	63.37	45.0	45.0						
	16.5	2904	1.8	58.32	45.0	45.0						
	17.8	2687	2.0	53.98	45.0	45.0						
	18.5	2585	2.0	51.92	45.0	45.0						
	20.1	2379	2.2	47.78	44.2	44.2						
	22.0	2173	2.3	43.64	43.4	43.4						
	24.4	1955	2.6	39.27	42.6	42.6						
	26.5	1802	2.8	36.20	41.7	41.7						
	29.8	1602	3.1	32.18	40.8	40.8						
	32.4	1477	3.3	29.66	39.9	39.9						
	35.4	1349	3.6	27.09	39.0	39.0						
	38.5	1240	3.9	24.90	38.4	38.4						
	42.8	1117	4.1	22.43	37.2	37.2						
	47.0	1016	4.1	20.40	36.5	36.5						
	52.2	915	4.1	18.38	35.3	35.3						
	57.2	836	4.0	16.79	34.5	34.5						
	9.9	4789	1.0	146.38	45.0	45.0				K70390 - 132S/4C	169	98
	10.8	4368	1.1	133.53	45.0	45.0						
	11.8	3990	1.3	121.96	45.0	45.0						
	13.2	3583	1.4	109.54	45.0	45.0						
	13.8	3425	1.5	104.68	45.0	45.0						
	15.5	3045	1.6	93.09	45.0	45.0						
	17.3	2737	1.8	83.66	45.0	45.0						
	18.9	2495	2.0	76.27	44.5	44.5						
	20.7	2279	2.2	69.66	43.7	43.7						
	22.8	2073	2.4	63.37	43.0	43.0						
	24.8	1908	2.6	58.32	42.1	42.1						
	26.8	1766	2.8	53.98	41.4	41.4						
	27.8	1699	2.9	51.92	41.2	41.2						
	30.2	1563	3.2	47.78	40.3	40.3						
	33.1	1428	3.4	43.64	39.4	39.4						
36.8	1285	3.7	39.27	38.5	38.5							
39.9	1184	4.1	36.20	37.6	37.6							
5.7	8392	1.0	168.56	65.0	65.0	K90390 - 132M/6B	262	100				
6.3	7573	1.1	152.10	65.0	65.0							
7.0	6815	1.2	136.87	65.0	65.0							
7.6	6285	1.3	126.23	65.0	65.0							
9.1	5236	1.6	105.17	65.0	65.0							
10.1	4725	1.8	94.90	65.0	65.0							
10.8	4425	1.9	88.87	65.0	65.0							
11.2	4259	2.0	85.54	65.0	65.0							
12.2	3921	2.1	78.76	65.0	65.0							
13.3	3593	2.3	72.16	65.0	65.0							
14.8	3228	2.6	64.83	65.0	65.0							
15.4	3097	2.7	62.21	65.0	65.0							
16.4	2913	2.9	58.50	65.0	65.0							
17.3	2761	3.0	55.45	65.0	65.0							
18.6	2571	3.3	51.63	65.0	65.0							
19.8	2417	3.5	48.55	65.0	65.0							
22.1	2138	3.9	42.94	65.0	65.0							
8.6	5514	1.5	168.56	65.0	65.0	K90390 - 132S/4C	243	100				
9.5	4976	1.6	152.10	65.0	65.0							
10.6	4478	1.8	136.87	65.0	65.0							
11.4	4130	1.9	126.23	65.0	65.0							
13.7	3441	2.3	105.17	65.0	65.0							
15.2	3105	2.6	94.90	65.0	65.0							
16.3	2907	2.8	88.87	65.0	65.0							
16.9	2798	2.9	85.54	65.0	65.0							
18.3	2577	3.1	78.76	65.0	65.0							
20.0	2361	3.4	72.16	65.0	65.0							
22.3	2121	3.8	64.83	65.0	65.0							
23.2	2035	3.9	62.21	65.0	65.0							
17.2	2656	2.3	168.56	65.0	65.0	K90390 - 132S/2A	238	100				
19.1	2397	2.5	152.10	65.0	65.0							
21.2	2157	2.8	136.87	65.0	65.0							
23.0	1989	3.1	126.23	65.0	65.0							
27.6	1657	3.7	105.17	63.8	63.8							
30.6	1495	4.1	94.90	61.8	61.8							


P₁ [kW]	n₂ [Min ⁻¹]	M₂ [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	Kg 	 mm			
7.50	80.6	800	1.1	17.98	15.1	4.3	K40390 - 132M/4B	88	92			
	89.0	724	1.2	16.29	14.8	4.2						
	102.8	627	1.3	14.11	14.4	4.1						
	128.0	504	1.5	11.33	13.7	3.9						
	141.3	456	1.4	10.26	13.4	3.8						
	168.0	384	1.6	8.63	12.8	3.7						
	185.5	348	1.4	7.82	12.5	3.6						
	111.1	561	1.2	26.11	14.3	4.1				K40390 - 132S/2C	79	92
	161.2	386	1.7	17.98	13.1	3.7						
	178.0	350	1.8	16.29	12.7	3.6						
282.6	220	2.2	10.26	11.3	3.2							
41.1	1570	1.1	35.30	22.0	6.7	K50390 - 132M/4B	114	94				
44.6	1446	1.2	32.54	22.0	6.5							
48.9	1319	1.2	29.67	22.0	6.4							
56.5	1140	1.3	25.65	21.8	6.2							
62.4	1034	1.4	23.26	21.3	6.1							
77.5	831	1.7	18.70	20.2	5.8							
85.6	753	1.9	16.95	19.7	5.6							
99.0	651	1.8	14.65	19.0	5.4							
123.1	524	1.9	11.78	17.9	5.1							
135.8	475	2.1	10.68	17.4	5.0							
161.5	399	2.3	8.98	16.5	4.7							
178.3	362	2.2	8.13	16.0	4.6							
56.2	1109	1.2	51.63	22.0	6.3				K50390 - 132S/2C	105	94	
59.3	1051	1.2	48.89	21.7	6.2							
62.2	1001	1.3	46.59	21.4	6.1							
66.1	943	1.4	43.91	21.1	6.0							
71.7	869	1.5	40.46	20.7	5.9							
82.1	759	1.7	35.30	20.0	5.7							
89.1	699	1.8	32.54	19.5	5.6							
97.7	638	1.9	29.67	19.1	5.5							
113.1	551	2.1	25.65	18.4	5.3							
124.7	500	2.1	23.26	17.9	5.1							
155.1	402	2.6	18.70	16.8	4.8							
171.1	364	2.9	16.95	16.3	4.7							
197.9	315	2.9	14.65	15.7	4.5							
246.2	253	3.0	11.78	14.7	4.2							
271.6	229	3.3	10.68	14.3	4.1							
51.3	1270	1.2	18.70	22.0	6.4	K50390 - 160M/6B	159	94				
56.6	1151	1.3	16.95	21.9	6.2							
65.5	995	1.3	14.65	21.2	6.0							
81.5	800	1.3	11.78	20.1	5.7							
89.9	725	1.4	10.68	19.6	5.6							
107.0	609	1.6	8.98	18.6	5.3							
118.0	552	1.5	8.13	18.1	5.2							
17.9	3609	1.0	81.18	30.0	10.0	K60390 - 132M/4B	135	96				
19.2	3361	1.0	75.60	30.0	10.0							
20.5	3139	1.1	70.62	30.0	9.9							
22.8	2830	1.2	63.65	30.0	9.9							
24.0	2683	1.2	60.34	30.0	9.8							
26.2	2458	1.3	55.28	30.0	9.7							
28.7	2248	1.4	50.56	30.0	9.6							
31.8	2026	1.5	45.57	30.0	9.5							
35.1	1834	1.5	41.26	30.0	9.4							
41.1	1567	1.8	35.25	30.0	9.1							
45.6	1412	2.0	31.77	30.0	8.9							
46.2	1396	2.0	31.39	30.0	8.9							
51.6	1250	2.2	28.11	30.0	8.7							
55.1	1170	2.4	26.31	30.0	8.6							
62.3	1035	2.7	23.27	29.3	8.4							
69.0	934	2.7	21.00	28.6	8.2							
76.6	841	2.6	18.92	28.0	8.0							
92.5	697	3.0	15.67	26.7	7.6							
102.5	629	3.3	14.15	26.0	7.4							
113.7	567	3.5	12.75	25.3	7.2							



P_1 [kW]	n_2 [Min ⁻¹]	M_2 [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	 Kg	 mm			
7.50	26.8	2327	1.1	108.31	30.0	9.8	K60390 - 132S/2C	126	96			
	28.6	2176	1.2	101.29	30.0	9.8						
	31.8	1962	1.4	91.30	30.0	9.6						
	35.7	1744	1.5	81.18	30.0	9.4						
	38.4	1625	1.6	75.60	30.0	9.3						
	41.1	1517	1.7	70.62	30.0	9.2						
	45.6	1368	1.8	63.65	30.0	9.0						
	48.1	1297	1.9	60.34	30.0	8.9						
	52.5	1188	2.0	55.28	30.0	8.8						
	57.4	1086	2.2	50.56	30.0	8.6						
	63.6	979	2.3	45.57	29.4	8.4						
	70.3	887	2.4	41.26	28.7	8.2						
	82.3	757	2.8	35.25	27.6	7.9						
	91.3	683	3.1	31.77	26.9	7.7						
	92.4	675	3.2	31.39	26.8	7.7						
	103.2	604	3.5	28.11	26.0	7.4	K60390 - 160M/6B	169	96			
	110.2	565	3.8	26.31	25.6	7.3						
	153.3	407	4.1	18.92	23.4	6.7						
	19.0	3433	1.0	50.56	30.0	9.9						
	21.1	3094	1.0	45.57	30.0	9.9						
	23.3	2801	1.0	41.26	30.0	9.8						
	27.2	2393	1.2	35.25	30.0	9.7						
	30.2	2157	1.4	31.77	30.0	9.6						
	30.6	2131	1.4	31.39	30.0	9.6						
	34.2	1908	1.5	28.11	30.0	9.4						
	36.5	1786	1.6	26.31	30.0	9.3						
	41.2	1580	1.9	23.27	30.0	9.1						
	45.7	1426	1.8	21.00	30.0	9.0						
	50.7	1285	1.8	18.92	30.0	8.8						
	61.3	1064	2.1	15.67	29.6	8.5						
	67.8	961	2.3	14.15	28.9	8.3	K70390 - 132M/4B	180	98			
	75.3	866	2.4	12.75	28.2	8.1						
	90.9	717	2.9	10.56	27.0	7.7						
	99.7	654	2.9	9.63	26.5	7.6						
	120.5	541	2.9	7.97	25.2	7.2						
	13.2	4870	1.0	109.54	42.5	42.5						
	13.9	4654	1.1	104.68	42.4	42.4						
	15.6	4139	1.2	93.09	42.0	42.0						
	17.3	3719	1.3	83.66	41.6	41.6						
	19.0	3391	1.5	76.27	41.1	41.1						
	20.8	3097	1.6	69.66	40.6	40.6						
	22.9	2817	1.8	63.37	40.1	40.1						
	24.9	2593	1.9	58.32	39.5	39.5						
	26.9	2400	2.1	53.98	39.0	39.0						
	27.9	2308	2.2	51.92	38.8	38.8						
30.3	2124	2.4	47.78	38.1	38.1							
	33.2	1940	2.5	43.64	37.4	37.4	K70390 - 132S/2C	171	98			
	36.9	1746	2.7	39.27	36.7	36.7						
	40.1	1609	3.0	36.20	36.0	36.0						
	45.1	1430	3.3	32.18	35.2	35.2						
	48.9	1318	3.6	29.66	34.4	34.4						
	53.5	1204	3.8	27.09	33.6	33.6						
	58.2	1107	4.2	24.90	33.1	33.1						
	19.8	3145	1.2	146.38	41.4	41.4						
	21.7	2869	1.3	133.53	40.8	40.8						
	23.8	2621	1.5	121.96	40.2	40.2						
	26.5	2354	1.6	109.54	39.5	39.5						
	27.7	2249	1.7	104.68	39.1	39.1						
	31.2	2000	1.9	93.09	38.2	38.2						
	34.7	1798	2.1	83.66	37.4	37.4						
	38.0	1639	2.3	76.27	36.6	36.6						
41.6	1497	2.5	69.66	35.9	35.9							
	45.8	1362	2.8	63.37	35.2	35.2	K70390 - 132S/2C	171	98			
	49.7	1253	3.0	58.32	34.4	34.4						
	53.7	1160	3.3	53.98	33.8	33.8						
	55.9	1116	3.4	51.92	33.5	33.5						
	60.7	1027	3.7	47.78	32.7	32.7						
	66.4	938	3.9	43.64	32.0	32.0						

P₁ [kW]	n₂ [Min ⁻¹]	M₂ [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	kg ~	mm ~				
7.50	12.6	5178	1.0	76.27	42.4	42.4	K70390 - 160M/6B	214	98				
	13.8	4730	1.1	69.66	42.3	42.3							
	15.1	4303	1.2	63.37	42.1	42.1							
	16.5	3960	1.3	58.32	41.8	41.8							
	17.8	3665	1.4	53.98	41.5	41.5							
	18.5	3525	1.5	51.92	41.3	41.3							
	20.1	3244	1.6	47.78	40.9	40.9							
	22.0	2963	1.7	43.64	40.4	40.4							
	24.4	2666	1.9	39.27	39.8	39.8							
	26.5	2458	2.1	36.20	39.2	39.2							
	29.8	2185	2.3	32.18	38.5	38.5							
	32.4	2013	2.5	29.66	37.8	37.8							
	35.4	1839	2.6	27.09	37.1	37.1							
	38.5	1691	2.9	24.90	36.6	36.6							
	42.8	1523	3.0	22.43	35.7	35.7							
	47.0	1385	3.0	20.40	35.0	35.0							
	52.2	1248	3.0	18.38	34.1	34.1							
	57.2	1140	2.9	16.79	33.3	33.3							
	67.5	966	3.4	14.23	32.0	32.0							
	82.4	791	4.1	11.65	30.4	30.4							
		8.6	7494	1.1	168.56	65.0				65.0	K90390 - 132M/4B	264	100
		9.5	6762	1.2	152.10	65.0				65.0			
		10.6	6085	1.3	136.87	65.0				65.0			
		11.5	5612	1.4	126.23	65.0				65.0			
		13.8	4676	1.7	105.17	65.0				65.0			
		15.3	4219	1.9	94.90	65.0				65.0			
		16.3	3951	2.0	88.87	65.0				65.0			
		17.0	3803	2.1	85.54	65.0				65.0			
		18.4	3501	2.3	78.76	65.0				65.0			
		20.1	3208	2.5	72.16	65.0				65.0			
		22.4	2882	2.8	64.83	65.0				65.0			
		23.3	2766	2.9	62.21	65.0				65.0			
		24.8	2601	3.1	58.50	64.8				64.8			
		26.1	2465	3.2	55.45	63.9				63.9			
		28.1	2295	3.5	51.63	62.5				62.5			
		29.9	2158	3.7	48.55	61.3				61.3			
		17.2	3622	1.7	168.56	65.0				65.0	K90390 - 132S/2C	245	100
	19.1	3268	1.9	152.10	65.0	65.0							
	21.2	2941	2.1	136.87	65.0	65.0							
	23.0	2712	2.3	126.23	65.0	65.0							
	27.6	2260	2.7	105.17	62.9	62.9							
	30.6	2039	3.0	94.90	61.0	61.0							
	32.6	1910	3.2	88.87	59.9	59.9							
	33.9	1838	3.3	85.54	59.2	59.2							
	36.8	1692	3.6	78.76	57.7	57.7							
	40.2	1551	3.9	72.16	56.3	56.3							
	7.6	8570	1.0	126.23	65.0	65.0	K90390 - 160M/6B	288	100				
	9.1	7140	1.2	105.17	65.0	65.0							
	10.1	6443	1.3	94.90	65.0	65.0							
	10.8	6034	1.4	88.87	65.0	65.0							
	11.2	5808	1.4	85.54	65.0	65.0							
	12.2	5347	1.6	78.76	65.0	65.0							
	13.3	4899	1.7	72.16	65.0	65.0							
	14.8	4402	1.9	64.83	65.0	65.0							
	15.4	4224	2.0	62.21	65.0	65.0							
	16.4	3972	2.1	58.50	65.0	65.0							
	17.3	3765	2.2	55.45	65.0	65.0							
	18.6	3505	2.4	51.63	65.0	65.0							
	19.8	3296	2.5	48.55	65.0	65.0							
	22.4	2915	2.9	42.94	65.0	65.0							
	24.2	2698	3.1	39.74	65.0	65.0							
	26.8	2434	3.5	35.85	63.8	63.8							
	28.1	2321	3.6	34.18	63.1	63.1							
	31.1	2094	4.0	30.84	61.2	61.2							
	37.5	1738	4.1	25.60	57.8	57.8							



P₁ [kW]	n₂ [Min ⁻¹]	M₂ [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	Kg ~	mm
7.50	6.3	10370	1.3	152.74	80.0	65.0	K100390 - 160M/6B	356	101
	7.0	9298	1.5	136.95	80.0	65.0			
	7.7	8457	1.6	124.56	80.0	65.0			
	8.5	7649	1.8	112.66	80.0	65.0			
	9.4	6957	2.0	102.47	80.0	65.0			
	10.1	6440	2.1	94.85	80.0	65.0			
	11.1	5857	2.3	86.27	80.0	65.0			
	12.7	5130	2.7	75.56	80.0	65.0			
	14.0	4666	2.9	68.72	80.0	65.0			
	16.5	3939	3.5	58.01	80.0	65.0			
	18.2	3582	3.8	52.76	80.0	65.0			
	19.1	3416	4.0	50.31	80.0	65.0			
	21.6	3012	4.2	44.36	80.0	65.0			
9.20	89.0	888	1.0	16.29	14.1	4.0	K40390 - 132M/4	88	92
	102.8	769	1.1	14.11	13.8	3.9			
	128.0	618	1.2	11.33	13.3	3.8			
	141.3	560	1.2	10.26	13.0	3.7			
	168.0	471	1.3	8.63	12.4	3.6			
	185.5	426	1.2	7.82	12.2	3.5			
	66.1	1157	1.1	43.91	20.4	5.8	K50390 - 132M/2	114	94
	71.7	1067	1.2	40.46	20.1	5.7			
	82.1	931	1.4	35.30	19.4	5.6			
	89.1	858	1.5	32.54	19.1	5.4			
	97.7	782	1.6	29.67	18.7	5.3			
	124.7	613	1.7	23.26	17.5	5.0			
	155.1	493	2.2	18.70	16.5	4.7			
	171.1	447	2.4	16.95	16.1	4.6			
	44.6	1774	1.0	32.54	21.9	6.3	K50390 - 132M/4	114	94
	48.9	1618	1.0	29.67	21.6	6.2			
	56.5	1399	1.1	25.65	21.0	6.0			
	62.4	1268	1.1	23.26	20.6	5.9			
	77.5	1020	1.4	18.70	19.6	5.6			
	85.6	924	1.5	16.95	19.2	5.5			
	99.0	799	1.5	14.65	18.5	5.3			
	123.1	642	1.6	11.78	17.5	5.0			
	135.8	582	1.7	10.68	17.1	4.9			
	161.5	489	1.8	8.98	16.2	4.6			
	178.3	444	1.8	8.13	15.8	4.5			
	31.8	2406	1.1	91.30	30.0	9.0			
	35.7	2140	1.2	81.18	30.0	8.9			
	38.4	1993	1.3	75.60	30.0	8.8			
	41.1	1861	1.3	70.62	30.0	8.7			
	45.6	1678	1.5	63.65	30.0	8.6			
	48.1	1590	1.5	60.34	29.8	8.5			
	52.5	1457	1.7	55.28	29.4	8.4			
	57.4	1333	1.8	50.56	28.9	8.3			
	63.6	1201	1.9	45.57	28.3	8.1			
	70.3	1088	2.0	41.26	27.7	7.9			
	82.3	929	2.3	35.25	26.8	7.7			
	91.4	827	2.6	31.77	26.2	7.5			
	92.4	827	2.6	31.39	26.1	7.5			
	103.2	741	2.9	28.11	25.4	7.3			
	110.3	693	3.1	26.29	25.0	7.2			
	124.6	613	3.5	23.27	24.2	6.9			
	138.1	554	3.4	21.00	23.6	6.7			
	153.3	499	3.4	18.92	23.0	6.6			
185.1	413	3.9	15.67	21.8	6.2				

P₁ [kW]	n₂ [Min ⁻¹]	M₂ [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	Kg 	 mm	
9.20	22.8	3471	1.0	63.65	30.0	9.0	K60390 - 132M/4	135	96	
	24.0	3291	1.0	60.34	30.0	9.0				
	26.2	3015	1.1	55.28	30.0	9.0				
	28.7	2757	1.2	50.56	30.0	9.0				
	31.8	2485	1.2	45.57	30.0	8.9				
	35.1	2250	1.2	41.26	30.0	8.8				
	41.1	1922	1.5	35.25	30.0	8.6				
	45.6	1733	1.6	31.77	29.8	8.5				
	46.2	1712	1.6	31.39	29.7	8.5				
	51.6	1533	1.8	28.11	29.2	8.3				
	55.1	1435	2.0	26.31	28.9	8.3				
	62.3	1269	2.2	23.27	28.2	8.1				
	69.0	1145	2.2	21.00	27.7	7.9				
	76.6	1032	2.1	18.92	27.1	7.7				
	92.5	855	2.5	15.67	26.0	7.4				
	102.5	772	2.7	14.15	25.3	7.2				
	113.7	695	2.9	12.75	24.7	7.1				
	137.3	576	3.5	10.56	23.5	6.7				
	150.6	525	3.4	9.63	23.1	6.6				
	182.0	434	3.5	7.97	22.0	6.3				
		21.7	3520	1.1	133.53	38.4	38.4	K70390 - 132M/2	180	98
		23.8	3215	1.2	121.96	38.0	38.0			
		26.5	2887	1.3	109.54	37.5	37.5			
		27.7	2759	1.4	104.68	37.2	37.2			
		31.2	2454	1.5	93.09	36.5	36.5			
		34.7	2205	1.7	83.66	35.9	35.9			
		38.0	2010	1.9	76.27	35.2	35.2			
		41.6	1836	2.1	69.66	34.6	34.6			
		45.8	1670	2.3	63.37	34.0	34.0			
		49.7	1537	2.5	58.32	33.3	33.3			
		53.7	1423	2.7	53.98	32.8	32.8			
		55.9	1369	2.8	51.92	32.6	32.6			
		60.7	1259	3.0	47.78	31.9	31.9			
		66.4	1150	3.2	43.64	31.2	31.2			
		73.8	1035	3.5	39.27	30.5	30.5			
		80.1	954	3.8	36.20	29.8	29.8			
		90.1	848	4.2	32.18	29.0	29.0			
	15.6	5077	1.0	93.09	38.5	38.5	K70390 - 132M/4	180	98	
	17.3	4562	1.1	83.66	38.4	38.4				
	19.0	4159	1.2	76.27	38.2	38.2				
	20.8	3799	1.3	69.66	38.0	38.0				
	22.9	3456	1.4	63.37	37.7	37.7				
	24.9	3181	1.6	58.32	37.3	37.3				
	26.9	2944	1.7	53.98	37.0	37.0				
	27.9	2831	1.8	51.92	36.8	36.8				
	30.3	2606	1.9	47.78	36.3	36.3				
	33.2	2380	2.0	43.64	35.8	35.8				
	36.9	2142	2.2	39.27	35.2	35.2				
	40.1	1974	2.4	36.20	34.6	34.6				
	45.1	1755	2.7	32.18	33.9	33.9				
	48.9	1617	2.9	29.66	33.3	33.3				
	53.5	1477	3.1	27.09	32.6	32.6				
	58.2	1358	3.4	24.90	32.1	32.1				
	64.6	1223	3.6	22.43	31.3	31.3				
	71.1	1113	3.6	20.40	30.7	30.7				
	78.9	1002	3.6	18.38	29.8	29.8				
	86.4	915	3.5	16.79	29.1	29.1				
	101.9	776	4.0	14.23	27.9	27.9				
	17.2	4443	1.4	168.56	65.0	65.0	K90390 - 132M/2	264	100	
	19.1	4009	1.5	152.10	65.0	65.0				
	21.2	3608	1.7	136.87	65.0	65.0				
	23.0	3327	1.8	126.23	65.0	65.0				
	27.6	2772	2.2	105.17	62.2	62.2				
	30.6	2501	2.4	94.90	60.3	60.3				
	32.6	2342	2.6	88.87	59.3	59.3				
	33.9	2255	2.7	85.54	58.5	58.5				
	36.8	2076	2.9	78.76	57.1	57.1				
	40.2	1902	3.2	72.16	55.7	55.7				
	44.7	1709	3.6	64.83	53.9	53.9				
	46.6	1640	3.7	62.21	53.2	53.2				
	49.6	1542	3.9	58.50	52.2	52.2				



P₁ [kW]	n₂ [Min ⁻¹]	M₂ [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	Kg ~					
9.20	9.5	8246	1.0	152.10	65.0	65.0	K90390 - 132M/4	264	100				
	10.6	7420	1.1	136.87	65.0	65.0							
	11.5	6843	1.2	126.23	65.0	65.0							
	13.8	5701	1.4	105.17	65.0	65.0							
	15.3	5145	1.5	94.90	65.0	65.0							
	16.3	4842	1.7	88.87	65.0	65.0							
	17.0	4637	1.7	85.54	65.0	65.0							
	18.4	4270	1.9	78.76	65.0	65.0							
	20.1	3932	2.0	72.16	65.0	65.0							
	22.4	3515	2.3	64.83	65.0	65.0							
	23.3	3373	2.4	62.21	65.0	65.0							
	24.8	3171	2.5	58.50	63.9	63.9							
	26.1	3021	2.6	55.45	63.1	63.1							
	28.1	2799	2.8	51.63	61.7	61.7							
	29.9	2632	3.0	48.55	60.6	60.6							
33.8	2339	3.4	42.94	58.6	58.6								
11.00	128.0	739	1.0	11.33	12.7	3.6	K40390 - 160M/4B	87	92				
	141.3	669	1.0	10.26	12.5	3.6							
	168.0	563	1.1	8.63	12.1	3.4							
	185.5	510	1.0	7.82	11.8	3.4							
		77.5	1219	1.1	18.70	19.0	5.4	K50390 - 160M/4B K50390 - 132M/4C	145	94			
		85.6	1105	1.3	16.95	18.6	5.3						
		99.0	955	1.3	14.65	18.0	5.2						
		123.1	768	1.3	11.78	17.1	4.9						
		135.8	696	1.4	10.68	16.7	4.8						
		161.5	585	1.5	8.98	15.9	4.5						
		178.3	530	1.5	8.13	15.5	4.4						
		89.9	1063	1.0	10.68	18.5	5.3	K50390 - 160L/6B	158	94			
		107.0	894	1.1	8.98	17.7	5.1						
		118.0	810	1.0	8.13	17.3	4.9						
		35.7	2558	1.0	81.18	29.2	8.3	K60390 - 160M/2A	130	96			
		38.4	2383	1.1	75.60	29.1	8.3						
		41.1	2225	1.1	70.62	28.9	8.3						
		45.6	2006	1.3	63.65	28.6	8.2						
		48.1	1902	1.3	60.34	28.4	8.1						
		52.5	1742	1.4	55.28	28.1	8.0						
		57.4	1593	1.5	50.56	27.7	7.9						
		63.6	1436	1.6	45.57	27.2	7.8						
		70.3	1300	1.6	41.26	26.8	7.6						
		82.3	1111	1.9	35.25	26.0	7.4						
		91.3	1001	2.1	31.77	25.4	7.3						
		92.4	989	2.2	31.39	25.3	7.2						
		103.2	886	2.4	28.11	24.7	7.1						
		110.2	829	2.6	26.31	24.4	7.0						
		124.6	733	2.9	23.27	23.7	6.8						
		138.1	662	2.9	21.00	23.1	6.6						
		153.3	596	2.8	18.92	22.5	6.4						
		185.1	494	3.2	15.67	21.5	6.1						
204.9		446	3.6	14.15	20.9	6.0							
227.5	401	3.8	12.75	20.3	5.8								
	28.7	3297	1.0	50.56	28.8	8.2	K60390 - 160M/4B K60390 - 132M/4C	167	96				
	31.8	2971	1.0	45.57	28.9	8.2							
	35.1	2690	1.0	41.26	28.8	8.2							
	41.1	2298	1.2	35.25	28.5	8.1							
	45.6	2072	1.4	31.77	28.2	8.1							
	46.2	2047	1.4	31.39	28.2	8.1							
	51.6	1833	1.5	28.11	27.8	7.9							
	55.1	1716	1.6	26.31	27.6	7.9							
	62.3	1518	1.8	23.27	27.1	7.7							
	69.0	1369	1.8	21.00	26.6	7.6							
	76.6	1234	1.8	18.92	26.1	7.5							
	92.5	1022	2.1	15.67	25.2	7.2							
	102.5	923	2.3	14.15	24.6	7.0							
	113.7	831	2.4	12.75	24.1	6.9							
	137.3	689	2.9	10.56	23.0	6.6							
	150.6	628	2.9	9.63	22.6	6.5							
	182.0	519	2.9	7.97	21.6	6.2							

