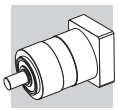
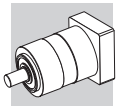


RESUMEN

Párrafo **Descripción**

Revisiones
El índice de revisión del catálogo está indicado en la Pág. 36.
En la dirección www.tecnoingranaggi.it se encuentran disponibles los catálogos con las revisiones actualizadas.



1 INFORMACIONES GENERALES

1.1 SIMBOLOGÍA YUNIDADES DE MEDIDA

A_n	[N]	**Carga axial admisible** representa la fuerza máxima que puede aplicarse axialmente al eje del reductor conjuntamente con la carga radial nominal. El valor suministrado está referido a la velocidad $n_2 = 100\ min^{-1}$
C_t	[Nm/arcmin]	**Rigidez torsonial**
i	-	**Relación de transmisión**, expresa la relación entre la velocidad del eje de entrada y el eje de salida del reductor: $i = \frac{n_1}{n_2}$
I	-	**Relación de intermitencia** se define como la relación entre el tiempo de funcionamiento y el tiempo del ciclo
f_c	-	**Factor de utilización**. Factor correctivo que interviene en el dimensionado del reductor funcionando con servicio S1
f_Z	-	**Factor de servicio**
M_{a2}	[Nm]	**Par máximo de aceleración**, admisible durante el ciclo de trabajo con I < 60%
M_{n2}	[Nm]	**Par nominal transmisible**, referido al eje de salida del reductor
M_{p2}	[Nm]	**Par de paro de emergencia**. Este valor no puede aplicarse más de 1000 veces durante la vida del reductor y no debe emplearse regularmente en el ciclo del reductor
M_r	[Nm]	**Par de reversibilidad**. Par mínimo que ha de aplicarse al eje de salida para lograr la inversión del movimiento
J	[$Kgcm^2$]	**Momento de inercia** referido al eje de entrada
L_{10}	[h]	**Duración media de los rodamientos**
n_1	[min^{-1}]	**Velocidad nominal en la entrada** (servicio continuo S1). Constituye la referencia que debe utilizarse para ciclos caracterizados por una relación de intermitencia $\geqslant$ 60% y/o funcionamiento $\geqslant$ 20 mtos
n_{1max}	[min^{-1}]	**Velocidad máxima instantánea**. Puede alcanzarse ocasionalmente en condiciones no repetitivas. Para servicio de tipo S5 no puede aplicarse continuamente por un tiempo superior a los 30 segundos
R_n	[N]	**Carga radial admisible**: siempre deberá ser igual, o superior, a la carga radial de cálculo. El valor punta está referido a mitad de la longitud del eje, con velocidad $n_2 = 100\ min^{-1}$
T_c	[°C]	**Temperatura en la carcasa**. No se debe superar nunca la temperatura de 90ºC en ninguna de las condiciones de funcionamiento
φ_S	[arcmin]	**Juego angular estándar** está calculado en condiciones estáticas y aplicando un par de aproximadamente el 2% del par nominal del reductor
φ_R	[arcmin]	**Juego angular reducido** está calculado en condiciones estáticas y aplicando un par de aproximadamente el 2% del par nominal del reductor
η	[%]	**Rendimiento dinámico** está expresado por la relación entre el par medido en el eje de salida y el aplicado en el eje de entrada en condiciones nominales: $\eta_d = \frac{M_2}{M_1 \times i} \times 100$
Z	-	**Número** de aceleraciones/arranques hora2

1.2 CARACTERÍSTICAS SERIE TR

- Caracterizados por los valores del juego angular muy restringido, hasta 5’ en la ejecución **estándar**, para aplicaciones de máxima precisión y repetibilidad, pueden prepararse con juego **reducido** hasta 3’

- Rodamientos para una duración media de aproximadamente 20.000 horas, en condiciones nominales de funcionamiento.
  Montaje estándar con rodamientos rígidos de bolas para los tamaños 053, 060.
  Rodamientos cónicos de rodillos para los tamaños 080,105,130,160 y 190

