

RN-RO-RV

**RIDUTTORI AD ASSI PARALLELI ED ORTOGONALI
PARALLEL SHAFT AND BEVEL/HELICAL GEARBOXES
FLACH- u. KEGELRADGETRIEBE**



RN-RO-RV Riduttori - Gearboxes - Getriebe

Descrizione - Description - Beschreibung

La serie dei riduttori RN, RO, RV - con brevetto depositato - è costruita con una carcassa comune che permette i medesimi piazzamenti di fissaggio per le tre versioni ed è concepita secondo le norme di progettazione ISO con l'ausilio di analisi strutturale per verifica della deformata e dello stress.

La robusta struttura non subisce deformazioni significative sotto effetto della coppia di funzionamento e dei carichi esterni con positivi risultati sulle superfici di tenuta.

I riduttori delle serie RN, RO, RV sono costruiti in alluminio pressofuso per le prime 3 grandezze ed in ghisa per le rimanenti.

La versione pendolare, comune ai tre tipi, permette la conversione in forma flangiata B5 applicando semplicemente una delle diverse flange di uscita disponibili.

Diverse dimensioni e tipi di alberi di uscita (cavo con chiavetta, cavo con calettatore e pieno con una o due sporgenze) sono disponibili per la più ampia possibilità di applicazioni.

La serie RN, RO, RV è prevista in 6 grandezze, 30 rapporti per due e tre coppie di riduzione per ognun tipo di riduttore e momenti torcenti fra 100 e 3400 Nm.

The gearboxes, series RN, RO, RV - patent pending - are manufactured with a common housing that allows the same footprint for the three versions and are designed according to latest ISO engineering specifications with the help of computer aided structural analysis for displacement and stress field.

The monolithic framework does not deflect under the effect of torque and external loads with effective results on sealing surfaces.

The gearboxes of series RN, RO, RV are manufactured of pressure die cast for the first 3 sizes and of cast iron for the others. The shaft mount version, common to the three types, allows the flange mount B5 conversion by simply fitting one of the many output flanges available.

Various dimensions and types of output shafts (hollow with through keyway, hollow with shrink disk and solid with single or double end) are available for the majority of applications.

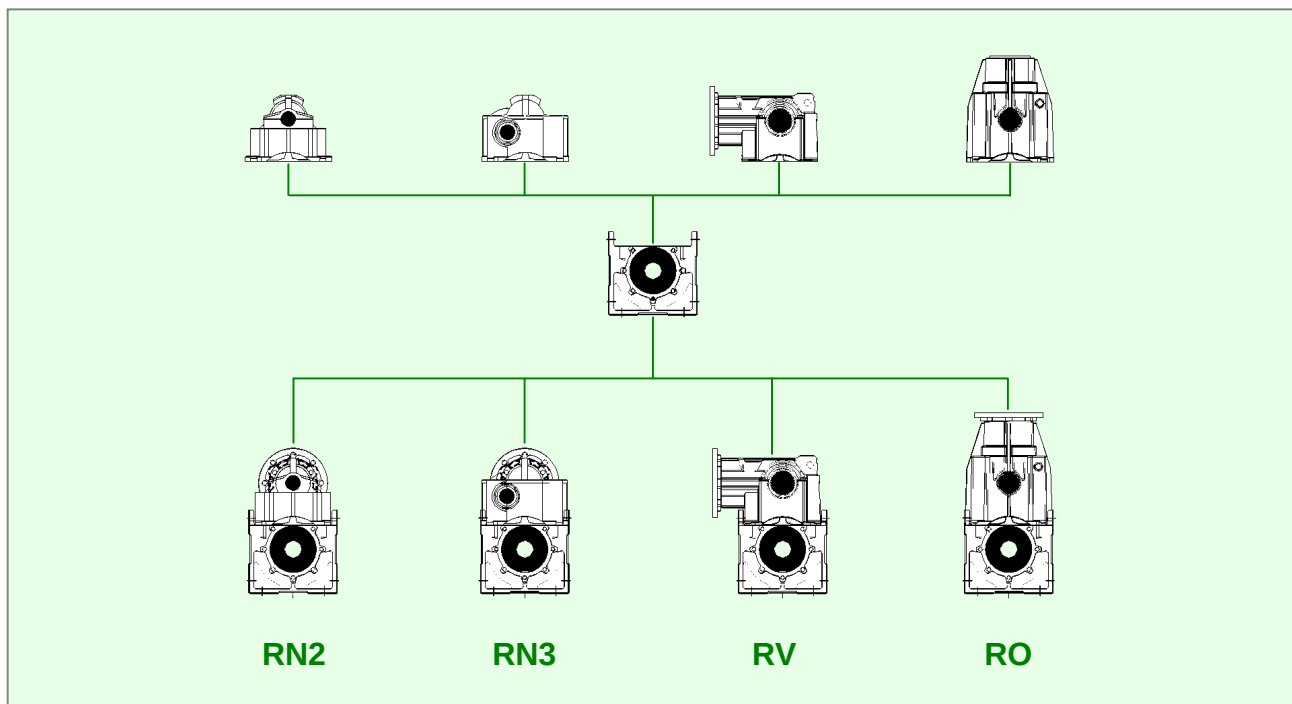
The series RN, RO, RV are made in 6 sizes for each type of gearboxes, 30 reduction ratios and output torques between 100 and 3400 Nm.

Die Getriebe der Baureihe RN, RO, RV - unter Patentschutzrecht - nach den ISO Normen konstruiert und anhand von Analysen auf Deformation und Kräfteeinwirkung nachgerechnet sind mit einem gemeinsamen Gehäuse hergestellt und haben somit die gleichen Befestigungsanschlüsse.

Die Gehäusestruktur wird von den Betriebsdrehmomenten und durch außen am Getriebe wirkende Kräfte nahezu nicht beeinflusst, was sich positiv auf die Lebensdauer der Wellendichtungen auswirkt.

Die ersten drei Größen der Getriebe der Baureihe RN, RO, RV sind aus Aluminiumdruckguss, die restlichen aus Grauguß. Die Aufsteckausführung, jeweils gemeinsam für die drei Typen, kann in Flanschausführung B5 nachgerüstet werden mittels eines der vielen zur Auswahl stehenden Ausgangsflansche.

Eine breite Auswahl an Wellenabmessungen am Ausgang (Hohlwelle mit Nut, Hohlwelle mit Schrumpfscheibe oder Vollwelle ein- oder beidseitig) ist verfügbar. Die Serie RN, RO, RV ist für jede Getriebetypen in 6 Baugrößen lieferbar, mit 30 Untersetzungen, zwei oder dreistufig und Ausgangsdrehmomenten zwischen 100 und 3400 Nm..



Getriebe - Gearboxes - Riduttori RN-RO-RV

Beschreibung - Description - Descrizione

	SPECIFICHE GENERALI	GENERAL SPECIFICATIONS	ALLGEMEINE EIGENSCHAFTEN
Gamma Range Bereich	6 grandezze 30 rapporti in 2 e 3 coppie 3400 Nm coppia uscita max	6 sizes 30 ratios in 2 and 3 stages 3400 Nm max. output torque	6 Baugrößen 30 Übersetzungen 2- u. 3- stufig 3400 Nm max. Abtriebsmoment
Dimensionamento Sizing Auslegung	Secondo ISO6336 / DIN3990. Vita media 15.000 ore con fattore di servizio SF1	According to ISO6336/DIN3990. 15,000 hrs average lifetime with service factor SF1	Laut ISO6336/DIN3990. 15.000 Stunden Lebensdauer für Verzahnung und Lagerung bei einem Betriebsfaktor SF1
Carcassa, Coperchi Housing, Covers Gehäuse, Flansche	Pressofusione in alluminio AlSi12Cu2Fe fino taglia 3 e ghisa G25 dalla taglia 4	Pressure die cast aluminium AlSi12Cu2Fe up to size 3 and cast iron G25 from size 4	Aluminium-Druckguss AlSi12Cu2Fe bis Größe 3 und Grauguss ab Größe 4
Entrata con giunto G Coupling G input Kupplungseingang G	Pressofusione in alluminio AlSi12Cu2Fe per taglie 3, 5, 6 e acciaio dalla taglia 5	Pressure die cast aluminium AlSi12Cu2Fe for sizes 3, 5, 6 and alloyed steel from size 8	Aluminium-Druckguss AlSi12Cu2Fe für Größen 3, 5, 6 und Stahl ab Größe 8
Parti dentate Toothed parts Verzahnung	Acciaio 20MnCr5 cmt / tmp Evolvente rettificato o sbarbato Coppie coniche rodiate	Steel 20MnCr5 case hardened Tooth profile ground or shaved Run-in bevel gears	Stahl 20MnCr5 einsatzgehärtet Zahnprofil geschliffen Kegelräder eingelaufen
Alberi & Linguette Shafts & Keys Wellen	Acciaio 39NiCrMo3 Alberi h6 - Fori E8 Linguette secondo DIN6885 B1	Steel 39NiCrMo3 Shafts h6 - Bores E8 Keys according to DIN6885 B1	Stahl 39NiCrMo3 Wellen h6 - Bohrungen E8 Passfedern nach DIN6885 B1
Cuscinetti Bearings Lagerung	Sfere o rulli secondo grandezza e specifiche tecniche	Ball- or roller-types according to sizes and technical requirements	Kugel- oder Rollenlager entsprechend den technischen Vorschriften
Paraolio Oilseals Dichtungen	Tipo NB - nitril-butadiene con secondo labbro parapolvere secondo DIN 3760	Type NB - nitril-butadiene with additional anti-dust lip according to DIN 3760	Typ NB - Nitril-Butadien mit zusätzlicher Staublippe entsprechend DIN 3760
Lubrificante Lubricant Schmierung	Olio sintetico a lunga durata Gradazione ISO VG 320	Synthetic long-life oil Grade ISO VG 320	Synthetisches Getriebeöl ISO VG 320 als Langzeit-Füllung
Verniciatura a forno Powder coating Gehäuselackierung	Alluminio naturale fino taglia 3 e vernice a polveri epossidiche colore standard RAL 7012 dalla taglia 4	Aluminium until size 3 and Epoxy powder paint Standard colour RAL 7012 from size 4	Aluminium bis Größe 3 und Epoxypulverfarbe Standard-farbtone RAL 7012 ab Größe 4

RN-RO-RV Riduttori - Gearboxes - Getriebe

Simboli - Symbols - Abkürzungen

D [mm]	Diametro primitivo dell'elemento di trasmissione $k_{(t)}$	PCD of transmission element $k_{(t)}$	Wirkkreisdurchmesser des Übertragungselementes $k_{(t)}$
F_r [N]	Carico radiale dell'applicazione	Application radial load	Radialkraft der Anwendung
F_{r1} [N]	Carico radiale di catalogo (entrata)	Catalogue radial load (input)	Radialkraft aus dem Katalog (Eingang).
F_{r2} [N]	Carico radiale di catalogo (uscita)	Catalogue radial load (output)	Radialkraft aus dem Katalog (Ausgang).
$F_{r2b(x)}$ [N]	Carico radiale ammissibile in posizione "X" sull'albero di uscita. Basato sulla vita dei cuscinetti.	Permissible radial load at position "X" on output shaft. Based on bearing lifetime.	Zulässige Radialkraft an der Position "X" der Ausgangswelle, basierend auf der Lagerlebensdauer.
$F_{r2s(x)}$ [N]	Carico radiale ammissibile come $F_{r2b(x)}$. Basato sulla resistenza a flessione e torsione dell'albero.	Permissible radial load same as $F_{r2b(x)}$. Based on shaft bending and torsional stress.	Zulässige Radialkraft wie $F_{r2b(x)}$ aber basierend auf Biegung und Verdrehung der Ausgangswelle.
FS	Fattore di servizio Service factor Betriebsfaktor	$FS = \frac{M_2}{M_{(app)}}$	
i_n	Rapporto di riduzione nominale	Nominal reduction ratio	Nominelle Übersetzung
i_r	Rapporto di riduzione reale	Actual reduction ratio	Tatsächliche Übersetzung
J_1 [kgm ²]	Momento d'inerzia del riduttore all'albero di entrata del riduttore	Moment of inertia of the gearbox at gearbox input shaft	Trägheitsmoment des Getriebes an der Eingangswelle
J_2 [kgm ²]	Momento d'inerzia dell'applicazione	Moment of inertia of the application	Trägheitsmoment der Anwendung
J_m [kgm ²]	Momento d'inerzia del motore	Moment of inertia of the motor	Trägheitsmoment des Motors
$k_{(a)}$	Fattore di accelerazione delle masse	Mass acceleration factor	Beschleunigungsfaktor der Massen
$k_{(t)}$	Fattore dell'elemento della trasmissione	Transmission element factor	Kennwert des Übertragungs-Elements
Lub H/V [l]	Lubrificante (litri) H - Montaggio orizzontale V - Montaggio verticale	Lubricant (litres) H - Horizontal mounting V - Vertical mounting	Schmierstoff (Liter) H - waagrechte Einbaulage V - senkrechte Einbaulage
M_2 [Nm]	Coppia massima di uscita del riduttore Gearbox maximum output torque Abtriebsdrehmoment des Getriebes	$M_2 = \frac{9550 * P_1 * \eta}{n_2}$	
$M_{(app)}$ [Nm]	Coppia dell'applicazione	Application torque	Erforderliches Drehmoment der Anwendung
n_1 [min ⁻¹]	Velocità di entrata	Input speed	Eingangsdrehzahl
n_2 [min ⁻¹]	Velocità di uscita	Output speed	Ausgangsdrehzahl
P_1 [kW]	Potenza in entrata Input power Motorleistung	$P_1 = \frac{M_2 * n_2}{9550 * \eta}$	
$P_{(kg)}$ [kg]	Peso per montaggio B3H e rapporto di riduzione medio	Weight: for mounting B3H and average reduction ratio	Gewicht für Bauform B3H und durch durchschnittliche Getriebeübersetzungen
η	Rendimento Efficiency Wirkungsgrad	$\eta = 0.96$ - 2 coppie, stages, Stufen $\eta = 0.94$ - 3 coppie, stages, Stufen	

Getriebe - Gearboxes - Riduttori RN-RO-RV

Betriebsfaktoren - Service factors - Fattori di servizio

FATTORE DI SERVIZIO del riduttore

Il fattore di servizio FS1.0 è inteso come rappresentativo di un funzionamento di 8 ore al giorno, con carico uniforme e fattore di accelerazione delle masse $k_{(a)} \leq 0,2$, avviamenti inferiori a 300 all'ora e temperatura ambiente fra 15 e 35 °C.

SERVICE FACTOR of the gearbox

Service factor FS1.0 is meant as typical of 8 hours/day operation, with uniform load and mass acceleration factor $k_{(a)} \leq 0,2$, starts/ stops lower than 300 per hour and ambient temperature between 15 and 35 Celsius.

BETRIEBSFAKTOR des Getriebes

Für den Servicefaktor FS1.0 gilt ein 8- bis 10- stündiger Betrieb mit gleichförmiger Last und einem Massenbeschleunigungsfaktor $k_{(a)} J_2 \leq 2$, bis zu 300 Starts/Stops je Stunde und Umgebungstemperaturen zwischen 15° und 35 °C.

Le prestazioni riportate nelle tabelle permettono di calcolare il fattore di servizio come rapporto fra la coppia massima di uscita del riduttore M_2 e la coppia richiesta dalla applicazione $M_{(app)}$.

The performance shown in the tables gives the service factor calculation as a ratio between gearbox maximum output torque M_2 and application torque $M_{(app)}$.

Die in den Tabellen dargestellten Daten ermöglichen eine Bestimmung des genauen Betriebsfaktors aus dem max. Abtriebsmoment des Getriebes M_2 und dem erforderlichen Moment der Anwendung $M_{(app)}$.

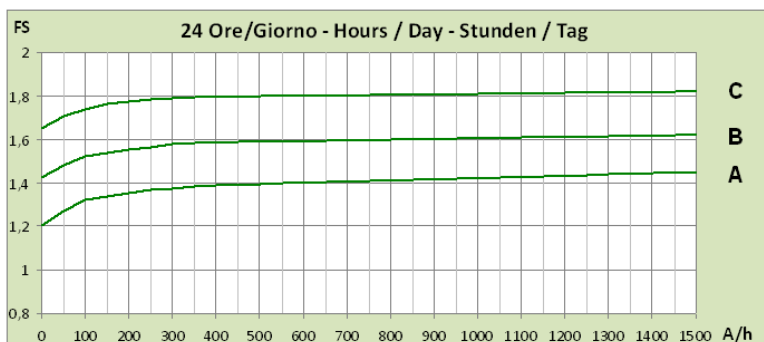
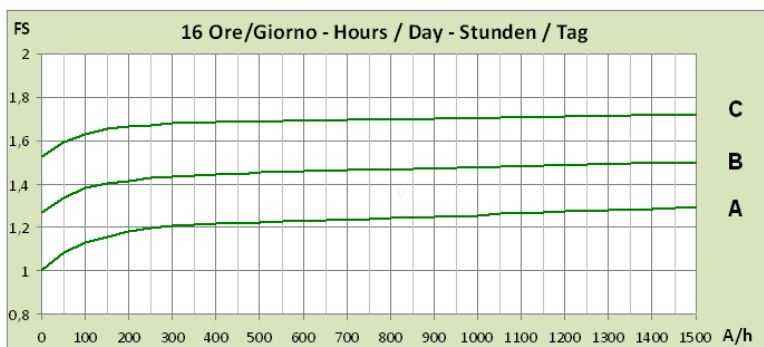
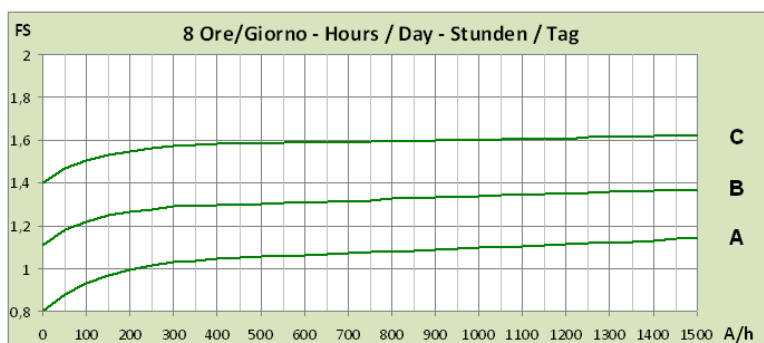
Fattore di accelerazione delle masse
Mass acceleration factor
Beschleunigungsfaktor der Massen

$$k_{(a)} = \frac{\frac{J_2}{i_r^2} + J_1}{J_m}$$

Classi di carico
Load class
Belastungsklassen

- (A) - Carico uniforme
Uniform load
Gleichförmige Last
 $k_{(a)} \leq 0,2$
- (B) - Carico con urti moderati
Moderate shock load
Ungleichförmige Last
 $0,2 < k_{(a)} \leq 3$
- (C) - Carico con forti urti
Severe shock load
Stark ungleichförmige Last
 $3 < k_{(a)} \leq 10$

A/h - Numero di avviamenti orari
Number of starts/stops per hour
Anzahl der Starts/Stops je Stunde



RN-RO-RV Riduttori - Gearboxes - Getriebe

Fattori di servizio - Service factors - Betriebsfaktoren

TIPO DI SERVIZIO del motore

Le specifiche dei vari tipi di servizi più o meno gravosi in condizioni ambientali normali sono definiti dalle norme CEI EN 60034-1 / IEC34-1.

DUTY TYPE of the motor

The specifications of various duty types are defined by the Standard CEI EN 60034-1 / IEC34-1.

BETRIEBSARTEN des Motors

Die Betriebsarten sind definiert in den Normen CEI EN 60034-1 / IEC34-1.

S1 - Servizio continuo

Funzionamento a carico costante per un periodo di tempo indefinito (N), comunque sufficiente a raggiungere l'equilibrio termico

S1 - Continuous duty

Steady load operation for an indefinite period (N), but long enough to achieve thermal balancing

S1 - Dauerbetrieb

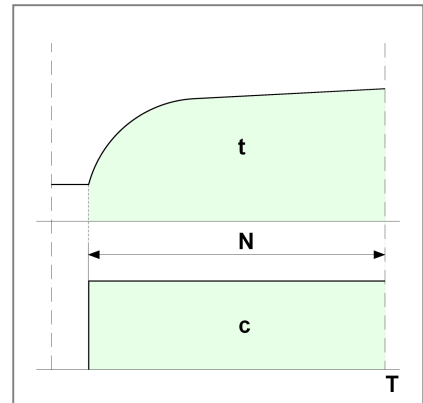
Betrieb mit konstanter Belastung über eine unbestimmte Zeit (N), ohne dass der thermische Beharrungszustand der Maschine beeinträchtigt wird.

FS = 1.0

N = Tempo di lavoro
Operation time
Betriebszeit

c = Carico
Load
Belastung

t = Temperatura
Temperature
Temperatur



S3 - Servizio intermittente periodico

Funzionamento secondo un ciclo (C) comprendente un periodo di tempo a carico costante (N) ed un periodo di tempo di riposo (R). Gli avviamenti non influiscono sulle temperature. Il ciclo (C) di riferimento è di 10 minuti complessivi. Il rapporto di intermittenza viene determinato secondo la formula

S3 - Periodic intermittent duty

Operation according to cycle (C) including steady load time (N) and rest time (R). Starts/stops do not affect temperature. The reference cycle (C) is up to a total of 10 minutes. Intermittence ratio is calculated as follows

S3 - Aussetzbetriebe

Betrieb als Folge (C) gleichartiger Spiele mit konstanter Last während der Zeit (N) und einer folgenden Pause (R). Start und Stop beeinflussen nicht die Temperatur.

Für die Zyklusdauer (C) gilt eine Zeit von 10 Minuten.

$$\frac{N}{(N+R)} * 100 = \begin{matrix} 60\% \\ 40\% \\ 25\% \\ 15\% \end{matrix}$$

FS = 0.90

FS = 0.85

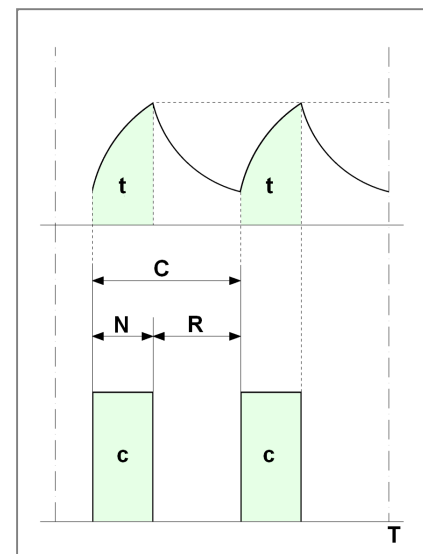
FS = 0.75

FS = 0.70

N = Tempo di lavoro
Operation time
Betriebsdauer

R = Tempo di riposo
Rest time
Pause

C = Ciclo di lavoro
Duty cycle
Zyklusdauer

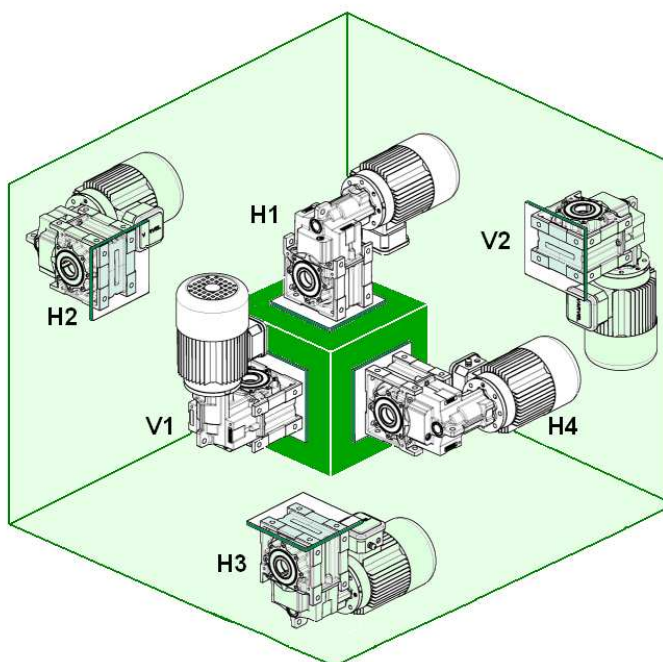


Getriebe - Gearboxes - Riduttori RN-RO-RV

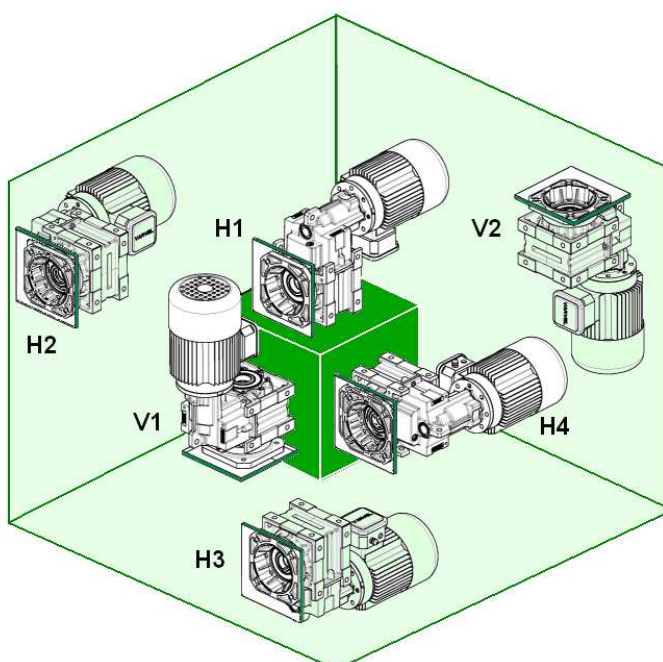
Einbaulagen - Mounting positions - Posizioni di montaggio

RN

B3
Montaggio a piedi
Foot mounting
Fußbauformen



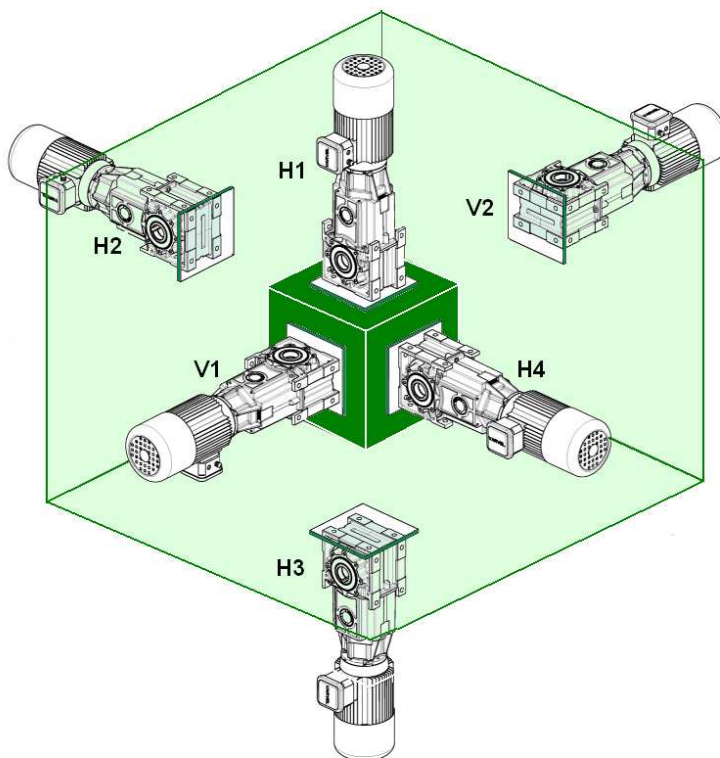
B5
Montaggio a flangia
Flange mounting
Flanschbauformen



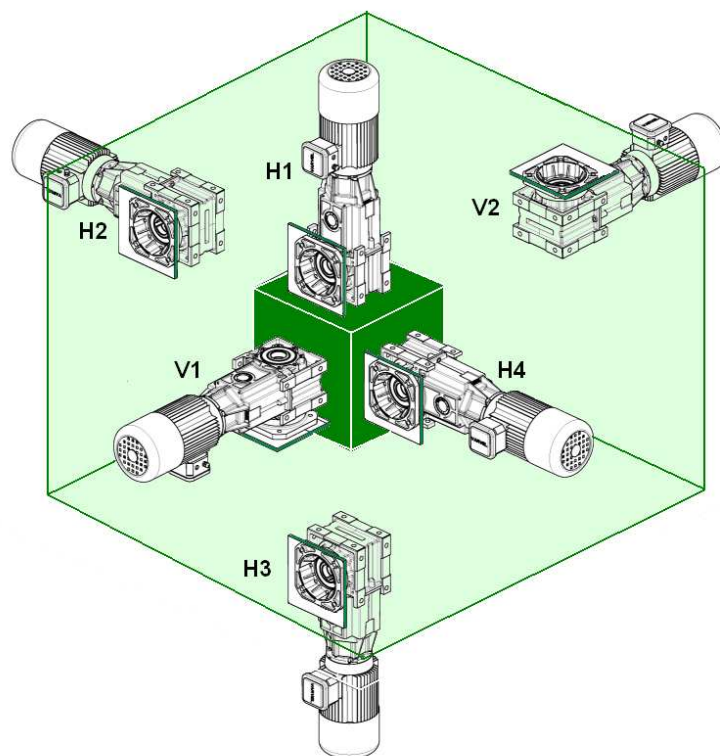
RN-RO-RV Riduttori - Gearboxes - Getriebe

Posizioni di montaggio - Mounting positions - Einbaulagen

RO



B3
Montaggio a piedi
Foot mounting
Fußbaufornen



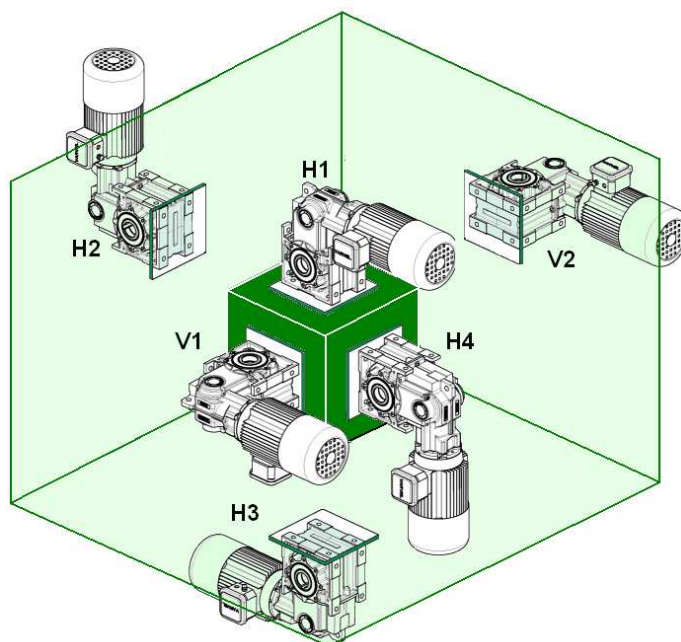
B5
Montaggio a flangia
Flange mounting
Flanschbauformen

Getriebe - Gearboxes - Riduttori RN-RO-RV

Einbaulagen - Mounting positions - Posizioni di montaggio

B3

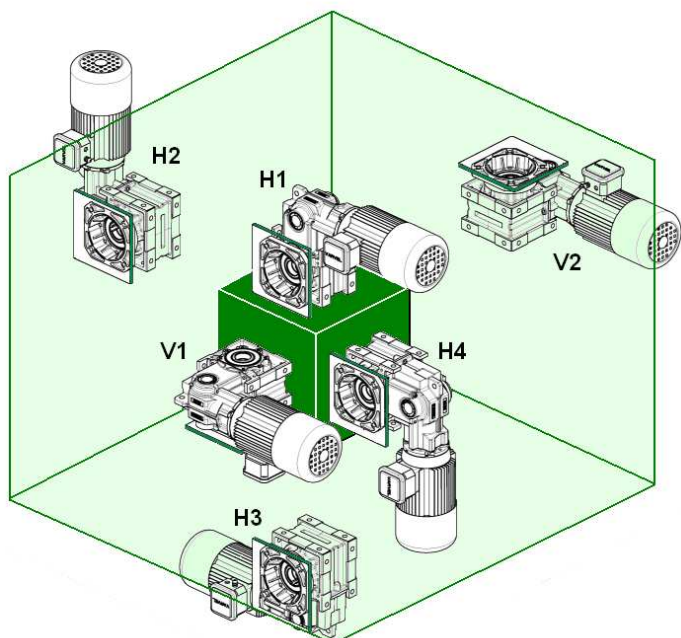
Montaggio a piedi
Foot mounting
Fußbauformen



RV

B5

Montaggio a flangia
Flange mounting
Flanschbauformen



RN-RO-RV Riduttori - Gearboxes - Getriebe

Designazione - Designation - Bezeichnungen

DESIGNAZIONE RIDUTTORE

GEARBOX DESIGNATION

GETRIEBEBEZEICHNUNG

F RN 32/B3 H 31.5 IEC71-B14 AU30 DFU200

Flangia uscita ø - Output flange ø - Ausgangsflansch ø

Albero uscita ø - Output shaft ø - Ausgangswelle ø

B5, B14 = Forma del motore - Motor format - Motorbauform

Grandezza del motore elettrico - Electric motor frame - Motorbaugröße

I = Rapporto di riduzione - Reduction ratio - Getriebeübersetzung

H, V = Posizione di montaggio del riduttore - Gearbox mounting position - Einbaulage des Getriebes

B3, B5 = Forma costruttiva del riduttore - Gearbox format - Bauform des Getriebes

Grandezza e coppie del riduttore - Gearbox size and stages - Baugröße u. Stufen des Getriebes

RN, RO, RV = Tipo del riduttore - Gearbox type - Getriebetyp

M = Motoriduttore

F = Riduttore con flangia entrata

S = Riduttore senza flangia entrata

... = Riduttore con albero entrata sporgente

- Geared motor

- Gearbox with input flange

- Gearbox without input flange

- Gearbox with input free shaft

- Getriebemotor

- Getriebe mit Eingangsflansch

- Getriebe ohne Eingangsflansch

- Freie Eingangswelle

DESIGNAZIONE MOTORE

MOTOR DESIGNATION

MOTORENBEZEICHNUNG

MT 0.37 kW 71B 4 B14 230/400/50 IP55 F X4

Posizione della morsettiera

Terminal box position

Klemmkastenposition

Class F (std) = Classe isolamento

Insulation class

Isolationsklasse

IP55 (std) = Grado di protezione

Protection class

Schutzart

Tensione/Frequenza - Voltage/frequency - Spannung/Frequenz

Forma costruttiva - Mounting format - Bauform

Numero poli - Number of poles - Polzahl

Grandezza IEC motore - IEC motor frame - IEC-Motorbaugröße

Potenza motore - Motor power - Motorleistung

MT = Motore trifase

- Three-phase motor

- Dreiphasenmotor

MM = Motore monofase

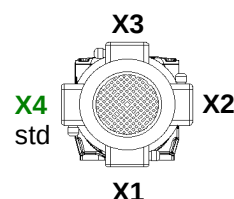
- Single-phase motor

- Einphasenmotor

MA = Motore autofrenante

- Brake motor

- Bremsmotor



Getriebe - Gearboxes - Riduttori RN-RO-RV

Ausgangskräfte - External Loads - Carichi Esterni

CARICHI RADIALI USCITA

I carichi radiali riportati nelle tabelle di selezione dei riduttori debbono essere verificati anche in base al tipo di elemento di trasmissione montato sulla estremità d'albero tramite il relativo fattore $k_{(t)}$.