P₁ [kW]	n₂ [Min ⁻¹]	M₂ [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	Kg 		
11.00	34.2	2799	1.1	28.11	28.7	8.2	K60390 - 160L/6B	180	96	
	36.5	2620	1.1	26.31	28.6	8.2				
	41.2	2318	1.3	23.27	28.4	8.1				
	45.7	2091	1.3	21.00	28.2	8.1				
	50.7	1884	1.2	18.92	27.9	8.0				
	61.3	1560	1.4	15.67	27.2	7.8				
	67.8	1409	1.6	14.15	26.7	7.6				
	75.3	1270	1.7	12.75	26.3	7.5				
	90.9	1052	2.0	10.56	25.3	7.2				
	99.7	959	2.0	9.63	25.0	7.1				
	120.5	793	2.0	7.97	24.0	6.9				
		26.5	3452	1.1	109.54	35.3				35.3
		27.7	3299	1.2	104.68	35.1	35.1			
		31.2	2934	1.3	93.09	34.7	34.7			
		34.7	2636	1.4	83.66	34.3	34.3			
		38.0	2404	1.6	76.27	33.7	33.7			
		41.6	2195	1.7	69.66	33.3	33.3			
		45.8	1997	1.9	63.37	32.8	32.8			
		49.7	1838	2.1	58.32	32.2	32.2			
		53.7	1701	2.2	53.98	31.7	31.7			
		55.9	1636	2.3	51.92	31.6	31.6			
		60.7	1506	2.5	47.78	30.9	30.9			
		66.4	1375	2.7	43.64	30.3	30.3			
		73.8	1238	2.9	39.27	29.7	29.7			
		80.1	1141	3.2	36.20	29.1	29.1			
		90.1	1014	3.5	32.18	28.4	28.4			
		97.8	935	3.8	29.66	27.7	27.7			
		107.1	854	4.1	27.09	27.1	27.1			
		19.0	4973	1.0	76.27	35.2	35.2	K70390 - 160M/4B K70390 - 132M/4C	213	98
		20.8	4542	1.1	69.66	35.2	35.2			
		22.9	4132	1.2	63.37	35.1	35.1			
		24.9	3803	1.3	58.32	35.0	35.0			
		26.9	3519	1.4	53.98	34.8	34.8			
		27.9	3385	1.5	51.92	34.7	34.7			
		30.3	3116	1.6	47.78	34.4	34.4			
		33.2	2846	1.7	43.64	34.0	34.0			
		36.9	2561	1.9	39.27	33.6	33.6			
		40.1	2360	2.0	36.20	33.2	33.2			
		45.1	2098	2.2	32.18	32.6	32.6			
		48.9	1934	2.4	29.66	32.1	32.1			
		53.5	1766	2.6	27.09	31.5	31.5			
		58.2	1624	2.8	24.90	31.1	31.1			
		64.6	1463	3.0	22.43	30.4	30.4			
		71.1	1330	3.0	20.40	29.8	29.8			
		78.9	1198	3.0	18.38	29.1	29.1			
		86.4	1094	2.9	16.79	28.4	28.4			
		101.9	928	3.3	14.23	27.3	27.3			
		124.4	760	4.1	11.65	26.0	26.0			
		17.8	5375	1.0	53.98	34.9	34.9	K70390 - 160L/6B	226	98
		18.5	5170	1.0	51.92	34.9	34.9			
		20.1	4758	1.1	47.78	35.0	35.0			
		22.0	4346	1.2	43.64	35.0	35.0			
		24.4	3911	1.3	39.27	34.9	34.9			
		26.5	3604	1.4	36.20	34.8	34.8			
		29.8	3204	1.5	32.18	34.5	34.5			
		32.4	2953	1.7	29.66	34.2	34.2			
		35.4	2697	1.8	27.09	33.8	33.8			
		38.5	2480	1.9	24.90	33.5	33.5			
		42.8	2234	2.1	22.43	32.9	32.9			
		47.0	2032	2.1	20.40	32.5	32.5			
		52.2	1830	2.1	18.38	31.8	31.8			
		57.2	1671	2.0	16.79	31.3	31.3			
		67.5	1417	2.3	14.23	30.2	30.2			
		82.4	1161	2.8	11.65	28.9	28.9			
		90.2	1060	3.0	10.64	28.3	28.3			



P_1 [kW]	n_2 [Min ⁻¹]	M_2 [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	Kg	mm				
11.00	17.2	5312	1.1	168.56	65.0	65.0	K90390 - 160M/2A	259	100				
	19.1	4793	1.3	152.10	65.0	65.0							
	21.2	4313	1.4	136.87	65.0	65.0							
	23.0	3978	1.5	126.23	64.6	64.6							
	27.6	3314	1.8	105.17	61.4	61.4							
	30.6	2991	2.0	94.90	59.6	59.6							
	32.6	2801	2.2	88.87	58.6	58.6							
	33.9	2696	2.3	85.54	57.9	57.9							
	36.8	2482	2.4	78.76	56.5	56.5							
	40.2	2274	2.7	72.16	55.2	55.2							
	44.7	2043	3.0	64.83	53.4	53.4							
	46.6	1961	3.1	62.21	52.7	52.7							
	49.6	1844	3.3	58.50	51.8	51.8							
	52.3	1748	3.5	55.45	51.0	51.0							
	56.2	1627	3.7	51.63	49.9	49.9							
	59.7	1530	4.0	48.55	48.9	48.9							
		11.5	8231	1.0	126.23	65.0				65.0	K90390 - 160M/4B K90390 - 132M/4C	288	100
		13.8	6857	1.2	105.17	65.0				65.0			
		15.3	6188	1.3	94.90	65.0				65.0			
		16.3	5795	1.4	88.87	65.0				65.0			
		17.0	5578	1.4	85.54	65.0	65.0						
		18.4	5135	1.6	78.76	65.0	65.0						
		20.1	4705	1.7	72.16	65.0	65.0						
		22.4	4227	1.9	64.83	64.8	64.8						
		23.3	4056	2.0	62.21	64.1	64.1						
		24.8	3814	2.1	58.50	63.0	63.0						
		26.1	3616	2.2	55.45	62.2	62.2						
		28.1	3366	2.4	51.63	60.9	60.9						
		29.9	3166	2.5	48.55	59.8	59.8						
		33.8	2800	2.9	42.94	57.9	57.9						
		42.4	2229	3.6	34.18	54.2	54.2						
		47.0	2011	4.0	30.84	52.6	52.6						
		56.6	1669	4.1	25.60	49.7	49.7						
		10.8	8850	0.9	88.87	65.0	65.0	K90390 - 160L/6B	306	100			
		11.2	8518	1.0	85.54	65.0	65.0						
		12.2	7843	1.1	78.76	65.0	65.0						
		13.3	7186	1.2	72.16	65.0	65.0						
		14.8	6456	1.3	64.83	65.0	65.0						
		15.4	6195	1.4	62.21	65.0	65.0						
		16.4	5825	1.4	58.50	65.0	65.0						
		17.3	5522	1.5	55.45	65.0	65.0						
		18.6	5141	1.6	51.63	65.0	65.0						
		19.8	4835	1.7	48.55	65.0	65.0						
		22.4	4276	2.0	42.94	65.0	65.0						
		24.2	3957	2.1	39.74	63.8	63.8						
		26.8	3570	2.4	35.85	62.1	62.1						
		28.1	3404	2.5	34.18	61.4	61.4						
		31.1	3071	2.7	30.84	59.7	59.7						
		33.4	2859	2.9	28.71	58.5	58.5						
		37.5	2549	2.8	25.60	56.6	56.6						
		39.2	2440	2.9	24.50	55.7	55.7						
		45.8	2086	3.3	20.95	53.3	53.3						
		50.8	1882	3.3	18.90	51.8	51.8						
		61.2	1562	3.4	15.69	49.0	49.0						
		67.0	1426	3.7	14.32	47.6	47.6						
		74.3	1287	3.7	12.92	46.1	46.1						
		36.5	2591	3.1	39.74	56.5	56.5	K90390 - 160M/4B	288	100			
		40.4	2338	3.4	35.85	54.8	54.8						

P₁ [kW]	n₂ [Min ⁻¹]	M₂ [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	Kg 	 mm				
11.00	7.0	13637	1.0	136.95	80.0	65.0	K100390 - 160L/6B	353	101				
	7.7	12403	1.1	124.56	80.0	65.0							
	8.5	11219	1.2	112.66	80.0	65.0							
	9.4	10204	1.3	102.47	80.0	65.0							
	10.1	9445	1.4	94.85	80.0	65.0							
	11.1	8590	1.6	86.27	80.0	65.0							
	12.7	7524	1.8	75.56	80.0	65.0							
	14.0	6843	2.0	68.72	80.0	65.0							
	16.5	5777	2.4	58.01	80.0	65.0							
	18.2	5254	2.6	52.76	80.0	65.0							
	19.1	5010	2.7	50.31	80.0	65.0							
	21.6	4418	2.9	44.36	80.0	65.0							
	24.0	3990	3.3	40.07	80.0	65.0							
	26.0	3681	3.5	36.96	80.0	65.0							
	28.6	3348	3.7	33.62	80.0	65.0							
	31.7	3020	4.0	30.33	80.0	65.0							
	34.0	2815	3.8	28.27	80.0	65.0							
	9.5	9959	1.3	152.74	80.0	65.0				K100390 - 160M/4B	335	101	
	10.6	8930	1.5	136.95	80.0	65.0							
	11.6	8122	1.6	124.56	80.0	65.0							
	12.9	7346	1.8	112.66	80.0	65.0							
	14.2	6681	1.9	102.47	80.0	65.0							
	15.3	6185	2.1	94.85	80.0	65.0							
	16.8	5625	2.3	86.27	80.0	65.0							
	19.2	4926	2.6	75.56	80.0	65.0							
	21.1	4481	2.9	68.72	80.0	65.0							
	25.0	3783	3.4	58.01	80.0	65.0							
	27.5	3440	3.8	52.76	80.0	65.0							
	28.8	3280	4.0	50.31	80.0	65.0							
	32.7	2893	4.1	44.36	80.0	65.0							
	15.00	123.1	1047	1.0	11.78	16.3							4.7
		135.8	949	1.1	10.68	16.0				4.6			
		161.5	798	1.1	8.98	15.3				4.4			
		178.3	723	1.1	8.13	14.9				4.3			
45.6		2825	1.0	31.77	24.7	7.1	K60390 - 160L/4A	176	96				
46.2		2791	1.0	31.39	24.7	7.1							
51.6		2499	1.1	28.11	24.7	7.1							
55.1		2339	1.2	26.31	24.7	7.0							
62.3		2069	1.4	23.27	24.5	7.0							
69.0		1867	1.3	21.00	24.3	6.9							
76.6		1682	1.3	18.92	24.0	6.9							
92.5		1393	1.5	15.67	23.4	6.7							
102.5		1258	1.7	14.15	23.1	6.6							
113.7		1134	1.8	12.75	22.6	6.5							
137.3		939	2.1	10.56	21.9	6.2							
150.6		856	2.1	9.63	21.5	6.2							
182.0		708	2.1	7.97	20.7	5.9							
61.6		2117	1.0	15.67	24.5	7.0				K60390 - 160L/6A	208	96	
68.2		1911	1.1	14.15	24.3	6.9							
75.7		1722	1.2	12.75	24.1	6.9							
91.4		1427	1.4	10.56	23.5	6.7							
100.2		1301	1.4	9.63	23.3	6.6							
121.1		1076	1.4	7.97	22.6	6.4							
24.9		5186	1.0	58.32	29.8	29.8	K70390 - 160L/4A	222	98				
26.9		4799	1.0	53.98	30.0	30.0							
27.9		4616	1.1	51.92	30.0	30.0							
30.3		4249	1.2	47.78	30.1	30.1							
33.2		3880	1.2	43.64	30.1	30.1							
36.9		3492	1.4	39.27	30.1	30.1							
40.1		3218	1.5	36.20	29.9	29.9							
45.1		2861	1.6	32.18	29.7	29.7							
48.9		2637	1.8	29.66	29.4	29.4							
53.5		2408	1.9	27.09	29.1	29.1							
58.2		2214	2.1	24.90	28.9	28.9							
64.6		1994	2.2	22.43	28.4	28.4							
71.1		1814	2.2	20.40	28.0	28.0							
78.9		1634	2.2	18.38	27.4	27.4							
86.4		1492	2.1	16.79	26.9	26.9							
101.9		1265	2.5	14.23	26.1	26.1							
124.4		1036	3.0	11.65	25.0	25.0							
136.2		946	3.2	10.64	24.4	24.4							


P_1 [kW]	n_2 [Min ⁻¹]	M_2 [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	Kg	mm			
15.00	26.7	4890	1.0	36.20	29.7	29.7	K70390 - 160L/6A	254	98			
	30.0	4346	1.1	32.18	29.9	29.9						
	32.5	4006	1.2	29.66	30.0	30.0						
	35.6	3659	1.3	27.09	30.0	30.0						
	38.7	3364	1.4	24.90	29.9	29.9						
	43.0	3030	1.5	22.43	29.7	29.7						
	47.3	2756	1.5	20.40	29.6	29.6						
	52.5	2483	1.5	18.38	29.2	29.2						
	57.5	2268	1.4	16.79	28.9	28.9						
	67.8	1922	1.6	14.23	28.2	28.2						
	82.8	1574	2.0	11.65	27.3	27.3						
	90.7	1438	2.1	10.64	26.8	26.8						
	15.3	8438	0.9	94.90	65.0	65.0				K90390 - 160L/4A	302	100
	16.3	7902	1.0	88.87	65.0	65.0						
	17.0	7606	1.1	85.54	65.0	65.0						
	18.4	7003	1.1	78.76	65.0	65.0						
	20.1	6416	1.2	72.16	64.2	64.2						
	22.4	5764	1.4	64.83	62.5	62.5						
	23.3	5531	1.4	62.21	61.9	61.9						
	24.8	5201	1.5	58.50	60.9	60.9						
	26.1	4930	1.6	55.45	60.2	60.2						
	28.1	4591	1.7	51.63	59.0	59.0						
	29.9	4317	1.9	48.55	58.1	58.1						
	33.8	3818	2.1	42.94	56.3	56.3						
	36.5	3039	2.3	39.74	55.1	55.1						
	40.4	3188	2.5	35.85	53.5	53.5						
	42.4	3039	2.6	34.18	53.0	53.0						
	47.0	2742	2.9	30.84	51.5	51.5						
	50.5	2553	3.1	28.71	50.4	50.4						
	56.6	2276	3.0	25.60	48.8	48.8						
	59.2	2178	3.1	24.50	48.1	48.1						
	69.2	1863	3.5	20.95	46.0	46.0						
	77.1	1672	3.6	18.80	44.7	44.7						
	92.4	1395	3.6	15.69	42.2	42.2						
	101.3	1273	3.9	14.32	41.0	41.0						
	112.2	1149	3.9	12.92	39.8	39.8						
	14.9	8758	0.9	64.83	65.0	65.0	K90390 - 160L/6A	327	100			
	15.5	8404	1.0	62.21	65.0	65.0						
	16.5	7903	1.0	58.50	65.0	65.0						
	17.4	7490	1.1	55.45	65.0	65.0						
	18.7	6974	1.1	51.63	65.0	65.0						
	19.9	6558	1.2	48.55	64.7	64.7						
	22.5	5801	1.4	42.94	62.9	62.9						
	24.3	5368	1.5	39.74	61.6	61.6						
	26.9	4843	1.7	35.85	60.1	60.1						
	28.2	4617	1.7	34.18	59.5	59.5						
	31.3	4166	1.9	30.84	57.9	57.9						
	33.6	3878	2.1	28.71	56.9	56.9						
	37.7	3458	2.0	25.60	55.2	55.2						
	39.4	3310	2.0	24.50	54.4	54.4						
	46.1	2830	2.3	20.95	52.2	52.2						
	51.1	2553	2.4	18.90	50.7	50.7						
	61.5	2119	2.4	15.69	48.1	48.1						
	67.4	1934	2.6	14.32	46.8	46.8						
	74.7	1745	2.6	12.92	45.4	45.4						
	90.0	1448	3.1	10.72	43.0	43.0						
	9.5	13581	1.0	152.74	80.0	65.0				K100390 - 160L/4A	349	101
	10.6	12177	1.1	136.95	80.0	65.0						
	11.6	11075	1.2	124.56	80.0	65.0						
	12.9	10017	1.3	112.66	80.0	65.0						
	14.2	9111	1.4	102.47	80.0	65.0						
	15.3	8434	1.5	94.85	80.0	65.0						
	16.8	7670	1.7	86.27	80.0	65.0						
	19.2	6718	1.9	75.56	80.0	65.0						
	21.1	6110	2.1	68.72	80.0	65.0						
	25.0	5158	2.5	58.01	80.0	65.0						
	27.5	4691	2.8	52.76	80.0	65.0						
	28.8	4473	2.9	50.31	80.0	65.0						
	32.7	3945	3.0	44.36	80.0	65.0						
	36.2	3563	3.6	40.07	80.0	65.0						
	39.2	3287	3.7	36.96	80.0	65.0						
	43.1	2989	4.0	33.62	80.0	65.0						
	51.3	2513	4.1	28.27	80.0	65.0						



P₁ [kW]	n₂ [Min ⁻¹]	M₂ [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	Kg 	 mm	
15.00	9.4	13842	0.9	102.47	80.0	65.0	K100390 - 160L/6A	374	101	
	10.2	12813	1.0	94.85	80.0	65.0				
	11.2	11653	1.1	86.27	80.0	65.0				
	12.8	10206	1.3	75.56	80.0	65.0				
	14.0	9283	1.4	68.72	80.0	65.0				
	16.6	7837	1.7	58.01	80.0	65.0				
	18.3	7128	1.8	52.76	80.0	65.0				
	19.2	6796	1.9	50.31	80.0	65.0				
	21.8	5993	2.0	44.36	80.0	65.0				
	24.1	5413	2.3	40.07	80.0	65.0				
	26.1	4993	2.5	36.96	80.0	65.0				
	28.7	4541	2.6	33.62	80.0	65.0				
	31.8	4097	2.8	30.33	80.0	65.0				
	34.1	3818	2.7	28.27	80.0	65.0				
	37.1	3514	3.2	26.01	80.0	65.0				
	40.8	3196	3.3	23.66	80.0	65.0				
	45.0	2895	3.6	21.43	80.0	65.0				
	49.2	2648	4.0	19.61	80.0	65.0				
18.50	55.1	2885	1.0	26.31	22.1	6.3	K60390 - 180M/4B	212	96	
	62.3	2552	1.1	23.27	22.2	6.4				
	69.0	2303	1.1	21.00	22.3	6.4				
	76.6	2075	1.1	18.92	22.2	6.3				
	92.5	1718	1.2	15.67	21.9	6.3				
	102.5	1552	1.4	14.15	21.7	6.2				
	113.7	1398	1.4	12.75	21.4	6.1				
	137.3	1158	1.7	10.56	20.8	6.0				
	150.6	1056	1.7	9.63	20.6	5.9				
	182.0	874	1.7	7.97	19.9	5.7				
	30.3	5240	1.0	47.78	26.4	26.4				
	33.2	4786	1.0	43.64	26.7	26.7				
	36.9	4307	1.1	39.27	27.0	27.0				
	40.1	3969	1.2	36.20	27.1	27.1				
	45.1	3528	1.3	32.18	27.2	27.2				
	48.9	3252	1.4	29.66	27.1	27.1				
	53.5	2970	1.5	27.09	27.0	27.0				
	58.2	2731	1.7	24.90	26.9	26.9				
	64.6	2460	1.8	22.43	26.6	26.6				
	71.1	2238	1.8	20.40	26.4	26.4				
	78.9	2015	1.8	18.38	26.0	26.0				
	86.4	1841	1.7	16.79	25.6	25.6				
	101.9	1560	2.0	14.23	25.0	25.0				
	124.4	1278	2.4	11.65	24.0	24.0				
	136.2	1167	2.6	10.64	23.6	23.6				
	35.8	4489	1.1	27.09	26.7	26.7				
	38.9	4128	1.2	24.90	26.8	26.8				
	43.2	3718	1.2	22.43	27.0	27.0				
	47.5	3382	1.2	20.40	27.0	27.0				
	52.8	3046	1.2	18.38	27.0	27.0				
	57.8	2782	1.2	16.79	26.8	26.8				
	68.2	2358	1.4	14.23	26.5	26.5				
	83.2	1932	1.7	11.65	25.9	25.9				
	91.1	1764	1.8	10.64	25.5	25.5				

P_1 [kW]	n_2 [Min ⁻¹]	M_2 [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	Kg	mm				
18.50	18.4	8637	0.9	78.76	63.0	63.0	K90390 - 180M/4B	331	100				
	20.1	7913	1.0	72.16	62.0	62.0							
	22.4	7109	1.1	64.83	60.5	60.5							
	23.3	6822	1.2	62.21	59.9	59.9							
	24.8	6415	1.2	58.50	59.1	59.1							
	26.1	6081	1.3	55.45	58.5	58.5							
	28.1	5662	1.4	51.63	57.4	57.4							
	29.9	5324	1.5	48.55	56.6	56.6							
	33.8	4709	1.7	42.94	55.0	55.0							
	36.5	4358	1.8	39.74	53.8	53.8							
	40.4	3931	2.0	35.85	52.4	52.4							
	42.4	3748	2.1	34.18	51.9	51.9							
	47.0	3382	2.4	30.84	50.5	50.5							
	50.5	3148	2.5	28.71	49.5	49.5							
	56.6	2807	2.4	25.60	48.0	48.0							
	59.2	2687	2.5	24.50	47.3	47.3							
	69.2	2297	2.8	20.95	45.4	45.4							
	76.7	2073	2.9	18.90	44.1	44.1							
	92.4	1721	2.9	15.69	41.8	41.8							
	101.3	1570	3.2	14.32	40.6	40.6							
	112.2	1417	3.2	12.92	39.4	39.4							
	135.3	1176	3.8	10.72	37.2	37.2							
		20.0	8047	1.0	48.55	62.3				62.3	K90390 - 200L/6B	382	100
		22.6	7117	1.2	42.94	60.8				60.8			
		24.4	6587	1.3	39.74	59.7				59.7			
		27.1	5942	1.4	35.85	58.4				58.4			
		28.4	5665	1.5	34.18	57.8				57.8			
		31.5	5112	1.6	30.84	56.4				56.4			
		33.8	4759	1.8	28.71	55.5				55.5			
		37.9	4243	1.7	25.60	53.9				53.9			
		39.6	4061	1.7	24.50	53.2				53.2			
		46.3	3472	2.0	20.95	51.2				51.2			
		51.3	3133	2.0	18.90	49.8				49.8			
		61.8	2601	2.0	15.69	47.3				47.3			
		67.7	2373	2.2	14.32	46.1				46.1			
		75.1	2141	2.2	12.92	44.8				44.8			
		90.5	1777	2.7	10.72	42.4				42.4			
		11.6	13659	1.0	124.56	80.0				65.0	K100390 - 180M/4B	378	101
		12.9	12355	1.1	112.66	80.0				65.0			
	14.2	11237	1.2	102.47	80.0	65.0							
	15.3	10401	1.2	94.85	80.0	65.0							
	16.8	9460	1.4	86.27	80.0	65.0							
	19.2	8285	1.6	75.56	80.0	65.0							
	21.1	7536	1.7	68.72	80.0	65.0							
	25.0	6362	2.0	58.01	80.0	65.0							
	27.5	5786	2.2	52.76	80.0	65.0							
	28.8	5517	2.4	50.31	80.0	65.0							
	32.7	4865	2.5	44.36	80.0	65.0							
	36.2	4394	2.9	40.07	80.0	65.0							
	39.2	4053	3.0	36.96	80.0	65.0							
	43.1	3687	3.2	33.62	80.0	65.0							
	47.8	3326	3.5	30.33	80.0	65.0							
	51.3	3100	3.3	28.27	79.7	65.0							
	55.7	2853	3.9	26.01	77.9	65.0							
	61.3	2594	4.0	23.66	75.8	65.0							

P₁ [kW]	n₂ [Min ⁻¹]	M₂ [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	Kg 		
18.50	12.8	12523	1.1	75.56	80.0	65.0	K100390 - 200L/6B	429	101	
	14.1	11390	1.2	68.72	80.0	65.0				
	16.7	9616	1.4	58.01	80.0	65.0				
	18.4	8745	1.6	52.76	80.0	65.0				
	19.3	8338	1.6	50.31	80.0	65.0				
	21.9	7353	1.7	44.36	80.0	65.0				
	24.2	6642	2.0	40.07	80.0	65.0				
	26.2	6127	2.1	36.96	80.0	65.0				
	28.9	5572	2.2	33.62	80.0	65.0				
	32.0	5027	2.4	30.33	80.0	65.0				
	34.3	4685	2.3	28.27	80.0	65.0				
	37.3	4311	2.7	26.01	80.0	65.0				
	41.0	3921	2.8	23.66	80.0	65.0				
	45.3	3553	3.1	21.43	80.0	65.0				
	49.5	3249	3.5	19.61	80.0	65.0				
	54.8	2931	3.7	17.69	79.0	65.0				
	60.3	2666	3.9	16.09	76.9	65.0				
	63.7	2523	4.2	15.22	75.7	65.0				
83.3	1929	4.2	11.64	70.0	65.0					
22.00	62.5	3025	0.9	23.27	20.0	5.7	K60390 - 180L/4B	220	96	
	92.9	2036	1.0	15.67	20.4	5.8				
	102.8	1839	1.1	14.15	20.3	5.8				
	114.1	1657	1.2	12.75	20.2	5.8				
	137.8	1372	1.5	10.56	19.8	5.7				
	151.1	1252	1.4	9.63	19.6	5.6				
	182.7	1053	1.4	7.97	19.1	5.5				
	40.2	4704	1.0	36.20	24.3	24.3				
	45.2	4182	1.1	32.18	24.6	24.6				
	49.1	3854	1.2	29.66	24.8	24.8				
	53.7	3520	1.3	27.09	24.9	24.9				
	58.4	3237	1.4	24.90	24.9	24.9				
	64.9	2915	1.5	22.43	24.8	24.8				
	71.3	2652	1.5	20.40	24.7	24.7				
	79.2	2388	1.5	18.38	24.5	24.5				
	86.7	2181	1.5	16.79	24.3	24.3				
	102.3	1849	1.7	14.23	23.8	23.8				
	124.8	1515	2.0	11.65	23.1	23.1				
	136.7	1383	2.2	10.64	22.8	22.8				
	43.2	4421	1.0	22.43	24.2	24.2				
	47.5	4022	1.0	20.40	24.5	24.5				
	52.8	3622	1.0	18.38	24.7	24.7				
	57.8	3309	1.0	16.79	24.8	24.8				
	68.2	2804	1.2	14.23	24.7	24.7				
	83.2	2297	1.4	11.65	24.4	24.4				
	91.1	2098	1.5	10.64	24.2	24.2				
	22.4	8425	0.9	64.83	58.5	58.5				
	23.4	8085	1.0	62.21	58.0	58.0				
	24.9	7603	1.1	58.50	57.3	57.3				
	26.2	7206	1.1	55.45	56.8	56.8				
	28.2	6710	1.2	51.63	55.9	55.9				
	30.0	6309	1.3	48.55	55.1	55.1				
	33.9	5580	1.4	42.94	53.7	53.7				
	36.6	5165	1.5	39.74	52.6	52.6				
	40.6	4659	1.7	35.85	51.3	51.3				
	42.6	4442	1.8	34.18	50.8	50.8				
	47.2	4008	2.0	30.84	49.5	49.5				
	50.7	3731	2.1	28.71	48.6	48.6				
	56.8	3327	2.0	25.60	47.2	47.2				
	59.4	3184	2.1	24.50	46.6	46.6				
	69.5	2723	2.4	20.95	44.7	44.7				
	77.0	2456	2.4	18.90	43.5	43.5				
	92.7	2039	2.5	15.69	41.3	41.3				
	101.6	1861	2.7	14.32	40.2	40.2				
	112.6	1679	2.7	12.92	39.0	39.0				
	135.7	1393	3.2	10.72	36.9	36.9				

