

Riduttori coassiale **serie A\F**



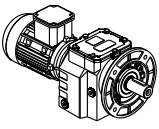
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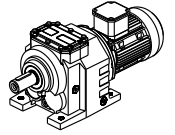
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SEMBOLLER / SYMBOLS / ZEICHEN / SIMBOLOGIA / SYMBOLES / SIMBOLOGIA

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 |

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 |

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 |

Simbologia

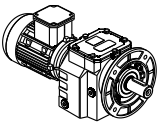
| | | |
|--|-------------|----------------------------|
| P = Potenza | (kW) | 1 = Albero ingresso |
| M = Momento torcente | (Nm) | 2 = Albero uscita |
| n = Numero giri | (giri / 1') | R = Radiale |
| i = Rapporto di riduzione | | A = Assiale |
| F = Forza | (N) | s = Statico |
| m = Peso | (kg) | 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 = Minimo |



SERVIS FAKTÖRÜ / SERVICE FACTOR / BETRIEBSFAKTOR / FATTORE DI SERVIZIO / FACTEUR DE SERVICE / FACTOR DE SERVICIO

Servis 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 (Δ)**
- Start-Stop sıklığı : **başlangıç / saatler (*)**

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

$maf = Je / Jm$

- maf Kuvvet hız faktörü
- Je (kgm^2) sürüm şaftındaki indirgenmiş harici atalet momenti
- Jm (kgm^2) motor atalet momenti

Eğer maf değeri > 10 ise durumu Teknik Servisimize bildirin.

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 (Δ)**
- Start-up frequency: **starts/hour (*)**

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

$maf = Je/Jm$

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

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 (Δ)**
- Anlauffrequenz: **Anl./Std. (*)**

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

$maf = Je/Jm$

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

Fattore di servizio

Il fattore di servizio (f_B) 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 (Δ)**
- frequenza di avviamento: **avv/ora (*)**

TIPO DEL CARICO: **U** - Uniforme $maf \leq 0.3$
M - Medio $maf \leq 3$
H - Forte $maf \leq 10$

$maf = Je/Jm$

- maf fattore d'inerzia
 - Je (kgm^2) momento d'inerzia esterno ridotto all'albero motore
 - Jm (kgm^2) momento d'inerzia motore
- Se $maf > 10$ interpellare il ns. Servizio Tecnico.

U- Hafif malzemeler için vida besleme aparatları, fanlar, montaj hatları, hafif malzeme naklinde kullanılan kemerler, küçük mikserler, liftler 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 spatulası, paketleme makinaları, beton mikserleri, vinç mekanizmaları, freze makinaları, bükme-kıvrırma makinaları, dişli pompalar.

H- Ağır malzemeler için mikserler, kırkma 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, silindir variller, vibratörler, kağıt öğütücülere.

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.

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

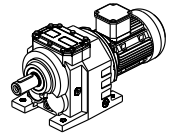
M- Wickelmaschinen, Vorrichtungen zur Zuführung bei Holzbearbeitungsmaschinen, Lastaufzüge, Auswuchtmaschinen, Gewindeschneidmaschinen, mittlere Rührwerke und Mischer, Bandförderer für schwere Materialien, Winden, Schiebepore, Dünger Abkratzer, Verpackungsmaschinen, Betonmischmaschinen, Kranfahrend Kranhubwerke,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

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

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



SERVIS FAKTÖRÜ / SERVICE FACTOR / BETRIEBSFAKTOR / FATTORE DI SERVIZIO / FACTEUR DE SERVICE / FACTOR DE SERVICIO

Facteur de service

Le facteur de service (f_B) 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 (Δ)**
- Fréquence de démarrage: **dém / heure (*)**

| | | |
|-----------------------|------------------------------|-------------------|
| TYPE DE CHARGE | U - Uniforme | $m_{af} \leq 0.3$ |
| | M - Surcharge moyenne | $m_{af} \leq 3$ |
| | H - Surcharge forte | $m_{af} \leq 10$ |

$m_{af} = J_e/J_m$

- m_{af} facteur d'inertie
 - J_e (kgm^2) moment d'inertie extérieur ramené à l'arbre-moteur
 - J_m (kgm^2) moment d'inertie moteur
- En cas de $m_{af} > 10$, contacter notre S.ce 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, monte-charges, équilibreuses, taraudeuses, agitateurs moyens et mélangeurs, convoyeurs pour matériaux lourds, treuils, portes coulissantes, racleurs d'engrais, machines à emballer, bétonnières, mécanismes pour le mouvement des grues, fraises, 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.

Factor de servicio

El factor de servicio (f_B) 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 (Δ)**
- Frecuencia de arranques: **arr/hora (*)**

| | | |
|-----------------------|------------------------------|-------------------|
| TIPO DE CARGA: | U - Uniforme | $m_{af} \leq 0.3$ |
| | M - Sobrecarga media | $m_{af} \leq 3$ |
| | H - Sobrecarga fuerte | $m_{af} \leq 10$ |

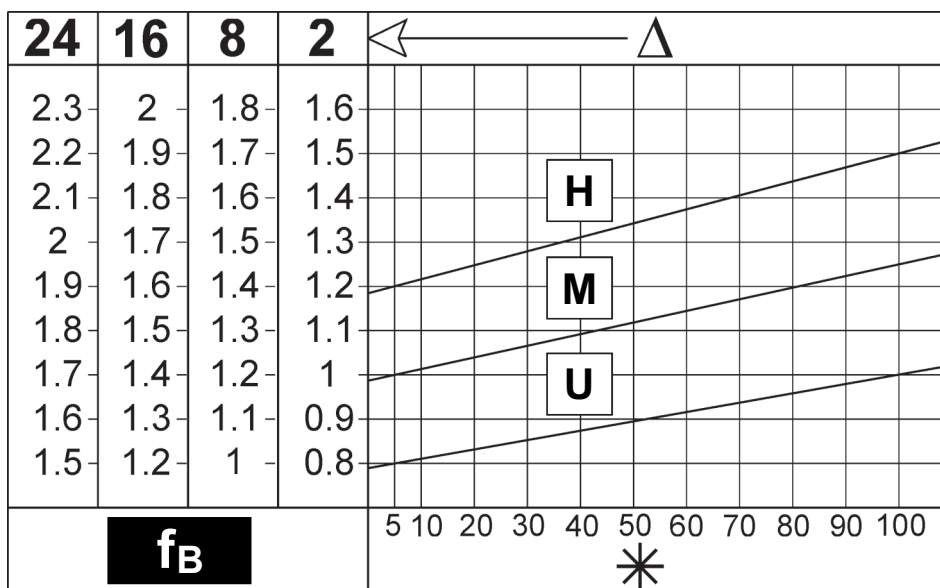
$m_{af} = J_e/J_m$

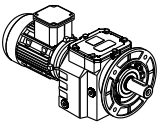
- m_{af} factor de inercia
 - J_e (kgm^2) inercia externa reducida al eje motor
 - J_m (kgm^2) inercia motor
- En caso de $m_{af} > 10$, ponerse en contacto con nuestro Servicio Técnico.

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, 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.





KRITİK UYGULAMALAR / CRITICAL APPLICATIONS / KRISTISCHE ANWENDUNGEN / APLICAZIONI CRITICHE / APPLICATIONS CRITIQUES / APLICACIONES CRITICAS

Kritik Uygulamalar

Katalogta verilen performans değerleri M1 montaj pozisyonu ve buna benzer durumlar içindir. Örneğin: İlk kademe komple yağ içinde olmadığı durumlar. Diğer montaj pozisyonu değişik giriş hızları ve herbir redüktör gövdesi için kritik uygulama durumları tabloda sunulmuştur. Aşağıdaki uygulamalar için de teknik servisimize danışılması gerekir.

- Yüksek ataletli uygulamalar.
- Redüktörde yüksek dinamik gerilmelere sebep olabilecek uygulamalar.
- -5°C altında veya 40°C üzerindeki iş ortamında yapılan uygulamalar.
- Katalogta belirtilmeyen montaj pozisyonlarında kullanım.
- Redüktör ünitesinin sorun yaşanmasında canlılara zarar verebileceği uygulamalar.

- Hız artışı durumunda.
- Kaldırma vinci olarak kullanım.
- Atmosferik basınçtan farklı basınç tiplerinin bulunduğu ortamlarda kullanım.
- Kimyasal aşındırıcı çevrelerde kullanım.
- Tuzlu ortamlarda kullanım.
- Radyoaktif ortamlarda kullanım.

Redüktör kısmının batırılması gerektiği uygulama ortamlarından sakının.

Redüktörün dayanabileceği maksimum moment değeri (*) performans tablolarında belirtilen nominal moment değerinin ($f_B = 1$) iki katı bir değeri aşmamalıdır.

(*) Maksimum kapasiteli yük değerleri ile yapılan başlatmalarda, frenlemelerde, özellikle dinamik olan şok ve diğer nedenlerde, momente bağlı aşırı yüklerde geçerlidir.

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:

- Applications with especially high inertia.
- Applications with high dynamic strain on the case of the reduction unit.
- In places with T° under -5°C or over 40°C
- Mounting positions not envisaged in the catalogue.
- Use in services that could be hazardous for people if the reduction unit fails..

- As a speed increasing.
- Use as a lifting winch.
- Use in environments pressures other than atmospheric pressure.
- Use in chemically aggressive environments.
- Use in a salty environment
- Use in radioactive environments.

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.

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 Tafeln 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:

- Anwendungen mit sehr hohen Trägheitsmomenten.
- Anwendungen mit hohen dynamischen Beanspruchungen auf Getriebegehäuse.
- Einsatz bei Umgebungstemperaturen unter -5°C oder über 40°C.
- Nicht im Katalog vorgesehene Einbaulagen.
- Anwendungen, die bei Bruch des Getriebes für den Menschen gefährlich sein könnten.

- Einsatz als Übersetzungsgetriebe (Übersetzung ins Schnelle).
- Einsatz als Hebewinde.
- Einsatz unter einem Druck, der nicht dem normalem Luftdruck entspricht.
- Einsatz in Verbindung mit aggressiven chemischen Substanzen.
- Einsatz unter Salzwassereinwirkung.
- Einsatz unter radioaktiver Strahlung.

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

Das max. zulässige Drehmoment (*) des Getriebes, 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.

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 piazzamento 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:

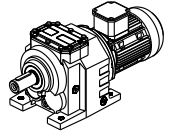
- Applicazioni con inerzie particolarmente elevate.
- Applicazioni con elevate sollecitazioni dinamiche sulla cassa del riduttore.
- Utilizzo in ambiente con T° inferiore a -5°C o superiore a 40°C
- Posizioni di piazzamento non previste a catalogo.
- Utilizzo in servizi che potrebbero risultare pericolosi per l'uomo in caso di rottura del riduttore.

- Utilizzo come moltiplicatore.
- Utilizzo come organo di sollevamento.
- Utilizzo in ambiente con pressione diversa da quella atmosferica.
- Utilizzo in ambiente con presenza di aggressivi chimici.
- Utilizzo in ambiente salmastro.
- Utilizzo in ambiente radioattivo.

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.



KRİTİK UYGULAMALAR / CRITICAL APPLICATIONS / KRISTISCHE ANWENDUNGEN / APLICAZIONI CRITICHE / APPLICATIONS CRITIQUES / APLICACIONES CRITICAS

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:

- Applications avec inerties particulièrement élevées.
- 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.
- Positions de montage non prévues sur le catalogue.
- Emploi en services qui pourraient être dangereux pour l'homme en cas de rupture du réducteur.

- Emploi comme multiplicateur.
- Emploi comme treuil, en cas de soulèvement.
- Emploi en milieu ayant une pression différente de celle atmosphérique.
- Emploi en milieu en présence d'agents chimiques agressifs.
- Emploi en milieu saumâtre.
- Emploi en milieu radioactif.

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.

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 criticas por cada tamaño de reductor.

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

- Aplicaciones con inercias particularmente elevadas.
- Aplicaciones con esfuerzos dinámicos elevados sobre la carcasa del reductor.
- Utilización en ambiente con T° inferior a -5°C o superior a 40°C.
- Posiciones en montaje no previstas en el catálogo.
- Utilización en servicios que, en caso de ruptura del reductor, podrían resultar peligrosos para el hombre.

- Utilización como multiplicador.
- Utilización como cabrestante de levantamiento.
- Utilización en ambiente con presión distinta de la atmosférica.
- Utilización en ambiente con presencia de agentes químicos agresivos.
- Utilización en ambiente salino.
- Utilización en ambiente radioactivo.

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

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

(*) Entendida como sobrecarga instantanea debida a puestas en marcha a plena carga, frenados, impactos y otras causas sobretodo dinamicas.

| AIF | 252 - 253 | 302 - 303 | 352 - 353 | 402 - 403 | 502 - 503 | 602 - 603 | 702 - 703 | 902 - 903 |
|-----------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| M4 : 1500 < n1 < 3000 | - | - | - | - | - | - | B | B |
| n1 > 3000 | B | B | B | B | B | B | A | A |
| M2 | B | B | B | B | B | B | B | B |

Uygulama yapılması tavsiye edilmez

Application not recommended

Nicht empfohlene Anwendung

A Applicazione sconsigliata
Application non conseillée
Aplicación desaconsejada

Yapılan uygulamayı kontrol edin ve/veya Teknik Servisimize durumu bildirin.

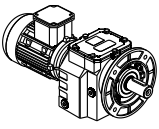
Check the application and/or call our technical service.

Anwendung überprüfen und/oder mit unserem Kundendienst Kontakt aufnehmen.

B 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.



MONTAJ / INSTALLATION / MONTAGE / INSTALLAZIONE / INSTALLATION / INSTALACIÓN

Montaj

Redüktör ünitelerinden en uzun ve en verimli servis ömrü sağlamak için, uygulanacak makinaların üzerlerine doğru montaj yapılması gerekmektedir.

Redüktörü monte etmek için aşağıdaki verilen tavsiyeleri uygulamamız gerekmektedir.

- Dışarıda yapılacak olan montajlarda, redüktör ünitesini kötü hava koşullarından koruyunuz. Korozyon önleyici madde kullanınız. Keçeleri su geçirmez gresle koruyunuz.
- Redüktör ünitesini sabitlemek için, seçim sayfalarındaki teknik çizimlerde belirtilen uygun civata ve somun kullanınız. Flanşlar üzerindeki bağlama deliklerinin hepsini kullandığınızdan emin olunuz.
- Redüktör üniteleri genellikle elektrik motorlarına flanşla direkt bağlanır. Özellikle montajdan sonra hasara neden olabilecek kritik uygulamalarda bu durum söz konusudur.
- Yapılacak olan montaj işleminde makinada olabilecek bir titreşimi engellemek için sabit olmalıdır.
- Cihazı makinaya 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 cihaz 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.

- 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 delikler kullanılarak rulman yatağı veya harici parçalarına zarar vermeyecek şekilde tasarlanmış sistemler kullanmak suretiyle hasar riski olmadan mil yada delik millî 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 gönderilen redüktörlerin sevkiyatı için kullanılan kör tapa özel havalandırma tapası ile değiştirilir.
- 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 yöntemleri geliştirilmelidir.

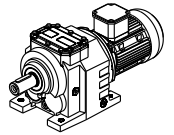
Installation

For the longest and most efficient service life, drives must be correctly mounted on the application structure. Therefore, all structure faces must be machined with H8 spigots so that they are flat and perpendicular to the drive axis.

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

- For outdoor installations, drives must be protected against bad weather, treated with anticorrosive agents and oil seals protected with water-repellent grease.
- To secure the drive, use the nuts and bolts shown under each technical drawing on the product technical sheets. Make sure to use all the fixing holes on the flanges.
- Drives are usually connected directly to what are mainly electric or hydraulic motors by means of flanges when there are particularly critical conditions that might cause damage after installation.
- The mounting on the machine must be stable to avoid any vibration.
- Before installing gearbox to your machine, please check rotation direction of output shaft is correct or not.
- Check the correct direction of rotation of the 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.

- 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.



MONTAJ / INSTALLATION / MONTAGE / INSTALLAZIONE / INSTALLATION / INSTALACIÓN

Montage

Der korrekte Einbau des Getriebes in die entsprechende Vorrichtung der Applikation ist Voraussetzung, um einen einwandfreien und dauerhaften Betrieb zu gewährleisten. Vor allem die Oberflächen der Zentrierungen / Aufnahme sind in einer Toleranz H8 zu fertigen, damit die einwandfreie Übereinstimmung mit der Getriebeachse garantiert wird.

Für die Montage des Getriebes sind nachstehende Anweisungen zu beachten:

- Für im Freien betriebene Maschinen wird empfohlen, das Getriebe soweit wie möglich vor Witterungseinflüssen zu schützen sowie mit Rostschutzmittel zu behandeln. Die Dichtringe sind mit wasserabweisendem Fett zu versehen.
- Für die Befestigung sind die Schrauben zu verwenden, die in der Zeichnung / Teileliste des Modells vorgesehen sind. Dazu sind alle vorgesehenen Befestigungsbohrungen zu verwenden
- Der Anbau des Getriebes an Elektro oder Hydraulikmotoren erfolgt normalerweise direkt über Flansche, wenn keine außergewöhnliche Situation vorliegt, die nach erfolgtem Einbau Schäden verursachen könnte.
- 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.

- Die Motorkühlung muß durch eine gute Belüftung auf der Seite des Lüfters gewährleistet werden. Bei Umgebungstemperaturen $< -5^{\circ}\text{C}$ oder $> +40^{\circ}\text{C}$ 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 Verschlußschraube 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.

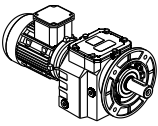
Installazione

Per garantire un buon funzionamento dei riduttori ed una miglior durata nel tempo è necessario un corretto accoppiamento alla struttura cui viene fissato il gruppo. Pertanto le superfici di tale struttura dovranno essere lavorate con centraggi in H8 ed in modo da garantire un'ottima planarità e perpendicolarità con l'asse del riduttore.

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

- Per gruppi installati all'aperto si consiglia dove possibile, di proteggere i riduttori dalle intemperie, di trattarli con sistemi anticorrosivi e di proteggere i paraoli con grasso idrorepellente.
- Per il fissaggio del riduttore usare la bulloneria indicata sotto ogni disegno nelle schede tecniche di prodotto. Usare inoltre tutti i fori di fissaggio previsti sulle flange dei riduttori.
- L'abbinamento fra riduttori e motori, principalmente elettrici o idraulici, viene normalmente fatto mediante flangiatura diretta quando non si presentano particolari condizioni di criticità, che possono provocare danni dopo l'installazione.
- 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.

- Garantire un corretto raffreddamento del motore assicurando un buon passaggio d'aria dal lato ventola. Nel caso di temperature ambiente $< -5^{\circ}\text{C}$ o $> +40^{\circ}\text{C}$ 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 cusci netti 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.



MONTAJ / INSTALLATION / MONTAGE / INSTALLAZIONE / INSTALLATION / INSTALACIÓN

Installation

Pour garantir le bon fonctionnement des réducteurs et leur durée de vie maximum, il est indispensable d'assurer un bon accouplement à la structure sur laquelle le groupe doit être fixé. Aussi, les surfaces de cette structure doivent être usinées par des centrages en H8 et de façon à garantir une planéité optimale et une perpendicularité par rapport à l'axe du réducteur. Pour l'installation du réducteur, il faut se conformer aux indications suivantes:

- Pour les groupes installés à ciel ouvert, il est conseillé, dans la mesure du possible, de mettre les réducteurs à l'abri des intempéries, de les traiter avec des produits anti-corrosion et de protéger les joints d'étanchéité à l'aide de la graisse hydrofuge.
- Pour effectuer la fixation du réducteur, utiliser les boulons indiqués sous chaque dessin des fiches techniques du produit. En outre, utiliser tous les trous de fixation prévus sur les brides des réducteurs.
- L'assemblage des réducteurs aux moteurs principalement électriques ou hydrauliques, est généralement assuré par bridage direct en l'absence de conditions critiques particulières susceptibles d'endommager l'installation.
- 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.

- Vérifier que le refroidissement du moteur soit suffisant, en assurant un bon passage d'air du côté ventilateur. En cas de températures ambiante $< -5^{\circ}\text{C}$ ou $> +40^{\circ}\text{C}$, contacter le S.ce 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.

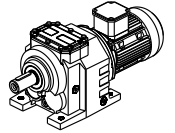
Instalación

Para garantizar un buen funcionamiento de los reductores y una mayor duración se deberá realizar un correcto acoplamiento a la estructura en la que se fija el grupo. Por tanto las superficies de dicha estructura tendrán que estar bien planas y los ejes de los agujeros respetar una tolerancia H8, de este modo se podrá garantizar una óptima planaridad y perpendicularidad con el eje del reductor.

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

- Para los grupos instalados al aire libre se aconseja, donde sea posible, proteger los reductores contra la intemperie, tratarlos con sistemas contra la corrosión y proteger los sellos de lubricación con grasa hidrófuga.
- Pour effectuer la fixation du réducteur, utiliser les boulons indiqués sous chaque dessin des fiches techniques du produit. En outre, utiliser tous les trous de fixation prévus sur les brides des réducteurs.
- El montaje entre los reductores y los motores, principalmente eléctricos o hidráulicos, generalmente se realiza con embridado directo siempre que no se presenten particulares condiciones críticas que podrían ocasionar daños después de la instalación.
- 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.

- Controlar que la refrigeración del motor sea suficiente, asegurando una correcta transferencia de aire del lado ventilador. En caso de temperatura ambiente de $< -5^{\circ}\text{C}$ o $> +40^{\circ}\text{C}$, 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 gripados o las oxidaciones.
- El barnizado no debe cubrir las partes de goma y los agujeros en los existentes tapones - respiraderos. Para los grupos equipados de tapones de aceite, reemplazar el tapón cerrado, utilizado durante el transporte, por el tapón respiradero.
- Controlar, por medio del indicador (si previsto), que el nivel del lubricante corresponda. 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 ó materiales que puedan dañarse por una eventual pérdida de aceite, deberá preverse una protección adecuada.



PAM B5 FLANŞI İLE MOTOR MONTAJI / MOTOR MOUNTING WITH PAM FLANGE B5 / MONTAGE DES MOTORS AN DEN PAM-FLANSCH B5 / MONTAGGIO MOTORE SU FLANGE B5 / INSTALLATION MOTEUR SUR BRIDE PAM B5 / MONTAJE DE MOTORES CON BRIDA B5

PAM B5 Flanşı ile Motor Montajı

Redüktör motorsuz olarak tedarik edildiğinde elektrik motorunun doğru olarak monte edildiğinden emin olmak için aşağıdaki tavsiyelere uyulmak zorundadır.

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 kontrol edin. Flanş montajlı motorun Pam flanşlı redüktöre montajında kaplin kullanılır.

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

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

Motor Mounting with PAM 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.

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.

Montage des Motors an den PAM - 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.

Montaggio Motore su Flange PAM 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;

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.

Installation Moteur sur Bride PAM 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.

Montaje de Motores con Brida B5

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

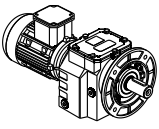
Verificar que la tolerancia del eje y de la brida motor se correspondan al menos a una clase de calidad "normal".

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.

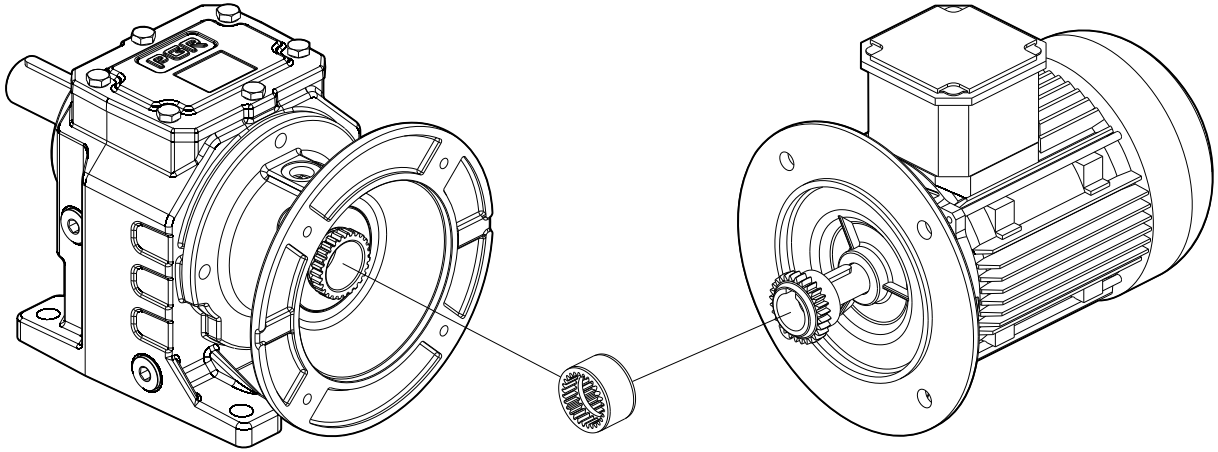
Proceder a continuación al montaje del motor con el semiacoplamiento en el reductor, evitando la interferencia de los dientes del acoplamiento.

No se prevé ninguna adaptación de la chaveta del motor.



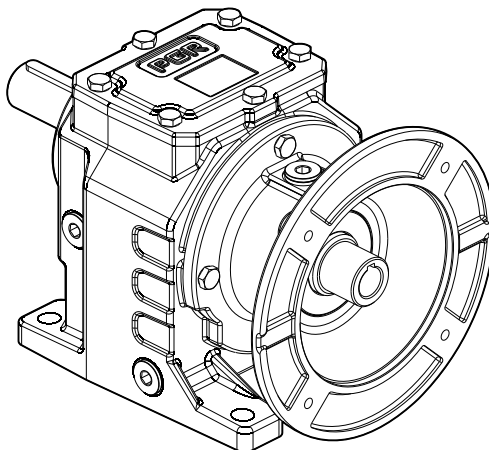
IEC BAĞLANTILI / FLEXIBLE JOINT / ELASTISCHE KUPPLUNG / GIUNTO ELASTICO / ACCOUP. ÉLASTIQUE / ACOPL. ELÁSTICO

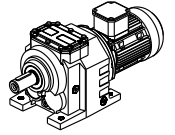
PH - PB - PS



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

H - B - S





RADYAL YÜKLER / RADIAL LOADS / QUERBELASTUNGEN / CARICHI RADIALI / CHARGES RADIALES / CARGAS RADIALES

Radyal Yükler

Şaft üzerindeki radyal yük aşağıdaki formülle hesaplanır:

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

FR_{XL} (N)
İzin verilen radyal yük
M_a (Nm)
Şaft üzerindeki moment
d_o (mm)
Şaft üzerine monte edilmiş transmisyon elemanın çapı
FR (N)
Uygulanan maksimum radyal yük değeri FR₁ - FR₂ (ilgili tablolara bakınız).

fz = 1,1 Dişliler
1,4 Zincir dişliler
1,7 v-makarası
2,5 Düz makara

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

$$FR_X = \frac{FR_1 - 2 \cdot Z}{(y + x)}$$

y, z = sayfa 15, 16'daki tablolarda verilen değerler
x = Yükün uygulandığı nokta ile çıkış mili faturası arasındaki mesafe.

Overhung Load

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

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

FR_{XL} (N)
Resulting radial load
M_a (Nm)
Torque on the shaft
d_o (mm)
Diameter of the transmission member mounted on the shaft
FR (N)
Value of the maximum admitted radial load FR₁ - FR₂ (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 adjust the admissible radial load FR₁₋₂ with the following formula:

$$FR_X = \frac{FR_1 - 2 \cdot Z}{(y + x)}$$

y, z = values given in the tables on page 15,16.
x = distance from the point of application of the load to the shaft shoulder.

Querbelastungen

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

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

FR_{XL} (N)
Resultierende Querkraft
M_a (Nm)
Wellendrehmoment
d_o (mm)
Durchmesser des an der Welle montierten Antriebselements
FR (N)
Max. zul. Querkraft FR₁ - FR₂ (siehe entspr. Tafel).

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

Sofern die resultierende Querkraft nicht auf die mitte der welle bezogen ist, ist die effektive Kraft FR₁₋₂ durch formel zu berechnen:

$$FR_X = \frac{FR_1 - 2 \cdot Z}{(y + x)}$$

y, z = siehe Tafeln auf seite 15,16.
x = Abstand der Querkraft zur Wellenschulter.

Carichi radiali

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

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

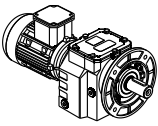
FR_{XL} (N)
Carico radiale risultante
M_a (Nm)
Momento torcente sull'albero
d_o (mm)
Diametro dell'elemento di trasmissione montato sull'albero
FR (N)
Valore di carico radiale massimo ammesso FR₁ - FR₂ (ved. tab. relative)

fz = 1,1 pignone dentato
1,4 ruota per catena
1,7 puleggia a gola
2,5 puleggia piana

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

$$FR_X = \frac{FR_1 - 2 \cdot Z}{(y + x)}$$

y, z = valori riportati nelle tabelle pag. 15,16
x = distanza del punto di applicazione del carico da spallamento albero.



RADYAL YÜKLER / RADIAL LOADS / QUERBELASTUNGEN / CARICHI RADIALI / CHARGES RADIALES / CARGAS RADIALES

Charges Radiales

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

$$F_{RXL} = \frac{2000 \cdot M_a \cdot fz}{d_o} \leq F_{R1} \text{ o } F_{R2}$$

F_{RXL} (N)

Charge radiale résultante

M_a (Nm)

Moment de torsion sur l'arbre

d_o (mm)

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

F_R (N)

Valeur de charge radiale maximum admise F_{R1} - F_{R2} (voir tableaux correspondants)

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

Quand la charge radiale résultante n'est pas appliquée au milieu de l'arbre, il est nécessaire de corriger la charge radiale admissible F_{R1-2} avec la formule suivante:

$$F_{RX} = \frac{F_{R1-2} \cdot z}{(y + x)}$$

y, z = valeurs indiquées dans les tableaux à page 15,16.
x = distance entre le point d'application de la charge et l'épaule-ment de l'arbre.

Cargas Radiales

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

$$F_{RXL} = \frac{2000 \cdot M_a \cdot fz}{d_o} \leq F_{R1} \text{ o } F_{R2}$$

F_{RXL} (N)

Carga radial resultante

M_a (Nm)

Par de torsión sobre el eje

d_o (mm)

Diámetro del elemento de transmisión montado sobre el eje

F_R (N)

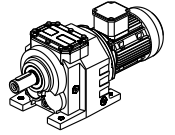
Valor de carga radial máximo admitido F_{R1} - F_{R2} (ver tablas correspondientes)

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

Cuando la carga radial resultante no se aplica sobre el centro del eje de salida, se debe corregir la carga radial admisible F_{R1-2} mediante la siguiente fórmula:

$$F_{RX} = \frac{F_{R1-2} \cdot z}{(y + x)}$$

y, z = valores indicados en las tablas pág. 15,16.
x = distancia desde el punto de aplicación de la carga hasta la base del eje.



RADYAL YÜKLER / RADIAL LOADS / QUERBELASTUNGEN / CARICHI RADIALI / CHARGES RADIALES / CARGAS RADIALES

Radyal Yükler

Kabul edilebilir Radyal yük (N) değeri redüktörün performansını gösteren ilgili tablolarda verilmiştir. Bu şaftın merkez hattına binen yükte ve en uygun durumlarda uygulama açısı ve yönü ile ilgili bir olgudur.

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

Radial Loads

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.

Querbelastungen

Der Wert der zulässigen Querbelastung (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 Querbelastungen, 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.

Carichi radiali

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 mezziera 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.

Charges Radiales

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.

Cargas Radiales

El valor de carga radial (N) admisible es 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.

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 (yükün yönü, şaft rotasyonun yönü, verilecek servisin tipi) sağlar.

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.

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, Anwendungsort.

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.

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.

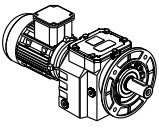
Nel caso di alberi bisporgenti e cavi in cui è previsto l'applicazione di carichi radiali su entrambe le estremità, i carichi massimi ammissibili sono da definire in funzione delle condizioni di esercizio specifiche, in questo caso contattare il ns. Servizio Tecnico.

Des conditions particulières de charges radiales supérieures aux limites de catalogue peuvent être vérifiées; dans ce cas, contacter notre S. ce 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.

Podrían presentarse condiciones particulares de carga radial superiores a los límites de catálogo; en este caso, ponerse en contacto con nuestro Serviciotécnico 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.



RADYAL YÜKLER / RADIAL LOADS / QUERBELASTUNGEN / CARICHI RADIALI / CHARGES RADIALES / CARGAS RADIALES

ÇIKIŞ ŞAFTI - OUTPUT SHAFTS - ABTRIEBSWELLEN - ALBERI IN USCITA - ARBRES DE SORTIE - EJES DE SALIDA

Radyal kuvvet çıkış şaftının orta noktasına gelmediğinde kabul edilebilir radyal yük F_{R2} aşağıdaki formül ile hesaplanır.

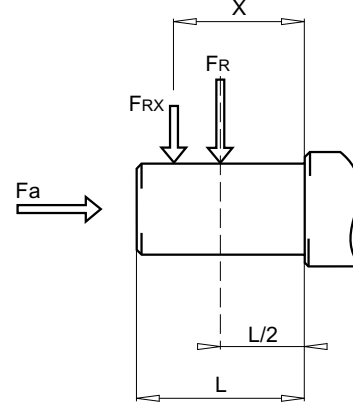
When the radial load is not on the centre line of the shaft, it is necessary to adjust the admissible radial load F_{R2} with the following formula:

Sofern die radiale Querkraft nicht auf die Mitte der welle bezogen ist, ist die effektive zulässige kraft F_{R2} durch formel zu berechnen:

Con carico radiale risultante non in mezzeria dell'albero, correggere il carico radiale ammissibile F_{R2} con la formula:

Quand la charge radiale n'est pas au milieu de l'arbre, il est nécessaire de corriger la charge radiale admissible F_{R2} avec la formule suivante:

Si la carga radial resultante no se aplica sobre el centro del eje, corregir la carga radial admissible F_{R2} mediante la siguiente fórmula:



$$F_{RX} = \frac{F_{R2} \cdot Z}{(y + x)} \text{ (N)}$$

| A/F | 252 - 253 | 302 - 303 | 352 - 353 | 402 - 403 | 502 - 503 | 602 - 603 | 702 - 703 | 902 - 903 |
|------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| z | 120 | 138 | 169 | 195 | 238 | 281 | 331 | 367 |
| y | 96 | 108 | 134 | 155 | 188 | 221 | 261 | 282 |
| F_{R2} max(**) | 5500 | 6600 | 8000 | 12000 | 18000 | 22000 | 30000 | 55000 |

(** F_{R2}) Redüktörün kabul edilen max. değerini performans tablolarından doğrulayınız.

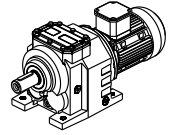
(** F_{R2}) Max. admissible value of the reducer; verify max. admissible value on performance tables.

(** F_{R2}) Entspricht dem max. zulässigem getriebe wert; bitte beachten sie den max. wert de tabelle.

(** F_{R2}) Valore massimo ammesso dal riduttore; verificare valore massimo ammesso su tabelle di prestazioni.

(** F_{R2}) Valeur maximale admissible du réducteur; vérifier la valeur maxi admissible dans les tableaux de performances.

(** F_{R2}) Valor máximo admisible por el reductor; verificar el valor máximo admisible en las tablas de prestaciones.



RADYAL YÜKLER / RADIAL LOADS / QUERBELASTUNGEN / CARICHI RADIALI / CHARGES RADIALES / CARGAS RADIALES

GİRİŞ ŞAFTI - INPUT SHAFTS - ANTRIEBSWELLEN - ALBERI IN ENTRATA - ARBRES D'ENTREE - EJES DE ENTRADA

Radyal kuvvet çıkış şaftının orta noktasına gelmediğinde kabul edilebilir radyal yük F_{R1} aşağıdaki formül ile hesaplanır.

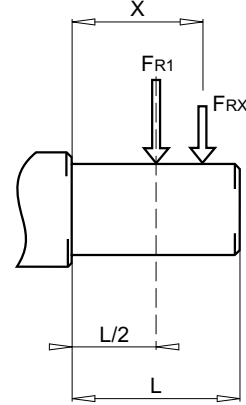
When the radial load is not on the centre line of the shaft, it is necessary to adjust the admissible radial load F_{R1} with the following formula:

Sofern die radiale Querkraft nicht auf die Mitte der welle bezogen ist, ist die effektive zulässige kraft F_{R1} durch formel zu berechnen:

Con carico radiale risultante non in mezzeria dell'albero, correggere il carico radiale ammissibile F_{R1} con la formula:

Quand la charge radiale n'est pas au milieu de l'arbre, il est nécessaire de corriger la charge radiale admissible F_{R1} avec la formule suivante:

Si la carga radial resultante no se aplica sobre el centro del eje, corregir la carga radial admissible F_{R1} mediante la siguiente fórmula:



$$F_{RX} = \frac{F_{R1} \cdot z}{(y + x)} \text{ (N)}$$

| A\F - W | 252 - 253 | 302 - 303 | 352 - 353 | 402 - 403 | 502 - 503 | 602 - 603 | 702 - 703 | 902 - 903 |
|--------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| z | 105 | 105 | 105 | 137 | 137 | 175 | 175 | 225 |
| y | 80 | 80 | 80 | 108 | 108 | 135 | 135 | 170 |
| F_{R1} max (**) | 2200 | 2200 | 2500 | 3600 | 3600 | 7200 | 7200 | 15000 |

(**F_{R1}) Redüktörün kabul edilen max. değerini performans tablolarından doğrulayınız.

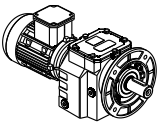
(**F_{R1}) Max. admissible value of the reducer; verify max. admissible value on performances tables.

(**F_{R1}) Entspricht dem max. zulässigem getriebe wert; bitte beachten sie den max. wert der tabelle.

(**F_{R1}) Valore massimo ammesso dal riduttore; verificare valore massimo ammesso su tabelle di prestazioni.

(**F_{R1}) Valeur maximale admissible du réducteur; vérifier la valeur maxi admissible dans le tableaux de performances.

(**F_{R1}) Valor máximo admisible por el reductor; verificar el valor máximo admisible en las tablas de prestaciones.



YAĞLAMA / LUBRICATION / SCHMIERUNG / LUBRIFICAZIONE / LUBRIFICATION / LUBRICACIÓN

Yağlama

Redüktörlerin verimli çalışmasını sağlamak için gerekli olan en önemli faktör doğru yağlamadır. Bu nedenle, montaj sırasında lütfen aşağıdaki durumları kontrol ediniz.

- Redüktör üzerindeki tüm tapaların belirtilen montaj pozisyonuna göre monte edilmiş olduğundan emin olun ve Montaj Pozisyonları sayfasından doğruluğunu teyit ediniz.

- Konumları ne olursa olsun (doğrusal veya açısız) bütün yatay montaj pozisyonlarında merkez çizgisine kadar yağ ile dolu olması gerekmektedir. Yağ seviyesine bakmak için yalnızca merkez çizgisindeki tapayı sökmeniz yeterlidir.

- 24 saat çalışmaya maruz bırakılan bir redüktör, içerisinde bulunan yağın kısa zamanda aşırı ısınmasına neden olabilir. Bu gibi durumlarda düşük viskoziteli yağ kullanınız.

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 kullanmak gerekir.

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

1- Elektrik motorunun gücü gerekli olan yüksek başlama moment değerlerini aşabilmesi için yeterli olmalıdır.

2- Motorlar tahmin edilen ortam sıcaklıklarındaki operasyonlara uygunluk gerektirir.

Lubrication

Correct lubrication is required to run drives efficiently.

Therefore, check the following conditions during installation:

- Make sure that all plugs are correctly mounted with respect to the installation position specified in the order and according to the instructions in the Mounting Positions section.

- Fill horizontally-mounted units up to the central line regardless of a linear or angular configuration. To visually check the oil level, unscrew the plug located just above the center line.

- Units running under continuous duty conditions may overheat due to the large quantity of oil they contain. In these cases, use oil with a lower viscosity.

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 power of the electric motor needs to be adequate for exceeding the higher starting torques required.

2- The motors need to be suitable for operation at the envisaged ambient temperature.

Schmierung

Nur eine korrekte Schmierung gewährleistet den problemlosen Betrieb des Getriebes.

Es wird deshalb empfohlen, bei der installation folgende Bedingungen zu überprüfen:

- Kontrollieren, ob je nach bestellter Montageposition die Einfüllstutzen korrekt montiert sind, vgl. dazu die Angaben im Abschnitt Einbaulage.

- Ist das Getriebe waagrecht montiert, muß es bis zur Mitte aufgefüllt werden; Sichtkontrolle des Ölstandes vornehmen, indem der Öleinfüllstopfen abgeschraubt wird.

- Außerdem kommt es bei Getrieben, die im Dauerbetrieb arbeiten, aufgrund der darin enthaltenen großen Ölmengen leicht zu Überhitzung; in diesem Fall wird die Verwendung von Öltypen mit niedrigerem Viskositätsgrad empfohlen.