OUTPUT RADIAL LOADS

Radial (overhung) loads have to be checked with the rating factor given in the gearbox selection tables. The $k_{(t)}$ rating factor will vary according to the transmission element fitted on the gearbox output shaft according to the below table.

AUSGANGSRADIALKRÄFTE

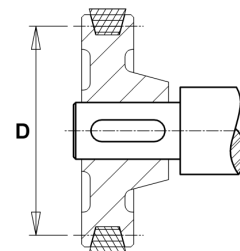
Radialkräfte müssen mit den zulässigen Werten der Auswahl tabellen für Getriebe verglichen werden, wobei der Faktor $k_{(t)}$ des jeweiligen Übertragungs-elementes berücksichtigt werden muss.

- Carico radiale dell'applicazione

Application radial load

Radialbelastung der Anwendung

$$F_r = \frac{2000 * M_2}{D} * k_{(t)}$$



$k_{(t)}$	Elemento della trasmissione	Transmission element	Übertragungselement
1,15	Ingranaggio - N. denti < 17	Gear - Tooth No. < 17	Zahnrad - Zähnezahl < 17
1,40	Pignone per catena - N. denti < 13	Chain sprocket - Tooth No. < 13	Kettenrad - Zähnezahl < 13
1,25	Pignone per catena - N. denti < 20	Chain sprocket - Tooth No. < 20	Kettenrad - Zähnezahl < 20
1,00	Pignone per catena - N. denti > 20	Chain sprocket - Tooth No. > 20	Kettenrad - Zähnezahl > 20
2,50	Puleggia per cinghie "V"	V-belt pulley	Keilriemen "V"
1,25	Puleggia per cinghie dentate	Toothed-belt pulley	Zahnriemen

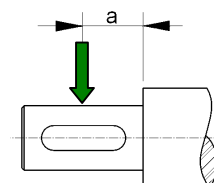
- Carico radiale di catalogo a metà albero (a)

Catalogue radial load at shaft centre (a)

Katalogwert der Radialbelastung Wellenmitte (a)

[mm]	1	2	3	4	5	6
a	22.5	30.0	30.0	40.0	41.0	52.5

$$F_{r2} \geq F_r$$



- Carico radiale in posizione generica (x)

Radial load offset from centre (x)

Radialbelastung für allgemeine Positionen (x)

Verificare entrambi i confronti (*) e (**).
Check both (*) and (**) comparisons.
Überprüfe beide Ergebnisse (*) und (**)

[mm]	1	2	3	4	5	6
a	22.5	30.0	30.0	40.0	41.0	52.5
b	21.5	24.5	23.5	30.5	32.0	33.0
c	44.0	54.5	53.5	70.5	73.0	85.5

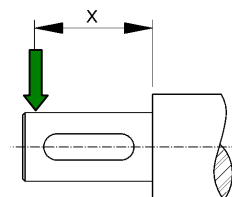
$$(*) \quad F_{r2b(x)} \geq F_r$$

$$F_{r2b(x)} = F_{r2} * \frac{c}{x + b}$$

$$F_{r2s(x)} \geq F_r$$

$$(**) \quad F_{r2s(x)} = F_{r2} * \frac{a}{x}$$

'b, c' = costanti / constants / Konstanten



CARICHI ASSIALI USCITA

Valore del carico assiale, sia a trazione che a compressione, e in presenza di carico radiale:

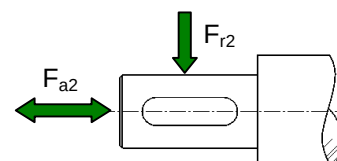
OUTPUT AXIAL LOADS

Axial load value, both on tensile and compressive stress, and with radial load:

$$F_{a2} = F_{r2} * 0.2$$

EINGANGSAXIALKRÄFTE

Axialkräfte auf Zug- und Druck bei gleichzeitiger Radialkraft:



RN-RO-RV Riduttori - Gearboxes - Getriebe

RN1

Selezione Riduttore - Speed Reducer Selection - Getriebeauswahl
(1400 min⁻¹) 180 Nm

FRN	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	P ₁ [kW]	F _{r1} [N]	F _{r2} [N]	J ₁ [kgcm ²]	56 B5	63 B*	71 B*	80 B*	90 B14
12 2c	7,1	6,59	212	125	2,9	1050	3350	0,8414	⊙	⊙	⊙	⊙	⊙
	8,0	7,95	176	130	2,5	1100	3470	0,7600	⊙	⊙	⊙	⊙	⊙
	9,0	8,32	168	140	2,6	1030	3580	0,6786	⊙	⊙	⊙	⊙	⊙
	10,0	10,11	138	150	2,3	1010	3490	0,5849	⊙	⊙	⊙	⊙	⊙
	12,5	12,19	115	130	1,6	1110	3470	0,5416	⊙	⊙	⊙	⊙	⊙
	14,0	13,17	106	165	1,9	1000	3450	0,4982	⊙	⊙	⊙	⊙	⊙
	16,0	15,87	88,2	140	1,3	1110	3450	0,4722	⊙	⊙	⊙	⊙	⊙
	18,0	16,65	84,1	165	1,5	1060	3560	0,4462	⊙	⊙	⊙	⊙	⊙
	20,0	20,29	69	170	1,3	1110	3710	0,4149	⊙	⊙	⊙	⊙	⊙
	22,4	25,37	55,2	170	1,0	1130	3850	0,3892	⊙	⊙	⊙	⊙	
	31,5	30,59	45,8	140	0,70	1270	4070	0,3789	⊙	⊙	⊙	⊙	
	33,0	33,00	42,4	160	0,74	1230	4290	0,3685	⊙	⊙	⊙	⊙	
	35,5	36,47	38,4	140	0,59	1330	4700	0,3626	⊙	⊙	⊙	⊙	
	40	39,78	35,2	140	0,54	1420	4870	0,3635	⊙	⊙	⊙		
	45	43,96	31,8	140	0,49	1420	4900	0,3585	⊙	⊙	⊙		
	50	48,98	28,6	140	0,44	1420	4900	0,3539	⊙	⊙	⊙		
	56	52,07	26,9	110	0,32	1420	5150	0,3499	⊙	⊙	⊙		
	60	62,78	22,3	120	0,29	1470	5400	0,3459	⊙	⊙	⊙		
13 3c	40	39,52	35,4	145	0,57	850	4762	0,2554	⊙	⊙	⊙		
	50	48,04	29,1	155	0,50	950	4600	0,2512	⊙	⊙	⊙		
	63	62,54	22,4	170	0,42	1070	4300	0,2474	⊙	⊙	⊙		
	80	79,10	17,7	180	0,35	1140	4000	0,2451	⊙	⊙	⊙		
	100	96,36	14,5	180	0,29	1200	4000	0,2437	⊙	⊙	⊙		
	125	120,51	11,6	180	0,23	1250	4000	0,2426	⊙	⊙			
	160	156,75	8,93	175	0,17	1300	4100	0,2416	⊙	⊙			
	180	173,22	8,08	150	0,14	1340	4800	0,2414	⊙	⊙			
	200	203,91	6,87	150	0,11	1320	4800	0,2326	⊙				
	250	265,22	5,28	150	0,09	1350	4800	0,2322	⊙				
	280	293,09	4,78	150	0,08	1360	4800	0,2321	⊙				
	315	326,53	4,29	150	0,07	1360	4800	0,2320	⊙				
	400	418,50	3,35	120	0,04	1440	5300	0,2318	⊙				

B* = B5 & B14

2c & 3c - Numero coppie di riduzione
 (⊙) - Potenza max utilizzabile ≤ P₁

- Number of reduction stages
 - Max, available power ≤ P₁

- Anzahl der Getriebestufen
 - Max, Leistung ≤ P₁

	Lubrificante Lubricant Schmiermittel						Peso Weight Gewicht [kg]		
	H1 [l]	H2 [l]	H3 [l]	H4 [l]	[V1 l]	V2 [l]			
FRN12	0,5	0,6	0,4	0,6	0,6	0,6	5,4		
FRN13	0,5	0,4	0,3	0,4	0,6	0,4	5,5		

RO1/RV1

Getriebe - Gearboxes - Riduttori RN-RO-RV

180 Nm (1400 min⁻¹)
Getriebeauswahl - Speed Reducer Selection - Selezione Riduttore

FRO FRV	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	P ₁ [kW]	F _{r1} [N]	F _{r2} [N]	J ₁ [kgcm ²]	56 B5	63 B*	71 B*	80 B*	90 B14
13 3c	7,1	7,58	184,6	130	2,7	1550	3510	1,1700	⊙	⊙	⊙	⊙	⊙
	9,0	9,14	153,2	130	2,2	1580	3740	1,0754	⊙	⊙	⊙	⊙	⊙
	10,0	9,57	146,3	140	2,3	1580	3600	1,0469	⊙	⊙	⊙	⊙	⊙
	11,2	11,63	120,4	150	2,0	1590	3570	0,9761	⊙	⊙	⊙	⊙	⊙
	14,0	14,02	99,8	130	1,5	1600	4040	0,9358	⊙	⊙	⊙	⊙	⊙
	16,0	15,14	92,5	165	1,7	1600	3550	0,9105	⊙	⊙	⊙	⊙	⊙
	18,0	18,25	76,7	135	1,2	1610	4240	0,8868	⊙	⊙	⊙	⊙	⊙
	20,0	19,15	73,1	170	1,4	1610	3670	0,8712	⊙	⊙	⊙	⊙	⊙
	22,4	23,33	60,0	170	1,1	1610	3820	0,8476	⊙	⊙	⊙	⊙	⊙
	25,0	24,44	57,3	150	0,96	1600	4150	0,3567	⊙	⊙	⊙	⊙	
	28,0	29,18	48,0	170	0,91	1610	3960	0,8281	⊙	⊙	⊙	⊙	
	31,5	31,82	44,0	165	0,81	1600	4120	0,3418	⊙	⊙	⊙	⊙	
	35,5	37,95	36,9	160	0,66	1610	4430	0,8125	⊙	⊙	⊙	⊙	
	40	40,24	34,8	175	0,68	1610	4100	0,3329	⊙	⊙	⊙	⊙	
	45	47,88	29,2	170	0,55	1600	4300	0,2717	⊙	⊙	⊙	⊙	
	50	49,02	28,6	175	0,56	1610	4100	0,3276	⊙	⊙	⊙	⊙	
	56	59,10	23,7	140	0,37	1610	4820	0,3253	⊙	⊙	⊙		
	63	61,31	22,8	170	0,43	1610	4000	0,3231	⊙	⊙	⊙		
	71	73,77	19,0	170	0,36	1610	4000	0,2654	⊙	⊙	⊙		
	80	84,93	16,5	165	0,30	1610	4400	0,2441	⊙	⊙	⊙		
	90	92,26	15,2	180	0,30	1610	4000	0,2634	⊙	⊙	⊙		
	100	103,46	13,5	180	0,27	1610	4000	0,2429	⊙	⊙	⊙		
	112	111,22	12,6	150	0,21	1610	4800	0,2628	⊙	⊙			
	125	129,39	10,8	180	0,22	1610	4000	0,2419	⊙	⊙			
	140	132,61	10,6	150	0,18	1610	4700	0,2614	⊙	⊙			
	160	168,30	8,32	175	0,16	1610	4100	0,2411	⊙	⊙			
	180	185,98	7,53	150	0,13	1610	4700	0,2409	⊙	⊙			
	200	202,90	6,90	150	0,12	1610	4800	0,2409	⊙				
	224	224,21	6,24	150	0,10	1610	4800	0,2407	⊙				
	250	249,80	5,60	150	0,09	1610	4800	0,2405	⊙				
	315	320,15	4,37	130	0,06	1610	5300	0,2402	⊙				

B* = B5 & B14

3c - Numero coppie di riduzione - Number of reduction stages - Anzahl der Getriebestufen
 (⊙) - Potenza max utilizzabile ≤ P₁ - Max, available power ≤ P₁ - Max, Leistung ≤ P₁

	Lubrificante Lubricant Schmiermittel						Peso Weight Gewicht [kg]		
	H1 [l]	H2 [l]	H3 [l]	H4 [l]	V1 [l]	V2 [l]			
FRO13	0,6	0,6	0,6	0,6	0,7	0,7	6,4		
FRV13	0,6	0,5	0,4	0,5	0,6	0,6	6,1		

RN-RO-RV Riduttori - Gearboxes - Getriebe

RN2

Selezione Riduttore - Speed Reducer Selection - Getriebeauswahl
(1400 min⁻¹) 310 Nm

FRN	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	P ₁ [kW]	F _{r1} [N]	F _{r2} [N]	J ₁ [kgcm ²]	71 B*	80 B*	90 B*	100 B*	112 B*
22 2c	6,3	5,76	243	190	5,1	2900	3200	2,5855	⊙	⊙	⊙	⊙	⊙
	7,1	7,37	190	215	4,6	2900	3450	2,1881	⊙	⊙	⊙	⊙	⊙
	8,0	7,80	179	220	4,4	2900	3530	2,2972	⊙	⊙	⊙	⊙	⊙
	9,0	9,07	154	240	4,1	2900	3690	1,9599	⊙	⊙	⊙	⊙	⊙
	10,0	9,98	140	230	3,6	3000	3850	2,0120	⊙	⊙	⊙	⊙	
	11,2	11,33	124	260	3,6	2900	3890	1,7848	⊙	⊙	⊙	⊙	
	12,5	12,29	114	230	2,9	3000	4140	1,8436	⊙	⊙	⊙	⊙	
	14,0	14,51	96,5	300	3,2	3000	3720	1,6479	⊙	⊙	⊙	⊙	
	16,0	15,36	91,2	230	2,3	3000	4480	1,7103	⊙	⊙	⊙	⊙	
	18,0	17,87	78,4	310	2,7	3000	3590	1,5647	⊙	⊙	⊙	⊙	
	20,0	19,66	71,2	230	1,8	3000	4810	1,6024	⊙	⊙	⊙		
	22,4	22,67	61,8	310	2,1	3000	3800	1,4958	⊙	⊙	⊙		
	25,0	24,21	57,8	240	1,5	3000	4970	1,5348	⊙	⊙	⊙		
	28,0	29,32	47,8	265	1,4	3000	4770	1,4440	⊙	⊙	⊙		
	31,5	30,71	45,6	240	1,2	3000	5180	1,4772	⊙	⊙	⊙		
	35,5	34,52	40,6	220	0,99	3000	5420	1,4202	⊙	⊙			
	40	39,72	35,2	240	0,94	3000	5380	1,4329	⊙	⊙			
	45	46,78	29,9	245	0,82	3000	5550	1,4122	⊙	⊙			
	50	51,19	27,3	245	0,75	3000	5650	1,4027	⊙	⊙			
	63	62,66	22,3	250	0,62	3000	6040	1,3859	⊙	⊙			
23 3c	40	36,34	38,5	250	1,07	-	5130	0,9994	⊙	⊙			
	45	44,73	31,3	270	0,94	-	5070	0,9900	⊙	⊙			
	56	55,91	25,0	310	0,86	1070	4970	0,9828	⊙	⊙			
	71	71,57	19,6	310	0,68	1210	5100	0,9772	⊙	⊙			
	80	79,01	17,7	140	0,28	1390	7160	0,9250	⊙	⊙			
	90	88,14	15,9	310	0,55	1370	5200	0,9738	⊙	⊙			
	100	101,07	13,9	180	0,28	1390	7190	0,9223	⊙				
	112	111,82	12,5	310	0,43	1480	5200	0,9710	⊙	⊙			
	125	124,39	11,3	220	0,28	1390	6700	0,9206	⊙				
	140	144,62	9,68	265	0,29	1550	6100	0,9688	⊙				
	160	155,49	9,00	260	0,26	1450	6200	0,9193	⊙				
	180	186,37	7,51	200	0,17	1570	7000	0,9674	(⊙)				
	200	199,03	7,03	260	0,20	1500	6200	0,9183	(⊙)				
	224	228,12	6,14	170	0,12	1580	7400	0,9666	(⊙)				
	250	245,13	5,71	260	0,17	1540	6200	0,9176	(⊙)				
	315	310,98	4,50	260	0,13	1560	6200	0,9170	(⊙)				
	400	402,20	3,48	260	0,10	1570	6200	0,9166	(⊙)				
	450	473,65	2,96	260	0,09	1570	6200	0,9164	(⊙)				
	500	518,30	2,70	260	0,08	1580	6200	0,9163	(⊙)				
	630	634,40	2,21	230	0,06	1580	6700	0,9161	(⊙)				

B* = B5 & B14

2c & 3c - Numero coppie di riduzione - Number of reduction stages - Anzahl der Getriebestufen
 (⊙) - Potenza max utilizzabile ≤ P₁ - Max, available power ≤ P₁ - Max, Leistung ≤ P₁

	Lubrificante Lubricant Schmiermittel						Peso Weight Gewicht [kg]		
	H1 [l]	H2 [l]	H3 [l]	H4 [l]	V1 [l]	V2 [l]			
FRN22	0,7	0,8	0,5	0,8	0,7	0,7	8,6		
FRN23	0,7	0,6	0,4	0,6	0,7	0,7	9,1		

RO2/RV2

Getriebe - Gearboxes - Riduttori RN-RO-RV

310 Nm (1400 min⁻¹)
Getriebeauswahl - Speed Reducer Selection - Selezione Riduttore

FRO FRV	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	P ₁ [kW]	F _{r1} [N]	F _{r2} [N]	J ₁ [kgcm ²]	71 B*	80 B*	90 B*	100 B*	112 B*
23 3c	6,3	6,62	211,4	200	4,7	2900	3350	3,7230	⊙	⊙	⊙	⊙	⊙
	8,0	8,47	165,3	220	4,1	2900	3620	3,4225	⊙	⊙	⊙	⊙	⊙
	9,0	8,97	156,0	225	3,9	2900	3710	3,4623	⊙	⊙	⊙	⊙	
	10,0	10,43	134,3	245	3,7	2900	3870	3,2499	⊙	⊙	⊙	⊙	
	11,2	11,48	122,0	230	3,1	3000	4040	3,2632	⊙	⊙	⊙	⊙	
	12,5	13,03	107,4	275	3,3	3000	3920	3,1175	⊙	⊙	⊙	⊙	
	14,0	14,13	99,1	230	2,5	3000	4340	3,1448	⊙	⊙	⊙	⊙	
	16,0	16,68	83,9	305	2,9	3000	3620	3,0140	⊙	⊙	⊙	⊙	
	18,0	17,80	78,6	250	2,2	3000	4480	1,3623	⊙	⊙	⊙	⊙	
	20,0	20,55	68,1	310	2,4	3000	3720	2,9511	⊙	⊙	⊙	⊙	
	22,4	21,91	63,9	270	1,9	3000	4420	1,3232	⊙	⊙	⊙		
	25,0	26,07	53,7	310	1,9	3000	3930	2,8990	⊙	⊙	⊙		
	28,0	27,39	51,1	310	1,8	3000	4180	1,2932	⊙	⊙	⊙		
	31,5	32,97	42,5	260	1,2	3000	4960	1,0795	⊙	⊙	⊙		
	35,5	35,06	39,9	310	1,4	3000	4220	1,2698	⊙	⊙	⊙		
	40	41,21	34,0	310	1,2	3000	4600	1,0662	⊙	⊙	⊙		
	45	43,18	32,4	310	1,1	3000	4450	1,2555	⊙	⊙	⊙		
	50	52,75	26,5	310	0,92	3000	4680	1,0559	⊙	⊙			
	56	54,78	25,6	310	0,88	3000	4720	1,2437	⊙	⊙			
	63	64,97	21,5	310	0,74	3000	4930	1,0496	⊙	⊙			
	71	73,98	18,9	285	0,60	3000	5510	0,9764	⊙	⊙			
	80	82,42	17,0	310	0,59	3000	5100	1,0444	⊙	⊙			
	90	91,12	15,4	310	0,53	3000	5100	0,9732	⊙				
	100	106,60	13,1	270	0,39	3000	6000	1,0405	⊙				
	112	115,60	12,1	310	0,42	3000	5100	0,9706	⊙				
	125	123,47	11,34	260	0,33	3000	6200	0,9721	⊙				
	140	149,51	9,36	270	0,28	3000	6000	0,9686	⊙				
	160	156,64	8,94	260	0,26	3000	6200	0,9699	⊙				
	180	170,11	8,23	260	0,24	3000	6200	1,0381	(⊙)				
	200	202,59	6,91	260	0,20	3000	6200	0,9682	(⊙)				
	224	238,58	5,87	260	0,17	3000	6200	0,9674	(⊙)				
	250	261,07	5,363	260	0,16	3000	6200	0,9670	(⊙)				
	315	319,55	4,381	260	0,13	3000	6200	0,9664	(⊙)				

B* = B5 & B14

3c - Numero coppie di riduzione - Number of reduction stages - Anzahl der Getriebestufen
 (⊙) - Potenza max utilizzabile ≤ P₁ - Max, available power ≤ P₁ - Max, Leistung ≤ P₁

	Lubrificante Lubricant Schmiermittel						Peso Weight Gewicht [kg]		
	H1 [l]	H2 [l]	H3 [l]	H4 [l]	V1 [l]	V2 [l]			
FRO23	0,8	0,7	0,8	0,7	0,9	0,9	10,6		
FRV23	0,7	0,6	0,5	0,6	0,7	0,6	10,1		

RN-RO-RV Riduttori - Gearboxes - Getriebe

RN3

Selezione Riduttore - Speed Reducer Selection - Getriebeauswahl
(1400 min⁻¹) 580 Nm

FRN	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	P ₁ [kW]	F _{r1} [N]	F _{r2} [N]	J ₁ [kgcm ²]	71 B*	80 B*	90 B*	100 B*	112 B*
32 2c	6,3	5,59	250	400	10,9	1780	4760	4,8684	⊙	⊙	⊙	⊙	⊙
	7,1	7,17	195	430	9,2	1890	5180	3,8232	⊙	⊙	⊙	⊙	⊙
	8,0	7,90	177	370	7,1	2100	5410	3,9288	⊙	⊙	⊙	⊙	⊙
	9,0	8,84	158	480	8,3	1790	5180	3,2176	⊙	⊙	⊙	⊙	⊙
	10,0	10,13	138	380	5,7	2170	5890	3,2515	⊙	⊙	⊙	⊙	⊙
	11,2	11,06	127	530	7,3	-	4550	2,7466	⊙	⊙	⊙	⊙	⊙
	12,5	12,49	112	380	4,6	2180	6330	2,8412	⊙	⊙	⊙	⊙	⊙
	14,0	14,18	98,8	540	5,8	1870	4700	2,3720	⊙	⊙	⊙	⊙	⊙
	16,0	15,63	89,6	390	3,8	2180	6830	2,5063	⊙	⊙	⊙	⊙	
	18,0	18,84	74,3	550	4,5	2020	4860	2,0717	⊙	⊙	⊙	⊙	
	20,0	20,03	69,9	390	3,0	2180	7400	2,2256	⊙	⊙	⊙	⊙	
	22,4	22,18	63,1	550	3,8	-	5000	1,9456	⊙	⊙	⊙	⊙	
	25,0	26,62	52,6	400	2,3	2180	7750	1,9888	⊙	⊙	⊙	⊙	
	28,0	28,93	48,4	540	2,9	1610	5550	1,7952	⊙	⊙	⊙	⊙	
	31,5	31,33	44,7	400	1,9	2180	7920	1,8858	⊙	⊙	⊙		
	35,5	34,50	40,6	450	2,0	2020	7320	1,7221	⊙	⊙	⊙		
	40	40,87	34,3	420	1,6	2180	8250	1,7600	⊙	⊙	⊙		
	45	47,50	29,5	320	1,0	2180	9440	1,6310	⊙	⊙	⊙		
	50	48,74	28,7	420	1,3	2180	8530	1,6974	⊙	⊙	⊙		
	56	53,75	26,0	420	1,2	2180	8640	1,6689	⊙	⊙	⊙		
	63	67,10	20,9	420	0,96	2180	9030	1,6180	⊙	⊙			
33 3c	40	35,86	39,0	490	2,1	1610	6840	1,2294	⊙	⊙	⊙		
	45	44,20	31,7	550	1,9	-	5900	1,2052	⊙	⊙	⊙		
	56	55,31	25,3	580	1,6	1640	5500	1,1864	⊙	⊙	⊙		
	71	70,88	19,8	580	1,3	1950	5500	1,1714	⊙	⊙	⊙		
	80	80,62	17,4	265	0,51	2160	10880	1,0679	⊙	⊙			
	90	94,22	14,9	580	0,96	2160	5500	1,1594	⊙	⊙			
	100	103,34	13,5	340	0,51	2170	10730	1,0614	⊙	⊙			
	112	110,89	12,6	580	0,82	2230	5500	1,1543	⊙	⊙			
	125	127,37	11,0	420	0,51	2160	9700	1,0575	⊙	⊙			
	140	144,64	9,68	580	0,63	2300	5500	1,1483	⊙	⊙			
	160	159,41	8,78	430	0,42	2240	9400	1,0542	⊙				
	180	172,50	8,12	480	0,43	2300	8600	1,1454	⊙				
	200	204,26	6,85	430	0,33	2300	9400	1,0515	⊙				
	224	237,50	5,89	320	0,21	2300	11100	1,1417	⊙				
	280	271,53	5,16	430	0,25	2300	9400	1,0493	⊙				
	315	319,58	4,38	430	0,21	2300	9400	1,0483	(⊙)				
	400	416,85	3,36	430	0,16	2300	9400	1,0471	(⊙)				
	500	497,13	2,82	430	0,13	2300	9400	1,0465	(⊙)				
	560	548,22	2,55	430	0,12	2300	9400	1,0462	(⊙)				
	710	684,45	2,05	430	0,10	2300	9400	1,0457	(⊙)				

2c & 3c - Numero coppie di riduzione
(⊙) - Potenza max utilizzabile ≤ P₁

- Number of reduction stages
- Max, available power ≤ P₁

- Anzahl der Getriebestufen
- Max, Leistung ≤ P₁

	Lubrificante Lubricant Schmiermittel						Peso Weight Gewicht [kg]		
	H1 [l]	H2 [l]	H3 [l]	H4 [l]	V1 [l]	V2 [l]			
FRN32	1,1	1,3	0,8	1,3	1,2	1,2	12,5		
FRN33	1,2	1,0	0,6	1,0	1,2	1,0	13,0		