P_1 [kW]	n_2 [Min ⁻¹]	M_2 [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	Kg	mm			
22.00	22.6	8464	1.0	42.94	58.7	58.7	K90390 - 200L/6C	392	100			
	24.4	7833	1.1	39.74	57.8	57.8						
	27.1	7066	1.2	35.85	56.6	56.6						
	28.4	6737	1.2	34.18	56.2	56.2						
	31.5	6079	1.4	30.84	54.9	54.9						
	33.8	5659	1.5	28.71	54.1	54.1						
	37.9	5046	1.4	25.60	52.7	52.7						
	39.6	4829	1.5	24.50	52.0	52.0						
	46.3	4129	1.7	20.95	50.1	50.1						
	51.3	3725	1.7	18.90	48.9	48.9						
	61.8	3093	1.7	15.69	46.6	46.6						
	67.7	2823	1.9	14.32	45.4	45.4						
	75.1	2547	1.9	12.92	44.1	44.1						
	90.5	2113	2.2	10.72	41.9	41.9						
	22.00	14.2	13316	1.0	102.47	80.0				65.0	K100390 - 180L/4B	386
		15.3	12327	1.1	94.85	80.0	65.0					
		16.9	11211	1.2	86.27	80.0	65.0					
		19.3	9819	1.3	75.56	80.0	65.0					
		21.2	8930	1.5	68.72	80.0	65.0					
		25.1	7539	1.7	58.01	80.0	65.0					
		27.6	6857	1.9	52.76	80.0	65.0					
		28.9	6538	2.0	50.31	80.0	65.0					
		32.8	5765	2.1	44.36	80.0	65.0					
		36.3	5208	2.4	40.07	80.0	65.0					
		39.4	4804	2.6	36.96	80.0	65.0					
		43.3	4369	2.7	33.62	80.0	65.0					
		48.0	3941	2.9	30.33	80.0	65.0					
		51.5	3674	2.8	28.27	78.6	65.0					
		55.9	3381	3.3	26.01	76.9	65.0					
	22.00	61.5	3075	3.4	23.66	74.9	65.0	K100390 - 200L/6C	439	101		
67.9		2785	3.7	21.43	72.8	65.0						
74.2		2548	4.2	19.61	70.9	65.0						
14.1		13545	1.0	68.72	80.0	65.0						
16.7		11435	1.2	58.01	80.0	65.0						
18.4		10400	1.3	52.76	80.0	65.0						
19.3		9916	1.4	50.31	80.0	65.0						
21.9		8744	1.4	44.36	80.0	65.0						
24.2		7899	1.7	40.07	80.0	65.0						
26.2		7286	1.8	36.96	80.0	65.0						
28.9		6626	1.9	33.62	80.0	65.0						
32.0		5978	2.0	30.33	80.0	65.0						
34.3		5571	1.9	28.27	80.0	65.0						
37.3		5127	2.3	26.01	80.0	65.0						
41.0		4663	2.4	23.66	80.0	65.0						
45.3	4225	2.6	21.43	80.0	65.0							
49.5	3864	2.9	19.61	80.0	65.0							
54.8	3486	3.1	17.69	78.0	65.0							
60.3	3171	3.3	16.09	75.9	65.0							
63.7	3000	3.5	15.22	74.8	65.0							
70.3	2719	3.7	13.80	72.8	65.0							
77.3	2473	3.7	12.55	70.8	65.0							
83.3	2294	3.5	11.64	69.3	65.0							
93.8	2038	4.1	10.34	67.0	65.0							
111.6	1713	4.2	8.69	63.6	63.6							
30.00	53.9	4784	1.0	27.09	20.0	20.0	K70390 - 200L/4C	331	98			
	58.6	4398	1.0	24.90	20.4	20.4						
	65.1	3962	1.1	22.43	20.8	20.8						
	71.6	3604	1.1	20.40	21.0	21.0						
	79.4	3246	1.1	18.38	21.2	21.2						
	87.0	2965	1.1	16.79	21.3	21.3						
	102.6	2512	1.2	14.23	21.3	21.3						
	125.3	2058	1.5	11.65	21.0	21.0						
	137.2	1880	1.6	10.64	20.9	20.9						

P₁ [kW]	n₂ [Min ⁻¹]	M₂ [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	Kg ~					
30.00	30.1	8574	0.9	48.55	51.7	51.7	K90390 - 200L/4C	403	100				
	34.0	7584	1.1	42.94	50.6	50.6							
	36.7	7018	1.1	39.74	49.8	49.8							
	40.7	6331	1.3	35.85	48.8	48.8							
	42.7	6037	1.3	34.18	48.4	48.4							
	47.3	5447	1.5	30.84	47.4	47.4							
	50.9	5070	1.6	28.71	46.6	46.6							
	57.0	4521	1.5	25.60	45.4	45.4							
	59.6	4327	1.5	24.50	44.8	44.8							
	69.7	3700	1.8	20.95	43.2	43.2							
	77.2	3338	1.8	18.90	42.1	42.1							
	93.1	2771	1.8	15.69	40.2	40.2							
	102.0	2529	2.0	14.32	39.2	39.2							
	113.0	2282	2.0	12.92	38.1	38.1							
	136.2	1893	2.4	10.72	36.2	36.2							
		19.3	13344	1.0	75.56	80.0				65.0	K100390 - 200L/4C	450	101
		21.2	12136	1.1	68.72	80.0				65.0			
		25.2	10246	1.3	58.01	80.0				65.0			
		27.7	9319	1.4	52.76	80.0	65.0						
		29.0	8885	1.5	50.31	80.0	65.0						
		32.9	7835	1.5	44.36	80.0	65.0						
		36.4	7077	1.8	40.07	80.0	65.0						
		39.5	6528	1.9	36.96	80.0	65.0						
		43.4	5937	2.0	33.62	79.5	65.0						
		48.1	5356	2.1	30.33	77.5	65.0						
		51.7	4992	2.0	28.27	76.2	65.0						
		56.1	4594	2.4	26.01	74.6	65.0						
		61.7	4178	2.5	23.66	72.8	65.0						
		68.1	3785	2.7	21.43	71.0	65.0						
		74.5	3462	3.1	19.61	69.2	65.0						
		82.6	3124	3.3	17.69	67.3	65.0						
		90.8	2841	3.5	16.09	65.5	65.0						
		95.9	2688	3.7	15.22	64.5	64.5						
		105.8	2437	3.9	13.80	62.8	62.8						
	116.4	2216	4.0	12.55	61.1	61.1							
	125.5	2055	3.7	11.64	59.8	59.8							
37.00	36.7	8656	0.9	39.74	47.4	47.4	K90390 - 225S/4A	453	100				
	40.7	7809	1.0	35.85	46.6	46.6							
	42.7	7445	1.1	34.18	46.3	46.3							
	47.3	6718	1.2	30.84	45.4	45.4							
	50.9	6254	1.3	28.71	44.8	44.8							
	57.0	5576	1.2	25.60	43.8	43.8							
	59.6	5337	1.3	24.50	43.3	43.3							
	69.7	4563	1.4	20.95	41.9	41.9							
	77.2	4117	1.5	18.90	41.0	41.0							
	93.1	3418	1.5	15.69	39.2	39.2							
	102.0	3119	1.6	14.32	38.3	38.3							
	113.0	2814	1.6	12.92	37.3	37.3							
	136.2	2335	1.9	10.72	35.5	35.5							
		25.2	12637	1.0	58.01	80.0				65.0	K100390 - 225S/4A	500	101
		27.7	11493	1.1	52.76	80.0				65.0			
		29.0	10958	1.2	50.31	80.0				65.0			
		32.9	9663	1.2	44.36	80.0				65.0			
		36.4	8729	1.5	40.07	79.7				65.0			
		39.5	8051	1.5	36.96	78.5	65.0						
		43.4	7323	1.6	33.62	76.9	65.0						
		48.1	6606	1.7	30.33	75.2	65.0						
		51.7	6157	1.7	28.27	74.0	65.0						
		56.1	5666	2.0	26.01	72.6	65.0						
		61.7	5153	2.0	23.66	71.0	65.0						
		68.1	4669	2.2	21.43	69.3	65.0						
		74.5	4270	2.5	19.61	67.7	65.0						
		82.6	3852	2.7	17.69	65.9	65.0						
		90.8	3504	2.8	16.09	64.3	64.3						
		95.9	3315	3.0	15.22	63.4	63.4						
		105.8	3005	3.2	13.80	61.7	61.7						
		116.4	2733	3.2	12.55	60.1	60.1						
		125.5	2535	3.0	11.64	58.9	58.9						
		141.2	2252	3.5	10.34	57.0	57.0						
		167.9	1894	3.6	8.69	54.2	54.2						

P₁ [kW]	n₂ [Min ⁻¹]	M₂ [Nm]	f_B	i_{ges}	FR (a) [kN]	FR (b) [kN]	Typ / Type / Tip Tipo / Type / Tipo	Kg 					
45.00	47.3	8170	1.0	30.84	43.3	43.3	K90390 - 225M/4C	490	100				
	50.9	7606	1.1	28.71	42.8	42.8							
	57.0	6782	1.0	25.60	42.0	42.0							
	59.6	6490	1.0	24.50	41.6	41.6							
	69.7	5550	1.2	20.95	40.5	40.5							
	77.2	5007	1.2	18.90	39.6	39.6							
	93.1	4157	1.2	15.69	38.1	38.1							
	102.0	3794	1.3	14.32	37.3	37.3							
	113.0	3423	1.3	12.92	36.4	36.4							
	136.2	2840	1.6	10.72	34.7	34.7							
	29.0	13327	1.0	50.31	78.7	65.0				K100390 - 225M/4C	537	101	
	32.9	11753	1.0	44.36	77.4	65.0							
	36.4	10616	1.2	40.07	76.2	65.0							
	39.5	9792	1.3	36.96	75.2	65.0							
	43.4	8906	1.3	33.62	74.0	65.0							
	48.1	8034	1.4	30.33	72.5	65.0							
	51.7	7488	1.4	28.27	71.5	65.0							
	56.1	6891	1.6	26.01	70.3	65.0							
	61.7	6267	1.7	23.66	68.9	65.0							
	68.1	5678	1.8	21.43	67.4	65.0							
	74.5	5194	2.1	19.61	66.0	65.0							
	82.6	4685	2.2	17.69	64.4	64.4							
	90.8	4261	2.3	16.09	62.9	62.9							
	95.9	4032	2.5	15.22	62.0	62.0							
	105.8	3655	2.6	13.80	60.5	60.5							
	116.4	3324	2.6	12.55	59.0	59.0							
125.5	3083	2.5	11.64	57.8	57.8								
141.2	2739	2.9	10.34	56.1	56.1								
167.9	2303	3.0	8.69	53.4	53.4								
55.00	36.6	12931	1.0	40.07	71.8	65.0	K100390 - 250M/4A	755	101				
	39.6	11928	1.0	36.96	71.2	65.0							
	43.6	10848	1.1	33.62	70.3	65.0							
	48.3	9786	1.2	30.33	69.2	65.0							
	51.8	9121	1.1	28.27	68.4	65.0							
	56.3	8394	1.3	26.01	67.5	65.0							
	61.9	7634	1.4	23.66	66.3	65.0							
	68.4	6916	1.5	21.43	65.1	65.0							
	74.7	6326	1.7	19.61	63.8	63.8							
	82.8	5707	1.8	17.69	62.4	62.4							
	91.1	5191	1.9	16.09	61.1	61.1							
	96.3	4911	2.0	15.22	60.4	60.4							
	106.2	4452	2.2	13.80	59.0	59.0							
	116.8	4049	2.2	12.55	57.6	57.6							
	125.9	3755	2.1	11.64	56.6	56.6							
	141.7	3336	2.4	10.34	54.9	54.9							
	168.5	2805	2.4	8.69	52.5	52.5							
75.00	56.7	11368	1.0	26.01	61.8	61.8	K100390 - 280S/4A	985	101				
	62.3	10340	1.0	23.66	61.1	61.1							
	68.8	9367	1.1	21.43	60.4	60.4							
	83.4	7729	1.3	17.69	58.6	58.6							
	91.7	7030	1.4	16.09	57.6	57.6							
	96.9	6651	1.5	15.22	57.0	57.0							
	106.9	6030	1.6	13.80	56.0	56.0							
	117.5	5484	1.6	12.55	54.9	54.9							
	126.7	5086	1.5	11.64	54.0	54.0							
	142.7	4519	1.7	10.34	52.7	52.7							
	169.7	3799	1.8	8.69	50.6	50.6							
	90.00	83.7	9244	1.1	17.69	55.7				55.7	K100390 - 280M/4A	1100	101
		92.0	8407	1.2	16.09	55.0				55.0			
97.2		7955	1.3	15.22	54.5	54.5							
107.3		7211	1.3	13.80	53.7	53.7							
117.9		6558	1.3	12.55	52.8	52.8							
127.2		6083	1.3	11.64	52.1	52.1							
143.1		5404	1.5	10.34	51.0	51.0							
170.3		4544	1.5	8.69	49.2	49.2							



A series of horizontal dotted lines spanning the width of the page, intended for writing or drawing.



A series of horizontal dotted lines spanning the width of the page, providing a template for writing or drawing.

Maßtabellen

Dimension Tables

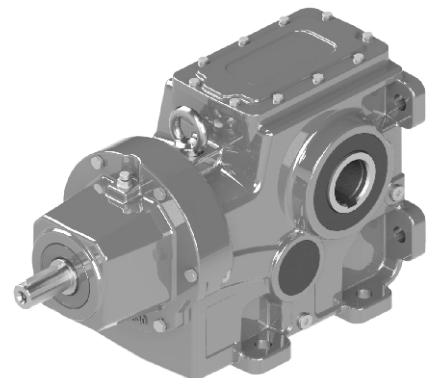
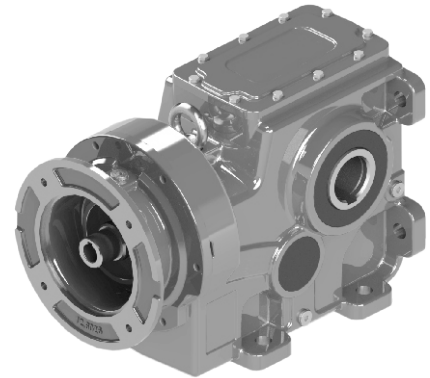
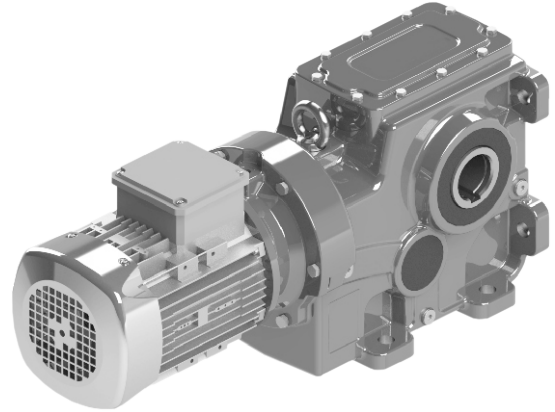
Ölçü Tabloları

Dimensione Tabelle

Tables de Dimension

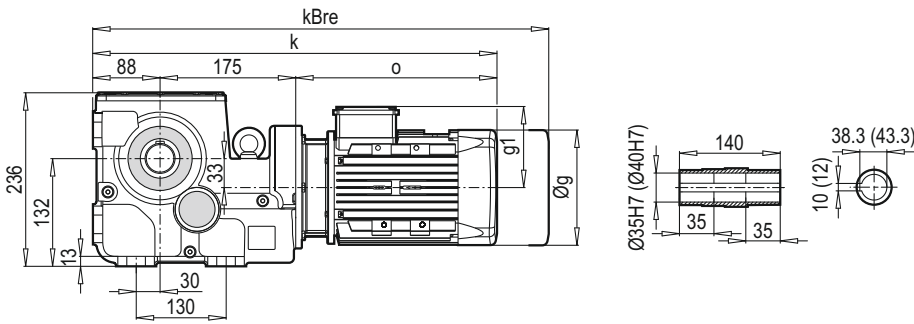
Tablas de Dimensiones

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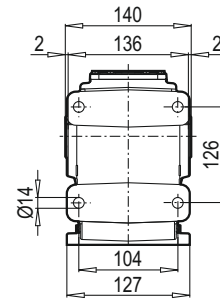


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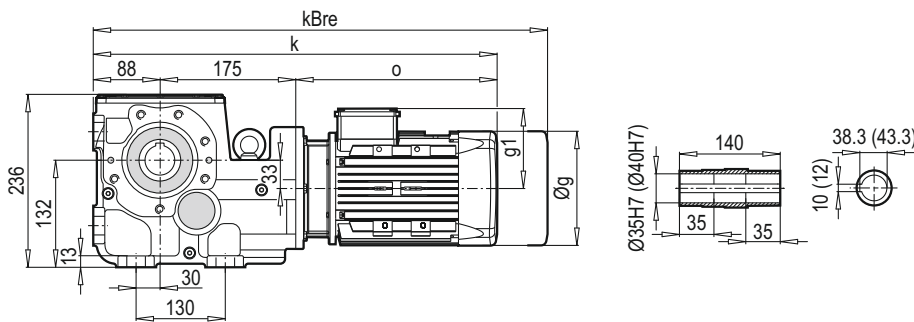
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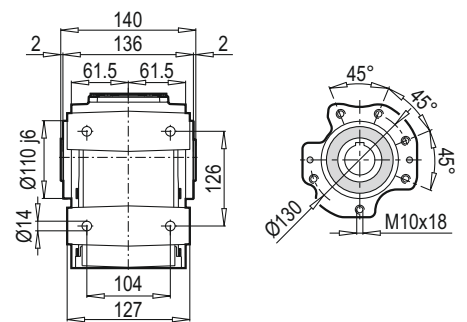
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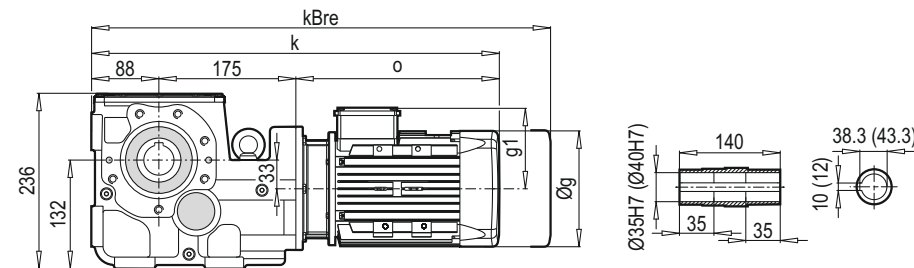
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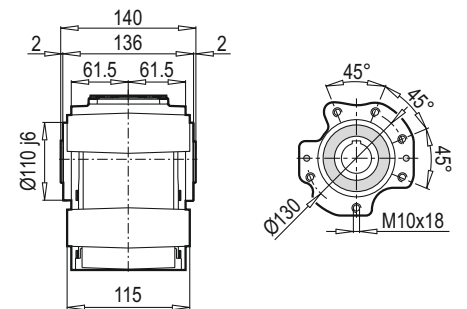
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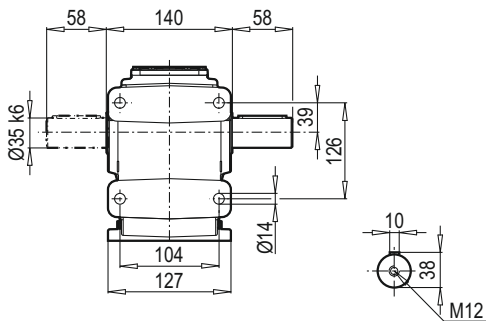
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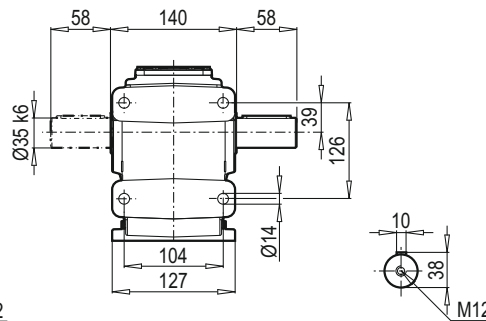
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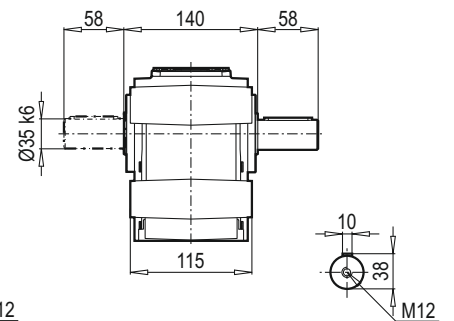
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TMA - ÇMA / B14

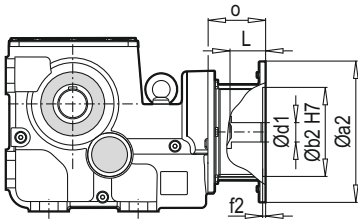


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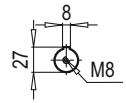
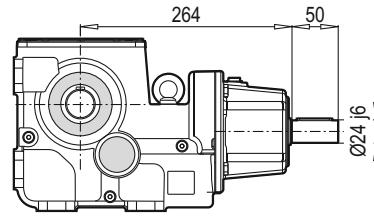


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g1	111	119	127	151	151	160	168		
k	475	504	530	576	596	597	647		
kBre	527	564	592	649	669	678	727		
o	212	241	267	313	333	334	384		

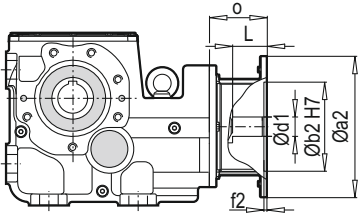
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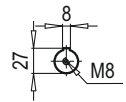
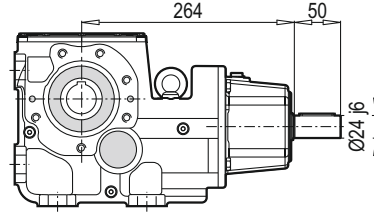
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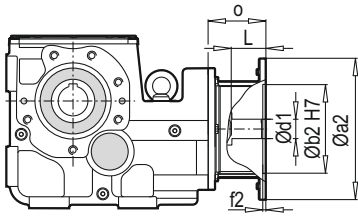
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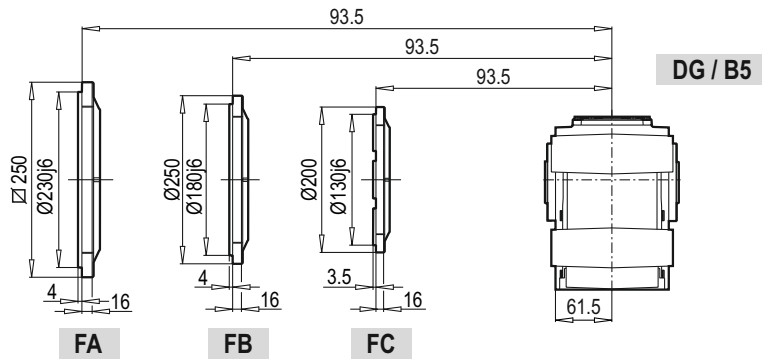
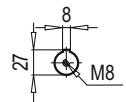
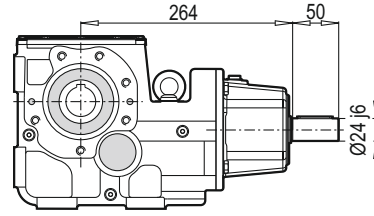
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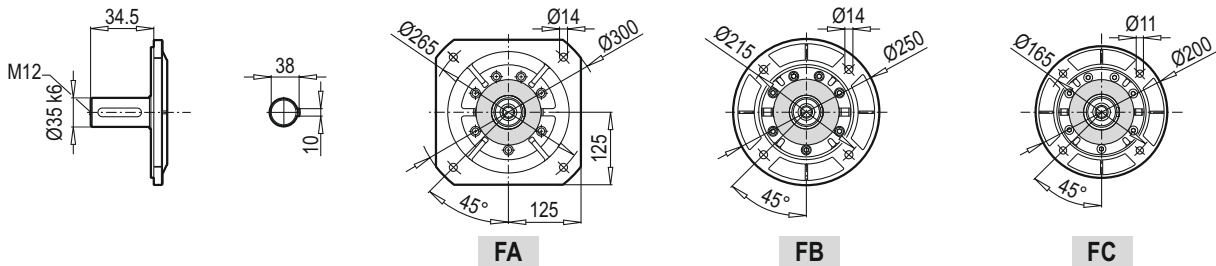
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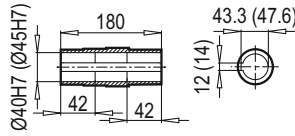
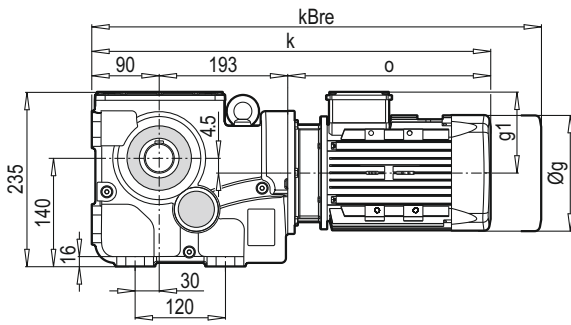


TMG / B5

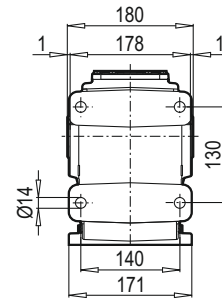


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b2	95	110	130	130	180	180			
d1	11	14	19	24	28	28			
f2	4.5	5	5	5	5.5	5.5			
L	25	32	42	52	62	62			
u1	4	5	6	8	8	8			
t1	12.8	16.3	21.8	27.3	31.3	31.3			
o	57	69	90	90	105	105			

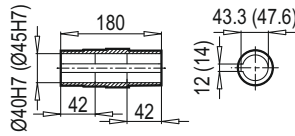
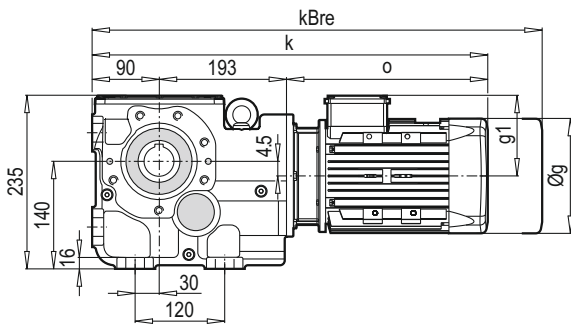
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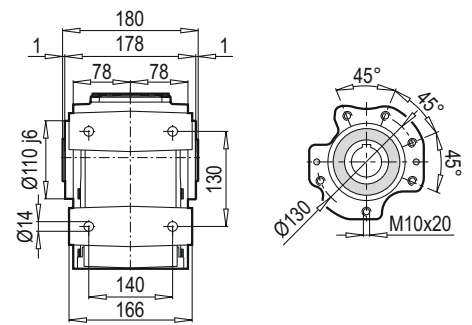
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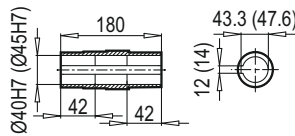
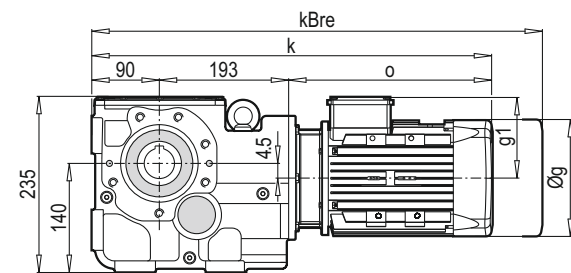
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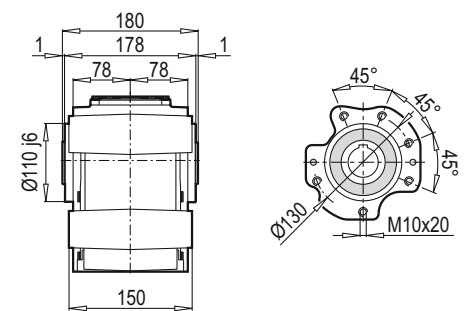
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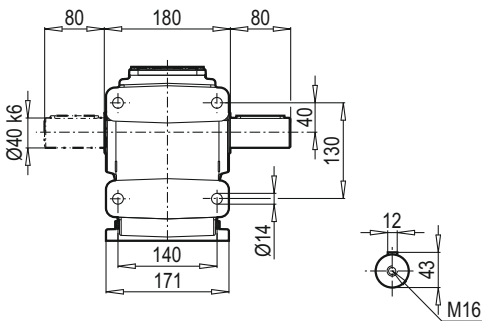
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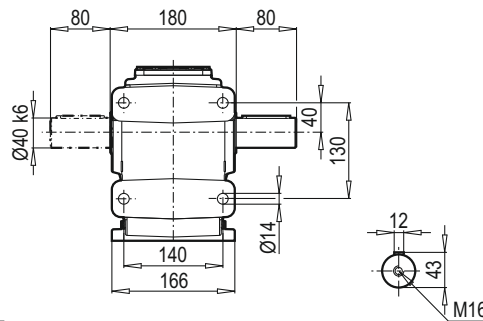
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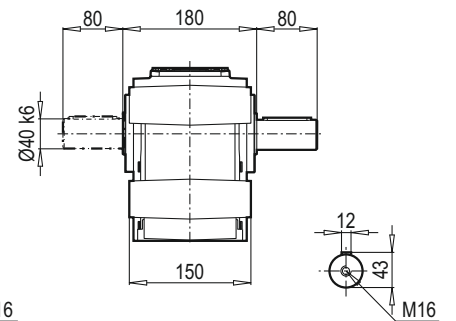
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TMA - ÇMA / B14

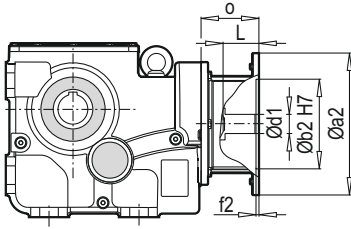


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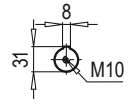
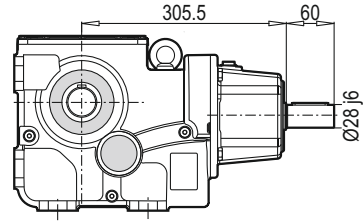