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 Leistung des Elektromotors muß so ausgelegt werden, daß die höheren benötigten Anlaufdrehmomente aufgebracht werden können.

2- Die Motoren müssen für den Betrieb mit der vorgesehenen niedrigen Raumtemperatur geeignet sein.

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

- Tortu birikintilerini önlemek için, redüktör ünitesi hala sıcak iken yağ değişimi yapılmalıdır.

- Bütün tapalar temizlenmelidir.

- Yeni yağ ilavesi yapılmadan önce, redüktör ünitesi yağ tedarikçilerinin tavsiye ettiği sıvı temizleyicilerle yıkanması gerekmektedir.

- Yağ seviyelerini ölçmek ve oluşabilecek yağ sızıntılarını önlemek için redüktör ünitesini periyodik olarak yüke maruz bırakmadan boşta çalıştırarak kontrol ediniz.

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

3- In the case of reduction units with a cast-iron case, 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.

Oil Changes

- To avoid sludge deposits, change the oil while the drive is still hot.

- Clean all plugs.

- Before adding the new oil, the unit should be flushed with a liquid detergent recommended by the lubricant supplier.

- Periodically check for oil leaks and the oil level while the unit is idling. If needed, top up using the same type of oil.

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.

3- Bei Getriebeghäusen aus Guß sind die Stoßbelastungen zu beachten, weil der Guß bei Temperaturen unter -15°C verpröden könnte.

4- Bei Betriebsbeginn könnten Schmierungsprobleme infolge der hohen Ölviskosität auftreten, daher ist es sinnvoll, für einige Minuten einen Leerlauf auszuführen.

Ölwechsel

- Das Öl bitte bei noch warmen Getriebe ablassen. Auf diese Weise werden Ablagerungen vermieden.

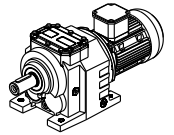
- Ölstopfen reinigen.

- Vor dem Auffüllen mit neuem Öl, das Getriebe innen mit einem vom Schmierstoffhersteller empfohlenen Reinigungsmittel auswaschen.

- Getriebe regelmäßig auf Dichtigkeit prüfen sowie sicherstellen, daß bei Stillstand das Öl bis zum vorgesehenen Ölstand reicht. Sofern erforderlich, ist Öl nachzufüllen; der Öltyp muß mit dem im Getriebe bereits enthaltenen Öl unbedingt übereinstimmen.

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.



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Lubrificazione

Per il buon funzionamento dei riduttori è indispensabile una corretta lubrificazione.

Si consiglia pertanto di verificare le seguenti condizioni in fase di installazione:

- Controllare che, in relazione alla posizione di montaggio specificata in fase d'ordine, il gruppo abbia i tappi di servizio montati correttamente, secondo le indicazioni del capitolo Posizioni di Montaggio.

- Quando il gruppo è montato in posizione orizzontale bisogna riempirlo fino alla mezzeria, indipendentemente dalla configurazione lineare o angolare. Controllare visivamente il livello dell'olio svitando il tappo posto sulla stessa zona o in zona limitrofa, vale a dire appena sopra.

- I gruppi con servizio continuativo sono soggetti a surriscaldamento per la notevole quantità di olio in essi contenuta: in questi casi consigliamo l'uso di oli con una viscosità più bassa.

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- La potenza del motore elettrico deve essere adeguata al superamento delle maggiori coppie di avviamento richieste.
- 2- I motori devono essere idonei al funzionamento con temperatura ambiente prevista.

Lubrification

Une bonne lubrification est indispensable au bon fonctionnement des réducteurs.

Il est par conséquent recommandé de s'assurer des conditions suivantes en cours d'installation:

- En fonction de la position de montage spécifiée lors de la commande, s'assurer que les bouchons de service du groupe sont montés correctement, conformément aux indications du chapitre Positions de Montage.

- Lorsque le groupe est monté en position horizontale, il est nécessaire de le remplir de lubrifiant à mi-hauteur, que la configuration soit linéaire ou angulaire. Contrôler le niveau de lubrifiant visuellement en dévissant le bouchon se trouvant à mi-hauteur ou à proximité, c'est-à-dire juste au-dessus.

- Les groupes à fonctionnement en service continu sont sujets des surchauffes en raison de la très grande quantité d'huile qu'ils contiennent: dans ce cas, il est conseillé d'employer des lubrifiants à degré de viscosité inférieur.

En cas de températures ambiantes non prévues dans le tableau, contacter notre S.c.e 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- La puissance du moteur électrique doit être apte au dépassement de la plupart des couples de démarrage demandés.
- 2- Les moteurs doivent être aptes au fonctionnement à la température ambiante prévue.

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 causa l'elevata viscosità che assume l'olio e quindi è opportuno procedere ad alcuni minuti di rotazione a "vuoto".

Cambio Olio

- Lo svuotamento del riduttore va effettuato con l'olio ancora caldo, per evitare il deposito di morchie.

- Pulire i tappi.

- Prima del riempimento con nuovo olio effettuare un lavaggio interno del gruppo con liquido detergente consigliato dal fornitore di lubrificante.

- Controllare periodicamente che non vi siano perdite d'olio e che, a gruppo fermo, l'olio raggiunga il livello previsto.

Se necessario, effettuare un rabbocco con lo stesso tipo di olio presente nel riduttore.

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.

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.

Vidange D'huile

- La vidange du réducteur doit se faire lorsque l'huile est encore chaude de façon à éviter les dépôts de cambouis.

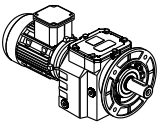
- Nettoyer les bouchons.

- Laver l'intérieur du réducteur avec un détergent conseillé par le fournisseur du lubrifiant avant d'effectuer le remplissage.

- Contrôler périodiquement qu'il n'y ait pas de pertes d'huile et que, lorsque le groupe est arrêté, l'huile atteigne bien le niveau prévu. Si nécessaire, rétablir ce niveau avec de l'huile du même type que celle se trouvant dans le réducteur.

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.



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Lubricación

Para un buen funcionamiento de los reductores es indispensable una correcta lubricación.

Por tanto, se aconseja verificar las siguientes condiciones durante la instalación:

- Controlar que, según la posición de montaje especificada en la orden, el grupo tenga todos los tapones de servicio correctamente montados, según las indicaciones del capítulo Posiciones de Montaje.

- Cuando el grupo esté montado en posición horizontal habrá que llenarlo hasta la línea central, independientemente de la configuración lineal o angular. Controlar visualmente el nivel de aceite aflojando el tapón que está situado en la misma zona o en una zona limítrofe o sea, apenas por encima.

- Los grupos con servicio continuo pueden recalentarse debido a la gran cantidad de aceite que contienen: en estos casos se aconseja utilizar aceites con una viscosidad más baja.

En caso de temperaturas ambiente 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- La potencia del motor eléctrico tiene que ser idónea para superar los mayores pares de arranque pedidos.

2- Los motores tienen que ser idóneos al funcionamiento con la temperatura ambiente prevista.

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.

Cambio de Aceite

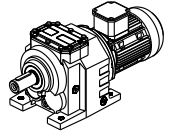
- El vaciado del reductor se tiene que realizar estando todavía el aceite caliente, para evitar el depósito de sedimentos.

- Limpiar los tapones.

- Antes de efectuar el llenado con el aceite nuevo hay que lavar el interior del grupo con el detergente que aconseja el proveedor del lubricante.


- Controlar periódicamente que no haya pérdidas de aceite y que, estando el grupo parado, el aceite alcance el nivel previsto. Si fuese necesario, efectuar un llenado con el mismo tipo de aceite del reductor.

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.



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- Yağsız olarak tedarik edilen redüktör üzerlerinde bir uyarı etiketi taşır.
- The reduction units supplied without lubricant are provided with the relative warning-label.
- Die Getriebe welche ohne Schmiermittel ausgeliefert werden, sind durch ein entsprechendes Hinweisschild gekennzeichnet.
- I riduttori che vengono forniti privi di olio lubrificante sono contraddistinti dall'applicazione della relativa targhetta.
- Los reductores que se suministran sin lubricante son identificados mediante un tarjeta.
- Les réducteurs fournis sans lubrifiant sont signalés par un adhésif d'alerte.

 Ürün içerisinde yağ yoktur. Uygun yağ seçimi için ilgili ürünün kataloğuna / kullanım talimatına veya www.pgr.com.tr web sayfamıza bakınız.
No oil in gearbox. See Manual / Catalogue or visit our web page www.pgr.com.tr to choose appropriate oil concerning to this product.

Mineral Yağ / Mineral Oil / Mineralöl / Olio minerale
Huile Minérale / Aceite mineral

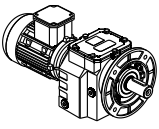
| | | |
|-----------|--------------|---------------|
| T°C | (-5) \ (+40) | (-15) \ (+25) |
| ISO VG... | ISO VG 220 | ISO VG 150 |

- Yağ malzemesi ile ilgili özellikler Polat Group Redüktör A.Ş. tarafından tavsiye edilmektedir.
- Specifications of lubricants recommended by Polat Group Redüktör A.Ş.
- Spezifische Schmierstoffangabe erfragen Sie bei Polat Group Redüktör A.Ş.
- Specifiche dei lubrificanti consigliati da Polat Group Redüktör A.Ş.
- Especificaciones de lubricante aconsejados por Polat Group Redüktör A.Ş.
- Spécification des lubrifiants suivant Polat Group Redüktör A.Ş.

| A1F 252...902 - A1F 253...903 Mineral Yağ / Mineral Oil / Mineralöl / Olio Minerale Huile Minérale / Aceite Mineral | | | | | | |
|---|---------------|------------------|------------------|------------------|------------------|---------------------|
| T°C ISO VG... | AGIP | SHELL | ESSO | MOBIL | CASTROL | BP |
| (-5) \ (+40) ISO VG220 | BLASIA 220 | OMALA OIL 220 | SPARTAN EP220 | MOBILGEAR 630 | ALPHA MAX 220 | ENERGOL GR-XP220 |
| (-15) \ (+25) ISO VG150 | BLASIA 150 | OMALA OIL 150 | SPARTAN EP150 | MOBILGEAR 629 | ALPHA MAX 150 | ENERGOL GR-XP150 |

| A1F | 252 - 253 | 302 - 303 | 352 - 353 | 402 - 403 | 502 - 503 | 602 - 603 | 702 - 703 | 902 - 903 |
|-------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| M1 | 0.8 | 1.2 | 1.3 | 2.3 | 4 | 8.2 | 12 | 22 |
| M2 | 1.2 | 1.7 | 2 | 5 | 7.5 | 14.5 | 20 | 38 |
| M3 | 0.8 | 1.2 | 1.3 | 3.1 | 4.7 | 8.5 | 12 | 22 |
| M4 | 1.3 | 1.7 | 2.1 | 3.7 | 7 | 12.8 | 20.5 | 30.5 |
| M5-M6 | 1 | 1.2 | 1.8 | 2.7 | 4.5 | 8.8 | 12 | 22 |

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



MODÜLER SİSTEM / MODULARITY / MODULARES BAUKASTENSYSYSTEM / MODULARITA / MODULARITE / MODULARIDAD

Gri Demir Döküm Serisi / Grey cast iron series / Serie in ghisa grigia / Serie aus GG. / Série en fonte grise / Serie en fundición gris

A - F \ PAM

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

A - F

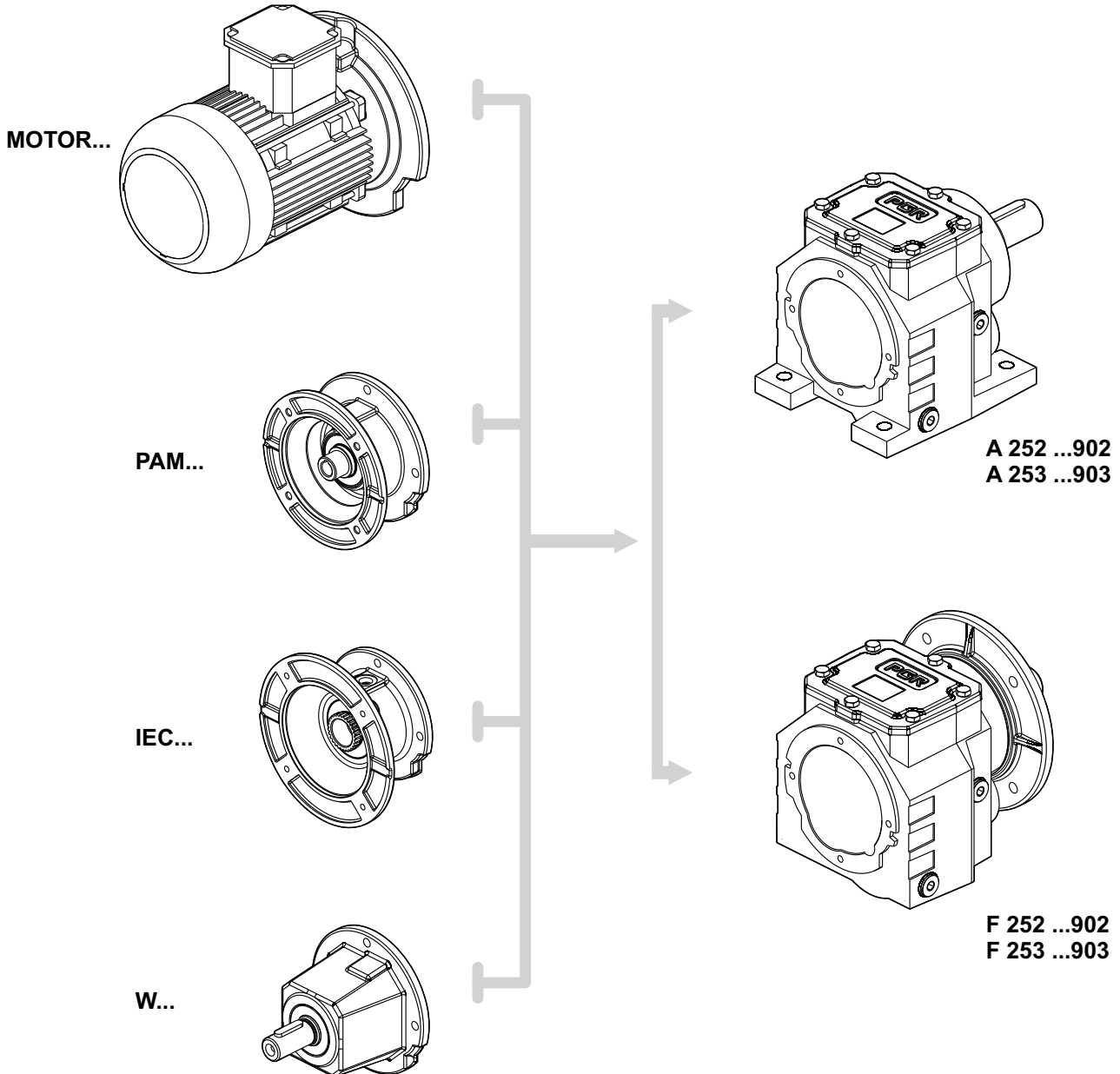
- Kompak elektrik motor versiyonu.
- Compact electric motor versions.
- Ausführungen mit kompakt elektro motoren.
- Versioni con motore elettrico compatto.
- Version avec moteur électrique compact.
- Versión motorreductor compacto.

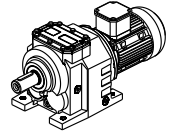
A - F \ W

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

A - F \ IEC

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

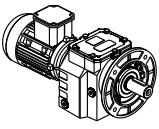




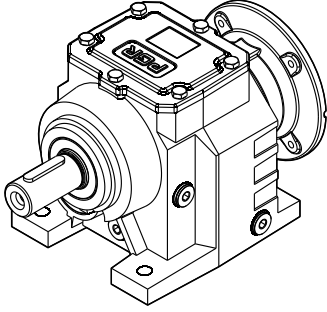
TASARIM / DESIGNATION / BEZEICHNUNG / DESIGNAZIONE / DÉSIGNATION / DESIGNACIÓN

A \ F

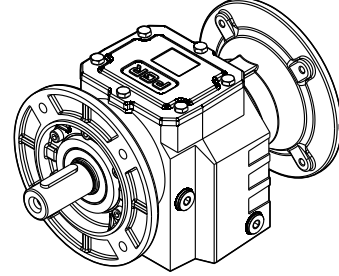
| | | | |
|---|---|-----------|--|
| A \ F | <p>Kompak motorlu helisel dişli redüktör Compact geared motor with helical gears (supplied complete with motor) Kompakter stirnradtriebemotor (mit motor geliefert) Motoriduttore ad ingranaggi cilindrici compatto (fornito completo di motore) Motoréducteur à engrenages cylindriques compact (livré avec moteur) Motorreductor de engranajes cilíndricos compacto (motor y reductor compacto)</p> | | |
| 252 | <p>Boyut 25, 2 kademeli - Gri demir döküm serisi Size 25, 2 reduction stages, cast iron series Baugröße 25 - 2 Übersetzungsstufen - Ausführung in grauguss Grandezza 25, 2 stadi di riduzione, serie in ghisa Grandeur 25, 2 trains d'engrenages, série en fonte Tamaño 25, 2 trenes de engranajes, gama de fundición</p> | | |
| FA - FB FC | <p>Çıkış flanşı Output flange Abtriebsflansch Flangia di uscita Bride de sortie Brida de salida</p> | | |
| 44.7 | <p>Tahvil oranı Reduction ratio Übersetzungsverhältnis Rapporto di riduzione Rapport de réduction Relación de reducción</p> | | |
| M1 | <p>Montaj Pozisyonu Mounting position Einbaulage Posizione di piazzamento Position de montage Posición de montaje</p> | | |
| Giriş ölçüleri / Input dimensions / Abmessungen antriebsseitig / Dimensioni di entrata / Dimensions d'entrée / Dimensiones de entrada | | | |
| PAM | <p>Motor bağlantısı için Fitted for motor coupling Für motoranbau vorbereitet Predisposto per attacco motore Prédisposé pour montage moteur standard Predispuosto para motaje motor</p> | | |
| 160 | <p>Motor flanş çapı Motor flange diameter Motorflansch - Durchmesser Diametro flangia motore Diamètre bride moteur Diámetro brida motor</p> | 14 | <p>Motor giriş şaftı çapı Drive - shaft diameter Motorwellen - Durchmesser Diametro albero motore Diamètre arbre moteur Diámetro eje motor</p> |
| Çıkış ölçüleri / Output dimensions / Abmessungen abtriebsseitig / Dimensioni di uscita / Dimensions de sortie / Dimensiones de salida | | | |
| 250 | <p>Çıkış flanşı çapı Output flange diameter Durchmesser Abtriebsflansch Diametro flangia uscita Diamètre de la bride de sortie Diámetro brida de salida</p> | 40 | <p>Çıkış mili çapı Output shaft diameter Durchmesser abtriebswelle Diametro albero uscita Diamètre de l'arbre de sortie Diámetro eje de salida</p> |



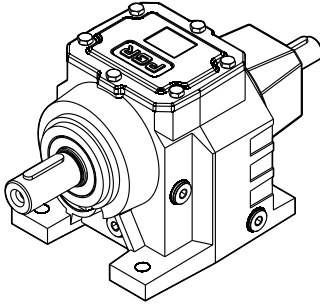
VERSİYONLAR / VERSIONS / AUSFUHRUNGEN / VERSIONI / VERSIONS / VERSIONES



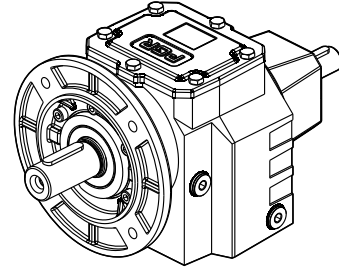
A ... \ PAM



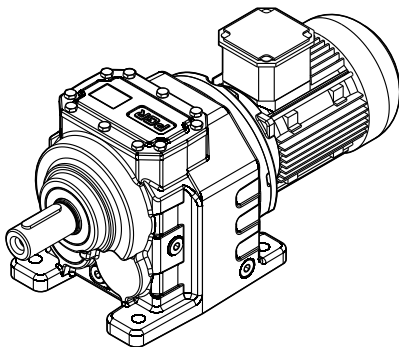
F ... \ PAM



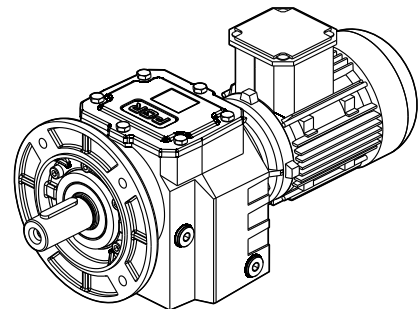
A ... \ W



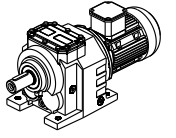
F ... \ W



A ... \ Motor



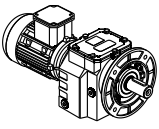
F ... \ Motor



MONTAJ POZİSYONLARI / MOUNTING POSITIONS / EINBAULAGE / PIAZZAMENTO / POS. DE MONTAGE / POS. DE MONTAJE

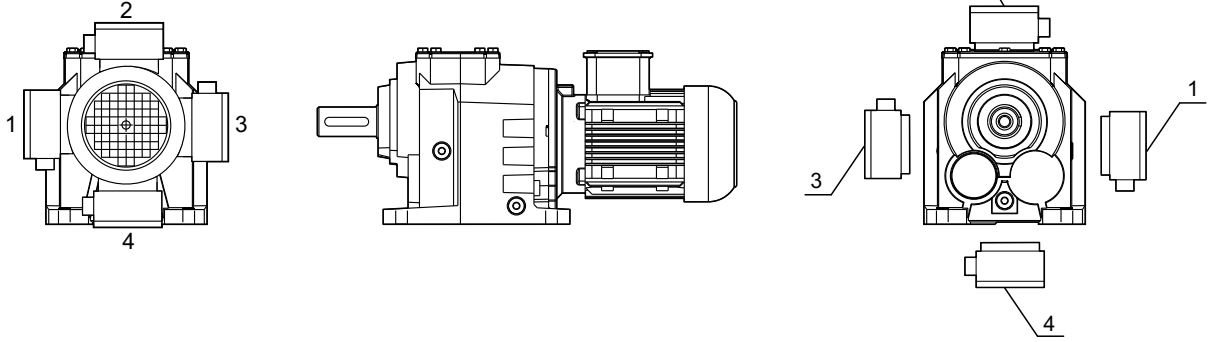
| M1 (B3) | M2 (V6) | M3 (B8) |
|---------|---------|---------|
| | | |
| M4 (V5) | M5 (B6) | M6 (B7) |
| | | |

| M1 (B5) | M2 (V3) | M4 (V1) |
|---------|---------|---------|
| | | |



MONTAJ POZİSYONLARI / MOUNTING POSITIONS / EINBAULAGE / PIAZZAMENTO / POS. DE MONTAGE / POS. DE MONTAJE

**Terminal kutusunun pozisyonu
Position of terminal box
Klemmenkastenlage
Posizione morsettiera
Position du bornier
Posición caja de bornes**



- Sipariş sırasında özel istekleriniz olacaksa şekilde gösterildiği üzere terminal kutusunun pozisyonunu belirtiniz.
- In the case of specific requirements, when ordering, specify the position of the terminal box as shown in the diagram.
- Im Falle von Sonderanforderungen ist bei Auftragserteilung die Lage des Klemmenkastens gemäß dem Schema genau anzugeben.
- Nel caso di particolari esigenze specificare in fase di ordine la posizione della morsettiera come da schema.
- En cas d'exigences particulières, spécifier, lors de la commande, la position du bornier comme d'après le schéma.
- En caso de exigencias particulares, detallar en el pedido, la posición de la caja de bornes según el esquema.

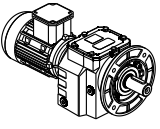
- Aksi belirtilmediği takdirde redüktörlerin klemens kutusu pozisyonu 1 olarak verilir.
- Unless otherwise specified, the gear reducer is supplied with terminal box in position 1.
- Sofern nichts gegenteiliges angegeben, wird der schneckengetriebemotor mit klemmkastenlage 1 geliefert.
- Se non diversamente specificato, il gruppo viene fornito con morsettiera in pos.1.
- Sauf indications contraires, le réducteur est fourni avec boîte à borne en position 1.
- Si non esta diferentemente especificado, el motorreductor se monta con la caja de bornes en posición 1.

- Dikey pozisyonları sayfa 24'den kontrol ediniz.
- For vertical positions, check with pages 24.
- Für die vertikalen Einbautagen siehe seite 24.
- Per le posizioni di piazzamento verticali verificare quanto detto a pag. 24.
- Pour les positions de montage verticales, voir pages 24.
- Para las posiciones de montaje verticales, ver las páginas 24.

- Aksi belirtilmediği takdirde standart pozisyon M1'dir.
- Unless specified otherwise, the standard positions are M1.
- Falls nicht angegebene Einbautagen sind M1 die Standardeinbautagen.
- Se non diversamente specificato le posizioni standard sono M1.
- Si non specificato, les positions standard sont M1.
- Si no se especifica el contrario, las posiciones estándar son M1.

- Öngörülen montaj pozisyonları dışında kalan durumlar için teknik servisimize danışınız.
- For positions not envisaged, it is necessary to call our Technical Service.
- Für nicht angegebene Einbautagen setzen sie sich bitte mit unserem kundendienst in verbindung.
- Per le posizioni di piazzamento non previste to call our Technical Service.
- Pour les positions de montage non prévues, contacter notre S.ce technique.
- Para las posiciones de montaje no previstas, es necesario ponerse en contacto con nuestro Servicio técnico.

PGR[®]
Drive Technologies

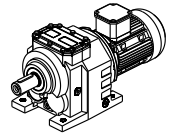


Motorlu Seçim Tabloları
Selection Tables of Gearedmotors
Auswahltable von Getriebemotoren
Tabella di Selezione di Motoriduttori
Tableau de Sélection du Motoreducteurs
Tabla de Selección de Motorreductores

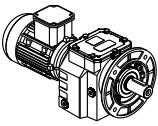


A/F 252 ... 902
A/F 253 ... 903

0.12 kW - 0.18kW
0.25 kW - 0.37kW

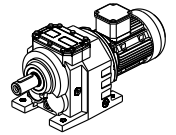




| P_1 [kW] | n_2 [Min ⁻¹] | M_2 [Nm] | f_B | i_{ges} | F_R [kN] | Tip / Type / Typ Tipo / Type / Tipo | Kg | mm | | | | | |
|---------------|-------------------------------|---------------|-------|-----------|---------------|--|--|----|--------|------|--|----|----|
| 0.12 | 4.8 | 223 | 1.3 | 282.17 | 6.6 | A303 - 63M/4A F303 - 63M/4A | 18 | 50 | | | | | |
| | 6.0 | 180 | 1.7 | 227.56 | 6.6 | | | | | | | | |
| | 6.7 | 162 | 1.9 | 205.01 | 6.6 | | | | | | | | |
| | 8.3 | 130 | 2.3 | 165.33 | 6.6 | | | | | | | | |
| | 5.6 | 194 | 1.0 | 245.76 | 5.5 | A253 - 63M/4A F253 - 63M/4A | 15 | 48 | | | | | |
| | | 6.9 | 156 | 1.3 | 197.21 | | | | 5.5 | | | | |
| | | 7.6 | 141 | 1.4 | 178.56 | | | | 5.5 | | | | |
| | | 9.5 | 113 | 1.8 | 143.29 | | | | 5.5 | | | | |
| | | 11.0 | 98 | 2.1 | 123.58 | | | | 5.5 | | | | |
| | | 12.6 | 85 | 2.3 | 108.02 | | | | 5.5 | | | | |
| | | 0.18 | 5.1 | 314 | 1.6 | | | | 268.00 | 8.0 | A353 - 63M/4B F353 - 63M/4B | 23 | 52 |
| | | | 6.4 | 254 | 2.0 | | | | 216.67 | 8.0 | | | |
| | 4.9 | | 330 | 0.9 | 282.17 | 6.6 | A303 - 63M/4B F303 - 63M/4B | 18 | 50 | | | | |
| | | | 6.1 | 266 | 1.1 | 227.56 | | | | 6.6 | | | |
| 6.7 | | | 240 | 1.2 | 205.01 | 6.6 | | | | | | | |
| 8.3 | | | 194 | 1.5 | 165.33 | 6.6 | | | | | | | |
| 9.7 | | | 166 | 1.8 | 141.89 | 6.6 | | | | | | | |
| 11.0 | | | 147 | 2.0 | 125.65 | 6.6 | | | | | | | |
| 12.1 | | | 134 | 2.2 | 114.42 | 6.6 | | | | | | | |
| 7.0 | 231 | | 0.9 | 197.21 | 5.5 | A253 - 63M/4B F253 - 63M/4B | 15 | 48 | | | | | |
| | 7.7 | | 209 | 1.0 | 178.56 | | | | 5.5 | | | | |
| | 9.6 | | 168 | 1.2 | 143.29 | | | | 5.5 | | | | |
| | 11.2 | | 145 | 1.4 | 123.58 | | | | 5.5 | | | | |
| | 12.8 | | 126 | 1.6 | 108.02 | | | | 5.5 | | | | |
| | 13.8 | | 117 | 1.7 | 100.12 | | | | 5.5 | | | | |
| | 0.25 | | 5.2 | 432 | 2.0 | | | | 267.75 | 12.0 | A403 - 71M/4A F403 - 71M/4A | 36 | 54 |
| 5.9 | | | 379 | 2.2 | 234.50 | 12.0 | | | | | | | |
| 6.5 | | | 347 | 2.4 | 215.01 | 12.0 | | | | | | | |
| 5.2 | | 433 | 1.2 | 268.00 | 8.0 | A353 - 71M/4A F353 - 71M/4A | 26 | 52 | | | | | |
| | | 6.4 | 350 | 1.4 | 216.67 | | | | 8.0 | | | | |
| | | 7.1 | 314 | 1.6 | 194.72 | | | | 8.0 | | | | |
| | | 8.8 | 254 | 2.0 | 157.42 | | | | 8.0 | | | | |
| 6.8 | | 331 | 0.9 | 205.01 | 6.6 | A303 - 71M/4A F303 - 71M/4A | 21 | 50 | | | | | |
| | | 8.4 | 267 | 1.1 | 165.33 | | | | 6.6 | | | | |
| | | 9.8 | 229 | 1.3 | 141.89 | | | | 6.6 | | | | |
| | | 11.1 | 203 | 1.5 | 125.65 | | | | 6.6 | | | | |
| | | 12.1 | 185 | 1.6 | 114.42 | | | | 6.6 | | | | |
| | | 16.0 | 140 | 2.1 | 86.96 | | | | 6.6 | | | | |
| | | 18.2 | 123 | 2.4 | 76.42 | | | | 6.6 | | | | |
| 11.2 | | 200 | 1.0 | 123.58 | 5.5 | A253 - 71M/4A F253 - 71M/4A | 18 | 48 | | | | | |
| | | 12.9 | 174 | 1.1 | 108.02 | | | | 5.5 | | | | |
| | | 13.9 | 162 | 1.2 | 100.12 | | | | 5.5 | | | | |
| | | 18.6 | 121 | 1.7 | 74.76 | | | | 5.5 | | | | |
| | | 20.9 | 107 | 1.9 | 66.56 | | | | 5.5 | | | | |
| | | 26.0 | 86 | 2.3 | 53.41 | | | | 5.5 | | | | |
| | | 0.37 | 5.2 | 640 | 1.3 | | | | 267.75 | 12.0 | A403 - 71M/4B F403 - 71M/4B | 38 | 54 |
| | | | 5.9 | 560 | 1.5 | | | | 234.50 | 12.0 | | | |
| 6.5 | | | 514 | 1.7 | 215.01 | 12.0 | | | | | | | |
| 7.5 | | | 445 | 1.9 | 186.14 | 12.0 | | | | | | | |
| 8.2 | 408 | | 2.1 | 170.55 | 12.0 | | | | | | | | |
| 6.4 | 518 | | 1.0 | 216.67 | 8.0 | A353 - 71M/4B F353 - 71M/4B | 28 | 52 | | | | | |
| | 7.1 | | 465 | 1.1 | 194.72 | | | | 8.0 | | | | |
| | 8.8 | | 376 | 1.3 | 157.42 | | | | 8.0 | | | | |
| | 10.3 | | 322 | 1.6 | 134.76 | | | | 8.0 | | | | |
| | 12.8 | | 260 | 1.9 | 108.95 | | | | 8.0 | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

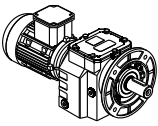


| P₁ [kW] | n₂ [Min ⁻¹] | M₂ [Nm] | f_B | i_{ges} | F_R [kN] | Tip / Type / Typ Tipo / Type / Tipo | Kg ~ | mm |
|------------------------------|--|------------------------------|----------------------|------------------------|--|--|---------------------------|-----------|
| 0.37 | 11.1 | 300 | 1.0 | 125.65 | 6.6 | A303 - 71M/4B F303 - 71M/4B | 23 | 50 |
| | 12.1 | 273 | 1.1 | 114.42 | 6.6 | | | |
| | 16.0 | 208 | 1.4 | 86.96 | 6.6 | | | |
| | 18.2 | 183 | 1.6 | 76.42 | 6.6 | | | |
| | 22.6 | 147 | 2.0 | 61.63 | 6.6 | | | |
| | 25.3 | 134 | 2.1 | 55.03 | 6.6 | A302 - 71M/4B F302 - 71M/4B | 23 | 50 |
| | 28.8 | 118 | 2.4 | 48.22 | 6.6 | | | |
| | 13.9 | 239 | 0.8 | 100.12 | 5.5 | A253 - 71M/4B F253 - 71M/4B | 20 | 48 |
| | 18.6 | 179 | 1.1 | 74.76 | 5.5 | | | |
| | 20.9 | 159 | 1.3 | 66.56 | 5.5 | | | |
| | 26.0 | 128 | 1.6 | 53.41 | 5.5 | | | |
| | 29.0 | 117 | 1.7 | 47.93 | 5.5 | A252 - 71M/4B F252 - 71M/4B | 20 | 48 |
| | 33.1 | 102 | 2.0 | 42.00 | 5.5 | | | |
| | 36.1 | 94 | 2.1 | 38.46 | 5.5 | | | |
| | 0.55 | 6.3 | 785 | 2.3 | 222.59 | 18.0 | A503\F503 - 80M/4A | 55 |
| 5.2 | | 944 | 0.9 | 267.75 | 12.0 | A403 - 80M/4A F403 - 80M/4A | 38 | 54 |
| 6.0 | | 827 | 1.0 | 234.50 | 12.0 | | | |
| 6.5 | | 758 | 1.1 | 215.01 | 12.0 | | | |
| 7.5 | | 656 | 1.3 | 186.14 | 12.0 | | | |
| 8.2 | | 601 | 1.4 | 170.55 | 12.0 | | | |
| 9.4 | | 527 | 1.6 | 149.47 | 12.0 | | | |
| 10.3 | | 477 | 1.8 | 135.37 | 12.0 | | | |
| 10.4 | | 475 | 1.1 | 134.76 | 8.0 | A353 - 80M/4A F353 - 80M/4A | 28 | 52 |
| 12.9 | | 384 | 1.3 | 108.95 | 8.0 | | | |
| 15.5 | | 319 | 1.6 | 90.51 | 8.0 | | | |
| 19.3 | | 256 | 2.0 | 72.58 | 8.0 | | | |
| 16.1 | | 307 | 1.0 | 86.96 | 6.6 | A303 - 80M/4A F303 - 80M/4A | 23 | 50 |
| 18.3 | | 270 | 1.1 | 76.42 | 6.6 | | | |
| 22.7 | | 217 | 1.4 | 61.63 | 6.6 | | | |
| 25.4 | | 198 | 1.4 | 55.03 | 6.6 | A302 - 80M/4A F302 - 80M/4A | 23 | 50 |
| 29.0 | | 174 | 1.6 | 48.22 | 6.6 | | | |
| 31.5 | | 160 | 1.8 | 44.38 | 6.6 | | | |
| 36.5 | 138 | 2.0 | 38.33 | 6.6 | | | | |
| 40.4 | 125 | 2.2 | 34.62 | 6.6 | | | | |
| 21.0 | 235 | 0.9 | 66.56 | 5.5 | A253 - 80M/4A F253 - 80M/4A | 20 | 48 | |
| 26.2 | 188 | 1.1 | 53.41 | 5.5 | | | | |
| 29.2 | 173 | 1.2 | 47.93 | 5.5 | A252 - 80M/4A F252 - 80M/4A | 20 | 48 | |
| 33.3 | 151 | 1.3 | 42.00 | 5.5 | | | | |
| 36.4 | 139 | 1.4 | 38.46 | 5.5 | | | | |
| 41.9 | 120 | 1.7 | 33.38 | 5.5 | | | | |
| 46.4 | 109 | 1.8 | 30.15 | 5.5 | | | | |
| 52.3 | 96 | 2.1 | 26.79 | 5.5 | | | | |
| 0.75 | 6.3 | 1070 | 1.7 | 222.59 | 18.0 | A503 - 80M/4B F503 - 80M/4B | 57 | 56 |
| | 7.2 | 937 | 1.9 | 194.86 | 18.0 | | | |
| | 7.8 | 861 | 2.1 | 178.98 | 18.0 | | | |
| | 7.5 | 895 | 0.9 | 186.14 | 12.0 | A403 - 80M/4B F403 - 80M/4B | 40 | 54 |
| | 8.2 | 820 | 1.0 | 170.55 | 12.0 | | | |
| | 9.4 | 719 | 1.2 | 149.47 | 12.0 | | | |
| | 10.3 | 651 | 1.3 | 135.37 | 12.0 | | | |
| | 11.9 | 568 | 1.5 | 118.13 | 12.0 | | | |
| | 14.8 | 456 | 1.9 | 94.86 | 12.0 | | | |
| | | | | | | | | |

0.75 kW
0.92 kW

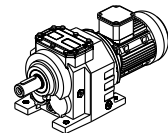


| P_1 [kW] | n_2 [Min ⁻¹] | M_2 [Nm] | f_B | i_{ges} | F_R [kN] | Tip / Type / Typ Tipo / Type / Tipo |  Kg |  mm |
|---------------|-------------------------------|---------------|-------|-----------|---------------|--|--|--|
| 0.75 | 12.9 | 524 | 1.0 | 108.95 | 8.0 | A353 - 80M/4B F353 - 80M/4B | 29 | 52 |
| | 15.5 | 435 | 1.1 | 90.51 | 8.0 | | | |
| | 19.3 | 349 | 1.4 | 72.58 | 8.0 | | | |
| | 23.9 | 282 | 1.8 | 58.68 | 8.0 | | | |
| | 24.6 | 280 | 1.8 | 56.95 | 8.0 | A352 - 80M/4B F352 - 80B/4B | 29 | 52 |
| | 28.1 | 245 | 2.0 | 49.88 | 8.0 | | | |
| | 22.7 | 296 | 1.0 | 61.63 | 6.6 | A303\F303 - 80M/4B | 24 | 50 |
| | 25.4 | 270 | 1.0 | 55.03 | 6.6 | A302 - 80M/4B F302 - 80M/4B | 24 | 50 |
| | 29.0 | 237 | 1.2 | 48.22 | 6.6 | | | |
| | 31.5 | 218 | 1.3 | 44.38 | 6.6 | | | |
| | 36.5 | 188 | 1.5 | 38.33 | 6.6 | | | |
| | 40.4 | 170 | 1.6 | 34.62 | 6.6 | | | |
| | 45.3 | 152 | 1.8 | 30.91 | 6.6 | | | |
| | 29.2 | 235 | 0.8 | 47.93 | 5.5 | A252 - 80M/4B F252 - 80M/4B | 21 | 48 |
| | 33.3 | 206 | 1.0 | 42.00 | 5.5 | | | |
| | 36.4 | 189 | 1.1 | 38.46 | 5.5 | | | |
| 41.9 | 164 | 1.2 | 33.38 | 5.5 | | | | |
| 46.4 | 148 | 1.4 | 30.15 | 5.5 | | | | |
| 52.3 | 132 | 1.5 | 26.79 | 5.5 | | | | |
| 57.9 | 119 | 1.7 | 24.19 | 5.5 | | | | |
| 69.3 | 99 | 2.0 | 20.19 | 5.4 | | | | |
| 0.92 | 6.3 | 1313 | 1.4 | 222.59 | 18.0 | A503 - 80M/4 F503 - 80M/4 | 57 | 56 |
| | 7.2 | 1149 | 1.6 | 194.86 | 18.0 | | | |
| | 7.8 | 1056 | 1.7 | 178.98 | 18.0 | | | |
| | 8.6 | 957 | 1.9 | 162.21 | 18.0 | | | |
| | 9.1 | 912 | 2.0 | 154.52 | 18.0 | | | |
| | 9.4 | 882 | 1.0 | 149.47 | 12.0 | A403 - 80M/4 F403 - 80M/4 | 40 | 54 |
| | 10.3 | 799 | 1.1 | 135.37 | 12.0 | | | |
| | 11.9 | 697 | 1.2 | 118.13 | 12.0 | | | |
| | 14.8 | 560 | 1.5 | 94.86 | 12.0 | | | |
| | 16.3 | 507 | 1.7 | 85.91 | 12.0 | | | |
| | 15.5 | 534 | 0.9 | 90.51 | 8.0 | A353 - 80M/4 F353 - 80M/4 | 29 | 52 |
| | 19.3 | 428 | 1.2 | 72.58 | 8.0 | | | |
| | 23.9 | 346 | 1.4 | 58.68 | 8.0 | | | |
| | 24.6 | 343 | 1.4 | 56.95 | 8.0 | A352 - 80M/4 F352 - 80M/4 | 29 | 52 |
| | 28.1 | 294 | 1.7 | 49.88 | 8.0 | | | |
| | 30.4 | 272 | 1.8 | 46.04 | 8.0 | | | |
| | 29.0 | 291 | 1.0 | 48.22 | 6.6 | A302 - 80M/4 F302 - 80M/4 | 24 | 50 |
| | 31.5 | 267 | 1.0 | 44.38 | 6.6 | | | |
| | 36.5 | 231 | 1.2 | 38.33 | 6.6 | | | |
| | 40.4 | 209 | 1.3 | 34.62 | 6.6 | | | |
| | 45.3 | 186 | 1.5 | 30.91 | 6.6 | | | |
| | 50.1 | 168 | 1.7 | 27.92 | 6.6 | | | |
| | 52.9 | 159 | 1.6 | 26.45 | 6.6 | | | |
| | 59.6 | 142 | 1.8 | 23.49 | 6.6 | | | |
| 65.6 | 129 | 1.9 | 21.33 | 6.6 | | | | |
| | | | | | | | | |