RO3/RV3

Getriebe - Gearboxes - Riduttori RN-RO-RV

580 Nm (1400 min⁻¹)
Getriebeauswahl - Speed Reducer Selection - Selezione Riduttore

FRO FRV	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	P ₁ [kW]	F _{r1} [N]	F _{r2} [N]	J ₁ [kgcm ²]	71 B5	80 B*	90 B*	100 B*	112 B*
33 3c	6,3	6,43	217,6	420	10,2	4550	4990	7,8449	⊙	⊙	⊙	⊙	⊙
	8,0	8,25	169,7	450	8,5	5540	5430	7,0546	⊙	⊙	⊙	⊙	⊙
	9,0	9,09	154,0	380	6,5	5710	5680	7,1141	⊙	⊙	⊙	⊙	⊙
	10,0	10,17	137,7	500	7,7	5630	4980	6,5966	⊙	⊙	⊙	⊙	⊙
	11,2	11,65	120,2	380	5,1	5730	6180	6,6099	⊙	⊙	⊙	⊙	⊙
	12,5	12,72	110,0	540	6,6	5710	4640	6,2405	⊙	⊙	⊙	⊙	⊙
	14,0	13,52	103,5	460	5,3	5520	5970	2,2602	⊙	⊙	⊙	⊙	⊙
	16,0	16,30	85,9	540	5,2	5730	4800	5,9573	⊙	⊙	⊙	⊙	⊙
	18,0	17,33	80,8	510	4,6	5680	5460	2,0812	⊙	⊙	⊙	⊙	⊙
	20,0	19,10	73,3	390	3,2	5730	7310	2,0993	⊙	⊙	⊙	⊙	⊙
	22,4	21,67	64,6	550	4,0	5740	4970	5,7302	⊙	⊙	⊙	⊙	⊙
	25,0	26,73	52,4	560	3,3	5730	5130	1,8969	⊙	⊙	⊙	⊙	⊙
	28,0	28,74	48,7	400	2,2	5740	7800	1,4638	⊙	⊙	⊙	⊙	⊙
	31,5	33,27	42,1	550	2,6	5740	4800	5,5211	⊙	⊙	⊙	⊙	⊙
	35,5	34,26	40,9	560	2,5	5740	5370	1,8327	⊙	⊙	⊙	⊙	⊙
	40	40,23	34,8	570	2,2	5740	5500	1,3744	⊙	⊙	⊙	⊙	⊙
	45	45,54	30,7	570	2,0	5740	5580	1,7813	⊙	⊙	⊙	⊙	⊙
	50	51,55	27,2	580	1,8	5740	5600	1,3460	⊙	⊙	⊙	⊙	⊙
	56	53,60	26,1	580	1,7	5740	5600	1,7597	⊙	⊙	⊙	⊙	⊙
	63	64,33	21,8	410	1,0	5740	8950	1,7667	⊙	⊙	⊙	⊙	⊙
	71	68,52	20,4	580	1,3	5740	5500	1,3233	⊙	⊙	⊙	⊙	⊙
	80	80,65	17,4	580	1,1	5740	5500	1,3138	⊙	⊙	⊙	⊙	⊙
	90	91,94	15,2	410	0,70	5740	9580	1,7158	⊙	⊙	⊙	⊙	⊙
	100	105,19	13,3	580	0,86	5750	5500	1,3024	⊙	⊙	⊙	⊙	⊙
	112	113,11	12,4	580	0,80	5740	5500	1,1546	⊙	⊙	⊙	⊙	⊙
	125	125,45	11,16	480	0,60	5740	8500	1,2969	⊙	⊙	⊙	⊙	⊙
	140	147,54	9,49	580	0,61	5740	5500	1,1488	⊙	⊙	⊙	⊙	⊙
	160	162,17	8,63	430	0,41	5740	9400	1,7036	⊙	⊙	⊙	⊙	⊙
	180	175,95	7,96	490	0,43	5740	8200	1,1460	⊙	⊙	⊙	⊙	⊙
	200	208,42	6,72	430	0,32	5740	9400	1,1474	⊙	⊙	⊙	⊙	⊙
	250	248,56	5,63	430	0,27	5740	9400	1,1450	⊙	⊙	⊙	⊙	⊙
	280	274,108	5,107	430	0,25	5740	9400	1,1439	⊙	⊙	⊙	⊙	⊙
	315	342,226	4,091	430	0,20	5740	9400	1,1420	⊙	⊙	⊙	⊙	⊙

B* = B5 & B14

3c - Numero coppie di riduzione - Number of reduction stages - Anzahl der Getriebestufen
 (⊙) - Potenza max utilizzabile ≤ P₁ - Max, available power ≤ P₁ - Max, Leistung ≤ P₁

	Lubrificante Lubricant Schmiermittel						Peso Weight Gewicht [kg]		
	H1 [l]	H2 [l]	H3 [l]	H4 [l]	V1 [l]	V2 [l]			
FRO33	1,5	1,2	1,4	1,2	1,7	1,7	15,0		
FRV33	1,5	1,0	0,8	1,0	1,2	1,2	14,5		

RN-RO-RV Riduttori - Gearboxes - Getriebe

RN4

Selezione Riduttore - Speed Reducer Selection - Getriebeauswahl
(1400 min⁻¹) 1000 Nm

FRN	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	P ₁ [kW]	F _{r1} [N]	F _{r2} [N]	J ₁ [kgcm ²]	71 B5	80 B*	90 B*	100 B*	112 B*
42 2c	6,3	5,74	244	680	18,1	-	5030	13,0943	⊙	⊙	⊙	⊙	⊙
	7,1	7,26	193	790	16,6	-	5190	10,7969	⊙	⊙	⊙	⊙	⊙
	8,0	7,59	185	690	13,9	2020	5680	11,2674	⊙	⊙	⊙	⊙	⊙
	9,0	9,08	154	890	15,0	-	5660	9,2579	⊙	⊙	⊙	⊙	⊙
	10,0	9,60	146	690	11,0	2400	6200	9,6555	⊙	⊙	⊙	⊙	⊙
	11,2	11,55	121	910	12,0	-	6170	8,0995	⊙	⊙	⊙	⊙	⊙
	12,5	12,00	117	700	8,9	2610	6720	8,5274	⊙	⊙	⊙	⊙	⊙
	14,0	14,09	99,3	920	10,0	2440	6810	7,4107	⊙	⊙	⊙	⊙	⊙
	16,0	15,27	91,7	710	7,1	2720	7330	7,6485	⊙	⊙	⊙	⊙	⊙
	18,0	17,59	79,6	930	8,1	-	7410	6,8426	⊙	⊙	⊙	⊙	⊙
	22,4	22,69	61,7	940	6,3	2090	8160	6,4129	⊙	⊙	⊙	⊙	⊙
	28,0	28,28	49,5	890	4,8	2450	8920	6,1008	⊙	⊙	⊙	⊙	⊙
	31,5	30,00	46,7	730	3,7	2850	9290	6,2602	⊙	⊙	⊙	⊙	
	35,5	37,39	37,4	740	3,0	2860	10030	6,0256	⊙	⊙	⊙	⊙	
	40	38,12	36,7	650	2,6	2800	10140	5,8382	⊙	⊙	⊙	⊙	
	45	45,27	30,9	750	2,5	2900	10720	5,8675	⊙	⊙	⊙	⊙	
	50	50,40	27,8	750	2,3	2870	11110	5,7968	⊙	⊙	⊙	⊙	
	56	56,67	24,7	700	1,9	2880	11600	5,7318	⊙	⊙	⊙		
43 3c	40	34,07	41,1	730	3,3	-	9670	4,3102	⊙	⊙	⊙	⊙	
	45	42,59	32,9	910	3,3	-	10030	4,2058	⊙	⊙	⊙	⊙	
	56	54,21	25,8	980	2,8	2030	9830	4,1359	⊙	⊙	⊙	⊙	
	63	66,13	21,2	990	2,3	2270	10110	4,0833	⊙	⊙	⊙	⊙	
	71	70,82	19,8	410	0,90	3020	12640	4,0520	⊙	⊙			
	80	82,52	17,0	1000	1,9	2720	10510	3,7956	⊙	⊙	⊙		
	90	89,60	15,6	510	0,89	3020	13650	4,0262	⊙	⊙			
	100	106,48	13,1	1010	1,5	3060	10930	3,7770	⊙	⊙	⊙		
	140	132,69	10,6	950	1,1	3270	12260	4,0051	⊙	⊙	⊙		
	160	160,69	8,71	760	0,74	3370	14590	3,9942	⊙	⊙			
	180	173,90	8,05	800	0,72	3170	14570	3,9843	⊙	⊙			
	200	201,13	6,96	550	0,43	3370	16680	3,7478	⊙				
	224	217,00	6,45	800	0,57	3300	15210	3,9773	⊙	⊙			
	280	280,00	5,00	800	0,45	3370	16030	3,7425	⊙				
	355	348,92	4,01	800	0,36	3370	16500	3,7381	⊙				
	450	422,55	3,31	800	0,30	3370	16500	3,7354	⊙				
	500	470,40	2,98	800	0,27	3370	16500	3,7336	⊙				
	560	528,89	2,65	800	0,24	3370	17000	3,7328	⊙				

2c & 3c - Numero coppie di riduzione

- Number of reduction stages

- Anzahl der Getriebestufen

(⊙) - Potenza max utilizzabile ≤ P₁

- Max, available power ≤ P₁

- Max, Leistung ≤ P₁

	Lubrificante Lubricant Schmiermittel						Peso Weight Gewicht [kg]		
	H1 [l]	H2 [l]	H3 [l]	H4 [l]	V1 [l]	V2 [l]			
FRN42	2,8	1,8	1,2	1,8	2,7	2,7	33,5		
FRN43	2,5	1,5	0,9	1,5	2,2	1,9	36,0		

RO4/RV4

Getriebe - Gearboxes - Riduttori RN-RO-RV

1000 Nm (1400 min⁻¹)
Getriebeauswahl - Speed Reducer Selection - Selezione Riduttore

FRO FRV	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	P ₁ [kW]	F _{r1} [N]	F _{r2} [N]	J ₁ [kgcm ²]	71 B5	80 B5	90 B*	100 B*	112 B*
43 3c	6,3	6,60	212,1	470	11,1	5670	5570	18,0401	☉	☉	☉	☉	☉
	8,0	8,35	167,6	530	9,9	5740	6000	16,3029	☉	☉	☉	☉	☉
	9,0	8,72	160,6	650	11,6	5560	5980	16,5334	☉	☉	☉	☉	☉
	10,0	10,43	134,2	610	9,1	5770	6430	15,1392	☉	☉	☉	☉	☉
	11,2	11,04	126,8	650	9,2	5740	6520	15,3615	☉	☉	☉	☉	☉
	12,5	13,29	105,4	670	7,9	5780	6950	14,2633	☉	☉	☉	☉	☉
	14,0	13,87	100,9	515	5,8	5630	7190	6,3637	☉	☉	☉	☉	☉
	16,0	16,21	86,4	730	7,0	5780	7420	13,7425	☉	☉	☉	☉	☉
	18,0	17,55	79,8	610	5,4	5700	7740	5,9704	☉	☉	☉	☉	☉
	20,0	20,22	69,2	780	6,0	5780	7980	13,3129	☉	☉	☉	☉	☉
	22,4	21,94	63,8	690	4,9	5740	8310	5,7069	☉	☉	☉	☉	☉
	25,0	26,10	53,6	840	5,0	5780	8690	12,9609	☉	☉	☉	☉	☉
	28,0	27,92	50,1	770	4,3	5780	8990	5,5085	☉	☉	☉	☉	☉
	31,5	32,52	43,1	890	4,3	5790	9390	12,7520	☉	☉	☉	☉	☉
	35,5	34,06	41,1	840	3,9	5780	9580	5,3906	☉	☉	☉	☉	
	45	42,50	32,9	840	3,1	5780	10020	5,2933	☉	☉	☉	☉	
	50	51,25	27,3	980	3,0	5780	9720	4,3723	☉	☉	☉	☉	
	56	54,84	25,5	980	2,8	5790	9800	5,2136	☉	☉	☉	☉	
	63	63,95	21,9	990	2,4	5780	10090	4,3293	☉	☉	☉	☉	
	71	68,34	20,5	920	2,1	5790	10970	5,1663	☉	☉	☉		
	80	82,52	17,0	1000	1,9	5790	10510	4,2941	☉	☉	☉		
	90	89,69	15,6	890	1,6	5790	11880	3,9791	☉	☉	☉		
	100	102,83	13,6	940	1,4	5790	11740	4,2732	☉	☉	☉		
	112	115,73	12,1	1020	1,4	5790	11130	3,9612	☉	☉	☉		
	125	121,80	11,5	780	1,0	5790	13730	5,1136	☉	☉			
	140	144,22	9,71	950	1,0	5790	12410	3,9506	☉	☉			
	160	164,63	8,50	750	0,71	5790	14400	4,2552	☉	☉			
	180	183,27	7,64	790	0,67	5790	14710	4,2500	☉	☉			
	200	190,66	7,34	750	0,61	5790	14830	3,9474	☉	☉			
	224	230,89	6,06	750	0,51	5790	15400	3,9414	☉				
	250	257,04	5,45	750	0,46	5790	16500	3,9388	☉				
	280	289,000	4,844	750	0,41	5790	16470	3,9363	☉				

B* = B5 & B14

3c - Numero coppie di riduzione - Number of reduction stages - Anzahl der Getriebestufen
 (☉) - Potenza max utilizzabile ≤ P₁ - Max, available power ≤ P₁ - Max, Leistung ≤ P₁

	Lubrificante Lubricant Schmiermittel						Peso Weight Gewicht [kg]		
	H1 [l]	H2 [l]	H3 [l]	H4 [l]	V1 [l]	V2 [l]			
FRO43	2,8	2,0	1,6	2,0	2,5	2,5	39,0		
FRV43	2,9	1,9	1,2	1,8	2,6	2,6	36,5		

RN-RO-RV Riduttori - Gearboxes - Getriebe

RN5

Selezione Riduttore - Speed Reducer Selection - Getriebeauswahl
(1400 min⁻¹) 1800 Nm

FRN	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	P ₁ [kW]	F _{r1} [N]	F _{r2} [N]	J ₁ [kgcm ²]	80 90 B5	100 112 B5	132 B*	160 B*	180 B*
52 2c	6,3	5,64	248	1100	29,8	-	7550	37,6347	⊙	⊙	⊙	⊙	⊙
	7,1	7,46	188	1260	25,8	-	8250	31,2885	⊙	⊙	⊙	⊙	⊙
	8,0	7,66	183	1140	22,7	-	8410	31,9539	⊙	⊙	⊙	⊙	⊙
	9,0	9,46	148	1400	22,6	-	8900	27,6749	⊙	⊙	⊙	⊙	⊙
	10,0	10,13	138	1150	17,3	-	9280	28,0395	⊙	⊙	⊙	⊙	⊙
	11,2	11,45	122	1550	20,7	-	8400	25,5151	⊙	⊙	⊙	⊙	⊙
	12,5	12,85	109	1170	13,9	-	10080	25,6545	⊙	⊙	⊙	⊙	⊙
	14,0	14,12	99,2	1610	17,4	-	8470	23,7029	⊙	⊙	⊙	⊙	⊙
	16,0	15,56	90,0	1180	11,6	-	10780	24,1384	⊙	⊙	⊙	⊙	⊙
	18,0	17,85	78,4	1630	13,9	-	8680	22,1741	⊙	⊙	⊙	⊙	⊙
	20,0	19,19	73,0	1190	9,5	-	11580	22,7969	⊙	⊙	⊙	⊙	⊙
	22,4	23,45	59,7	1650	10,7	-	8020	20,8963	⊙	⊙	⊙	⊙	⊙
	25,0	24,26	57,7	1200	7,6	-	12560	21,6073	⊙	⊙	⊙	⊙	⊙
	28,0	27,55	50,8	1670	9,3	-	8090	20,3546	⊙	⊙	⊙	⊙	⊙
	31,5	30,02	46,6	1590	8,1	-	9610	20,1029	⊙	⊙	⊙	⊙	⊙
	35,5	36,31	38,6	1300	5,5	-	13530	19,6654	⊙	⊙	⊙	⊙	⊙
	40	40,79	34,3	1250	4,7	3370	14620	19,9025	⊙	⊙	⊙	⊙	⊙
	45	45,38	30,8	1100	3,7	-	15630	19,2544	⊙	⊙	⊙	⊙	⊙
	50	49,33	28,4	1300	4,0	3410	15030	19,5092	⊙	⊙	⊙	⊙	⊙
	63	61,67	22,7	1300	3,2	3440	15530	19,1667	⊙	⊙	⊙	⊙	⊙
53 3c	40	37,28	37,6	1650	6,9	-	9220	13,8553	⊙	⊙	⊙	⊙	⊙
	45	47,28	29,6	1710	5,6	-	8610	13,7108	⊙	⊙	⊙	⊙	⊙
	56	57,27	24,4	1750	4,8	3470	8800	13,6244	⊙	⊙	⊙	⊙	⊙
	71	70,60	19,8	1750	3,9	3930	9010	13,5519	⊙	⊙	⊙	⊙	⊙
	90	89,26	15,7	1770	3,1	4280	8500	13,4907	⊙	⊙	⊙	⊙	⊙
	100	95,68	14,6	1160	1,9	4190	17820	12,7382	⊙	⊙	⊙	⊙	⊙
	112	117,24	11,9	1790	2,4	4560	7200	13,4396	⊙	⊙	⊙	⊙	⊙
	125	121,33	11,5	1310	1,7	4350	17330	12,7114	⊙	⊙	⊙	⊙	⊙
	140	137,77	10,2	1800	2,0	4680	7200	13,4179	⊙	⊙	⊙	⊙	⊙
	160	150,12	9,33	1700	1,8	4790	12400	13,4079	⊙	⊙	⊙	⊙	⊙
	180	181,54	7,71	1360	1,2	4960	18220	13,3896	⊙	⊙	⊙	⊙	⊙
	224	229,08	6,11	1350	0,92	4830	19100	12,6660	⊙	⊙	⊙	⊙	⊙
	315	300,91	4,65	1350	0,70	4950	19100	12,6544	⊙	⊙	⊙	⊙	⊙
	355	353,60	3,96	1350	0,60	5000	19100	12,6493	⊙	⊙	⊙	⊙	⊙
	400	385,28	3,63	1350	0,55	5030	19100	12,6469	⊙	⊙	⊙	⊙	⊙
	450	465,93	3,00	1350	0,45	5070	19100	12,6425	⊙	⊙	⊙	⊙	⊙
	560	582,41	2,40	1350	0,36	5110	19100	12,6387	⊙	⊙	⊙	⊙	⊙

2c & 3c - Numero coppie di riduzione

(⊙) - Potenza max utilizzabile ≤ P₁

- Number of reduction stages

- Max, available power ≤ P₁

- Anzahl der Getriebestufen

- Max, Leistung ≤ P₁
B* = B5 & B14

	Lubrificant Lubricant Schmiermittel						Peso Weight Gewicht [kg]		
	H1 [l]	H2 [l]	H3 [l]	H4 [l]	V1 [l]	V2 [l]			
FRN52	5,1	3,2	2,1	3,2	4,9	4,9	62		
FRN53	5,0	2,8	1,6	2,8	4,0	3,4	67		

RO5-RV5

Getriebe - Gearboxes - Riduttori RN-RO-RV

1800 Nm (1400 min⁻¹)
Getriebeauswahl - Speed Reducer Selection - Selezione Riduttore

FRO FRV	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	P ₁ [kW]	F _{r1} [N]	F _{r2} [N]	J ₁ [kgcm ²]	80 90 B5	100 112 B5	132 B*	160 B*	180 B*
53 3c	6,3	6,48	215,9	930	22,4	8200	8020	57,2158	⊙	⊙	⊙	⊙	⊙
	8,0	8,57	163,3	1100	20,0	8290	8770	52,4172	⊙	⊙	⊙	⊙	⊙
	10,0	10,87	128,8	1230	17,6	8350	9470	49,6847	⊙	⊙	⊙	⊙	⊙
	12,5	13,17	106,3	1400	16,6	8350	10050	48,0516	⊙	⊙	⊙	⊙	⊙
	14,0	13,63	102,7	1050	12,0	8110	10340	20,5375	⊙	⊙	⊙	⊙	
	16,0	16,24	86,2	1470	14,1	8360	10150	46,6813	⊙	⊙	⊙	⊙	
	18,0	18,02	77,7	1250	10,8	8260	11300	19,4509	⊙	⊙	⊙		
	20,0	20,53	68,2	1600	12,2	8360	8650	45,5253	⊙	⊙	⊙	⊙	
	22,4	22,85	61,3	1420	9,7	8310	11180	18,8321	⊙	⊙	⊙		
	25,0	26,97	51,9	1670	9,7	8360	8140	44,5592	⊙	⊙	⊙		
	28,0	27,68	50,6	1560	8,8	8350	9800	18,4623	⊙	⊙	⊙		
	31,5	31,69	44,2	1680	8,3	8360	8230	44,1495	⊙	⊙	⊙		
	35,5	34,12	41,0	1690	7,7	8360	8340	18,1520	⊙	⊙	⊙		
	40	41,65	33,6	1700	6,4	8330	8510	14,8941	⊙	⊙	⊙		
	45	43,14	32,5	1700	6,2	8360	8540	17,8902	⊙	⊙	⊙		
	50	51,34	27,3	1720	5,2	8360	8720	14,7570	⊙	⊙			
	56	56,67	24,7	1730	4,8	8360	8820	17,6715	⊙	⊙			
	63	64,91	21,6	1740	4,2	8360	8950	14,6414	⊙	⊙			
	71	72,56	19,3	1660	3,6	8360	10800	17,5356	⊙	⊙			
	80	79,37	17,6	1280	2,5	8360	16160	13,5189	⊙	⊙			
	90	91,04	15,4	1770	3,0	8360	8400	13,4434	⊙	⊙			
	100	100,20	14,0	1780	2,8	8360	8000	14,5038	⊙	⊙			
	112	109,18	12,8	1700	2,4	8360	11200	14,4848	⊙	⊙			
	125	119,59	11,7	1790	2,3	8360	7200	13,3942	⊙	⊙			
	140	140,53	10,0	1790	2,0	8360	7200	13,3734	⊙				
	160	153,12	9,14	1720	1,8	8360	10100	13,3637	⊙				
	180	185,17	7,56	1420	1,2	8360	17640	13,3462	⊙				
	200	208,05	6,73	1330	1,0	8360	19060	13,3560	⊙				
	224	224,24	6,24	1330	0,92	8360	19100	14,4140	⊙				
	250	251,60	5,56	1330	0,82	8360	19100	13,3409	⊙				
	315	314,50	4,45	1330	0,66	8360	19100	13,3277	⊙				

B* = B5 & B14

3c - Numero coppie di riduzione - Number of reduction stages - Anzahl der Getriebestufen
 (⊙) - Potenza max utilizzabile ≤ P₁ - Max, available power ≤ P₁ - Max, Leistung ≤ P₁

	Lubrificante Lubricant Schmiermittel						Peso Weight Gewicht [kg]		
	H1 [l]	H2 [l]	H3 [l]	H4 [l]	V1 [l]	V2 [l]			
FRO53	5,1	3,6	2,9	3,6	5,0	5,0	73		
FRV53	5,2	3,4	2,1	3,2	4,7	4,7	68		

RN-RO-RV Riduttori - Gearboxes - Getriebe

RN6

Selezione Riduttore - Speed Reducer Selection - Getriebeauswahl
(1400 min⁻¹) 3300 Nm

FRN	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	P ₁ [kW]	F _{r1} [N]	F _{r2} [N]	J ₁ [kgcm ²]	80 90 B5	100 112 B5	132 B*	160 B*	180 B*
62 2c	6,3	5,59	250	2200	60,1	-	10060	84,0612	⊙	⊙	⊙	⊙	⊙
	7,1	7,39	189	2600	53,7	-	9540	68,0211	⊙	⊙	⊙	⊙	⊙
	8,0	7,97	176	2200	42,1	-	11380	68,6806	⊙	⊙	⊙	⊙	⊙
	9,0	9,38	149	2900	47,2	-	9030	56,8499	⊙	⊙	⊙	⊙	⊙
	10,0	10,54	133	2200	31,9	-	12550	58,6662	⊙	⊙	⊙	⊙	⊙
	11,2	11,36	123	3100	41,7	-	5620	50,1639	⊙	⊙	⊙	⊙	⊙
	14,0	14,00	100	3160	34,5	-	5450	44,5468	⊙	⊙	⊙	⊙	⊙
	16,0	16,19	86,4	2250	21,2	3800	11630	46,1997	⊙	⊙	⊙	⊙	⊙
	18,0	17,70	79,1	3200	27,6	-	3100	39,8027	⊙	⊙	⊙	⊙	⊙
	20,0	19,96	70,1	2270	17,4	4020	15790	41,9382	⊙	⊙	⊙	⊙	⊙
	22,4	23,25	60,2	3250	21,3	-	8000	35,8331	⊙	⊙	⊙	⊙	⊙
	25,0	25,24	55,5	3000	18,2	4200	16780	38,1707	⊙	⊙	⊙	⊙	⊙
	28,0	27,69	50,6	3270	18,0	-	6000	34,0539	⊙	⊙	⊙	⊙	⊙
	31,5	30,38	46,1	3105	15,6	-	7160	33,2259	⊙	⊙	⊙	⊙	⊙
	35,5	37,35	37,5	2515	10,3	-	16090	31,7360	⊙	⊙	⊙	⊙	⊙
	40	39,49	35,5	3245	12,5	4440	18170	33,3872	⊙	⊙	⊙	⊙	⊙
	45	43,31	32,3	2360	8,3	4470	18380	32,6717	⊙	⊙	⊙	⊙	⊙
	50	53,26	26,3	2380	6,8	4520	18970	31,3694	⊙	⊙	⊙	⊙	⊙
	56	59,89	23,4	2400	6,1	4540	19310	30,7868	⊙	⊙	⊙	⊙	⊙
63 3c	40	38,20	36,7	3250	13,3	-	7350	22,6869	⊙	⊙	⊙	⊙	⊙
	50	48,44	28,9	3400	10,9	-	7670	22,2684	⊙	⊙	⊙	⊙	⊙
	56	58,68	23,9	3400	9,0	-	7800	22,0179	⊙	⊙	⊙	⊙	⊙
	71	72,33	19,4	3400	7,3	3670	7800	21,8075	⊙	⊙	⊙	⊙	⊙
	80	79,72	17,6	1780	3,5	2870	25090	19,9592	⊙	⊙	⊙	⊙	⊙
	90	91,45	15,3	3400	5,8	3030	7800	21,6298	⊙	⊙	⊙	⊙	⊙
	100	105,42	13,3	2350	3,5	2870	22430	19,8591	⊙	⊙	⊙	⊙	⊙
	125	120,13	11,7	3400	4,4	3840	7800	21,4811	⊙	⊙	⊙	⊙	⊙
	140	143,08	9,78	3400	3,7	4160	7800	21,4145	⊙	⊙	⊙	⊙	⊙
	160	156,94	8,92	3300	3,3	4330	7900	21,3834	⊙	⊙	⊙	⊙	⊙
	200	192,98	7,25	2700	2,2	4720	21200	21,3276	⊙	⊙	⊙	⊙	⊙
	224	217,00	6,45	2300	1,7	4880	26700	21,3029	⊙	⊙	⊙	⊙	⊙
	250	252,39	5,55	2600	1,6	4490	22500	19,6541	⊙	⊙	⊙	⊙	⊙
	315	331,53	4,22	2600	1,2	4720	22500	19,6213	⊙	⊙	⊙	⊙	⊙
	400	394,87	3,55	2600	1,0	4820	22500	19,6063	⊙	⊙	⊙	⊙	⊙
	450	433,13	3,23	2600	0,94	4870	22500	19,5991	⊙	⊙	⊙	⊙	⊙
	500	532,58	2,63	2600	0,76	4960	22500	19,5861	⊙	⊙	⊙	⊙	⊙
	560	598,89	2,34	2600	0,68	4990	22500	19,5803	⊙	⊙	⊙	⊙	⊙

2c & 3c - Numero coppie di riduzione

- Number of reduction stages

- Anzahl der Getriebestufen

(⊙) - Potenza max utilizzabile ≤ P₁

- Max, available power ≤ P₁

- Max, Leistung ≤ P₁

	Lubrificante Lubricant Schmiermittel						Peso Weight Gewicht [kg]		
	H1 [l]	H2 [l]	H3 [l]	H4 [l]	V1 [l]	V2 [l]			
FRN62	9,2	5,8	3,8	5,8	8,8	8,8	109		
FRN63	9,0	5,0	2,9	5,0	7,2	6,1	116		

RO6 - RV6

Getriebe - Gearboxes - Riduttori RN-RO-RV

3300 Nm (1400 min⁻¹)
Getriebeauswahl - Speed Reducer Selection - Selezione Riduttore

FRO FRV	i _n	i _r	n ₂ [min ⁻¹]	M ₂ [Nm]	P ₁ [kW]	F _{r1} [N]	F _{r2} [N]	J ₁ [kgcm ²]	80 90 B5	100 112 B5	132 B*	160 B*	180 B*
63 3c	6,3	6,43	217,7	1660	40,3	6670	10740	102,1187	⊙	⊙	⊙	⊙	⊙
	8,0	8,50	164,7	1740	31,9	7570	11850	89,9906	⊙	⊙	⊙	⊙	⊙
	10,0	10,78	129,9	1970	28,5	7820	12750	81,543	⊙	⊙	⊙	⊙	⊙
	12,5	13,06	107,2	2150	25,7	8010	13550	76,4873	⊙	⊙	⊙	⊙	⊙
	14,0	13,51	103,6	1640	18,9	7530	14110	40,9607	⊙	⊙	⊙	⊙	⊙
	16,0	16,10	87,0	2330	22,6	8190	14450	72,2401	⊙	⊙	⊙	⊙	⊙
	18,0	17,87	78,4	1950	17,0	7880	15380	38,2144	⊙	⊙	⊙	⊙	⊙
	20,0	20,36	68,8	2530	19,4	8310	14100	68,6529	⊙	⊙	⊙	⊙	⊙
	22,4	22,66	61,8	2230	15,4	8090	16460	36,3014	⊙	⊙	⊙	⊙	⊙
	25,0	25,48	55,0	2300	14,1	8230	16820	36,6126	⊙	⊙	⊙	⊙	⊙
	28,0	27,45	51,0	2450	13,9	8240	15700	35,1566	⊙	⊙	⊙	⊙	⊙
	31,5	31,85	44,0	2860	14,0	8360	11540	64,3060	⊙	⊙	⊙	⊙	⊙
	35,5	33,83	41,4	2690	12,4	8310	13920	34,1949	⊙	⊙	⊙	⊙	⊙
	40	42,78	32,7	2950	10,8	8360	11390	33,3825	⊙	⊙	⊙	⊙	⊙
	45	42,95	32,6	2540	9,2	8360	16450	62,5533	⊙	⊙	⊙	⊙	⊙
	50	50,91	27,5	3360	10,3	8120	9810	25,1536	⊙	⊙	⊙	⊙	⊙
	56	56,19	24,9	3360	9,3	8360	9970	32,7029	⊙	⊙	⊙	⊙	⊙
	63	64,36	21,8	3360	8,1	8330	10200	24,7949	⊙	⊙	⊙	⊙	⊙
	71	73,41	19,1	3250	6,9	8360	11430	32,2564	⊙	⊙	⊙	⊙	⊙
	80	84,55	16,6	3360	6,2	8360	11400	24,4947	⊙	⊙	⊙	⊙	⊙
	90	90,27	15,5	3360	5,8	8340	11400	21,7196	⊙	⊙	⊙	⊙	⊙
	100	100,70	13,9	3360	5,2	8360	9800	24,3601	⊙	⊙	⊙	⊙	⊙
	112	118,58	11,8	3360	4,4	8360	9800	21,5670	⊙	⊙	⊙	⊙	⊙
	125	128,72	10,9	2490	3,0	8360	22060	21,6569	⊙	⊙	⊙	⊙	⊙
	140	141,23	9,9	3360	3,7	8360	9800	21,4986	⊙	⊙	⊙	⊙	⊙
	160	154,91	9,04	3360	3,4	8360	9800	21,4668	⊙	⊙	⊙	⊙	⊙
	180	190,49	7,35	2730	2,2	8360	19400	21,4095	⊙	⊙	⊙	⊙	⊙
	224	220,89	6,34	2550	1,8	8360	22500	21,4455	⊙	⊙	⊙	⊙	⊙
	280	271,62	5,15	2550	1,5	8360	22500	21,3954	⊙	⊙	⊙	⊙	⊙
	315	305,43	4,58	2550	1,3	8360	22500	21,3730	⊙	⊙	⊙	⊙	⊙