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g1	127	151	151	160	168	182	182		
k	530	576	596	619	672	679	714		
kBre	592	649	669	700	752	787	855		
o	247	293	313	336	389	396	431		

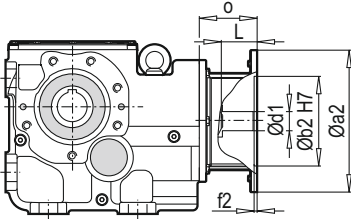
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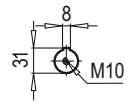
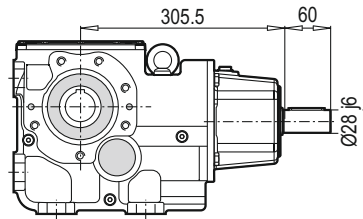
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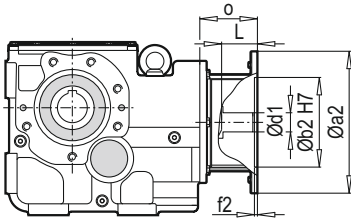
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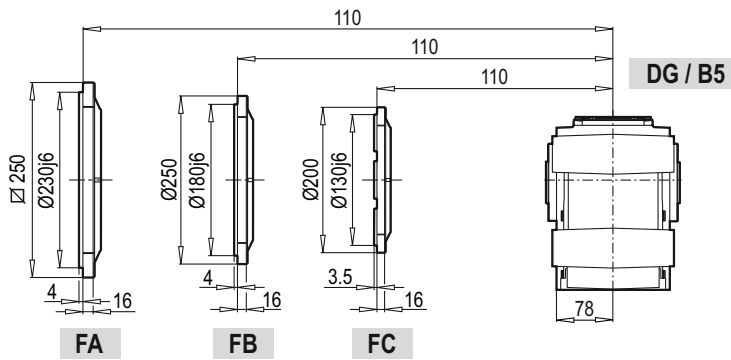
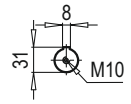
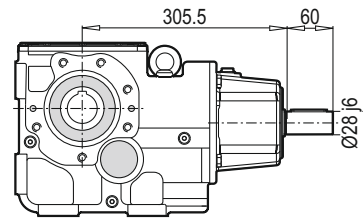
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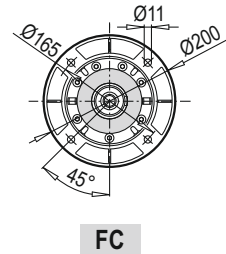
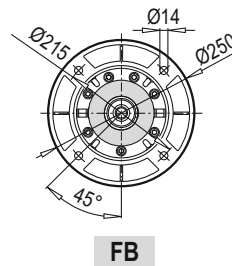
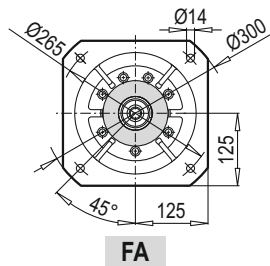
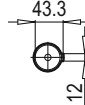
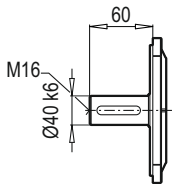
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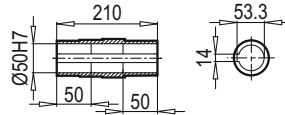
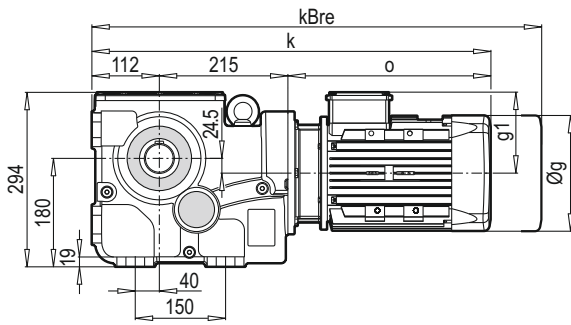


TMG / B5

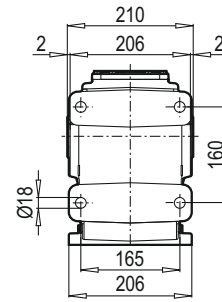


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b2	130	130	180	180	230			
d1	19	24	28	28	38			
f2	5	5	5.5	5.5	5.5			
L	42	52	62	62	82			
u1	6	8	8	8	10			
t1	21.8	27.3	31.3	31.3	41.3			
o	70	70	85	85	110			

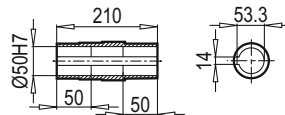
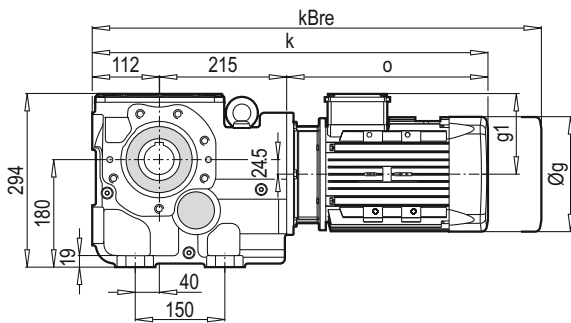
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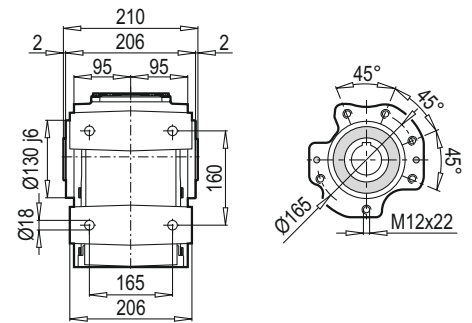
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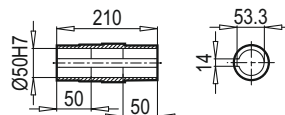
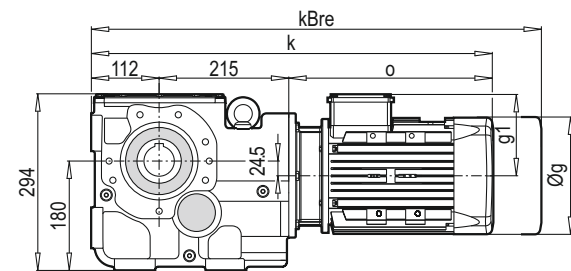
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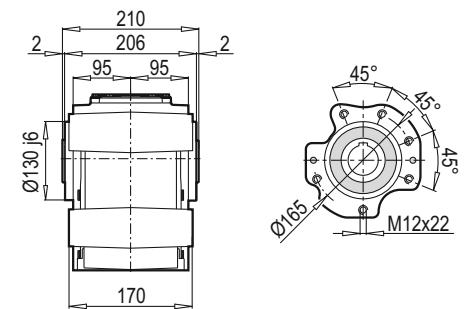
DA / B14



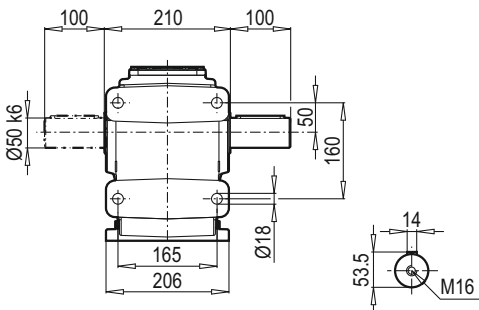
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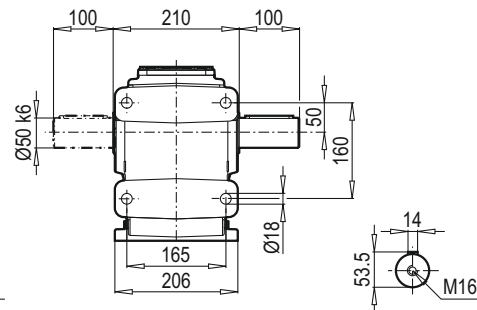
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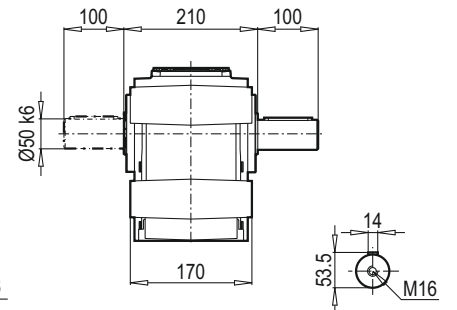
TMA - ÇMA



TMA - ÇMA / B14

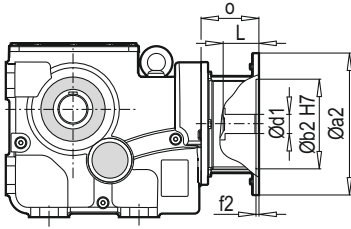


TMG - ÇMG / B14

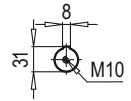
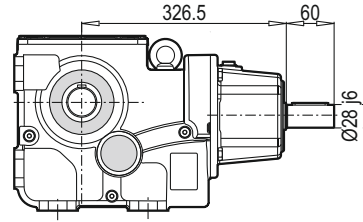


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g1	127	151	151	160	168	182	182	200	
k	574	620	640	663	716	723	758	845	
kBre	636	693	713	744	796	831	899	997	
o	247	293	313	336	389	396	431	518	

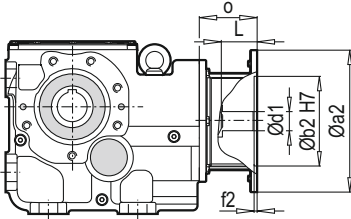
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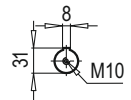
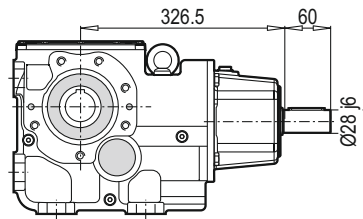
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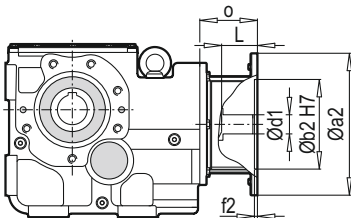
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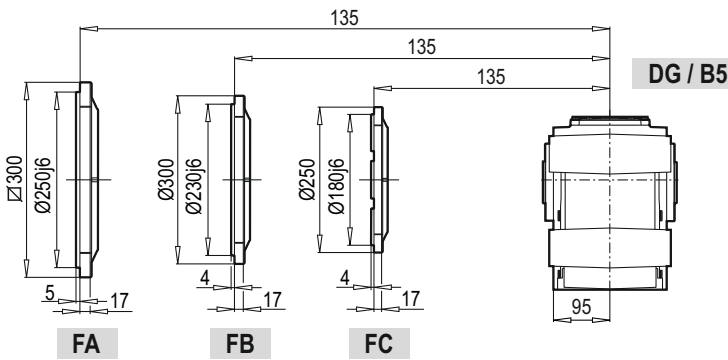
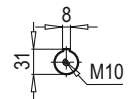
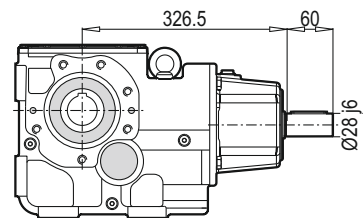
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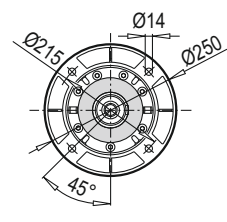
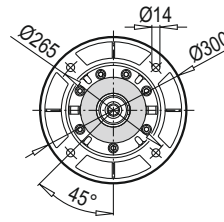
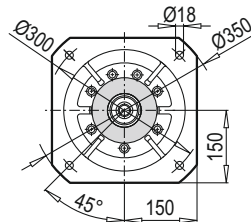
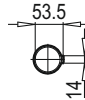
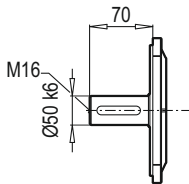
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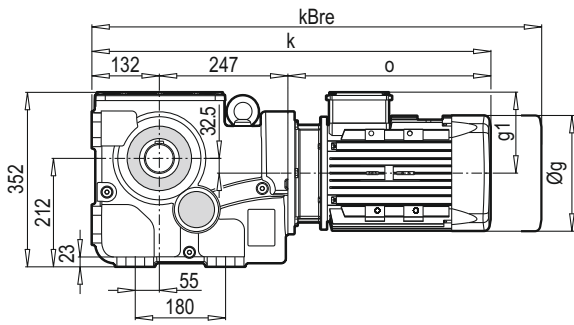


TMG / B5

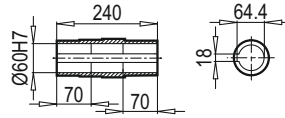
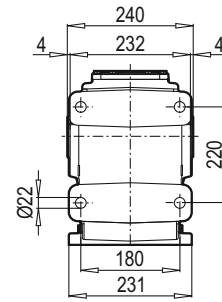


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a2	200	200	250	250	300	350		
b2	130	130	180	180	230	250		
d1	19	24	28	28	38	42		
f2	5	5	5.5	5.5	5.5	7		
L	42	52	62	62	82	112		
u1	6	8	8	8	10	12		
t1	21.8	27.3	31.3	31.3	41.3	45.3		
o	70	70	85	85	110	158		

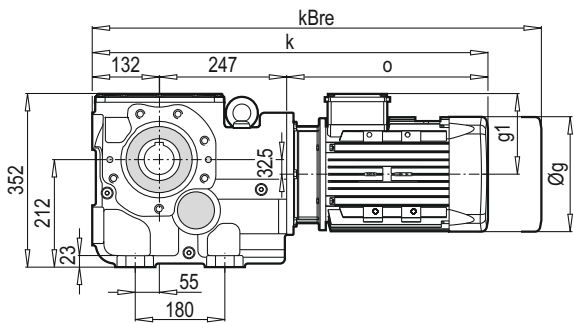
K - 60390



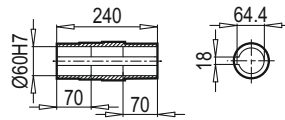
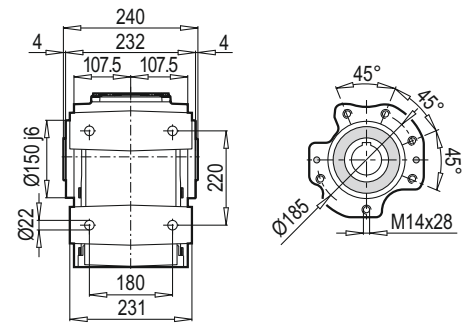
DA



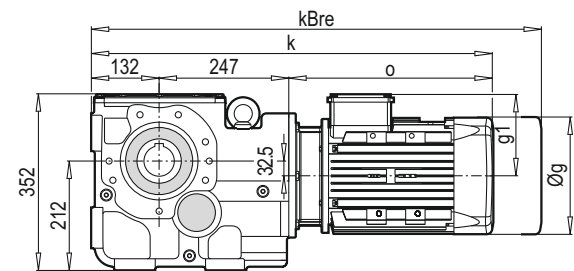
K - 60390



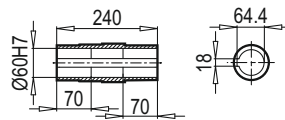
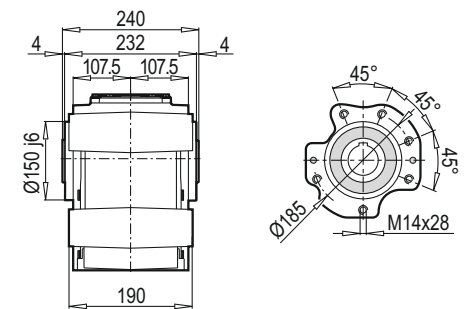
DA / B14



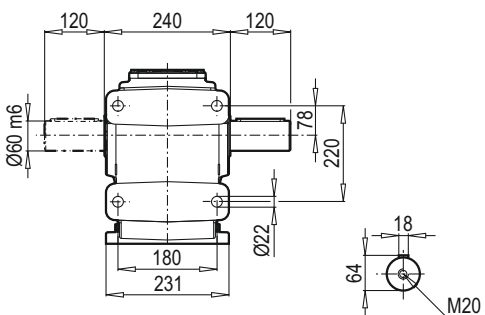
K - 60390



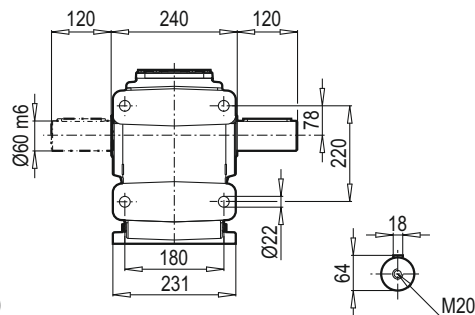
DG / B14



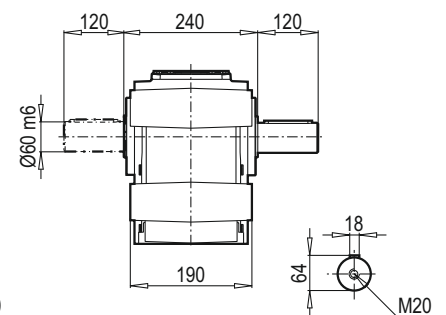
TMA - ÇMA



TMA - ÇMA / B14

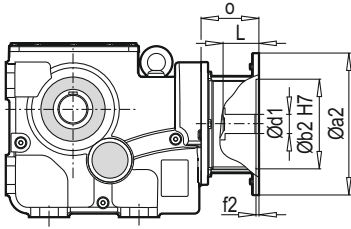


TMG - ÇMG / B14

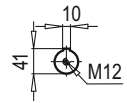
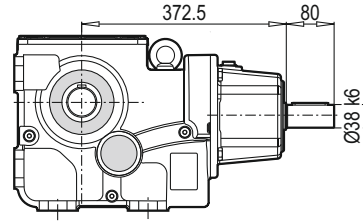


	90S	90L	100L	112M	132S	132M	160M/L	180M/L
g	193	193	217	232	279	279	323	370
g1	151	151	160	168	182	182	200	248
k	662	682	705	759	765	800	887	952
kBre	735	755	786	839	873	941	1039	1114
o	283	303	326	380	386	421	508	573

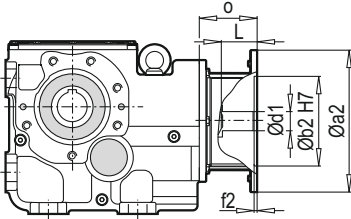
K - PAM



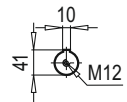
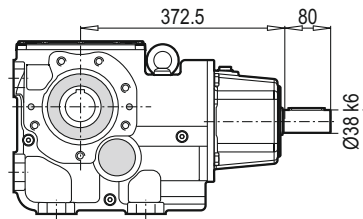
K - W



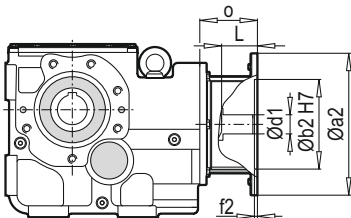
K - PAM



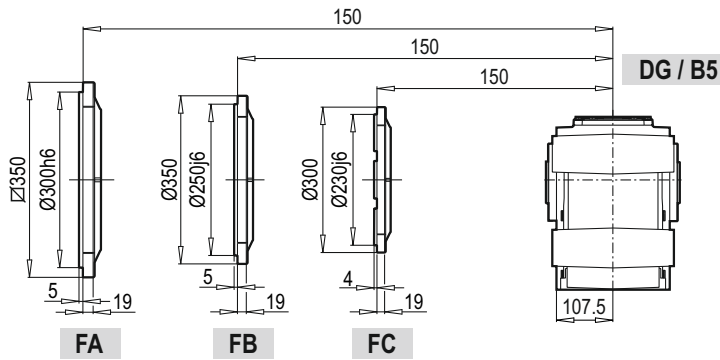
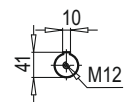
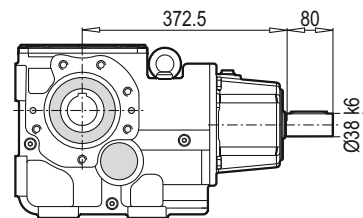
K - W



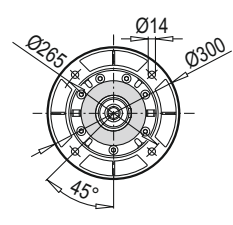
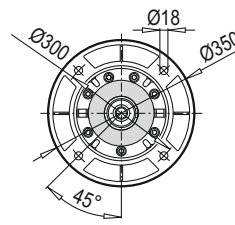
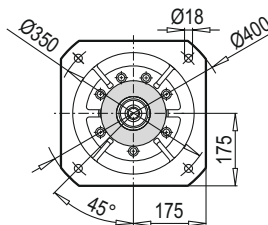
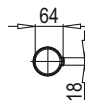
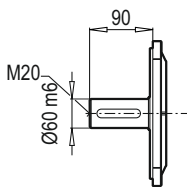
K - PAM



K - W

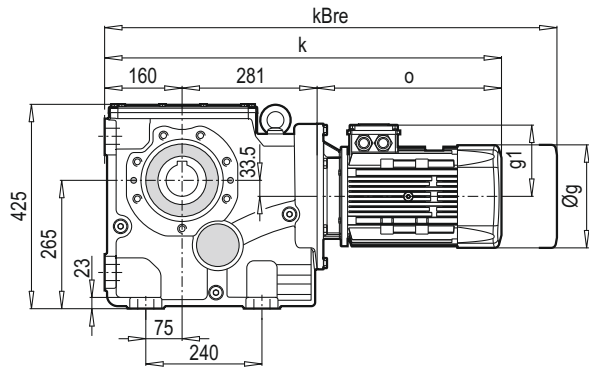


TMG / B5

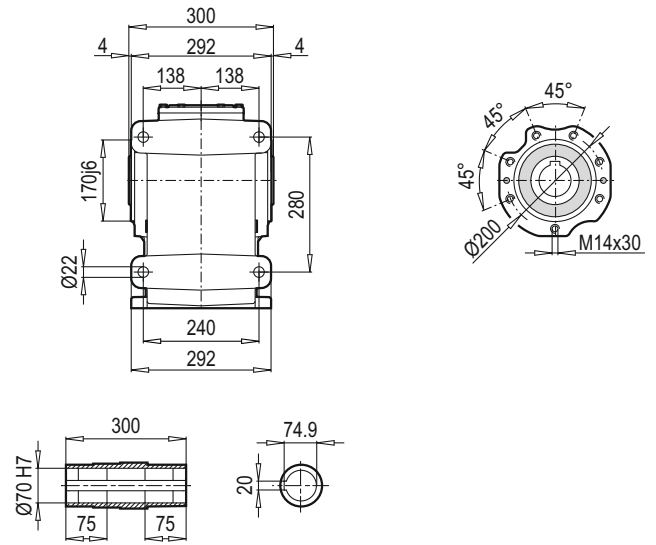


	90	100	112	132	160	180		
a2	200	250	250	300	350	350		
b2	130	180	180	230	250	250		
d1	24	28	28	38	42	48		
f2	5	5.5	5.5	5.5	7	7		
L	52	62	62	82	112	112		
u1	8	8	8	10	12	14		
t1	27.3	31.3	31.3	41.3	45.3	51.8		
o	61	76	76	101	148	148		

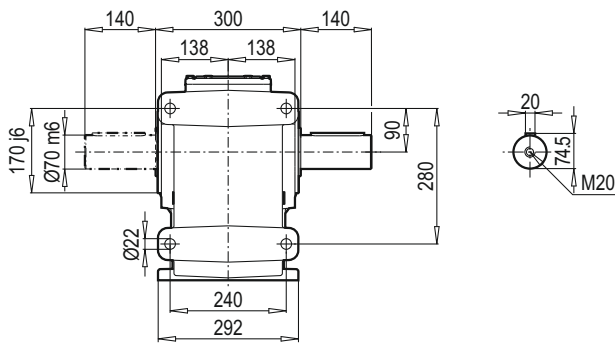
K - 70390



DA / B14

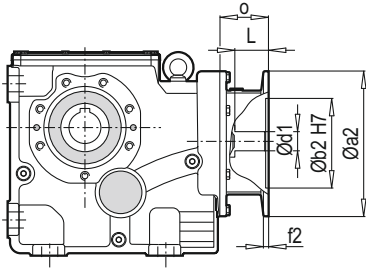


TMA - ÇMA / B14

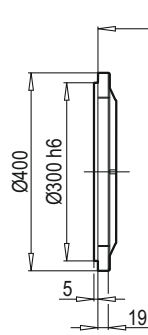
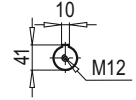
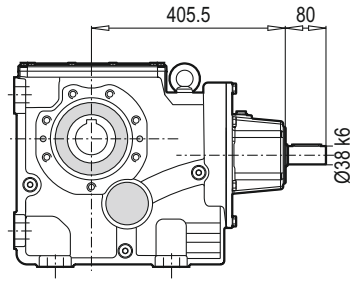


	100L	112M	132S	132M	160M/L	180M/L	200L		
g	217	232	279	279	323	370	415		
g1	160	168	182	182	200	248	260		
k	767	821	827	862	949	1014	1051		
kBre	848	901	935	1003	1101	1176	1198		
o	326	380	386	421	508	573	610		

K - PAM

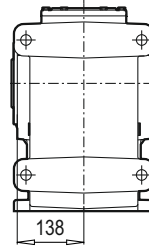


K - W

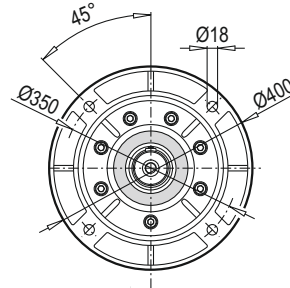
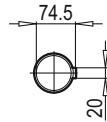
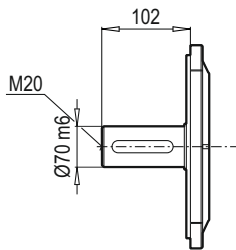


FB

DA / B5



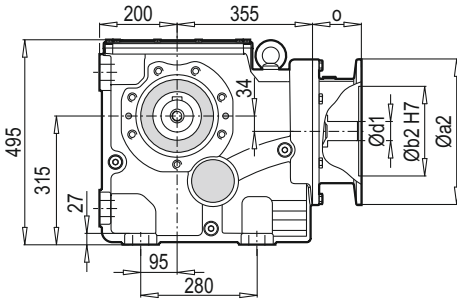
TMA / B5



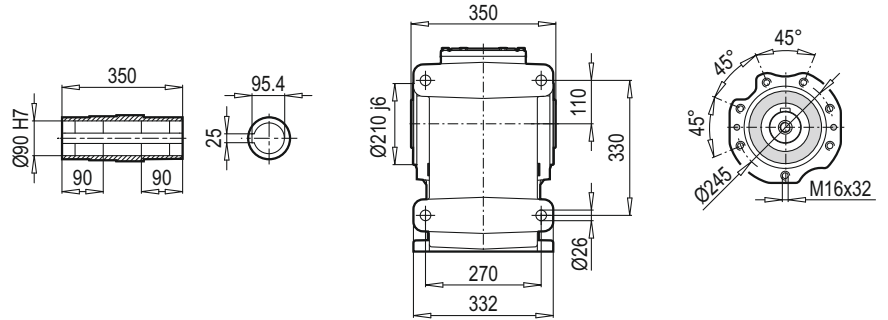
FB

	100	112	132	160	180	200			
a2	250	250	300	350	350	400			
b2	180	180	230	250	250	300			
d1	28	28	38	42	48	55			
f2	5.5	5.5	5.5	7	7	7			
L	62	62	82	112	112	112			
u1	8	8	10	12	14	16			
t1	31.3	31.3	41.3	45.3	51.8	59.3			
o	76	76	101	148	148	185			