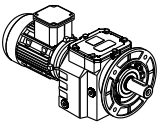


| P₁ [kW] | n₂ [Min ⁻¹] | M₂ [Nm] | f_B | i_{ges} | F_R [kN] | Tip / Type / Typ Tipo / Type / Tipo | kg ~ | mm |
|------------------------------|--|------------------------------|----------------------|------------------------|--|--|-------------|-----------|
| 0.92 | 36.4 | 232 | 0.9 | 38.46 | 5.5 | A252 - 80M/4 F252 - 80M/4 | 21 | 48 |
| | 41.9 | 201 | 1.0 | 33.38 | 5.5 | | | |
| | 46.4 | 182 | 1.1 | 30.15 | 5.5 | | | |
| | 52.3 | 161 | 1.2 | 26.79 | 5.4 | | | |
| | 57.9 | 146 | 1.4 | 24.19 | 5.4 | | | |
| | 60.8 | 139 | 1.4 | 23.04 | 5.3 | | | |
| | 69.3 | 122 | 1.6 | 20.19 | 5.2 | | | |
| | 75.7 | 111 | 1.5 | 18.49 | 5.1 | | | |
| | 93.9 | 90 | 1.9 | 14.91 | 4.9 | | | |
| | 100.4 | 84 | 2.0 | 13.94 | 4.9 | | | |
| 117.0 | 72 | 2.0 | 11.97 | 4.7 | | | | |
| 1.10 | 6.3 | 1559 | 1.2 | 222.59 | 18.0 | A503 - 90S/4A F503 - 90S/4A | 60 | 56 |
| | 7.2 | 1365 | 1.3 | 194.86 | 18.0 | | | |
| | 7.9 | 1253 | 1.4 | 178.98 | 18.0 | | | |
| | 8.7 | 1136 | 1.6 | 162.21 | 18.0 | | | |
| | 9.1 | 1082 | 1.7 | 154.52 | 18.0 | | | |
| | 9.9 | 994 | 1.8 | 142.00 | 18.0 | | | |
| | 11.3 | 870 | 2.1 | 124.25 | 18.0 | | | |
| | 12.5 | 789 | 2.3 | 112.61 | 18.0 | | | |
| | 14.4 | 685 | 2.6 | 97.80 | 18.0 | | | |
| | 11.9 | 827 | 1.0 | 118.13 | 12.0 | | | |
| | 14.9 | 664 | 1.3 | 94.86 | 12.0 | | | |
| | 16.4 | 602 | 1.4 | 85.91 | 12.0 | | | |
| | 20.7 | 478 | 1.8 | 68.25 | 12.0 | | | |
| | 19.4 | 508 | 1.0 | 72.58 | 8.0 | A353 - 90S/4A F353 - 90S/4A | 32 | 52 |
| | 24.0 | 411 | 1.2 | 58.68 | 8.0 | | | |
| | 24.8 | 407 | 1.2 | 56.95 | 8.0 | A352 - 90S/4A F352 - 90S/4A | 32 | 52 |
| | 28.3 | 357 | 1.4 | 49.88 | 8.0 | | | |
| | 30.6 | 329 | 1.5 | 46.04 | 8.0 | | | |
| | 35.6 | 283 | 1.7 | 39.59 | 8.0 | | | |
| | 42.1 | 240 | 2.0 | 33.50 | 8.0 | | | |
| | 44.1 | 229 | 2.1 | 32.01 | 8.0 | | | |
| | 36.8 | 274 | 1.0 | 38.33 | 6.6 | A302 - 90S/4A F302 - 90S/4A | 27 | 50 |
| | 40.7 | 248 | 1.1 | 34.62 | 6.6 | | | |
| | 45.6 | 221 | 1.3 | 30.91 | 6.6 | | | |
| | 50.5 | 200 | 1.4 | 27.92 | 6.6 | | | |
| | 53.3 | 189 | 1.4 | 26.45 | 6.6 | | | |
| | 60.0 | 168 | 1.5 | 23.49 | 6.6 | | | |
| | 66.1 | 153 | 1.6 | 21.33 | 6.6 | | | |
| | 73.1 | 138 | 1.8 | 19.29 | 6.6 | | | |
| | 87.0 | 116 | 2.2 | 16.21 | 6.5 | | | |
| 42.2 | 239 | 0.8 | 33.38 | 5.2 | A252 - 90S/4A F252 - 90S/4A | | | |
| 46.8 | 216 | 0.9 | 30.15 | 5.1 | | | | |
| 52.6 | 192 | 1.0 | 26.79 | 5.1 | | | | |
| 58.3 | 173 | 1.2 | 24.19 | 5.1 | | | | |
| 61.2 | 165 | 1.2 | 23.04 | 5.0 | | | | |
| 69.8 | 144 | 1.4 | 20.19 | 5.0 | | | | |
| 76.3 | 132 | 1.3 | 18.49 | 4.9 | | | | |
| 82.7 | 122 | 1.6 | 17.05 | 4.8 | | | | |
| 94.5 | 107 | 1.6 | 14.91 | 4.7 | | | | |
| 101.2 | 100 | 1.7 | 13.94 | 4.7 | | | | |
| 117.8 | 86 | 1.7 | 11.97 | 4.5 | | | | |
| 136.7 | 74 | 1.9 | 10.32 | 4.4 | | | | |
| 156.3 | 65 | 2.0 | 9.02 | 4.3 | | | | |
| | | | | | | | | |

1.50 kW

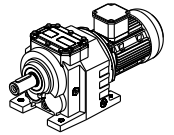


| P₁ [kW] | n₂ [Min ⁻¹] | M₂ [Nm] | f_B | i_{ges} | F_R [kN] | Tip / Type / Typ Tipo / Type / Tipo | kg | mm |
|------------------------------|---|---|---|---|---|--|-----------|-----------|
| 1.50 | 5.9 6.6 | 2301 2044 | 1.6 1.7 | 242.67 215.56 | 22.0 22.0 | A603 - 90L/4A F603 - 90L/4A | 90 | 58 |
| | 7.3 7.9 8.8 9.2 10.0 11.4 12.6 14.5 18.1 | 1848 1697 1538 1465 1347 1178 1068 927 746 | 1.0 1.1 1.2 1.2 1.3 1.5 1.7 1.9 2.4 | 194.86 178.98 162.21 154.52 142.00 124.25 112.61 97.80 78.64 | 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 | A503 - 90L/4A F503 - 90L/4A | 62 | 56 |
| | 16.5 20.8 25.9 28.6 | 815 647 520 471 | 1.0 1.3 1.6 1.8 | 85.91 68.25 54.81 49.64 | 12.0 12.0 12.0 12.0 | A403 - 90L/4A F403 - 90L/4A | 45 | 54 |
| | 31.3 35.7 39.0 | 439 385 353 | 1.9 2.2 2.3 | 45.38 39.72 36.44 | 12.0 12.0 12.0 | A402 - 90L/4A F402 - 90L/4A | 45 | 54 |
| | 24.9 28.5 30.8 35.9 42.4 44.4 49.2 53.4 56.5 | 552 483 446 383 324 310 280 258 243 | 0.9 1.0 1.1 1.3 1.5 1.6 1.8 1.9 1.9 | 56.95 49.88 46.04 39.59 33.50 32.01 28.89 26.59 25.13 | 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 | A352 - 90L/4A F352 - 90L/4A | 34 | 52 |
| | 45.9 50.9 53.7 60.4 66.6 73.6 87.6 102.8 | 299 270 256 227 207 187 157 134 | 0.9 1.0 1.0 1.1 1.2 1.3 1.6 1.9 | 30.91 27.92 26.45 23.49 21.33 19.29 16.21 13.81 | 6.6 6.6 6.6 6.6 6.5 6.4 6.2 6.0 | A302 - 90L/4A F302 - 90L/4A | 29 | 50 |
| | 58.7 61.6 70.3 76.8 83.3 95.2 101.9 118.6 137.7 157.4 179.0 223.1 296.0 | 234 223 196 179 165 144 135 116 100 87 77 62 46 | 0.9 0.9 1.0 0.9 1.2 1.2 1.3 1.3 1.4 1.5 1.6 1.7 2.0 | 24.19 23.04 20.19 18.49 17.05 14.91 13.94 11.97 10.32 9.02 7.93 6.36 4.80 | 4.4 4.4 4.4 4.4 4.4 4.3 4.3 4.2 4.1 4.0 3.9 3.8 3.5 | A252 - 90L/4A F252 - 90L/4A | 26 | 48 |

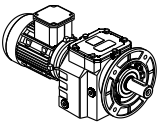


| P₁ [kW] | n₂ [Min ⁻¹] | M₂ [Nm] | f_B | i_{ges} | F_R [kN] | Tip / Type / Typ Tipo / Type / Tipo | Kg ~ | mm |
|------------------------------|--|------------------------------|----------------------|------------------------|------------------------------|--|-------------|-----------|
| 1.84 | 5.9 | 2823 | 1.3 | 242.67 | 22.0 | A603 - 90L/4 F603 - 90L/4 | 90 | 58 |
| | 6.6 | 2507 | 1.4 | 215.56 | 22.0 | | | |
| | 7.3 | 2260 | 1.5 | 194.31 | 22.0 | | | |
| | 7.8 | 2107 | 1.7 | 181.13 | 22.0 | | | |
| | 8.8 | 1872 | 1.9 | 160.90 | 22.0 | | | |
| | 8.8 | 1887 | 1.0 | 162.21 | 18.0 | A503 - 90L/4 F503 - 90L/4 | 62 | 56 |
| | 9.2 | 1797 | 1.0 | 154.52 | 18.0 | | | |
| | 10.0 | 1652 | 1.1 | 142.00 | 18.0 | | | |
| | 11.4 | 1445 | 1.2 | 124.25 | 18.0 | | | |
| | 12.6 | 1310 | 1.4 | 112.61 | 18.0 | | | |
| | 14.5 | 1138 | 1.6 | 97.80 | 18.0 | | | |
| | 16.6 | 993 | 1.8 | 85.33 | 18.0 | | | |
| | 18.1 | 915 | 2.0 | 78.64 | 18.0 | | | |
| | 19.9 | 829 | 2.2 | 71.27 | 18.0 | | | |
| | 20.8 | 794 | 1.1 | 68.25 | 12.0 | A403 - 90L/4 F403 - 90L/4 | 45 | 54 |
| | 25.9 | 638 | 1.3 | 54.81 | 12.0 | | | |
| | 28.6 | 577 | 1.5 | 49.64 | 12.0 | | | |
| | 31.3 | 539 | 1.6 | 45.38 | 12.0 | A402 - 90L/4 F402 - 90L/4 | 45 | 54 |
| | 35.7 | 472 | 1.8 | 39.72 | 12.0 | | | |
| | 39.0 | 433 | 1.8 | 36.44 | 12.0 | | | |
| | 45.1 | 374 | 2.3 | 31.50 | 12.0 | | | |
| | 49.2 | 343 | 2.3 | 28.89 | 12.0 | | | |
| | 30.8 | 547 | 0.9 | 46.04 | 8.0 | A352 - 90L/4 F352 - 90L/4 | 34 | 52 |
| | 35.9 | 470 | 1.0 | 39.59 | 8.0 | | | |
| | 42.4 | 398 | 1.2 | 33.50 | 8.0 | | | |
| | 44.4 | 380 | 1.3 | 32.01 | 8.0 | | | |
| | 49.2 | 343 | 1.4 | 28.89 | 8.0 | | | |
| | 53.4 | 316 | 1.6 | 26.59 | 8.0 | | | |
| | 56.5 | 298 | 1.6 | 25.13 | 8.0 | | | |
| | 64.5 | 262 | 1.8 | 22.03 | 8.0 | | | |
| | 69.9 | 241 | 1.9 | 20.31 | 8.0 | | | |
| | 50.9 | 332 | 0.8 | 27.92 | 6.2 | A302 - 90L/4 F302 - 90L/4 | 29 | 50 |
| | 53.7 | 314 | 0.8 | 26.45 | 6.2 | | | |
| | 60.4 | 279 | 0.9 | 23.49 | 6.1 | | | |
| | 66.6 | 253 | 1.0 | 21.33 | 6.1 | | | |
| | 73.6 | 229 | 1.1 | 19.29 | 6.0 | | | |
| | 87.6 | 193 | 1.3 | 16.21 | 5.9 | | | |
| | 102.8 | 164 | 1.5 | 13.81 | 5.7 | | | |
| | 118.3 | 143 | 1.8 | 12.00 | 5.6 | | | |
| | 135.3 | 125 | 1.9 | 10.50 | 5.4 | | | |
| | 155.9 | 108 | 1.9 | 9.11 | 5.3 | | | |
| | 193.4 | 87 | 1.8 | 7.34 | 5.0 | | | |
| | 70.3 | 240 | 0.8 | 20.19 | 4.0 | A252 - 90L/4 F252 - 90L/4 | 26 | 48 |
| | 76.8 | 220 | 0.8 | 18.49 | 4.0 | | | |
| | 83.3 | 203 | 0.9 | 17.05 | 4.0 | | | |
| 95.2 | 177 | 1.0 | 14.91 | 4.0 | | | | |
| 101.9 | 166 | 1.0 | 13.94 | 4.0 | | | | |
| 118.6 | 142 | 1.0 | 11.97 | 4.0 | | | | |
| 137.7 | 123 | 1.1 | 10.32 | 3.9 | | | | |
| 157.4 | 107 | 1.2 | 9.02 | 3.8 | | | | |
| 179.0 | 94 | 1.3 | 7.93 | 3.8 | | | | |
| 223.1 | 76 | 1.4 | 6.36 | 3.6 | | | | |
| 296.0 | 57 | 1.7 | 4.80 | 3.4 | | | | |
| | | | | | | | | |

2.20 kW

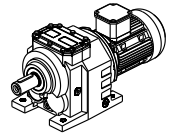




| P ₁ [kW] | n ₂ [Min ⁻¹] | M ₂ [Nm] | f _B | i _{ges} | F _R [kN] | Tip / Type / Typ Tipo / Type / Tipo | Kg | mm |
|------------------------|--|------------------------|----------------|------------------|------------------------|--|-----|----|
| 2.20 | 5.4 | 3644 | 1.4 | 260.15 | 30.0 | A703 - 100L/4A F703 - 100L/4A | 128 | 60 |
| | 6.1 | 3240 | 1.5 | 231.34 | 30.0 | | | |
| | 6.8 | 2910 | 1.7 | 207.78 | 30.0 | | | |
| | 7.4 | 2655 | 1.9 | 189.54 | 30.0 | | | |
| | 8.1 | 2425 | 2.1 | 173.11 | 30.0 | | | |
| | 9.1 | 2178 | 2.3 | 155.48 | 30.0 | | | |
| | 5.8 | 3399 | 1.1 | 242.67 | 22.0 | A603 - 100L/4A F603 - 100L/4A | 98 | 58 |
| | 6.5 | 3019 | 1.2 | 215.56 | 22.0 | | | |
| | 7.3 | 2722 | 1.3 | 194.31 | 22.0 | | | |
| | 7.8 | 2537 | 1.4 | 181.13 | 22.0 | | | |
| | 8.8 | 2254 | 1.6 | 160.90 | 22.0 | | | |
| | 9.8 | 2011 | 1.7 | 143.57 | 22.0 | | | |
| | 9.9 | 1989 | 0.9 | 142.00 | 18.0 | A503 - 100L/4A F503 - 100L/4A | 70 | 56 |
| | 11.3 | 1740 | 1.0 | 124.25 | 18.0 | | | |
| | 12.5 | 1577 | 1.1 | 112.61 | 18.0 | | | |
| | 14.4 | 1370 | 1.3 | 97.80 | 18.0 | | | |
| | 16.5 | 1195 | 1.5 | 85.33 | 18.0 | | | |
| | 17.9 | 1102 | 1.6 | 78.64 | 18.0 | | | |
| | 19.8 | 998 | 1.8 | 71.27 | 18.0 | | | |
| | 25.1 | 787 | 2.0 | 56.21 | 18.0 | | | |
| | 28.9 | 698 | 2.3 | 48.77 | 18.0 | A502 - 100L/4A F502 - 100L/4A | 70 | 56 |
| | 32.5 | 620 | 2.6 | 43.32 | 18.0 | | | |
| | 36.0 | 561 | 2.9 | 39.21 | 18.0 | | | |
| | 25.7 | 768 | 1.1 | 54.81 | 12.0 | A403 - 100L/4A F403 - 100L/4A | 53 | 54 |
| | 28.4 | 695 | 1.2 | 49.64 | 12.0 | | | |
| | 31.1 | 649 | 1.3 | 45.38 | 12.0 | A402 - 100L/4A F402 - 100L/4A | 53 | 54 |
| | 35.5 | 568 | 1.5 | 39.72 | 12.0 | | | |
| | 38.7 | 521 | 1.5 | 36.44 | 12.0 | | | |
| | 44.8 | 451 | 1.9 | 31.50 | 12.0 | | | |
| | 48.8 | 413 | 1.9 | 28.89 | 12.0 | | | |
| | 44.1 | 458 | 1.1 | 32.01 | 8.0 | A352 - 100L/4A F352 - 100L/4A | 42 | 52 |
| | 48.8 | 413 | 1.2 | 28.89 | 8.0 | | | |
| | 53.0 | 380 | 1.3 | 26.59 | 8.0 | | | |
| | 56.1 | 359 | 1.3 | 25.13 | 8.0 | | | |
| | 64.0 | 315 | 1.5 | 22.03 | 8.0 | | | |
| | 69.4 | 291 | 1.6 | 20.31 | 8.0 | | | |
| | 77.0 | 262 | 1.8 | 18.30 | 7.9 | | | |
| | 83.6 | 241 | 1.9 | 16.88 | 7.8 | | | |
| | 97.1 | 208 | 2.1 | 14.52 | 7.5 | | | |
| | 73.1 | 276 | 0.9 | 19.29 | 5.6 | A302 - 100L/4A F302 - 100L/4A | 37 | 50 |
| | 87.0 | 232 | 1.1 | 16.21 | 5.6 | | | |
| | 102.1 | 198 | 1.3 | 13.81 | 5.5 | | | |
| | 117.5 | 172 | 1.5 | 12.00 | 5.3 | | | |
| | 134.3 | 150 | 1.6 | 10.50 | 5.2 | | | |
| | 154.8 | 130 | 1.6 | 9.11 | 5.1 | | | |
| | 192.0 | 105 | 1.5 | 7.34 | 4.9 | | | |
| | 252.6 | 80 | 2.0 | 5.58 | 4.6 | | | |
| | 156.3 | 129 | 1.0 | 9.02 | 3.6 | | | |
| 177.8 | 113 | 1.1 | 7.93 | 3.6 | | | | |
| 221.5 | 91 | 1.2 | 6.36 | 3.5 | | | | |
| 293.9 | 69 | 1.4 | 4.80 | 3.3 | | | | |
| | | | | | | | | |

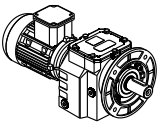


| P₁ [kW] | n₂ [Min ⁻¹] | M₂ [Nm] | f_B | i_{ges} | F_R [kN] | Tip / Type / Typ Tipo / Type / Tipo | kg ~ | mm ↔ |
|------------------------------|--|------------------------------|----------------------|------------------------|--|--|----------------|----------------|
| 3.00 | 5.4 | 4969 | 1.0 | 260.15 | 30.0 | A703 - 100L/4B F703 - 100L/4B | 131 | 60 |
| | 6.1 | 4419 | 1.1 | 231.34 | 30.0 | | | |
| | 6.8 | 3969 | 1.3 | 207.78 | 30.0 | | | |
| | 7.4 | 3620 | 1.4 | 189.54 | 30.0 | | | |
| | 8.1 | 3306 | 1.5 | 173.11 | 30.0 | | | |
| | 9.1 | 2970 | 1.7 | 155.48 | 30.0 | | | |
| | 9.7 | 2768 | 1.8 | 144.94 | 30.0 | | | |
| | 11.0 | 2452 | 2.0 | 128.35 | 30.0 | | | |
| | 11.9 | 2268 | 2.2 | 118.75 | 30.0 | | | |
| | 7.3 | 3711 | 0.9 | 194.31 | 22.0 | A603 - 100L/4B F603 - 100L/4B | 101 | 58 |
| | 7.8 | 3460 | 1.0 | 181.13 | 22.0 | | | |
| | 8.8 | 3073 | 1.1 | 160.90 | 22.0 | | | |
| | 9.8 | 2742 | 1.3 | 143.57 | 22.0 | | | |
| | 10.5 | 2564 | 1.4 | 134.25 | 22.0 | | | |
| | 11.7 | 2311 | 1.5 | 121.02 | 22.0 | | | |
| | 17.9 | 1502 | 1.2 | 78.64 | 18.0 | A503 - 100L/4B F503 - 100L/4B | 73 | 56 |
| | 19.8 | 1361 | 1.3 | 71.27 | 18.0 | | | |
| | 25.1 | 1074 | 1.5 | 56.21 | 18.0 | | | |
| | 28.9 | 951 | 1.7 | 48.77 | 18.0 | A502 - 100L/4B F502 - 100L/4B | 73 | 56 |
| | 32.5 | 845 | 1.9 | 43.32 | 18.0 | | | |
| | 36.0 | 765 | 2.1 | 39.21 | 18.0 | | | |
| | 40.5 | 679 | 2.4 | 34.83 | 18.0 | | | |
| | 31.1 | 885 | 1.0 | 45.38 | 12.0 | A402 - 100L/4B F402 - 100L/4B | 56 | 54 |
| | 35.5 | 775 | 1.1 | 39.72 | 12.0 | | | |
| | 38.7 | 711 | 1.1 | 36.44 | 12.0 | | | |
| | 44.8 | 614 | 1.4 | 31.50 | 12.0 | | | |
| | 48.8 | 564 | 1.4 | 28.89 | 12.0 | | | |
| | 55.7 | 493 | 1.7 | 25.30 | 12.0 | | | |
| | 61.5 | 447 | 1.9 | 22.91 | 12.0 | | | |
| | 70.7 | 389 | 2.2 | 19.94 | 12.0 | | | |
| | 48.8 | 564 | 0.9 | 28.89 | 7.4 | A352 - 100L/4B F352 - 100L/4B | 45 | 52 |
| | 53.0 | 519 | 0.9 | 26.59 | 7.4 | | | |
| | 56.1 | 490 | 1.0 | 25.13 | 7.4 | | | |
| | 64.0 | 430 | 1.1 | 22.03 | 7.4 | | | |
| | 69.4 | 396 | 1.2 | 20.31 | 7.3 | | | |
| | 77.0 | 357 | 1.3 | 18.30 | 7.2 | | | |
| | 83.6 | 329 | 1.4 | 16.88 | 7.2 | | | |
| | 97.1 | 283 | 1.5 | 14.52 | 7.0 | | | |
| | 120.1 | 229 | 1.7 | 11.74 | 6.8 | | | |
| | 144.6 | 190 | 1.9 | 9.75 | 6.5 | | | |
| | 161.5 | 170 | 2.0 | 8.73 | 6.4 | | | |
| | 199.8 | 138 | 2.1 | 7.06 | 6.1 | | | |
| 240.5 | 114 | 2.3 | 5.86 | 5.8 | | | | |
| 102.1 | 269 | 0.9 | 13.81 | 4.9 | A302 - 100L/4B F302 - 100L/4B | | | |
| 117.5 | 234 | 1.1 | 12.00 | 4.8 | | | | |
| 134.3 | 205 | 1.2 | 10.50 | 4.8 | | | | |
| 154.8 | 178 | 1.2 | 9.11 | 4.7 | | | | |
| 192.0 | 143 | 1.1 | 7.34 | 4.6 | | | | |
| 252.6 | 109 | 1.5 | 5.58 | 4.3 | | | | |
| 177.8 | 155 | 0.8 | 7.93 | 3.1 | A252 - 100L/4B F252 - 100L/4B | 37 | 48 | |
| 221.5 | 124 | 0.8 | 6.36 | 3.1 | | | | |
| 293.9 | 94 | 1.0 | 4.80 | 3.1 | | | | |
| | | | | | | | | |

4.00 kW

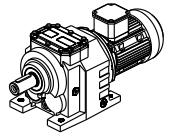




| P_1 [kW] | n_2 [Min ⁻¹] | M_2 [Nm] | f_B | i_{ges} | F_R [kN] | Tip / Type / Typ Tipo / Type / Tipo |  |  |
|---------------|-------------------------------|---------------|-------|-----------|---------------|--|---|---|
| 4.00 | 6.9 | 5217 | 1.0 | 207.78 | 30.0 | A703 - 112M/4B F703 - 112M/4B | 137 | 60 |
| | 7.5 | 4759 | 1.1 | 189.54 | 30.0 | | | |
| | 8.3 | 4347 | 1.2 | 173.11 | 30.0 | | | |
| | 9.2 | 3904 | 1.3 | 155.48 | 30.0 | | | |
| | 9.9 | 3639 | 1.4 | 144.94 | 30.0 | | | |
| | 11.1 | 3223 | 1.6 | 128.35 | 30.0 | | | |
| | 12.0 | 2982 | 1.7 | 118.75 | 30.0 | | | |
| | 13.2 | 2723 | 1.8 | 108.46 | 30.0 | | | |
| | 14.2 | 2520 | 2.0 | 100.38 | 30.0 | | | |
| | 15.9 | 2259 | 2.2 | 89.95 | 30.0 | | | |
| 17.2 | 2093 | 2.4 | 83.35 | 30.0 | | | | |
| | 10.0 | 3605 | 1.0 | 143.57 | 22.0 | A603 - 112M/4B F603 - 112M/4B | 108 | 58 |
| | 10.7 | 3371 | 1.0 | 134.25 | 22.0 | | | |
| | 11.8 | 3039 | 1.2 | 121.02 | 22.0 | | | |
| | 14.3 | 2516 | 1.4 | 100.21 | 22.0 | | | |
| | 15.3 | 2350 | 1.5 | 93.60 | 22.0 | | | |
| | 16.9 | 2119 | 1.7 | 84.37 | 22.0 | | | |
| 17.9 | 2008 | 1.7 | 79.98 | 22.0 | | | | |
| | 28.1 | 1306 | 2.5 | 50.91 | 22.0 | A602 - 112M/4B F602 - 112M/4B | 108 | 58 |
| | 31.6 | 1161 | 2.8 | 45.27 | 22.0 | | | |
| | 35.0 | 1047 | 3.2 | 40.81 | 22.0 | | | |
| | 37.6 | 975 | 2.9 | 38.00 | 22.0 | | | |
| | 42.3 | 867 | 3.7 | 33.79 | 22.0 | | | |
| | 20.1 | 1790 | 1.0 | 71.27 | 18.0 | A503 - 112M/4B F503 - 112M/4B | 80 | 56 |
| | 25.4 | 1411 | 1.1 | 56.21 | 18.0 | | | |
| | 29.3 | 1251 | 1.3 | 48.77 | 18.0 | A502 - 112M/4B F502 - 112M/4B | 80 | 56 |
| | 33.0 | 1111 | 1.4 | 43.32 | 18.0 | | | |
| | 36.5 | 1006 | 1.6 | 39.21 | 18.0 | | | |
| | 41.1 | 893 | 1.8 | 34.83 | 18.0 | | | |
| | 45.4 | 808 | 1.1 | 31.50 | 12.0 | A402 - 112M/4B F402 - 112M/4B | 63 | 54 |
| | 49.5 | 741 | 1.1 | 28.89 | 12.0 | | | |
| | 56.5 | 649 | 1.3 | 25.30 | 12.0 | | | |
| | 62.4 | 587 | 1.4 | 22.91 | 12.0 | | | |
| | 71.7 | 511 | 1.7 | 19.94 | 12.0 | | | |
| | 82.3 | 446 | 1.9 | 17.37 | 12.0 | | | |
| | 89.3 | 411 | 1.9 | 16.01 | 12.0 | | | |
| | 98.6 | 372 | 1.9 | 14.50 | 12.0 | | | |
| | 114.9 | 319 | 2.2 | 12.44 | 12.0 | | | |
| | 64.9 | 565 | 0.8 | 22.03 | 6.4 | A352 - 112M/4B F352 - 112M/4B | 52 | 52 |
| | 70.4 | 521 | 0.9 | 20.31 | 6.4 | | | |
| | 78.1 | 469 | 1.0 | 18.30 | 6.5 | | | |
| | 84.7 | 433 | 1.0 | 16.88 | 6.4 | | | |
| | 98.5 | 372 | 1.2 | 14.52 | 6.4 | | | |
| | 121.8 | 301 | 1.3 | 11.74 | 6.3 | | | |
| | 146.7 | 250 | 1.5 | 9.75 | 6.1 | | | |
| | 163.8 | 224 | 1.5 | 8.73 | 6.0 | | | |
| | 202.6 | 181 | 1.6 | 7.06 | 5.8 | | | |
| | 243.9 | 150 | 1.7 | 5.86 | 5.6 | | | |
| | 136.3 | 269 | 0.9 | 10.50 | 4.2 | A302 - 112M/4B F302 - 112M/4B | 47 | 50 |
| | 157.0 | 234 | 0.9 | 9.11 | 4.2 | | | |
| | 194.7 | 188 | 0.8 | 7.34 | 4.2 | | | |
| | 256.2 | 143 | 1.1 | 5.58 | 4.1 | | | |
| | | | | | | | | |

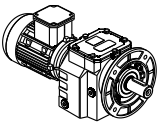


| P₁ [kW] | n₂ [Min ⁻¹] | M₂ [Nm] | f_B | i_{ges} | F_R [kN] | Tip / Type / Typ Tipo / Type / Tipo | kg ~ | mm ↔ |
|------------------------------|--|------------------------------|----------------------|------------------------|------------------------------|--|----------------|----------------|
| 4.80 | 7.5 | 5711 | 0.9 | 189.54 | 30.0 | A703 - 112M/4 F703 - 112M/4 | 137 | 60 |
| | 8.3 | 5216 | 1.0 | 173.11 | 30.0 | | | |
| | 9.2 | 4685 | 1.1 | 155.48 | 30.0 | | | |
| | 9.9 | 4367 | 1.1 | 144.94 | 30.0 | | | |
| | 11.1 | 3868 | 1.3 | 128.35 | 30.0 | | | |
| | 12.0 | 3578 | 1.4 | 118.75 | 30.0 | | | |
| | 13.2 | 3268 | 1.5 | 108.46 | 30.0 | | | |
| | 14.2 | 3025 | 1.7 | 100.38 | 30.0 | | | |
| | 15.9 | 2711 | 1.8 | 89.95 | 30.0 | | | |
| | 17.2 | 2512 | 2.0 | 83.35 | 30.0 | | | |
| | 10.7 | 4045 | 0.9 | 134.25 | 22.0 | A603 - 112M/4 F603 - 112M/4 | 108 | 58 |
| | 11.8 | 3647 | 1.0 | 121.02 | 22.0 | | | |
| | 14.3 | 3020 | 1.2 | 100.21 | 22.0 | | | |
| | 15.3 | 2820 | 1.2 | 93.60 | 22.0 | | | |
| | 17.9 | 2410 | 1.5 | 79.98 | 22.0 | | | |
| | 20.5 | 2105 | 1.7 | 69.87 | 22.0 | | | |
| | 28.1 | 1567 | 2.1 | 50.91 | 22.0 | A602 - 112M/4 F602 - 112M/4 | 108 | 58 |
| | 31.6 | 1393 | 2.4 | 45.27 | 22.0 | | | |
| | 35.0 | 1256 | 2.6 | 40.81 | 22.0 | | | |
| | 37.6 | 1169 | 2.4 | 38.00 | 22.0 | | | |
| | 42.3 | 1040 | 3.1 | 33.79 | 22.0 | | | |
| | 25.4 | 1694 | 0.9 | 56.21 | 18.0 | A503\F503 - 112M/4 | 80 | 56 |
| | 29.3 | 1501 | 1.1 | 48.77 | 18.0 | A502 - 112M/4 F502 - 112M/4 | 80 | 56 |
| | 33.0 | 1305 | 1.2 | 43.32 | 18.0 | | | |
| | 36.5 | 1182 | 1.4 | 39.21 | 18.0 | | | |
| | 41.1 | 1050 | 1.5 | 34.83 | 18.0 | | | |
| | 45.3 | 951 | 1.7 | 31.57 | 18.0 | | | |
| | 50.6 | 852 | 1.9 | 28.26 | 18.0 | | | |
| | 53.0 | 813 | 2.0 | 26.98 | 18.0 | | | |
| | 56.5 | 778 | 1.1 | 25.30 | 12.0 | A402 - 112M/4 F402 - 112M/4 | 63 | 54 |
| | 62.4 | 705 | 1.2 | 22.91 | 12.0 | | | |
| | 71.7 | 614 | 1.4 | 19.94 | 12.0 | | | |
| | 82.3 | 535 | 1.6 | 17.37 | 12.0 | | | |
| | 89.3 | 493 | 1.6 | 16.01 | 12.0 | | | |
| | 98.6 | 446 | 1.6 | 14.50 | 12.0 | | | |
| | 114.9 | 383 | 1.8 | 12.44 | 11.9 | | | |
| | 124.8 | 353 | 1.8 | 11.46 | 11.7 | | | |
| | 155.4 | 283 | 2.1 | 9.20 | 11.2 | | | |
| | 171.6 | 256 | 2.3 | 8.33 | 10.9 | | | |
| | 198.1 | 222 | 2.5 | 7.22 | 10.6 | | | |
| | 246.7 | 178 | 3.1 | 5.80 | 10.0 | | | |
| | 272.4 | 162 | 3.1 | 5.25 | 9.8 | | | |
| | 98.5 | 447 | 1.0 | 14.52 | 5.9 | A352 - 112M/4 F352 - 112M/4 | 52 | 52 |
| | 121.8 | 361 | 1.1 | 11.74 | 5.9 | | | |
| | 146.7 | 300 | 1.2 | 9.75 | 5.8 | | | |
| | 163.8 | 269 | 1.3 | 8.73 | 5.7 | | | |
| | 202.6 | 217 | 1.3 | 7.06 | 5.5 | | | |
| 243.9 | 180 | 1.4 | 5.86 | 5.4 | | | | |
| 256.2 | 172 | 0.9 | 5.58 | 3.8 | A302\F302 - 112M/4 | 47 | 50 | |

5.50 kW

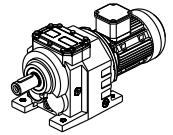


| P_1 [kW] | n_2 [Min ⁻¹] | M_2 [Nm] | f_B | i_{ges} | F_R [kN] | Tip / Type / Typ Tipo / Type / Tipo |  Kg |  mm |
|---------------|-------------------------------|---------------|-------|-----------|---------------|--|--|--|
| 5.50 | 7.0 | 7030 | 1.1 | 205.73 | 55.0 | A903 - 132S/4C F903 - 132S/4C | 216 | 62 |
| | 7.8 | 6343 | 1.3 | 185.64 | 55.0 | | | |
| | 9.4 | 5264 | 1.5 | 154.07 | 55.0 | | | |
| | 10.4 | 4764 | 1.7 | 139.41 | 55.0 | | | |
| | 11.3 | 4386 | 1.8 | 128.36 | 55.0 | | | |
| | 12.5 | 3958 | 2.0 | 115.83 | 55.0 | | | |
| | 13.8 | 3567 | 2.2 | 104.41 | 55.0 | | | |
| | 10.0 | 4952 | 1.0 | 144.94 | 30.0 | A703 - 132S/4C F703 - 132S/4C | 154 | 60 |
| | 11.3 | 4386 | 1.1 | 128.35 | 30.0 | | | |
| | 12.2 | 4057 | 1.2 | 118.75 | 30.0 | | | |
| | 13.3 | 3706 | 1.3 | 108.46 | 30.0 | | | |
| | 14.4 | 3430 | 1.5 | 100.38 | 30.0 | | | |
| | 16.1 | 3074 | 1.6 | 89.95 | 30.0 | | | |
| | 17.3 | 2848 | 1.8 | 83.35 | 30.0 | | | |
| | 14.4 | 3424 | 1.0 | 100.21 | 22.0 | A603 - 132S/4C F603 - 132S/4C | 124 | 58 |
| | 15.4 | 3198 | 1.1 | 93.60 | 22.0 | | | |
| | 17.1 | 2883 | 1.2 | 84.37 | 22.0 | | | |
| | 18.1 | 2733 | 1.3 | 79.98 | 22.0 | | | |
| | 20.7 | 2387 | 1.5 | 69.87 | 22.0 | | | |
| | 28.4 | 1776 | 1.9 | 50.91 | 22.0 | A602 - 132S/4C F602 - 132S/4C | 124 | 58 |
| | 31.9 | 1580 | 2.1 | 45.27 | 22.0 | | | |
| | 35.4 | 1424 | 2.3 | 40.81 | 22.0 | | | |
| | 38.0 | 1326 | 2.1 | 38.00 | 22.0 | | | |
| | 29.6 | 1702 | 0.9 | 48.77 | 18.0 | A502 - 132S/4C F502 - 132S/4C | 96 | 56 |
| | 33.4 | 1512 | 1.1 | 43.32 | 18.0 | | | |
| | 36.9 | 1368 | 1.2 | 39.21 | 18.0 | | | |
| | 41.5 | 1216 | 1.3 | 34.83 | 18.0 | | | |
| | 45.8 | 1102 | 1.5 | 31.57 | 18.0 | | | |
| | 51.1 | 986 | 1.6 | 28.26 | 17.8 | | | |
| | 53.6 | 941 | 1.7 | 26.98 | 17.7 | | | |
| | 62.5 | 807 | 2.0 | 23.14 | 17.2 | | | |
| | 66.6 | 757 | 2.1 | 21.69 | 17.0 | | | |
| | 73.5 | 686 | 2.3 | 19.66 | 16.7 | | | |
| | 76.8 | 656 | 2.3 | 18.81 | 16.6 | | | |
| | 57.1 | 883 | 1.0 | 25.30 | 12.0 | A402 - 132S/4C F402 - 132S/4C | 79 | 54 |
| | 63.1 | 799 | 1.1 | 22.91 | 12.0 | | | |
| | 72.5 | 696 | 1.2 | 19.94 | 12.0 | | | |
| | 83.2 | 606 | 1.4 | 17.37 | 12.0 | | | |
| | 90.3 | 559 | 1.4 | 16.01 | 12.0 | | | |
| | 99.7 | 506 | 1.4 | 14.50 | 11.9 | | | |
| | 116.1 | 434 | 1.6 | 12.44 | 11.6 | | | |
| | 126.1 | 400 | 1.6 | 11.46 | 11.4 | | | |
| | 157.0 | 321 | 1.9 | 9.20 | 10.9 | | | |
| | 173.4 | 291 | 2.1 | 8.33 | 10.7 | | | |
| | 200.2 | 252 | 2.2 | 7.22 | 10.4 | | | |
| | 249.3 | 202 | 2.7 | 5.80 | 9.8 | | | |
| | 275.2 | 183 | 2.7 | 5.25 | 9.6 | | | |
| | | | | | | | | |