3c - Numero coppie di riduzione - Number of reduction stages - Anzahl der Getriebestufen
 (⊙) - Potenza max utilizzabile ≤ P₁ - Max, available power ≤ P₁ - Max, Leistung ≤ P₁

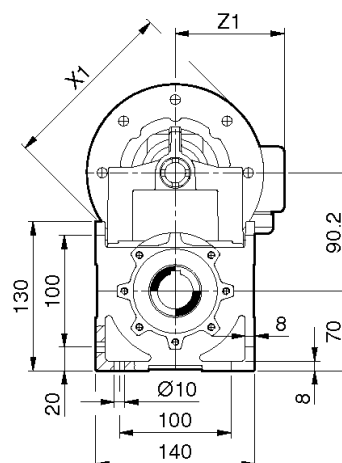
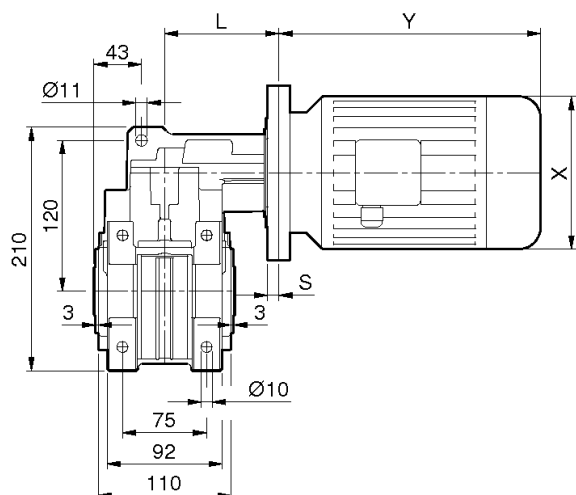
	Lubrificante Lubricant Schmiermittel						Peso Weight Gewicht		
	H1 [l]	H2 [l]	H3 [l]	H4 [l]	V1 [l]	V2 [l]	[kg]		
FRO63	9,2	6,5	5,2	6,5	9,0	9,0	121		
FRV63	9,4	6,1	3,8	5,8	8,5	8,5	117		

RN-RO-RV Riduttori - Gearboxes - Getriebe

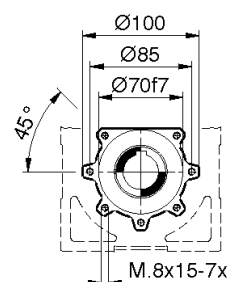
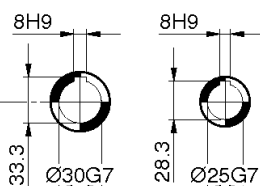
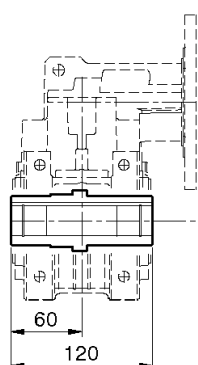
RN12-13

Dimensioni - Dimensions - Abmessungen

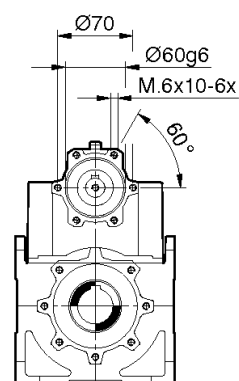
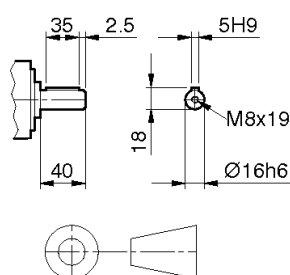
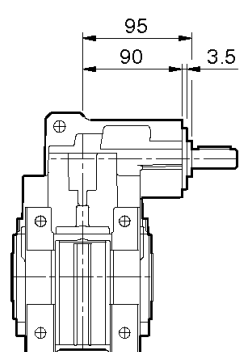
**MRN
FRN**



AC30 AC25



RN



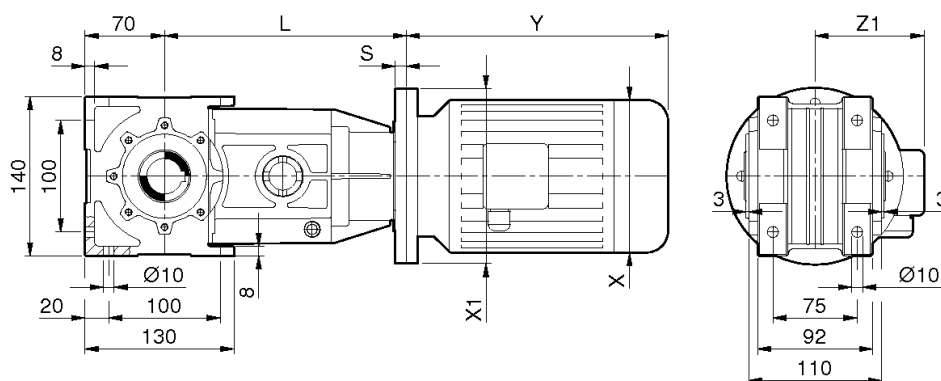
RN	12 / 13	12 / 13	12 / 13	12	12	12	
IEC	56	63	71	80	90 S	90 L	
X / Y / Z1	110/168/108	123/185/110	140/220/121	159/238/138	176/255/149	176/280/149	
X1 (B5) / S	120/13	140/13	160/13,5	200/13,5	---	---	
X1 (B14) / S	---	90/13	105/18,5	120/13,5	140/13,5	140/13,5	
L (RN12)	103	103	103,5 (108,5)	103,5	103,5	103,5	
L (RN13)	103	103	103,5 (108,5)	---	---	---	

RO13

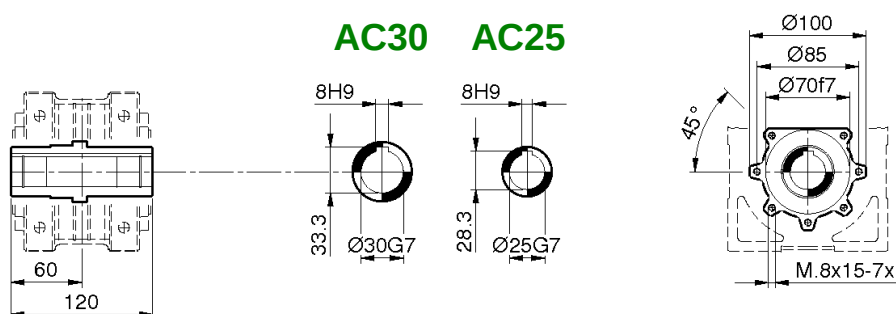
Getriebe - Gearboxes - Riduttori RN-RO-RV

Abmessungen - Dimensions - Dimensioni

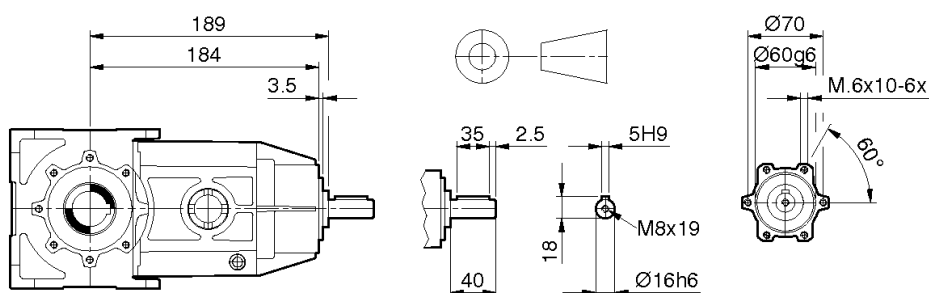
**MRO
FRO**



AC30 AC25



RO



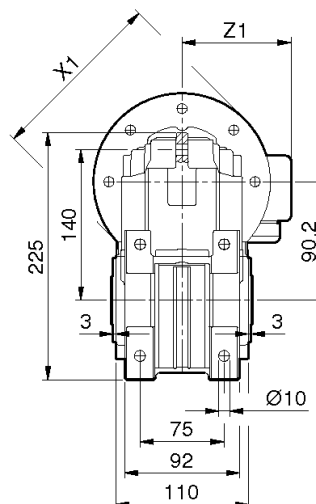
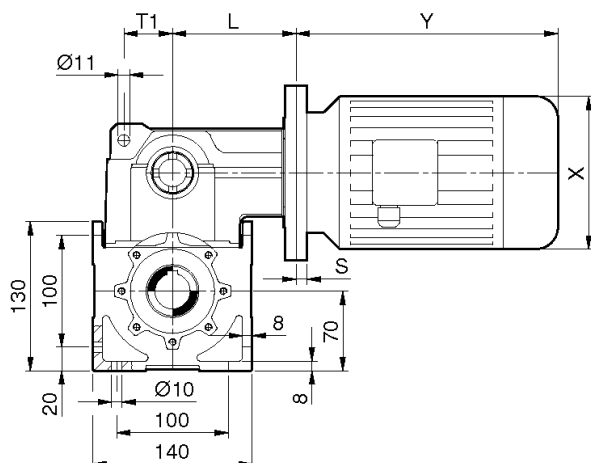
RO	13	13	13	13	13	13	
IEC	56	63	71	80	90 S	90 L	
X / Y / Z1	110/168/108	123/185/110	140/220/121	159/238/138	176/255/149	176/280/149	
X1 (B5) / S	120/13	140/13	160/13,5	200/13,5	---	---	
X1 (B14) / S	---	90/13	105/18,5	120/13,5	140/13,5	140/13,5	
L (RO13)	197	197	197,5 (202,5)	197,5	197,5	197,5	

RN-RO-RV Riduttori - Gearboxes - Getriebe

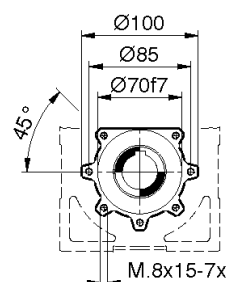
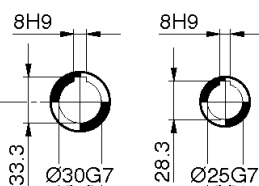
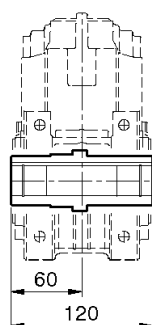
RV13

Dimensioni - Dimensions - Abmessungen

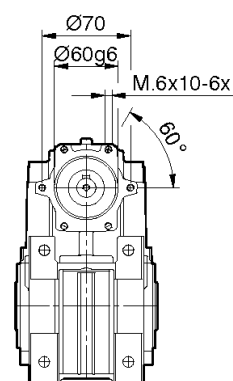
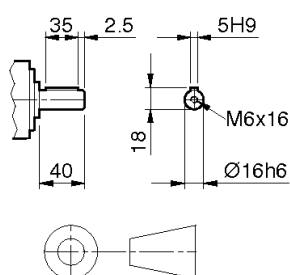
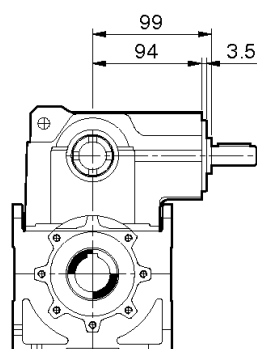
**MRV
FRV**



AC30 AC25



RV



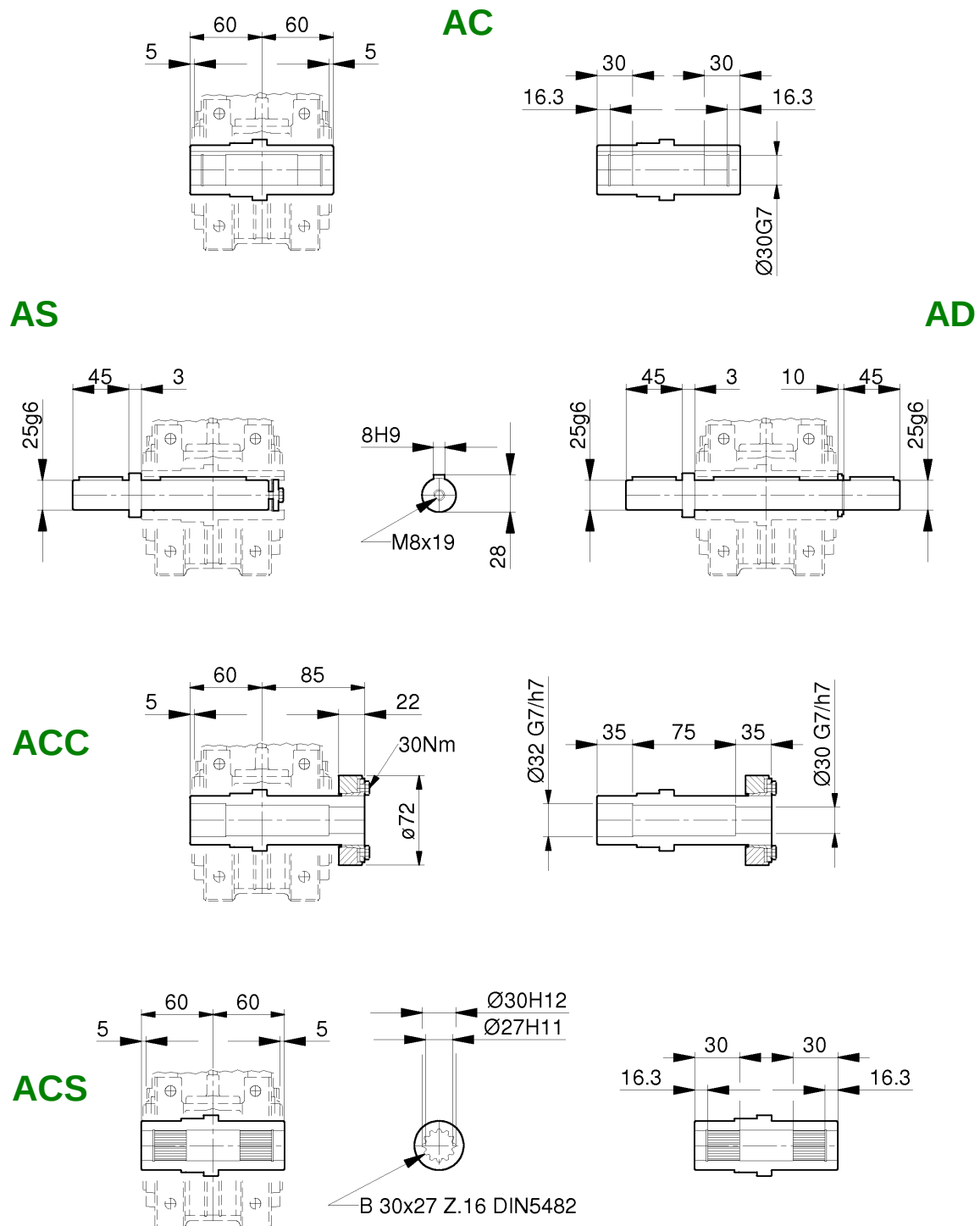
RV	13	13	13	13	13	13	
IEC	56	63	71	80	90 S	90 L	
X / Y / Z1	110/168/108	123/185/110	140/220/121	159/238/138	176/255/149	176/280/149	
X1 (B5) / S	120/13	140/13	160/13,5	200/13,5	---	---	
X1 (B14) / S	---	90/13	105/18,5	120/13,5	140/13,5	140/13,5	
L (RV13)	107	107	107,5 (112,5)	107,5	107,5	107,5	

R1

Getriebe - Gearboxes - Riduttori RN-RO-RV

RN12-13 / RO13 / RV13

Abmessungen - Dimensions - Dimensioni



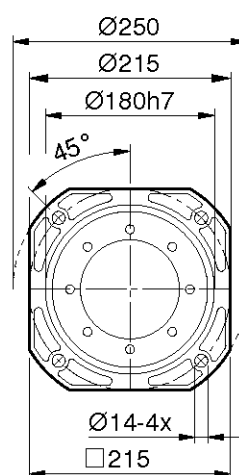
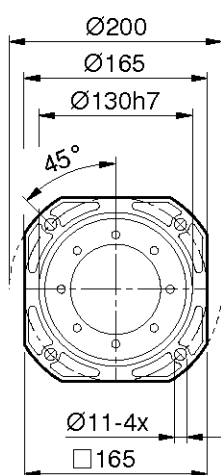
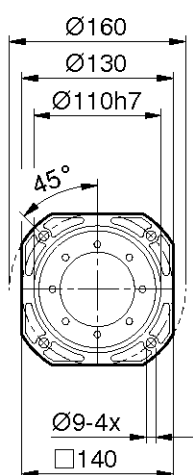
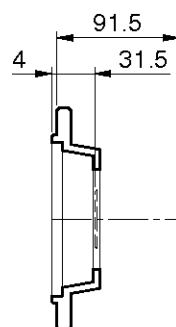
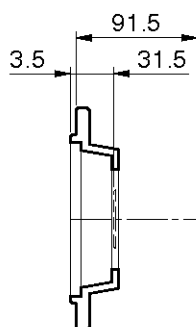
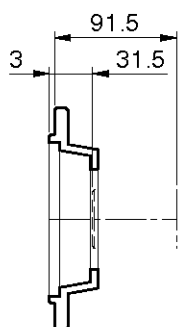
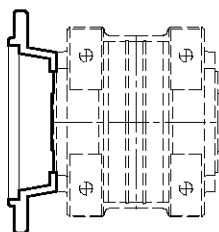
RN-RO-RV Riduttori - Gearboxes - Getriebe

R1

Dimensioni - Dimensions - Abmessungen

RN12-13 / RO13 / RV13

A

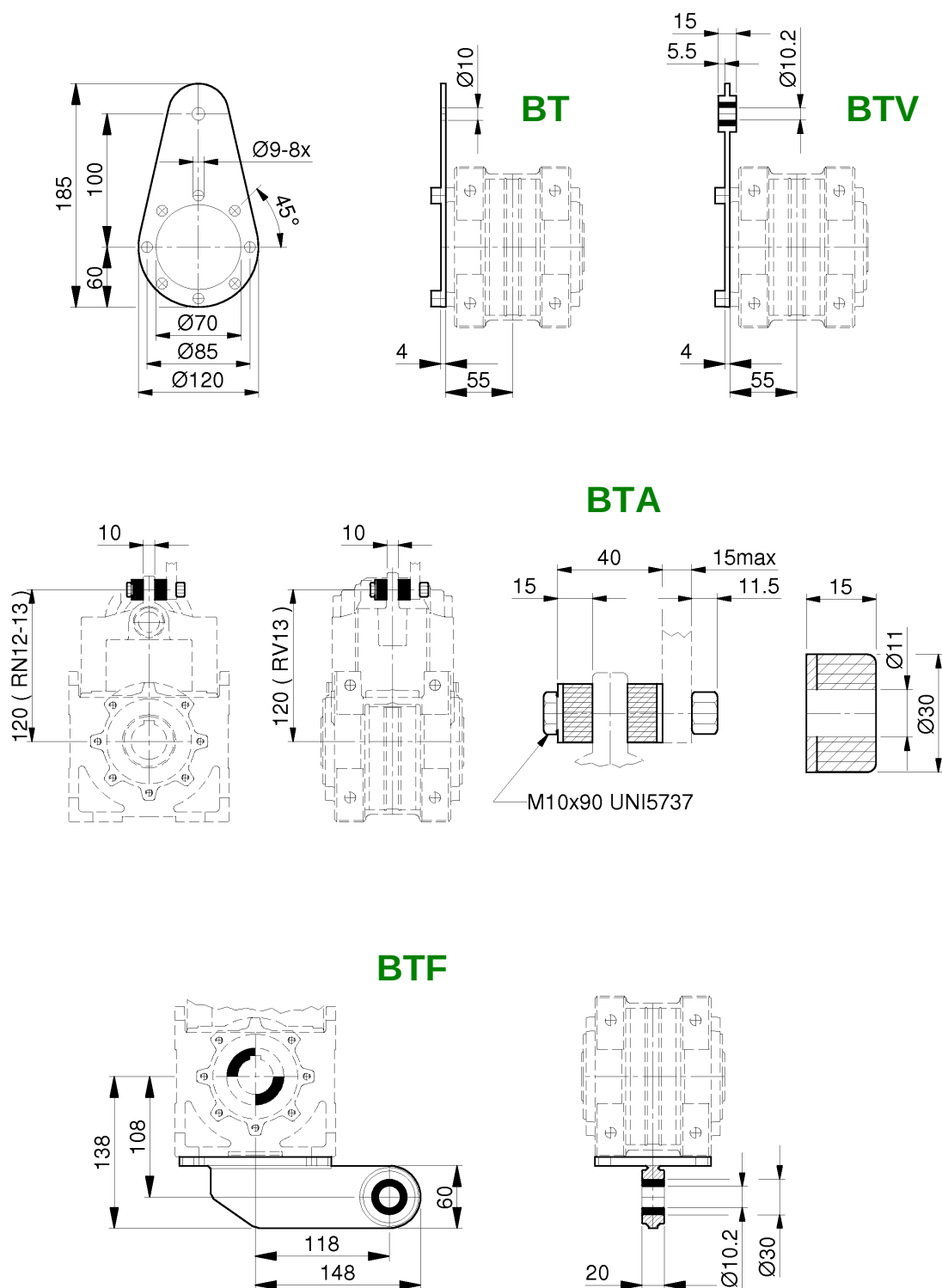


R1

Getriebe - Gearboxes - Riduttori RN-RO-RV

RN12-13 / RO13 / RV13

Abmessungen - Dimensions - Dimensioni

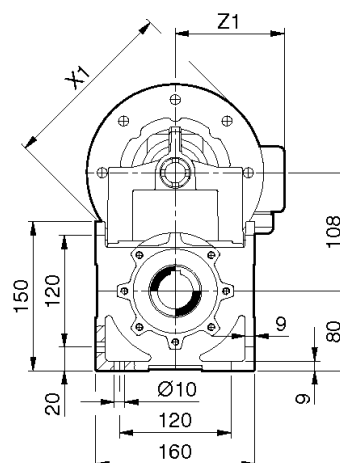
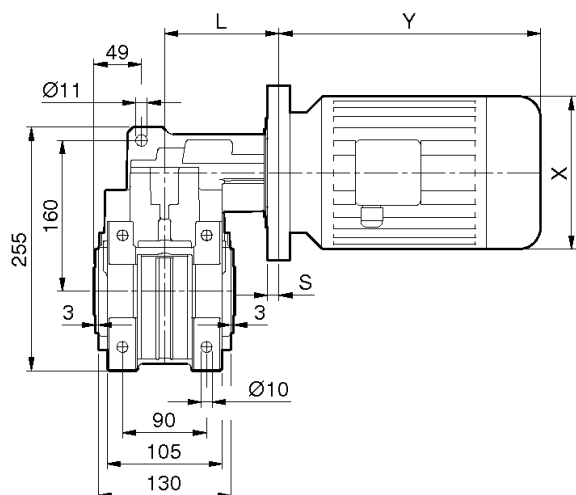


RN-RO-RV Riduttori - Gearboxes - Getriebe

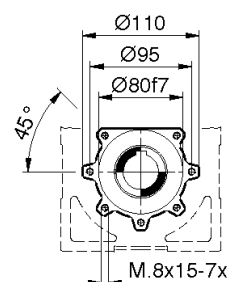
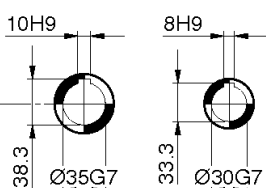
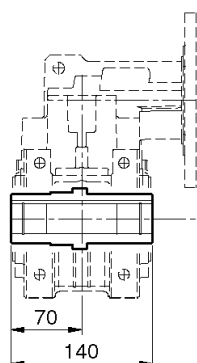
RN22-23

Dimensioni - Dimensions - Abmessungen

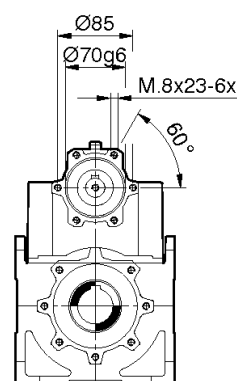
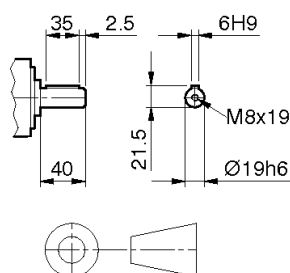
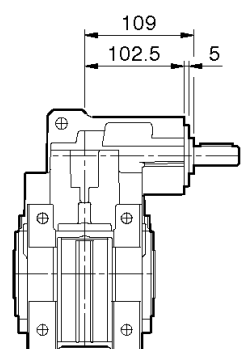
**MRN
FRN**



AC35 AC30



RN



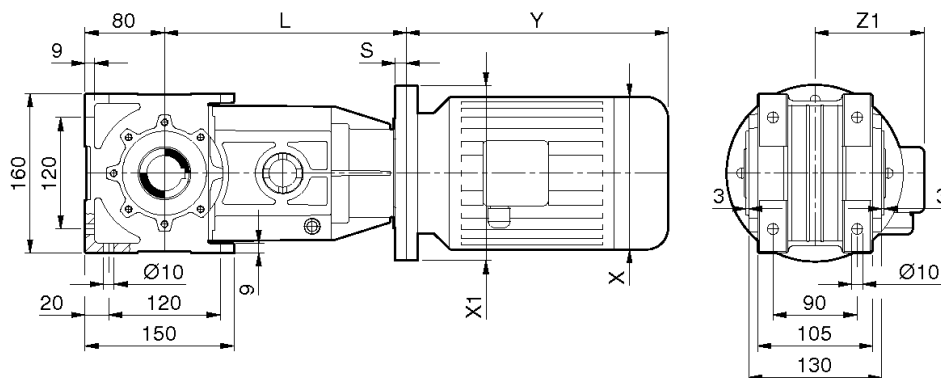
RN	22 / 23	22 / 23	22	22	22	22	
IEC	71	80	90 S	90 L	100	112	
X / Y / Z1	140/220/121	159/238/138	176/255/149	176/280/149	195/314/160	219/328/172	
X1 (B5) / S	160/15,5	200/15,5	200/15,5	200/15,5	250/16,5	250/16,5	
X1 (B14) / S	105/15,5	120/17,5	140/17,5	140/17,5	160/15,5	160/15,5	
L (RN22)	118	118 (120)	118 (120)	118 (120)	119 (118)	119 (118)	
L (RN23)	118	118 (120)	---	---	---	---	

RO23

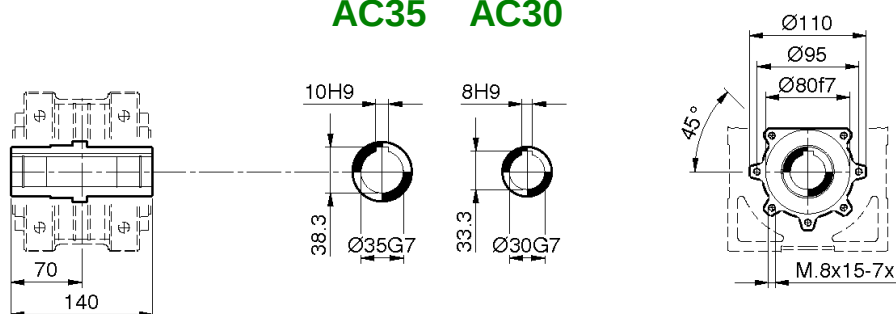
Getriebe - Gearboxes - Riduttori RN-RO-RV

Abmessungen - Dimensions - Dimensioni

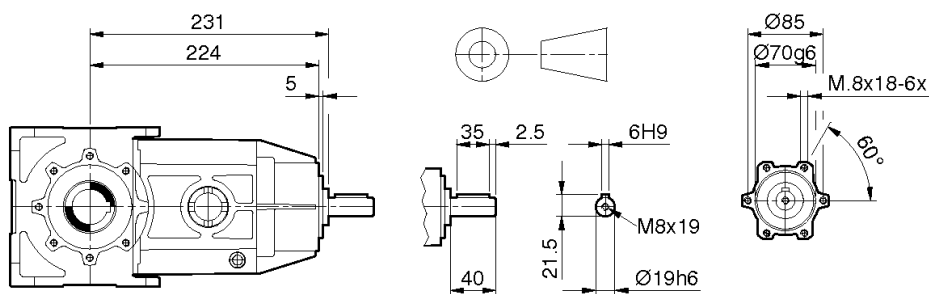
**MRO
FRO**



AC35 AC30



RO



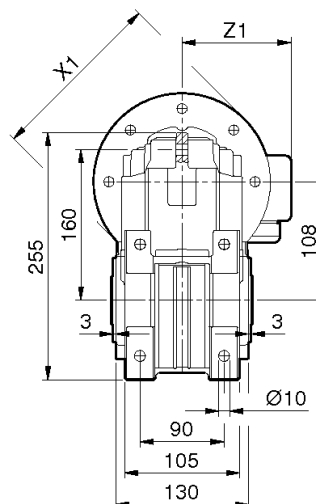
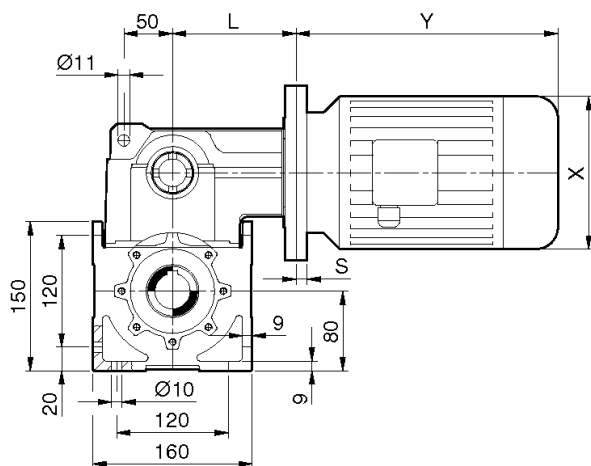
RO	23	23	23	23	23	23	
IEC	71	80	90 S	90 L	100	112	
X / Y / Z1	140/220/121	159/238/138	176/255/149	176/280/149	195/314/160	219/328/172	
X1 (B5) / S	160/15,5	200/15,5	200/15,5	200/15,5	250/16,5	250/16,5	
X1 (B14) / S	105/15,5	120/17,5	140/17,5	140/17,5	160/15,5	160/15,5	
L (RO23)	239,5	239,5 (241,5)	239,5 (241,5)	239,5 (241,5)	240,5 (239,5)	240,5 (239,5)	

RN-RO-RV Riduttori - Gearboxes - Getriebe

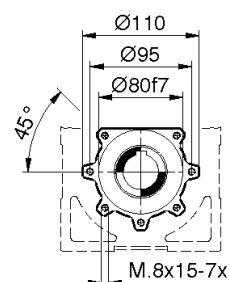
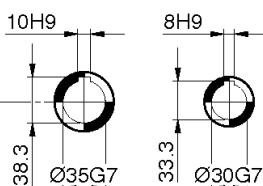
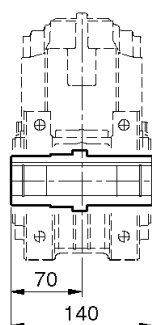
RV23

Dimensioni - Dimensions - Abmessungen

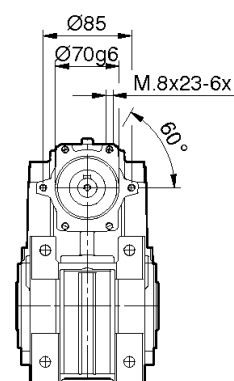
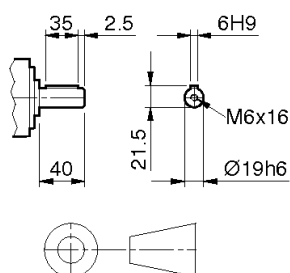
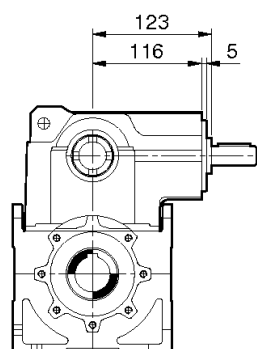
**MRV
FRV**