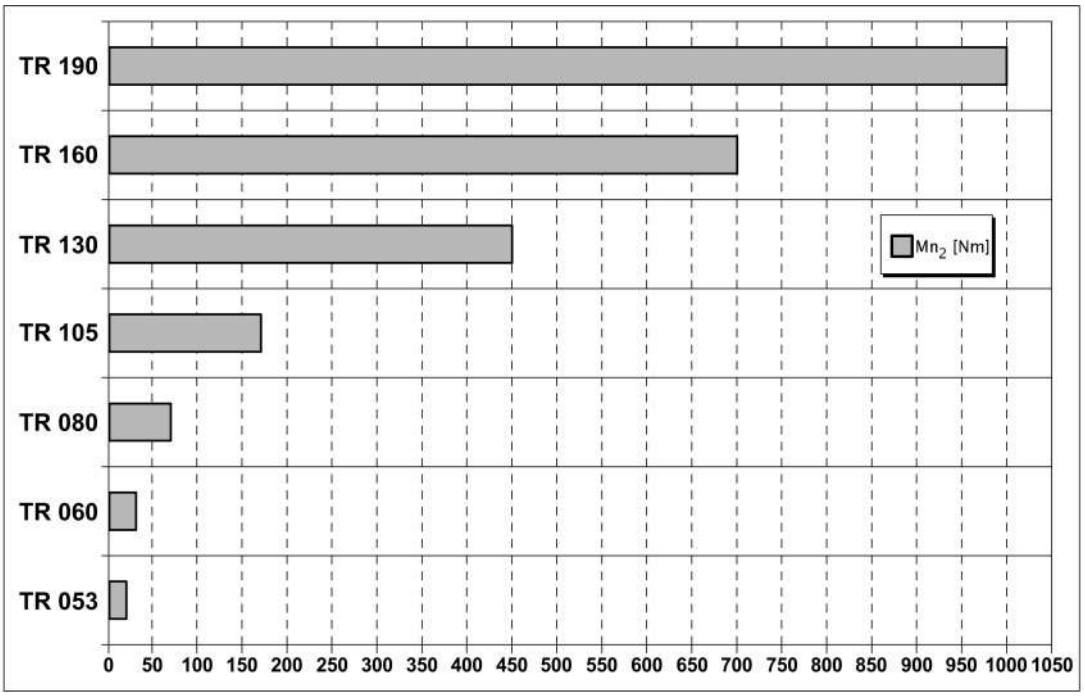
- Llenado en fábrica con lubricante sintético con viscosidad ISO VG 220, idóneo para su instalación en cualquier posición de montaje
  No se precisa sustituir periódicamente el lubricante a no ser que existan contaminaciones externas

- Grado de protección IP65

- Rumorosidad máxima LP $\leqslant$ 70 dB (A) – n_1= 3000 min^{-1}

- Amplia posibilidad de configuraciones para el acoplamiento del motor

- Ejecuciones con un sólo tren, disponibles hasta la relación i = 10 (i = 9 para el tamaño 053)



1.3 VERSIONES

-

Reductor coaxial

053...190

IS

Reductor con eje de entrada cilíndrico

053...160

G

Reductor angular

053...160

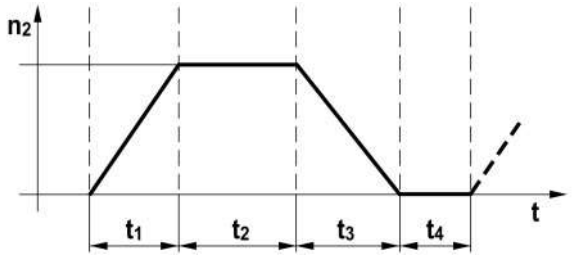
MB

Reductor angular con eje hueco pasante

080...160

1.4 DIMENSIONADO REDUCTOR

- Calcular la relación de intermitencia **I**:



$$I\,[\%] = \frac{t_1 + t_2 + t_3}{t_1 + t_2 + t_3 + t_4}$$

$\mathbf{t_1}$ = tiempo de aceleración
$\mathbf{t_2}$ = tiempo de funcionamiento a velocidad constante
$\mathbf{t_3}$ = tiempo de desaceleración
$\mathbf{t_4}$ = tiempo de pausa