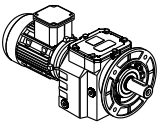


| P₁ [kW] | n₂ [Min ⁻¹] | M₂ [Nm] | f_B | i_{ges} | F_R [kN] | Tip / Type / Typ Tipo / Type / Tipo | kg | mm |
|------------------------------|--|------------------------------|----------------------|------------------------|------------------------------|--|-----------|-----------|
| 7.50 | 7.8 | 8620 | 0.9 | 185.64 | 55.0 | A903 - 132M/4B F903 - 132M/4B | 227 | 62 |
| | 9.4 | 7154 | 1.1 | 154.07 | 55.0 | | | |
| | 10.4 | 6473 | 1.2 | 139.41 | 55.0 | | | |
| | 11.3 | 5960 | 1.3 | 128.36 | 55.0 | | | |
| | 12.5 | 5378 | 1.5 | 115.83 | 55.0 | | | |
| | 13.9 | 4848 | 1.7 | 104.41 | 55.0 | | | |
| | 15.1 | 4464 | 1.8 | 96.13 | 55.0 | | | |
| | 16.8 | 4013 | 2.0 | 86.43 | 55.0 | | | |
| | 12.2 | 5514 | 0.9 | 118.75 | 30.0 | A703 - 132M/4B F703 - 132M/4B | 165 | 60 |
| | 13.4 | 5036 | 1.0 | 108.46 | 30.0 | | | |
| | 14.4 | 4661 | 1.1 | 100.38 | 30.0 | | | |
| | 16.1 | 4177 | 1.2 | 89.95 | 30.0 | | | |
| | 17.4 | 3870 | 1.3 | 83.35 | 30.0 | | | |
| | 19.7 | 3422 | 1.5 | 73.70 | 30.0 | | | |
| | 21.5 | 3125 | 1.6 | 67.31 | 30.0 | | | |
| | 17.2 | 3918 | 0.9 | 84.37 | 22.0 | A603 - 132M/4B F603 - 132M/4B | 135 | 58 |
| | 18.1 | 3714 | 0.9 | 79.98 | 22.0 | | | |
| | 20.8 | 3244 | 1.1 | 69.87 | 22.0 | | | |
| | 26.0 | 2589 | 1.4 | 55.75 | 22.0 | | | |
| | 28.5 | 2414 | 1.4 | 50.91 | 22.0 | A602 - 132M/4B F602 - 132M/4B | 135 | 58 |
| | 32.0 | 2147 | 1.5 | 45.27 | 22.0 | | | |
| | 35.5 | 1935 | 1.7 | 40.81 | 22.0 | | | |
| | 38.2 | 1802 | 1.6 | 38.00 | 22.0 | | | |
| | 42.9 | 1602 | 2.0 | 33.79 | 22.0 | | | |
| | | | | | | | | |
| | 41.6 | 1652 | 1.0 | 34.83 | 16.3 | A502 - 132M/4B F502 - 132M/4B | 107 | 56 |
| | 45.9 | 1497 | 1.1 | 31.57 | 16.3 | | | |
| | 51.3 | 1340 | 1.2 | 28.26 | 16.2 | | | |
| | 53.7 | 1279 | 1.3 | 26.98 | 16.1 | | | |
| | 62.7 | 1097 | 1.5 | 23.14 | 15.9 | | | |
| | 66.8 | 1029 | 1.6 | 21.69 | 15.8 | | | |
| | 73.7 | 932 | 1.7 | 19.66 | 15.5 | | | |
| | 77.1 | 892 | 1.7 | 18.81 | 15.4 | | | |
| | 86.0 | 799 | 1.9 | 16.86 | 15.2 | | | |
| | 95.9 | 717 | 2.1 | 15.13 | 14.9 | | | |
| | 105.8 | 650 | 2.2 | 13.71 | 14.6 | | | |
| | 129.4 | 531 | 2.1 | 11.20 | 14.0 | | | |
| | 161.0 | 427 | 2.1 | 9.01 | 13.4 | | | |
| | 177.6 | 387 | 2.1 | 8.16 | 13.1 | | | |
| | 192.1 | 358 | 2.2 | 7.55 | 12.8 | | | |
| | 90.6 | 759 | 1.1 | 16.01 | 10.8 | A402 - 132M/4B F402 - 132M/4B | 90 | 54 |
| | 100.0 | 688 | 1.0 | 14.50 | 10.8 | | | |
| | 116.5 | 590 | 1.2 | 12.44 | 10.6 | | | |
| | 126.5 | 543 | 1.2 | 11.46 | 10.5 | | | |
| | 157.6 | 436 | 1.4 | 9.20 | 10.2 | | | |
| | 174.0 | 395 | 1.5 | 8.33 | 10.1 | | | |
| | 200.9 | 342 | 1.6 | 7.22 | 9.8 | | | |
| | 250.1 | 275 | 2.0 | 5.80 | 9.4 | | | |
| 276.2 | 249 | 2.0 | 5.25 | 9.2 | | | | |
| | | | | | | | | |

9.20 kW

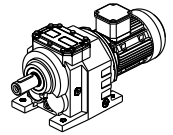


| P₁ [kW] | n₂ [Min ⁻¹] | M₂ [Nm] | f_B | i_{ges} | F_R [kN] | Tip / Type / Typ Tipo / Type / Tipo | kg | mm |
|------------------------------|--|------------------------------|----------------------|------------------------|------------------------------|--|-----------|-----------|
| 9.20 | 9.4 | 8775 | 0.9 | 154.07 | 55.0 | A903 - 132M/4 F903 - 132M/4 | 227 | 62 |
| | 10.4 | 7941 | 1.0 | 139.41 | 55.0 | | | |
| | 11.3 | 7311 | 1.1 | 128.36 | 55.0 | | | |
| | 12.5 | 6597 | 1.2 | 115.83 | 55.0 | | | |
| | 13.9 | 5947 | 1.3 | 104.41 | 55.0 | | | |
| | 15.1 | 5475 | 1.5 | 96.13 | 55.0 | | | |
| | 16.8 | 4923 | 1.6 | 86.43 | 55.0 | | | |
| | 18.3 | 4507 | 1.8 | 79.13 | 55.0 | | | |
| | 20.3 | 4067 | 2.0 | 71.40 | 55.0 | | | |
| | 16.1 | 5123 | 1.0 | 89.95 | 30.0 | A703 - 132M/4 F703 - 132M/4 | 165 | 60 |
| | 17.4 | 4747 | 1.1 | 83.35 | 30.0 | | | |
| | 19.7 | 4198 | 1.2 | 73.70 | 30.0 | | | |
| | 21.5 | 3834 | 1.3 | 67.31 | 30.0 | | | |
| | 26.0 | 3175 | 1.6 | 55.75 | 30.0 | | | |
| | 31.7 | 2601 | 1.9 | 45.67 | 30.0 | | | |
| | 32.5 | 2599 | 1.9 | 44.67 | 30.0 | A702\F702 - 132M/4 | 165 | 60 |
| | 26.0 | 3175 | 1.1 | 55.75 | 22.0 | A603\F603 - 132M/4 | 135 | 58 |
| | 28.5 | 2961 | 1.1 | 50.91 | 22.0 | A602 - 132M/4 F602 - 132M/4 | 135 | 58 |
| | 32.0 | 2633 | 1.3 | 45.27 | 22.0 | | | |
| | 35.5 | 2374 | 1.4 | 40.81 | 22.0 | | | |
| | 38.2 | 2210 | 1.3 | 38.00 | 22.0 | | | |
| | 42.9 | 1966 | 1.6 | 33.79 | 22.0 | | | |
| | 47.8 | 1765 | 1.8 | 30.35 | 22.0 | | | |
| | 51.1 | 1650 | 2.0 | 28.36 | 22.0 | | | |
| | 45.9 | 1836 | 0.9 | 31.57 | 14.7 | | | |
| | 51.3 | 1644 | 1.0 | 28.26 | 14.8 | | | |
| | 53.7 | 1569 | 1.0 | 26.98 | 14.8 | | | |
| | 62.7 | 1346 | 1.2 | 23.14 | 14.7 | | | |
| | 66.8 | 1262 | 1.3 | 21.69 | 14.7 | | | |
| | 73.7 | 1144 | 1.4 | 19.66 | 14.6 | | | |
| | 77.1 | 1094 | 1.4 | 18.81 | 14.5 | | | |
| | 86.0 | 981 | 1.5 | 16.86 | 14.3 | | | |
| | 95.9 | 880 | 1.7 | 15.13 | 14.1 | | | |
| | 105.8 | 797 | 1.8 | 13.71 | 13.9 | | | |
| | 129.4 | 652 | 1.7 | 11.20 | 13.5 | | | |
| | 161.0 | 524 | 1.7 | 9.01 | 12.9 | | | |
| | 177.6 | 475 | 1.7 | 8.16 | 12.7 | | | |
| | 192.1 | 439 | 1.8 | 7.55 | 12.4 | | | |
| | 238.9 | 353 | 2.0 | 6.07 | 11.8 | | | |
| | 263.6 | 320 | 2.2 | 5.50 | 11.6 | | | |
| | 126.5 | 667 | 1.0 | 11.46 | 9.8 | A402 - 132M/4 F402 - 132M/4 | 90 | 54 |
| | 157.6 | 535 | 1.1 | 9.20 | 9.6 | | | |
| 174.0 | 485 | 1.2 | 8.33 | 9.5 | | | | |
| 200.9 | 420 | 1.3 | 7.22 | 9.3 | | | | |
| 250.1 | 337 | 1.6 | 5.80 | 9.0 | | | | |
| 276.2 | 305 | 1.6 | 5.25 | 8.8 | | | | |
| | | | | | | | | |

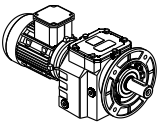


| P₁ [kW] | n₂ [Min ⁻¹] | M₂ [Nm] | f_B | i_{ges} | F_R [kN] | Tip / Type / Typ Tipo / Type / Tipo | kg | mm | |
|------------------------------|--|------------------------------|----------------------|------------------------|------------------------------|--|--|-----------|----|
| 11.0 | 11.3 | 8742 | 0.9 | 128.36 | 55.0 | A903 - 160M/4B F903 - 160M/4B | 275 | 62 | |
| | 12.5 | 7888 | 1.0 | 115.83 | 55.0 | | | | |
| | 13.9 | 7110 | 1.1 | 104.41 | 55.0 | | | | |
| | 15.1 | 6546 | 1.2 | 96.13 | 55.0 | | | | |
| | 16.8 | 5886 | 1.4 | 86.43 | 55.0 | | | | |
| | 18.3 | 5389 | 1.5 | 79.13 | 55.0 | | | | |
| | 20.3 | 4862 | 1.6 | 71.40 | 55.0 | | | | |
| | 23.0 | 4292 | 1.9 | 63.02 | 55.0 | | | | |
| | 24.5 | 4035 | 2.0 | 59.26 | 55.0 | | | | |
| | 27.0 | 3654 | 2.2 | 53.66 | 55.0 | | | | |
| | | 19.7 | 5019 | 1.0 | 73.70 | 30.0 | A703 - 160M/4B F703 - 160M/4B | 208 | 60 |
| | | 21.5 | 4584 | 1.1 | 67.31 | 30.0 | | | |
| | | 26.0 | 3796 | 1.3 | 55.75 | 30.0 | | | |
| | | 31.7 | 3110 | 1.6 | 45.67 | 30.0 | | | |
| | | 32.5 | 3107 | 1.6 | 44.67 | 30.0 | A702 - 160M/4B F702 - 160M/4B | 208 | 60 |
| | | 39.6 | 2546 | 2.0 | 36.60 | 30.0 | | | |
| | | 43.4 | 2325 | 2.2 | 33.43 | 30.0 | | | |
| | | 26.0 | 3797 | 0.9 | 55.75 | 22.0 | A603\F603 - 160M/4B | 179 | 58 |
| | | 32.0 | 3149 | 1.0 | 45.27 | 22.0 | A602 - 160M/4B F602 - 160M/4B | 179 | 58 |
| | | 35.5 | 2838 | 1.2 | 40.81 | 22.0 | | | |
| | | 42.9 | 2350 | 1.4 | 33.79 | 22.0 | | | |
| | | 47.8 | 2111 | 1.5 | 30.35 | 22.0 | | | |
| | | 51.1 | 1973 | 1.7 | 28.36 | 22.0 | | | |
| | | 56.7 | 1778 | 1.9 | 25.57 | 22.0 | | | |
| | | 61.3 | 1646 | 2.0 | 23.66 | 22.0 | | | |
| | | 68.5 | 1472 | 2.2 | 21.17 | 21.7 | | | |
| | | 74.0 | 1363 | 2.3 | 19.59 | 21.4 | | | |
| | | 82.4 | 1224 | 2.6 | 17.60 | 21.1 | | | |
| | | 66.8 | 1509 | 1.1 | 21.69 | 13.5 | A502 - 160M/4B F502 - 160M/4B | 150 | 56 |
| | | 73.7 | 1367 | 1.2 | 19.66 | 13.5 | | | |
| | | 77.1 | 1308 | 1.1 | 18.81 | 13.5 | | | |
| | | 86.0 | 1173 | 1.3 | 16.86 | 13.4 | | | |
| | | 95.9 | 1052 | 1.4 | 15.13 | 13.3 | | | |
| | | 105.8 | 953 | 1.5 | 13.71 | 13.2 | | | |
| | | 129.4 | 779 | 1.4 | 11.20 | 12.9 | | | |
| | | 161.0 | 627 | 1.4 | 9.01 | 12.4 | | | |
| | 177.6 | 568 | 1.4 | 8.16 | 12.2 | | | | |
| | 192.1 | 525 | 1.5 | 7.55 | 12.0 | | | | |
| | 238.9 | 422 | 1.7 | 6.07 | 11.5 | | | | |
| | 263.6 | 383 | 1.8 | 5.50 | 11.3 | | | | |
| 15.0 | 15.1 | 8927 | 0.9 | 96.13 | 55.0 | A903 - 160L/4A F903 - 160L/4A | 284 | 62 | |
| | 16.8 | 8027 | 1.0 | 86.43 | 55.0 | | | | |
| | 18.3 | 7348 | 1.1 | 79.13 | 55.0 | | | | |
| | 20.3 | 6631 | 1.2 | 71.40 | 55.0 | | | | |
| | 23.0 | 5852 | 1.4 | 63.02 | 55.0 | | | | |
| | 24.5 | 5503 | 1.5 | 59.26 | 55.0 | | | | |
| | 27.0 | 4983 | 1.6 | 53.66 | 55.0 | | | | |
| | 29.9 | 4504 | 1.8 | 48.50 | 54.9 | | | | |
| | | 34.1 | 4028 | 2.0 | 42.47 | 53.6 | A902\F902 - 160L/4A | 284 | 62 |
| | | 26.0 | 5177 | 1.0 | 55.75 | 30.0 | A703 - 160L/4A F703 - 160L/4A | 217 | 60 |
| | | 31.7 | 4241 | 1.2 | 45.67 | 30.0 | | | |
| | | | | | | | | | |

15.0 kW
18.5 kW

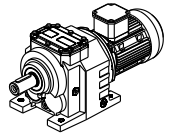


| P₁ [kW] | n₂ [Min ⁻¹] | M₂ [Nm] | f_B | i_{ges} | F_R [kN] | Tip / Type / Typ Tipo / Type / Tipo | Kg | mm | | | |
|------------------------------|--|------------------------------|----------------------|------------------------|------------------------------|--|--|-----------|--|-----|----|
| 15.0 | 32.5 | 4237 | 1.2 | 44.67 | 30.0 | A702 - 160L/4A F702 - 160L/4A | 217 | 60 | | | |
| | 39.6 | 3471 | 1.4 | 36.60 | 30.0 | | | | | | |
| | 43.4 | 3170 | 1.6 | 33.43 | 30.0 | | | | | | |
| | 47.9 | 2871 | 1.7 | 30.27 | 30.0 | | | | | | |
| | 52.0 | 2643 | 1.9 | 27.87 | 30.0 | | | | | | |
| | 58.5 | 2352 | 2.1 | 24.80 | 30.0 | | | | | | |
| | 63.5 | 2166 | 2.3 | 22.84 | 30.0 | | | | | | |
| | 42.9 | 3205 | 1.0 | 33.79 | 19.4 | | | | A602 - 160L/4A F602 - 160L/4A | 187 | 58 |
| | 47.8 | 2878 | 1.1 | 30.35 | 19.6 | | | | | | |
| | 51.1 | 2690 | 1.2 | 28.36 | 19.6 | | | | | | |
| | 56.7 | 2425 | 1.4 | 25.57 | 19.7 | | | | | | |
| | 61.3 | 2244 | 1.5 | 23.66 | 19.7 | | | | | | |
| | 68.5 | 2008 | 1.6 | 21.17 | 19.6 | | | | | | |
| | 74.0 | 1858 | 1.7 | 19.59 | 19.5 | | | | | | |
| | 82.4 | 1670 | 1.9 | 17.60 | 19.3 | | | | | | |
| | 91.4 | 1505 | 2.1 | 15.87 | 19.1 | | | | | | |
| | 110.4 | 1246 | 2.5 | 13.14 | 18.6 | | | | | | |
| | 132.9 | 1035 | 2.9 | 10.91 | 18.0 | | | | | | |
| | 147.5 | 933 | 3.0 | 9.83 | 17.7 | | | | | | |
| | 178.1 | 772 | 3.2 | 8.14 | 17.0 | | | | | | |
| | 209.6 | 656 | 3.5 | 6.92 | 16.5 | | | | | | |
| | 232.5 | 591 | 3.4 | 6.24 | 16.1 | | | | | | |
| | 280.8 | 490 | 3.7 | 5.16 | 15.4 | | | | | | |
| | 95.9 | 1434 | 1.0 | 15.13 | 11.6 | A502 - 160L/4A F502 - 160L/4A | 159 | 56 | | | |
| | 105.8 | 1300 | 1.1 | 13.71 | 11.6 | | | | | | |
| | 129.4 | 1063 | 1.0 | 11.20 | 11.6 | | | | | | |
| | 161.0 | 854 | 1.1 | 9.01 | 11.4 | | | | | | |
| | 177.6 | 774 | 1.0 | 8.16 | 11.3 | | | | | | |
| | 192.1 | 716 | 1.1 | 7.55 | 11.2 | | | | | | |
| | 238.9 | 576 | 1.2 | 6.07 | 10.8 | | | | | | |
| | 263.6 | 522 | 1.3 | 5.50 | 10.6 | | | | | | |
| | 18.5 | 18.3 | 9063 | 0.9 | 79.13 | 52.9 | A903 - 180M/4B F903 - 180M/4B | 317 | 62 | | |
| | | 20.3 | 8178 | 1.0 | 71.40 | 52.9 | | | | | |
| 23.0 | | 7218 | 1.1 | 63.02 | 52.7 | | | | | | |
| 24.5 | | 6787 | 1.2 | 59.26 | 52.6 | | | | | | |
| 27.0 | | 6146 | 1.3 | 53.66 | 52.2 | | | | | | |
| 29.9 | | 5555 | 1.4 | 48.50 | 51.7 | | | | | | |
| 34.1 | | 4968 | 1.6 | 42.47 | 50.6 | A902 - 180M/4B F902 - 180M/4B | 317 | 62 | | | |
| 37.8 | | 4483 | 1.8 | 38.33 | 49.9 | | | | | | |
| 45.6 | | 3721 | 2.2 | 31.81 | 48.5 | | | | | | |
| 31.7 | | 5231 | 1.0 | 45.67 | 30.0 | A703\F703 - 180M/4B | 250 | 60 | | | |

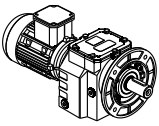


| P₁ [kW] | n₂ [Min ⁻¹] | M₂ [Nm] | f_B | i_{ges} | F_R [kN] | Tip / Type / Typ Tipo / Type / Tipo | kg | mm | | | | |
|------------------------------|--|------------------------------|----------------------|------------------------|------------------------------|--|--|-----------|------|--|-----|----|
| 18.5 | 32.5 | 5225 | 1.0 | 44.67 | 30.0 | A702 - 180M/4B F702 - 180M/4B | 250 | 60 | | | | |
| | 39.6 | 4281 | 1.2 | 36.60 | 30.0 | | | | | | | |
| | 43.4 | 3910 | 1.3 | 33.43 | 30.0 | | | | | | | |
| | 47.9 | 3541 | 1.4 | 30.27 | 30.0 | | | | | | | |
| | 52.0 | 3260 | 1.5 | 27.87 | 30.0 | | | | | | | |
| | 58.5 | 2901 | 1.7 | 24.80 | 30.0 | | | | | | | |
| | 63.5 | 2671 | 1.9 | 22.84 | 30.0 | | | | | | | |
| | 69.5 | 2440 | 2.0 | 20.86 | 30.0 | | | | | | | |
| | 74.0 | 2292 | 2.2 | 19.60 | 30.0 | | | | | | | |
| | 84.4 | 2010 | 2.4 | 17.18 | 30.0 | | | | | | | |
| | 103.0 | 1647 | 2.8 | 14.08 | 28.8 | | | | | | | |
| | 112.8 | 1504 | 2.9 | 12.86 | 28.3 | | | | | | | |
| | 137.7 | 1232 | 3.2 | 10.53 | 27.0 | | | | | | | |
| | 168.1 | 1009 | 3.8 | 8.63 | 25.8 | | | | | | | |
| | 184.0 | 922 | 4.0 | 7.88 | 25.2 | | | | | | | |
| | 201.5 | 842 | 4.3 | 7.20 | 24.6 | | | | | | | |
| | 246.0 | 690 | 4.6 | 5.90 | 23.4 | | | | | | | |
| | 269.3 | 630 | 4.8 | 5.38 | 22.8 | | | | | | | |
| | 18.5 | 51.1 | 3318 | 1.0 | 28.36 | | | | 17.1 | A602 - 180M/4B F602 - 180M/4B | 220 | 58 |
| | | 56.7 | 2991 | 1.1 | 25.57 | | | | 17.4 | | | |
| | | 61.3 | 2768 | 1.2 | 23.66 | | | | 17.6 | | | |
| | | 68.5 | 2476 | 1.3 | 21.17 | | | | 17.7 | | | |
| | | 74.0 | 2292 | 1.4 | 19.59 | | | | 17.7 | | | |
| | | 82.4 | 2059 | 1.6 | 17.60 | | | | 17.7 | | | |
| | | 91.4 | 1856 | 1.7 | 15.87 | | | | 17.7 | | | |
| | | 110.4 | 1537 | 2.0 | 13.14 | | | | 17.4 | | | |
| | | 132.9 | 1276 | 2.4 | 10.91 | | | | 17.1 | | | |
| | | 147.5 | 1150 | 2.4 | 9.83 | | | | 16.8 | | | |
| 178.1 | | 952 | 2.6 | 8.14 | 16.3 | | | | | | | |
| 209.6 | | 809 | 2.8 | 6.92 | 15.8 | | | | | | | |
| 232.5 | | 729 | 2.7 | 6.24 | 15.5 | | | | | | | |
| 280.8 | | 604 | 3.0 | 5.16 | 14.9 | | | | | | | |
| 22.0 | | 23.1 | 8554 | 0.9 | 63.02 | 48.5 | A903 - 180L/4B F903 - 180L/4B | 325 | 62 | | | |
| | | 24.6 | 8043 | 1.0 | 59.26 | 48.6 | | | | | | |
| | 27.1 | 7284 | 1.1 | 53.66 | 48.6 | | | | | | | |
| | 30.0 | 6583 | 1.2 | 48.50 | 48.4 | A902 - 180L/4B F902 - 180L/4B | 325 | 62 | | | | |
| | 34.3 | 5888 | 1.4 | 42.47 | 47.7 | | | | | | | |
| | 38.0 | 5313 | 1.5 | 38.33 | 47.3 | | | | | | | |
| | 45.7 | 4409 | 1.8 | 31.81 | 46.3 | | | | | | | |
| | 55.2 | 3656 | 2.2 | 26.38 | 45.1 | | | | | | | |
| | 61.1 | 3299 | 2.4 | 23.80 | 44.3 | A702 - 180L/4B F702 - 180L/4B | 258 | 60 | | | | |
| | 39.8 | 5074 | 1.0 | 36.60 | 30.0 | | | | | | | |
| | 43.5 | 4634 | 1.1 | 33.43 | 30.0 | | | | | | | |
| | 48.1 | 4196 | 1.2 | 30.27 | 30.0 | | | | | | | |
| | 52.2 | 3864 | 1.3 | 27.87 | 30.0 | | | | | | | |
| | 58.7 | 3438 | 1.5 | 24.80 | 29.9 | | | | | | | |
| | 63.7 | 3166 | 1.6 | 22.84 | 29.7 | | | | | | | |
| 69.8 | 2891 | 1.7 | 20.86 | 29.4 | | | | | | | | |
| 74.2 | 2717 | 1.8 | 19.60 | 29.2 | | | | | | | | |
| 84.7 | 2382 | 2.0 | 17.18 | 28.7 | | | | | | | | |
| 103.4 | 1951 | 2.4 | 14.08 | 27.8 | | | | | | | | |
| 113.2 | 1782 | 2.5 | 12.86 | 27.3 | | | | | | | | |
| 138.2 | 1460 | 2.7 | 10.53 | 26.3 | | | | | | | | |
| 168.6 | 1196 | 3.2 | 8.63 | 25.2 | | | | | | | | |
| 184.6 | 1092 | 3.4 | 7.88 | 24.7 | | | | | | | | |
| 202.2 | 998 | 3.6 | 7.20 | 24.1 | | | | | | | | |
| 246.8 | 817 | 3.9 | 5.90 | 23.0 | | | | | | | | |
| 270.2 | 746 | 4.0 | 5.38 | 22.4 | | | | | | | | |

22.0 kW
30.0 kW
37.0 kW

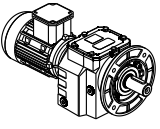


| P₁ [kW] | n₂ [Min ⁻¹] | M₂ [Nm] | f_B | i_{ges} | F_R [kN] | Tip / Type / Typ Tipo / Type / Tipo | kg | mm | | | | |
|------------------------------|--|------------------------------|----------------------|------------------------|------------------------------|--|--|-----------|----|--|--|--|
| 22.0 | 56.9 | 3544 | 0.9 | 25.57 | 15.2 | A602 - 180L/4B F602 - 180L/4B | 228 | 58 | | | | |
| | 61.5 | 3280 | 1.0 | 23.66 | 15.5 | | | | | | | |
| | 68.7 | 2935 | 1.1 | 21.17 | 15.8 | | | | | | | |
| | 74.3 | 2716 | 1.2 | 19.59 | 16.0 | | | | | | | |
| | 82.7 | 2440 | 1.3 | 17.60 | 16.2 | | | | | | | |
| | 91.7 | 2200 | 1.5 | 15.87 | 16.3 | | | | | | | |
| | 110.7 | 1821 | 1.7 | 13.14 | 16.3 | | | | | | | |
| | 133.4 | 1512 | 2.0 | 10.91 | 16.1 | | | | | | | |
| | 148.0 | 1363 | 2.1 | 9.83 | 16.0 | | | | | | | |
| | 178.7 | 1129 | 2.2 | 8.14 | 15.6 | | | | | | | |
| | 210.3 | 959 | 2.4 | 6.92 | 15.2 | | | | | | | |
| | 233.3 | 864 | 2.3 | 6.24 | 15.0 | | | | | | | |
| 281.8 | 716 | 2.5 | 5.16 | 14.5 | | | | | | | | |
| 30.0 | 30.1 | 8946 | 0.9 | 48.50 | 41.0 | A903\F903 - 200L/4C | 394 | 62 | | | | |
| | 34.4 | 8001 | 1.0 | 42.47 | 40.9 | A902 - 200L/4C F902 - 200L/4C | 394 | 62 | | | | |
| | 38.1 | 7220 | 1.1 | 38.33 | 41.2 | | | | | | | |
| | 45.9 | 5992 | 1.3 | 31.81 | 41.3 | | | | | | | |
| | 55.4 | 4969 | 1.6 | 26.38 | 40.9 | | | | | | | |
| | 61.3 | 4484 | 1.8 | 23.80 | 40.5 | | | | | | | |
| | 73.9 | 3721 | 2.1 | 19.75 | 39.7 | | | | | | | |
| | 85.0 | 3236 | 2.4 | 17.18 | 38.9 | | | | | | | |
| | 37.0 | 52.4 | 5251 | 1.0 | 27.87 | 25.5 | A702 - 200L/4C F702 - 200L/4C | 327 | 60 | | | |
| | | 63.9 | 4302 | 1.2 | 22.84 | 25.9 | | | | | | |
| | | 70.0 | 3929 | 1.3 | 20.86 | 26.0 | | | | | | |
| | | 74.5 | 3692 | 1.4 | 19.60 | 26.0 | | | | | | |
| | | 85.0 | 3237 | 1.5 | 17.18 | 25.8 | | | | | | |
| | | 103.7 | 2652 | 1.7 | 14.08 | 25.5 | | | | | | |
| | | 113.6 | 2422 | 1.8 | 12.86 | 25.2 | | | | | | |
| | | 138.6 | 1984 | 2.0 | 10.53 | 24.5 | | | | | | |
| | | 169.2 | 1625 | 2.3 | 8.63 | 23.7 | | | | | | |
| | | 185.3 | 1484 | 2.5 | 7.88 | 23.3 | | | | | | |
| 202.9 | | 1356 | 2.7 | 7.20 | 22.9 | | | | | | | |
| 247.6 | | 1111 | 2.9 | 5.90 | 22.0 | | | | | | | |
| 271.1 | 1014 | 3.0 | 5.38 | 21.5 | | | | | | | | |
| 37.0 | 38.1 | 8904 | 0.9 | 38.33 | 35.9 | A902 - 225S/4A F902 - 225S/4A | 447 | 62 | | | | |
| | 45.9 | 7390 | 1.1 | 31.81 | 36.8 | | | | | | | |
| | 55.4 | 6128 | 1.3 | 26.38 | 37.2 | | | | | | | |
| | 61.3 | 5530 | 1.4 | 23.80 | 37.2 | | | | | | | |
| | 73.9 | 4589 | 1.7 | 19.75 | 36.9 | | | | | | | |
| | 85.0 | 3991 | 2.0 | 17.18 | 36.5 | | | | | | | |
| | 94.2 | 3601 | 2.2 | 15.50 | 36.1 | | | | | | | |
| | 113.5 | 2989 | 2.4 | 12.86 | 35.2 | | | | | | | |
| | 142.0 | 2388 | 3.0 | 10.28 | 33.9 | | | | | | | |
| | 157.4 | 2155 | 3.0 | 9.28 | 33.3 | | | | | | | |
| | 189.7 | 1788 | 3.0 | 7.70 | 32.1 | | | | | | | |
| | 211.9 | 1601 | 3.1 | 6.89 | 31.3 | | | | | | | |
| | 234.8 | 1444 | 3.4 | 6.22 | 30.6 | | | | | | | |
| | 283.0 | 1199 | 3.8 | 5.16 | 29.3 | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
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| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |



| P₁ [kW] | n₂ [Min ⁻¹] | M₂ [Nm] | f_B | i_{ges} | F_R [kN] | Tip / Type / Typ Tipo / Type / Tipo | kg ~ | mm |
|------------------------------|--|------------------------------|----------------------|------------------------|------------------------------|--|-------------|-----------|
| 45.0 | 55.4 | 7453 | 1.1 | 26.38 | 33.0 | A902 - 225M/4C F902 - 225M/4C | 492 | 62 |
| | 61.3 | 6725 | 1.2 | 23.80 | 33.4 | | | |
| | 73.9 | 5582 | 1.4 | 19.75 | 33.8 | | | |
| | 85.0 | 4854 | 1.6 | 17.18 | 33.8 | | | |
| | 94.2 | 4380 | 1.8 | 15.50 | 33.6 | | | |
| | 113.5 | 3635 | 2.0 | 12.86 | 33.2 | | | |
| | 142.0 | 2905 | 2.5 | 10.28 | 32.3 | | | |
| | 157.4 | 2621 | 2.5 | 9.28 | 31.8 | | | |
| | 189.7 | 2175 | 2.4 | 7.70 | 30.8 | | | |
| | 211.9 | 1947 | 2.6 | 6.89 | 30.2 | | | |
| | 234.8 | 1757 | 2.8 | 6.22 | 29.6 | | | |
| 283.0 | 1458 | 3.2 | 5.16 | 28.5 | | | | |

PGR[®]
Drive Technologies

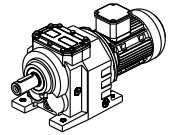


**Ölçü Tabloları
Dimension Tables
Maßtabellen
Dimensione Tabelle
Tables de Dimension
Tablas de Dimensiones**

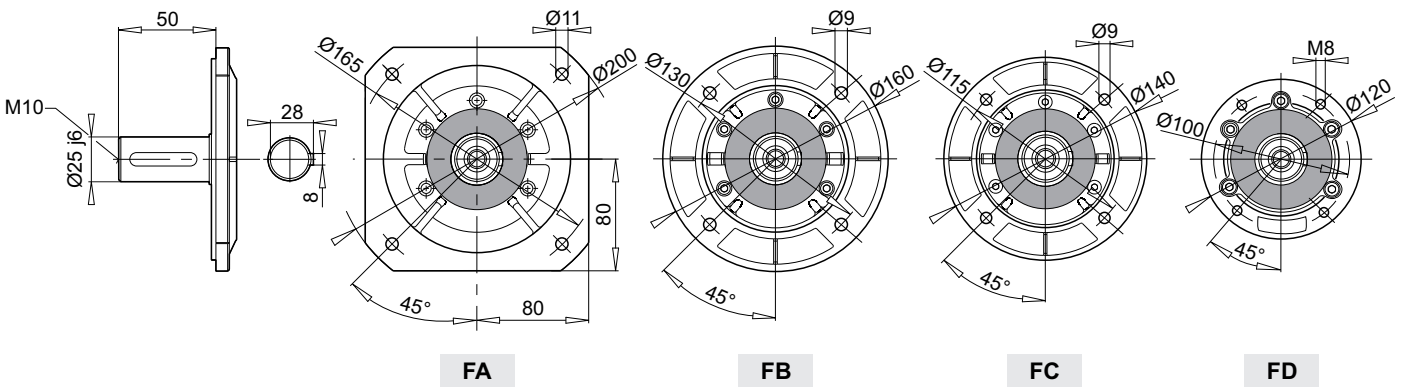
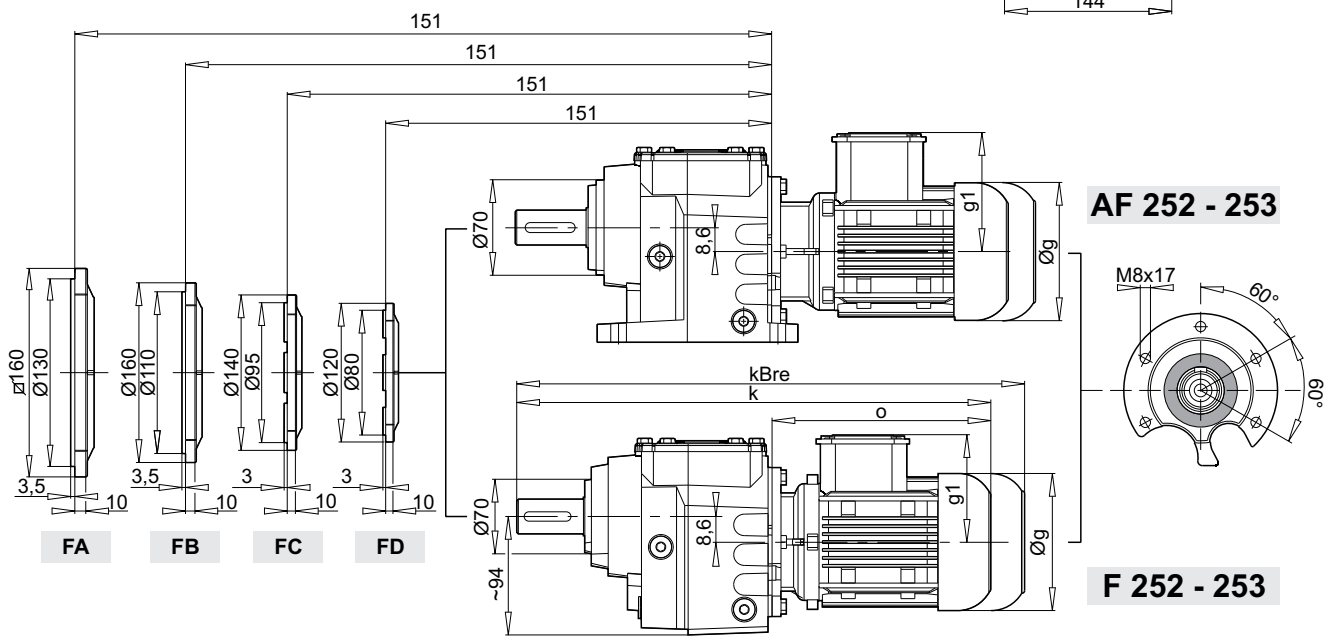
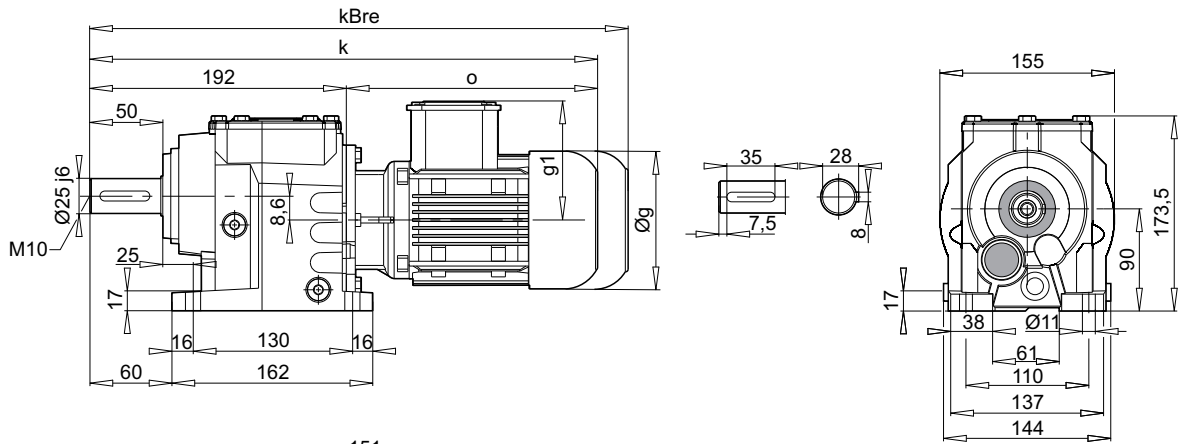


**A\F 252 ... 902
A\F 253 ... 903**

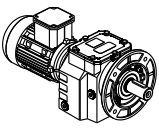
AIF 252 - 253



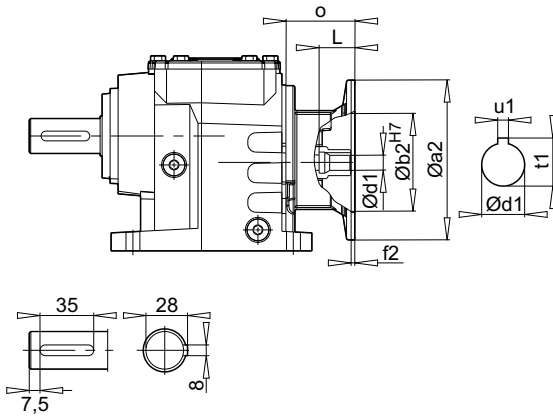
A 252 - 253



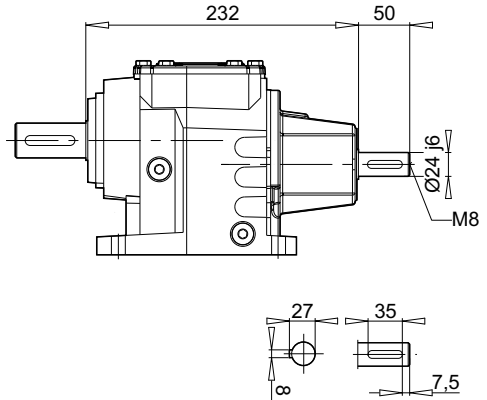
| | 63 M | 71 M | 80 M | 90 S | 90 L | 100 L | 112 M |
|-------------|------|------|------|------|------|-------|-------|
| g | 124 | 140 | 159 | 193 | 193 | 217 | 232 |
| g1 | 111 | 119 | 127 | 151 | 151 | 160 | 168 |
| k | 404 | 433 | 459 | 505 | 525 | 526 | 576 |
| kBre | 456 | 493 | 521 | 578 | 598 | 607 | 656 |
| o | 212 | 241 | 267 | 313 | 333 | 334 | 384 |