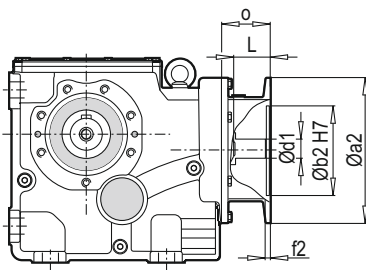
K - 90390



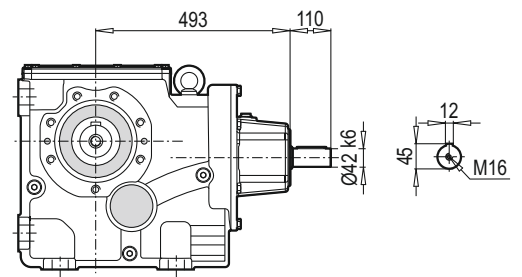
DA / B14



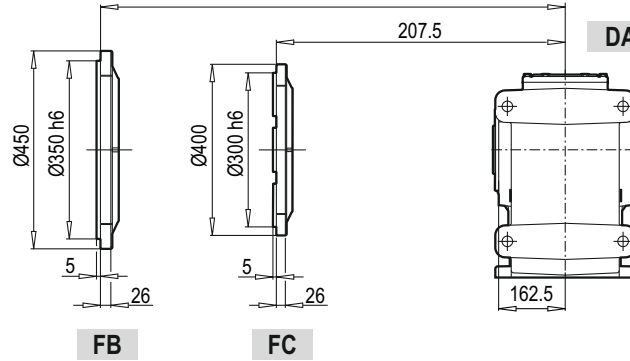
K - PAM



K - W



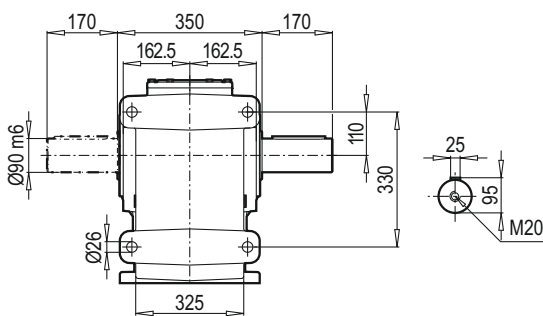
207.5



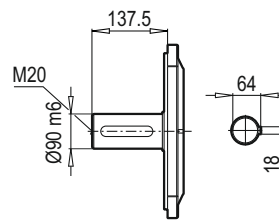
FB

FC

TMA - ÇMA / B14

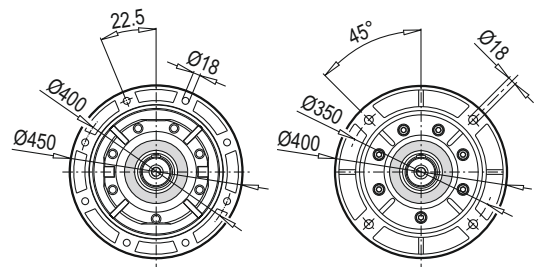


TMA / B5



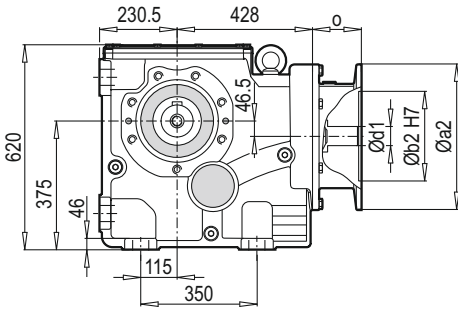
FB

FC

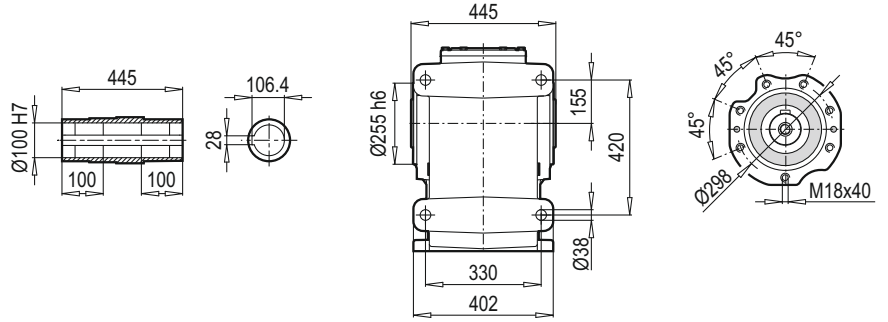


	132	160	180	200	225				
a2	300	350	350	400	450				
b2	230	250	250	300	350				
d1	38	42	48	55	60				
f2	5.5	7	7	7	7				
L	82	112	112	112	142				
u1	10	12	14	16	18				
t1	41.3	45.3	51.8	59.3	64.4				
o	76	124	124	161	161				

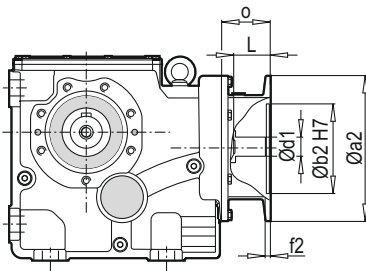
K - 100390



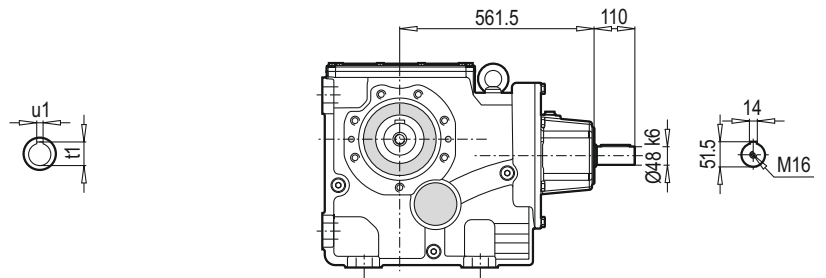
DA / B14



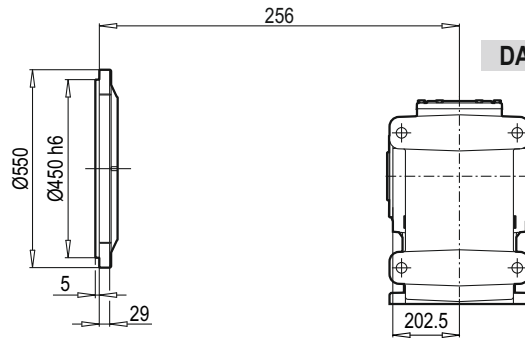
K - PAM



K - W

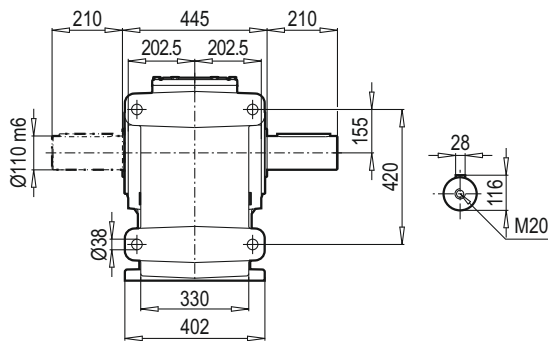


DA / B5

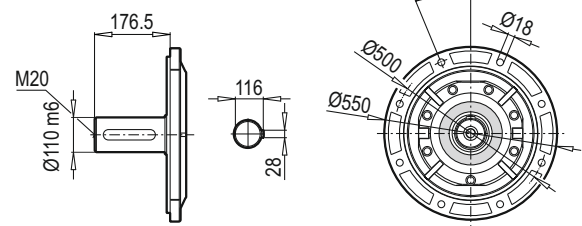


FB

TMA - ÇMA / B14



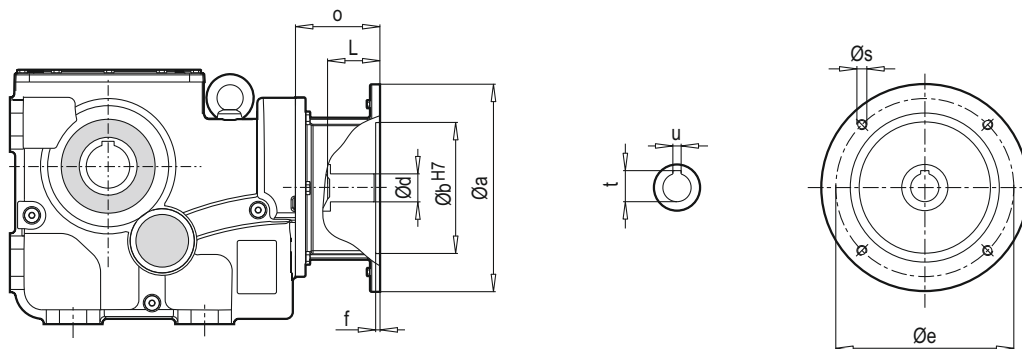
TMA / B5



FB

	160	180	200	225	250	280		
a2	350	350	400	450	550	550		
b2	250	250	300	350	450	450		
d1	42	48	55	60	65	75		
f2	7	7	7	7	7	7		
L	112	112	112	142	142	142		
u1	12	14	16	18	18	20		
t1	45.3	51.8	59.3	64.4	69.4	79.9		
o	109	109	146	146	175	175		

PAM / B14



Typ / Type / Tip Tipo / Type / Tipo	PAM / B14	Øa	Øb	Øe	f	Øs	Ød	L	t	u	o
K 35390	63	90	60	75	2.5	6	11	25	12.8	4	57
	71	105	70	85	2.5	7	14	32	16.3	5	69
	80	120	80	100	3	7	19	42	21.8	6	90
	90	140	95	115	3	9	24	52	27.3	8	90
	100	160	110	130	3.5	9	28	62	31.3	8	105
K 40390	80	120	80	100	3	7	19	42	21.8	6	70
	90	140	95	115	3	9	24	52	27.3	8	70
	100	160	110	130	3.5	9	28	62	31.3	8	85
	112	160	110	130	3.5	9	28	62	31.3	8	85
	132	200	130	165	3.5	11	38	82	41.3	10	110
K 50390	80	120	80	100	3	7	19	42	21.8	6	70
	90	140	95	115	3	9	24	52	27.3	8	70
	100	160	110	130	3.5	9	28	62	31.3	8	85
	112	160	110	130	3.5	9	28	62	31.3	8	85
K 60390	132	200	130	165	3.5	11	38	82	41.3	10	110
	90	140	95	115	3	9	24	52	27.3	8	61
	100	160	110	130	3.5	9	28	62	31.3	8	76
	112	160	110	130	3.5	9	28	62	31.3	8	76
K 70390	132	200	130	165	3.5	11	38	82	41.3	10	101
	100	160	110	130	3.5	9	28	62	31.3	8	76
	112	160	110	130	3.5	9	28	62	31.3	8	76
K 90390	132	200	130	165	3.5	11	38	82	41.3	10	76

**Auswahltable von
W - PAM - IEC Adapters**

Selection Tables
of W - PAM - IEC Adapters

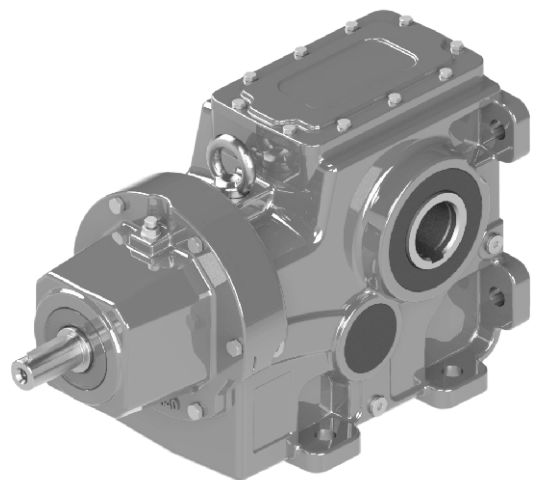
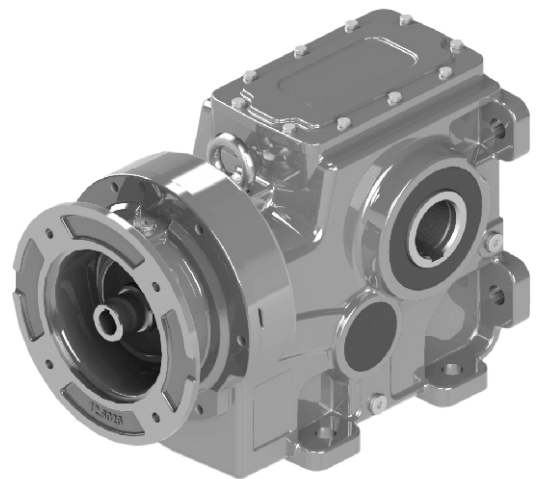
W - PAM - IEC Adaptörü
Seçim Tabloları

Tabella si Selezione di
W - PAM - IEC Adattatore

Tableau de Sélection du
W - PAM - IEC Adaptateur

Tabla de Selección de
W - PAM - IEC Adaptador

K...
35390 - 100390



K...

Der Aufbau der Leistungstabelle für W - IEC und PAM-Adapter

Notify about performance tables for W and IEC adapter type
 W ve IEC adaptörü için performans tablolarının yapısı
 Struttura delle tabelle delle prestazioni degli adattatori W – IEC e PAM
 La structure de la table de performance pour W - Adaptateur IEC et PAM
 Estructura de Tablas de Rendimiento para Adaptador de W – IEC ve PAM

K35390 → **Getriebemotortyp** / Gear unit motor type / Redüktör tipi / Tipo del motore con ingranaggi /
 Type du moteur à engrenages / Tipo del motor con engranajes

Betriebsfaktor f_B aus dem Motorauswahl Seite genommen werden, für die IEC montiert Reduzierungen der Motor Körpergröße und IEC Körpergröße sind die gleichen.

Service factor f_B could be seen from selection of geared motor tables. Because this value is same for geared motor and geared motor with IEC adapters.
 Motor gövde büyüklüğü ile IEC gövde büyüklüğü aynı olan IEC montajlı redüktörler için Servis faktörü f_B motor seçim sayfalarından alınabilir.
 Peri riduttori a montaggio IEC con grandezza del corpo motore uguale alla grandezza del corpo motore IEC il fattore di Servizio puo' essere rilevato dalle scelte di motori f_B .
 Facteur de service f_B peut être prise à partir de la page de sélection de moteur, pour réducteurs IEC montée dont moteur taille du corps et IEC taille du corps sont les mêmes.
 Factor de servicio para reductores con IEC montado, y con mismo tamaño de cuerpo de IEC y el cuerpo de motor, se puede encontrar en paginas de elección f_B motor.

Typ / Type / Tip / Tipo / Type / Tipo	iges	4-pol. 50Hz 1400rpm n_2 [min ⁻¹]	M _{amax} $f_B=1$ 4 - pol. [Nm]	P _{1max} W $f_B \geq 1$				PAM - IEC					
				4 - pol. 1400rpm [kW]	FR1 [kN]	FR2A [kN]	FR2B [kN]	$f_B \Rightarrow$ 45 - 86					
K35390	158.67	8.9	600	0.62	1.1	12.0	6.3	63	71	80			
	140.25	10.1	600	0.70	1.1	12.0	6.1	63	71	80			
	125.18	11.3	600	0.79	1.1	12.0	5.8	63	71	80			
	112.63	12.5	600	0.87	1.1	12.0	5.6	63	71	80			
	102.00	13.8	600	0.97	1.1	12.0	5.4	63	71	80			
	91.04	15.5	600	1.08	1.1	12.0	5.2	63	71	80			
	78.09	18.1	600	1.26	1.1	12.0	4.9	63	71	80	90		
	69.70	20.2	600	1.41	1.0	12.0	4.7	63	71	80	90		

Verkleinerungsfaktor
 Reduction ratio
 Tahvil oranı
 Rapporto di riduzione
 Rapport de réduction
 Relación de de reducción

Leistungsgeschwindigkeit
 Output speed
 Çıkış devri
 Velocità di uscita
 Vitesse de sortie
 Velocidad de salida






Abtriebsdrehmoment
 Output torque
 Çıkış momenti
 Momento di uscita
 Moment de sortie
 Momento de salida

Bei der Berechnung P_{1max} wird $f_B > 1$ kursiv Werte übernommen.
 P_{1max} value which is *italic*, is calculated when service factor f_B is greater than one.
 P_{1max} hesaplanırken *italic* olan değerlerde $f_B > 1$ alınmıştır.
 Nel calcolo della P_{1max} per i valori non in corsivo si é preso $f_B > 1$
 Bien que la force maximale de conduite de type W est calculé, les valeurs italiques ne sont pas prises. f_B avec P_{1max} = 1
 Al calcular P_{1max} en valores cursivos $f_B > 1$ se ha tomado.







IEC Motorgößen und IEC-Standard-Ausgänge sind nach DIN 50347.
 According to DIN EN 50347 IEC motor sizes. IEC motor büyüklükleri ve IEC standart çıkışları DIN 50347' e göre dir.
 Le grandezze dei motori IEC e le uscite standard IEC sono conformi a DIN 50347.
 Tailles de moteurs IEC et les sorties standards IEC est selon la norme DIN 50347.
 Tamaño de motores de IEC y salidas estandares de IEC son conformes a DIN 50347.

Digitale Bereichen zeigen, dass IEC-Adapter für IEC Motorgöße und der Wechselkurse ist.
 This area which is colorless is shown IEC adapter is applicable for this IEC motor size and reduction ratio
 Rakamlı alanlar IEC adaptörünün, IEC motor büyüklüğü ve tahvil oranına uygun olduğunu belirtir
 Gli spazi con cifre degli adattatori IEC, indicano che la grandezza del motore IEC é conforme al rapporto di trasmissione
 Zones numériques indiquent que l'adaptateur IEC est adapté pour IEC taille du moteur et taux de change.
 Áreas con números indican que es adaptador de IEC, es conforme a tamaño del motor IEC y al ratio de cambios.






Bei der Berechnung maximale Antriebskraft vom Typ W wird keine kursiv Werte übernommen. f_B mit P_{1max} = 1
 P_{1max} value which is *non-italic* is calculated when service factor f_B is equal to one.
 Tip W azami tahrik gücü hesaplanırken *italic* olmayan değerler alınmıştır. P_{1max} ile $f_B = 1$
 Nel calcolo della forza motrice massima tipo W sono stati presi valori non in corsivo. P_{1max} e $f_B = 1$
 Bien que la force maximale de conduite de type W est calculé, les valeurs italiques ne sont pas prises. f_B avec P_{1max} = 1
 Los valores no cursivos fueron tomados al calcular la fuerza motriz tipo W. P_{1max} con $f_B = 1$

Typ / Type / Tip / Tipo / Type / Tipo	iges	4-pol. 50Hz 1400rpm n_2 [min ⁻¹]	M _{amax} $f_B=1$ 4 - pol. [Nm]	P _{1max} W $f_B \geq 1$				PAM - IEC $f_B \Rightarrow$  45 - 86						
				4 - pol. 1400rpm [kW]	FR1 [kN]	FR2A [kN]	FR2B [kN]	63		71		80		
K35390	158.67	8.9	600	0.62	1.1	12.0	6.3	63	71	80				
	140.25	10.1	600	0.70	1.1	12.0	6.1	63	71	80				
	125.18	11.3	600	0.79	1.1	12.0	5.8	63	71	80				
	 112.63	12.5	600	0.87	1.1	12.0	5.6	63	71	80				
	 102.00	13.8	600	0.97	1.1	12.0	5.4	63	71	80				
	 91	91.04	15.5	600	1.08	1.1	12.0	5.2	63	71	80			
	+	78.09	18.1	600	1.26	1.1	12.0	4.9	63	71	80	90		
	PAM - IEC	69.70	20.2	600	1.41	1.0	12.0	4.7	63	71	80	90		
	 57.38	24.6	600	1.72	1.0	12.0	4.3		71	80	90	100	112	
	 91	51.21	27.6	600	1.92	1.0	12.0	4.1		71	80	90	100	112
		43.56	32.4	600	2.26	1.0	12.0	3.9		71	80	90	100	112
		38.88	36.3	600	2.53	0.9	12.0	3.7		71	80	90	100	112
		33.70	41.9	600	2.92	0.9	12.0	3.5		71	80	90	100	112
		28.25	49.9	600	3.49	0.8	11.4	3.3			80	90	100	112
		26.30	53.7	600	3.75	0.8	11.1	3.2			80	90	100	112
		22.50	62.5	600	4.36	0.7	10.4	3.0		71	80	90	100	112
		17.08	82.3	600	5.75	0.6	9.2	2.6		71	80	90	100	112
		15.25	92.3	590	6.33	0.5	8.9	2.5		71	80	90	100	112
		13.21	106.5	590	7.31	0.4	8.3	2.4		71	80	90	100	112
		12.41	113.3	580	7.65	0.4	8.1	2.3			80	90	100	112
	11.08	127.0	540	7.98	0.3	7.9	2.3			80	90	100	112	
	10.31	136.4	520	8.25	0.3	7.8	2.2			80	90	100	112	
	9.20	152.8	460	8.18	0.3	7.7	2.2			80	90	100	112	
	7.36	191.2	350	7.79	0.4	7.5	2.1		71	80	90	100	112	
	6.91	203.5	340	8.05	0.3	7.3	2.1			80	90	100	112	
	5.74	245.0	290	8.27	0.3	7.0	2.0			80	90	100	112	







Typ / Type / Tip / Tipo / Type / Tipo	iges	4-pol. 50Hz 1400rpm n_2 [min ⁻¹]	M _{amax} $f_B=1$ 4 - pol. [Nm]	P _{1max} W $f_B \geq 1$				PAM - IEC $f_B \Rightarrow$ 45 - 86						
				4 - pol. 1400rpm [kW]	FR1 [kN]	FR2A [kN]	FR2B [kN]	80	90	100	112			
K40390	142.18	9.8	850	0.97	2.5	18.0	9.5	80	90	100	112			
	124.46	11.2	850	1.11	2.5	18.0	9.1	80	90	100	112			
	114.17	12.3	850	1.21	2.5	18.0	8.8	80	90	100	112			
	W 	103.40	13.5	850	1.34	2.5	18.0	8.5	80	90	100	112		
	93	98.70	14.2	850	1.40	2.5	18.0	8.3	80	90	100	112	132	
	+	90.52	15.5	850	1.53	2.5	18.0	8.1	80	90	100	112		
	PAM - IEC	79.26	17.7	850	1.75	2.5	18.0	7.7	80	90	100	112	132	
		71.78	19.5	850	1.93	2.5	18.0	7.4	80	90	100	112	132	
	93	67.78	20.7	850	2.04	2.5	18.0	7.2	80	90	100	112	132	
		62.47	22.4	850	2.22	2.5	18.0	7.0	80	90	100	112	132	
		58.81	23.8	850	2.35	2.5	18.0	6.9	80	90	100	112	132	
		54.43	25.7	850	2.54	2.5	18.0	6.7	80	90	100	112	132	
		50.17	27.9	850	2.76	2.5	18.0	6.5	80	90	100	112	132	
		44.78	31.3	850	3.09	2.5	18.0	6.2	80	90	100	112	132	
		42.28	33.1	850	3.27	2.5	18.0	6.0	80	90	100	112	132	
		38.97	35.9	850	3.55	2.5	18.0	5.9	80	90	100	112	132	
		33.95	41.2	850	4.08	2.5	18.0	5.5	80	90	100	112	132	
		31.29	44.7	850	4.42	2.5	18.0	5.4	80	90	100	112	132	
		28.83	48.6	850	4.80	2.4	18.0	5.2	80	90	100	112	132	
		26.11	53.6	850	5.30	2.3	17.6	5.0	80	90	100	112	132	
	22.40	62.5	850	6.18	2.2	16.5	4.7	80	90	100	112	132		
	17.98	77.8	850	7.70	2.0	15.1	4.3	80	90	100	112	132		
	16.29	86.0	850	8.50	1.9	14.5	4.1	80	90	100	112	132		
	14.11	99.2	810	9.35	1.8	13.9	4.0	80	90	100	112	132		
	11.33	123.6	750	10.78	1.7	12.9	3.7	80	90	100	112	132		
	10.26	136.4	650	10.32	1.7	12.8	3.7	80	90	100	112	132		
	8.63	162.2	600	11.32	1.6	12.0	3.4	80	90	100	112	132		
	7.82	179.1	500	10.41	1.7	12.0	3.4	80	90	100	112	132		

Typ / Type / Tip / Tipo / Type / Tipo	iges	4-pol. 50Hz 1400rpm n_2 [min ⁻¹]	M _{amax} $f_B=1$ 4 - pol. [Nm]	P _{1max} W $f_B \geq 1$				PAM - IEC $f_B \Rightarrow$  45 - 86					
				4 - pol. 1400rpm [kW]	FR1 [kN]	FR2A [kN]	FR2B [kN]						
K50390    + PAM - IEC  	161.23	8.7	1800	1.82	2.8	22.0	11.8	80	90	100	112		
	141.14	9.9	1800	2.08	2.7	22.0	11.2	80	90	100	112		
	129.64	10.8	1800	2.26	2.7	22.0	10.9	80	90	100	112		
	117.49	11.9	1800	2.50	2.7	22.0	10.5	80	90	100	112		
	111.93	12.5	1800	2.62	2.7	22.0	10.3	80	90	100	112	132	
	102.86	13.6	1800	2.85	2.7	22.0	10.0	80	90	100	112		
	90.00	15.6	1800	3.26	2.6	22.0	9.5	80	90	100	112	132	
	81.57	17.2	1800	3.59	2.6	22.0	9.1	80	90	100	112	132	
	76.87	18.2	1700	3.60	2.6	22.0	9.0	80	90	100	112	132	
	70.84	19.8	1700	3.91	2.5	22.0	8.7	80	90	100	112	132	
	66.83	20.9	1700	4.14	2.5	22.0	8.5	80	90	100	112	132	
	63.93	21.9	1700	4.33	2.5	22.0	8.3	80	90	100	112	132	
	56.96	24.6	1700	4.86	2.4	22.0	8.0	80	90	100	112	132	
	51.63	27.1	1700	5.36	2.4	22.0	7.7	80	90	100	112	132	
	48.89	28.6	1700	5.66	2.3	22.0	7.6	80	90	100	112	132	
	46.59	30.0	1700	5.94	2.3	22.0	7.4	80	90	100	112	132	
	43.91	31.9	1700	6.31	2.2	22.0	7.2	80	90	100	112	132	
	40.46	34.6	1700	6.84	2.2	22.0	7.0	80	90	100	112	132	
	35.30	39.7	1700	7.84	2.1	22.0	6.6	80	90	100	112	132	
	32.54	43.0	1700	8.51	2.0	22.0	6.4	80	90	100	112	132	
	29.67	47.2	1600	8.78	2.0	22.0	6.3	80	90	100	112	132	160
	25.65	54.6	1500	9.53	1.9	21.1	6.0	80	90	100	112	132	160
	23.26	60.2	1400	9.80	1.8	20.4	5.8	80	90	100	112	132	160
	18.70	74.9	1400	12.19	1.6	18.7	5.3	80	90	100	112	132	160
	16.95	82.6	1400	13.45	1.4	18.0	5.1	80	90	100	112	132	160
	14.65	95.6	1200	13.34	1.4	17.6	5.0	80	90	100	112	132	160
	11.78	118.8	1000	13.83	1.4	16.7	4.8	80	90	100	112	132	160
	10.68	131.1	1000	15.25	1.2	16.1	4.6	80	90	100	112	132	160
	8.98	156.0	900	16.32	1.0	15.1	4.3	80	90	100	112	132	160
	8.13	172.1	800	16.03	1.1	14.9	4.2	80	90	100	112	132	160

Typ / Type / Tip / Tipo / Type / Tipo	iges	4-pol. 50Hz 1400rpm n_2 [min ⁻¹]	M _{amax} $f_B=1$ 4 - pol. [Nm]	P _{1max} W $f_B \geq 1$				PAM - IEC					
				4 - pol. 1400rpm [kW]	FR1 [kN]	FR2A [kN]	FR2B [kN]	$f_B \Rightarrow$ 45 - 86					
K60390 W 97 + PAM - IEC 97	183.08	7.6	3500	3.11	3.9	30.0	14.8	90	100	112	132		
	162.63	8.6	3500	3.51	3.8	30.0	14.0	90	100	112	132		
	146.59	9.6	3500	3.89	3.8	30.0	13.4	90	100	112	132		
	131.96	10.6	3500	4.32	3.8	30.0	12.8	90	100	112	132		
	121.39	11.5	3500	4.70	3.8	30.0	12.3	90	100	112	132		
	108.31	12.9	3500	5.26	3.8	30.0	11.7	90	100	112	132		
	101.29	13.8	3500	5.63	3.7	30.0	11.3		100	112	132	160	180
	91.30	15.3	3500	6.24	3.7	30.0	10.8		100	112	132	160	180
	81.18	17.2	3500	7.02	3.7	30.0	10.2	90	100	112	132		
	75.60	18.5	3500	7.54	3.6	30.0	9.9		100	112	132	160	180
	70.62	19.8	3300	7.61	3.6	30.0	9.8		100	112	132	160	180
	63.65	22.0	3300	8.44	3.6	30.0	9.3		100	112	132	160	180
	60.34	23.2	3200	8.64	3.6	30.0	9.2		100	112	132	160	180
	55.28	25.3	3200	9.43	3.6	30.0	8.8		100	112	132	160	180
	50.56	27.7	3200	10.31	3.5	29.6	8.5		100	112	132	160	180
	45.57	30.7	3000	10.72	3.5	29.0	8.3		100	112	132	160	180
	41.26	33.9	2800	11.05	3.5	28.5	8.2		100	112	132	160	180
	35.25	39.7	2800	12.94	3.4	26.5	7.6		100	112	132	160	180
	31.77	44.1	2800	14.36	3.3	25.1	7.2		100	112	132	160	180
	31.39	44.6	2800	14.53	3.3	24.9	7.1				132	160	180
	28.11	49.8	2800	16.22	3.2	23.6	6.7				132	160	180
	26.31	53.2	2800	17.33	3.2	22.8	6.5		100	112	132	160	180
	23.27	60.2	2800	19.60	3.1	21.4	6.1				132	160	180
	21.00	66.7	2500	19.39	3.1	21.6	6.2				132	160	180
	18.92	74.0	2200	18.94	3.1	21.9	6.3				132	160	180
	15.67	89.3	2100	21.83	3.0	20.4	5.8				132	160	180
	14.15	98.9	2100	24.17	2.8	19.4	5.5				132	160	180
	12.75	109.8	2000	25.55	2.8	18.9	5.4				132	160	180
	10.56	132.6	2000	30.85	2.5	17.2	4.9				132	160	180
	9.63	145.4	1800	30.45	2.6	17.5	5.0				132	160	180
7.97	175.8	1500	30.66	2.6	17.3	4.9				132	160	180	