1) Precisar el tipo de servicio correspondiente a la aplicación:

	Z ⩽ 1000	**Z** > 1000
I < 60%	S5	S1
I ⩾ 60%	S1	S1

S5 **servicio intermitente**

2) Seleccionar el reductor que cumpla la condición:

$$M_{a2} \geq M_{1max} \times i \times \eta$$

S1 **servicio continuo**

2) Determinar el factor de servicio $\mathbf{f_Z}$:

Z	$\mathbf{f_Z}$
Z ⩽ 1000	1.00
1000 < Z ⩽ 1500	1.25
1500 < Z ⩽ 2000	1.50
2000 < Z ⩽ 2500	1.75
2500 < Z ⩽ 3000	2.00
Z > 3000	Consultar

3) Determinar el factor de utilización $\mathbf{f_c}$:

I	20%...60%	80%	100%
$\mathbf{f_c}$	1.0	1.20	1.40

4) Seleccionar el reductor que cumpla la condición:

$$M_{n2} \geq M_{1max} \times i \times \eta \times f_z \times f_c$$

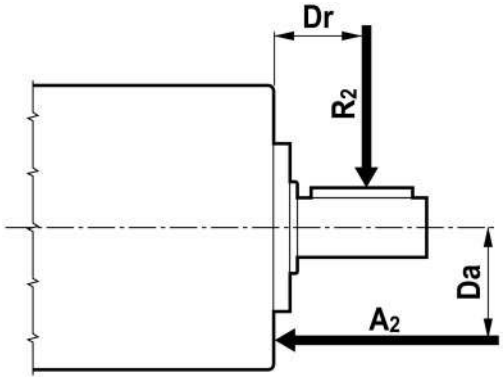
$\mathbf{M_{1max}}$ = Par máximo de aceleración del motor

⚠ Si, en función de las condiciones de funcionamiento el reductor ha de funcionar con una temperatura ambiente más alta de lo normal, se aconseja pedir las juntas de estanqueidad con mezcla de Viton® indicando la opción **S1**. En ningún caso es aconsejable superar la velocidad máxima [n_{1max}] admitida por el reductor. Si se observan temperaturas superiores de 90 ºC en la carcasa, es aconsejable reducir la velocidad de funcionamiento o instalar un sistema de refrigeración auxiliar.

1.5 CÁLCULO DE LA VELOCIDAD DE LOS RODAMIENTOS DEL EJE DE SALIDA

La duración en horas de los rodamientos de salida puede calcularse con una fórmula que tenga en cuenta las cargas radiales y axiales aplicadas cuando se utilizan rodamientos rígidos de bolas (**CS**) o cónicos de rodillos (**CR**).

TR 053	TR 060	TR 080	TR 105	TR 130	TR 160	TR 190
CS	CS	CR	CR	CR	CR	CR

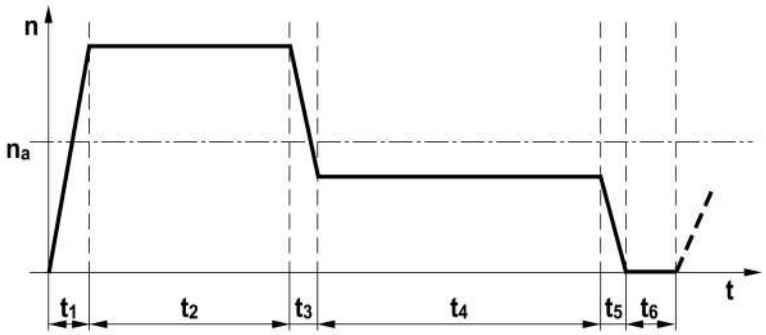


A_2 [N]	Carga radial excéntrica
R_2 [N]	Carga radial
Da [mm]	Distancia de la carga axial al eje del reductor
Dr [mm]	Distancia de la carga radial a la superficie de la brida