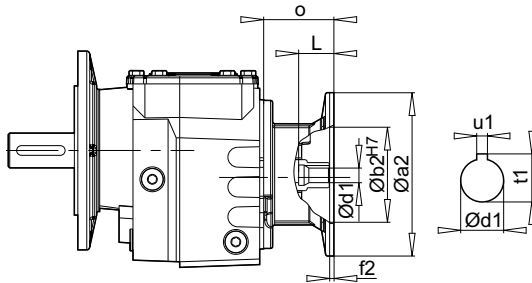
A - PAM



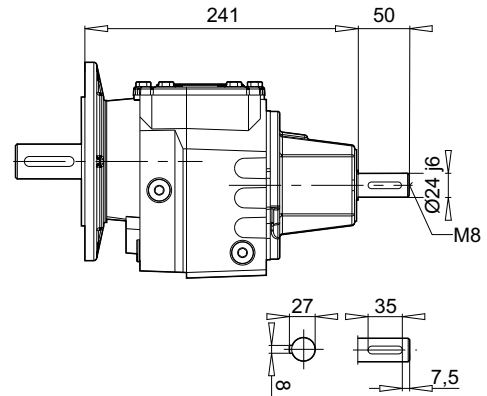
A - W



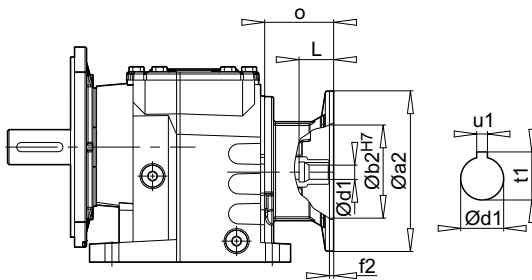
F - PAM



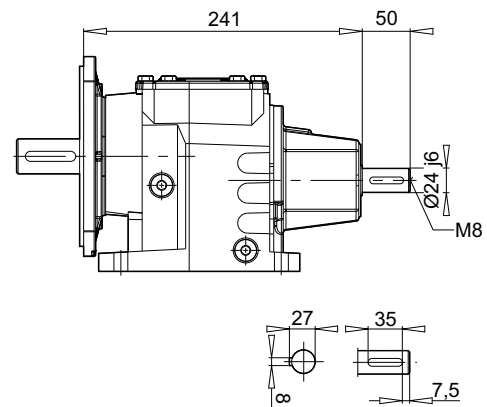
F - W



AF - PAM

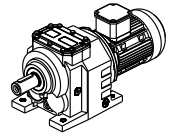


AF - W

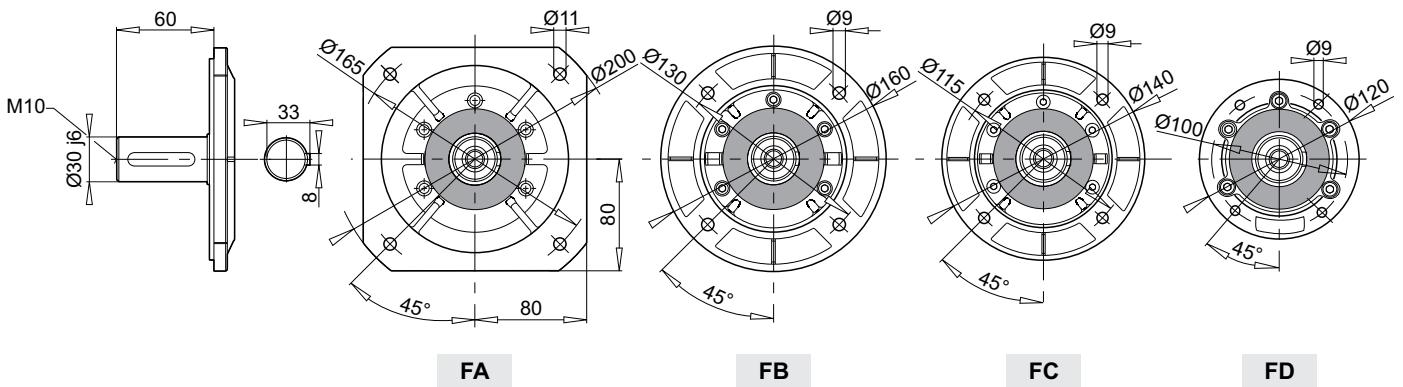
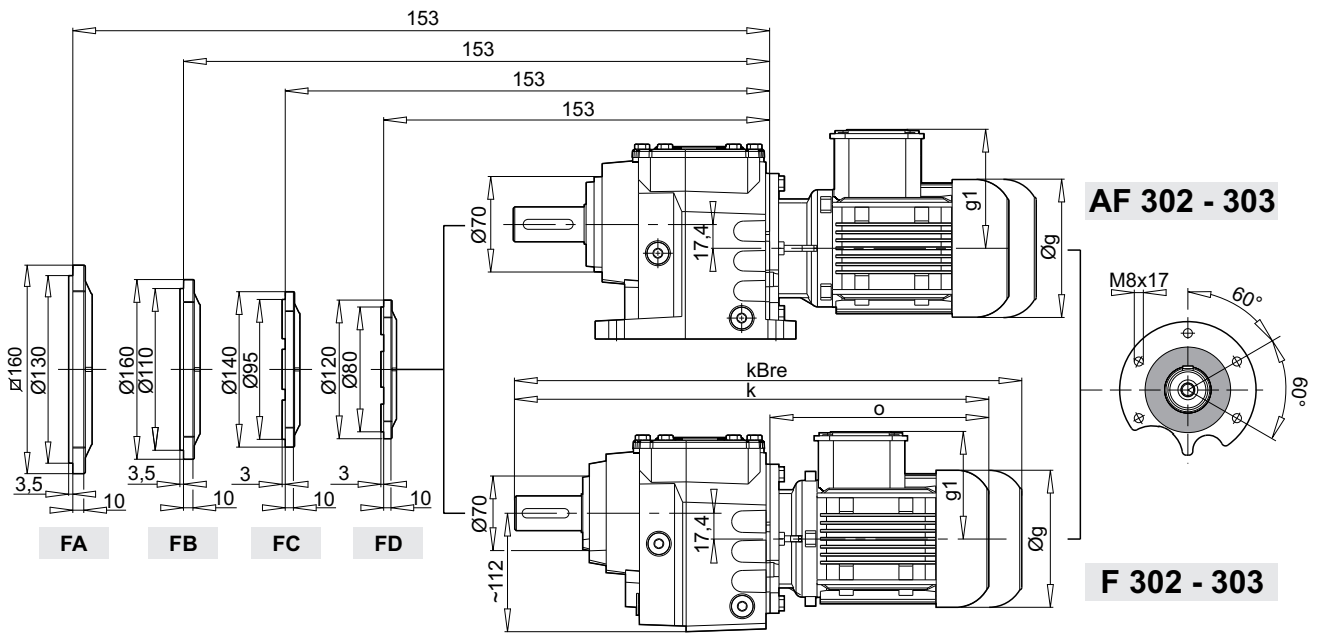
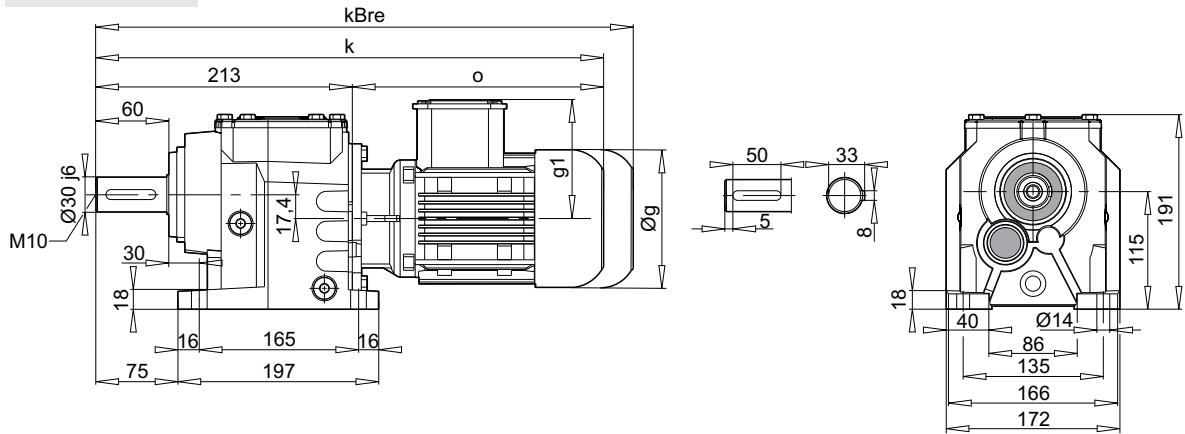


| | 63 | 71 | 80 | 90 | 100 | 112 | | |
|----|------|------|------|------|------|------|--|--|
| a2 | 140 | 160 | 200 | 200 | 250 | 250 | | |
| b2 | 95 | 110 | 130 | 130 | 180 | 180 | | |
| d1 | 11 | 14 | 19 | 24 | 28 | 28 | | |
| f2 | 4,5 | 5 | 5 | 5 | 5,5 | 5,5 | | |
| L | 25 | 32 | 42 | 52 | 62 | 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 | | |

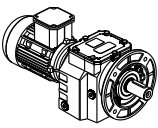
AIF 302 - 303



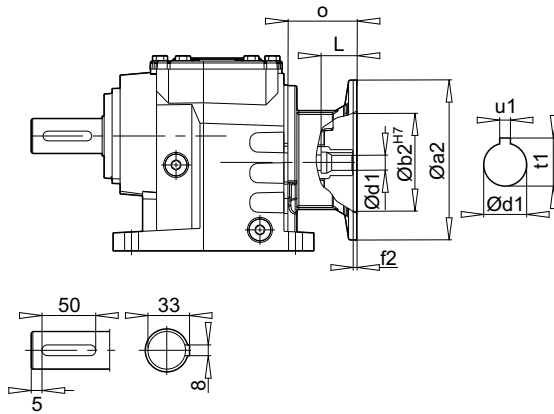
A 302 - 303



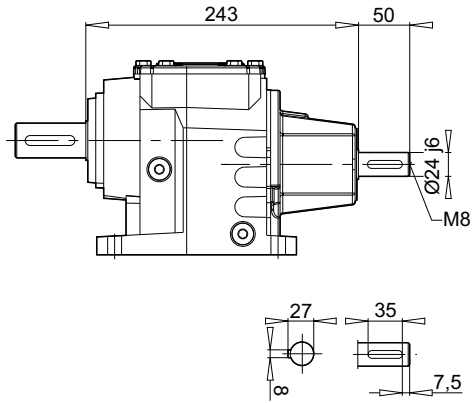
| | 63 M | 71 M | 80 M | 90 S | 90 L | 100 L | 112 M |
|-------------|------|------|------|------|------|-------|-------|
| g | 124 | 140 | 159 | 193 | 193 | 217 | 232 |
| g1 | 111 | 119 | 127 | 151 | 151 | 160 | 168 |
| k | 425 | 454 | 480 | 526 | 546 | 547 | 597 |
| kBre | 477 | 514 | 542 | 599 | 619 | 628 | 677 |
| o | 212 | 241 | 267 | 313 | 333 | 334 | 384 |



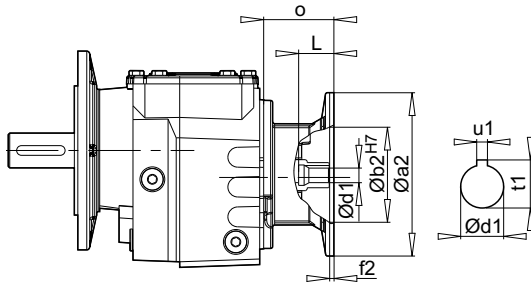
A - PAM



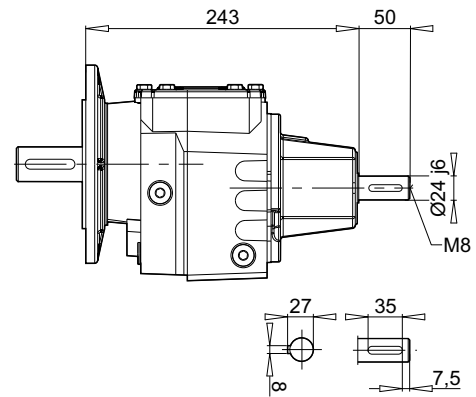
A - W



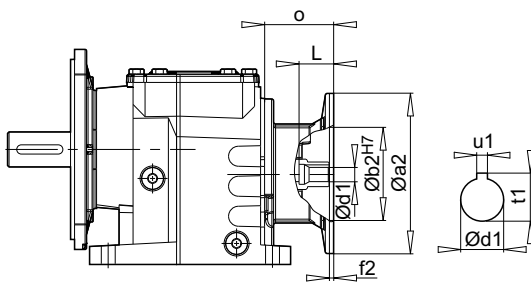
F - PAM



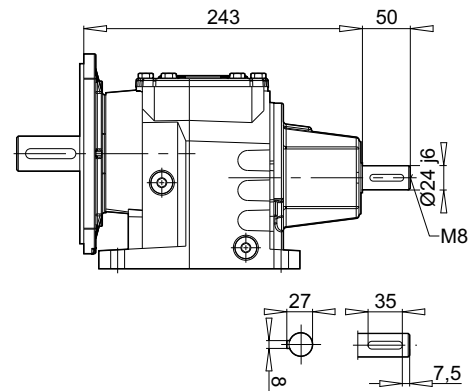
F - W



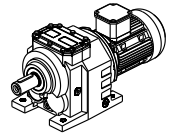
AF - PAM



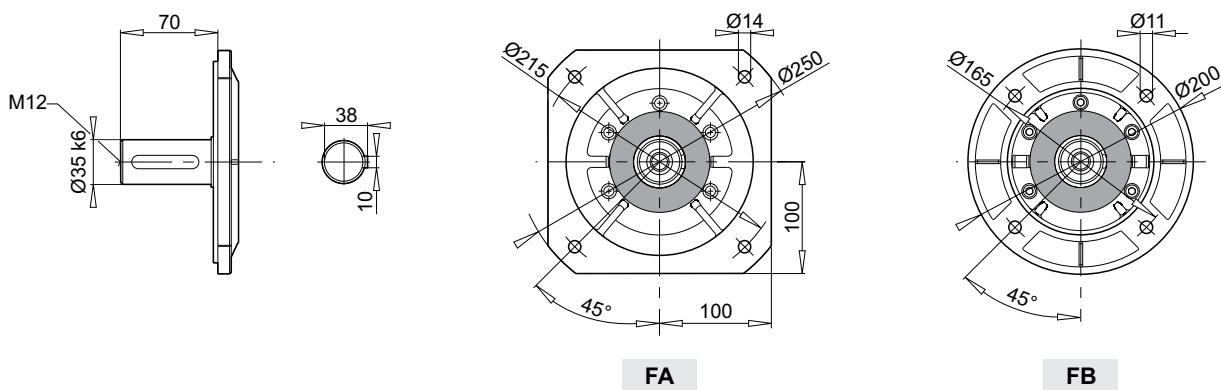
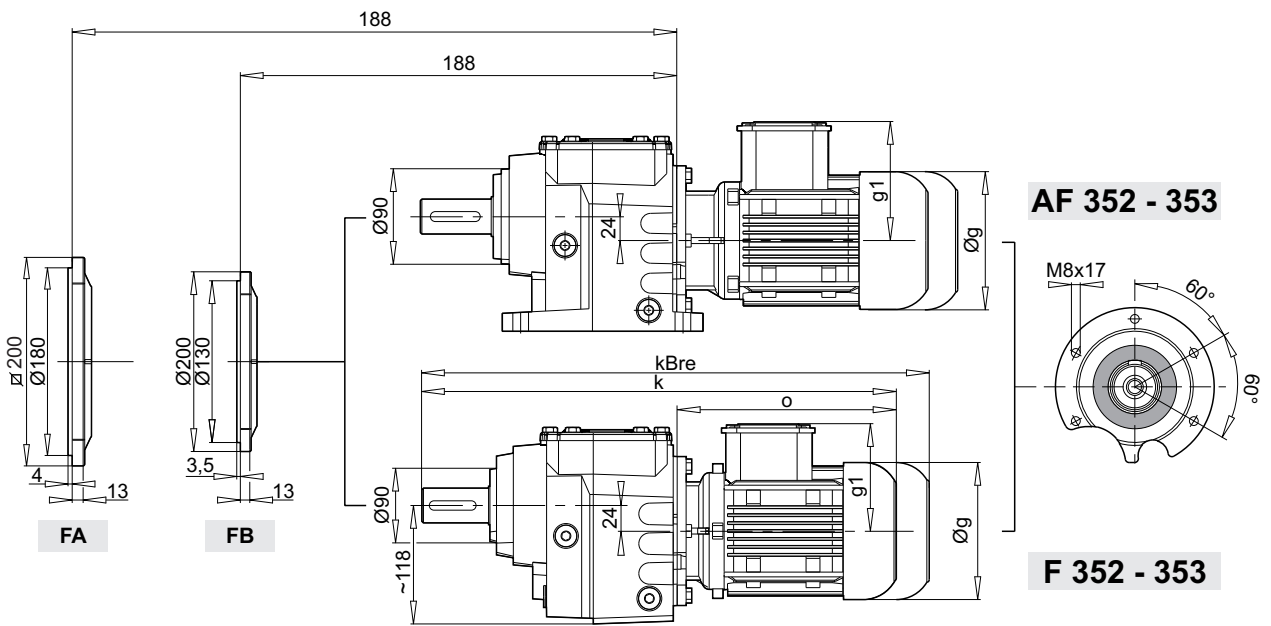
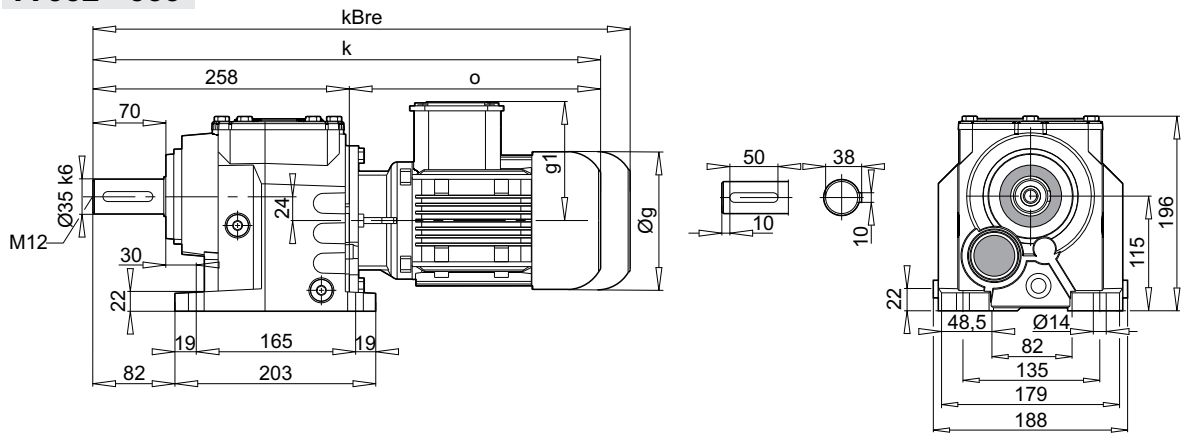
AF - W



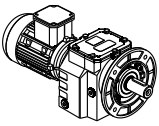
| | 63 | 71 | 80 | 90 | 100 | 112 | | |
|-----------|------|------|------|------|------|------|--|--|
| a2 | 140 | 160 | 200 | 200 | 250 | 250 | | |
| b2 | 95 | 110 | 130 | 130 | 180 | 180 | | |
| d1 | 11 | 14 | 19 | 24 | 28 | 28 | | |
| f2 | 4,5 | 5 | 5 | 5 | 5,5 | 5,5 | | |
| L | 25 | 32 | 42 | 52 | 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 | | |



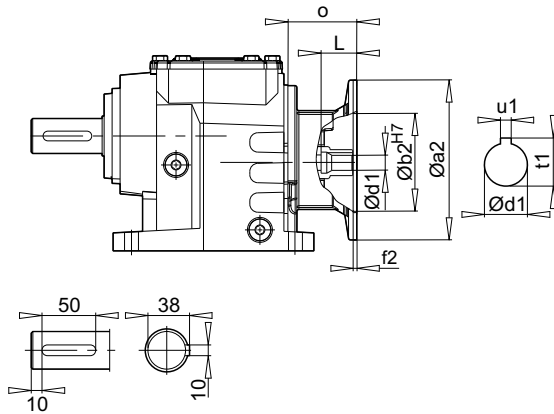
A 352 - 353



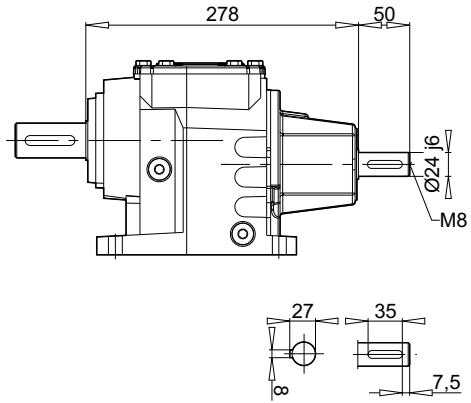
| | 63 M | 71 M | 80 M | 90 S | 90 L | 100 L | 112 M | |
|-------------|------|------|------|------|------|-------|-------|--|
| g | 124 | 140 | 159 | 193 | 193 | 217 | 232 | |
| g1 | 111 | 119 | 127 | 151 | 151 | 160 | 168 | |
| k | 470 | 499 | 525 | 571 | 591 | 592 | 642 | |
| kBre | 522 | 559 | 587 | 644 | 664 | 673 | 722 | |
| o | 212 | 241 | 267 | 313 | 333 | 334 | 384 | |



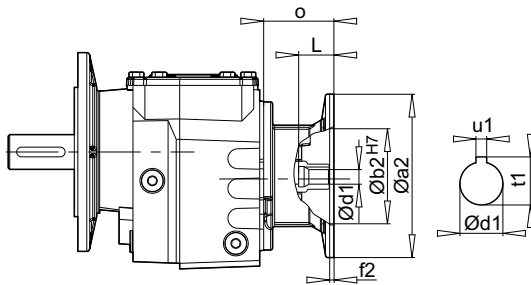
A - PAM



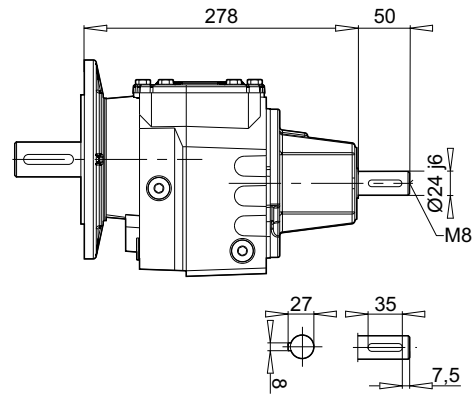
A - W



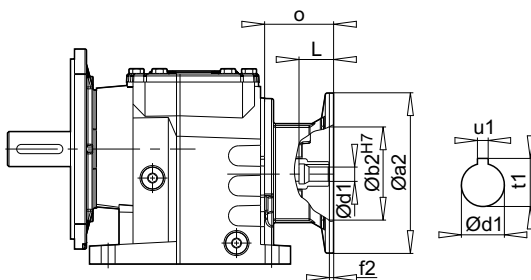
F - PAM



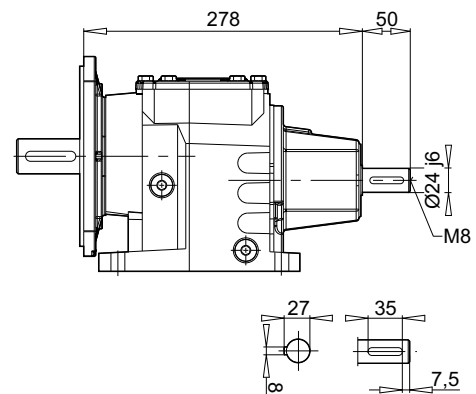
F - W



AF - PAM

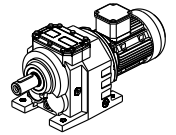


AF - W

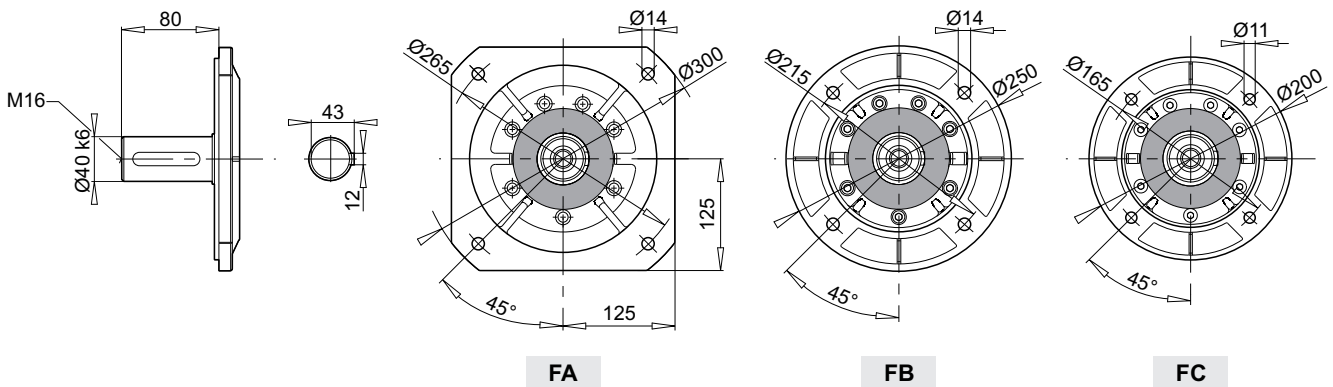
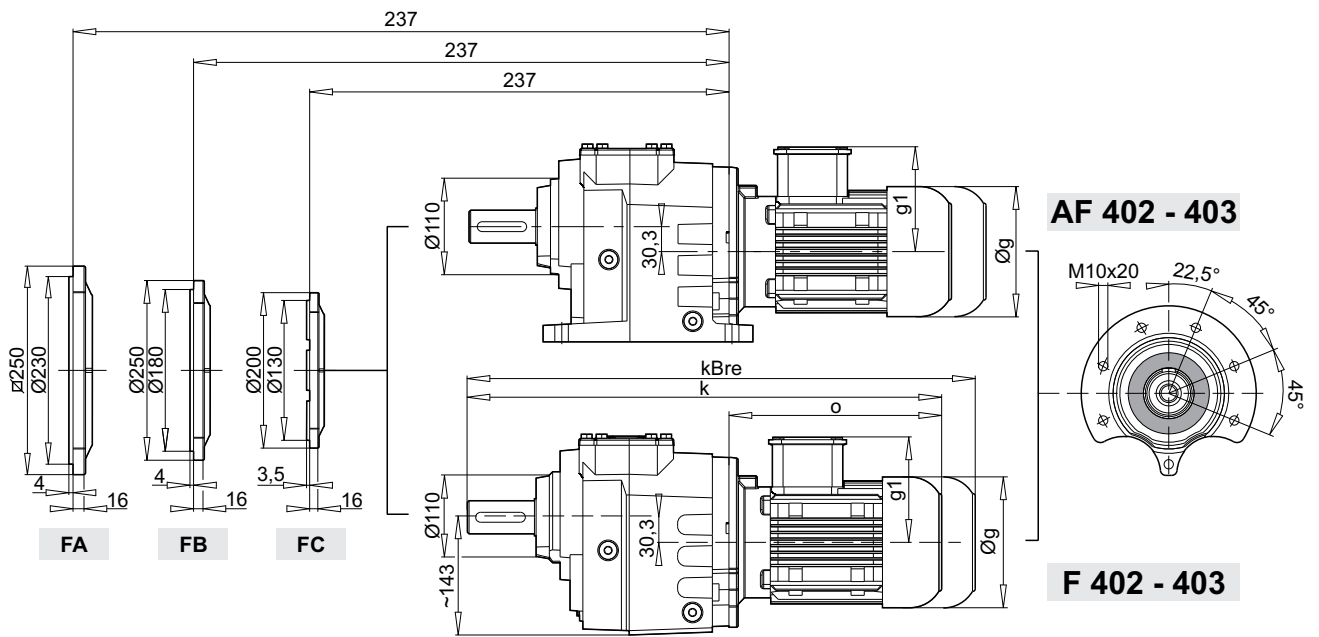
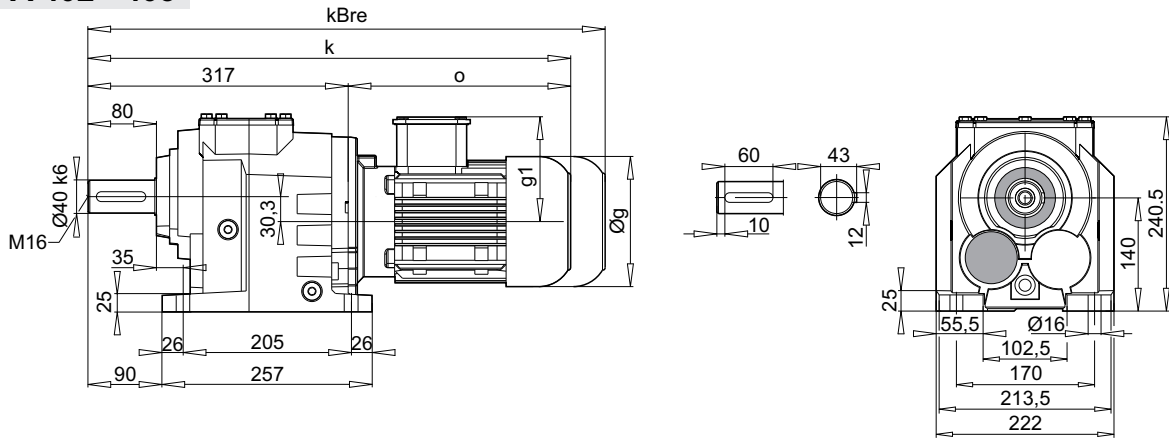


| | 63 | 71 | 80 | 90 | 100 | 112 | | |
|-----------|------|------|------|------|------|------|--|--|
| a2 | 140 | 160 | 200 | 200 | 250 | 250 | | |
| b2 | 95 | 110 | 130 | 130 | 180 | 180 | | |
| d1 | 11 | 14 | 19 | 24 | 28 | 28 | | |
| f2 | 4,5 | 5 | 5 | 5 | 5,5 | 5,5 | | |
| L | 25 | 32 | 42 | 52 | 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 | | |

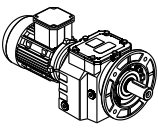
AIF 402 - 403



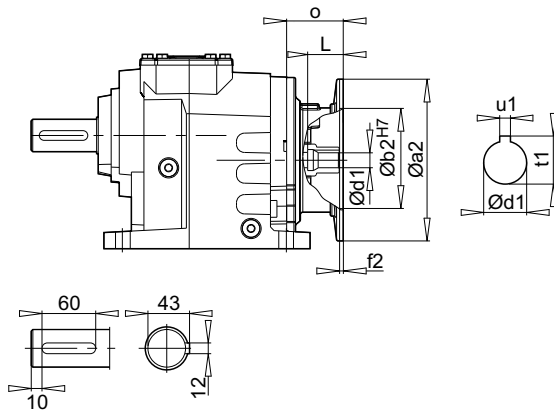
A 402 - 403



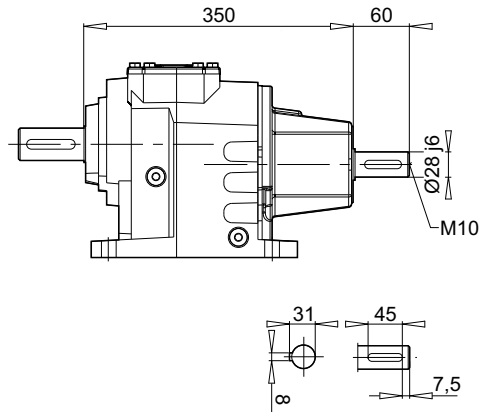
| | 71 M | 80 M | 90 S | 90 L | 100 L | 112 M | 132 S | 132 M |
|-------------|------|------|------|------|-------|-------|-------|-------|
| g | 140 | 159 | 193 | 193 | 217 | 232 | 279 | 279 |
| g1 | 119 | 127 | 151 | 151 | 160 | 168 | 182 | 182 |
| k | 558 | 564 | 610 | 630 | 653 | 706 | 713 | 748 |
| kBre | 618 | 626 | 683 | 703 | 734 | 786 | 821 | 856 |
| o | 241 | 247 | 293 | 313 | 336 | 389 | 396 | 431 |



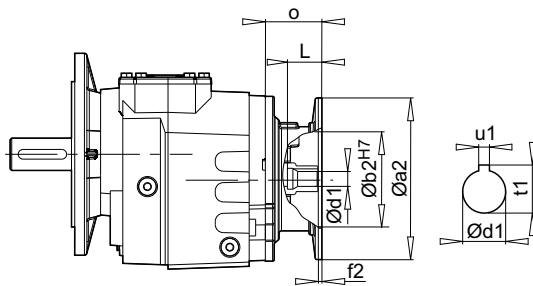
A - PAM



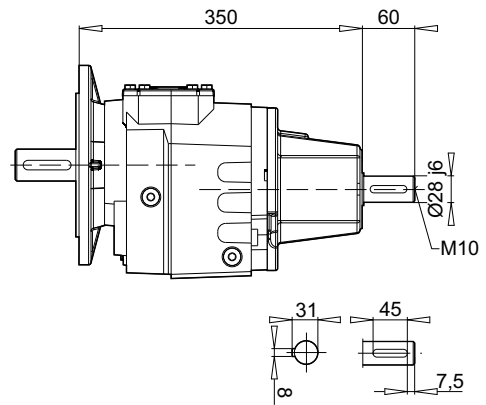
A - W



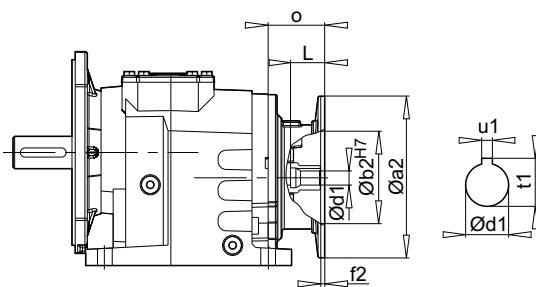
F - PAM



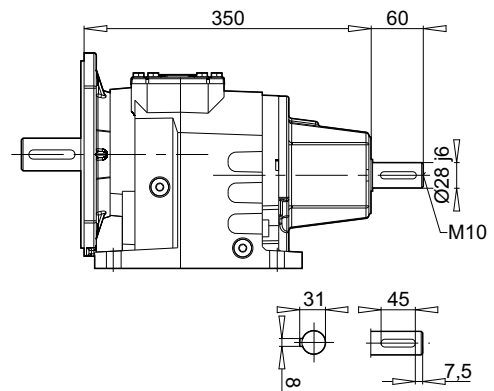
F - W



AF - PAM

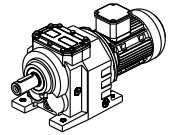


AF - W

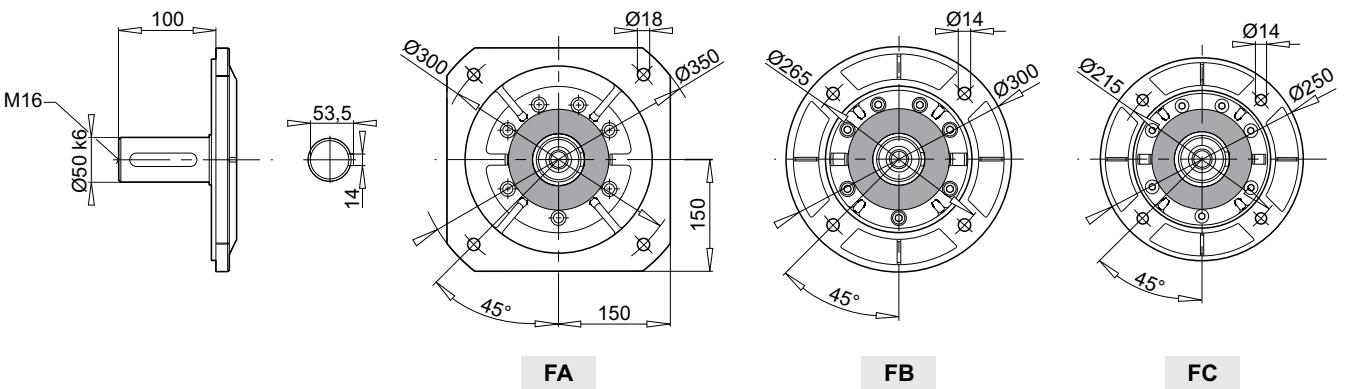
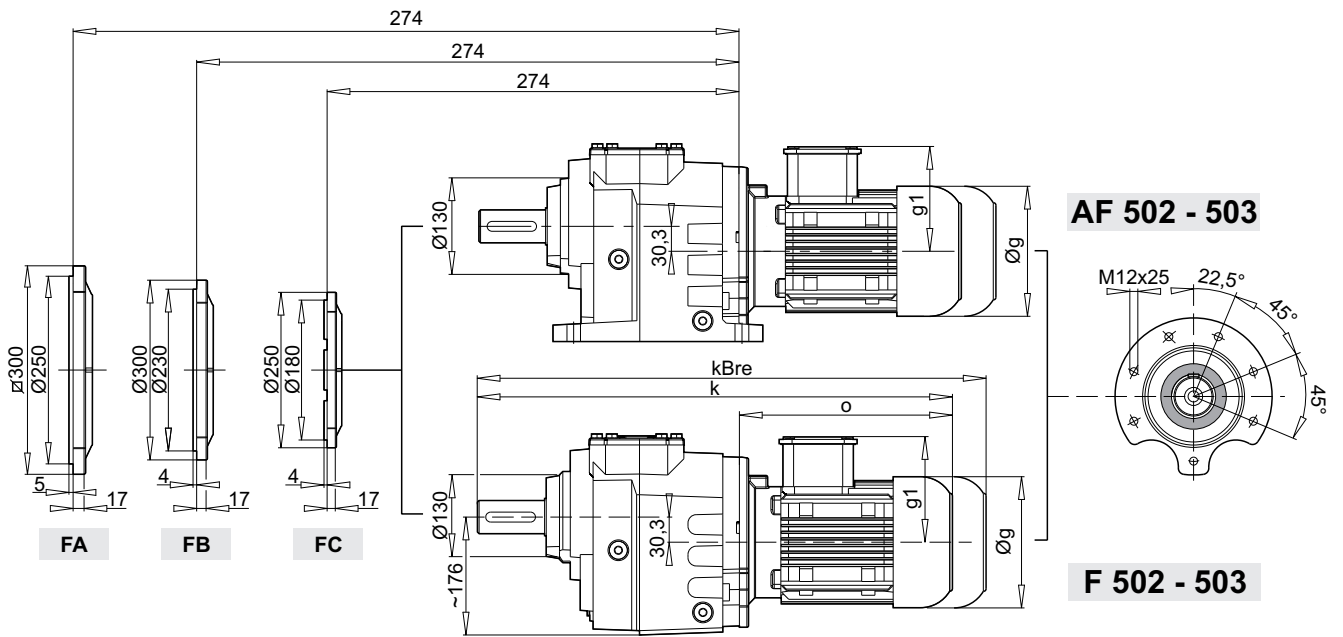
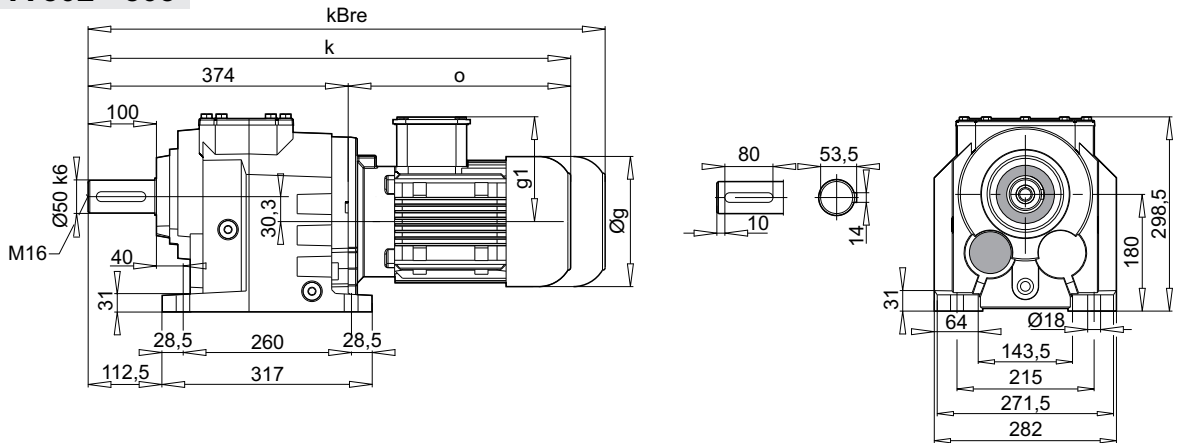


| | 71 | 80 | 90 | 100 | 112 | 132 | | |
|-----------|------|------|------|------|------|------|--|--|
| a2 | 160 | 200 | 200 | 250 | 250 | 300 | | |
| b2 | 110 | 130 | 130 | 180 | 180 | 230 | | |
| d1 | 14 | 19 | 24 | 28 | 28 | 38 | | |
| f2 | 5 | 5 | 5 | 5,5 | 5,5 | 5,5 | | |
| L | 32 | 42 | 52 | 62 | 62 | 82 | | |
| u1 | 5 | 6 | 8 | 8 | 8 | 10 | | |
| t1 | 16,3 | 21,8 | 27,3 | 31,3 | 31,3 | 41,3 | | |
| o | 49 | 70 | 70 | 85 | 85 | 110 | | |