Typ / Type / Tip / Tipo / Type / Tipo	iges	4-pol. 50Hz 1400rpm n_2 [min ⁻¹]	M _{amax} f _B =1 4 - pol. [Nm]	P _{1max} W f _B ≥ 1				PAM - IEC f _B ⇒  45 - 86						
				4 - pol. 1400rpm [kW]	FR1 [kN]	FR2A [kN]	FR2B [kN]							
K70390	183.27	7.6	5000	4.44	3.8	45.0	45.0	100	112	132				
	162.98	8.6	5000	5.00	3.8	45.0	45.0	100	112	132	160	180		
	146.38	9.6	5000	5.56	3.8	45.0	45.0	100	112	132	160	180		
	W	133.53	10.5	5000	6.10	3.8	45.0	45.0	100	112	132	160	180	
		121.96	11.5	5000	6.68	3.8	45.0	45.0	100	112	132	160	180	
		109.54	12.8	5000	7.43	3.7	43.1	43.1	100	112	132	160	180	
	+	104.68	13.4	5000	7.78	3.7	42.0	42.0	100	112	132			
	PAM - IEC	93.09	15.0	5000	8.75	3.7	39.7	39.7	100	112	132	160	180	
		83.66	16.7	5000	9.73	3.6	37.9	37.9	100	112	132	160	180	200
		76.27	18.4	5000	10.68	3.6	36.0	36.0	100	112	132	160	180	
		69.66	20.1	5000	11.69	3.6	34.4	34.4	100	112	132	160	180	
		63.37	22.1	5000	12.85	3.5	33.0	33.0	100	112	132	160	180	200
		58.32	24.0	5000	13.96	3.5	31.5	31.5	100	112	132	160	180	200
		53.98	25.9	5000	15.09	3.4	30.2	30.2	100	112	132	160	180	200
		51.92	27.0	5000	15.69	3.4	29.8	29.8	100	112	132	160	180	200
		47.78	29.3	5000	17.05	3.4	28.3	28.3	100	112	132	160	180	200
		43.64	32.1	4800	17.92	3.3	27.7	27.7	100	112	132	160	180	200
		39.27	35.6	4800	19.91	3.3	26.3	26.3			132	160	180	200
		36.20	38.7	4800	21.60	3.2	25.0	25.0	100	112	132	160	180	200
		32.18	43.5	4700	23.79	3.1	23.9	23.9			132	160	180	200
		29.66	47.2	4700	25.81	3.0	22.7	22.7	100	112	132	160	180	200
		27.09	51.7	4600	27.66	3.0	21.9	21.9	100	112	132	160	180	200
		24.90	56.2	4600	30.09	2.9	21.0	21.0			132	160	180	200
		22.43	62.4	4400	31.95	2.8	20.3	20.3			132	160	180	200
		20.40	68.6	4000	31.94	2.8	20.8	20.8			132	160	180	200
		18.38	76.2	3600	31.90	2.8	20.9	20.9			132	160	180	200
		16.79	83.4	3200	31.04	2.8	21.3	21.3			132	160	180	200
		14.23	98.4	3100	35.48	2.7	19.9	19.9			132	160	180	200
		11.65	120.1	3100	43.34	2.4	18.0	18.0			132	160	180	200
		10.64	131.5	3000	45.93	2.3	17.5	17.5			132	160	180	200

Typ / Type / Tip / Tipo / Type / Tipo	iges	4-pol. 50Hz 1400rpm n ₂ [min ⁻¹]	M _{amax} f _B =1 4 - pol. [Nm]	P _{1max} W f _B ≥ 1				PAM - IEC					
				4 - pol. 1400rpm [kW]	FR1 [kN]	FR2A [kN]	FR2B [kN]	f _B ⇒ 45 - 86					
K90390 + PAM - IEC 	168.56	8.3	8000	7.73	9.6	65.0	65.0	132	160	180			
	152.10	9.3	8000	8.62	9.5	65.0	65.0	132	160	180			
	136.87	10.2	8000	9.52	9.5	65.0	65.0	132	160	180			
	126.23	11.1	8000	10.32	9.4	65.0	65.0	132	160	180			
	105.17	13.3	8000	12.39	9.4	65.0	65.0	132	160	180	200	225	
	94.90	14.8	8000	13.73	9.3	65.0	65.0	132	160	180	200	225	
	88.87	15.8	8000	14.66	9.3	65.0	65.0	132	160	180			
	85.54	16.4	8000	15.23	9.2	65.0	65.0	132	160	180			
	78.76	17.8	8000	16.54	9.2	64.1	64.1	132	160	180	200	225	
	72.16	19.4	8000	18.06	9.1	62.1	62.1	132	160	180			
	64.83	21.6	8000	20.10	9.0	59.4	59.4	132	160	180	200	225	
	62.21	22.5	8000	20.95	9.0	58.4	58.4	132	160	180	200	225	
	58.50	23.9	8000	22.27	8.9	57.0	57.0	132	160	180	200	225	
	55.45	25.2	8000	23.50	8.9	55.9	55.9	132	160	180	200	225	
	51.63	27.1	8000	25.24	8.8	54.2	54.2	132	160	180	200	225	
	48.55	28.8	8000	26.84	8.8	52.9	52.9	132	160	180	200	225	
	42.94	32.6	8000	30.35	8.6	50.5	50.5	132	160	180	200	225	
	39.74	35.2	8000	32.79	8.5	48.7	48.7		160	180	200	225	
	35.85	39.1	8000	36.35	8.4	46.7	46.7		160	180	200	225	
	34.18	41.0	8000	38.12	8.3	45.9	45.9	132	160	180	200	225	
	30.84	45.4	8000	42.25	8.1	44.0	44.0	132	160	180	200	225	
	28.71	48.8	8000	45.39	8.0	42.7	42.7	132	160	180	200	225	
	25.60	54.7	6800	43.27	8.1	42.4	42.4	132	160	180	200	225	
	24.50	57.1	6700	44.54	8.0	41.7	41.7		160	180	200	225	
	20.95	66.8	6500	50.54	7.8	39.5	39.5		160	180	200	225	
	18.90	74.1	6000	51.71	7.7	38.6	38.6		160	180	200	225	
	15.69	89.2	5000	51.91	7.7	37.2	37.2		160	180	200	225	
	14.32	97.8	5000	56.87	7.5	35.9	35.9		160	180	200	225	
12.92	108.5	4500	56.73	7.5	35.1	35.1		160	180	200	225		
10.72	130.6	4500	68.38	7.0	32.7	32.7		160	180	200	225		

Typ / Type / Tip / Tipo / Type / Tipo	iges	4-pol. 50Hz 1400rpm n_2 [min ⁻¹]	Mamax $f_B=1$ 4 - pol. [Nm]	P _{1max} W $f_B \geq 1$				PAM - IEC $f_B \Rightarrow$  45 - 86							
				4 - pol. 1400rpm [kW]	FR1 [kN]	FR2A [kN]	FR2B [kN]								
K100390	152.74	9.2	13000	13.86	10.0	80.0	65.0	160	180						
	136.95	10.2	13000	15.46	9.9	80.0	65.0	160	180						
	124.56	11.2	13000	17.00	9.9	80.0	65.0	160	180						
	 112.66	12.4	13000	18.80	9.8	80.0	65.0	160	180						
	 102.47	13.7	13000	20.66	9.8	80.0	65.0	160	180	200					
	 94.85	14.8	13000	22.32	9.7	80.0	65.0	160	180	200					
	+	86.27	16.2	13000	24.55	9.7	80.0	65.0	160	180	200				
	PAM - IEC	75.56	18.5	13000	28.02	9.6	80.0	65.0	160	180	200				
	 68.72	20.4	13000	30.81	9.5	80.0	65.0	160	180	200	225				
	 58.01	24.1	13000	36.50	9.4	80.0	65.0	160	180	200	225	250			
	52.76	26.5	13000	40.13	9.3	80.0	65.0	160	180	200	225	250			
	50.31	27.8	13000	42.09	9.2	80.0	65.0	160	180	200	225	250			
	44.36	31.6	12000	44.06	9.2	78.2	65.0	160	180	200	225	250			
	40.07	34.9	12700	51.63	9.0	73.6	65.0	160	180	200	225	250			
	36.96	37.9	12300	54.21	8.9	71.9	65.0	160	180	200	225	250			
	33.62	41.6	11900	57.65	8.8	69.8	65.0	160	180	200	225	250			
	30.33	46.2	11500	61.76	8.7	67.5	65.0	160	180	200	225	250	280		
	28.27	49.5	10200	58.77	8.8	67.7	65.0	160	180	200	225	250			
	26.01	53.8	11100	69.51	8.5	63.9	63.9	160	180	200	225	250	280		
	23.66	59.2	10500	72.29	8.5	62.4	62.4	160	180	200	225	250	280		
	21.43	65.3	10400	79.05	8.3	60.0	60.0	160	180	200	225	250	280		
	19.61	71.4	10700	88.88	8.0	57.1	57.1	160	180	200	225	250			
	17.69	79.2	10400	95.76	7.9	55.1	55.1	160	180	200	225	250	280		
	16.09	87.0	9900	100.22	7.8	53.7	53.7		180	200	225	250	280		
	15.22	92.0	10000	107.02	7.6	52.3	52.3		180	200	225	250	280		
	13.80	101.5	9600	113.31	7.4	50.8	50.8		180	200	225	250	280		
	12.55	111.6	8800	114.21	7.4	50.1	50.1		180	200	225	250	280		
	11.64	120.3	7700	107.75	7.6	50.4	50.4		180	200	225	250	280		
	10.34	135.4	7900	124.45	7.1	47.6	47.6		180	200	225	250	280		
	8.69	161.0	6800	127.46	7.1	46.1	46.1		180	200	225	250	280		

DE GEWICHTTABELLE VON W UND IEC ADAPTERS
IT TABELLA DI PESO DI W E IEC ADATTATORE

EN WEIGHT TABLE OF W AND IEC ADAPTERS
FR TABLEAU DE POIDS DU W ET IEC ADAPTATEUR

TR W VE IEC ADAPTÖRLERİN AĞIRLIK TABLOSU
ES TABLA DE PESO DE W Y IEC ADAPTADOR

Gewichte (ca. kg) / Weights (approx. kg) / Ağırlıklar (Yaklaşık kg) / Pesi (ca. kg) / Poids (Environ kg) / Pesos (Aprox kg)															
Typ / Type / Tip / Tipo / Type / Tipo	W	PAM													
		63	71	80	90	100	112	132	160	180	200	225	250	280	
K35390	24	21	22	23	23	27	27	-	-	-	-	-	-	-	
K40390	35	-	-	33	33	35	35	39	-	-	-	-	-	-	
K50390	61	-	-	59	59	61	61	65	72	72	-	-	-	-	
K60390	89	-	-	80	80	84	84	87	93	93	-	-	-	-	
K70390	134.5	-	-	-	-	129.5	129.5	132.5	138.5	138.5	154.5	-	-	-	
K90390	216.5	-	-	-	-	-	-	203.5	211.5	211.5	226.5	229.5	-	-	
K100390	460	-	-	-	-	-	-	-	390	390	455	461	480	480	

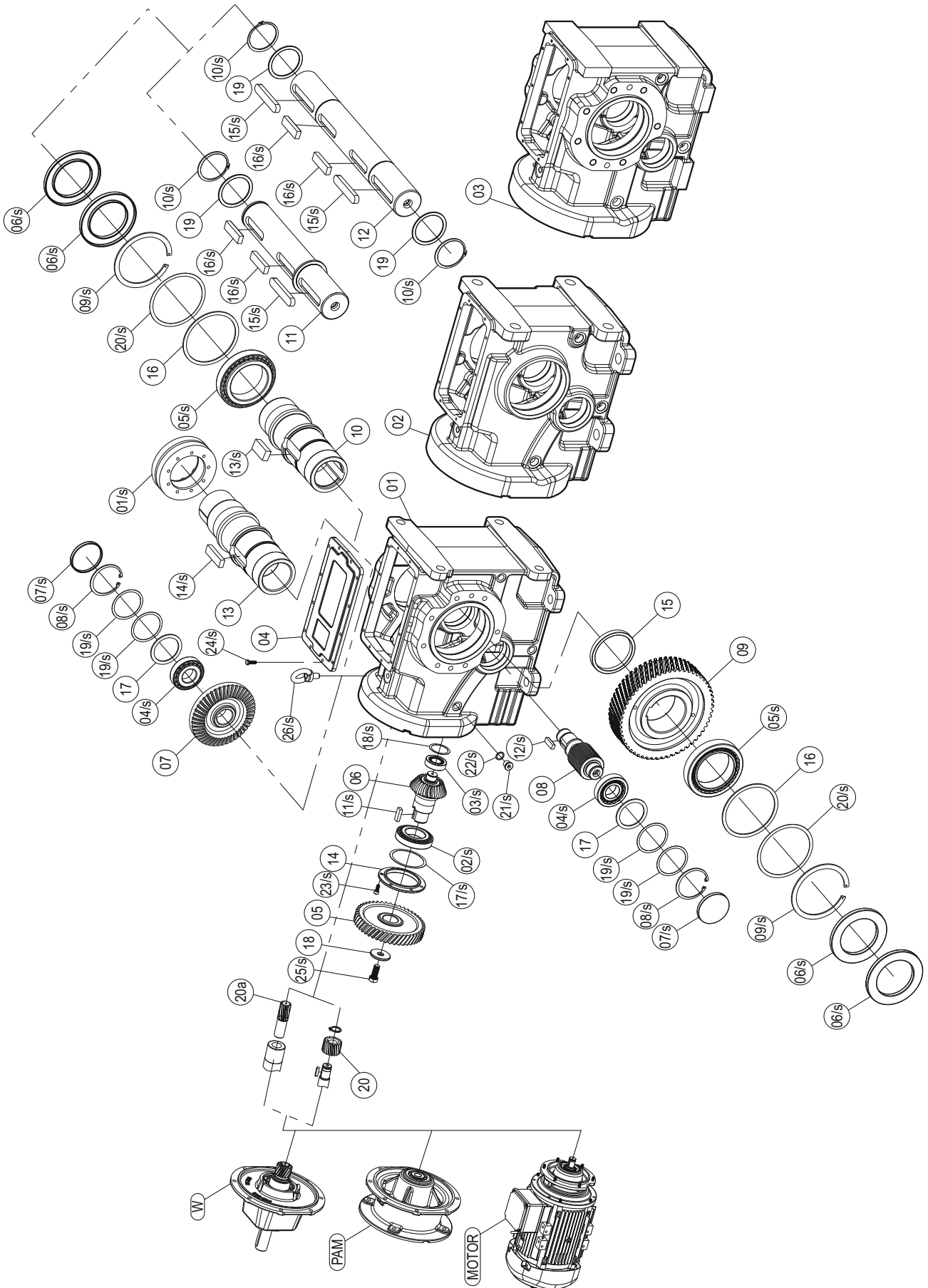


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DE ALLGEMEINE STUCKLISTE
IT GENERALE ELENCO DELLE PARTI

EN GENERAL PART LIST
FR GÉNÉRALE LA LISTE DES PIÈCES

TR GENEL PARÇA LİSTESİ
ES LISTE DE PIEZAS EN GENERAL



DE ALLGEMEINE STUCKLISTE

IT GENERALE ELENCO DELLE PARTI

1	Getriebegehäuse K-DA/B14	Gear Case K-DA/B14	Gövide K-DAB14	Ingranaggi Box K-DA/B14	La caja de engranajes K-DA/B14
2	Getriebegehäuse K-DA	Gear Case K-DA	Gövide K-DA	Ingranaggi Box K-DA	La caja de engranajes K-DA
3	Getriebegehäuse K-DG/B14	Gear Case K-DG/B14	Gövide K-DG/B14	Ingranaggi Box K-DG/B14	La caja de engranajes K-DG/B14
4	Gehäusedeckel	Case Cover	Gövide Kapağı	Coperchio della custodia	Tapá de la carcasa
5	Abtriebsrad	Driving Gear	Z2 Dişlisi	Ingranaggio Conduttore	Engrenaje con ducido
6	Ritzel Welle	Pinion Gear	Z3 Dişlisi	Pignone	Deleje del piñón
7	Abtriebsrad	Driven Gear	Z4 Dişlisi	Ingranaggio Condotto	Engrenaje conducido
8	Abtriebsritzelle	Pinion Gear	Z5 Dişlisi	Pignone di uscita	El eje de piñón de salida
9	Ausgangswelle	Driven Gear	Z6 Dişlisi	Albero di uscita	Eje de salida
10	Abstandhalter	Hollow Shaft	Çıkış Şaftı	Distanziatore	Espaciador
11	Abtriebswelle	Solid shaft	Tek Çıkış Mili	albero pieno	eje sólido
12	Abtriebswelle auf beiden Seiten	Solid shaft on both sides	Çift Çıkış Mili	albero sporgente da entrambi i lati	eje sólido en ambos lados
13	Hohlwelle mit Schrumpfscheibe	Hollow Shaft With Shrink Disc	KS Şaftı	albero cavo con boccola di serraggio	eje hueco anillo de contracción
14	Lagerflansch	Z3 Bearing Flange	Z3 Rulman Flanşı	staffa di supporto	brida de apoyo
15	Welle Distanz	Shaft Spacer	Şaft burcu	albero spacer	eje espaciador
16	Ausgangsscheibe	Output Washer	Çıkış Rondelasi	rondella di uscita	arandela de salida
17	Z5 Scheibe	Z5 Washer	Z5 Rondelasi	Z5 rondella	Z5 lavadora
18	Z2 Scheibe	Z2 Washer	Z2 Pulu	Z2 rondella	Z2 lavadora
19	Ausgangswellenscheibe	Output shaft Washer	Çıkış Mili Rondelasi	Rondella albero di uscita	arandela del eje de salida
20-20a	Antriebsritzel	Input pinion	Z1 Dişlisi (Çakma)- (Yekpare - Çakma)	-Ingresso Pignone	Piñón de entrada

EN GENERAL PART LIST

FR GÉNÉRALE LA LISTE DES PIÈCES

01/S	Schrumpfscheibe	Shrink Disc	Konik Siktirma	boccola di serraggio	anillo de contracción
02/S	Kugellager	Bearing	Rulman	Cuscinetto	Rodamiento de bolas
03/S	Kugellager	Bearing	Rulman	Cuscinetto	Rodamiento de bolas
04/S	Kugellager	Bearing	Rulman	Cuscinetto	Rodamiento de bolas
05/S	Kugellager	Bearing	Rulman	Cuscinetto	Rodamiento de bolas
06/S	Wellendichtring	Oil seal	Yağ keçesi	paraolio	sello de aceite
07/S	Verschlusskappe	Locking cap	Yağ Kapağı	Tappo di chiusura	Tapón de cierre
08/S	Sicherungsring	Circlip	Segman	Anello di sicurezza	Anillo de seguridad
09/S	Sicherungsring	Circlip	Segman	Anello di sicurezza	Anillo de seguridad
10/S	Sicherungsring	Circlip	Segman	Anello di sicurezza	Anillo de seguridad
11/S	Paßfeder	Key	Kama	Chiavetta	Clave
12/S	Paßfeder	Key	Kama	Chiavetta	Clave
13/S	Paßfeder	Key	Kama	Chiavetta	Clave
14/S	Paßfeder	Key	Kama	Chiavetta	Clave
15/S	Paßfeder	Key	Kama	Chiavetta	Clave
16/S	Paßfeder	Key	Kama	Chiavetta	Clave
17/S	Shim	Shim	Kama	Chiavetta	Clave
18/S	Shim	Shim	Layner	Shim	Calce
19/S	Shim	Shim	Layner	Shim	Calce
20/S	Shim	Shim	Layner	Shim	Calce
21/S	Verschlussschraube	Oil plug	Yağ Tapası	Tappo di scarico	Tapón
22/S	Verschlussschraube schiebe	Oil plug washer	Yağ Tapası rondelasi	di scarico lavatrice spina	draner arandela de la bujia
23/S	Lagerflansch schraube	Bearing Flange Bolt	Rulman Flanşı Civatası	cuscinetto bullone della flangia	perno de brida de apoyo
24/S	Bei deckelschraube	Case Cover Bolt	Gövide Kapağı Civatası	Bullone copertura di caso	Vis du couvercle de cas
25/S	Z2 Schraube	Z2 Bolt	Z2 Civatası	Z2 bullone	Z2 perno
26/S	Ring Schraube	Eye Bolt	Mapa	vite ad anello	Perno de anilla

TR GENEL PARÇA LİSTESİ

ES LISTE DE PIEZAS EN GENERAL

DE ALLGEMEINE STUCKLISTE

EN GENERAL PART LIST

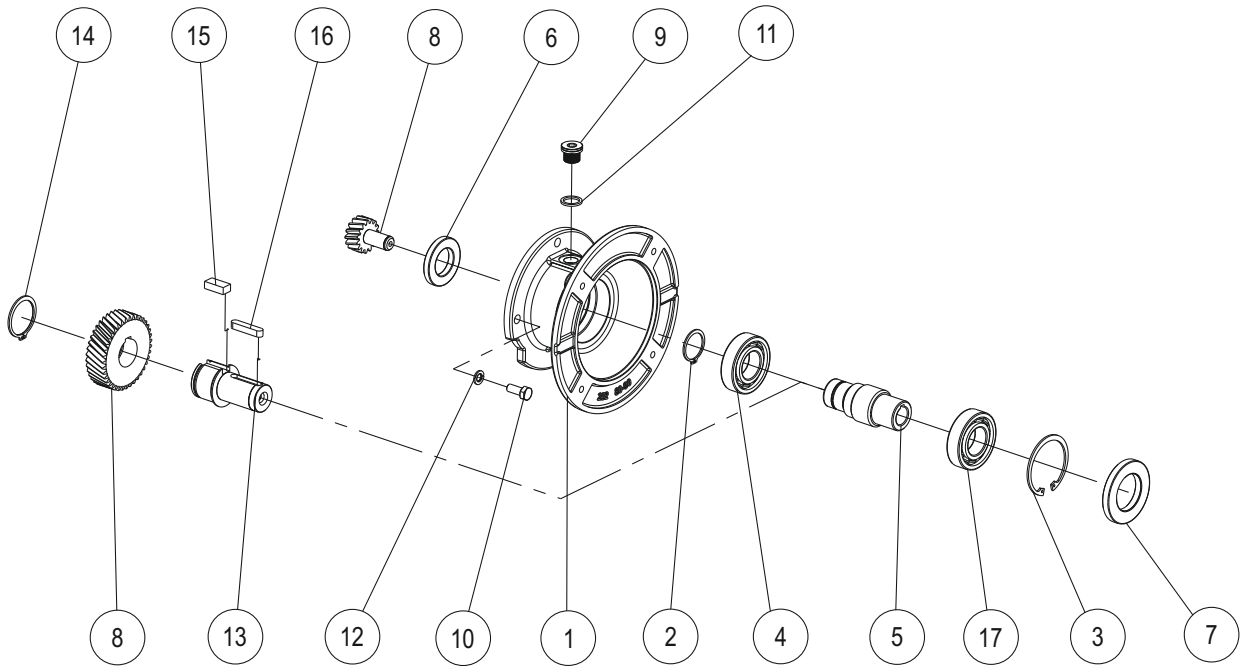
TR GENEL PARÇA LİSTESİ

IT GENERALE ELENCO DELLE PARTI

FR GÉNÉRALE LA LISTE DES PIÈCES

ES LISTE DE PIEZAS EN GENERAL

K 35390 - 40390 - 50390 PAM



1	PAM Box	PAM Case	PAM Gövdesi	PAM Box	PAM Boite	PAM Caja
2	Sicherungsring	Circlip	Segman	Anello di sicurezza	Circlip	Anillo de seguridad
3	Sicherungsring	Circlip	Segman	Anello di sicurezza	Circlip	Anillo de seguridad
4	Kugellager	Bearing	Rulman	Cuscinetto	Roulement	Rodamiento de bolas
5	PAM Welle	PAM Shaft	Pam Mili	PAM Albero	PAM Arbre	PAM Eje
6	Wellendichtring	Shaft Seal	Keçe	Tenuta Albero	Bague d'étancheite	Sello del eje
7	Wellendichtring	Shaft Seal	Keçe	Tenuta Albero	Bague d'étancheite	Sello del eje
8	Antriebsritzel	Input Pinion	Z1 Dişlisi	Ingresso Pignone	Pignon d'entrée	Piñón de entrada
9	Verschlußschraube	Oil Plug	Yağ Tapası	Olio Tappo	Visde vidange	Tapón
10	Verschrauben	Bolt	Civata	Bullone	Boulonner	Atornillor
11	Dichtung	Seal	Tapa Contası	Sigillo	Joint	Sellar
12	Federscheibe	Spring Washer	Yaylı Rondela	Rondella elastica	Rondella élastique	Arandela
13	Z1 Welle	Z1 Shaft	Çakma Z1 Mili	Z1 Albero	Z1 Arbre	Z1 Eje
14	Circlip	Circlip	Segman	Anello di sicurezza	Circlip	Anillo de seguridad
15	Paßfeder	Key	Kama	Chiavetta	Clavette	Clave
16	Paßfeder	Key	Kama	Chiavetta	Clavette	Clave
17	Kugellager	Bearing	Rulman	Cuscinetto	Roulement	Rodamiento de bolas