AC35 AC30



RV



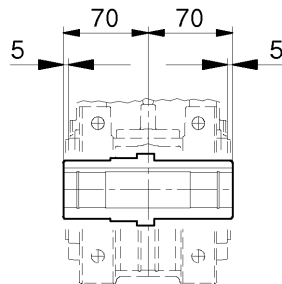
RV	23	23	23	23	23	23	
IEC	71	80	90 S	90 L	100	112	
X / Y / Z1	140/220/121	159/238/138	176/255/149	176/280/149	195/314/160	219/328/172	
X1 (B5) / S	160/15,5	200/15,5	200/15,5	200/15,5	250/16,5	250/16,5	
X1 (B14) / S	105/15,5	120/17,5	140/17,5	140/17,5	160/15,5	160/15,5	
L (RV23)	131,5	131,5 (133,5)	131,5 (133,5)	131,5 (133,5)	132,5 (131,5)	132,5 (131,5)	

R2

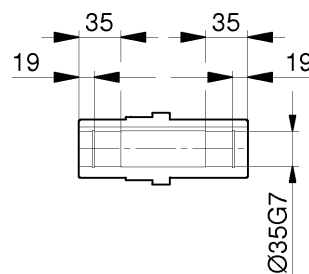
Getriebe - Gearboxes - Riduttori RN-RO-RV

RN22-23 / RO23 / RV23

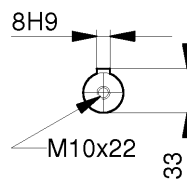
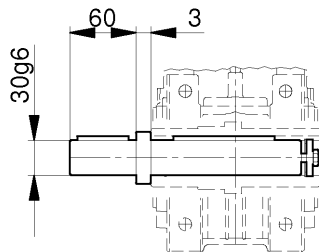
Abmessungen - Dimensions - Dimensioni



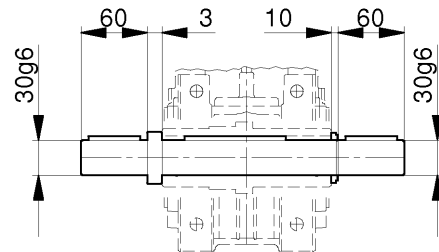
AC



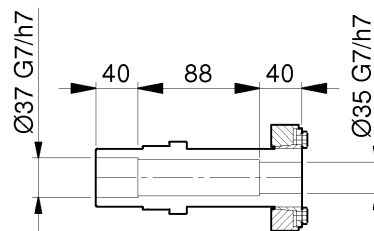
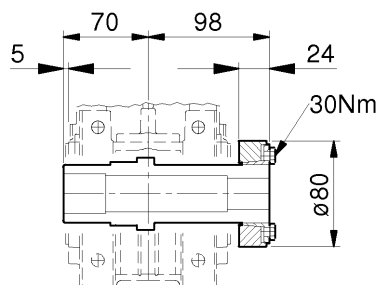
AS



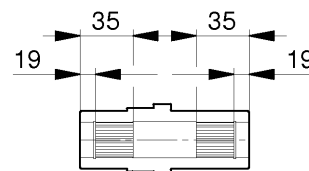
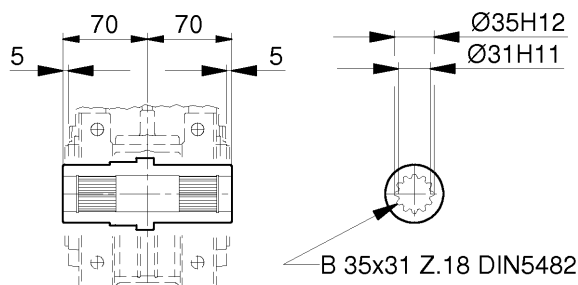
AD



ACC



ACS

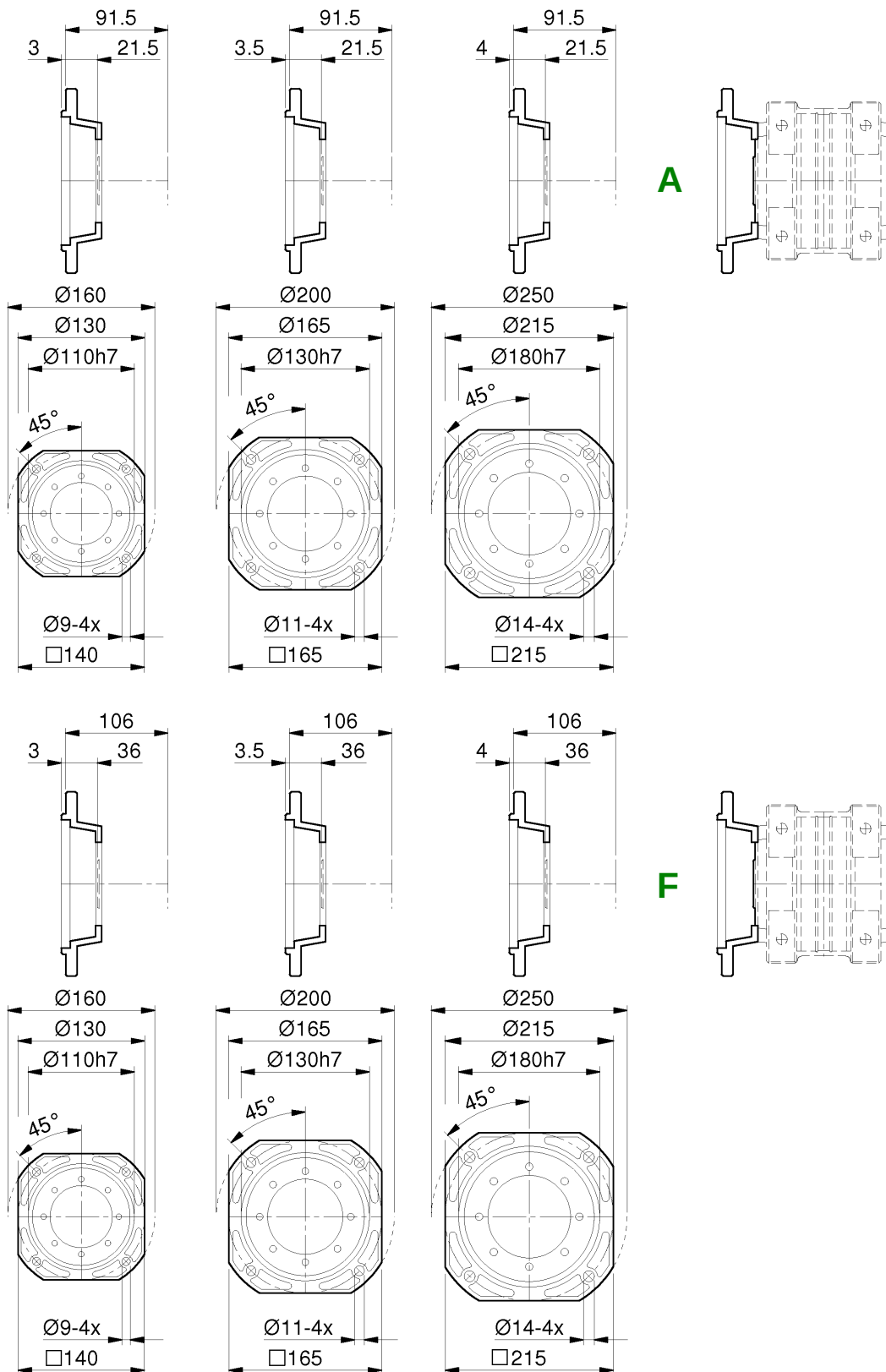


RN-RO-RV Riduttori - Gearboxes - Getriebe

R2

Dimensioni - Dimensions - Abmessungen

RN22-23 / RO23 / RV23

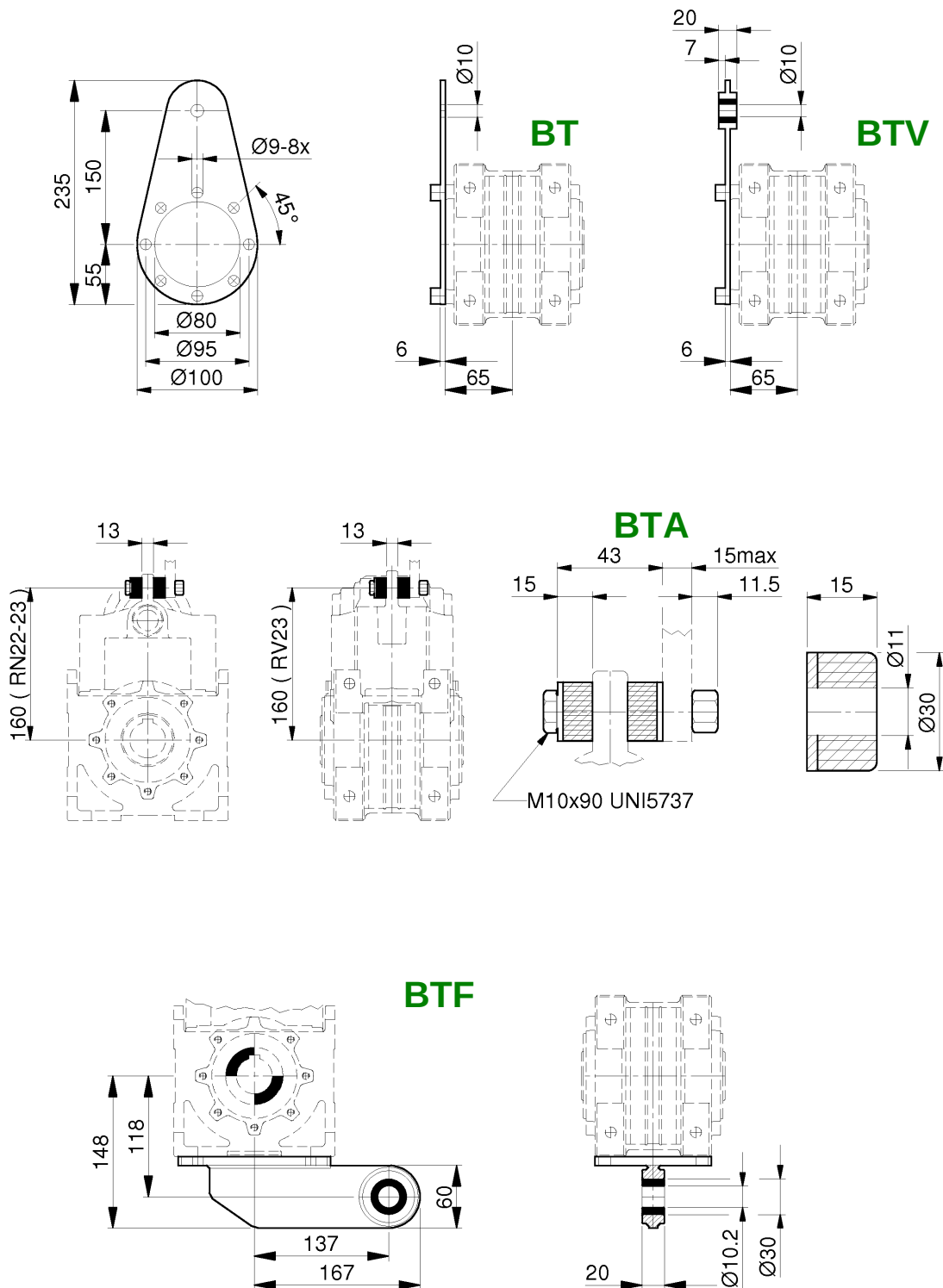


R2

Getriebe - Gearboxes - Riduttori RN-RO-RV

RN22-23 / RO23 / RV23

Abmessungen - Dimensions - Dimensioni

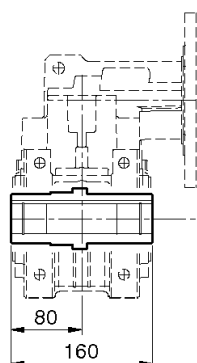
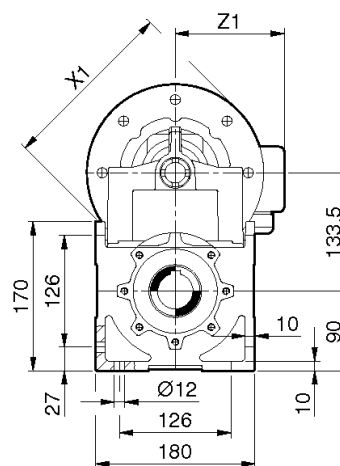
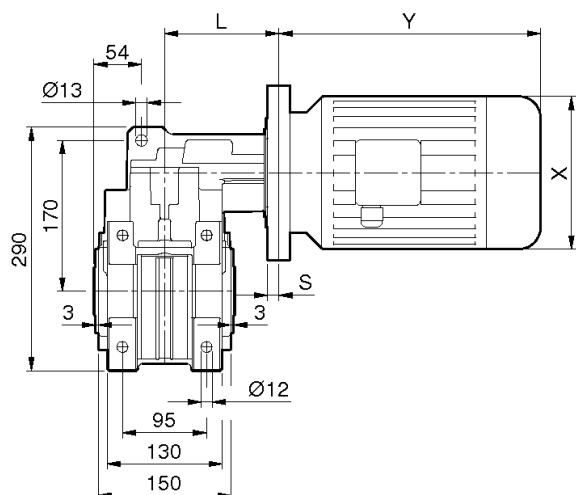


RN-RO-RV Riduttori - Gearboxes - Getriebe

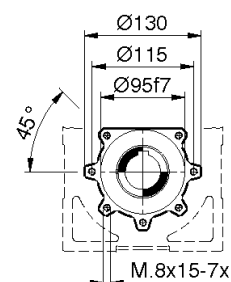
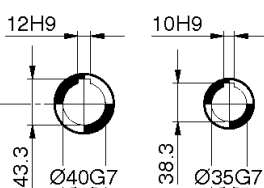
RN32-33

Dimensioni - Dimensions - Abmessungen

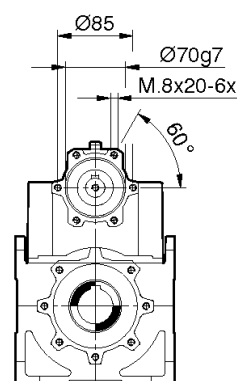
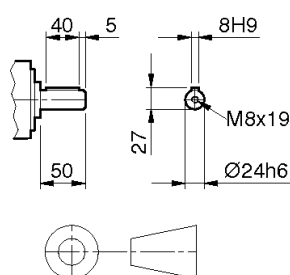
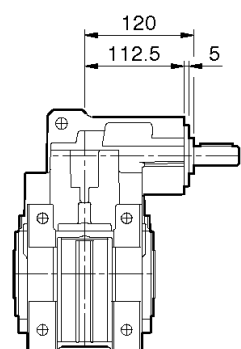
**MRN
FRN**



AC40 AC35



RN



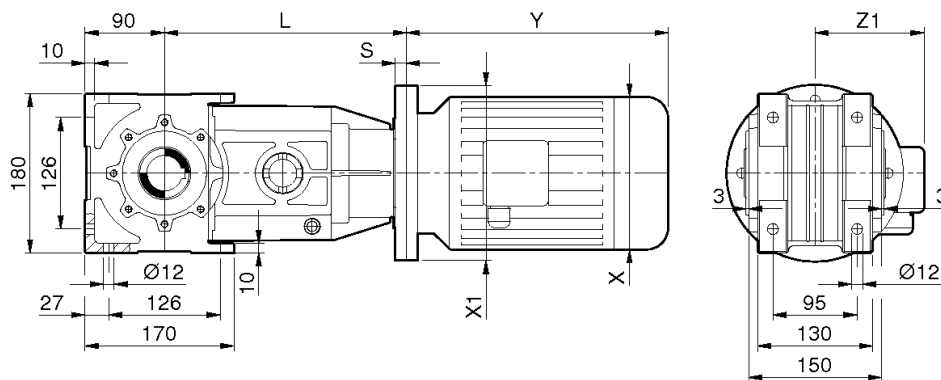
RN	32 / 33	32 / 33	32 / 33	32 / 33	32	32	
IEC	71	80	90 S	90 L	100	112	
X / Y / Z1	140/220/121	159/238/138	176/255/149	176/280/149	195/314/160	219/328/172	
X1 (B5) / S	160/15,5	200/15,5	200/15,5	200/15,5	250/16,5	250/16,5	
X1 (B14) / S	105/15,5	120/17,5	140/17,5	140/17,5	160/15,5	160/15,5	
L (RN32)	128	128 (130)	128 (130)	128 (130)	129 (128)	129 (128)	
L (RN33)	128	128 (130)	128 (130)	128 (130)	---	---	

RO33

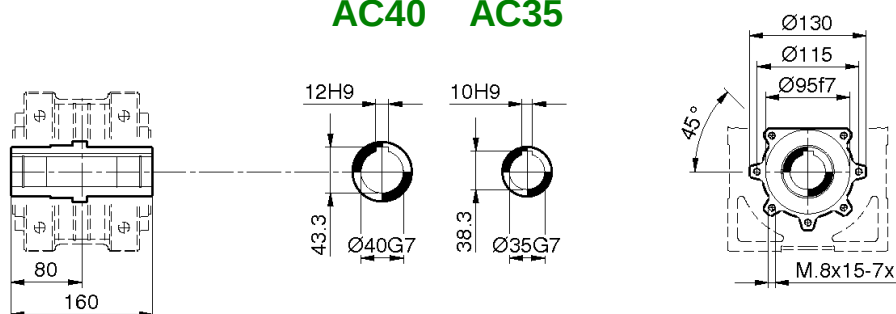
Getriebe - Gearboxes - Riduttori RN-RO-RV

Abmessungen - Dimensions - Dimensioni

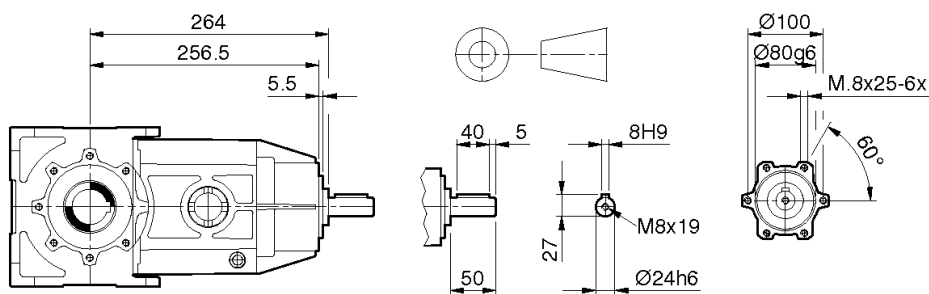
**MRO
FRO**



AC40 AC35



RO



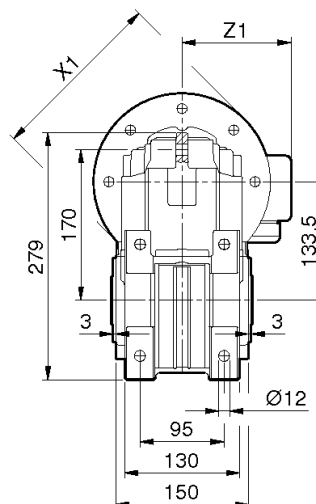
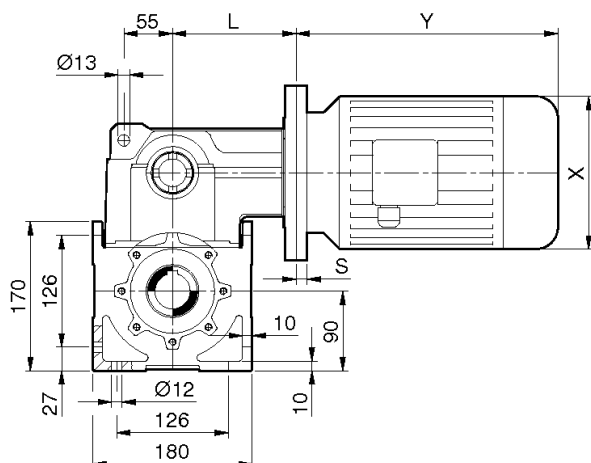
RO	33	33	33	33	33	33	
IEC	71	80	90 S	90 L	100	112	
X / Y / Z1	140/220/121	159/238/138	176/255/149	176/280/149	195/314/160	219/328/172	
X1 (B5) / S	160/15,5	200/15,5	200/18,5	200/18,5	250/16,5	250/16,5	
X1 (B14) / S	---	120/15,5	140/15,5	140/15,5	160/15,5	160/15,5	
L (RO33)	272	272	275 (272)	275 (272)	273 (272)	273 (272)	

RN-RO-RV Riduttori - Gearboxes - Getriebe

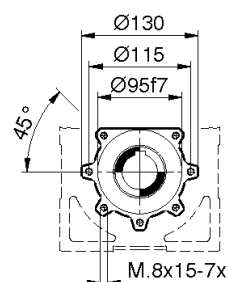
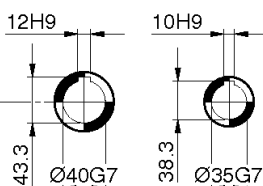
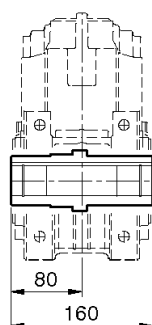
RV33

Dimensioni - Dimensions - Abmessungen

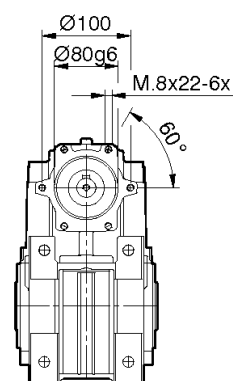
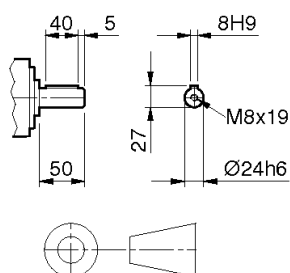
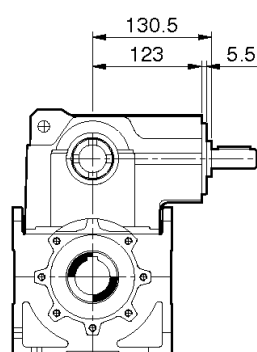
**MRV
FRV**



AC40 AC35



RV



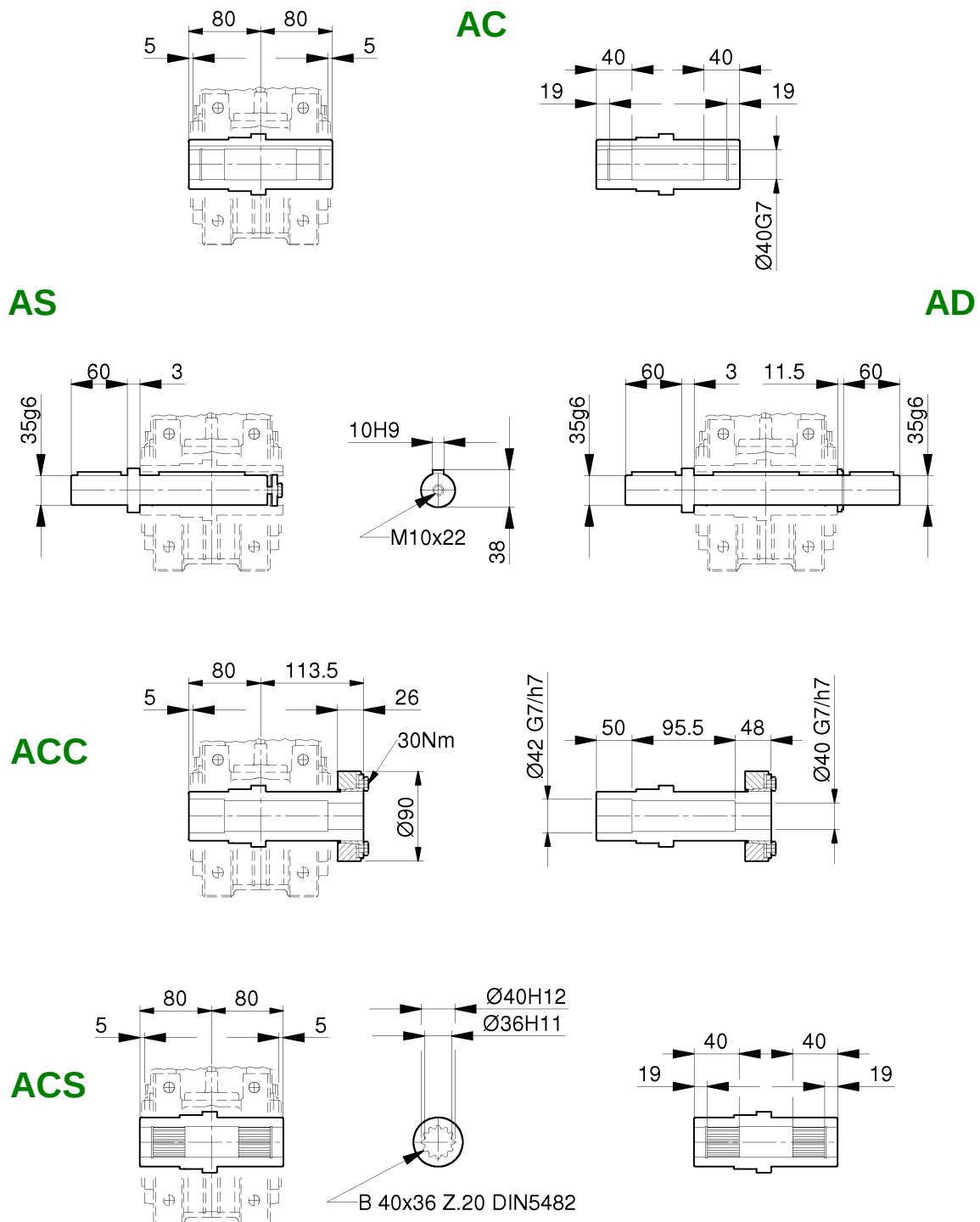
RV	33	33	33	33	33	33	
IEC	71	80	90 S	90 L	100	112	
X / Y / Z1	140/220/121	159/238/138	176/255/149	176/280/149	195/314/160	219/328/172	
X1 (B5) / S	160/15,5	200/15,5	200/15,5	200/15,5	250/16,5	250/16,5	
X1 (B14) / S	---	120/15,5	140/17,5	140/17,5	160/15,5	160/15,5	
L (RV33)	138,5	144,5	138,5 (141,5)	138,5 (141,5)	139,5 (138,5)	139,5 (138,5)	