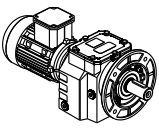
AIF 502 - 503



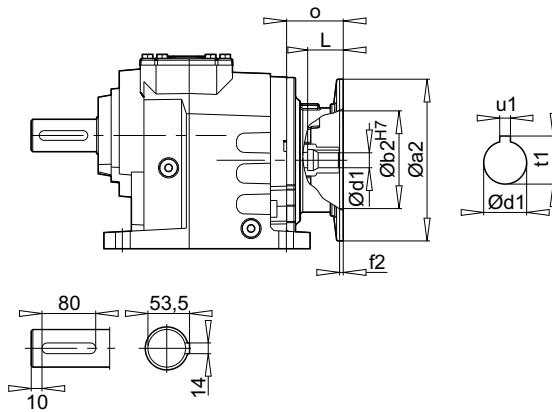
A 502 - 503



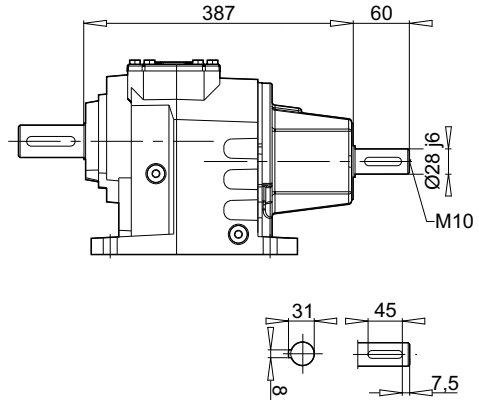
| | 80 M | 90 S | 90 L | 100 L | 112 M | 132 S | 132 M | |
|-------------|------|------|------|-------|-------|-------|-------|--|
| g | 159 | 193 | 193 | 217 | 232 | 279 | 279 | |
| g1 | 127 | 151 | 151 | 160 | 168 | 182 | 182 | |
| k | 621 | 667 | 687 | 710 | 763 | 770 | 805 | |
| kBre | 683 | 740 | 760 | 791 | 843 | 878 | 913 | |
| o | 247 | 293 | 313 | 336 | 389 | 396 | 431 | |



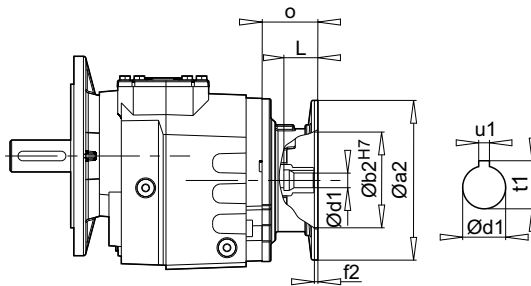
A - PAM



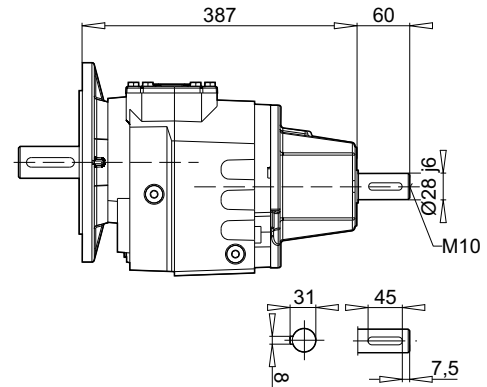
A - W



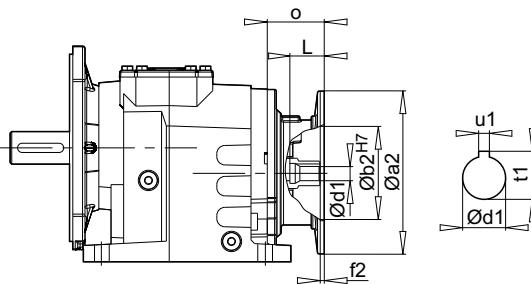
F - PAM



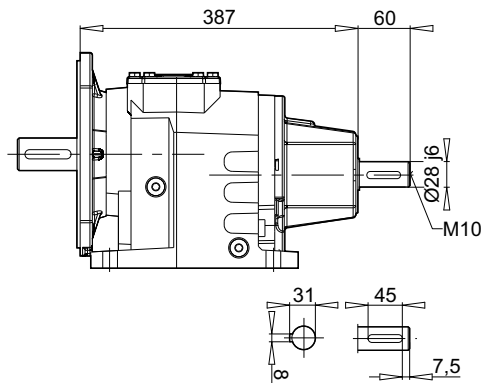
F - W



AF - PAM

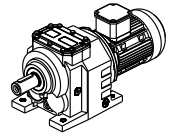


AF - W

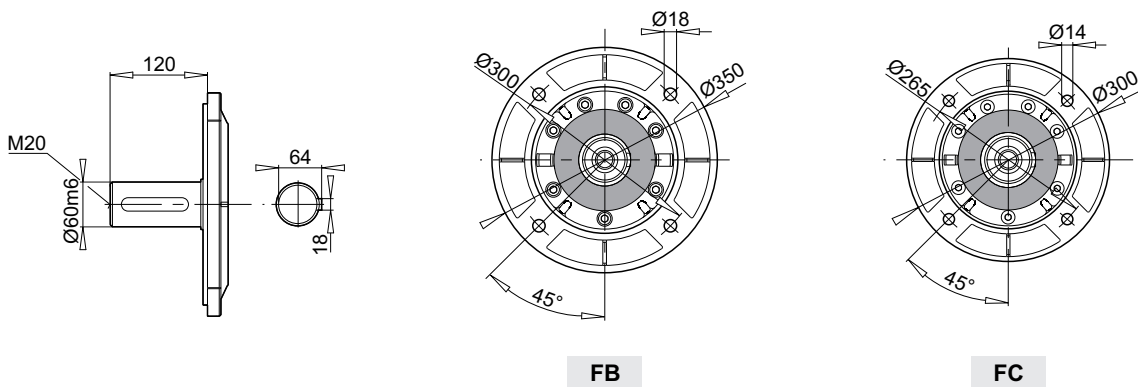
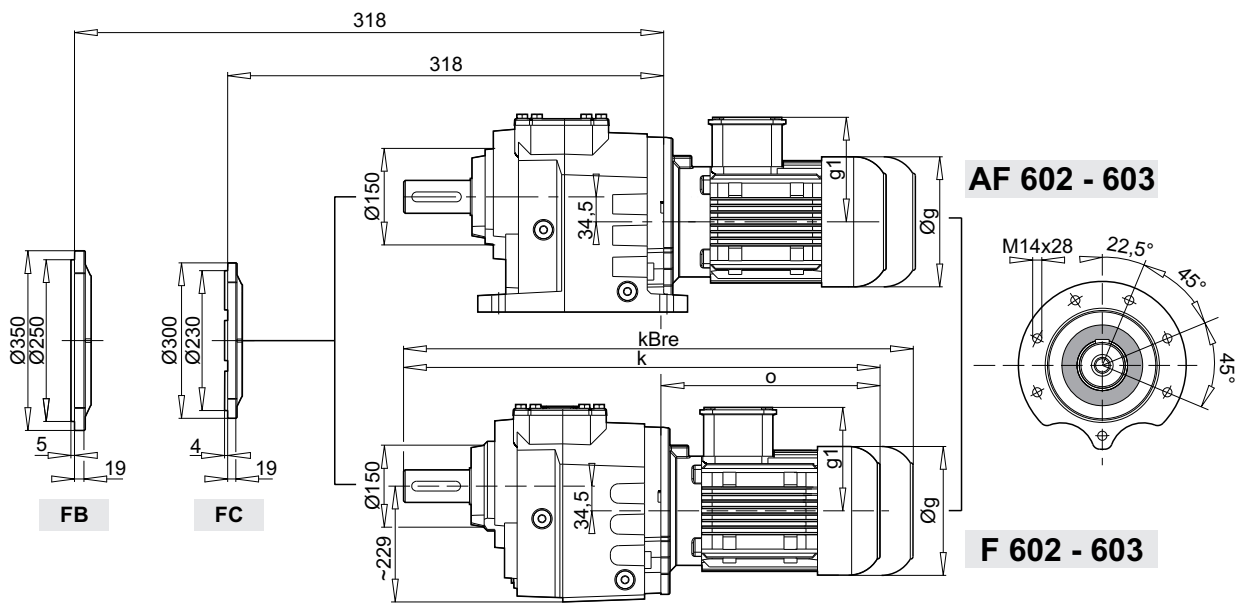
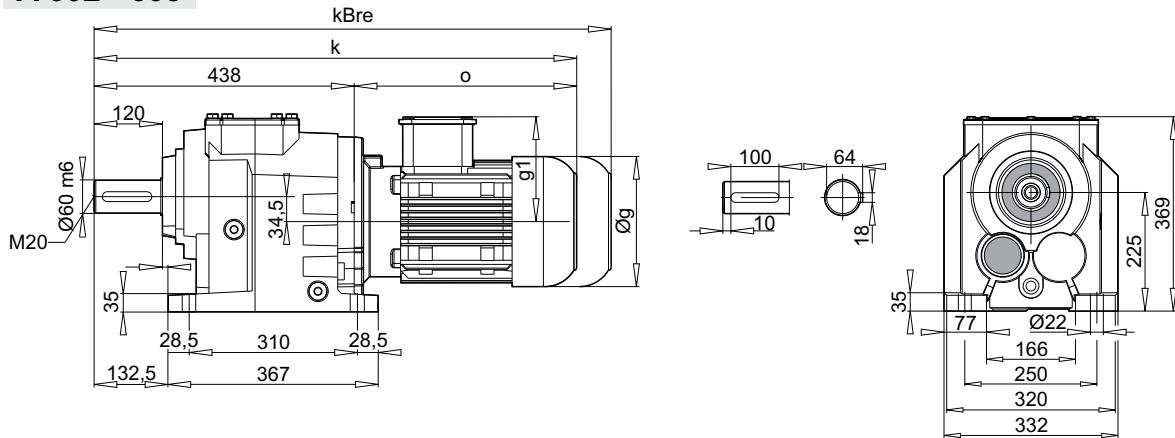


| | 80 | 90 | 100 | 112 | 132 | 160 | | | |
|-----------|------|------|------|------|------|------|--|--|--|
| a2 | 200 | 200 | 250 | 250 | 300 | 350 | | | |
| b2 | 130 | 130 | 180 | 180 | 230 | 250 | | | |
| d1 | 19 | 24 | 28 | 28 | 38 | 42 | | | |
| f2 | 5 | 5 | 5,5 | 5,5 | 5,5 | 7 | | | |
| L | 42 | 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 | | | |

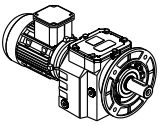
AIF 602 - 603



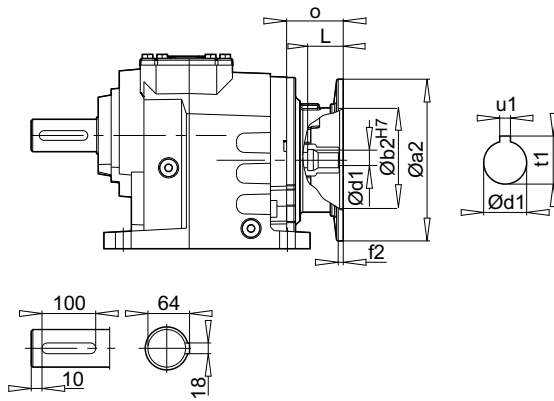
A 602 - 603



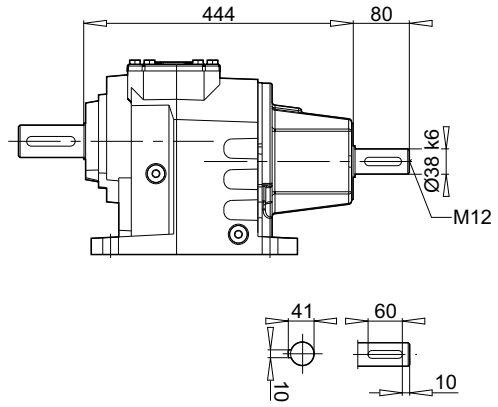
| | 90 L | 100 L | 112 M | 132 S | 132 M | | | |
|-------------|------|-------|-------|-------|-------|--|--|--|
| g | 193 | 217 | 232 | 279 | 279 | | | |
| g1 | 151 | 160 | 168 | 182 | 182 | | | |
| k | 741 | 764 | 818 | 824 | 859 | | | |
| kBre | 814 | 845 | 898 | 932 | 967 | | | |
| o | 303 | 326 | 380 | 386 | 421 | | | |



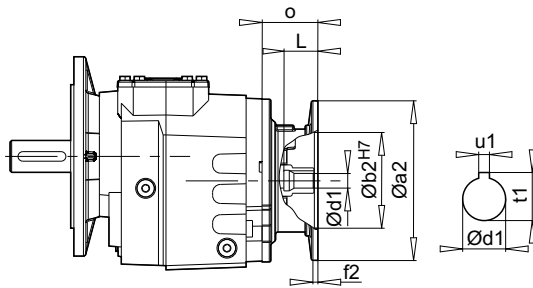
A - PAM



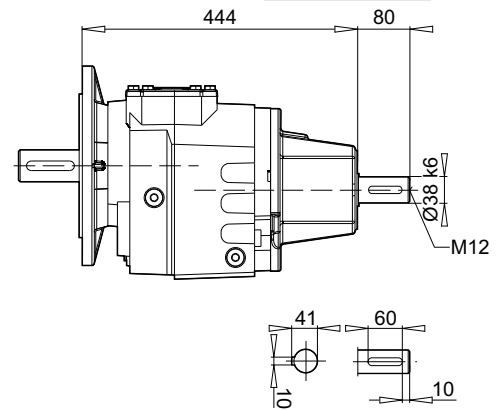
A - W



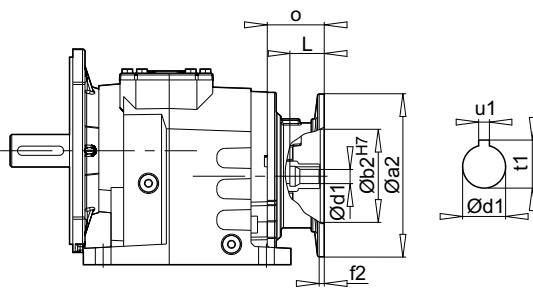
F - PAM



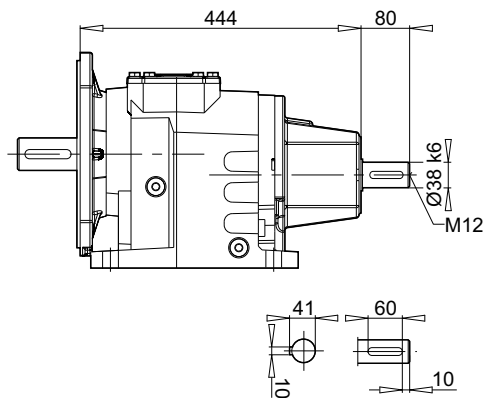
F - W



AF - PAM

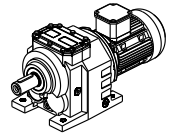


AF - W

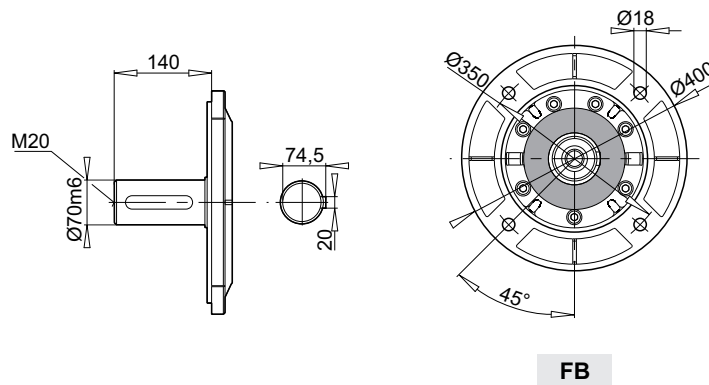
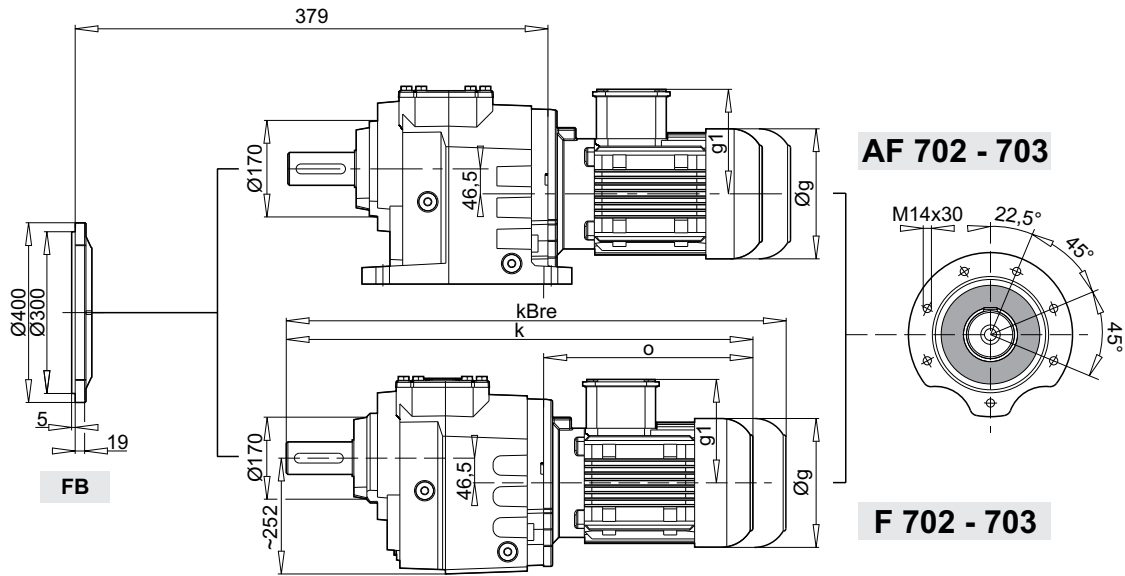
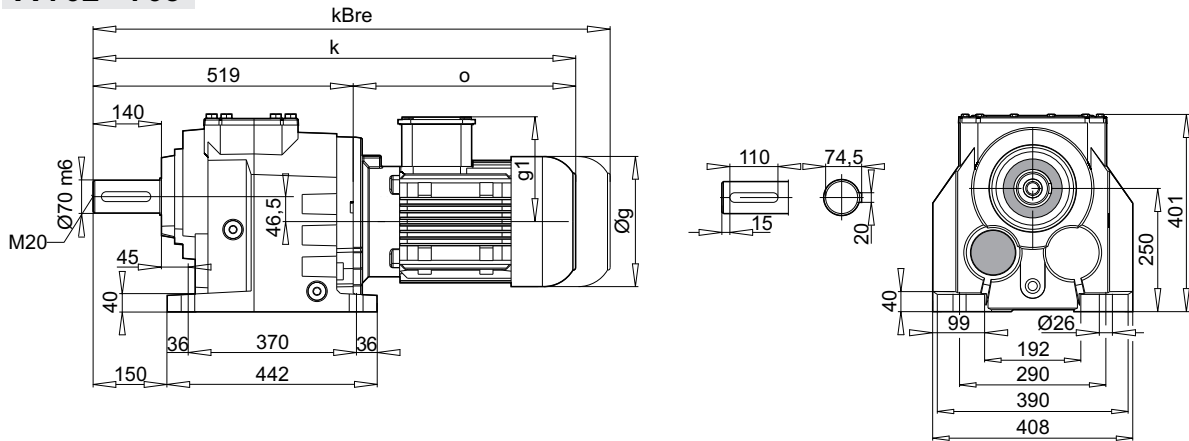


| | 90 | 100 | 112 | 132 | 160 | 180 | | | |
|-----------|------|------|------|------|------|------|--|--|--|
| a2 | 200 | 250 | 250 | 300 | 350 | 350 | | | |
| b2 | 130 | 180 | 180 | 230 | 250 | 250 | | | |
| d1 | 24 | 28 | 28 | 38 | 42 | 48 | | | |
| f2 | 5 | 5,5 | 5,5 | 5,5 | 7 | 7 | | | |
| L | 52 | 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 | | | |

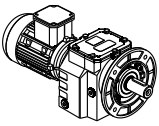
AIF 702 - 703



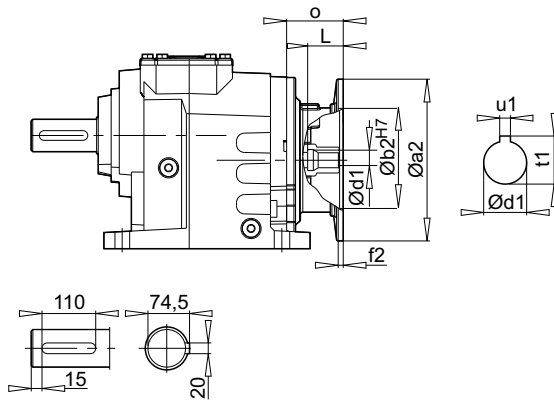
A 702 - 703



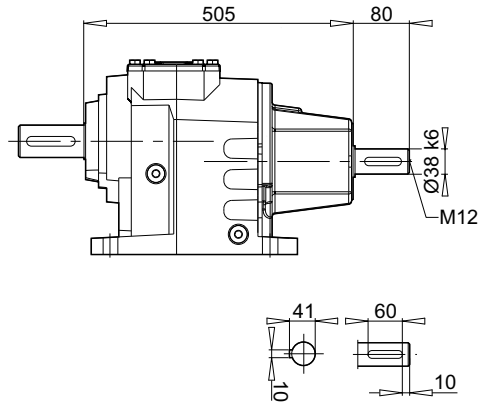
| | 100 L | 112 M | 132 S | 132 M | | | | |
|-------------|-------|-------|-------|-------|--|--|--|--|
| g | 217 | 232 | 279 | 279 | | | | |
| g1 | 160 | 168 | 182 | 182 | | | | |
| k | 845 | 899 | 905 | 940 | | | | |
| kBre | 926 | 979 | 1013 | 1048 | | | | |
| o | 326 | 380 | 386 | 421 | | | | |



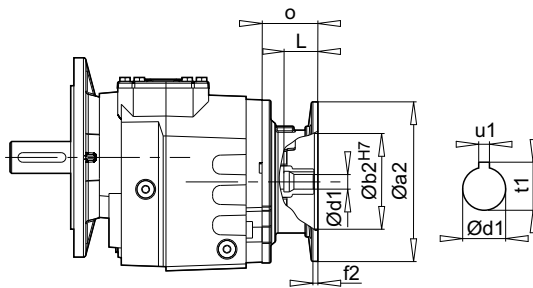
A - PAM



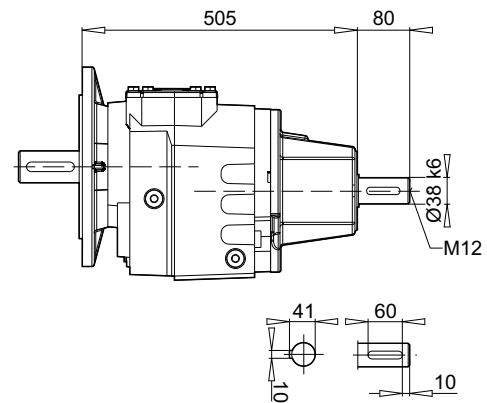
A - W



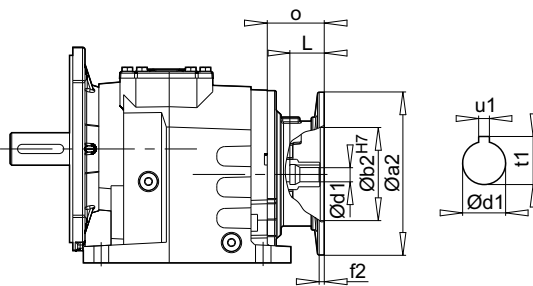
F - PAM



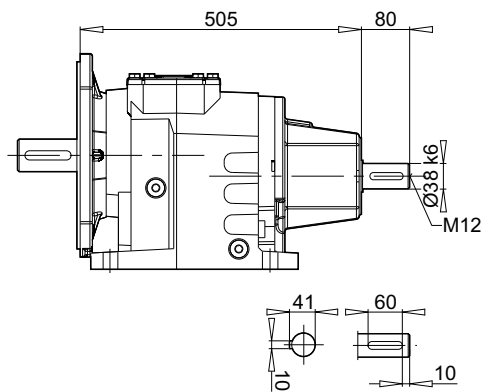
F - W



AF - PAM

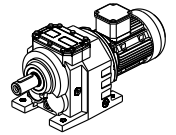


AF - W

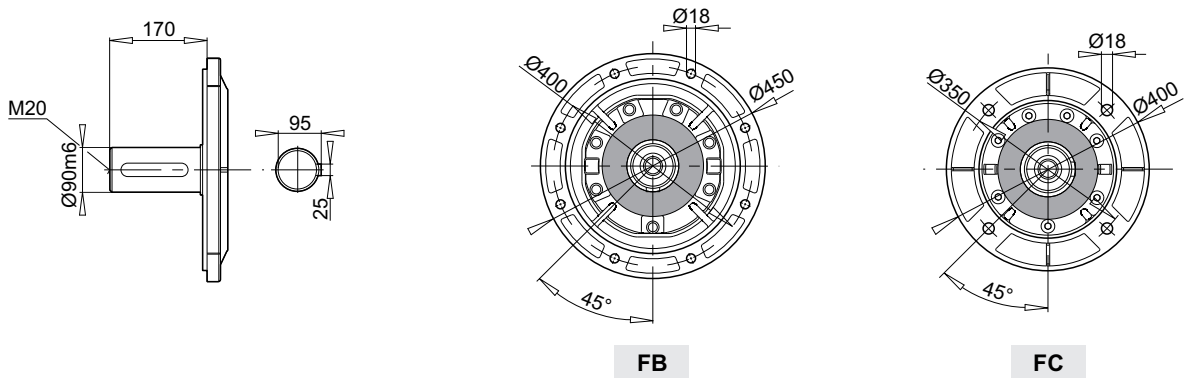
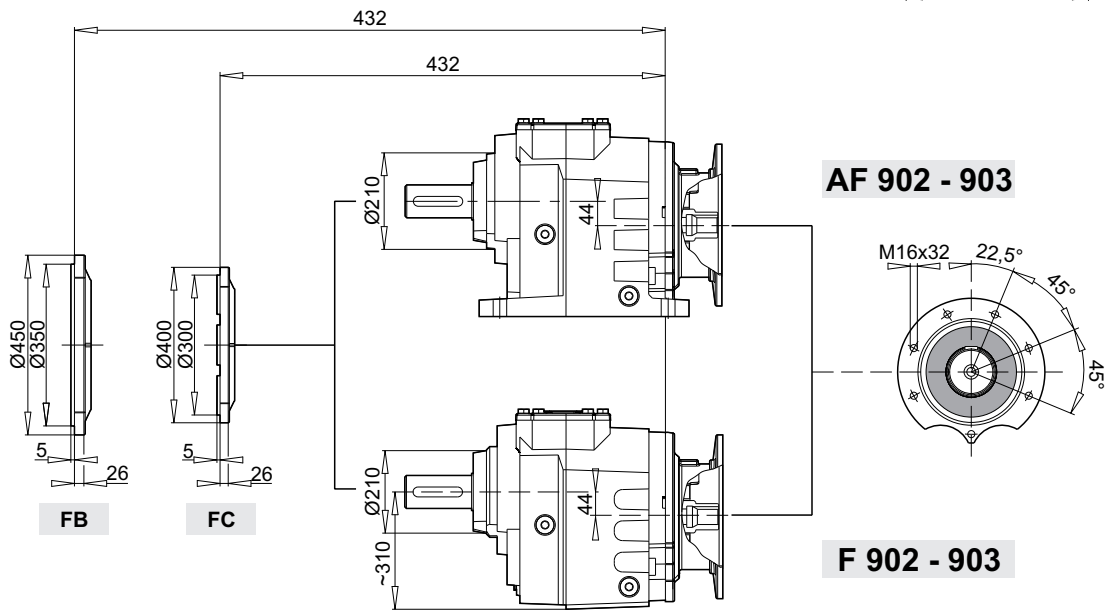
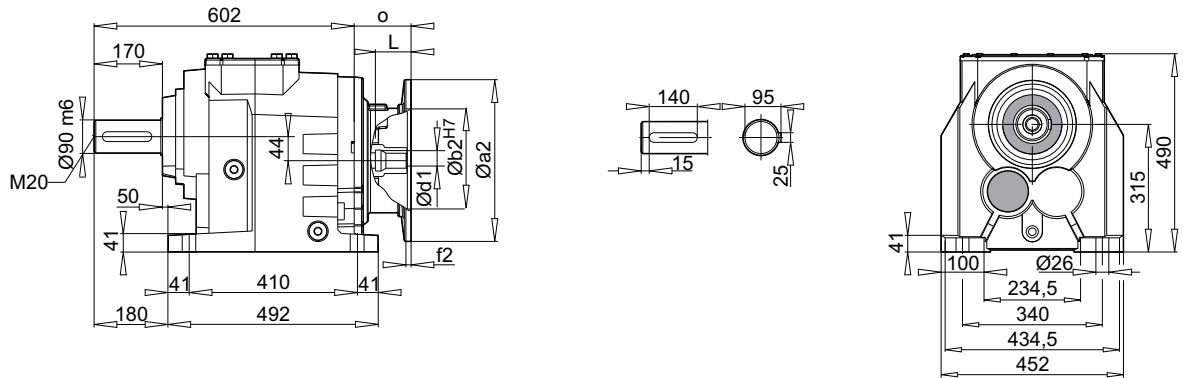


| | 100 | 112 | 132 | 160 | 180 | 200 | | |
|-----------|------|------|------|------|------|------|--|--|
| a2 | 250 | 250 | 300 | 350 | 350 | 400 | | |
| b2 | 180 | 180 | 230 | 250 | 250 | 300 | | |
| d1 | 28 | 28 | 38 | 42 | 48 | 55 | | |
| f2 | 5,5 | 5,5 | 5,5 | 7 | 7 | 7 | | |
| L | 62 | 62 | 82 | 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 | | |

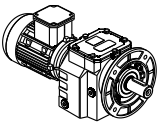
AIF 902 - 903



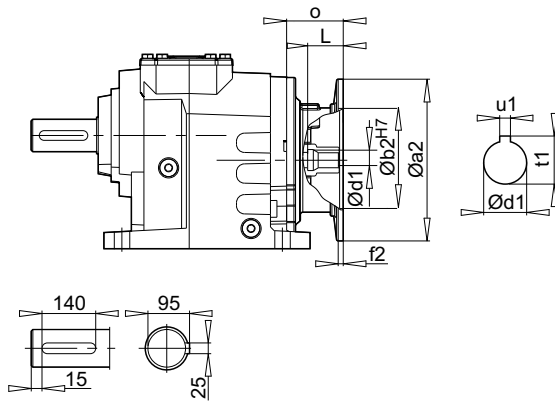
A 902 - 903



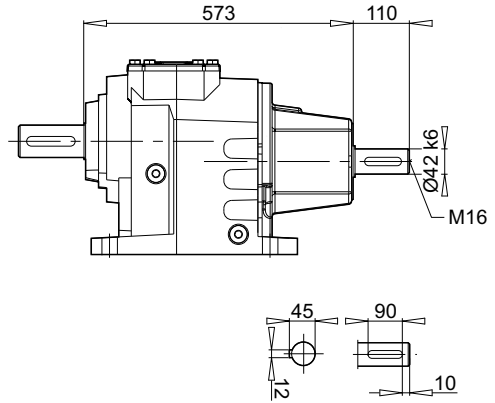
| | 132 | 160 | 180 | 200 | 225 | | | |
|-----------|------|------|------|------|------|--|--|--|
| a2 | 300 | 350 | 350 | 400 | 450 | | | |
| b2 | 230 | 250 | 250 | 300 | 350 | | | |
| d1 | 38 | 42 | 48 | 55 | 60 | | | |
| f2 | 5,5 | 7 | 7 | 7 | 7 | | | |
| L | 82 | 112 | 112 | 112 | 142 | | | |
| u1 | 10 | 12 | 14 | 16 | 18 | | | |
| t1 | 41,3 | 45,3 | 51,8 | 59,3 | 64,4 | | | |
| o | 76 | 124 | 124 | 161 | 161 | | | |



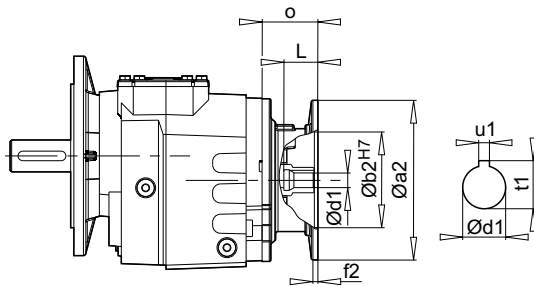
A - PAM



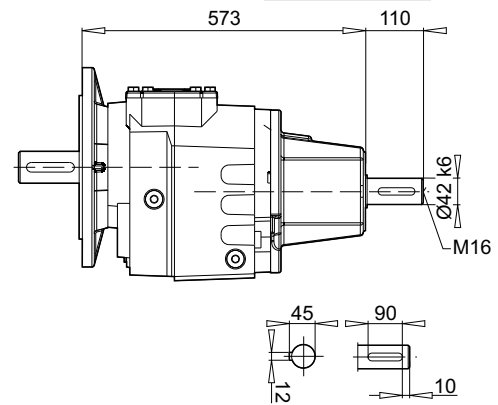
A - W



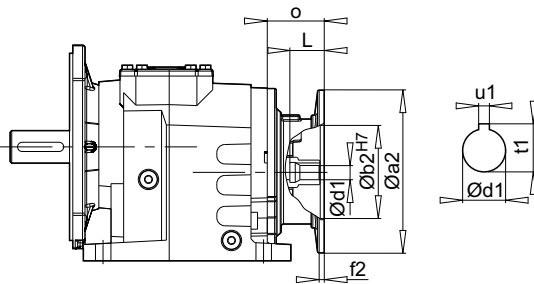
F - PAM



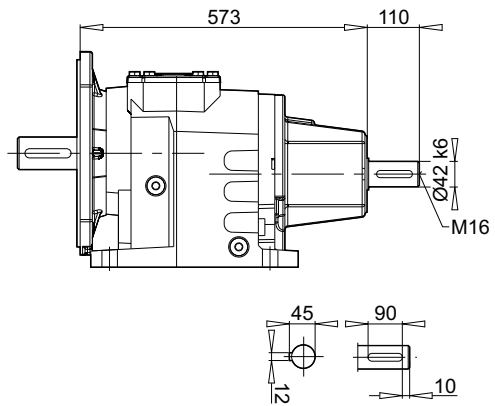
F - W



AF - PAM

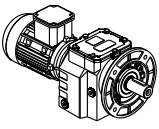


AF - W



| | 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 | | | |

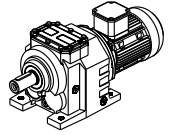
PGR[®]
Drive Technologies



W - PAM - IEC Adaptörü Seçim Tabloları
Selection Tables of W - PAM - IEC Adapters
Auswahltabelle von W - PAM - IEC Adapters
Tabella si Selezione di W - PAM - IEC Adattatore
Tableau de Sélection du W - PAM - IEC Adaptateur
Tabla de Selección de W - PAM - IEC Adaptador



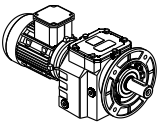
A\F 252 ... 902
A\F 253 ... 903



| Tip Type | i _{ges} | 4-pol. 50 Hz 1400rpm ⁻¹ 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] | FR2 [kN] | f _B ⇨ 27 - 45 | | | | | | | |
| A253 F253 W 49 + PAM - IEC 49 | 245.76 | 5.7 | 200 | 0.12 | 1.4 | 5.5 | 63 | 71 | | | | | | |
| | 197.21 | 7.1 | 200 | 0.15 | 1.4 | 5.5 | 63 | 71 | | | | | | |
| | 178.56 | 7.8 | 200 | 0.16 | 1.4 | 5.5 | 63 | 71 | | | | | | |
| | 143.29 | 9.8 | 200 | 0.20 | 1.4 | 5.5 | 63 | 71 | | | | | | |
| | 123.58 | 11.3 | 200 | 0.24 | 1.3 | 5.5 | 63 | 71 | 80 | 90 | | | | |
| | 108.02 | 13.0 | 200 | 0.27 | 1.3 | 5.5 | 63 | 71 | | | | | | |
| | 100.12 | 14.0 | 200 | 0.29 | 1.3 | 5.5 | 63 | 71 | 80 | 90 | | | | |
| | 74.76 | 18.7 | 200 | 0.39 | 1.3 | 5.5 | 63 | 71 | 80 | 90 | | | | |
| | 66.56 | 21.0 | 200 | 0.44 | 1.3 | 5.5 | 63 | 71 | 80 | 90 | | | | |
| | 53.41 | 26.2 | 200 | 0.55 | 1.3 | 5.5 | 63 | 71 | 80 | 90 | | | | |
| A252 F252 W 49 + PAM - IEC 49 | 47.93 | 29.2 | 200 | 0.61 | 1.3 | 5.5 | 71 | 80 | 90 | | | | | |
| | 42.00 | 33.3 | 200 | 0.70 | 1.2 | 5.5 | 71 | 80 | 90 | | | | | |
| | 38.46 | 36.4 | 200 | 0.76 | 1.2 | 5.5 | 71 | 80 | 90 | | | | | |
| | 33.38 | 41.9 | 200 | 0.88 | 1.2 | 5.5 | 71 | 80 | 90 | | | | | |
| | 30.15 | 46.4 | 200 | 0.97 | 1.2 | 5.3 | 71 | 80 | 90 | | | | | |
| | 26.79 | 52.3 | 200 | 1.09 | 1.1 | 5.0 | 71 | 80 | 90 | | | | | |
| | 24.19 | 57.9 | 200 | 1.21 | 1.1 | 4.8 | 71 | 80 | 90 | | | | | |
| | 23.04 | 60.8 | 200 | 1.27 | 1.1 | 4.7 | 71 | 80 | 90 | 100 | 112 | | | |
| | 20.19 | 69.3 | 200 | 1.45 | 1.1 | 4.4 | 71 | 80 | 90 | | | | | |
| | 18.49 | 75.7 | 170 | 1.35 | 1.0 | 4.2 | 71 | 80 | 90 | 100 | 112 | | | |
| | 17.05 | 82.1 | 190 | 1.63 | 1.0 | 4.1 | 71 | 80 | 90 | 100 | 112 | | | |
| | 14.91 | 93.9 | 170 | 1.67 | 1.0 | 4.1 | 71 | 80 | 90 | 100 | 112 | | | |
| | 13.94 | 100.4 | 170 | 1.79 | 1.0 | 3.9 | 71 | 80 | 90 | 100 | 112 | | | |
| | 11.97 | 117.0 | 145 | 1.78 | 1.0 | 3.9 | 71 | 80 | 90 | 100 | 112 | | | |
| | 10.32 | 135.7 | 140 | 1.99 | 0.9 | 3.7 | 71 | 80 | 90 | 100 | 112 | | | |
| | 9.02 | 155.2 | 130 | 2.11 | 0.9 | 3.6 | 71 | 80 | 90 | 100 | 112 | | | |
| | 7.93 | 176.5 | 125 | 2.31 | 0.8 | 3.4 | 71 | 80 | 90 | 100 | 112 | | | |
| | 6.36 | 220.0 | 105 | 2.42 | 0.8 | 3.3 | 71 | 80 | 90 | 100 | 112 | | | |
| 4.80 | 291.8 | 95 | 2.90 | 0.7 | 3.0 | 71 | 80 | 90 | 100 | 112 | | | | |

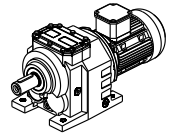
PAM - IEC bağlantısı yoktur - No PAM - IEC assembling on empty fields