DE ALLGEMEINE STUCKLISTE

EN GENERAL PART LIST

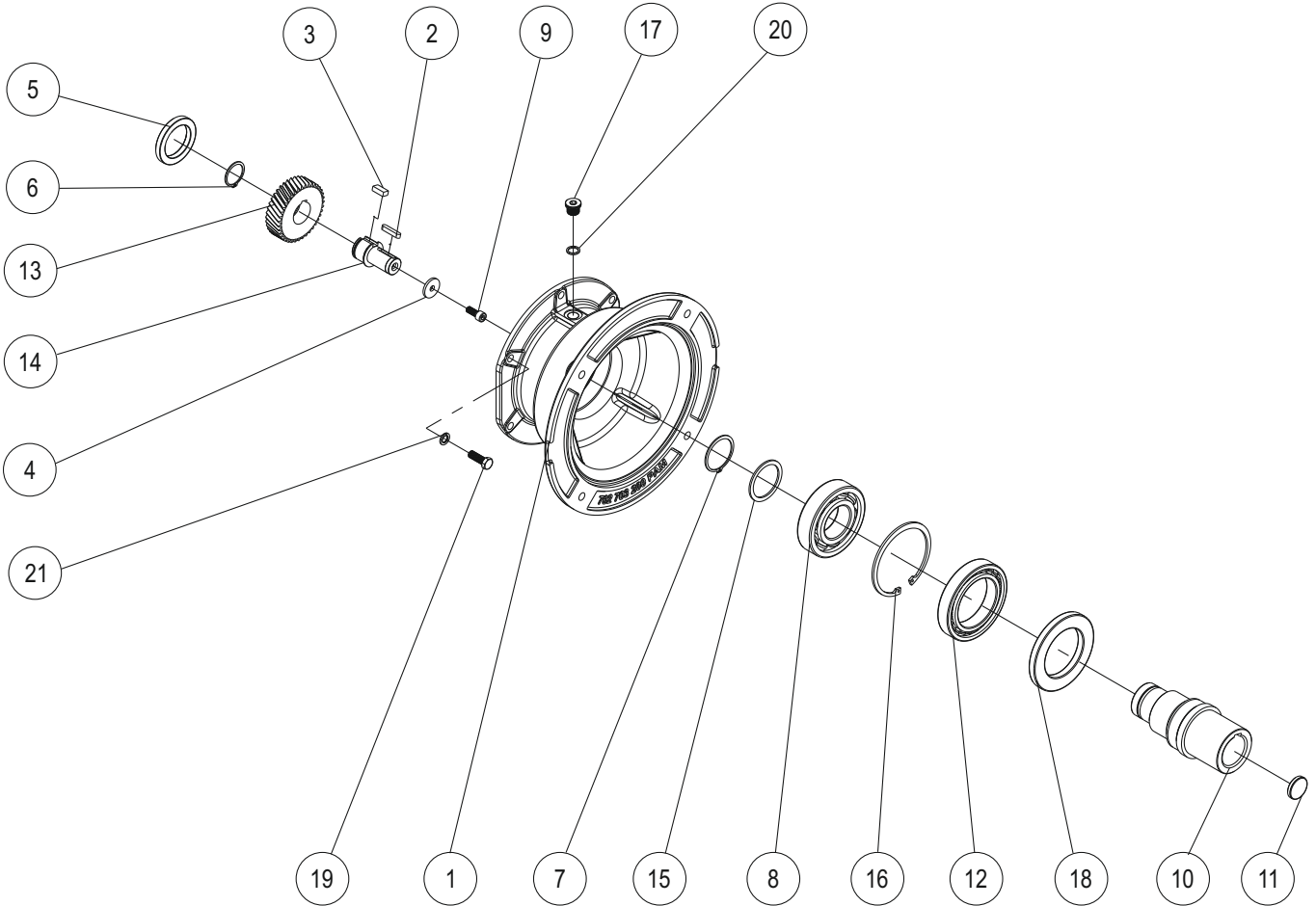
TR GENEL PARÇA LİSTESİ

IT GENERALE ELENCO DELLE PARTI

FR GÉNÉRALE LA LISTE DES PIÈCES

ES LISTE DE PIEZAS EN GENERAL

K 60390 - 70390 - 90390 - 100390 PAM



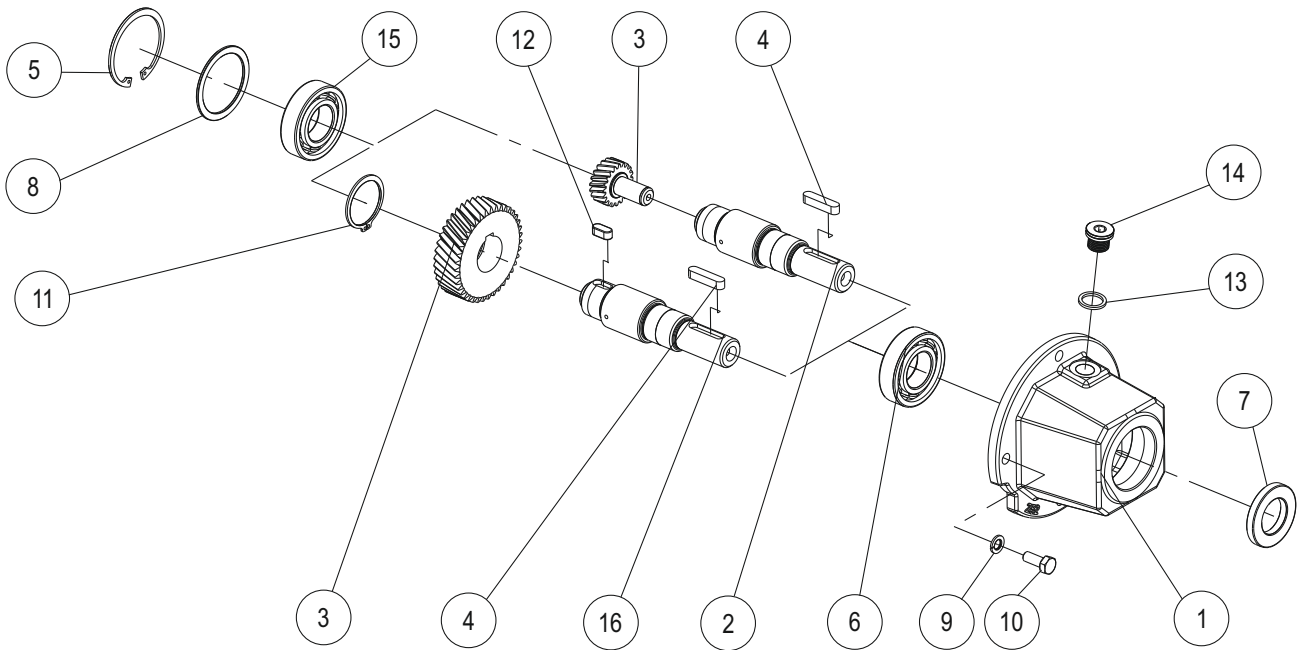
1	PAM Box	PAM Case	PAM Gövdesi	PAM Box	PAM Boite	PAM Caja
2	Paßfeder	Key	Kama	Chiavetta	Clavette	Clave
3	Paßfeder	Key	Kama	Chiavetta	Clavette	Clave
4	Stützscheibe	Supporting disc	Rondela	Rondella	Rondelle support	Al apoyo a disco
5	Wellendichtring	Shaft Seal	Keçe	Tenuta Albero	Bagua d'étancheite	Sello del eje
6	Sicherungsring	Circlip	Segman	Anello di sicurezza	Circlip	Anillo de seguridad
7	Sicherungsring	Circlip	Segman	Anello di sicurezza	Circlip	Anillo de seguridad
8	Kugellager	Bearing	Rulman	Cuscinetto	Roulement	Rodamiento de bolas
9	Verschrauben	Bolt	Civata	Bullone	Boulonner	Atornillar
10	PAM Welle	PAM Shaft	PAM Mili	PAM Albero	PAM Arbre	PAM Eje
11	Verschuß kappe	Locking cap	Yağ Kapağı	Tappo di chiusura	Bouchon	Tapón de cierre
12	Kugellager	Bearing	Rulman	Cuscinetto	Roulement	Rodamiento de bolas
13	Antriebsritzel	Input Pinion	Z1 Dişlisi	Ingresso Pignone	Pignon d'entrée	Piñón de entrada
14	Z1 Welle	Z1 Shaft	Çakma Z1 Mili	Z1 Albero	Z1 Arbre	Z1 Eje
15	Shim	Shim	Layner	Shim	Rondelle d'ajustage	Rondelle d'ajustage
16	Sicherungsring	Circlip	Segman	Anello di sicurezza	Circlip	Anillo de seguridad
17	Verschußschraube	Oil Plug	Yağ Tapası	Olio Tappo	Visde vidange	Tapón
18	Wellendichtring	Shaft Seal	Keçe	Tenuta Albero	Bagua d'étancheite	Sello del eje
19	Verschrauben	Bolt	Civata	Bullone	Boulonner	Atornillar
20	Dichtung	Seal	Tapa Contası	Sigillo	Joint	Sellar
21	Federscheibe	Spring Washer	Yaylı Rondela	Rondella Elastica	Rondella élastique	Arandela

DE ALLGEMEINE STUCKLISTE
IT GENERALE ELENCO DELLE PARTI

EN GENERAL PART LIST
FR GÉNÉRALE LA LISTE DES PIÈCES

TR GENEL PARÇA LİSTESİ
ES LISTE DE PIEZAS EN GENERAL

K 35390 - 100390 W

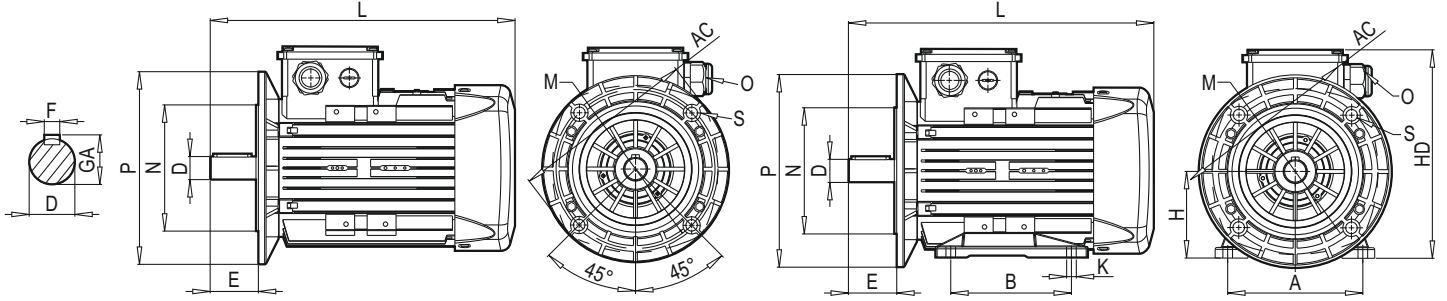


1 W Box	W Case	W Gövdesi	W Box	W Boite	W Caja
2 W Welle mit Getriebe	W Shaft with gear	W Mili Yekpare	WAlbero con ingranaggio	W Arbre avec des engins	W Eje col el engranaje
3 Antriebsritzel	Input Pinion	Z1 Dişlisi	Ingresso Pignone	Pignon d'entrée	Piñón de entrada
4 Paßfeder	Key	Kama	Chiavetta	Clavette	Clave
5 Sicherungsring	Circlip	Segman	Anello di sicurezza	Circlip	Anillo de seguridad
6 Kugellager	Bearing	Rulman	Cuscinetto	Roulement	Rodamiento de bolas
7 Wellendichtring	Shaft Seal	Keçe	Tenuta Albero	Bague d'étancheite	Sello del eje
8 Scheibe	Washer	Rondela	Rondella	Rondelle	Rondelle
9 Federscheibe	Spring Washer	Yaylı Rondela	Rondella elastica	Rondella élastique	Arandela
10 Bullone	Bolt	Civata	Bullone	Boulonner	Atornillor
11 Sicherungsring	Circlip	Segman	Anello di sicurezza	Circlip	Anillo de seguridad
12 Paßfeder	Key	Kama	Chiavetta	Clavette	Clave
13 Dichtung	Seal	Tapa Contası	Sigillo	Joint	Sellar
14 Verschlussschraube	Oil Plug	Yağ Tapası	Olio Tappo	Visde vidange	Tapón
15 Kugellager	Bearing	Rulman	Cuscinetto	Roulement	Rodamiento de bolas
16 W Welle	W Shaft	W Mili Çakma	W Albero	W Arbre	W Eje

EN THREE PHASE MOTORS IE1

TR ÜÇ FAZLI MOTORLAR IE1

DIMENSIONS / BOYUTLAR - B5, B35



B5 - V1 - V3

B35 - V15 - V35

Power Güç (kW)	Number of poles Kutup Sayısı	Motor Type Motor Tipi	Main Dimensions Ana Boyutlar			Foot mounted motors Ayaklı Motorlar					Shaft Mil				Bearing Rulman		Seal Keçe		Flange (FA) (B5) Flaş (FA) (B5)				
			AC	L	O	B	A	H	HD	K	D ⁽¹⁾	E	GA	F ⁽²⁾	Drive side Kasnak Tarafı	Non Drive Side Kasnak Tarafı Aksı	Drive side Kasnak Tarafı	Non Drive Side Kasnak Tarafı Aksı	P	N ⁽³⁾	M	R	S
0.12	4	Q1E63M4A	123	219.5	1*M20	80	100	63	174	7	11	23	125	4	6201-2Z	6201-2Z	12*22*7	12*22*7	140	95	115	0	10
	2	Q1E63M2A	123	219.5	1*M20	80	100	63	174	7	11	23	125	4	6201-2Z	6201-2Z	12*22*7	12*22*7	140	95	115	0	10
0.18	4	Q1E63M4B	123	219.5	1*M20	80	100	63	174	7	11	23	125	4	6201-2Z	6201-2Z	12*22*7	12*22*7	140	95	115	0	10
	6	Q1E71M6A	138	252.5	1*M20	90	112	71	190	7	14	30	16	5	6202-2Z	6202-2Z	15*24*5	15*24*5	160	110	130	0	10
0.25	2	Q1E63M2B	123	219.5	1*M20	80	100	63	174	7	11	23	125	4	6201-2Z	6201-2Z	12*22*5	12*22*7	140	95	115	0	10
	4	Q1E71M4A	138	252.5	1*M20	90	112	71	190	7	14	30	16	5	6202-2Z	6202-2Z	15*24*5	15*24*5	160	110	130	0	10
0.37	6	Q1E71M6B	138	252.5	1*M20	90	112	71	190	7	14	30	16	5	6202-2Z	6202-2Z	15*24*5	15*24*5	160	110	130	0	10
	2	Q1E80M2C	123	219.5	1*M20	80	100	63	174	7	11	23	125	4	6201-2Z	6201-2Z	12*22*7	12*22*7	140	95	115	0	10
0.55	2	Q1E71M2A	138	252.5	1*M20	90	112	71	190	7	14	30	16	5	6202-2Z	6202-2Z	15*24*5	15*24*5	160	110	130	0	10
	4	Q1E71M4B	138	252.5	1*M20	90	112	71	190	7	14	30	16	5	6202-2Z	6202-2Z	15*24*5	15*24*5	160	110	130	0	10
0.75	6	Q1E80M6A	158	283.5	1*M20	100	125	80	195	10	19	40	21.5	6	6204-2Z	6204-2Z	20*30*7	20*30*7	200	130	165	0	12
	2	Q1E71M2B	138	252.5	1*M20	90	112	71	190	7	14	30	16	5	6202-2Z	6202-2Z	15*24*5	15*24*5	160	110	130	0	10
1.1	4	Q1E71M4C	138	252.5	1*M20	90	112	71	190	7	14	30	16	5	6202-2Z	6202-2Z	15*24*5	15*24*5	160	110	130	0	10
	4	Q1E80M4A	158	283.5	1*M20	100	125	80	195	10	19	40	21.5	6	6204-2Z	6204-2Z	20*30*7	20*30*7	200	130	165	0	12
1.5	6	Q1E80M6B	158	283.5	1*M20	100	125	80	195	10	19	40	21.5	6	6204-2Z	6204-2Z	20*30*7	20*30*7	200	130	165	0	12
	2	Q1E71M2C	138	252.5	1*M20	90	112	71	190	7	14	30	16	5	6202-2Z	6202-2Z	15*24*5	15*24*5	160	110	130	0	10
2.2	2	Q1E80M2A	158	283.5	1*M20	100	125	80	195	10	19	40	21.5	6	6204-2Z	6204-2Z	20*30*7	20*30*7	200	130	165	0	12
	4	Q1E80M4B	158	283.5	1*M20	100	125	80	195	10	19	40	21.5	6	6204-2Z	6204-2Z	20*30*7	20*30*7	200	130	165	0	12
3	6	Q1E90S6A	193	296.5	1*M25	100	140	90	222	10	24	50	27	8	6305-2Z	6205-2Z	25*40*7	25*40*7	200	130	165	0	12
	2	Q1E71M2D	138	252.5	1*M20	90	112	71	190	7	14	30	16	5	6202-2Z	6202-2Z	15*24*5	15*24*5	160	110	130	0	10
1.5	2	Q1E80M2B	158	283.5	1*M20	100	125	80	195	10	19	40	21.5	6	6204-2Z	6204-2Z	20*30*7	20*30*7	200	130	165	0	12
	4	Q1E80M4C	158	283.5	1*M20	100	125	80	195	10	19	40	21.5	6	6204-2Z	6204-2Z	20*30*7	20*30*7	200	130	165	0	12
2.2	4	Q1E90S4A	193	296.5	1*M25	100	140	90	200	10	24	50	27	8	6305-2Z	6205-2Z	25*40*7	25*40*7	200	130	165	0	12
	6	Q1E90L6B	193	316.5	1*M25	125	140	90	222	10	24	50	27	8	6305-2Z	6205-2Z	25*40*7	25*40*7	200	130	165	0	12
1.5	2	Q1E80M2C	158	283.5	1*M20	100	125	80	195	10	19	40	21.5	6	6204-2Z	6204-2Z	20*30*7	20*30*7	200	130	165	0	12
	4	Q1E80M4D	158	283.5	1*M20	100	125	80	195	10	19	40	21.5	6	6204-2Z	6204-2Z	20*30*7	20*30*7	200	130	165	0	12
2.2	2	Q1E90S2A	193	296.5	1*M25	100	140	90	222	10	24	50	27	8	6305-2Z	6205-2Z	25*40*7	25*40*7	200	130	165	0	12
	4	Q1E90L4A	193	316.5	1*M25	125	140	90	222	10	24	50	27	8	6305-2Z	6205-2Z	25*40*7	25*40*7	200	130	165	0	12
3	6	Q1E100L6A	217	352	1*M25	140	160	100	241	12	28	60	31	8	6306-2Z	6205-2Z	30*47*7	25*40*7	250	180	215	0	15
	2	Q1E80M2D	158	283.5	1*M20	100	125	80	195	10	19	40	21.5	6	6204-2Z	6204-2Z	20*30*7	20*30*7	200	130	165	0	12
3	2	Q1E90L2A	193	316.5	1*M25	125	140	90	222	10	24	50	27	8	6305-2Z	6205-2Z	25*40*7	25*40*7	200	130	165	0	12
	4	Q1E90L4C	193	316.5	1*M25	125	140	90	222	10	24	50	27	8	6305-2Z	6205-2Z	25*40*7	25*40*7	200	130	165	0	12
3	4	Q1E100L4A	217	352	1*M25	140	160	100	241	12	28	60	31	8	6306-2Z	6205-2Z	30*47*7	25*40*7	250	180	215	0	15
	6	Q1E112M6A	232	395.5	2*M25	140	190	112	261	12	28	60	31	8	6306-2Z	6206-2Z	30*47*7	30*47*7	250	180	215	0	15
3	2	Q1E90L2C	193	316.5	1*M25	125	140	90	222	10	24	50	27	8	6305-2Z	6205-2Z	25*40*7	25*40*7	200	130	165	0	12
	4	Q1E90L4D	193	344.5	1*M25	125	140	90	222	10	24	50	27	8	6305-2Z	6205-2Z	25*40*7	25*40*7	200	130	165	0	12
3	2	Q1E100L2A	217	352	1*M25	140	160	100	241	12	28	60	31	8	6306-2Z	6205-2Z	30*47*7	25*40*7	250	180	215	0	15
	4	Q1E100L4B	217	352	1*M25	140	160	100	241	12	28	60	31	8	6306-2Z	6205-2Z	30*47*7	25*40*7	250	180	215	0	15
3	6	Q1E132S6B	279	440.5	2*M32	140	216	132	314	12	38	80	41	10	6208-2Z	6208-2Z	40*62*10	40*62*10	300	230	265	0	15

EN

THREE PHASE MOTORS IE1

TR

ÜÇ FAZLI MOTORLAR IE1

DIMENSIONS / BOYUTLAR - B5, B35

Power Güç (kW)	Number of poles Kutup Sayısı	Motor Type Motor Tipi	Main Dimensions Ana Boyutlar			Foot mounted motors Ayaklı Motorlar					Shaft Mil				Bearing Rulman		Seal Keçe		Flange (FA) (B5) Flanş (FA) (B5)				
			AC	L	O	B	A	H	HD	K	D ⁽¹⁾	E	GA	F ⁽²⁾	Drive side Kasnak Taraflı	Non Drive Side Kasnak Taraflı Aksı	Drive side Kasnak Taraflı	Non Drive Side Kasnak Taraflı Aksı	P	N ⁽³⁾	M	R	S
4	2	Q1E100L2C	217	352	1*M25	140	160	100	241	12	28	60	31	8	6306-2Z	6205-2Z	30*47*7	25*40*7	250	180	215	0	15
	4	Q1E100L4C	217	352	1*M25	140	160	100	241	12	28	60	31	8	6306-2Z	6205-2Z	30*47*7	25*40*7	250	180	215	0	15
	2	Q1E112M2A	232	395.5	2*M25	140	190	112	261	12	28	60	31	8	6306-2Z	6206-2Z	30*47*7	30*47*7	250	180	215	0	15
	4	Q1E112M4B	232	395.5	2*M25	140	190	112	261	12	28	60	31	8	6306-2Z	6206-2Z	30*47*7	30*47*7	250	180	215	0	15
5.5	6	Q1E132M6A	279	475.5	2*M32	178	216	132	314	12	38	80	41	10	6208-2Z	6208-2Z	40*62*10	40*62*10	300	230	265	0	15
	2	Q1E112M2C	232	395.5	2*M25	140	190	112	261	12	28	60	31	8	6306-2Z	6206-2Z	30*47*7	30*47*7	250	180	215	0	15
	4	Q1E112M4C	232	395.5	2*M25	140	190	112	261	12	28	60	31	8	6306-2Z	6206-2Z	30*47*7	30*47*7	250	180	215	0	15
	2	Q1E132S2A	279	440.5	2*M32	140	216	132	314	12	38	80	41	10	6208-2Z	6208-2Z	40*62*10	40*62*10	300	230	265	0	15
7.5	4	Q1E132S4C	279	440.5	2*M32	140	216	132	314	12	38	80	41	10	6208-2Z	6208-2Z	40*62*10	40*62*10	300	230	265	0	15
	6	Q1E132M6B	279	475.5	2*M32	178	216	132	314	12	38	80	41	10	6208-2Z	6208-2Z	40*62*10	40*62*10	300	230	265	0	15
	2	Q1E112M2D	232	395.5	2*M25	140	190	112	261	12	28	60	31	8	6306-2Z	6206-2Z	30*47*7	30*47*7	250	180	215	0	15
	2	Q1E132S2C	279	440.5	2*M32	140	216	132	314	12	38	80	41	10	6208-2Z	6208-2Z	40*62*10	40*62*10	300	230	265	0	15
11	4	Q1E132M4B	279	475.5	2*M32	178	216	132	314	12	38	80	41	10	6208-2Z	6208-2Z	40*62*10	40*62*10	300	230	265	0	15
	6	Q1E160M6B	302	576	2*M32	210	254	160	360	15	42	110	45	12	6309-2Z	6209-2Z	45*72*10	45*72*10	350	250	300	0	19
	2	Q1E132M2A	279	476	2*M32	178	216	132	314	12	38	80	41	10	6208-2Z	6208-2Z	40*62*10	40*62*10	300	230	265	0	15
	4	Q1E132M4C	279	475.5	2*M32	178	216	132	314	12	38	80	41	10	6208-2Z	6208-2Z	40*62*10	40*62*10	300	230	265	0	15
15	2	Q1E160M2A	302	576	2*M32	210	254	160	360	15	42	110	45	12	6309-2Z	6209-2Z	45*72*10	45*72*10	350	250	300	0	19
	4	Q1E160M4B	302	576	2*M32	210	254	160	360	15	42	110	45	12	6309-2Z	6209-2Z	45*72*10	45*72*10	350	250	300	0	19
	6	Q1E160L6A	370	629	2*M40	279	279	180	428	15	48	110	51.5	14	6310-2Z	6310-2Z	50*80*10	50*80*10	350	250	300	0	19
	2	Q1E160L2A	302	576	2*M32	254	254	160	360	15	42	110	45	12	6309-2Z	6209-2Z	45*72*10	45*72*10	350	250	300	0	19
18.5	4	Q1E160L4B	302	576	2*M32	254	254	160	360	15	42	110	45	12	6309-2Z	6209-2Z	45*72*10	45*72*10	350	250	300	0	19
	6	Q1E180M4B	370	629	2*M40	241	279	180	428	15	48	110	51.5	14	6310-2Z	6310-2Z	50*80*10	50*80*10	350	250	300	0	19
	2	Q1E200L6B	415	665	2*M50	305	318	200	461	19	55	110	59	16	6312-2Z	6312-2Z	60*90*10	60*90*10	400	300	350	0	19
	4	Q1E160L2A	302	576	2*M32	254	254	160	360	15	42	110	45	12	6309-2Z	6209-2Z	45*72*10	45*72*10	350	250	300	0	19
22	2	Q1E180M2A	370	629	2*M40	241	279	180	428	15	48	110	51.5	14	6310-2Z	6310-2Z	50*80*10	50*80*10	350	250	300	0	19
	4	Q1E180L4B	370	629	2*M40	279	279	180	428	15	48	110	51.5	14	6310-2Z	6310-2Z	50*80*10	50*80*10	350	250	300	0	19
	6	Q1E200L6C	415	665	2*M50	305	318	200	461	19	55	110	59	16	6312-2Z	6312-2Z	60*90*10	60*90*10	400	300	350	0	19
	2	Q1E180M2AE	370	629	2*M40	241	279	180	428	15	48	110	51.5	14	6310-2Z	6310-2Z	50*80*10	50*80*10	350	250	300	0	19
30	2	Q1E200L2A	415	665	2*M50	305	318	200	461	19	55	110	59	16	6312-2Z	6312-2Z	60*90*10	60*90*10	400	300	350	0	19
	4	Q1E200L4C	415	665	2*M50	305	318	200	461	19	55	110	59	16	6312-2Z	6312-2Z	60*90*10	60*90*10	400	300	350	0	19
	6	Q1E225M6B	456	765	2*M50	311	356	225	504	19	60	140	64	18	6313-2Z	6313-2Z	65*100*13	65*100*13	450	350	400	0	19
	2	Q1E200L2B	415	665	2*M50	305	318	200	461	19	55	110	59	16	6312-2Z	6312-2Z	60*90*10	60*90*10	400	300	350	0	19
37	4	Q1E225M2A	456	765	2*M50	286	356	225	504	19	60	140	64	18	6313-2Z	6313-2Z	65*100*13	65*100*13	450	350	400	0	19
	2	Q1E225M2A	456	735	2*M50	311	356	225	504	19	55	110	59	16	6313-2Z	6313-2Z	65*100*13	65*100*13	450	350	400	0	19
	4	Q1E225M4C	456	765	2*M50	311	356	225	504	19	60	140	64	18	6313-2Z	6313-2Z	65*100*13	65*100*13	450	350	400	0	19
	2	Q1E225M2C	456	735	2*M50	311	356	225	504	19	55	110	59	16	6313-2Z	6313-2Z	65*100*13	65*100*13	400	350	400	0	19
55	2	Q1E250M2A	456	784	2*M50	349	406	250	529	24	60	140	64	18	6315	6315	75*112*12	65*100*13	550	450	500	0	19
	2	Q1E250M2A (pik)	527	886	2*M50	349	406	250	615	24	60	140	64	18	6316	6316	80*100*10	80*100*10	550	450	500	0	19
	4	Q1E225M4D	456	765	2*M50	311	356	225	504	19	60	140	64	18	6313-2Z	6313-2Z	65*100*13	65*100*13	450	350	400	0	19
	4	Q1E250M4C	456	784	2*M50	349	406	250	529	24	65	140	69	18	6315	6315	75*112*12	65*100*13	550	450	500	0	19
75	4	Q1E250M4C (pik)	527	886	2*M50	349	406	250	615	24	65	140	69	18	6316	6316	80*100*10	80*100*10	550	450	500	0	19
	2	Q1E250M2B (pik)	527	886	2*M50	349	406	250	615	24	60	140	64	18	6316	6316	80*100*10	80*100*10	550	450	500	0	19
	2	Q1E280M2A (pik)	527	1025	2*M50	419	457	280	647	24	70	140	74	20	6316	6316	80*100*10	80*100*10	550	450	500	0	19
	4	Q1E280M4A (pik)	527	886	2*M50	349	406	250	615	24	65	140	69	18	6316	6316	80*100*10	80*100*10	550	450	500	0	19
90	4	Q1E280M4B (pik)	527	1025	2*M50	419	457	280	647	24	70	140	74	20	6316	6316	80*100*10	80*100*10	550	450	500	0	19
	2	Q1E280M2B (pik)	527	1025	2*M50	419	457	280	647	24	70	140	74	20	6316	6316	80*100*10	80*100*10	550	450	500	0	19

(1) Tolerance DIN EN 50347 "j6", up to 28mm, "k6" above 28mm

(2) According to DIN 6885

(3) Tolerance DIN EN 50347 "j6"

(1) Toleranslar 28 mm'ye kadar DIN EN 50347 "j6", 28 mm ve üzeri "k6"

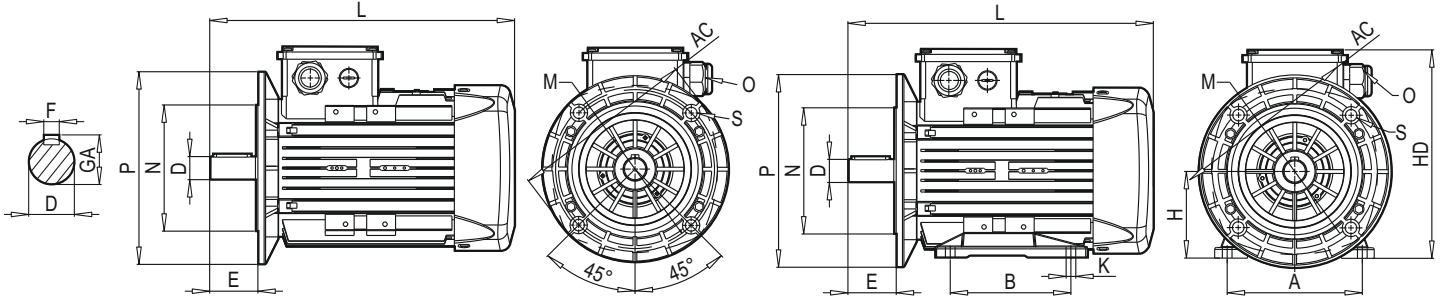
(2) DIN 6885'e göre

(3) Tolerans DIN EN 50347 "j6"