R3

Getriebe - Gearboxes - Riduttori RN-RO-RV

RN32-33 / RO33 / RV33

Abmessungen - Dimensions - Dimensioni

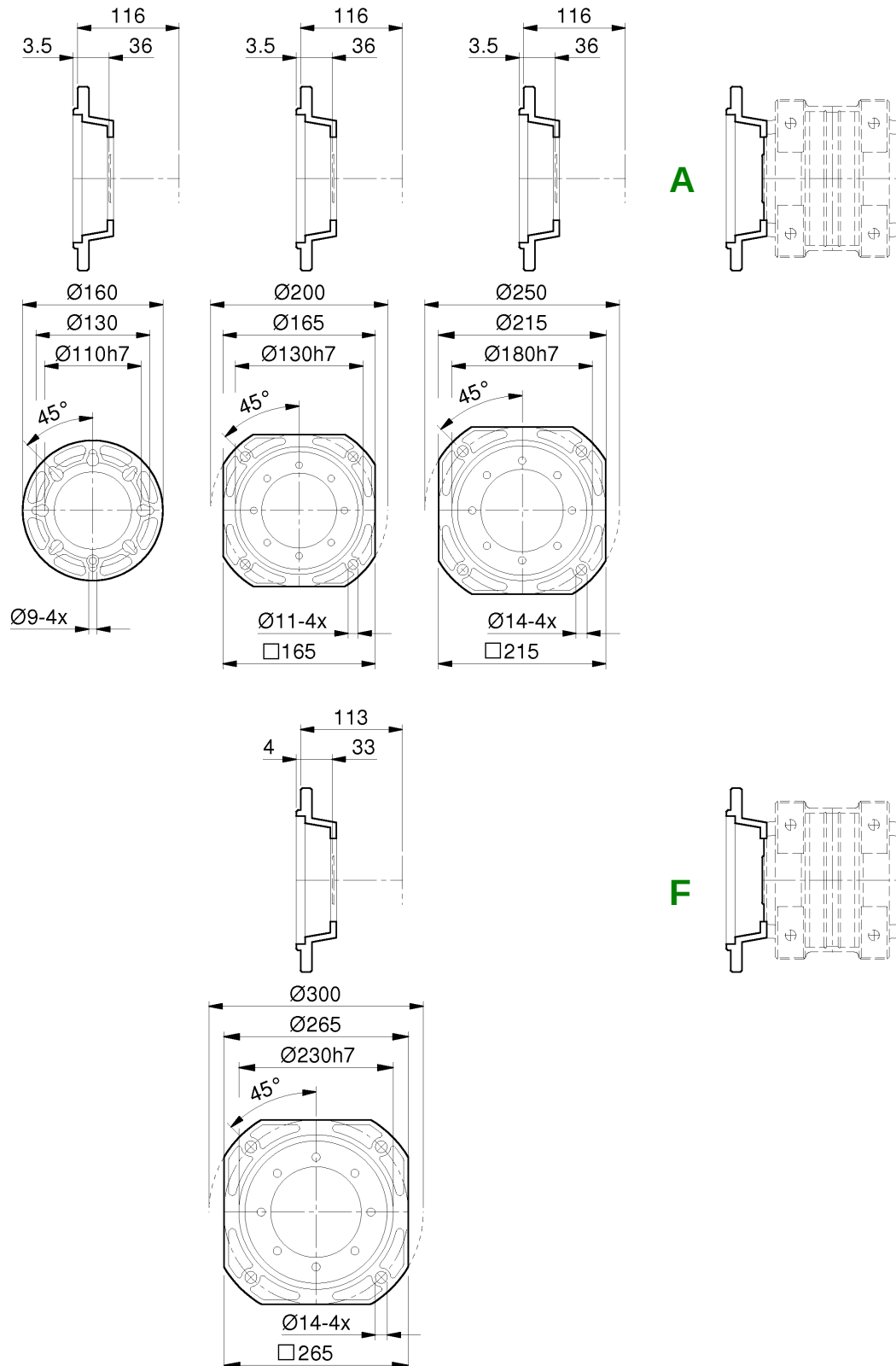


RN-RO-RV Riduttori - Gearboxes - Getriebe

R3

Dimensioni - Dimensions - Abmessungen

RN32-33 / RO33 / RV33

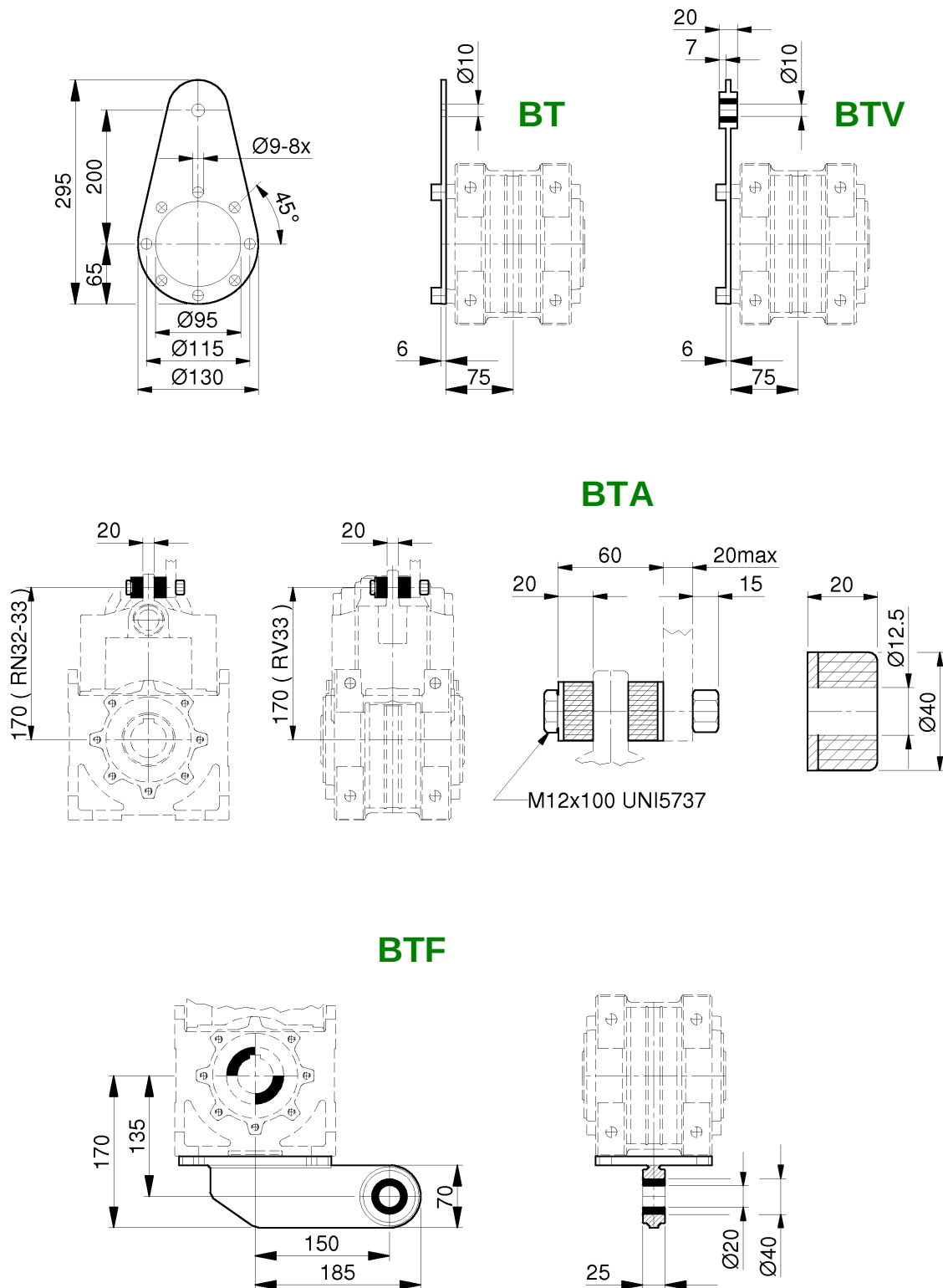


R3

Getriebe - Gearboxes - Riduttori RN-RO-RV

RN32-33 / RO33 / RV33

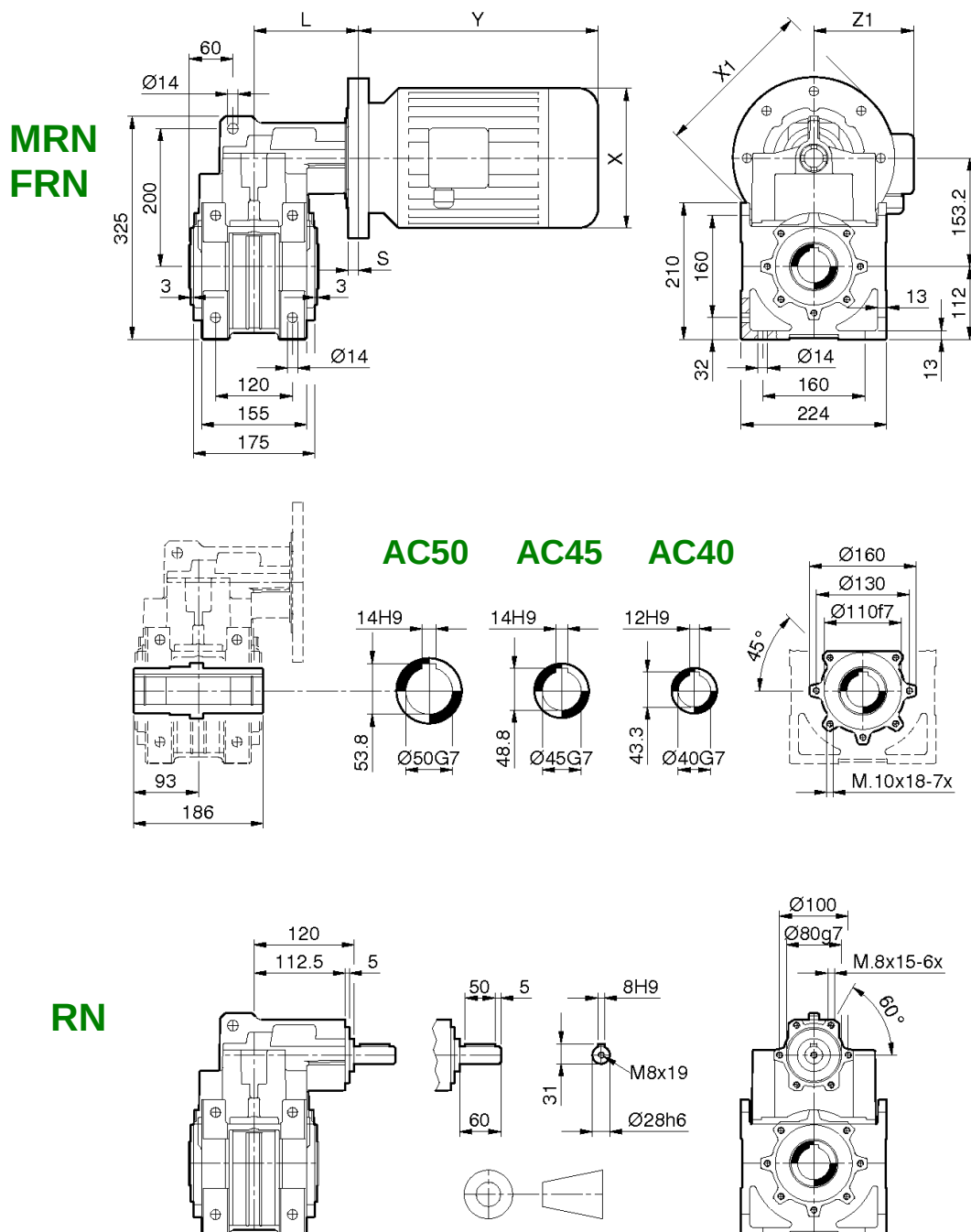
Abmessungen - Dimensions - Dimensioni



RN-RO-RV Riduttori - Gearboxes - Getriebe

RN42-43

Dimensioni - Dimensions - Abmessungen



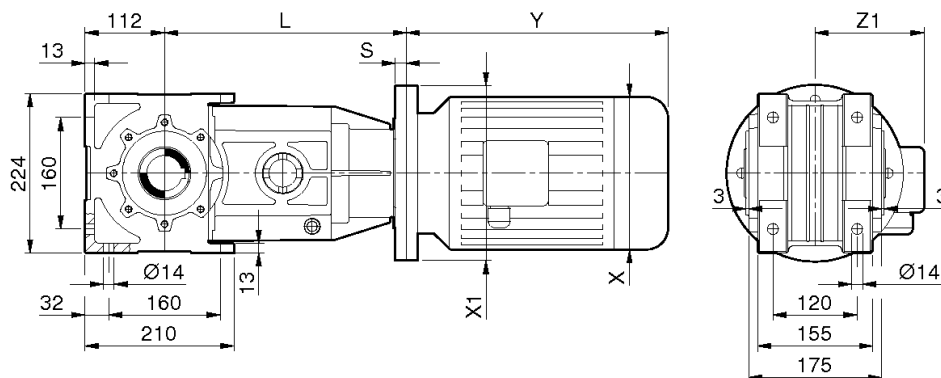
RN	42 / 43	42 / 43	42 / 43	42 / 43	42 / 43	42	
IEC	71	80	90 S	90 L	100	112	
X / Y / Z1	140/220/121	159/238/138	176/255/149	176/280/149	195/314/160	219/328/172	
X1 (B5) / S	160/15,5	200/15,5	200/15,5	200/15,5	250/16,5	250/16,5	
X1 (B14) / S	---	120/15,5	140/18,5	140/18,5	160/15,5	160/15,5	
L (RN42)	148	148	148 (151)	148 (151)	149 (148)	149 (148)	
L (RN43)	148	148	148 (151)	148 (151)	149 (148)	---	

RO43

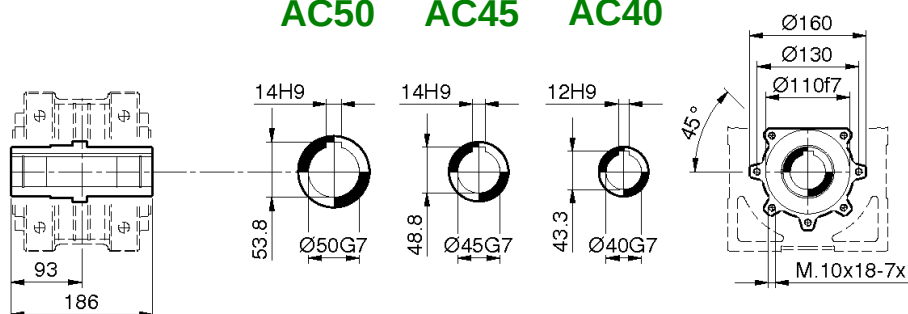
Getriebe - Gearboxes - Riduttori RN-RO-RV

Abmessungen - Dimensions - Dimensioni

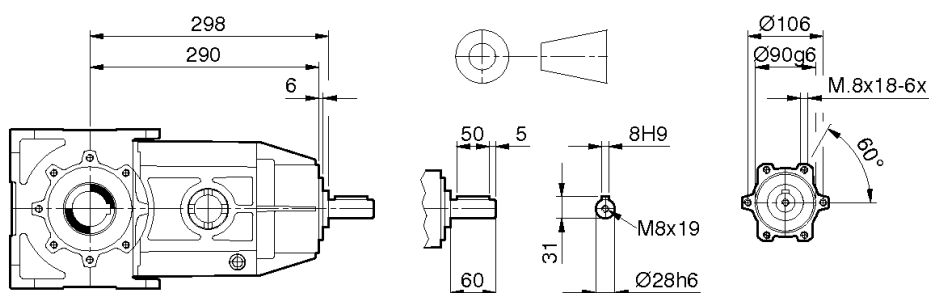
**MRO
FRO**



AC50 AC45 AC40



RO



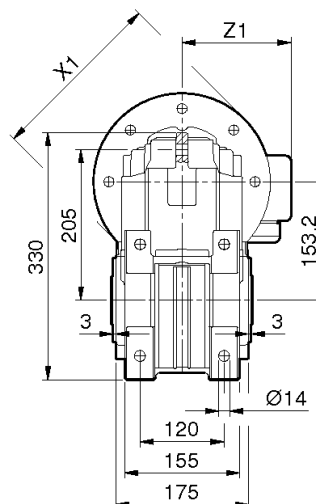
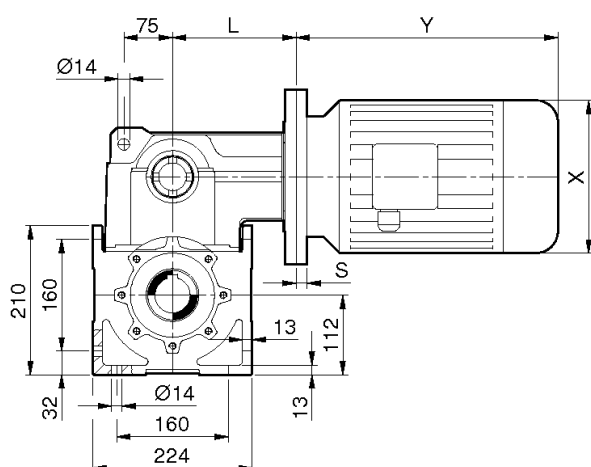
RO	43	43	43	43	43	43	
IEC	71	80	90 S	90 L	100	112	
X / Y / Z1	140/220/121	159/238/138	176/255/149	176/280/149	195/314/160	219/328/172	
X1 (B5) / S	160/18	200/18	200/18	200/18	250/18,5	250/18,5	
X1 (B14) / S	---	---	140/20	140/20	160/18	160/18	
L (RO43)	308	308	308 (310)	308 (310)	308,5 (308)	308,5 (308)	

RN-RO-RV Riduttori - Gearboxes - Getriebe

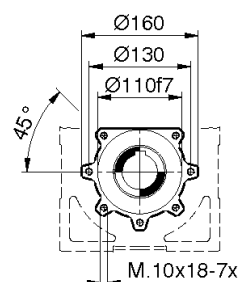
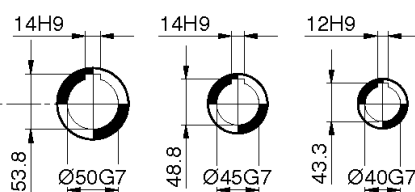
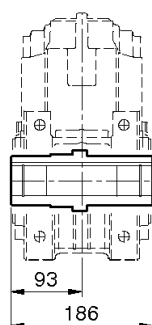
RV43

Dimensioni - Dimensions - Abmessungen

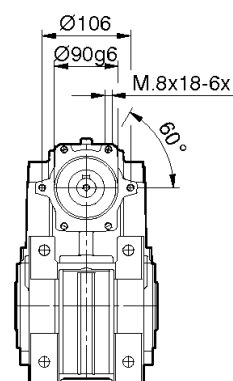
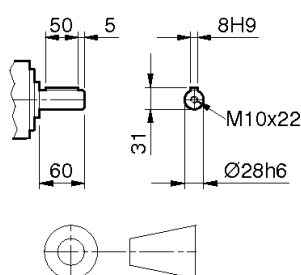
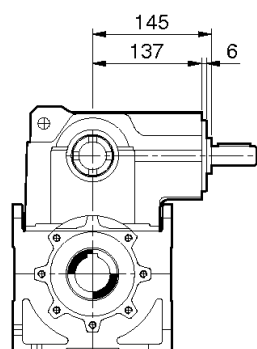
**MRV
FRV**



AC50 AC45 AC40



RV



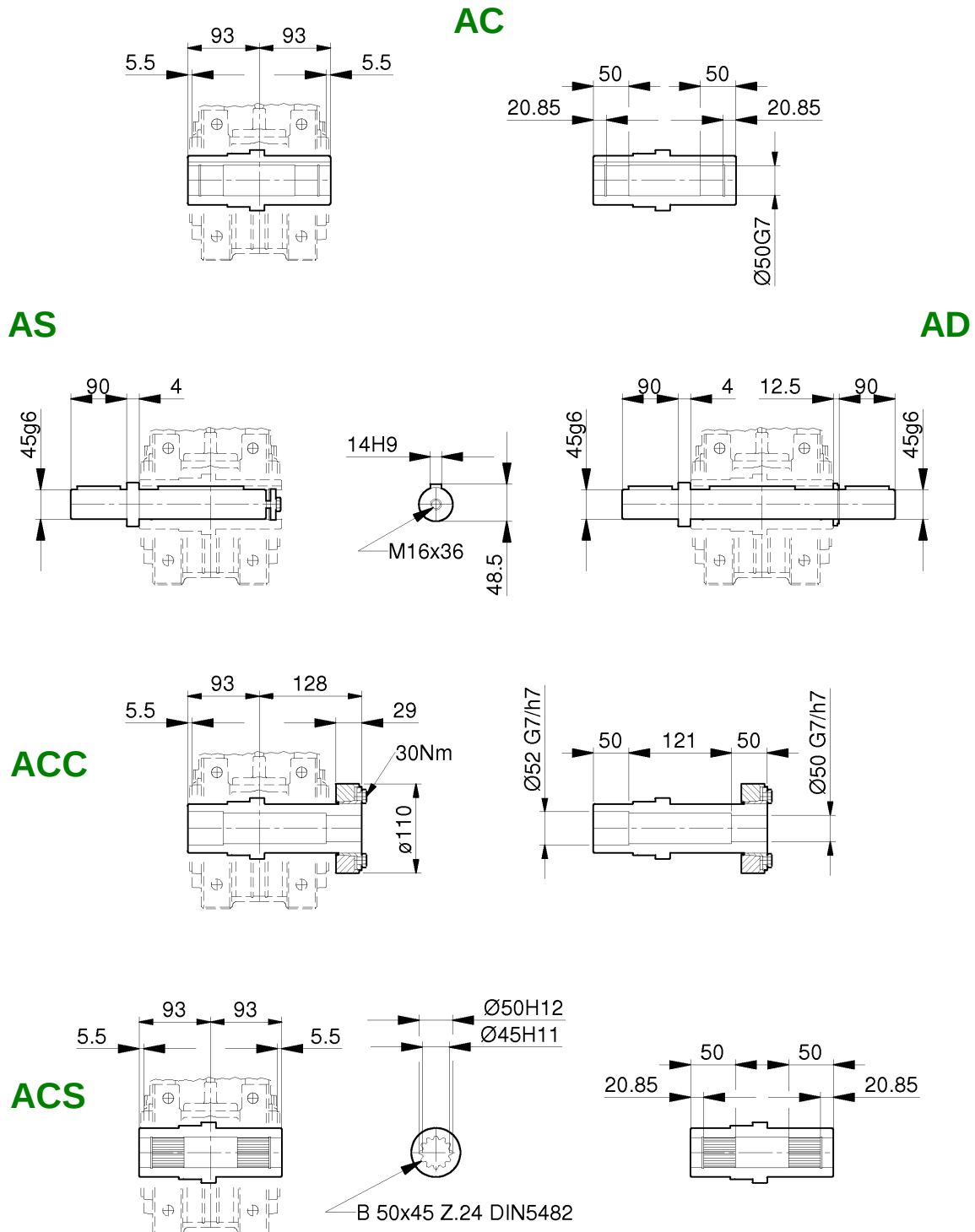
RV	43	43	43	43	43	43	
IEC	71	80	90 S	90 L	100	112	
X / Y / Z1	140/220/121	159/238/138	176/255/149	176/280/149	195/314/160	219/328/172	
X1 (B5) / S	160/18	200/18	200/18	200/18	250/18,5	250/18,5	
X1 (B14) / S	---	---	140/20	140/20	160/18	160/18	
L (RV43)	155	155	155 (157)	155 (157)	155,5 (155)	155,5 (155)	

R4

Getriebe - Gearboxes - Riduttori RN-RO-RV

RN42-43 / RO43 / RV43

Abmessungen - Dimensions - Dimensioni



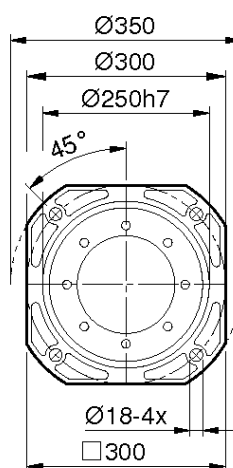
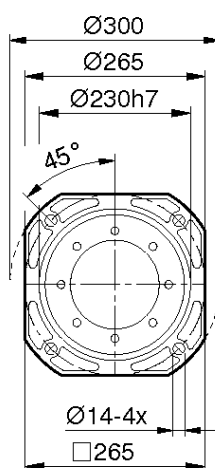
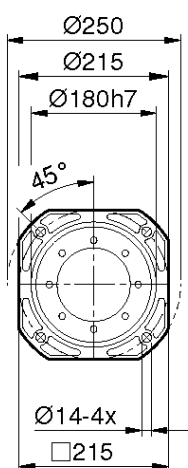
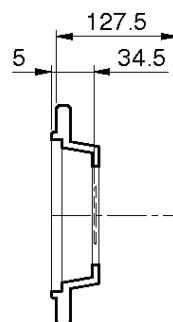
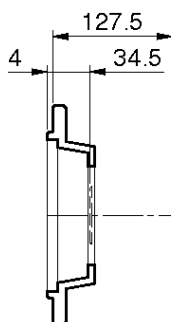
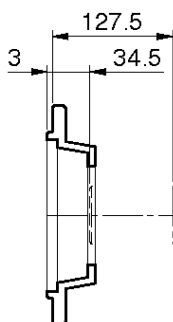
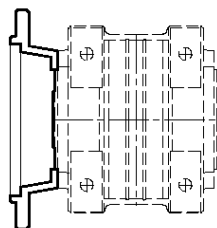
RN-RO-RV Riduttori - Gearboxes - Getriebe

R4

Dimensioni - Dimensions - Abmessungen

RN42-43 / RO43 / RV43

A

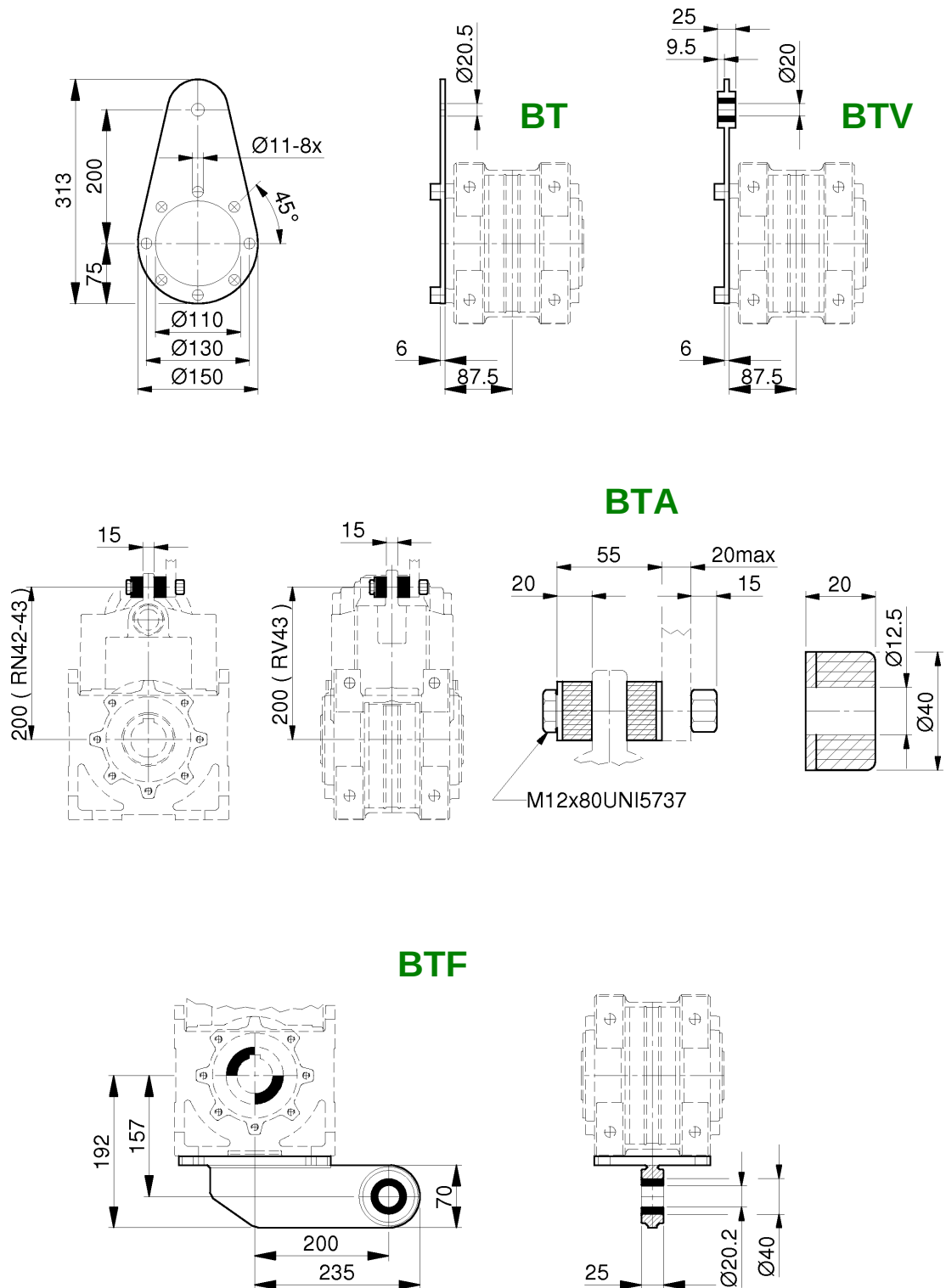


R4

Getriebe - Gearboxes - Riduttori RN-RO-RV

RN42-43 / RO43 / RV43

Abmessungen - Dimensions - Dimensioni

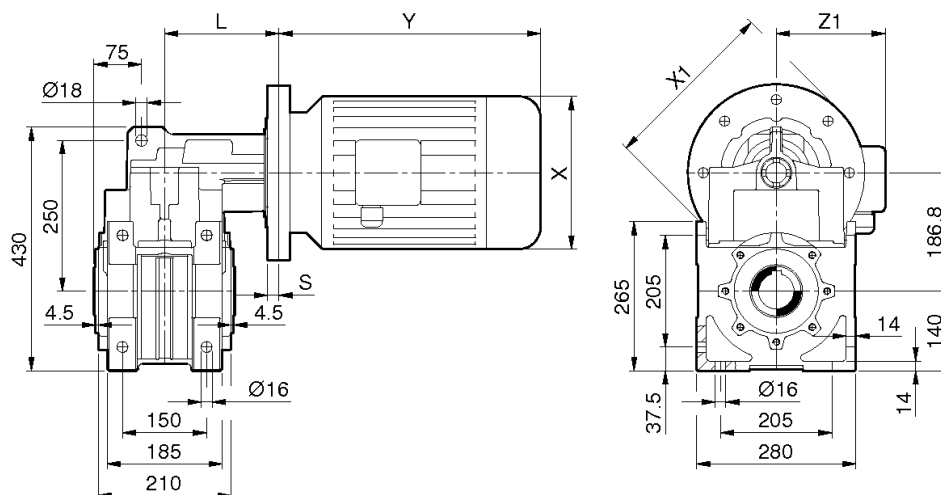


RN-RO-RV Riduttori - Gearboxes - Getriebe

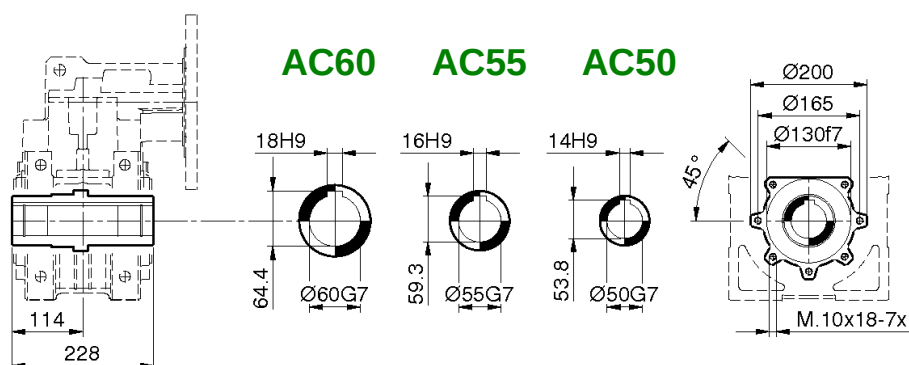
RN52-53

Dimensioni - Dimensions - Abmessungen

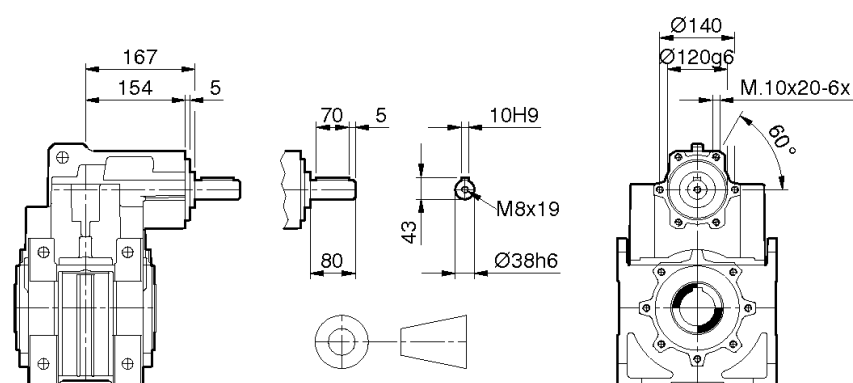
**MRN
FRN**



AC60 AC55 AC50



RN



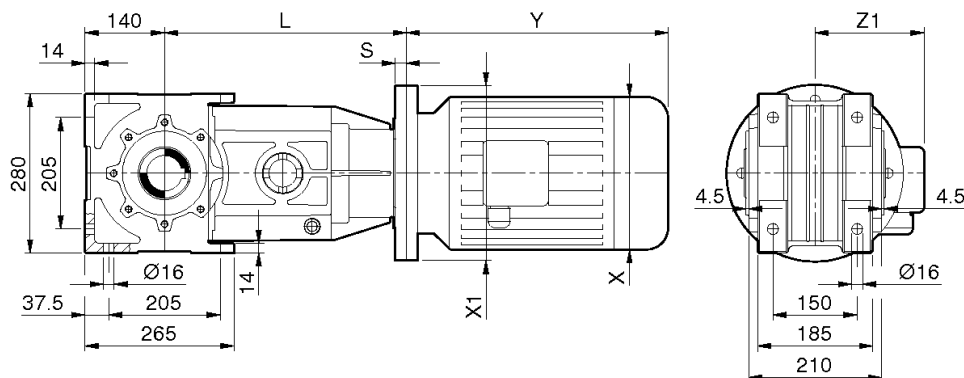
RN	52 / 53	52 / 53	52 / 53	52 / 53	52 / 53	52	52
IEC	80	90 S / L	100	112	132 S / M	160	180
X / Y / Z1	159/238/138	176/255-280/149	195/314/160	219/328/172	258/368-410/192	310/486/235	320/580/245
X1 (B5) / S	200/22	200/22	250/22	250/22	300/22	350/35	350/35
X1 (B14) / S	---	---	---	---	200/22	250/22	300/22
L (RN52)	176	176	176	176	176	189 (176)	189 (176)
L (RN53)	176	176	176	176	176	---	---

RO53

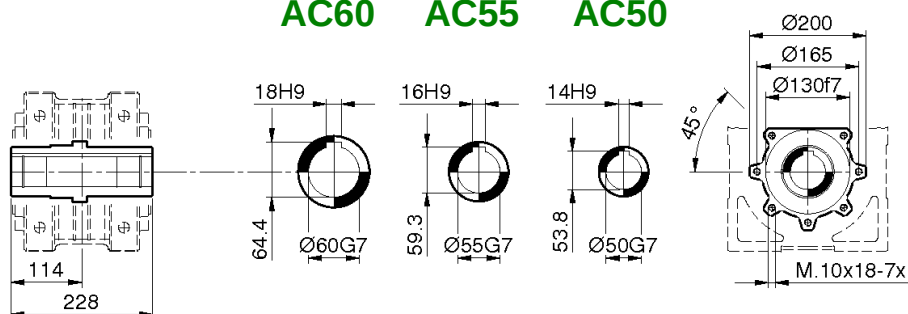
Getriebe - Gearboxes - Riduttori RN-RO-RV