63 PAM - IEC bağlantısı yapılır - PAM - IEC assembling available on numbered fields



| Tip Type | i _{ges} | 4-pol. 50 Hz 1400rpm ⁻¹ 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] | FR2 [kN] | f _B ⇨ 27 - 45 | | | | | | | |
| A303 F303 W 51 + PAM - IEC 51 | 282.17 | 5.0 | 300 | 0.16 | 1.4 | 6.6 | 63 | 71 | | | | | | |
| | 227.56 | 6.2 | 300 | 0.19 | 1.4 | 6.6 | 63 | 71 | | | | | | |
| | 205.01 | 6.8 | 300 | 0.21 | 1.4 | 6.6 | 63 | 71 | | | | | | |
| | 165.33 | 8.5 | 300 | 0.27 | 1.4 | 6.6 | 63 | 71 | | | | | | |
| | 141.89 | 9.9 | 300 | 0.31 | 1.4 | 6.6 | 63 | 71 | 80 | 90 | | | | |
| | 125.65 | 11.1 | 300 | 0.35 | 1.3 | 6.6 | 63 | 71 | | | | | | |
| | 114.42 | 12.2 | 300 | 0.38 | 1.3 | 6.6 | 63 | 71 | 80 | 90 | | | | |
| | 86.96 | 16.1 | 300 | 0.51 | 1.3 | 6.6 | 63 | 71 | 80 | 90 | | | | |
| | 76.42 | 18.3 | 300 | 0.58 | 1.3 | 6.6 | 63 | 71 | 80 | 90 | | | | |
| | 61.63 | 22.7 | 300 | 0.71 | 1.3 | 6.6 | 63 | 71 | 80 | 90 | | | | |
| A302 F302 W 51 + PAM - IEC 51 | 55.03 | 25.4 | 280 | 0.75 | 1.3 | 6.6 | 71 | 80 | 90 | | | | | |
| | 48.22 | 29.0 | 280 | 0.85 | 1.2 | 6.6 | 71 | 80 | 90 | | | | | |
| | 44.38 | 31.5 | 280 | 0.93 | 1.2 | 6.6 | 71 | 80 | 90 | | | | | |
| | 38.33 | 36.5 | 280 | 1.07 | 1.2 | 6.6 | 71 | 80 | 90 | | | | | |
| | 34.62 | 40.4 | 280 | 1.19 | 1.2 | 6.6 | 71 | 80 | 90 | | | | | |
| | 30.91 | 45.3 | 280 | 1.33 | 1.1 | 6.6 | 71 | 80 | 90 | | | | | |
| | 27.92 | 50.1 | 280 | 1.47 | 1.1 | 6.6 | 71 | 80 | 90 | | | | | |
| | 26.45 | 52.9 | 260 | 1.44 | 1.1 | 6.6 | 71 | 80 | 90 | 100 | 112 | | | |
| | 23.49 | 59.6 | 260 | 1.62 | 1.0 | 6.3 | 71 | 80 | 90 | | | | | |
| | 21.33 | 65.6 | 250 | 1.72 | 1.0 | 6.1 | 71 | 80 | 90 | 100 | 112 | | | |
| | 19.29 | 72.6 | 250 | 1.90 | 1.0 | 5.8 | 71 | 80 | 90 | 100 | 112 | | | |
| | 16.21 | 86.3 | 250 | 2.26 | 0.9 | 5.4 | 71 | 80 | 90 | 100 | 112 | | | |
| | 13.81 | 101.4 | 250 | 2.65 | 0.8 | 5.0 | 71 | 80 | 90 | 100 | 112 | | | |
| | 12.00 | 116.7 | 250 | 3.05 | 0.7 | 4.7 | 71 | 80 | 90 | 100 | 112 | | | |
| | 10.50 | 133.4 | 240 | 3.35 | 0.6 | 4.5 | 71 | 80 | 90 | 100 | 112 | | | |
| | 9.11 | 153.7 | 210 | 3.38 | 0.6 | 4.4 | 71 | 80 | 90 | 100 | 112 | | | |
| 7.34 | 190.6 | 160 | 3.19 | 0.7 | 4.4 | 71 | 80 | 90 | 100 | 112 | | | | |
| 5.58 | 250.8 | 160 | 4.20 | 0.4 | 3.9 | 71 | 80 | 90 | 100 | 112 | | | | |

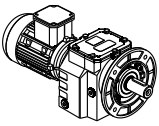
- PAM - IEC bağlantısı yoktur - No PAM - IEC assembling on empty fields
- 63 PAM - IEC bağlantısı yapılır - PAM - IEC assembling available on numbered fields



| Tip Type | i _{ges} | 4-pol. 50 Hz 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] | FR2 [kN] | f _B ⇨ 27 - 45 | | | | | | | |
| A353 F353 W 53 + PAM - IEC 53 | 268.00 | 5.2 | 500 | 0.27 | 1.4 | 8.0 | 63 | 71 | | | | | | |
| | 216.67 | 6.5 | 500 | 0.34 | 1.3 | 8.0 | 63 | 71 | | | | | | |
| | 194.72 | 7.2 | 500 | 0.38 | 1.3 | 8.0 | 63 | 71 | | | | | | |
| | 157.42 | 8.9 | 500 | 0.47 | 1.3 | 8.0 | 63 | 71 | | | | | | |
| | 134.76 | 10.4 | 500 | 0.54 | 1.3 | 8.0 | 63 | 71 | 80 | 90 | | | | |
| | 108.95 | 12.9 | 500 | 0.67 | 1.3 | 8.0 | 63 | 71 | 80 | 90 | | | | |
| | 90.51 | 15.5 | 500 | 0.81 | 1.3 | 8.0 | 63 | 71 | 80 | 90 | | | | |
| | 72.58 | 19.3 | 500 | 1.01 | 1.2 | 8.0 | 63 | 71 | 80 | 90 | | | | |
| | 58.68 | 23.9 | 500 | 1.25 | 1.2 | 8.0 | 63 | 71 | 80 | 90 | | | | |
| | | | | | | | | | | | | | | |
| A352 F352 W 53 + PAM - IEC 53 | 56.95 | 24.6 | 490 | 1.26 | 1.2 | 8.0 | 71 | 80 | 90 | | | | | |
| | 49.88 | 28.1 | 490 | 1.44 | 1.1 | 8.0 | 71 | 80 | 90 | | | | | |
| | 46.04 | 30.4 | 490 | 1.56 | 1.1 | 8.0 | 71 | 80 | 90 | | | | | |
| | 39.59 | 35.4 | 490 | 1.81 | 1.1 | 8.0 | 71 | 80 | 90 | 100 | 112 | | | |
| | 33.50 | 41.8 | 490 | 2.14 | 1.0 | 8.0 | 71 | 80 | 90 | | | | | |
| | 32.01 | 43.7 | 490 | 2.24 | 1.0 | 8.0 | 71 | 80 | 90 | 100 | 112 | | | |
| | 28.89 | 48.5 | 490 | 2.49 | 1.0 | 7.9 | 71 | 80 | 90 | 100 | 112 | | | |
| | 26.59 | 52.6 | 490 | 2.70 | 0.9 | 7.6 | 71 | 80 | 90 | 100 | 112 | | | |
| | 25.13 | 55.7 | 470 | 2.74 | 0.9 | 7.5 | 71 | 80 | 90 | 100 | 112 | | | |
| | 22.03 | 63.6 | 470 | 3.13 | 0.9 | 7.1 | 71 | 80 | 90 | 100 | 112 | | | |
| | 20.31 | 68.9 | 460 | 3.32 | 0.8 | 6.9 | 71 | 80 | 90 | 100 | 112 | | | |
| | 18.30 | 76.5 | 460 | 3.68 | 0.8 | 6.5 | 71 | 80 | 90 | 100 | 112 | | | |
| | 16.88 | 83.0 | 450 | 3.91 | 0.7 | 6.3 | 71 | 80 | 90 | 100 | 112 | | | |
| | 14.52 | 96.4 | 430 | 4.34 | 0.6 | 6.0 | | 80 | 90 | 100 | 112 | | | |
| | 11.74 | 119.3 | 390 | 4.87 | 0.6 | 5.7 | | 80 | 90 | 100 | 112 | | | |
| | 9.75 | 143.6 | 370 | 5.56 | 0.4 | 5.3 | | 80 | 90 | 100 | 112 | | | |
| | 8.73 | 160.4 | 340 | 5.71 | 0.4 | 5.2 | | 80 | 90 | 100 | 112 | | | |
| | 7.06 | 198.4 | 290 | 6.02 | 0.3 | 5.1 | | 80 | 90 | 100 | 112 | | | |
| 5.86 | 238.8 | 260 | 6.50 | 0.3 | 4.8 | | 80 | 90 | 100 | 112 | | | | |

PAM - IEC bağlantısı yoktur - No PAM - IEC assembling on empty fields

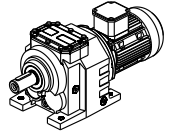
63 PAM - IEC bağlantısı yapılır - PAM - IEC assembling available on numbered fields



| Tip Type | i_{ges} | 4-pol. 50 Hz 1400rpm ⁻¹ n_2 [min ⁻¹] | M_{amax} $f_B=1$ 4 - pol. [Nm] | P_{1max} W $f_B \geq 1$ | | | PAM - IEC $f_B \Rightarrow$ 27 - 45 | | | | | | | | | |
|--|--|--|---|-----------------------------|-------------|-------------|--|-----|-----|-----|-----|--|--|--|--|--|
| | | | | 4 - pol. 1400rpm [kW] | FR1 [kN] | FR2 [kN] | | | | | | | | | | |
| A403 F403 W 55 + PAM - IEC 55 | 267.75 | 5.2 | 850 | 0.47 | 2.8 | 12.0 | 71 | 80 | 90 | | | | | | | |
| | 234.50 | 6.0 | 850 | 0.53 | 2.8 | 12.0 | 71 | 80 | 90 | | | | | | | |
| | 215.01 | 6.5 | 850 | 0.58 | 2.8 | 12.0 | 71 | 80 | 90 | | | | | | | |
| | 186.14 | 7.5 | 850 | 0.67 | 2.7 | 12.0 | 71 | 80 | 90 | 100 | 112 | | | | | |
| | 170.55 | 8.2 | 850 | 0.73 | 2.7 | 12.0 | 71 | 80 | 90 | | | | | | | |
| | 149.47 | 9.4 | 850 | 0.83 | 2.7 | 12.0 | 71 | 80 | 90 | 100 | 112 | | | | | |
| | 135.37 | 10.3 | 850 | 0.92 | 2.7 | 12.0 | 71 | 80 | 90 | 100 | 112 | | | | | |
| | 118.13 | 11.9 | 850 | 1.05 | 2.7 | 12.0 | 71 | 80 | 90 | 100 | 112 | | | | | |
| | 94.86 | 14.8 | 850 | 1.31 | 2.7 | 12.0 | 71 | 80 | 90 | 100 | 112 | | | | | |
| | 85.91 | 16.3 | 850 | 1.45 | 2.6 | 12.0 | 71 | 80 | 90 | 100 | 112 | | | | | |
| | 68.25 | 20.5 | 850 | 1.83 | 2.6 | 12.0 | | 80 | 90 | 100 | 112 | | | | | |
| | 54.81 | 25.5 | 850 | 2.27 | 2.5 | 12.0 | | 80 | 90 | 100 | 112 | | | | | |
| | 49.64 | 28.2 | 850 | 2.51 | 2.5 | 12.0 | | 80 | 90 | 100 | 112 | | | | | |
| | A402 F402 W 55 + PAM - IEC 55 | 45.38 | 30.9 | 850 | 2.75 | 2.4 | 12.0 | 80 | 90 | 100 | 112 | | | | | |
| | | 39.72 | 35.2 | 850 | 3.14 | 2.4 | 12.0 | 80 | 90 | 100 | 112 | | | | | |
| 36.44 | | 38.4 | 800 | 3.22 | 2.4 | 12.0 | 80 | 90 | 100 | 112 | | | | | | |
| 31.50 | | 44.4 | 850 | 3.96 | 2.3 | 12.0 | 80 | 90 | 100 | 112 | 132 | | | | | |
| 28.89 | | 48.5 | 800 | 4.06 | 2.3 | 12.0 | 80 | 90 | 100 | 112 | | | | | | |
| 25.30 | | 55.3 | 850 | 4.93 | 2.1 | 12.0 | 80 | 90 | 100 | 112 | 132 | | | | | |
| 22.91 | | 61.1 | 850 | 5.44 | 2.1 | 12.0 | 80 | 90 | 100 | 112 | 132 | | | | | |
| 19.94 | | 70.2 | 850 | 6.25 | 1.9 | 11.7 | 80 | 90 | 100 | 112 | 132 | | | | | |
| 17.37 | | 80.6 | 830 | 7.00 | 1.8 | 11.1 | 80 | 90 | 100 | 112 | 132 | | | | | |
| 16.01 | | 87.4 | 800 | 7.33 | 1.8 | 10.8 | 80 | 90 | 100 | 112 | 132 | | | | | |
| 14.50 | | 96.6 | 700 | 7.08 | 1.8 | 10.9 | 80 | 90 | 100 | 112 | 132 | | | | | |
| 12.44 | | 112.5 | 700 | 8.25 | 1.7 | 10.2 | 80 | 90 | 100 | 112 | 132 | | | | | |
| 11.46 | | 122.2 | 650 | 8.32 | 1.7 | 10.1 | 80 | 90 | 100 | 112 | 132 | | | | | |
| 9.20 | | 152.2 | 600 | 9.56 | 1.5 | 9.4 | 80 | 90 | 100 | 112 | 132 | | | | | |
| 8.33 | | 168.0 | 600 | 10.55 | 1.3 | 9.0 | 80 | 90 | 100 | 112 | 132 | | | | | |
| 7.22 | | 193.9 | 550 | 11.17 | 1.3 | 8.7 | 80 | 90 | 100 | 112 | 132 | | | | | |
| 5.80 | | 241.5 | 550 | 13.91 | 0.9 | 7.9 | 80 | 90 | 100 | 112 | 132 | | | | | |
| 5.25 | 266.7 | 500 | 13.96 | 0.9 | 7.8 | 80 | 90 | 100 | 112 | 132 | | | | | | |

PAM - IEC bağlantısı yoktur - No PAM - IEC assembling on empty fields

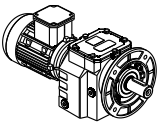
63 PAM - IEC bağlantısı yapılır - PAM - IEC assembling available on numbered fields



| Tip Type | i _{ges} | 4-pol. 50 Hz 1400rpm ⁻¹ 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] | FR2 [kN] | f _B ⇨ 27 - 45 | | | | | | | |
| A503 F503 W 57 + PAM - IEC 57 | 222.59 | 6.3 | 1800 | 1.19 | 2.9 | 18.0 | 80 | 90 | | | | | | |
| | 194.86 | 7.2 | 1800 | 1.35 | 2.9 | 18.0 | 80 | 90 | | | | | | |
| | 178.98 | 7.8 | 1800 | 1.47 | 2.8 | 18.0 | 80 | 90 | | | | | | |
| | 162.21 | 8.6 | 1800 | 1.63 | 2.8 | 18.0 | 80 | 90 | | | | | | |
| | 154.52 | 9.1 | 1800 | 1.71 | 2.8 | 18.0 | 80 | 90 | 100 | 112 | 132 | | | |
| | 142.00 | 9.9 | 1800 | 1.86 | 2.8 | 18.0 | 80 | 90 | 100 | 112 | | | | |
| | 124.25 | 11.3 | 1800 | 2.12 | 2.8 | 18.0 | 80 | 90 | 100 | 112 | 132 | | | |
| | 112.61 | 12.4 | 1800 | 2.34 | 2.7 | 18.0 | 80 | 90 | 100 | 112 | 132 | | | |
| | 97.80 | 14.3 | 1800 | 2.70 | 2.7 | 18.0 | 80 | 90 | 100 | 112 | 132 | | | |
| | 85.33 | 16.4 | 1800 | 3.09 | 2.7 | 18.0 | 80 | 90 | 100 | 112 | 132 | | | |
| | 78.64 | 17.8 | 1800 | 3.36 | 2.6 | 18.0 | 80 | 90 | 100 | 112 | 132 | | | |
| | 71.27 | 19.6 | 1800 | 3.70 | 2.6 | 18.0 | 80 | 90 | 100 | 112 | 132 | | | |
| | 56.21 | 24.9 | 1600 | 4.17 | 2.5 | 18.0 | 80 | 90 | 100 | 112 | 132 | | | |
| | A502 F502 W 57 + PAM - IEC 57 | 48.77 | 28.7 | 1600 | 4.81 | 2.4 | 18.0 | 80 | 90 | 100 | 112 | 132 | | |
| 43.32 | | 32.3 | 1600 | 5.41 | 2.4 | 18.0 | 80 | 90 | 100 | 112 | 132 | | | |
| 39.21 | | 35.7 | 1600 | 5.98 | 2.3 | 17.7 | 80 | 90 | 100 | 112 | 132 | | | |
| 34.83 | | 40.2 | 1600 | 6.73 | 2.2 | 16.7 | 80 | 90 | 100 | 112 | 132 | | | |
| 31.57 | | 44.3 | 1600 | 7.43 | 2.1 | 16.0 | 80 | 90 | 100 | 112 | 132 | | | |
| 28.26 | | 49.5 | 1600 | 8.30 | 2.0 | 15.1 | 80 | 90 | 100 | 112 | 132 | | | |
| 26.98 | | 51.9 | 1600 | 8.69 | 2.0 | 14.8 | | | 100 | 112 | 132 | 160 | | |
| 23.14 | | 60.5 | 1600 | 10.14 | 1.8 | 13.7 | | | 100 | 112 | 132 | 160 | | |
| 21.69 | | 64.5 | 1600 | 10.81 | 1.7 | 13.2 | | | 100 | 112 | 132 | 160 | | |
| 19.66 | | 71.2 | 1600 | 11.93 | 1.6 | 12.6 | | | 100 | 112 | 132 | 160 | | |
| 18.81 | | 74.4 | 1500 | 11.69 | 1.6 | 12.7 | | | 100 | 112 | 132 | 160 | | |
| 16.86 | | 83.0 | 1500 | 13.04 | 1.5 | 12.1 | | | 100 | 112 | 132 | 160 | | |
| 15.13 | | 92.6 | 1500 | 14.54 | 1.3 | 11.4 | | | 100 | 112 | 132 | 160 | | |
| 13.71 | | 102.1 | 1400 | 14.97 | 1.3 | 11.3 | | | 100 | 112 | 132 | 160 | | |
| 11.20 | | 125.0 | 1100 | 14.39 | 1.3 | 11.5 | | | | | 132 | 160 | | |
| 9.01 | | 155.4 | 900 | 14.65 | 1.3 | 11.2 | | | | | 132 | 160 | | |
| 8.16 | | 171.5 | 800 | 14.36 | 1.3 | 11.2 | | | | | 132 | 160 | | |
| 7.55 | | 185.5 | 800 | 15.54 | 1.2 | 10.8 | | | | | 132 | 160 | | |
| 6.07 | | 230.6 | 700 | 16.91 | 1.0 | 10.3 | | | | | 132 | 160 | | |
| 5.50 | | 254.5 | 700 | 18.65 | 0.8 | 9.8 | | | | | 132 | 160 | | |

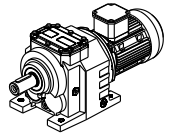
PAM - IEC bağlantısı yoktur - No PAM - IEC assembling on empty fields

63 PAM - IEC bağlantısı yapılır - PAM - IEC assembling available on numbered fields



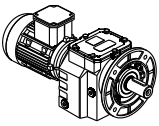
| Tip Type | i_{ges} | 4-pol. 50 Hz 1400rpm ⁻¹ n_2 [min ⁻¹] | M_{amax} $f_B=1$ 4 - pol. [Nm] | P_{1max} W $f_B \geq 1$ | | | PAM - IEC | | | | | | | | |
|--|--|--|---|-----------------------------|-------------|-------------|---------------------------|-----|-----|-----|-----|-----|--|--|--|
| | | | | 4 - pol. 1400rpm [kW] | FR1 [kN] | FR2 [kN] | $f_B \Rightarrow$ 27 - 45 | | | | | | | | |
| A603 F603 W 59 + PAM - IEC 59 | 242.67 | 5.8 | 3600 | 2.17 | 4.0 | 22.0 | 90 | 100 | 112 | 132 | | | | | |
| | 215.56 | 6.5 | 3500 | 2.38 | 4.0 | 22.0 | 90 | 100 | 112 | 132 | | | | | |
| | 194.31 | 7.2 | 3500 | 2.64 | 4.0 | 22.0 | 90 | 100 | 112 | 132 | | | | | |
| | 181.13 | 7.7 | 3500 | 2.83 | 4.0 | 22.0 | 90 | 100 | 112 | 132 | | | | | |
| | 160.90 | 8.7 | 3500 | 3.19 | 3.9 | 22.0 | 90 | 100 | 112 | 132 | | | | | |
| | 143.57 | 9.8 | 3500 | 3.57 | 3.9 | 22.0 | 90 | 100 | 112 | 132 | | | | | |
| | 134.25 | 10.4 | 3500 | 3.82 | 3.9 | 22.0 | | 100 | 112 | 132 | 160 | | | | |
| | 121.02 | 11.6 | 3500 | 4.24 | 3.9 | 22.0 | | 100 | 112 | 132 | 160 | | | | |
| | 100.21 | 14.0 | 3500 | 5.12 | 3.9 | 22.0 | | 100 | 112 | 132 | 160 | | | | |
| | 93.60 | 15.0 | 3500 | 5.48 | 3.8 | 22.0 | | 100 | 112 | 132 | 160 | | | | |
| | 84.37 | 16.6 | 3500 | 6.08 | 3.8 | 22.0 | | 100 | 112 | 132 | 160 | | | | |
| | 79.98 | 17.5 | 3500 | 6.42 | 3.8 | 22.0 | | 100 | 112 | 132 | 160 | | | | |
| | 69.87 | 20.0 | 3500 | 7.34 | 3.7 | 22.0 | | 100 | 112 | 132 | 160 | | | | |
| | 55.75 | 25.1 | 3500 | 9.20 | 3.7 | 22.0 | | | | | 132 | 160 | | | |
| | A602 F602 W 59 + PAM - IEC 59 | 50.91 | 27.5 | 3300 | 9.50 | 3.6 | 22.0 | 100 | 112 | 132 | | | | | |
| 45.27 | | 30.9 | 3300 | 10.69 | 3.6 | 22.0 | 100 | 112 | 132 | 160 | | | | | |
| 40.81 | | 34.3 | 3300 | 11.85 | 3.5 | 21.7 | 100 | 112 | 132 | 160 | | | | | |
| 38.00 | | 36.8 | 2800 | 10.80 | 3.6 | 22.0 | 100 | 112 | 132 | | | | | | |
| 33.79 | | 41.4 | 3200 | 13.88 | 3.4 | 20.0 | 100 | 112 | 132 | 160 | | | | | |
| 30.35 | | 46.1 | 3200 | 15.46 | 3.4 | 18.9 | 100 | 112 | 132 | 160 | | | | | |
| 28.36 | | 49.4 | 3300 | 17.06 | 3.3 | 17.8 | 100 | 112 | 132 | 160 | 180 | | | | |
| 25.57 | | 54.8 | 3300 | 18.92 | 3.2 | 16.8 | 100 | 112 | 132 | 160 | 180 | | | | |
| 23.66 | | 59.2 | 3300 | 20.45 | 3.1 | 16.1 | 100 | 112 | 132 | 160 | 180 | | | | |
| 21.17 | | 66.1 | 3200 | 22.16 | 3.1 | 15.4 | 100 | 112 | 132 | 160 | 180 | | | | |
| 19.59 | | 71.5 | 3200 | 23.94 | 3.0 | 14.7 | 100 | 112 | 132 | 160 | 180 | | | | |
| 17.60 | | 79.5 | 3200 | 26.65 | 2.9 | 13.8 | 100 | 112 | 132 | 160 | 180 | | | | |
| 15.87 | | 88.2 | 3200 | 29.56 | 2.7 | 12.9 | 100 | 112 | 132 | 160 | 180 | | | | |
| 13.14 | | 106.5 | 3100 | 34.59 | 2.5 | 11.8 | 100 | 112 | 132 | 160 | 180 | | | | |
| 10.91 | | 128.3 | 3000 | 40.31 | 2.2 | 10.8 | | | | 132 | 160 | 180 | | | |
| 9.83 | | 142.4 | 2800 | 41.74 | 2.2 | 10.8 | | | | 132 | 160 | 180 | | | |
| 8.14 | | 171.9 | 2500 | 45.01 | 2.0 | 10.6 | | | | 132 | 160 | 180 | | | |
| 6.92 | | 202.4 | 2300 | 48.74 | 1.8 | 10.4 | | | | 132 | 160 | 180 | | | |
| 6.24 | | 224.5 | 2000 | 47.02 | 1.9 | 10.9 | | | | 132 | 160 | 180 | | | |
| 5.16 | | 271.1 | 1800 | 51.10 | 1.7 | 10.5 | | | | 132 | 160 | 180 | | | |

- PAM - IEC bağlantısı yoktur - No PAM - IEC assembling on empty fields
- 63 PAM - IEC bağlantısı yapılır - PAM - IEC assembling available on numbered fields



| Tip Type | i _{ges} | 4-pol. 50 Hz 1400rpm ⁻¹ 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] | FR2 [kN] | f _B ⇔ 27 - 45 | | | | | | | | | | |
| A703 F703 W 61 + PAM - IEC 61 | 260.15 | 5.4 | 5000 | 2.82 | 3.9 | 30.0 | 100 | 112 | 132 | | | | | | | | |
| | 231.34 | 6.1 | 5000 | 3.17 | 3.9 | 30.0 | 100 | 112 | 132 | 160 | 180 | | | | | | |
| | 207.78 | 6.7 | 5000 | 3.53 | 3.9 | 30.0 | 100 | 112 | 132 | 160 | 180 | | | | | | |
| | 189.54 | 7.4 | 5000 | 3.87 | 3.9 | 30.0 | 100 | 112 | 132 | 160 | 180 | | | | | | |
| | 173.11 | 8.1 | 5000 | 4.23 | 3.9 | 30.0 | 100 | 112 | 132 | 160 | 180 | | | | | | |
| | 155.48 | 9.0 | 5000 | 4.71 | 3.8 | 30.0 | 100 | 112 | 132 | 160 | 180 | | | | | | |
| | 144.94 | 9.7 | 5000 | 5.06 | 3.8 | 30.0 | 100 | 112 | 132 | 160 | 180 | 200 | | | | | |
| | 128.35 | 10.9 | 5000 | 5.71 | 3.8 | 30.0 | 100 | 112 | 132 | 160 | 180 | | | | | | |
| | 118.75 | 11.8 | 5000 | 6.17 | 3.8 | 30.0 | 100 | 112 | 132 | 160 | 180 | 200 | | | | | |
| | 108.46 | 12.9 | 5000 | 6.76 | 3.8 | 30.0 | 100 | 112 | 132 | 160 | 180 | 200 | | | | | |
| | 100.38 | 13.9 | 5000 | 7.30 | 3.7 | 30.0 | 100 | 112 | 132 | 160 | 180 | 200 | | | | | |
| | 89.95 | 15.6 | 5000 | 8.15 | 3.7 | 30.0 | 100 | 112 | 132 | 160 | 180 | 200 | | | | | |
| | 83.35 | 16.8 | 5000 | 8.79 | 3.7 | 30.0 | 100 | 112 | 132 | 160 | 180 | 200 | | | | | |
| | 73.70 | 19.0 | 5000 | 9.95 | 3.6 | 30.0 | 100 | 112 | 132 | 160 | 180 | 200 | | | | | |
| | 67.31 | 20.8 | 5000 | 10.89 | 3.6 | 30.0 | 100 | 112 | 132 | 160 | 180 | 200 | | | | | |
| | 55.75 | 25.1 | 5000 | 13.15 | 3.5 | 30.0 | | | 132 | 160 | 180 | 200 | | | | | |
| | 45.67 | 30.7 | 5000 | 16.05 | 3.4 | 30.0 | | | 132 | 160 | 180 | 200 | | | | | |
| | A702 F702 W 61 + PAM - IEC 61 | 44.67 | 31.3 | 5000 | 16.41 | 3.4 | 30.0 | 132 | 160 | 180 | | | | | | | |
| 36.60 | | 38.3 | 5000 | 20.03 | 3.2 | 30.0 | 132 | 160 | 180 | | | | | | | | |
| 33.43 | | 41.9 | 5000 | 21.93 | 3.2 | 29.5 | 132 | 160 | 180 | | | | | | | | |
| 30.27 | | 46.2 | 5000 | 24.21 | 3.1 | 28.0 | 132 | 160 | 180 | | | | | | | | |
| 27.87 | | 50.2 | 5000 | 26.30 | 3.0 | 26.8 | 132 | 160 | 180 | 200 | | | | | | | |
| 24.80 | | 56.4 | 5000 | 29.55 | 2.9 | 25.2 | 132 | 160 | 180 | | | | | | | | |
| 22.84 | | 61.3 | 5000 | 32.10 | 2.8 | 24.1 | 132 | 160 | 180 | 200 | | | | | | | |
| 20.86 | | 67.1 | 5000 | 35.14 | 2.6 | 22.9 | 132 | 160 | 180 | 200 | | | | | | | |
| 19.60 | | 71.4 | 5000 | 37.40 | 2.6 | 22.1 | 132 | 160 | 180 | 200 | | | | | | | |
| 17.18 | | 81.5 | 4800 | 40.95 | 2.4 | 21.1 | 132 | 160 | 180 | 200 | | | | | | | |
| 14.08 | | 99.5 | 4600 | 47.90 | 2.1 | 19.4 | 132 | 160 | 180 | 200 | | | | | | | |
| 12.86 | | 108.9 | 4400 | 50.17 | 2.0 | 19.0 | 132 | 160 | 180 | 200 | | | | | | | |
| 10.53 | | 132.9 | 4000 | 55.68 | 1.8 | 18.2 | | 160 | 180 | 200 | | | | | | | |
| 8.63 | | 162.3 | 3800 | 64.57 | 1.5 | 16.9 | | 160 | 180 | 200 | | | | | | | |
| 7.88 | | 177.7 | 3700 | 68.83 | 1.3 | 16.3 | | 160 | 180 | 200 | | | | | | | |
| 7.20 | | 194.6 | 3600 | 73.34 | 1.1 | 15.8 | | 160 | 180 | 200 | | | | | | | |
| 5.90 | | 237.5 | 3200 | 79.57 | 0.9 | 15.3 | | 160 | 180 | 200 | | | | | | | |
| 5.38 | | 260.0 | 3000 | 81.68 | 0.8 | 15.2 | | 160 | 180 | 200 | | | | | | | |

- PAM - IEC bağlantısı yoktur - No PAM - IEC assembling on empty fields
- 63 PAM - IEC bağlantısı yapılır - PAM - IEC assembling available on numbered fields

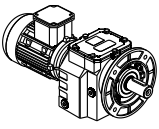


| Tip Type | i _{ges} | 4-pol. 50 Hz 1400rpm ⁻¹ n ₂ [min ⁻¹] | M _{amax} f _B =1 4 - pol. [Nm] | P _{1max} W f _B ≥ 1 | | | PAM - IEC | | | | | | | | |
|---|---|---|--|--|-------------|-------------|---------------------------|-----|-----|-----|-----|--|--|--|--|
| | | | | 4 - pol. 1400rpm [kW] | FR1 [kN] | FR2 [kN] | f _B ⇨ 27 - 45 | | | | | | | | |
| A903 F903 W 62 - 63 + PAM - IEC 62 - 63 | 205.73 | 6.8 | 8000 | 5.70 | 8.0 | 55.0 | 132 | 160 | 180 | | | | | | |
| | 185.64 | 7.5 | 8000 | 6.32 | 8.0 | 55.0 | 132 | 160 | 180 | | | | | | |
| | 154.07 | 9.1 | 8000 | 7.61 | 8.0 | 55.0 | 132 | 160 | 180 | | | | | | |
| | | 139.41 | 10.0 | 8000 | 8.41 | 8.0 | 55.0 | 132 | 160 | 180 | | | | | |
| | 62 - 63 | 128.36 | 10.9 | 8000 | 9.14 | 8.0 | 55.0 | 132 | 160 | 180 | 200 | | | | |
| | + | 115.83 | 12.1 | 8000 | 10.13 | 8.0 | 55.0 | 132 | 160 | 180 | 200 | | | | |
| | PAM - IEC | 104.41 | 13.4 | 8000 | 11.23 | 8.0 | 55.0 | 132 | 160 | 180 | | | | | |
| | | 96.13 | 14.6 | 8000 | 12.20 | 8.0 | 55.0 | 132 | 160 | 180 | 200 | | | | |
| | 62 - 63 | 86.43 | 16.2 | 8000 | 13.57 | 8.0 | 55.0 | 132 | 160 | 180 | 200 | | | | |
| | | 79.13 | 17.7 | 8000 | 14.82 | 8.0 | 55.0 | 132 | 160 | 180 | 200 | | | | |
| | | 71.40 | 19.6 | 8000 | 16.43 | 8.0 | 54.3 | 132 | 160 | 180 | 200 | | | | |
| | | 63.02 | 22.2 | 8000 | 18.61 | 8.0 | 51.2 | 132 | 160 | 180 | 200 | | | | |
| | | 59.26 | 23.6 | 8000 | 19.79 | 8.0 | 49.6 | 132 | 160 | 180 | 200 | | | | |
| | | 53.66 | 26.1 | 8000 | 21.86 | 8.0 | 47.2 | 132 | 160 | 180 | 200 | | | | |
| | | 48.50 | 28.9 | 8000 | 24.18 | 8.0 | 44.9 | | 160 | 180 | 200 | | | | |
| | A902 F902 W 62 - 63 + PAM - IEC 62 - 63 | 42.47 | 33.0 | 8000 | 27.61 | 5.1 | 42.3 | 160 | 180 | 200 | 225 | | | | |
| 38.33 | | 36.5 | 8000 | 30.60 | 5.1 | 40.1 | 160 | 180 | 200 | 225 | | | | | |
| 31.81 | | 44.0 | 8000 | 36.87 | 5.1 | 36.3 | 160 | 180 | 200 | 225 | | | | | |
| | | 26.38 | 53.1 | 8000 | 44.46 | 5.1 | 32.3 | 160 | 180 | 200 | 225 | | | | |
| 62 - 63 | | 23.80 | 58.8 | 8000 | 49.28 | 5.1 | 30.8 | 160 | 180 | 200 | 225 | | | | |
| + | | 19.75 | 70.9 | 8000 | 59.37 | 5.1 | 27.5 | 160 | 180 | 200 | 225 | | | | |
| PAM - IEC | | 17.18 | 81.5 | 7900 | 67.42 | 5.1 | 25.5 | 160 | 180 | 200 | 225 | | | | |
| | | 15.50 | 90.3 | 7800 | 73.77 | 5.1 | 24.2 | 160 | 180 | 200 | 225 | | | | |
| 62 - 63 | | 12.86 | 108.8 | 7300 | 83.19 | 5.1 | 22.9 | 160 | 180 | 200 | 225 | | | | |
| | | 10.28 | 136.2 | 7200 | 102.69 | 5.0 | 20.0 | 160 | 180 | 200 | 225 | | | | |
| | | 9.28 | 150.9 | 6500 | 102.74 | 5.0 | 20.7 | 160 | 180 | 200 | 225 | | | | |
| | | 7.70 | 181.9 | 5300 | 100.94 | 5.0 | 21.9 | 160 | 180 | 200 | 225 | | | | |
| | | 6.89 | 203.2 | 5000 | 106.38 | 4.0 | 21.5 | 160 | 180 | 200 | 225 | | | | |
| | | 6.22 | 225.2 | 4900 | 115.54 | 4.0 | 20.6 | 160 | 180 | 200 | 225 | | | | |
| | | 5.16 | 271.3 | 4600 | 130.69 | 4.0 | 19.4 | 160 | 180 | 200 | 225 | | | | |

PAM - IEC bağlantısı yoktur - No PAM - IEC assembling on empty fields

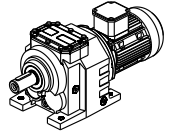
63 PAM - IEC bağlantısı yapılır - PAM - IEC assembling available on numbered fields

PGR[®]
Drive Technologies

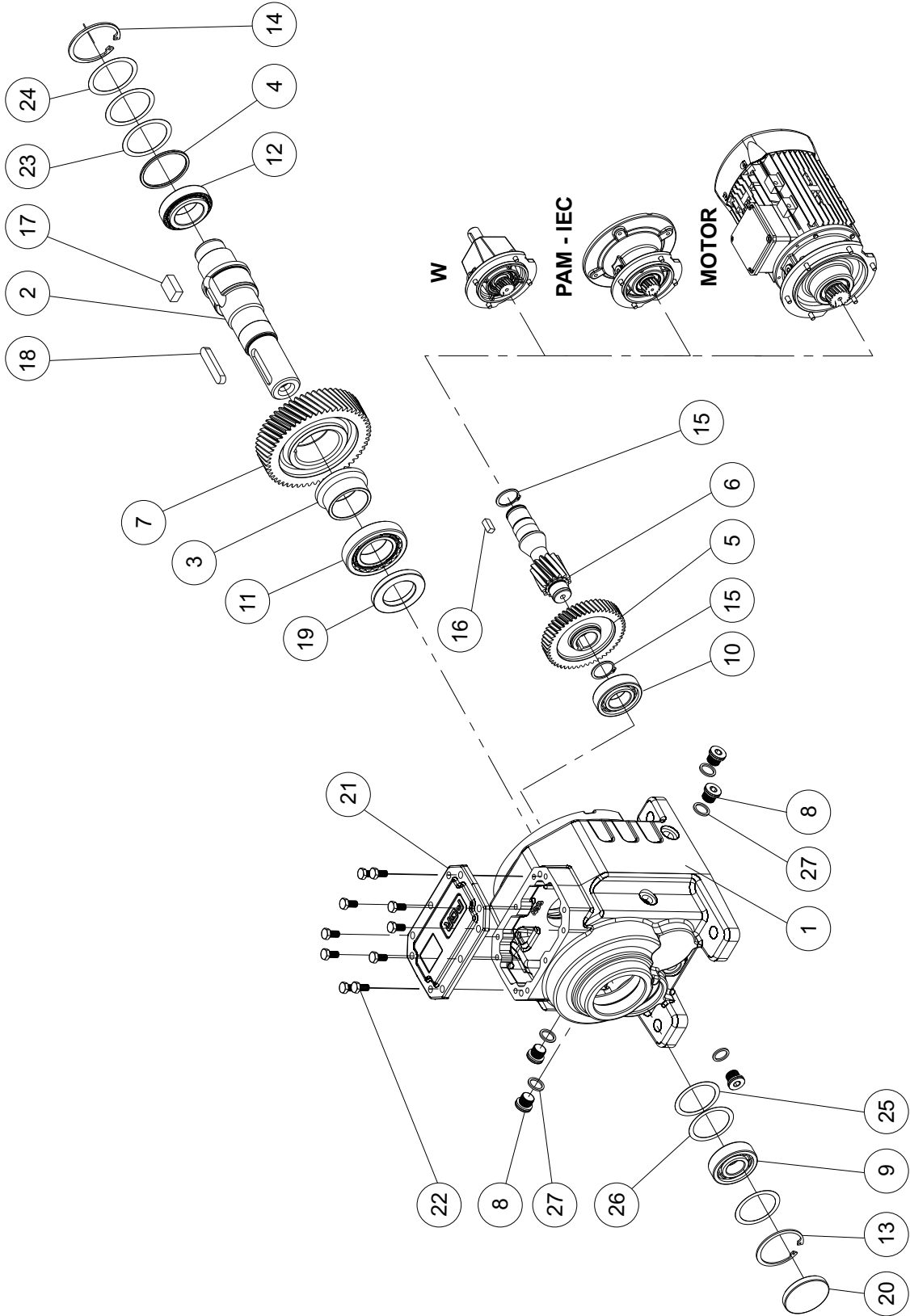


W VE IEC ADAPTÖRLERİN AĞIRLIK TABLOSU / WEIGHT TABLE OF W AND IEC ADAPTERS / GEWICHTTABELLE VON W UND IEC ADAPTERS / TABELLA DI PESO DI W E IEC ADATTATORE / TABLEAU DE POIDS DU W ET IEC ADAPTATEUR / TABLA DE PESO DE W Y IEC ADAPTADOR

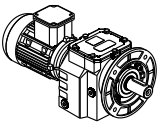
| Ağırlıklar (Yaklaşık kg) \ Weights (approx. kg) \ Gewichte (ca. kg) / Pesi (ca. kg) / Poids (Environ kg) / Pesos (Aprox kg) | | | | | | | | | | | | | | | |
|---|----|-----|----|----|----|-----|-----|-----|-----|-----|-----|-----|--|--|--|
| Tip Type | W | PAM | | | | | | | | | | | | | |
| | | 63 | 71 | 80 | 90 | 100 | 112 | 132 | 160 | 180 | 200 | 225 | | | |
| A1F 253 | 5 | 3 | 4 | 5 | 5 | 9 | 9 | – | – | – | – | – | | | |
| A1F 252 | 5 | 3 | 4 | 5 | 5 | 9 | 9 | – | – | – | – | – | | | |
| A1F 303 | 5 | 3 | 4 | 5 | 5 | 9 | 9 | – | – | – | – | – | | | |
| A1F 302 | 5 | 3 | 4 | 5 | 5 | 9 | 9 | – | – | – | – | – | | | |
| A1F 353 | 5 | 3 | 4 | 5 | 5 | 9 | 9 | – | – | – | – | – | | | |
| A1F 352 | 5 | 3 | 4 | 5 | 5 | 9 | 9 | – | – | – | – | – | | | |
| A1F 403 | 11 | – | 6 | 9 | 9 | 11 | 11 | 15 | 22 | 22 | – | – | | | |
| A1F 402 | 11 | – | 6 | 9 | 9 | 11 | 11 | 15 | 22 | 22 | – | – | | | |
| A1F 503 | 11 | – | 6 | 9 | 9 | 11 | 11 | 15 | 22 | 22 | – | – | | | |
| A1F 502 | 11 | – | 6 | 9 | 9 | 11 | 11 | 15 | 22 | 22 | – | – | | | |
| A1F 603 | 20 | – | – | 11 | 11 | 15 | 15 | 18 | 24 | 24 | 40 | – | | | |
| A1F 602 | 20 | – | – | 11 | 11 | 15 | 15 | 18 | 24 | 24 | 40 | – | | | |
| A1F 703 | 20 | – | – | 11 | 11 | 15 | 15 | 18 | 24 | 24 | 40 | – | | | |
| A1F 702 | 20 | – | – | 11 | 11 | 15 | 15 | 18 | 24 | 24 | 40 | – | | | |
| A1F 903 | 37 | – | – | – | – | – | – | 24 | 32 | 32 | 47 | 50 | | | |
| A1F 902 | 37 | – | – | – | – | – | – | 24 | 32 | 32 | 47 | 50 | | | |