EN **THREE PHASE MOTORS IE2**

TR **ÜÇ FAZLI MOTORLAR IE2**

DIMENSIONS / BOYUTLAR - B5, B35



B5 - V1 - V3

B35 - V15 - V35

Power Güç (kW)	Number of poles Kutup Sayısı	Motor Type Motor Tipi	Main Dimensions Ana Boyutlar			Foot mounted motors Ayaklı Motorlar					Shaft Mil				Bearing Rulman		Seal Keçe		Flange (FA) (B5) Flanş (FA) (B5)				
			AC	L	O	B	A	H	HD	K	D ⁽¹⁾	E	GA	F ⁽²⁾	Drive side Kasnak Tarafı	Non Drive Side Kasnak Tarafı Aksı	Drive side Kasnak Tarafı	Non Drive Side Kasnak Tarafı Aksı	P	N ⁽³⁾	M	R	S
0.12	4	Q2E71M4B	138	252.5	1*1M20	90	112	71	190	7	14	30	16	5	6202-2Z	6202-2Z	15*24*5	15*24*5	160	110	130	0	10
	2	Q2E71M2C	138	252.5	1*1M20	90	112	71	190	7	14	30	16	5	6202-2Z	6202-2Z	15*24*5	15*24*5	160	110	130	0	10
0.37	4	Q2E71M4B	138	252.5	1*1M20	90	112	71	190	7	14	30	16	5	6202-2Z	6202-2Z	15*24*5	15*24*5	160	110	130	0	10
	2	Q2E71M2D	138	252.5	1*1M20	90	112	71	190	7	14	30	16	5	6202-2Z	6202-2Z	15*24*5	15*24*5	160	110	130	0	10
0.55	4	Q2E80M4B	138	283.5	1*1M20	100	125	80	195	10	19	40	21.5	6	6204-2Z	6204-2Z	20*30*7	20*30*7	200	130	165	0	12
	2	Q2E71M2DE	138	252.5	1*1M20	90	112	71	190	7	14	30	16	5	6202-2Z	6202-2Z	15*24*5	15*24*5	160	110	130	0	10
0.75	2	Q2E80M2B	158	283.5	1*1M20	100	125	80	195	10	19	40	21.5	6	6204-2Z	6204-2Z	20*30*7	20*30*7	200	130	165	0	12
	4	Q2E80M4D	158	283.5	1*1M20	100	125	80	195	10	19	40	21.5	6	6204-2Z	6204-2Z	20*30*7	20*30*7	200	130	165	0	12
	6	Q2E90L6C	193	316.5	1*1M25	100	140	90	222	10	24	50	27	8	6305-2Z	6205-2Z	25*40*7	25*40*7	200	130	165	0	12
	2	Q2E80M2D	158	283.5	1*1M20	100	125	80	195	10	19	40	21.5	6	6204-2Z	6204-2Z	20*30*7	20*30*7	200	130	165	0	12
1.1	4	Q2E80M4DE	158	283.5	1*1M20	100	125	80	195	10	19	40	21.5	6	6204-2Z	6204-2Z	20*30*7	20*30*7	200	130	165	0	12
	6	Q2E90L6D	193	316.5	1*1M25	100	140	90	222	10	24	50	27	8	6305-2Z	6205-2Z	25*40*7	25*40*7	200	130	165	0	12
	2	Q2E80M2DE	158	283.5	1*1M20	100	125	80	195	10	19	40	21.5	6	6204-2Z	6204-2Z	20*30*7	20*30*7	200	130	165	0	12
	4	Q2E90L4D	193	316.5	1*1M25	100	140	90	222	10	24	50	27	8	6305-2Z	6205-2Z	25*40*7	25*40*7	200	130	165	0	12
1.5	6	Q2E100L6D	217	352.0	1*1M25	125	140	100	241	12	28	60	31	8	6306-2Z	6206-2Z	30*47*7	25*40*7	250	180	215	0	15
	2	Q2E80M2DE	158	283.5	1*1M20	100	125	80	195	10	19	40	21.5	6	6204-2Z	6204-2Z	20*30*7	20*30*7	200	130	165	0	12
	4	Q2E90L2C	193	316.5	1*1M25	100	140	90	222	10	24	50	27	8	6305-2Z	6205-2Z	25*40*7	25*40*7	200	130	165	0	12
	6	Q2E90L4D	193	316.5	1*1M25	125	140	90	222	10	24	50	27	8	6305-2Z	6205-2Z	25*40*7	25*40*7	200	130	165	0	12
2.2	6	Q2E100L6D	217	352.0	1*1M25	140	160	100	241	12	28	60	31	8	6306-2Z	6206-2Z	30*47*7	25*40*7	250	180	215	0	15
	2	Q2E90L2D	193	316.5	1*1M25	125	140	90	222	10	24	50	27	8	6305-2Z	6205-2Z	25*40*7	25*40*7	200	130	165	0	12
	4	Q2E90L4DE	193	344.5	1*1M25	125	140	90	222	10	24	50	27	8	6305-2Z	6205-2Z	25*40*7	25*40*7	200	130	165	0	12
	6	Q2E112M6C	232	395.5	2*1M25	140	190	112	261	12	28	60	31	8	6306-2Z	6206-2Z	30*47*7	30*47*7	250	180	215	0	15
3	6	Q2E112M6C	232	395.5	2*1M25	140	190	112	261	12	28	60	31	8	6306-2Z	6206-2Z	30*47*7	30*47*7	250	180	215	0	15
	2	Q2E90L2DE	193	316.5	1*1M25	125	140	90	222	10	24	50	27	8	6305-2Z	6205-2Z	25*40*7	25*40*7	200	130	165	0	12
	4	Q2E100L2C	217	352.0	1*1M25	140	160	100	241	12	28	60	31	8	6306-2Z	6206-2Z	30*47*7	25*40*7	250	180	215	0	15
	6	Q2E100L4D	217	352.0	1*1M25	140	160	100	241	12	28	60	31	8	6306-2Z	6206-2Z	30*47*7	25*40*7	250	180	215	0	15
4	6	Q2E132M6A	279	475.5	2*1M32	140	216	132	314	12	38	80	41	10	6208-2Z	6208-2Z	40*62*10	40*62*7	300	230	265	0	15
	2	Q2E112M2CE	217	352.0	1*1M25	140	160	100	241	12	28	60	31	8	6306-2Z	6206-2Z	30*47*7	25*40*7	250	180	215	0	15
	4	Q2E112M2C	232	395.5	2*1M25	140	190	112	261	12	28	60	31	8	6306-2Z	6206-2Z	30*47*7	30*47*7	250	180	215	0	15
	6	Q2E112M4C	232	395.5	2*1M25	140	190	112	261	12	28	60	31	8	6306-2Z	6206-2Z	30*47*7	30*47*7	250	180	215	0	15
5.5	6	Q2E132M6B	279	475.5	2*1M32	178	216	132	314	12	38	80	41	10	6208-2Z	6208-2Z	40*62*10	40*62*10	300	230	265	0	15
	2	Q2E112M2CE	217	352.0	1*1M25	140	160	100	241	12	28	60	31	8	6306-2Z	6206-2Z	30*47*7	25*40*7	250	180	215	0	15
	4	Q2E112M4D	232	395.5	2*1M25	140	190	112	261	12	28	60	31	8	6306-2Z	6206-2Z	30*47*7	30*47*7	250	180	215	0	15
	6	Q2E132S2C	279	440.5	2*1M32	140	216	132	314	12	38	80	41	10	6208-2Z	6208-2Z	40*62*10	40*62*10	300	230	265	0	15
7.5	6	Q2E132M6C	279	475.5	2*1M32	178	216	132	314	12	38	80	41	10	6208-2Z	6208-2Z	40*62*10	40*62*10	300	230	265	0	15
	2	Q2E132M2A	279	475.5	2*1M32	140	216	132	314	12	38	80	41	10	6208-2Z	6208-2Z	40*62*10	40*62*10	300	230	265	0	15
	4	Q2E132M4C	279	475.5	2*1M32	178	216	132	314	12	38	80	41	10	6208-2Z	6208-2Z	40*62*10	40*62*10	300	230	265	0	15
	6	Q2E160M6B	302	576	2*1M32	210	254	160	360	15	42	110	45	12	6208-2Z	6209-2Z	45*72*10	45*72*10	350	250	300	0	19
11	6	Q2E132M6B	279	475.5	2*1M32	178	216	132	314	12	38	80	41	10	6208-2Z	6208-2Z	40*62*10	40*62*10	300	230	265	0	15
	2	Q2E132M2AE	279	475.5	2*1M32	140	216	132	314	12	38	80	41	10	6208-2Z	6208-2Z	40*62*10	40*62*10	300	230	265	0	15
	4	Q2E160M2B	302	576	2*1M32	210	254	160	360	15	42	110	45	12	6309-2Z	6209-2Z	45*72*10	45*72*10	350	250	300	0	19
	6	Q2E160M4B	302	576	2*1M32	210	254	160	360	15	42	110	45	12	6309-2Z	6209-2Z	45*72*10	45*72*10	350	250	300	0	19
15	6	Q2E160L6B	302	576	2*1M32	254	254	160	360	15	42	110	45	12	6309-2Z	6209-2Z	45*72*10	45*72*10	350	250	300	0	19
	2	Q2E160L2A	302	576	2*1M32	210	254	160	360	15	42	110	45	12	6309-2Z	6209-2Z	45*72*10	45*72*10	350	250	300	0	19
	4	Q2E160L4A	302	576	2*1M32	254	254	160	360	15	42	110	45	12	6309-2Z	6209-2Z	45*72*10	45*72*10	350	250	300	0	19
	6	Q2E180L6A	370	629	2*1M40	279	279	180	428	15	48	110	51.5	14	6310-2Z	6310-2Z	50*80*10	50*80*10	350	250	300	0	19
18.5	2	Q2E160L2C	302	576	2*1M32	254	254	160	360	15	42	110	45	12	6309-2Z	6209-2Z	45*72*10	45*72*10	350	250	300	0	19
	6	Q2E200L6B	415	665	2*1M50	305	318	200	461	19	55	110	59	16	6312-2Z	6310-2Z	60*90*10	60*90*10	400	300	350	0	19

EN

THREE PHASE MOTORS IE2

TR

ÜÇ FAZLI MOTORLAR IE2

DIMENSIONS / BOYUTLAR - B5, B35

Power Güç (kW)	Number of poles Kutup Sayısı	Motor Type Motor Tipi	Main Dimensions Ana Boyutlar			Foot mounted motors Ayaklı Motorlar					Shaft Mil				Bearing Rulman		Seal Keçe		Flange (FA) (B5) Flanş (FA) (B5)				
			AC	L	O	B	A	H	HD	K	D ⁽¹⁾	E	GA	F ⁽²⁾	Drive side Kasnak Taraflı	Non Drive Side Kasnak Taraflı Aksı	Drive side Kasnak Taraflı	Non Drive Side Kasnak Taraflı Aksı	P	N ⁽³⁾	M	R	S
22	2	Q2E160L2D	302	576	2*M32	210	254	160	360	15	42	110	45	12	6309-2Z	6209-2Z	45*72*10	45*72*10	350	250	300	0	19
	2	Q2E180M2A	370	629	2*M40	241	279	180	428	15	48	110	51.5	14	6310-2Z	6310-2Z	50*80*10	50*80*10	350	250	300	0	19
	4	Q2E180M4B	370	629	2*M40	279	279	180	428	15	48	110	51.5	14	6310-2Z	6310-2Z	50*80*10	50*80*10	350	250	300	0	19
	6	Q2E200L6C	415	665	2*M50	305	318	200	461	19	55	110	59	16	6312-2Z	6312-2Z	60*90*10	60*90*10	400	300	350	0	19
30	2	Q2E200L2B	415	665	2*M50	305	318	200	461	19	55	110	59	16	6312-2Z	6312-2Z	60*90*10	60*90*10	400	300	350	0	19
	4	Q2E200L4D	415	665	2*M50	305	318	200	461	19	55	110	59	16	6312-2Z	6312-2Z	60*90*10	60*90*10	400	300	350	0	19
	6	Q2E225M6B	456	765	2*M50	311	356	225	504	19	60	140	64	18	6313-2Z	6313-2Z	65*100*13	65*100*13	450	350	400	0	19
37	2	Q2E200L2C	415	665	2*M50	305	318	200	461	19	55	110	59	16	6312-2Z	6312-2Z	60*90*10	60*90*10	400	300	350	0	19
	4	Q2E225M4C	456	765	2*M50	286	356	225	504	19	60	140	64	18	6313-2Z	6313-2Z	65*100*13	65*100*13	450	350	400	0	19
45	2	Q2E225M2B	456	735	2*M50	311	356	225	504	19	55	110	59	16	6313-2Z	6313-2Z	65*100*13	65*100*13	450	350	400	0	19
	4	Q2E225M4D	456	765	2*M50	311	356	225	504	19	60	140	64	18	6313-2Z	6313-2Z	65*100*13	65*100*13	450	350	400	0	19
55	2	Q2E250M2B	527	886	2*M50	349	406	250	615	24	60	140	64	18	6316	6316	80*100*10	80*100*10	550	450	500	0	19
	4	Q2E250M4D	527	886	2*M50	349	406	250	615	24	65	140	69	18	6316	6316	80*100*10	80*100*10	550	450	500	0	19
75	2	Q2E250M2C	527	886	2*M50	349	406	250	615	24	60	140	64	18	6316	6316	80*100*10	80*100*10	550	450	500	0	19
	2	Q2E280M2B	527	1025	2*M50	419	457	280	647	24	70	140	64	20	6316	6316	80*100*10	80*100*10	550	450	500	0	19
	4	Q2E250M4E	527	886	2*M50	349	406	250	615	24	65	140	69	18	6316	6316	80*100*10	80*100*10	550	450	500	0	19
	4	Q2E280M4B	527	1025	2*M50	419	457	280	647	24	75	140	79	20	6316	6316	80*100*10	80*100*10	550	450	500	0	19
90	4	Q1E280M2B	527	1025	2*M50	419	457	280	647	24	70	140	74	20	6316	6316	80*100*10	80*100*10	550	450	500	0	19
	4	Q1E280M4B	527	1025	2*M50	419	457	280	647	24	75	140	79	20	6316	6316	80*100*10	80*100*10	550	450	500	0	19

(1) Tolerance DIN EN 50347 "j6", up to 28mm, "k6" above 28mm

(2) According to DIN 6885

(3) Tolerance DIN EN 50347 "j6"

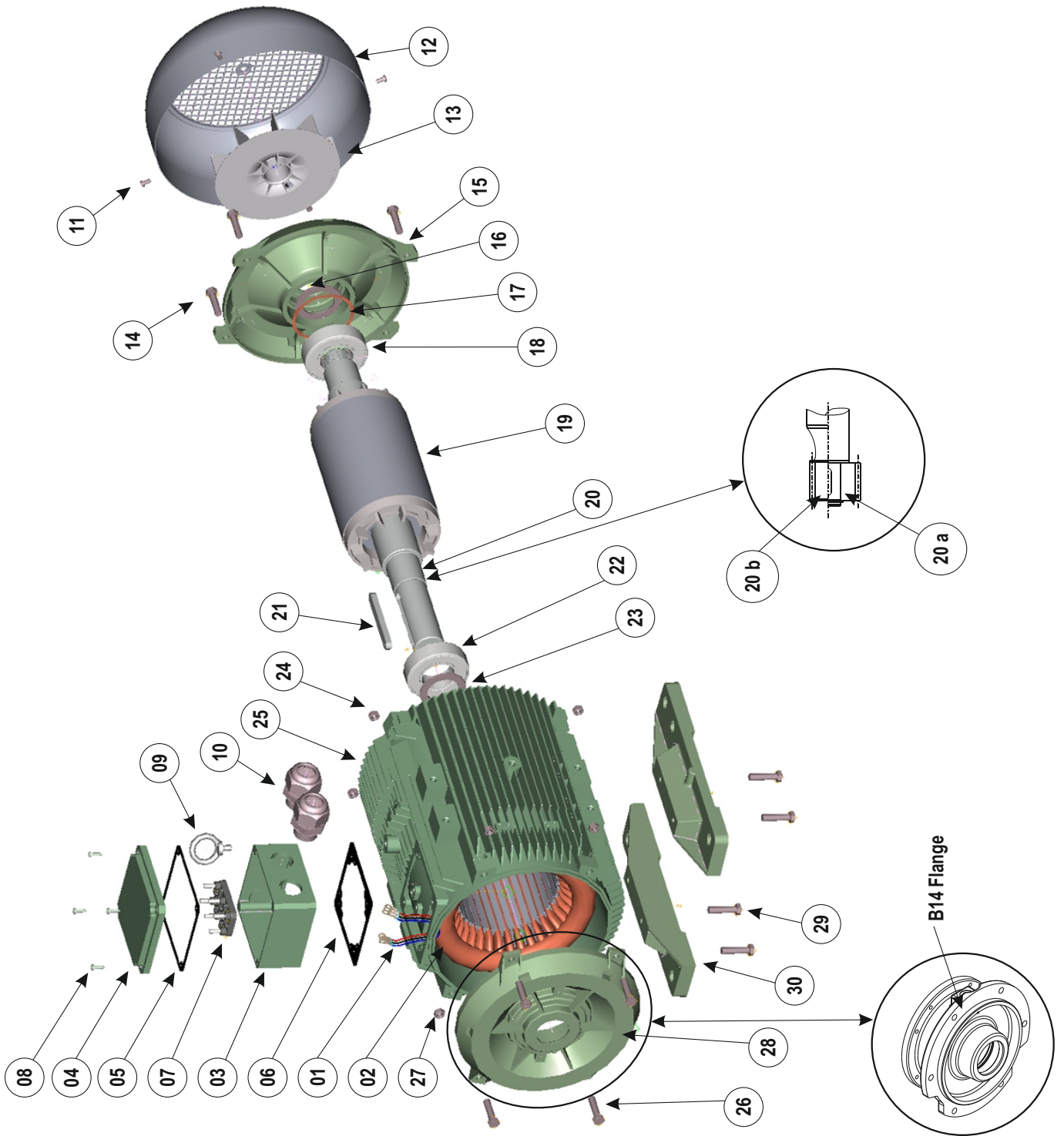
(1) Toleranslar 28 mm'ye kadar DIN EN 50347 "j6", 28 mm ve üzeri "k6"

(2) DIN 6885'e göre

(3) Tolerans DIN EN 50347 "j6"

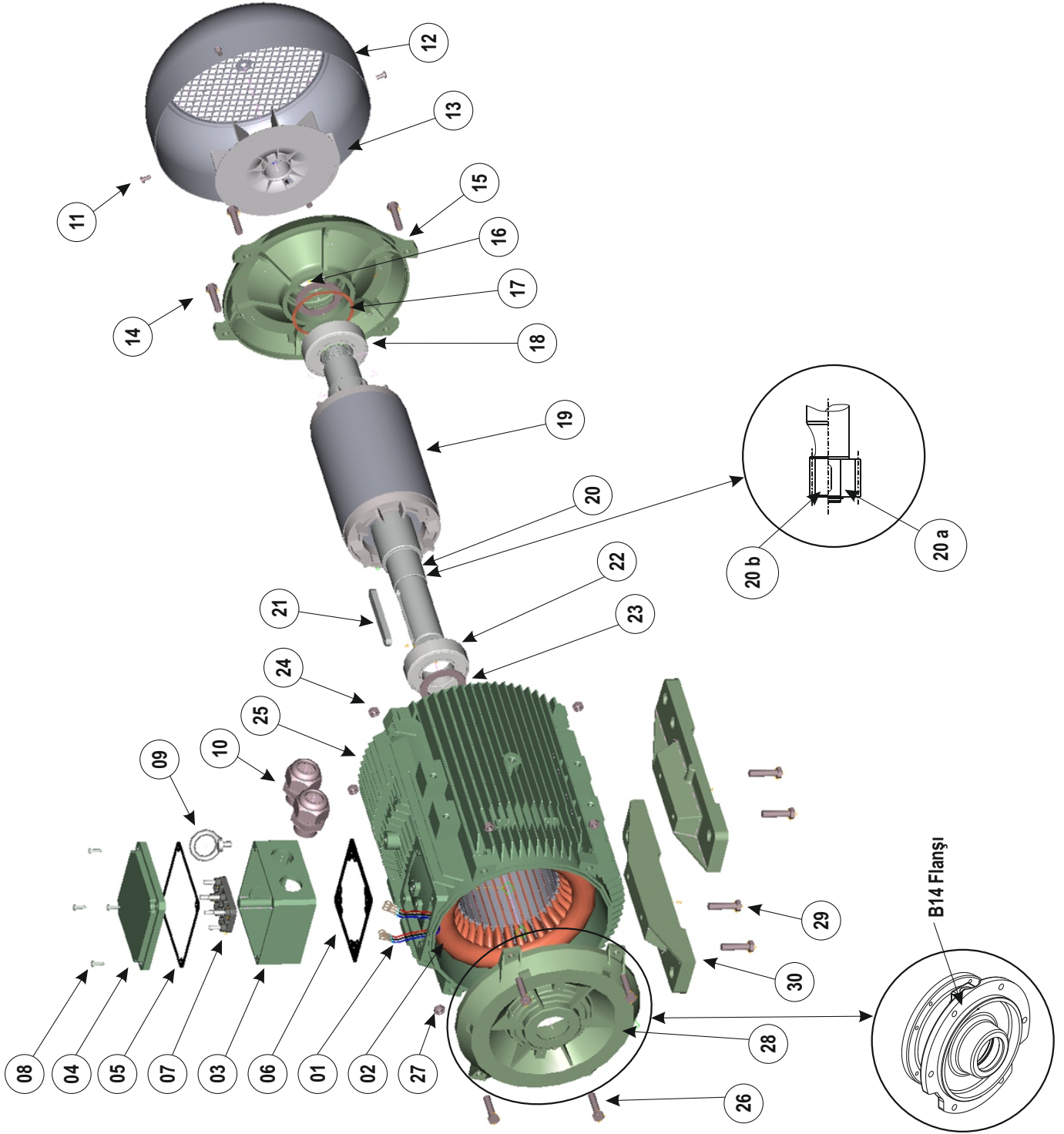
MOTOR PART LIST

- 01. Lead cables
- 02. Wound stator
- 03. Terminal box
- 04. Terminal box cover
- 05. Terminal gasket down
- 06. Terminal gasket up
- 07. Terminal plate
- 08. Terminal box screws
- 09. Eyebolt
- 10. Conduit
- 11. Fan cover screws
- 12. Fan cover
- 13. Fan
- 14. Endshield screws
- 15. Nondrive- endshield
- 16. Seal ring (back)
- 17. Bearing shim
- 18. Bal bearing (non-drive-side)
- 19. Rotor
- 20. Shaft
 - a. Drive Shaft (plain)
 - b. Drive Shaft (gearcut)
- 21. Key
- 22. Ballbearing (drive-side)
- 23. Seal ring (front)
- 24. Bolt nut (endshield)
- 25. Housing
- 26. Endshield screws (drive-side)
- 27. Bolt nut (drive endshield)
- 28. Drive endshield
- 29. Foot screws
- 30. Foot



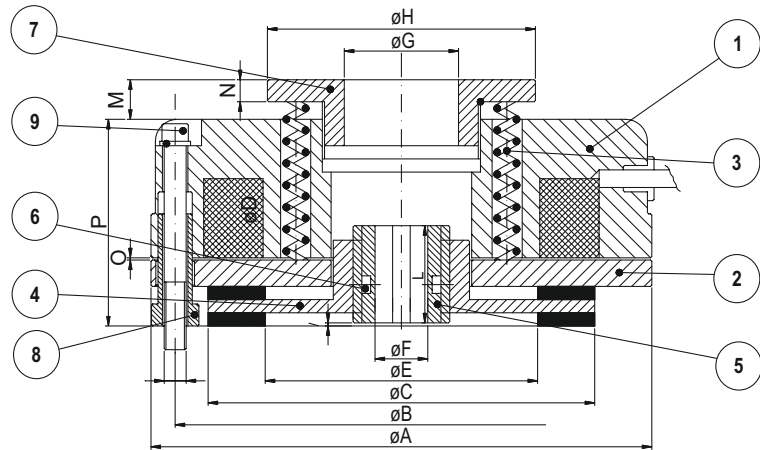
MOTOR PARÇA LİSTESİ

01. Kamçı grubu
02. Sargılı stator
03. Terminal kutusu
04. Terminal kutu kapağı
05. Terminal contası alt
06. Terminal contası üst
07. Klemens plakası
08. Terminal kutu vidaları
09. Kaldırma halkası
10. Rakor
11. Fan kapağı vidaları
12. Fan kapağı
13. Fan
14. Arka kapak vidaları
15. Motor arka kapağı
16. Keçe (arka)
17. Rulman gergi yayı
18. Arka rulman
19. Rotor
20. Mil
 - a. Çakma
 - b. Yekpare
21. Kama
22. Ön rulman
23. Keçe (ön)
24. Arka kapak bağlantı somun
25. Gövde
26. Ön kapak vidaları
27. Ön kapak bağlantı somunu
28. Ön kapak
29. Ayak bağlantı vidası
30. Ayak



BRAKE PART LIST AND PROPERTIES

- 1 Electromagnet
- 2 Armature plate
- 3 Torque springs
- 4 Disc
- 5 Splined hub
- 6 O-ring
- 7 Adjuster nuts
- 9 Fixing screws



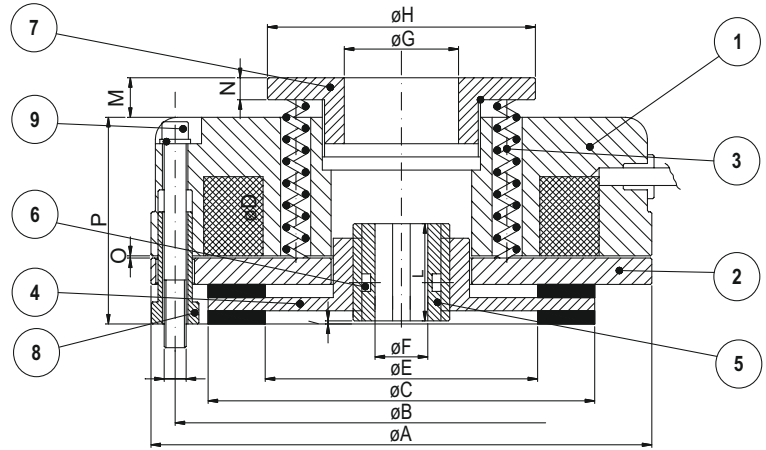
Tipo Brake Model	K1	K2	K3	K4	K5	K6	K7	K7/D	K8	K8/D	K9	K9/D	K9/T
Static Braking Torque (Nm)	5	12	16	20	40	60	90	180	200	400	300	600	900
Max Speed of the motor (rpm)	3000	3000	3000	3000	3000	3000	3000	3000	1500	1500	1500	1500	1500
Input Power (W)	15	20	25	30	45	50	55	55	60	60	65	65	65
Max noisiness (\leq dB-A)	68	69	68	69	70	70	70	70	70	69	69	69	70
Weight (Kg.)	1,1	1,85	2,55	2,84	4,8	7	12	15	14,3	18	23	28	34
A	84	104	114	124	148	159	189	189	218	218	248	248	248
B	72	90	103	112	132	145	170	170	196	196	230	230	230
C	61	77	88	98	119	128	151	151	176	176	204	204	204
D	3xM4	3xM5	3xM5	3xM6	3xM6	3xM8	3xM8	3xM8	6xM10	6xM10	6xM10	6xM10	9xM10
E	35	44	62	69	79	80	90	90	103	103	132	132	132
Tolerance hole till size K3 H7, others+ 0,01/-0,01	F 10-11 12	11-14 15	11-15	14-25	24-25 28	25-30 34	25-30 34	25 H40 34 H60	24-34	34 H60 48	44-45 48	44-45 48	44-45 48-50
G	20	26	26	42	60	60	60	60	60	60	60	60	60
H	50	61	61	79	104	104	104	104	104	104	104	104	104
I	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5
L	18	20	20	20	25	30	30	60	40	60	40	60	80
M(max)	9	9	9	9,5	18	16	14	14	18	18	18	18	18
N	4	4	4	5,5	8	8	8	8	8	8	8	8	8
O	0,2	0,2	0,2	0,2	0,3	0,3	0,3	0,3	0,3	0,4	0,4	0,4	0,4+0,5
P	38,5	41,5	47	46,5	64	69,5	79	101,5	78	98	80	105	130

Note:

- The brake before running in, the static braking torque value could change by +20% from the reported value.

FREN PARÇA LİSTESİ VE ÖZELLİKLERİ

- 1 Elektromıknatıs
- 2 Endüvi plakası
- 3 Tork yayı
- 4 Disk
- 5 Kamalı burç
- 6 O-ring
- 7 Ayar somunu
- 9 Bağlantı civataları



Tip Fren Modeli	K1	K2	K3	K4	K5	K6	K7	K7/D	K8	K8/D	K9	K9/D	K9/T
Statik Fren Momenti (Nm)	5	12	16	20	40	60	90	180	200	400	300	600	900
Motorun Max. Hızı (rpm)	3000	3000	3000	3000	3000	3000	3000	3000	1500	1500	1500	1500	1500
Giriş Gücü (W)	15	20	25	30	45	50	55	55	60	60	65	65	65
Max. Ses (\leq dB-A)	68	69	68	69	70	70	70	70	70	69	69	69	70
Ağırlık (Kg.)	1,1	1,85	2,55	2,84	4,8	7	12	15	14,3	18	23	28	34
A	84	104	114	124	148	159	189	189	218	218	248	248	248
B	72	90	103	112	132	145	170	170	196	196	230	230	230
C	61	77	88	98	119	128	151	151	176	176	204	204	204
D	3xM4	3xM5	3xM5	3xM6	3xM6	3xM8	3xM8	3xM8	6xM10	6xM10	6xM10	6xM10	9xM10
E	35	44	62	69	79	80	90	90	103	103	132	132	132
Delik toleransı K3'e kadar H7, diğerleri + 0,01/-0,01	F 10-11 12	11-14 15	11-15	14-25	24-25 28	25-30 34	25-30 34	25 H40 34 H60	24-34	34 H60 48	44-45 48	44-45 48	44-45 48-50
G	20	26	26	42	60	60	60	60	60	60	60	60	60
H	50	61	61	79	104	104	104	104	104	104	104	104	104
I	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5
L	18	20	20	20	25	30	30	60	40	60	40	60	80
M(max)	9	9	9	9,5	18	16	14	14	18	18	18	18	18
N	4	4	4	5,5	8	8	8	8	8	8	8	8	8
O	0,2	0,2	0,2	0,2	0,3	0,3	0,3	0,3	0,3	0,4	0,4	0,4	0,4+0,5
P	38,5	41,5	47	46,5	64	69,5	79	101,5	78	98	80	105	130

Not:

- Fren çalıştırılmadan önce statik fren momentini tabloda verilen değerlere göre \pm % 20 değişiklik gösterebilir.



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