Abmessungen - Dimensions - Dimensioni

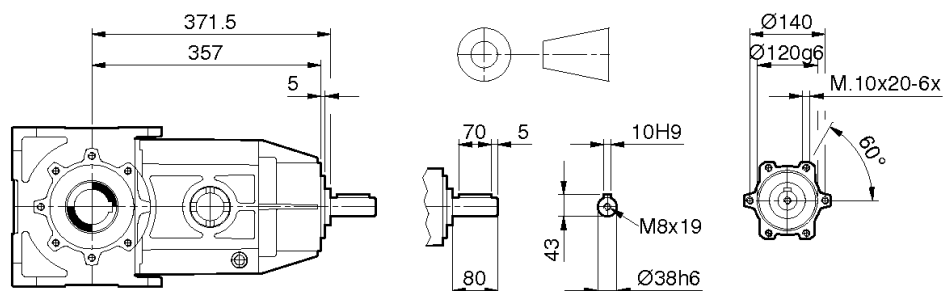
MRO FRO



AC60 AC55 AC50



RO



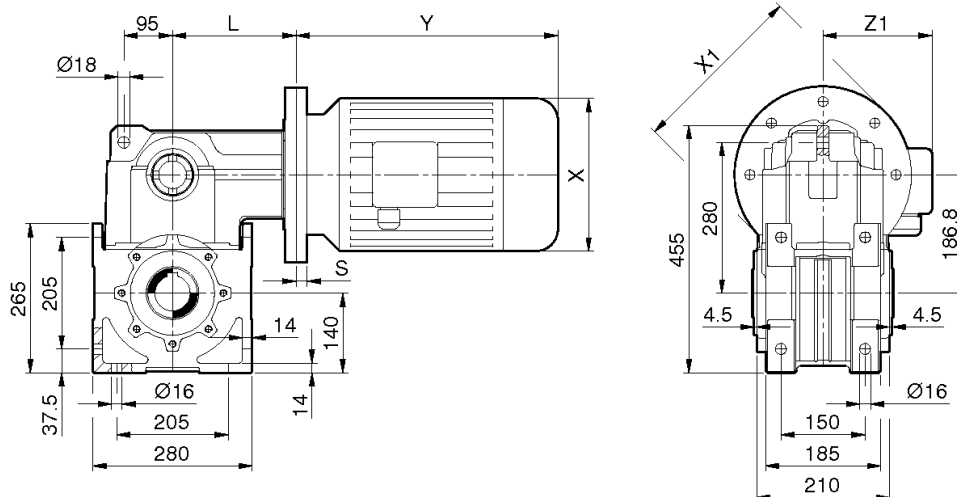
RO	53	53	53	53	53	53	53
IEC	80	90 S / L	100	112	132 S / M	160	180
X / Y / Z1	159/238/138	176/255-280/149	195/314/160	219/328/172	258/368-410/192	310/486/235	320/580/245
X1 (B5) / S	200/22	200/22	250/22	250/22	300/22	350/35	350/35
X1 (B14) / S	---	---	---	---	200/22	250/22	300/22
L (RO53)	379	379	379	379	379	392 (379)	392 (379)

RN-RO-RV Riduttori - Gearboxes - Getriebe

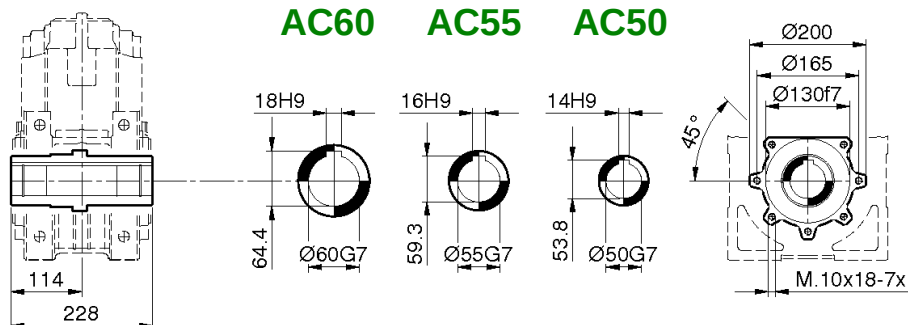
RV53

Dimensioni - Dimensions - Abmessungen

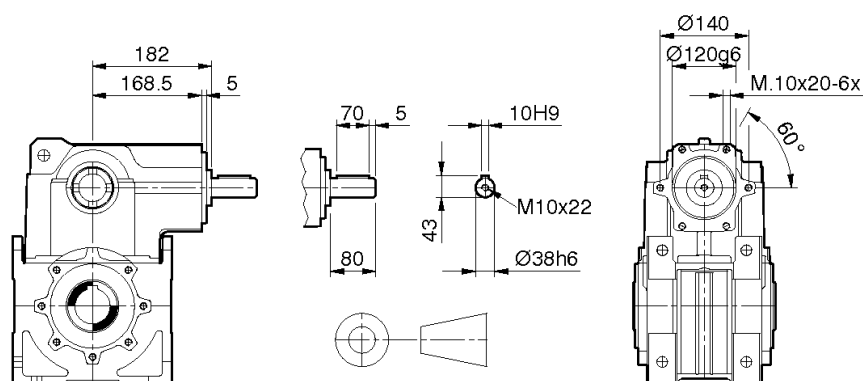
**MRV
FRV**



AC60 AC55 AC50



RV



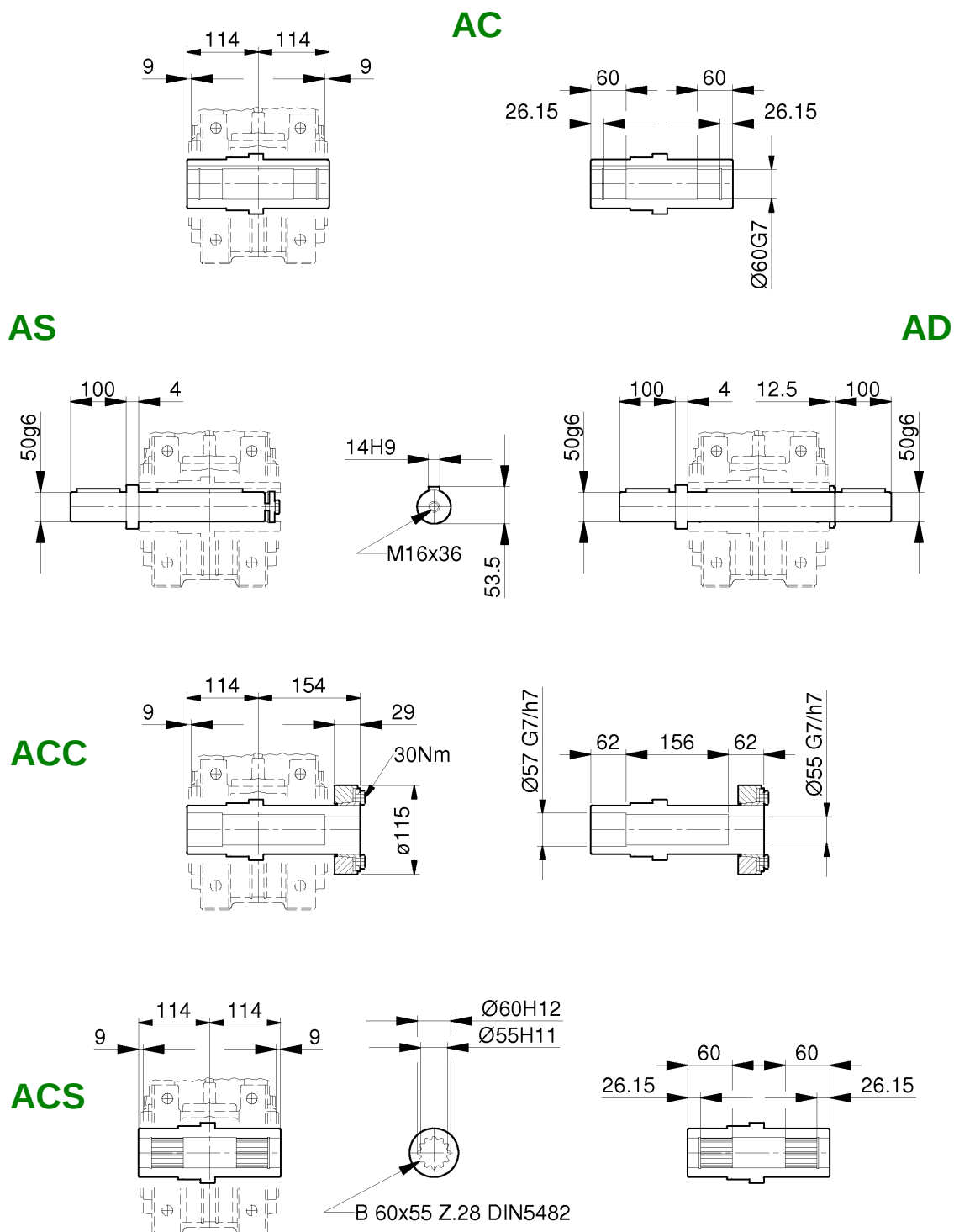
RV	53	53	53	53	53	53	53
IEC	80	90 S / L	100	112	132 S / M	160	180
X / Y / Z1	159/238/138	176/255-280/149	195/314/160	219/328/172	258/368-410/192	310/486/235	320/580/245
X1 (B5) / S	200/22	200/22	250/22	250/22	300/22	350/35	350/35
X1 (B14) / S	---	---	---	---	200/22	250/22	300/22
L (RV53)	190,5	190,5	190,5	190,5	190,5	203,5 (190,5)	203,5 (190,5)

R5

Getriebe - Gearboxes - Riduttori RN-RO-RV

RN52-53 / RO53 / RV53

Abmessungen - Dimensions - Dimensioni

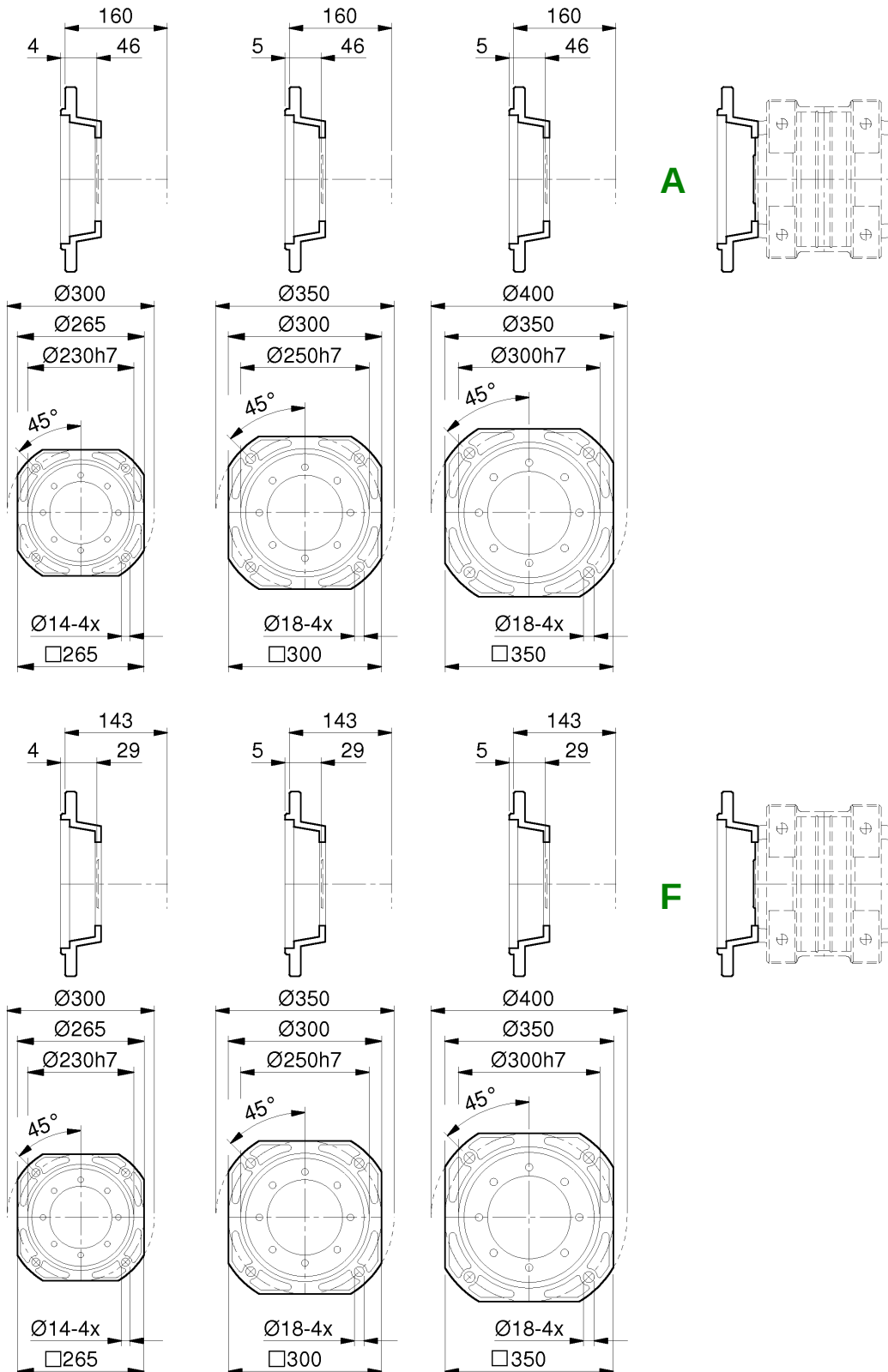


RN-RO-RV Riduttori - Gearboxes - Getriebe

R5

Dimensioni - Dimensions - Abmessungen

RN52-53 / RO53 / RV53

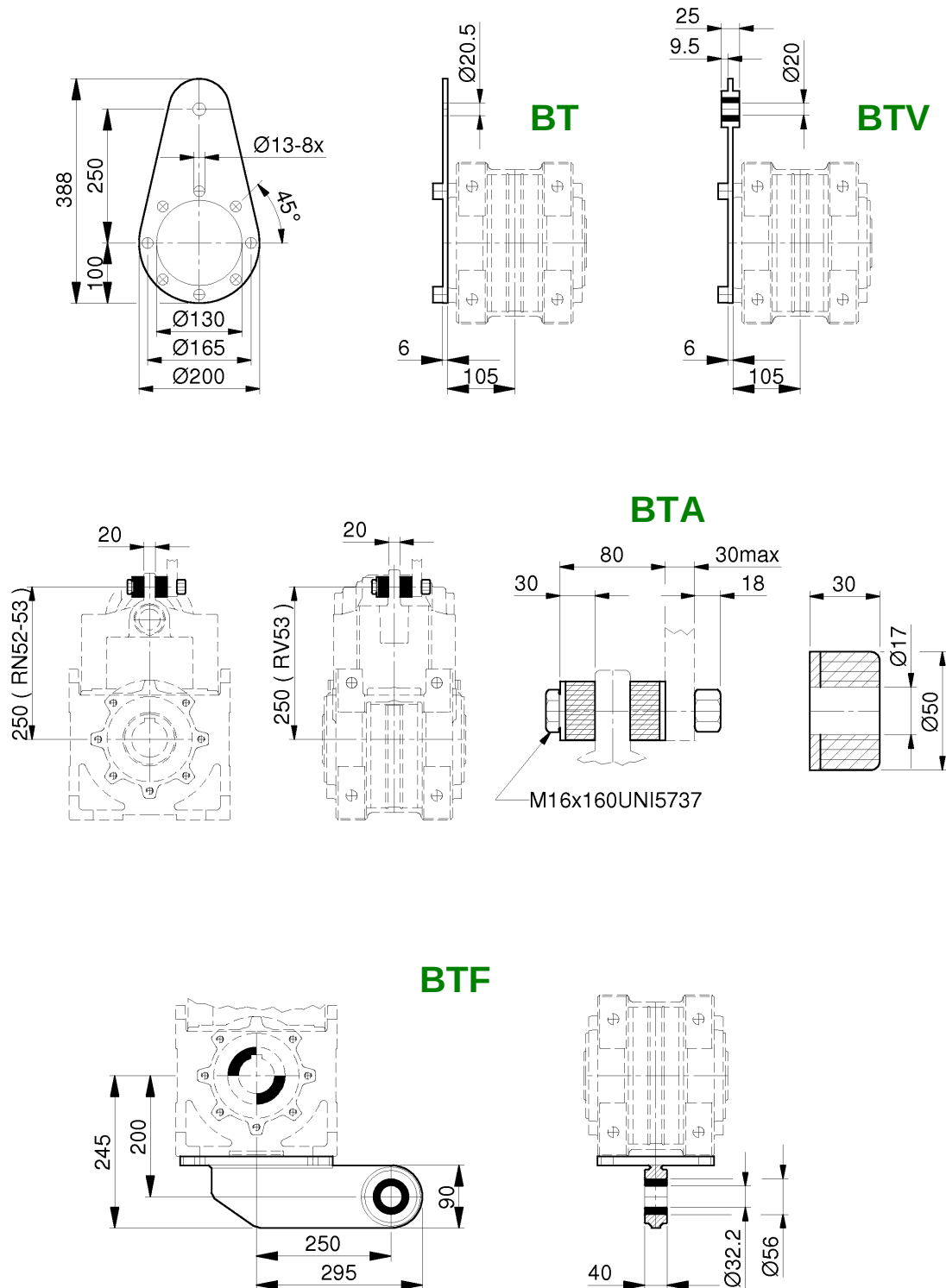


R5

Getriebe - Gearboxes - Riduttori RN-RO-RV

RN52-53 / RO53 / RV53

Abmessungen - Dimensions - Dimensioni

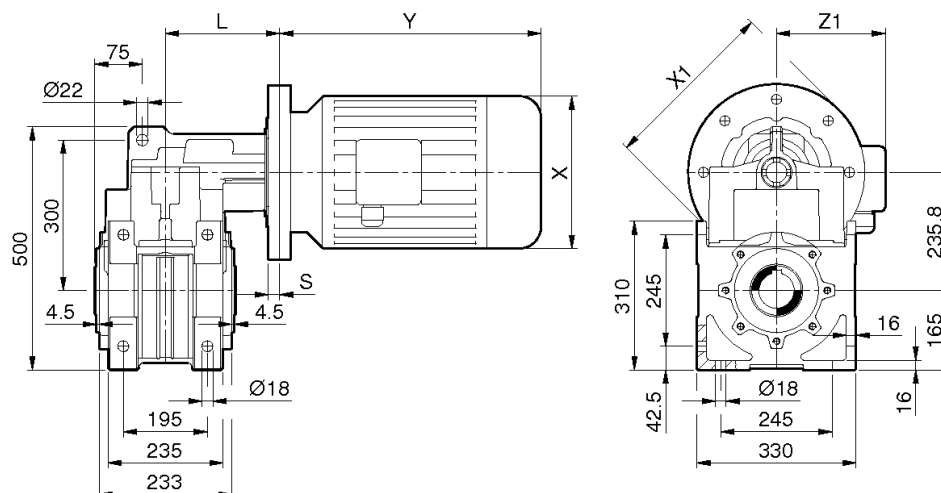


RN-RO-RV Riduttori - Gearboxes - Getriebe

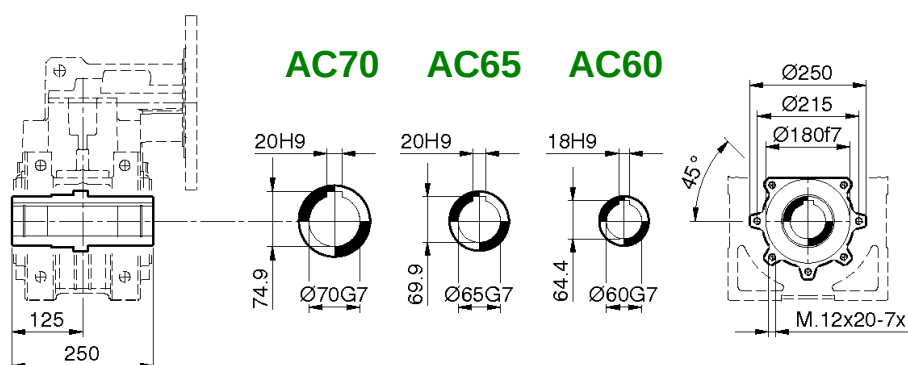
RN62-63

Dimensioni - Dimensions - Abmessungen

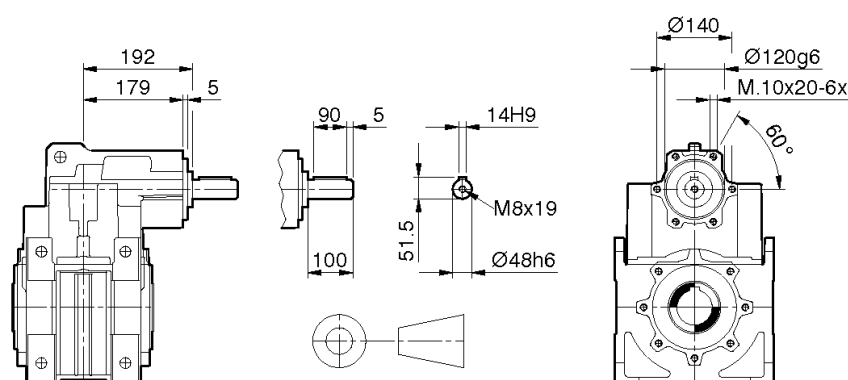
**MRN
FRN**



AC70 AC65 AC60



RN



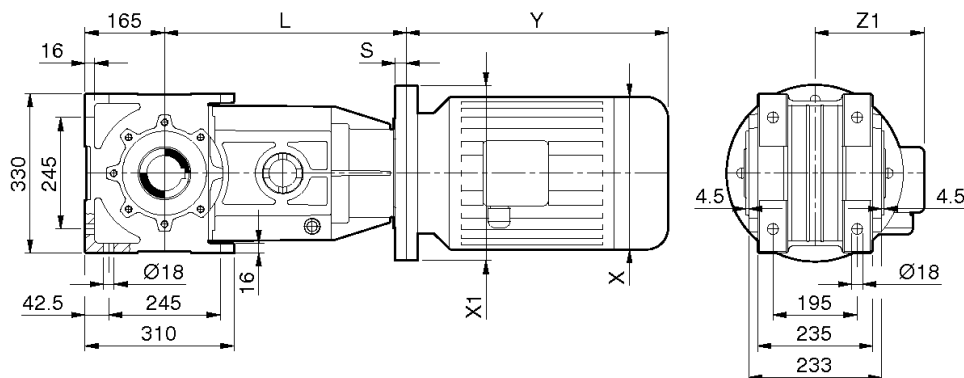
RN	62 / 63	62 / 63	62 / 63	62 / 63	62 / 63	62 / 63	62
IEC	80	90 S / L	100	112	132 S / M	160	180
X / Y / Z1	159/238/138	176/255-280/149	195/314/160	219/328/172	258/368-410/192	310/486/235	320/580/245
X1 (B5) / S	200/22	200/22	250/22	250/22	300/22	350/35	350/35
X1 (B14) / S	---	---	---	---	200/22	250/22	300/22
L (RN62)	201	201	201	201	201	214 (201)	214 (201)
L (RN63)	201	201	201	201	201	214 (201)	---

RO63

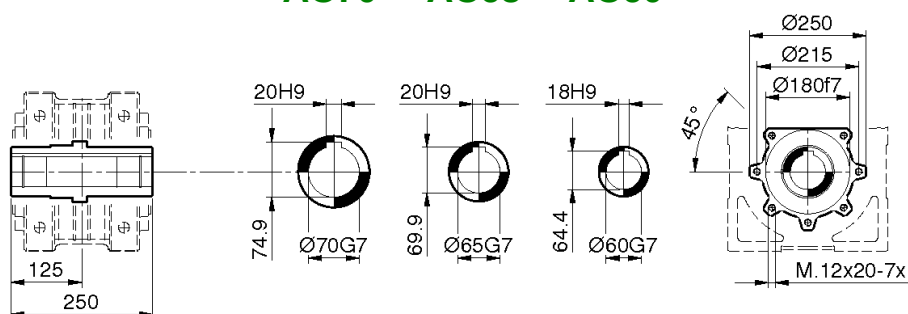
Getriebe - Gearboxes - Riduttori RN-RO-RV

Abmessungen - Dimensions - Dimensioni

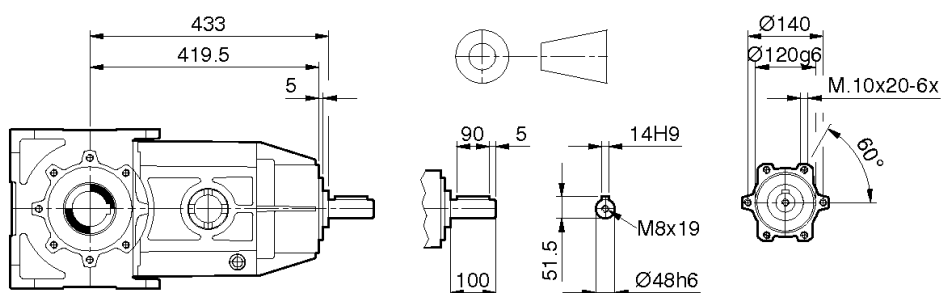
**MRO
FRO**



AC70 AC65 AC60



RO



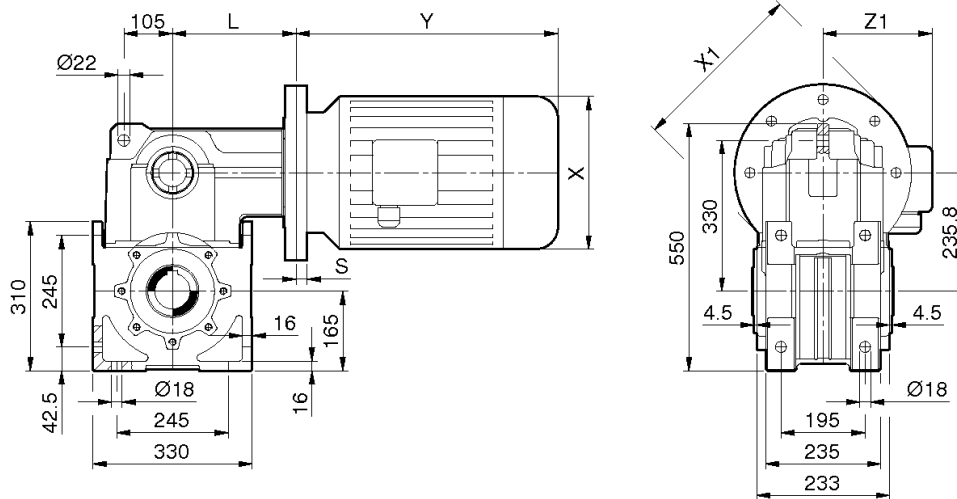
RO	63	63	63	63	63	63	63
IEC	80	90 S / L	100	112	132 S / M	160	180
X / Y / Z1	159/238/138	176/255-280/149	195/314/160	219/328/172	258/368-410/192	310/486/235	320/580/245
X1 (B5) / S	200/22	200/22	250/22	250/22	300/22	350/35	350/35
X1 (B14) / S	---	---	---	---	200/22	250/22	300/22
L (RO63)	421,5	421,5	421,5	421,5	421,5	434,5 (421,5)	434,5 (421,5)

RN-RO-RV Riduttori - Gearboxes - Getriebe

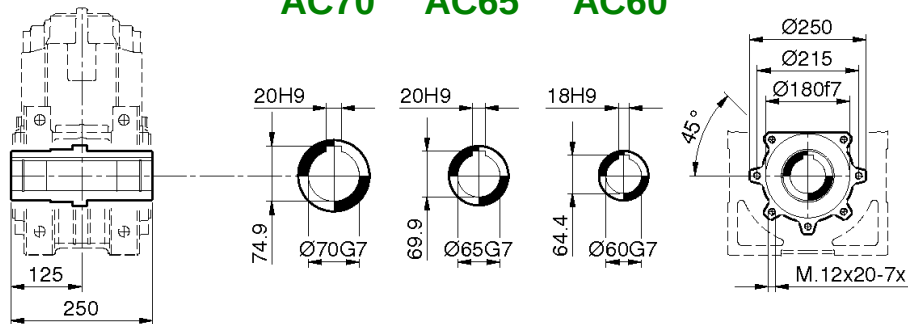
RV63

Dimensioni - Dimensions - Abmessungen

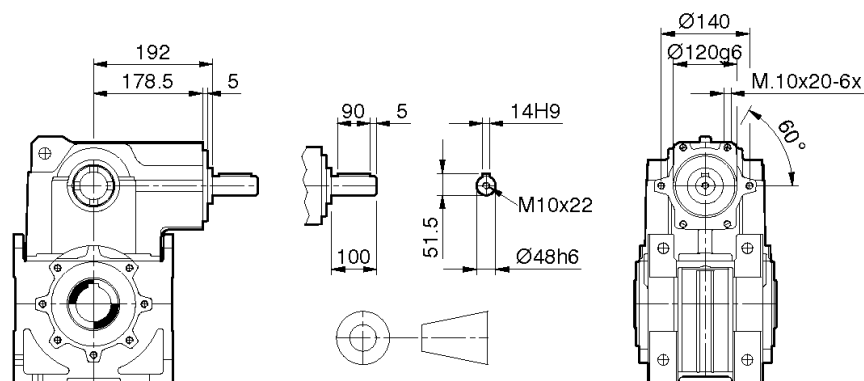
**MRV
FRV**



AC70 AC65 AC60



RV



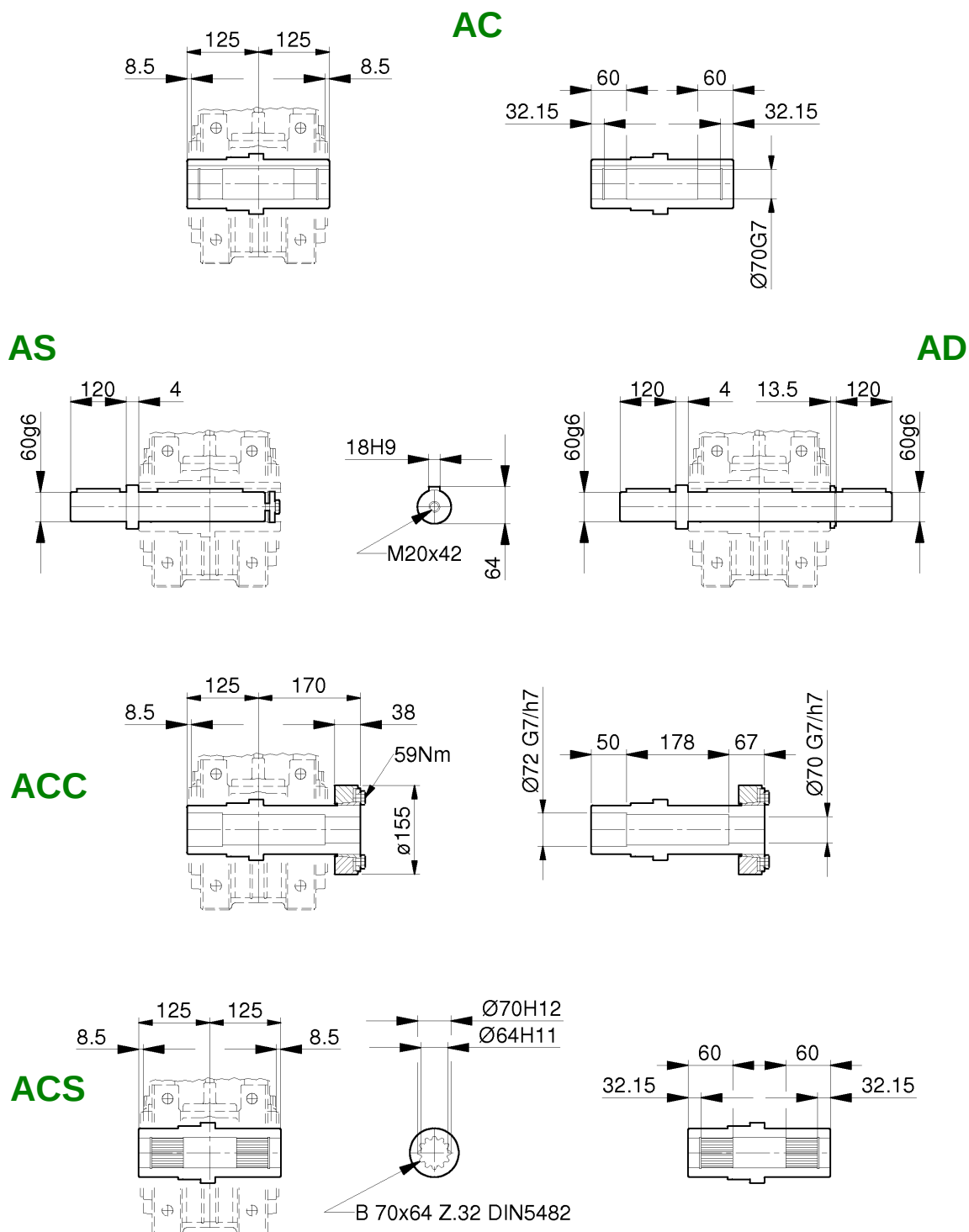
RV	63	63	63	63	63	63	63
IEC	80	90 S / L	100	112	132 S / M	160	180
X / Y / Z1	159/238/138	176/255-280/149	195/314/160	219/328/172	258/368-410/192	310/486/235	320/580/245
X1 (B5) / S	200/22	200/22	250/22	250/22	300/22	350/35	350/35
X1 (B14) / S	---	---	---	---	200/22	250/22	300/22
L (RV63)	205,5	205,5	205,5	205,5	205,5	218,5 (205,5)	218,5 (205,5)