**GENEL PARÇA LİSTESİ / GENERAL PART LIST / ALLGEMEINE STUCKLISTE / GENERALE ELENCO DELLE PARTI
GÉNÉRALE LA LISTE DES PIÈCES / LISTA DE PIEZAS EN GENERAL**

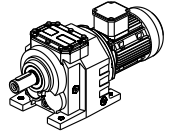


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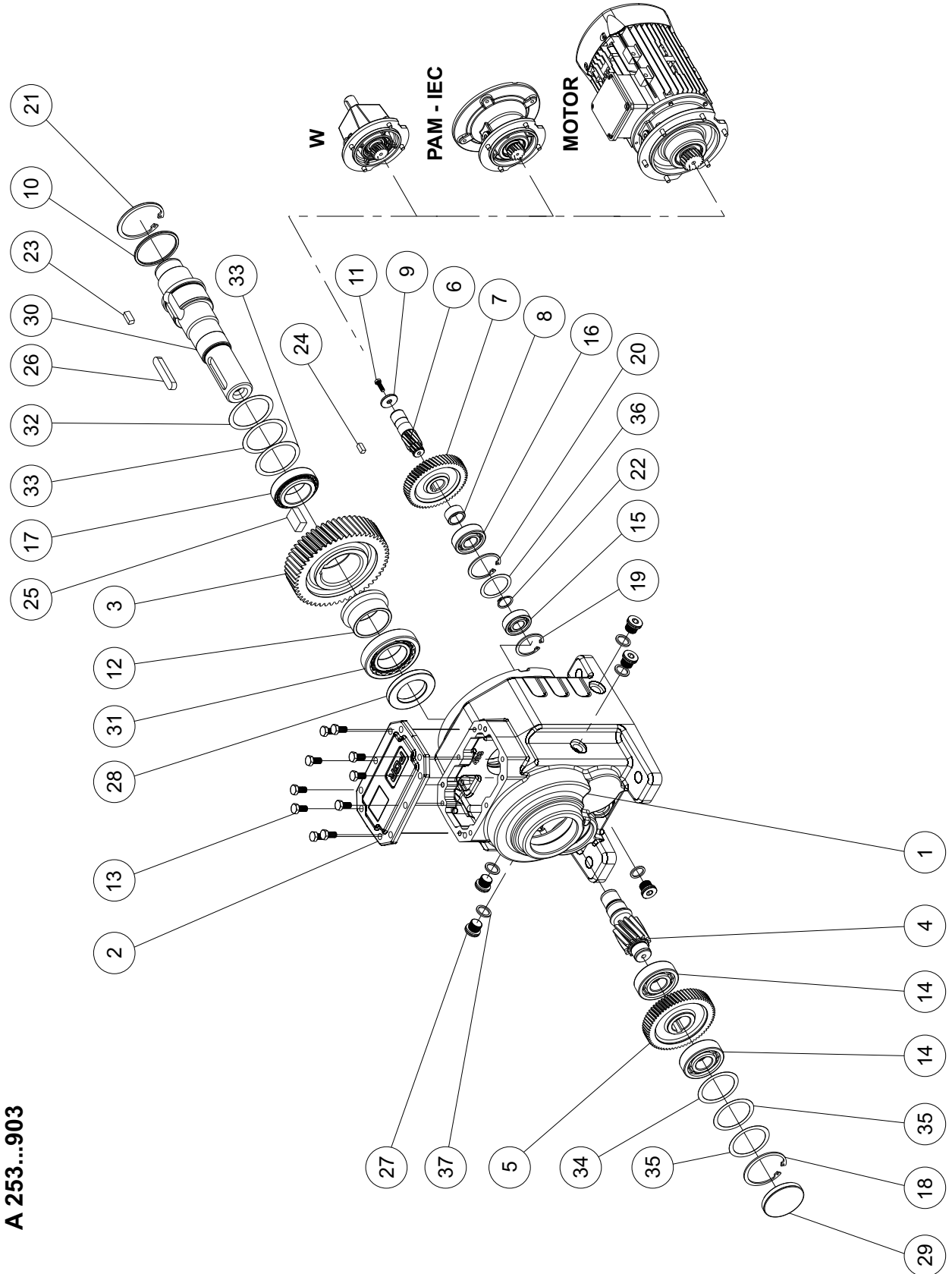


**GENEL PARÇA LİSTESİ / GENERAL PART LIST / ALLGEMEINE STUCKLISTE / GENERALE ELENCO DELLE PARTI
GÉNÉRALE LA LISTE DES PIÈCES / LISTA DE PIEZAS EN GENERAL**

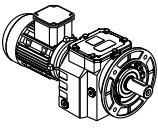
| | | | | | | | | |
|----|--------------|-----------------------|---------------------|--------------------------|-------------------|-----------------|----|--------------|
| 1 | Gövde | La caja de engranajes | Carter d'engrenage | Ingranaggi Box | Getriebegehäuse | Gear Case | 1 | Gövde |
| 2 | Çıkış Mili | Eje salida | Arbre de sortie | Albero di uscita | Abtriebswelle | Solid Shaft | 2 | Çıkış Mili |
| 3 | Burç | Espaciador | Doville entretoise | Distanziatore | Distanzbuchse | Spacer | 3 | Burç |
| 4 | Rondela | El apoyo el disco | Rondelle support | Rondella | Stützscheibe | Supporting disc | 4 | Rondela |
| 5 | Z2 Dişlisi | Engranaje conducido | Rove d'entrée | Ingranaggio Conduittore | Abtriebsrad | Driving Gear | 5 | Z2 Dişlisi |
| 6 | Z3 Dişlisi | Deleje del piñón | Arbre intermédiaire | Pignone | Ritzel Welle | Pinion Shaft | 6 | Z3 Dişlisi |
| 7 | Z4 Dişlisi | Engranaje conducido | Rove desortie | Ingranaggio Condotto | Abtriebsrad | Driven Gear | 7 | Z4 Dişlisi |
| 8 | Yağ Tapası | Tapón | Visde vidange | Olío Tappo | Verschlußschraube | Oil Plug | 8 | Yağ Tapası |
| 9 | Rulman | Rodamiento de bolas | Roulement a billes | Cuscinetto | Kugellager | Bearing | 9 | Rulman |
| 10 | Rulman | Rodamiento de bolas | Roulement a billes | Cuscinetto | Kugellager | Bearing | 10 | Rulman |
| 11 | Rulman | Rodamiento de bolas | Roulement a billes | Cuscinetto | Kugellager | Bearing | 11 | Rulman |
| 12 | Rulman | Rodamiento de bolas | Roulement a billes | Cuscinetto | Kugellager | Bearing | 12 | Rulman |
| 13 | Segman | Anillo de seguridad | Circlip | Anello di sicurezza | Sicherungsring | Bearing | 13 | Segman |
| 14 | Segman | Anillo de seguridad | Circlip | Anello di sicurezza | Sicherungsring | Circlip | 14 | Segman |
| 15 | Segman | Anillo de seguridad | Circlip | Anello di sicurezza | Sicherungsring | Circlip | 15 | Segman |
| 16 | Kama | Clave | Clavette | Chiavetta | Paßfeder | Key | 16 | Kama |
| 17 | Kama | Clave | Clavette | Chiavetta | Paßfeder | Key | 17 | Kama |
| 18 | Kama | Clave | Clavette | Chiavetta | Paßfeder | Key | 18 | Kama |
| 19 | Keçe | Sello del eje | Bague d'étancheite | Tenuta Albero | Wellendichtring | Shaft Seal | 19 | Keçe |
| 20 | Yağ Kapağı | Tapón de cierre | Bouchon | Tapo di chiusura | Verschluß kappe | Locking cap | 20 | Yağ Kapağı |
| 21 | Gövde Kapağı | Tapá de la carcasa | Couvercle du carter | Coperchio della custodia | Gehäusedeckel | Case Cover | 21 | Gövde Kapağı |
| 22 | Cıvata | Atornillor | Boulonner | Bullone | Verschrauben | Bolt | 22 | Cıvata |
| 23 | Layner | Calce | Rondella d'ajustage | Shim | Shim | Shim | 23 | Layner |
| 24 | Layner | Calce | Rondella d'ajustage | Shim | Shim | Shim | 24 | Layner |
| 25 | Layner | Calce | Rondella d'ajustage | Shim | Shim | Shim | 25 | Layner |
| 26 | Layner | Calce | Rondella d'ajustage | Shim | Shim | Shim | 26 | Layner |
| 27 | Tapá Contası | Sellar | Joint | Sigillo | Dichtung | Seal | 27 | Tapá Contası |



**GENEL PARÇA LİSTESİ / GENERAL PART LIST / ALLGEMEINE STUCKLISTE / GENERALE ELENCO DELLE PARTI
GÉNÉRALE LA LISTE DES PIÈCES / LISTA DE PIEZAS EN GENERAL**

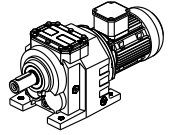


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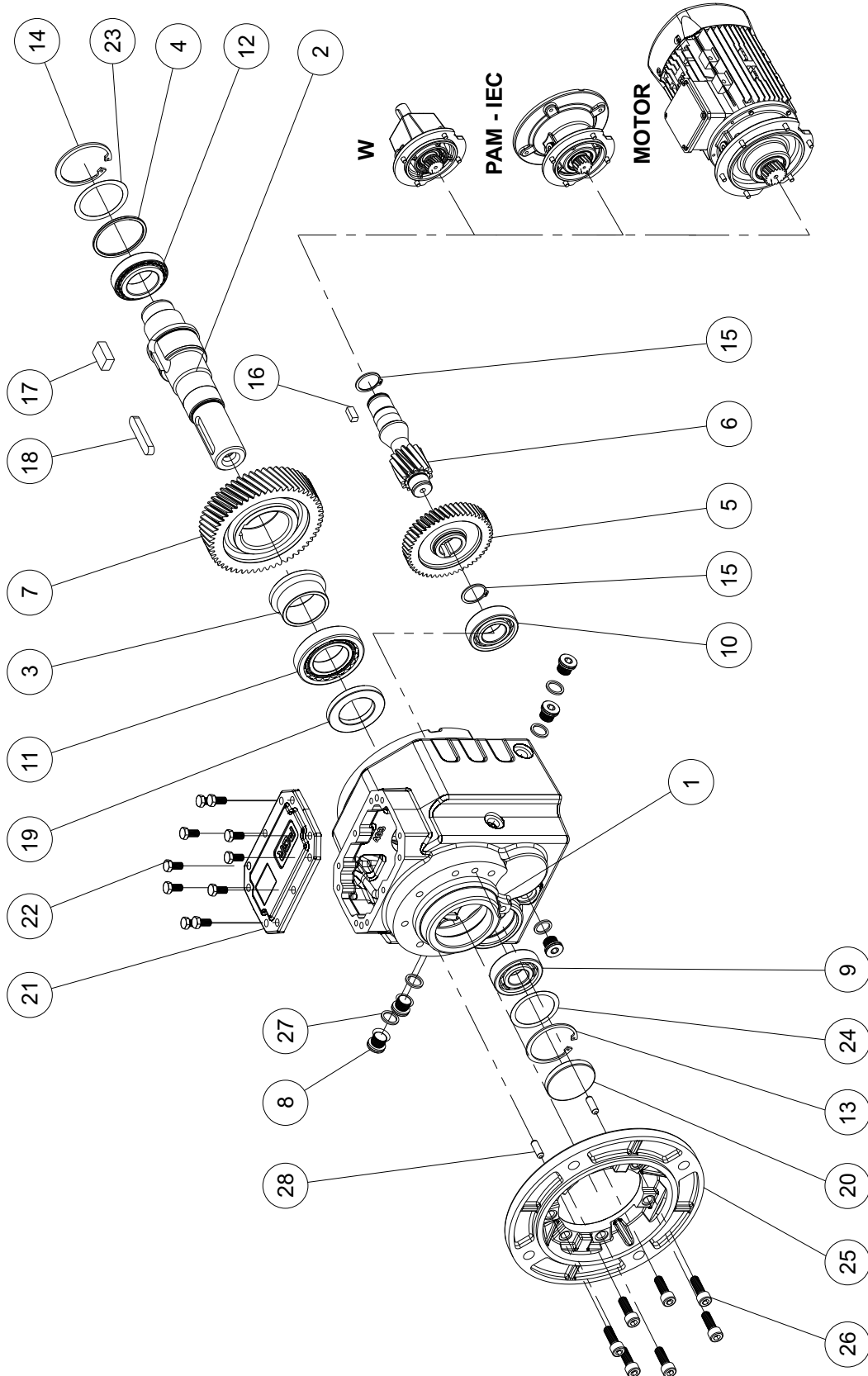


**GENEL PARÇA LİSTESİ / GENERAL PART LIST / ALLGEMEINE STUCKLISTE / GENERALE ELENCO DELLE PARTI
GÉNÉRALE LA LISTE DES PIÈCES / LISTA DE PIEZAS EN GENERAL**

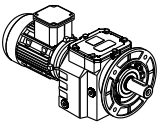
| | | | | |
|----|--------------|------------------------|--------------------------|------------------------|
| 1 | Gövde | Getriebegehäuse | Ingranaggi Box | La caja de engranajes |
| 2 | Gövde Kapağı | Genhäusedeckel | Coperchio della custodia | Tapá de la carcasa |
| 3 | Z6 Dişlisi | Ausgangswelle | Albero di uscita | Eje de salida |
| 4 | Z5 Dişlisi | Abtriebsritzwelle | Pignone di uscita | Eje de piñón de salida |
| 5 | Z4 Dişlisi | Abtriebsrad | Ingranaggio Condotto | Engranaje conducido |
| 6 | Z3 Dişlisi | Ritzel Welle | Pignone | Deleje del piñón |
| 7 | Z2 Dişlisi | Abtriebsrad | Ingranaggio Conduttore | Engranaje con ducido |
| 8 | Burç | Abstandhalter | Distanziatore | Espaciador |
| 9 | Rondela | Stützscheibe | Rondella | El apoyo a disco |
| 10 | Rondela | Stützscheibe | Rondella | El apoyo a disco |
| 11 | Civata | Verschraubene | Bullone | Atornillar |
| 12 | Burç | Distanzbuchse | Bullone | Espaciador |
| 13 | Civata | Verschraubene | Bullone | Atornillar |
| 14 | Rulman | Kugellager | Cuscinetto | Rodamiento de bolas |
| 15 | Rulman | Kugellager | Cuscinetto | Rodamiento de bolas |
| 16 | Rulman | Kugellager | Cuscinetto | Rodamiento de bolas |
| 17 | Rulman | Kugellager | Cuscinetto | Rodamiento de bolas |
| 18 | Segman | Sicherungsring | Anello di sicurezza | Anillo de seguridad |
| 19 | Segman | Sicherungsring | Anello di sicurezza | Anillo de seguridad |
| 20 | Segman | Sicherungsring | Anello di sicurezza | Anillo de seguridad |
| 21 | Segman | Sicherungsring | Anello di sicurezza | Anillo de seguridad |
| 22 | Segman | Sicherungsring | Anello di sicurezza | Anillo de seguridad |
| 23 | Kama | Paßfeder | Chiavetta | Clave |
| 24 | Kama | Paßfeder | Chiavetta | Clave |
| 25 | Kama | Paßfeder | Chiavetta | Clave |
| 26 | Kama | Paßfeder | Chiavetta | Clave |
| 27 | Yağ Tapası | Verschlußschraube | Öllo Tappo | Tapón |
| 28 | Keçe | Weilendichttring | Tenuta Albero | Sello del eje |
| 29 | Yağ Kapağı | Öleinfüllstutzen Tasse | Tappo di chiusura | Tapón de cierre |
| 30 | Çıkış Mili | Abtriebswelle | Albero di uscita | Eje de salida |
| 31 | Rulman | Kugellager | Cuscinetto | Rodamiento de bolas |
| 32 | Layner | Shim | Shim | Calce |
| 33 | Layner | Shim | Shim | Calce |
| 34 | Layner | Shim | Shim | Calce |
| 35 | Layner | Shim | Shim | Calce |
| 36 | Layner | Shim | Shim | Calce |
| 37 | Tapa Contasi | Dichtung | Sigillo | Sellar |



**GENEL PARÇA LİSTESİ / GENERAL PART LIST / ALLGEMEINE STUCKLISTE / GENERALE ELENCO DELLE PARTI
GÉNÉRALE LA LISTE DES PIÈCES / LISTA DE PIEZAS EN GENERAL**

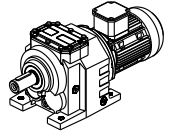


F 252...902

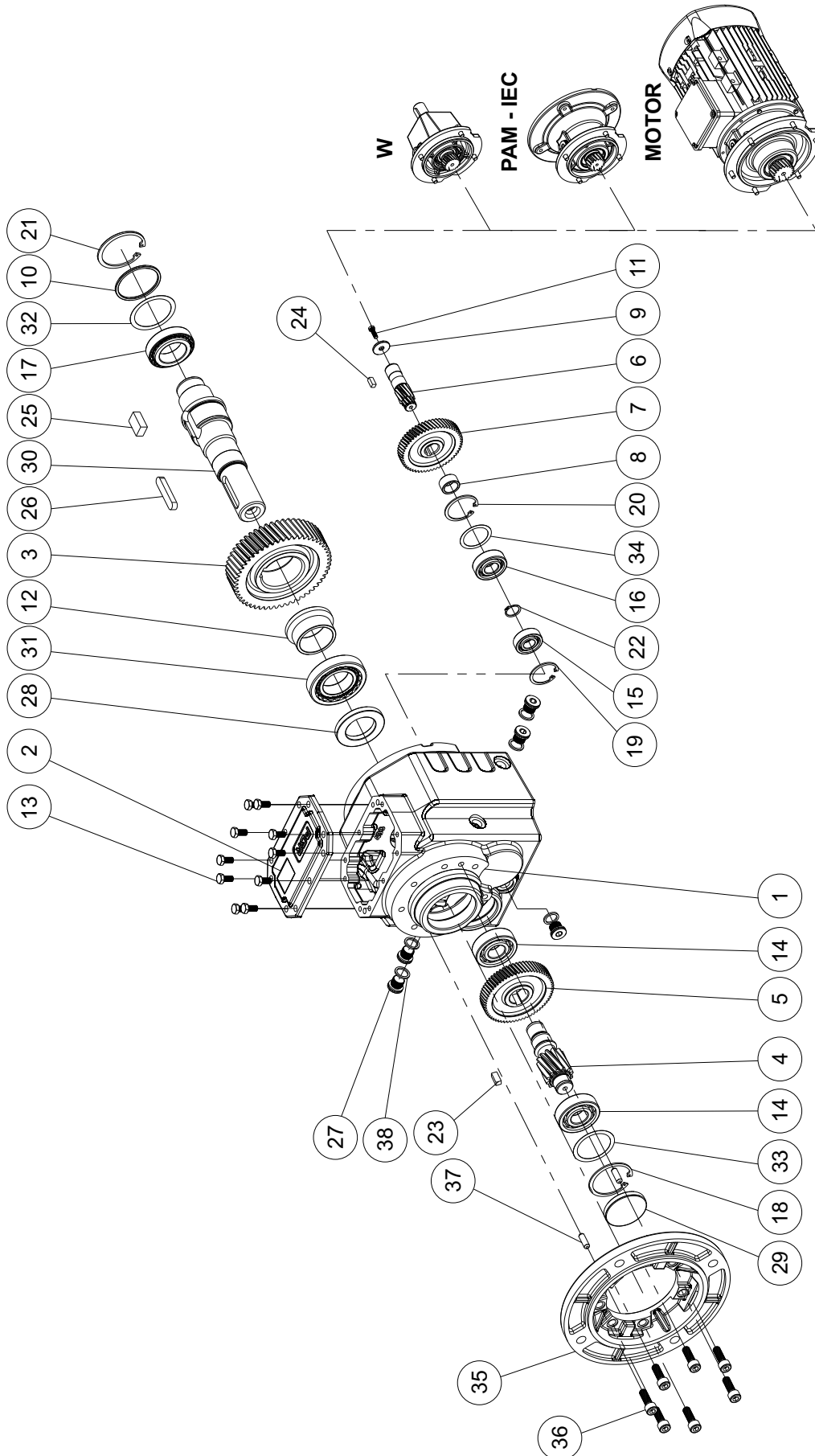


**GENEL PARÇA LİSTESİ / GENERAL PART LIST / ALLGEMEINE STUCKLISTE / GENERALE ELENCO DELLE PARTI
GÉNÉRALE LA LISTE DES PIÈCES / LISTA DE PIEZAS EN GENERAL**

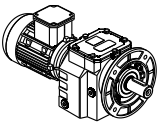
| | | | | | | | |
|----|--------------|-----------------------|---------------------|-------------------------|-------------------|-----------------|--------------|
| 1 | Gövde | La caja de engranajes | Carter d'engrenage | Ingranaggi Box | Getriebegehäuse | Gear Case | Gövde |
| 2 | Çıkış Mili | Eje de salida | Arbre de sortie | Albero di uscita | Abtriebswelle | Solid Shaft | Çıkış Mili |
| 3 | Burç | Espaciador | Doville entretoise | Distanziatore | Distanzbuchse | Spacer | Burç |
| 4 | Rondela | El apoyo a disco | Rondelle support | Rondella | Stützscheibe | Supporting disc | Rondela |
| 5 | Z2 Dişlisi | Engranaje conducido | Rove d'entrée | Abtriebssrad | Ritzel Welle | Driving Gear | Z2 Dişlisi |
| 6 | Z3 Dişlisi | Deleje del piñón | Arbre intermédiaire | Pignone | Abtriebssrad | Pinion Shaft | Z3 Dişlisi |
| 7 | Z4 Dişlisi | Engranaje conducido | Rove de sortie | Ingranaggio Condotta | Verschlußschraube | Driven Gear | Z4 Dişlisi |
| 8 | Yağ Tapası | Tapón | Visde vidange | Olio Tappo | Kugellager | Oil Plug | Yağ Tapası |
| 9 | Rulman | Rodamiento de bolas | Roulement a billes | Cuscinetto | Kugellager | Bearing | Rulman |
| 10 | Rulman | Rodamiento de bolas | Roulement a billes | Cuscinetto | Kugellager | Bearing | Rulman |
| 11 | Rulman | Rodamiento de bolas | Roulement a billes | Cuscinetto | Kugellager | Bearing | Rulman |
| 12 | Rulman | Rodamiento de bolas | Roulement a billes | Cuscinetto | Kugellager | Bearing | Rulman |
| 13 | Segman | Anillo de seguridad | Circlip | Anello di sicurezza | Sicherungsring | Circlip | Segman |
| 14 | Segman | Anillo de seguridad | Circlip | Anello di sicurezza | Sicherungsring | Circlip | Segman |
| 15 | Segman | Anillo de seguridad | Circlip | Anello di sicurezza | Sicherungsring | Circlip | Segman |
| 16 | Kama | Clave | Clavette | Chiavetta | Paßfeder | Key | Kama |
| 17 | Kama | Clave | Clavette | Chiavetta | Paßfeder | Key | Kama |
| 18 | Kama | Clave | Clavette | Chiavetta | Paßfeder | Key | Kama |
| 19 | Keçe | Sello del eje | Bague d'ertancheite | Tenuta Albero | Weilendichtring | Shaft Seal | Keçe |
| 20 | Yağ Kapağı | Tapón de cierre | Bouchon | Tappo di chiusura | Verschlußkappe | Locking Cap | Yağ Kapağı |
| 21 | Gövde Kapağı | Tapá de la carcasa | Couvercle de carter | Coperchiodella custodia | Gehäusedeckel | Case Cover | Gövde Kapağı |
| 22 | Civata | Atornillor | Boulonner | Bullone | Verschrauben | Bolt | Civata |
| 23 | Layner | Calce | Rondelle d'ajustage | Shim | Shim | Shim | Layner |
| 24 | Layner | Calce | Rondelle d'ajustage | Shim | Shim | Shim | Layner |
| 25 | B5 Flanşı | Brida B5 | B5 a bride | Flangia B5 | B5 Flansch | Flange B5 | B5 Flanşı |
| 26 | Civata | Atornillor | Boulonner | Bullone | Verschrauben | Bolt | Civata |
| 27 | Tapá Contası | Sellar | Joint | Sigillo | Dichtung | Seal | Tapá Contası |
| 28 | Pin | Pasador | Goupille | Tassello Pin | Spannstift | Dowel Pin | Pin |



**GENEL PARÇA LİSTESİ / GENERAL PART LIST / ALLGEMEINE STUCKLISTE / GENERALE ELENCO DELLE PARTI
GÉNÉRALE LA LISTE DES PIÈCES / LISTA DE PIEZAS EN GENERAL**

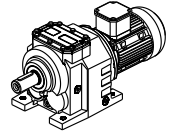


F 253...903



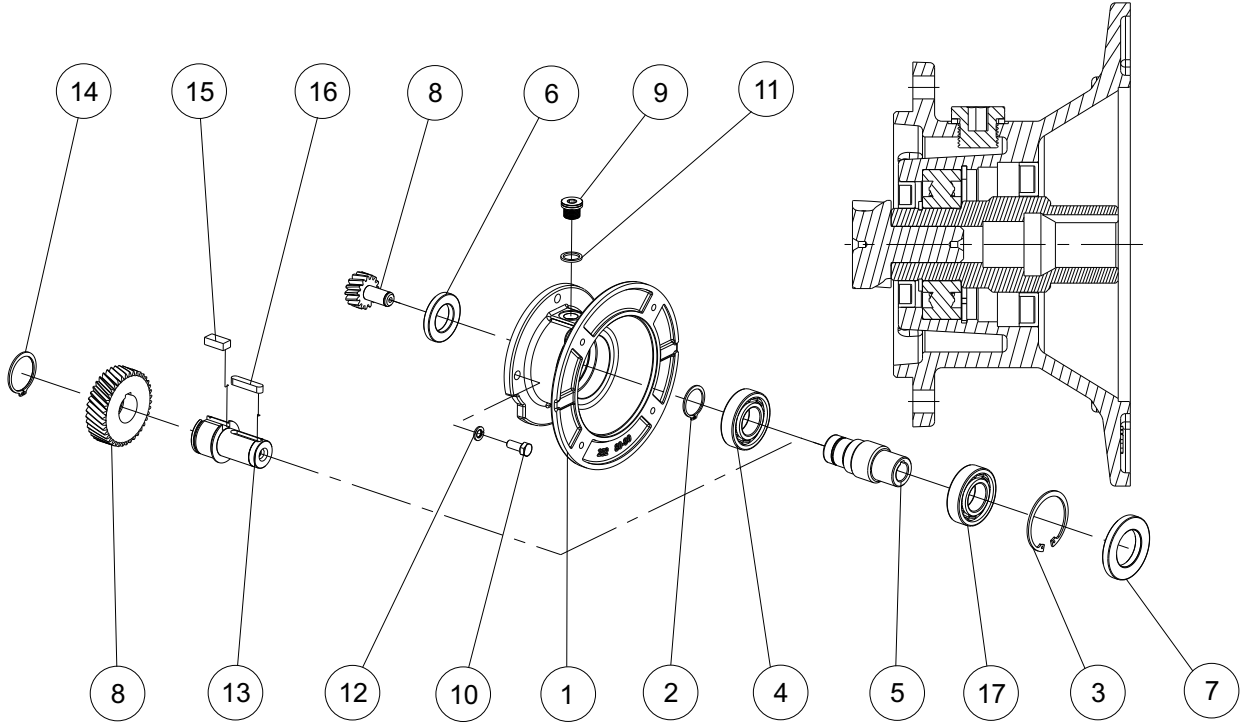
**GENEL PARÇA LİSTESİ / GENERAL PART LIST / ALLGEMEINE STUCKLISTE / GENERALE ELENCO DELLE PARTI
GÉNÉRALE LA LISTE DES PIÈCES / LISTA DE PIEZAS EN GENERAL**

| | | | | | |
|----|--------------|-----------------|-------------------------|---------------------|-----------------------|
| 1 | Gövde | Gear Case | Ingranaggi Box | Carter d'engrenage | La caja de engranajes |
| 2 | Gövde Kapağı | Case Cover | Coperchi della custodia | Couvercle du carter | Tapá de la carcasa |
| 3 | Z6 Dişlisi | Driving Gear | Ingranaggio Conduttore | Rove d'entrée | Engranaje conducido |
| 4 | Z5 Dişlisi | Pinion Shaft | Pignone | Arbre intermédiaire | Deleje del piñón |
| 5 | Z4 Dişlisi | Driven Gear | Ingranaggio condotto | Rove de sortie | Engranaje conducido |
| 6 | Z3 Dişlisi | Pinion Gear | Pignone | Arbre intermédiaire | Deleje del piñón |
| 7 | Z2 Dişlisi | Driving Gear | Ingranaggio conduttore | Rove d'entrée | Engranaje conducido |
| 8 | Burç | Spacer | Distanziatore | Doville entretoise | Espaciador |
| 9 | Rondela | Supporting disc | Rondella | Rondelle support | El apoyo a disco |
| 10 | Rondela | Supporting disc | Rondella | Rondelle support | El apoyo a disco |
| 11 | Cıvata | Bolt | Bullone | Boulonner | Atornillar |
| 12 | Burç | Spacer | Distanziatore | Doville entretoise | Espaciador |
| 13 | Cıvata | Bolt | Bullone | Boulonner | Atornillar |
| 14 | Rulman | Bearing | Cuscinetto | Roulement | Rodamiento de bolas |
| 15 | Rulman | Bearing | Cuscinetto | Roulement | Rodamiento de bolas |
| 16 | Rulman | Bearing | Cuscinetto | Roulement | Rodamiento de bolas |
| 17 | Rulman | Bearing | Cuscinetto | Roulement | Rodamiento de bolas |
| 18 | Segman | Circlip | Anello di sicurezza | Circlip | Anillo de seguridad |
| 19 | Segman | Circlip | Anello di sicurezza | Circlip | Anillo de seguridad |
| 20 | Segman | Circlip | Anello di sicurezza | Circlip | Anillo de seguridad |
| 21 | Segman | Circlip | Anello di sicurezza | Circlip | Anillo de seguridad |
| 22 | Segman | Circlip | Anello di sicurezza | Circlip | Anillo de seguridad |
| 23 | Kama | Key | Chiavetta | Clavette | Clave |
| 24 | Kama | Key | Chiavetta | Clavette | Clave |
| 25 | Kama | Key | Chiavetta | Clavette | Clave |
| 26 | Kama | Key | Chiavetta | Clavette | Clave |
| 27 | Yağ Tapası | Oil Plug | Oljo Tappo | Visde vidange | Tapón |
| 28 | Keçe | Shaft Seal | Tenuta Albero | Bague d'étanchéité | Sello del eje |
| 29 | Yağ Kapağı | Locking cap | Tappo di chiusura | Bouchon | Tapón de cierre |
| 30 | Çıkış Mili | Solid Shaft | Albero di uscita | Arbre de sortie | Eje de salida |
| 31 | Rulman | Bearing | Cuscinetto | Roulement a billes | Rodamiento de bolas |
| 32 | Layner | Shim | Shim | Rondelle d'ajustage | Calce |
| 33 | Layner | Shim | Shim | Rondelle d'ajustage | Calce |
| 34 | Layner | Shim | Shim | Rondelle d'ajustage | Calce |
| 35 | B5 Flanşı | Flange B5 | Flangia B5 | Brida B5 | Brida B5 |
| 36 | Cıvata | Bolt | Bullone | Boulonner | Atornillar |
| 37 | Pim | Dowel Pin | Pin | Pin | Pin |
| 38 | Tapa Contası | Seal | Sigillo | Joint | Sellar |

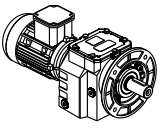


**GENEL PARÇA LİSTESİ / GENERAL PART LIST / ALLGEMEINE STUCKLISTE / GENERALE ELENCO DELLE PARTI
GÉNÉRALE LA LISTE DES PIÈCES / LISTA DE PIEZAS EN GENERAL**

**A/F 252...502 PAM
A/F 253...503 PAM**

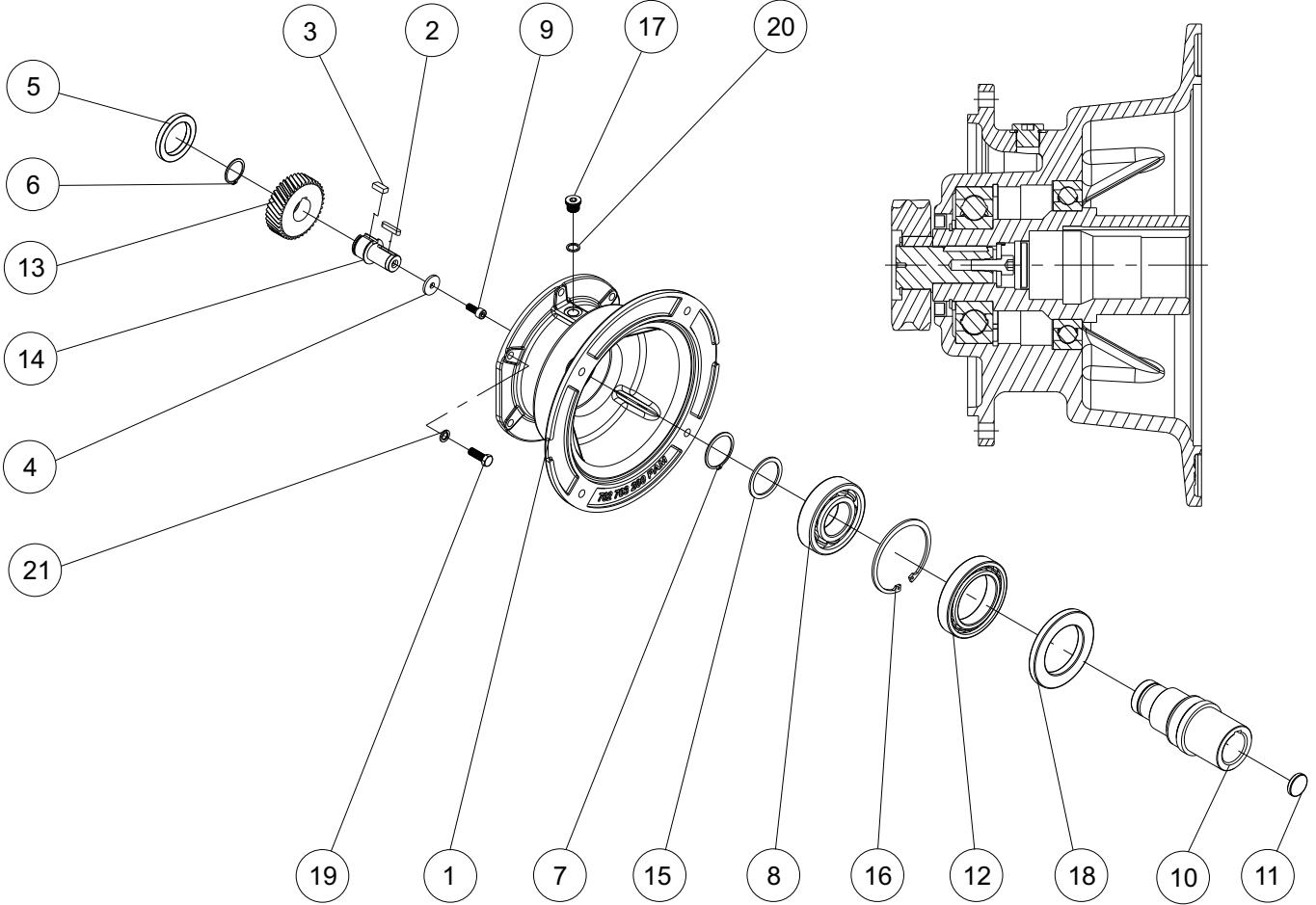


| | | | | | |
|-------------------------|---------------|-------------------|---------------------|--------------------|---------------------|
| 1 PAM Gövdəsi | PAM Case | PAM Box | PAM Box | PAM Boite | PAM Caja |
| 2 Segman | Circlip | Sicherungsring | Anello di sicurezza | Circlip | Anillo de seguridad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

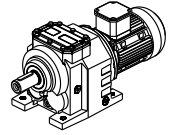


**GENEL PARÇA LİSTESİ / GENERAL PART LIST / ALLGEMEINE STUCKLISTE / GENERALE ELENCO DELLE PARTI
GÉNÉRALE LA LISTE DES PIÈCES / LISTA DE PIEZAS EN GENERAL**

**A/F 602...902 PAM
A/F 603...903 PAM**

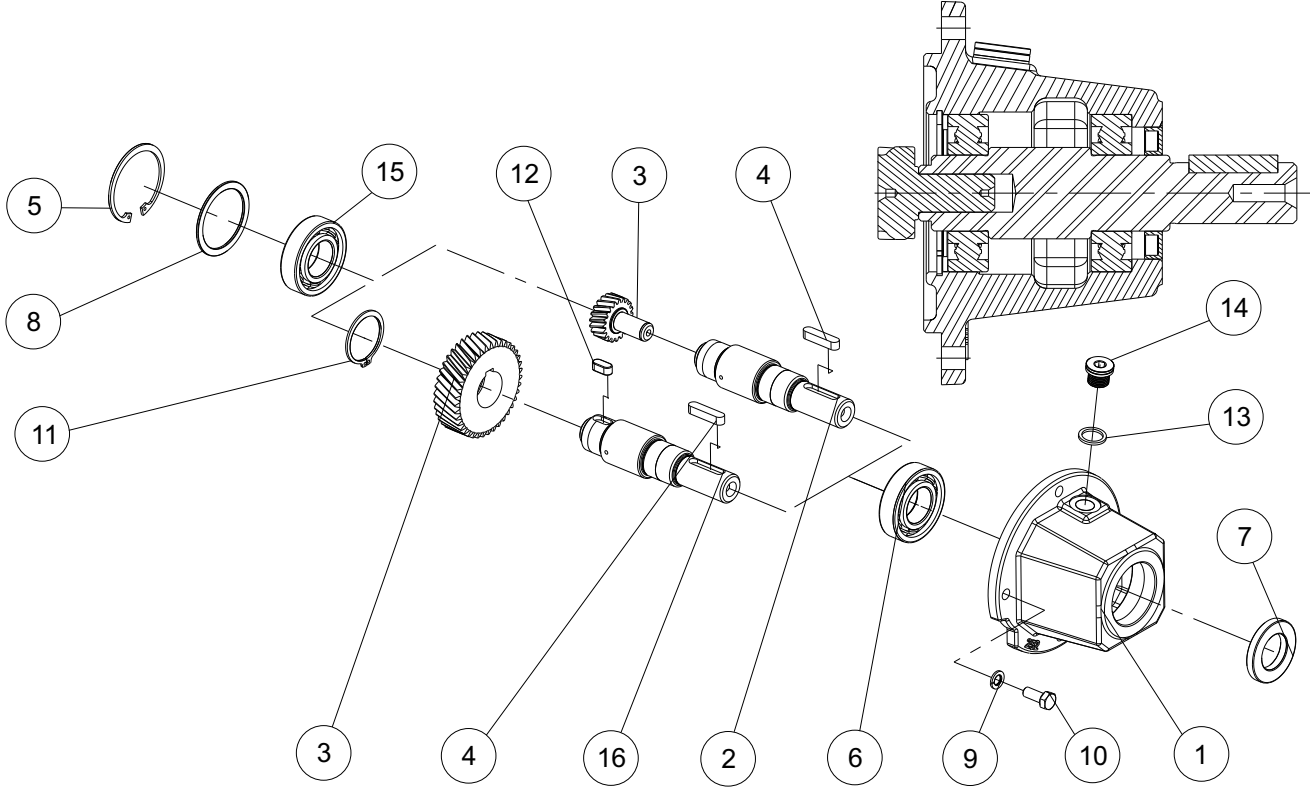


| | | | | | | |
|----|----------------------|-----------------|-------------------|---------------------|---------------------|---------------------|
| 1 | PAM Gövdesi | PAM Case | PAM Box | PAM Box | PAM Boite | PAM Caja |
| 2 | Kama | Key | Paßfeder | Chiavetta | Clavette | Clave |
| 3 | Kama | Key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



**GENEL PARÇA LİSTESİ / GENERAL PART LIST / ALLGEMEINE STUCKLISTE / GENERALE ELENCO DELLE PARTI
GÉNÉRALE LA LISTE DES PIÈCES / LISTA DE PIEZAS EN GENERAL**

A/F 252...253 / 902...903 W



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





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