R6

Getriebe - Gearboxes - Riduttori RN-RO-RV

RN62-63 / RO63 / RV63

Abmessungen - Dimensions - Dimensioni



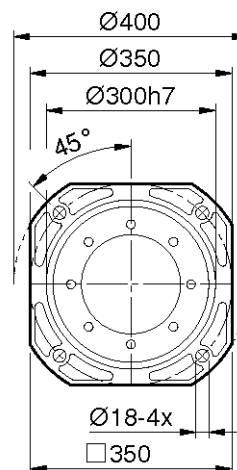
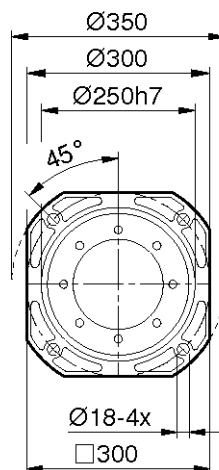
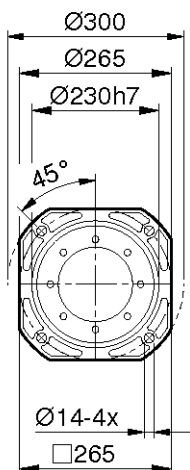
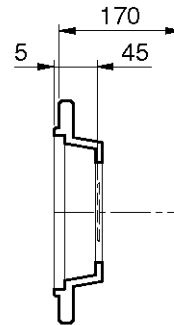
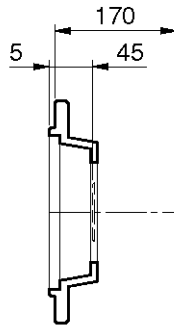
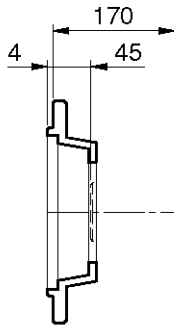
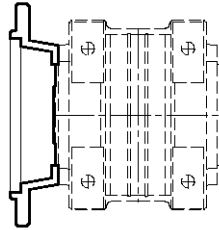
RN-RO-RV Riduttori - Gearboxes - Getriebe

R6

Dimensioni - Dimensions - Abmessungen

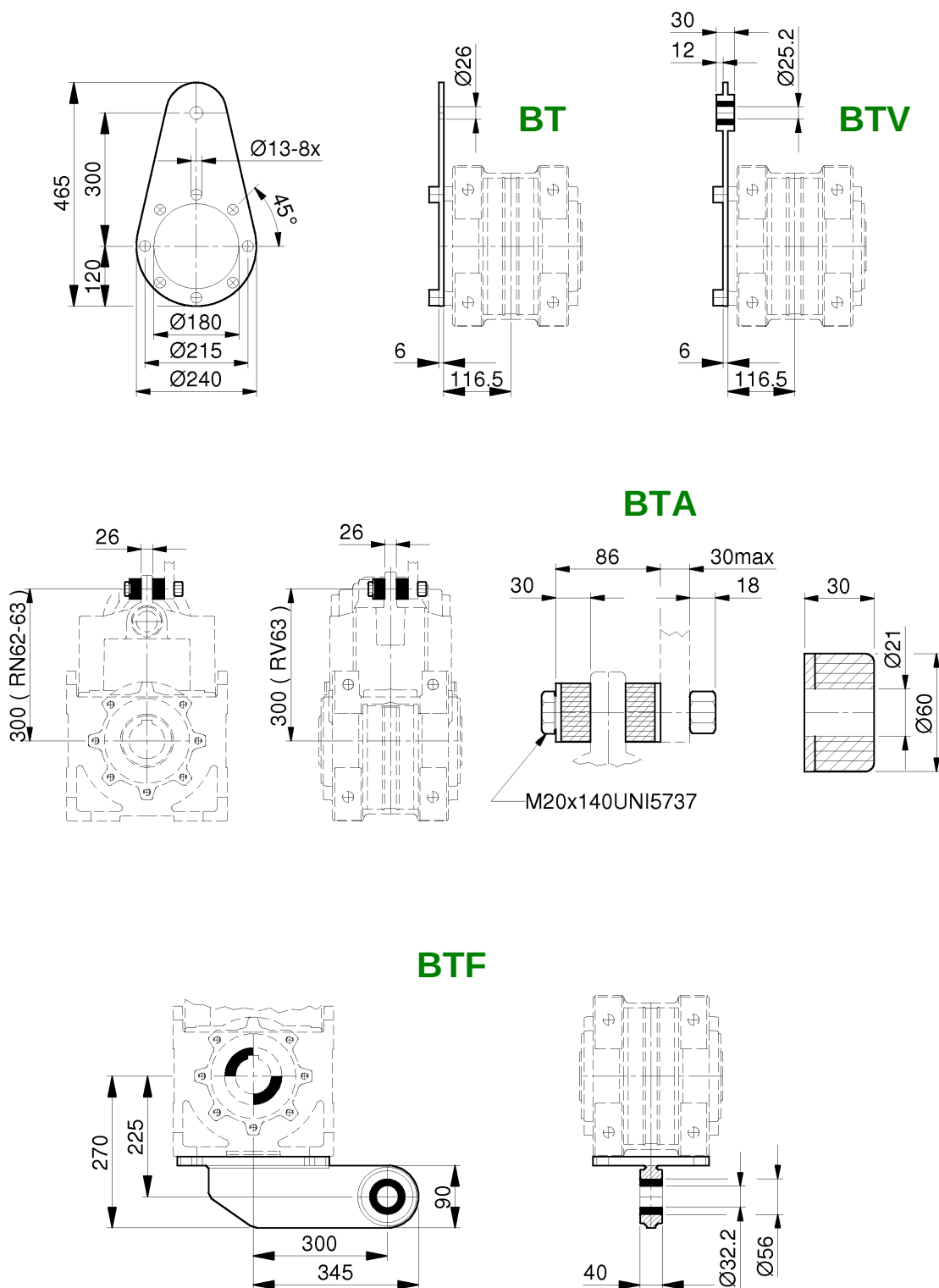
RN62-63 / RO63 / RV63

A



Getriebe - Gearboxes - Riduttori RN-RO-RV

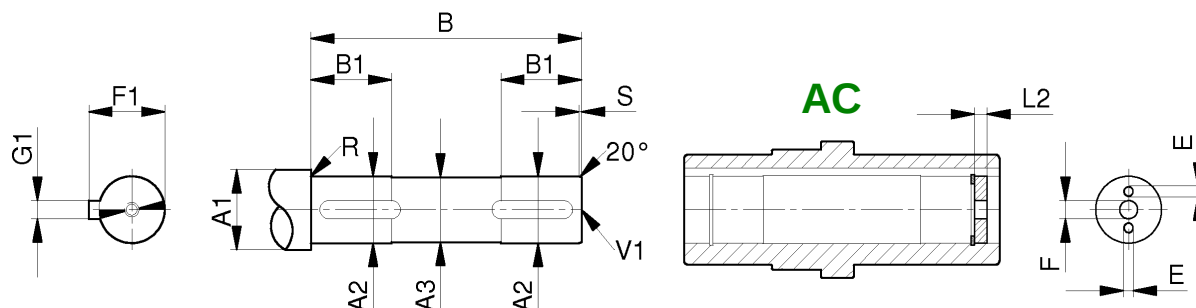
Abmessungen - Dimensions - Dimensioni



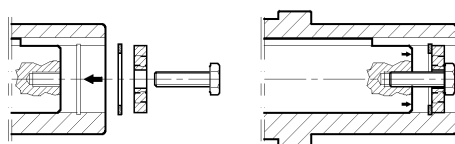
RN-RO-RV Riduttori - Gearboxes - Getriebe

R1- 6

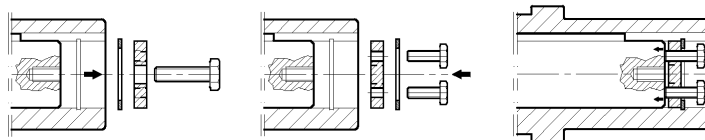
Dimensioni albero - Shaft dimensions - Welleabmessungen



- Montaggio
Mounting
Montage



- Smontaggio
Disassembly
Demontage

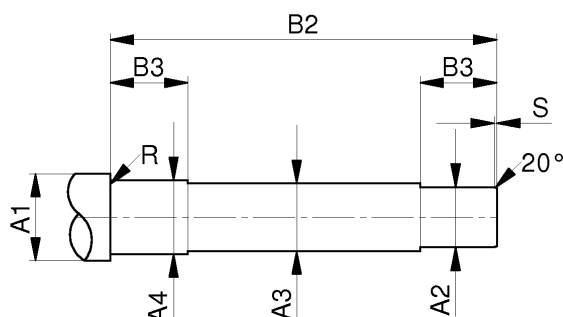


Size	A1	A2	A3	B	B1	E	F	F1	G1	L2	R	S	V1
Gr.1	40	30	29	98	35	M6	11	33	8	5,5	1	2	M10x22
	35	25	24	98	35	M6	9	28	8	5,5	1	2	M8x19
Gr.2	45	35	34	113,5	40	M8	11	38	10	7	1	2	M10x22
	40	30	29	113,5	40	M6	11	33	8	7	1	2	M10x22
Gr.3	50	40	39	133,5	45	M8	13	43	12	7	1	2	M12x28
	45	35	34	133,5	45	M8	11	38	10	7	1	2	M10x22
Gr.4	60	50	49	155,5	55	M10	17	53,5	14	8	1,5	3	M16x36
	55	45	44	155,5	55	M10	17	48,5	14	8	1,5	3	M16x36
	50	40	39	155,5	55	M8	13	43	12	8	1,5	3	M12x28
Gr.5	75	60	59	185	65	M12	17	64	18	12,5	2	4	M16x36
	70	55	54	185	65	M12	17	59	16	12,5	2	4	M16x36
	65	50	49	185	65	M10	17	53,5	14	12,5	2	4	M16x36
Gr.6	85	70	69	205	70	M12	21	74,5	20	12,5	2	4	M20x42
	80	65	64	205	70	M12	21	69	18	12,5	2	4	M20x42
	75	60	59	205	70	M12	21	64	18	12,5	2	4	M16x36

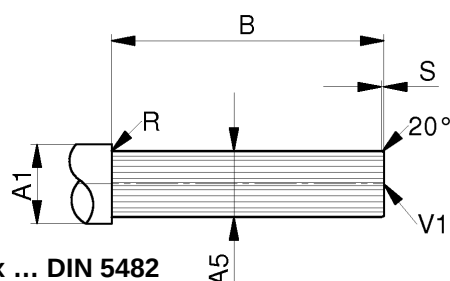
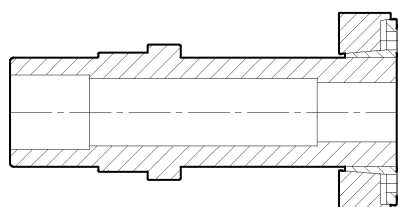
R1- 6

Getriebe - Gearboxes - Riduttori RN-RO-RV

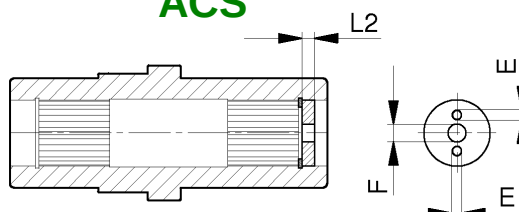
Welleabmessungen - Shaft dimensions - Dimensioni albero



ACC

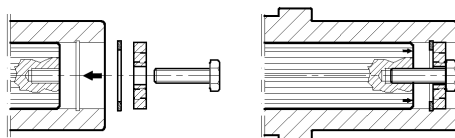


ACS

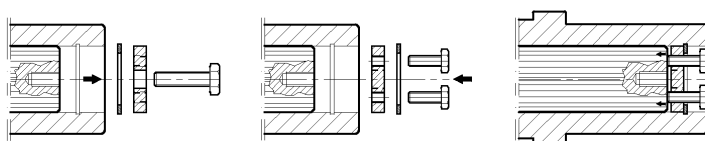


- A5 = B ... x ... DIN 5482

- Montaggio
Mounting
Montage



- Smontaggio
Disassembly
Demontage



Size	A1	A2	A3	A4	A5	B	B2	B3	E	F	L2	R	S	V1
Gr.1	40	30	29	32	30x27	98	144	34	M6	11	5,5	1	2	M8x19
Gr.2	45	35	34	37	35x31	113,5	167	39	M8	11	7	1	2	M10x22
Gr.3	50	40	39	42	40x36	133,5	189	49	M8	13	7	1	2	M10x22
Gr.4	60	50	49	52	50x45	155,5	220	49	M10	17	8	1,5	3	M16x36
Gr.5	75	60	59	62	60x55	185	267	49	M12	17	12,5	2	4	M16x36
Gr.6	85	70	69	72	70x64	205	294	49	M12	21	12,5	2	4	M20x42

RN-RO-RV Riduttori - Gearboxes - Getriebe

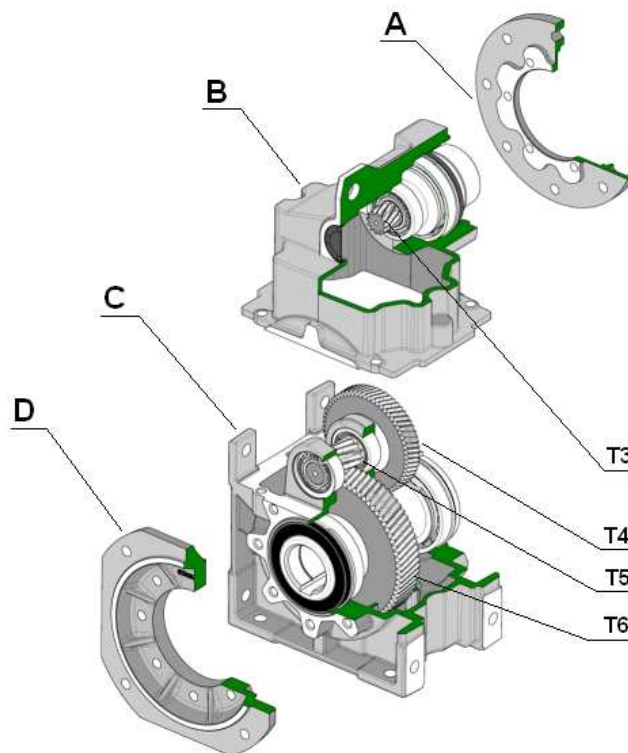
RN2-RN3

Parti Componenti - Component Parts - Bauelemente

RN2

RIDUTTORE A DUE COPPIE TWO GEAR STAGE REDUCER ZWEISTUFIGEGETRIEBE

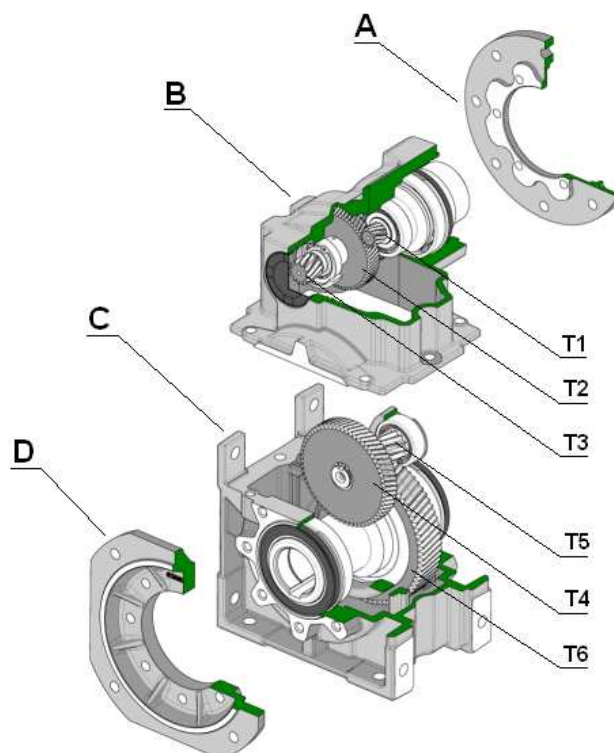
- A - Flangia motore IEC
IEC motor flange
Motorflansch IEC
- B - Coperchio entrata 2 coppie + ingranaggio T3
2 stage input cover + T3 gear
Zweistufige Eingangsdeckel u. Ritzel T3
- C - Carcassa + ingranaggi T4, T5, T6
Housing + T4, T5, T6 gears
Gehäuse u. Räder T4, T5, T6
- D - Flangia uscita
Output flange
Abtriebsflansch



RN3

RIDUTTORE A TRE COPPIE THREE GEAR STAGE REDUCER DREISTUFIGEGETRIEBE

- A - Flangia motore IEC
IEC motor flange
Motorflansch IEC
- B - Coperchio entrata 3 coppie + ingranaggi T1, T2, T3
3 stage input cover + T1, T2, T3 gears
Dreistufige Eingangsdeckel u. Räder T1, T2, T3
- C - Carcassa + ingranaggi T4, T5, T6
Housing + T4, T5, T6 gears
Gehäuse u. Räder T4, T5, T6
- D - Flangia uscita
Output flange
Abtriebsflansch



RO - RV

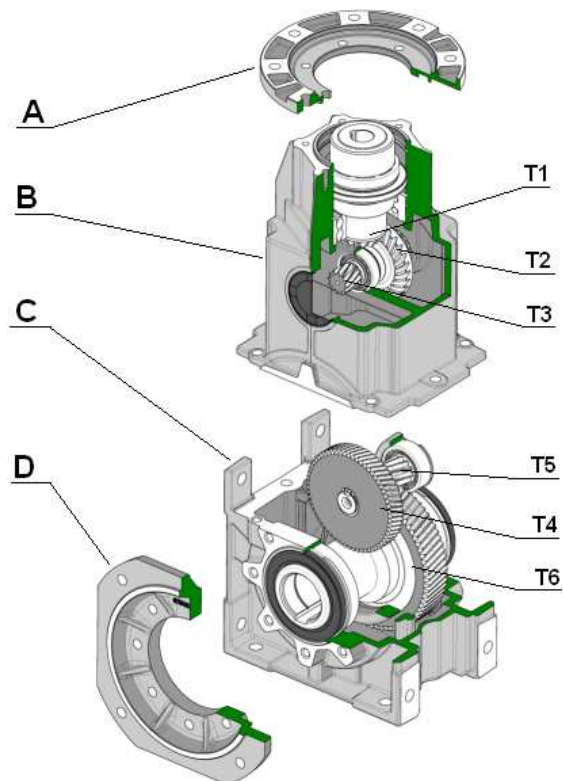
Getriebe - Gearboxes - Riduttori RN-RO-RV

Bauelemente - Component Parts - Parti Componenti

RO3

RIDUTTORE A TRE COPPIE THREE GEAR STAGE REDUCER DREISTUFIGEGETRIEBE

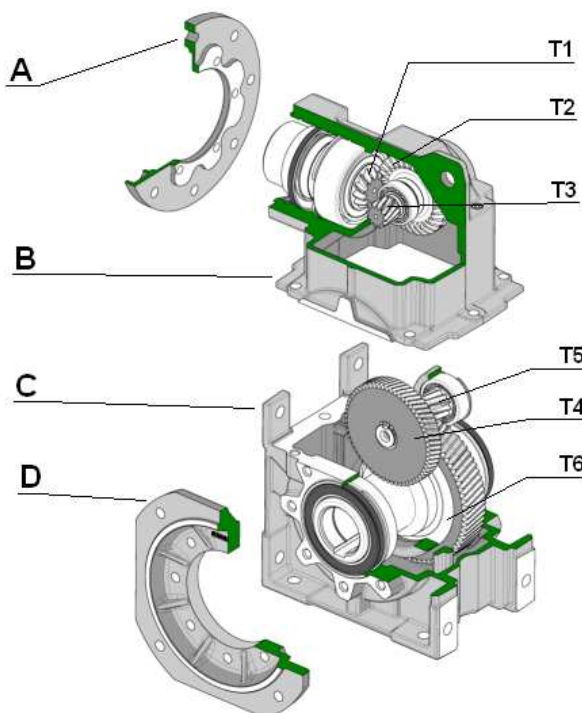
- A - Flangia motore IEC
IEC motor flange
Motorflansch IEC
- B - Coperchio entrata 3 coppie + ingranaggi T1, T2, T3
3 stage input cover + T1, T2, T3 gears
Dreistufige Eingangsdeckel u. Räder T1, T2, T3
- C - Carcassa + ingranaggi T4, T5, T6
Housing + T4, T5, T6 gears
Gehäuse u. Räder T4, T5, T6
- D - Flangia uscita
Output flange
Abtriebsflansch



RV3

RIDUTTORE A TRE COPPIE THREE GEAR STAGE REDUCER DREISTUFIGEGETRIEBE

- A - Flangia motore IEC
IEC motor flange
Motorflansch IEC
- B - Coperchio entrata 3 coppie + ingranaggi T1, T2, T3
3 stage input cover + T1, T2, T3 gears
Dreistufige Eingangsdeckel u. Räder T1, T2, T3
- C - Carcassa + ingranaggi T4, T5, T6
Housing + T4, T5, T6 gears
Gehäuse u. Räder T4, T5, T6
- D - Flangia uscita
Output flange
Abtriebsflansch



RN-RO-RV Riduttori - Gearboxes - Getriebe

Estratto delle ISTRUZIONI D'USO E MANUTENZIONE

(manuale completo su www.varvel.com)

Abstract of OPERATION AND MAINTENANCE INSTRUCTIONS

(complete manual on www.varvel.com)

Zusammenfassung der BETRIEBS- u. WARTUNGSANWEISUNGEN

(vollständiges Handbuch auf www.varvel.com)

I riduttori e i variatori di velocità non ricadono nel campo d'applicazione della Direttiva Macchine, art.1(2) e non possono essere messi in servizio finché la macchina nella quale devono essere incorporati, sia stata dichiarata conforme all'art. 4(2), all. II(B) delle Direttive Macchine 98/37/CEE/22,6,98 e, solo per l'Italia, al DL 459/24,7,96.

Installazione

Accertarsi che il gruppo da installare abbia le caratteristiche atte a svolgere la funzione richiesta e che la posizione di montaggio sia coerente con quanto ordinato. Tali caratteristiche sono deducibili dalla targhetta d'identificazione apposta sul riduttore. Effettuare la verifica della stabilità del montaggio affinché non si verifichino vibrazioni o sovraccarichi durante il funzionamento.

Funzionamento

Il riduttore può essere collegato per rotazione oraria o antioraria. Arrestare immediatamente il riduttore in caso di funzionamento difettoso o di rumorosità anomala, rimuovere il difetto o ritornare l'apparecchio alla fabbrica per un'adeguata revisione. Se la parte difettosa non è sostituita, anche altri componenti possono essere danneggiati con conseguenti ulteriori danneggiamenti e più scarsa possibilità di risalire alle cause.

Manutenzione

Sebbene i gruppi siano provati con funzionamento senza carico prima della spedizione, è consigliabile non usarli a carico massimo durante le prime 20-30 ore di funzionamento affinché le parti interne possano adattarsi reciprocamente. I riduttori sono spediti già riempiti con olio sintetico a lunga durata e, se occorre sostituire o rabboccare il lubrificante, non mescolare oli a base sintetica con oli a base minerale.

Movimentazione

In caso di sollevamenti con paranco, utilizzare posizioni di aggancio sulla struttura della carcassa, golfari ove esistenti, fori dei piedi o sulle flange, evitando tutte le parti mobili.

Verniciatura

Qualora il gruppo subisca una verniciatura successiva, è necessario proteggere accuratamente gli anelli di tenuta, i piani di accoppiamento e gli alberi sporgenti.

Conservazione prolungata a magazzino

Per permanenze maggiori di tre mesi, è consigliata l'applicazione di antiossidanti su alberi esterni e piani lavorati, e di grasso protettivo sui labbri dei paraoli.

Gestione Ambientale del prodotto

In conformità alla Certificazione Ambientale ISO 14001, sono suggerite le seguenti indicazioni per lo smaltimento del nostro prodotto:

- i componenti del gruppo che vengono rottamati debbono essere consegnati a centri di raccolta autorizzati per i materiali metallici;
- gli oli ed i lubrificanti raccolti dal gruppo devono essere smaltiti consegnandoli ai Consorzi Oli esausti;
- gli imballi a corredo dei gruppi (pallet, cartone, carta, plastica, ecc.) vanno avviati per quanto più possibile al recupero/riciclo, consegnandoli a ditte autorizzate per le singole classi di rifiuto.

Variable speed and reduction gearboxes are not part of the field of application of the Machinery Directive, art.1(2), and they must not be put into service until the machinery into which they are to be incorporated, has been declared in conformity with the provision of art.4(2), annex II(B) of Machinery Directives 98/37/CEE/22,6,98 and for Italy only, of DL 459/24,7,96.

Installation

Check if the unit to be installed, is properly selected to perform the required function and that its mounting position complies with the order. The nameplate reports such information. Check mounting stability to run the unit without vibrations or overloads.

Running

The unit may be connected for clockwise or counter-clockwise rotation.

The unit must be stopped as soon as defective running or unexpected noise occur, remove the faulty part or return the unit to the factory for checking.

If the faulty part is not replaced, other parts can also be affected, causing more severe damage and making the identification of initial cause more difficult.

Maintenance

Although the units are no-load run tested in the factory before despatch, it is recommended not to run them at maximum load for the first 20-30 running hours to allow the proper running in.

The gearboxes are delivered already filled with long-life synthetic oil and, in case of replacement or topping, do not mix with mineral lubricants.

Handling

When hoisting, use relevant housing locations or eyebolts if provided, or foot or flange holes. Never hoist on any moving part.

Painting

Carefully protect oil seals, coupling faces and shafts when units are re-painted.

Long-term storage

For storages longer than 3 months, apply anti-oxidants onto shafts and machined surfaces, and protective grease on oil seal lips.

Product's Environmental Management

In conformity with Environmental Certification ISO 14001, we recommend the following to dispose of our products:

- scraped components of the units to deliver to authorized centres for metal object collection;
- oils and lubricants drained from the units to deliver to Exhausted Oil Unions;
- packages (pallets, carton boxes, paper, plastic, etc.) to lead into regeneration/recycling circuits as far as possible, by delivering separate waste classes to authorized companies.

Varvel-Getriebe und Variatoren fallen nicht unter den Geltungsbereich der Maschinenrichtlinien, Artikel 1 (2): Sie dürfen jedoch nicht in Betrieb gesetzt werden, bevor sich nicht Maschinen, in die sie eingebaut werden, mit Artikel 4 (2), Anhang II (B) der Maschinenrichtlinien 98/37/CEE/22,6,98, und (nur für Italien) DL 459/24,07,96, in Übereinstimmung befinden.

Aufstellung

Vor der Aufstellung ist zu prüfen, dass die Antriebseinheit in bezug auf die Betriebsbedingungen richtig ausgewählt wurde und die Einbaulage mit der Bestellung übereinstimmt. Angaben hierüber sind auf dem Typenschild zu finden. Die Stützkonstruktion für die Getriebe ist so stabil auszuführen, dass keine Schwingungen oder Überlastungen auftreten, eventuell sind elastische Kupplungen oder Drehmomentbegrenzer zu verwenden.

Inbetriebnahme

Die Antriebseinheit kann in beiden Drehrichtungen eingesetzt werden. Die Einheit müsst sofort angehalten werden, wenn ein unzulässiger Lauf oder unerwartete Geräusche auftreten.

Das fehlerhafte Teil ist zu ersetzen oder die Einheit ist zur Überprüfung einzuschicken, Falls das fehlerhafte Teil nicht ersetzt wird, kann dies zu weiteren Schäden an anderen Bauteilen führen, was eine Feststellung der Ursachen sehr schwierig machen kann.

Wartung

Obwohl die Einheiten vor der Auslieferung im Leerlauf getestet wurden, ist es ratsam sie in den ersten 20-30 Stunden nicht mit Vollast zu betreiben, um ein einwandfreies Einlaufen zu gewährleisten. Die Einheiten werden entsprechend den Angaben auf dem Typenschild mit synthetischem Schmierstoff Lebensdauer geschmiert ausgeliefert. Bei einem eventuellen Ölwechsel oder Nachfüllen darf der Schmierstoff nicht mit Mineralöl vermischt werden.

Handhabung und Transport

Beim Heben und Transport ist auf standsichere Lage und sorgfältige Befestigung geeigneter Hebevorrichtungen zu achten, Bewegliche Teile dürfen nicht zum Anheben benutzt werden.

Anstrich

Beim Erneuern oder dem zusätzlichen Aufbringen eines Anstriches sind die Dichtungen, Kupplungssitze und Wellen sorgfältig zu schützen.

Langzeitlagerung

Die Einlagerung der Einheiten muss trocken und staubfrei erfolgen. Bei einer Einlagerungszeit über 3 Monate sind bearbeitete Flächen und Wellen mit Rostschutzmitteln zu besprühen, Dichtlippen sind mit Fett zu schützen.

Entsorgung

In Übereinstimmung mit ISO 14001 weisen wir darauf hin, im Falle des Verschrottens die einzelnen Metallteile getrennt zu behandeln und Schmiermittel bei den befugten Stellen zu entsorgen.

Verpackungen sollten soweit wie möglich wieder verwendet werden.