CÁLCULO DE LA VIDA TEÓRICA DE LOS RODAMIENTOS RÍGIDOS DE BOLAS (CS)

$$F_{eq} = \frac{A_2 \times D_a + R_2 \times (D_r + b)}{a}$$

$$n_a = \frac{n_1 \times t_1 + n_2 \times t_2 + \ldots + n_5 \times t_5}{t_1 + t_2 + t_3 + t_4 + t_5 + t_6}$$



$$L_{10}(h) = \frac{16666}{n_a} \times \left(\frac{c}{F_{eq}}\right)^3$$

Constantes	TR 053	TR 060
a	15.5	14.4
b	17	17.4
c	5600	9550

F_{eq} = Fuerza equivalente resultante del efecto de las fuerzas radiales y axiales actuando simultáneamente

n_a = Velocidad media del eje de salida

$L_{10}(h)$ = Duración teórica de los rodamientos

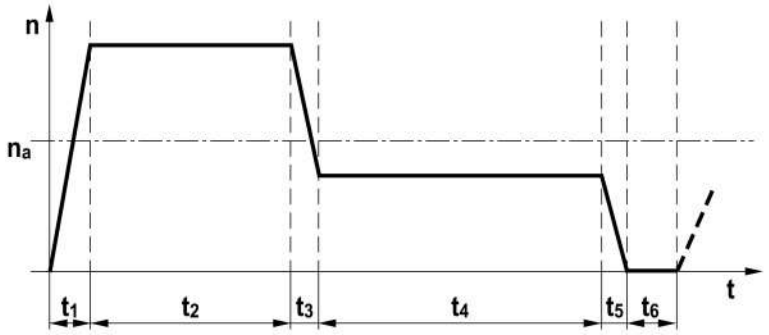
Calcular el parámetro **$e = A_2/Feq$** y verificar que se cumple la condición **$e \leqslant 0.19$**.

Si **$e > 0.19$** consultar con nuestro Servicio Técnico.

CÁLCULO DE LA VIDA TEÓRICA DE LOS RODAMIENTOS CÓNICOS DE RODILLOS (CR)

$$F_{eq} = \frac{A_2 \times D_a + R_2 \times (D_r + b)}{a}$$

$$n_a = \frac{n_1 \times t_1 + n_2 \times t_2 + \ldots + n_5 \times t_5}{t_1 + t_2 + t_3 + t_4 + t_5 + t_6}$$



$$L_{10}(h) = \frac{16666}{n_a} \times \left(\frac{c}{F_{eq}}\right)^{10/3}$$

Constantes	TR 080	TR 105	TR 130	TR 160	TR 190
a	28	35	45	52	62
b	35.55	41.25	51.75	56.75	64.25
c	30800	51200	76500	99000	14000

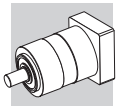
F_{eq} = Fuerza equivalente resultante del efecto de las fuerzas radiales y axiales actuando simultáneamente

n_a = Velocidad media del eje de salida

$L_{10}(h)$ = Duración teórica de los rodamientos

Calcular el parámetro **$e = A_2/Feq$** y verificar que se cumple la condición **$e \leqslant 0.4$**.

Si **$e > 0.4$** consultar con nuestro Servicio Técnico.



1.6 CÓDIGOS PARA REALIZAR LOS PEDIDOS

TR G 080 2 70 10' 14 30 60 75 S1 O TH

— **TH**: MOTORES CON TALADRO ROSCADO

POSICIONES DE MONTAJE:
O (horizontal)
VS (vertical con motor superior)
VI (vertical con motor inferior)

— **S1**: configuración con servicio continuo

INTEREJE TALADROS BRIDA MOTOR

DIÁMETRO CENTRAJE BRIDA MOTOR

LONGITUD EJE MOTOR

DIÁMETRO EJE MOTOR

	TR 053	TR 060	TR 080	TR 105	TR 130	TR 160	TR 190
D	6 - 6.35 7 - 8 9 - 9.52 10 - 11 12 - 12.7 14	6 - 6.35 7 - 8 9 - 9.52 10 - 11 12 - 12.7 14	8 - 9 9.52 - 11 12 - 12.7 14 - 15.875 16 - 17 19 - 19.05	11 - 12 12.7 - 14 15 - 15.875 16 - 19 22 - 24 28 - 32	14 - 15.875 16 - 19 22 - 24 28 - 32 35 - 38	14 - 15.875 16 - 19 22 - 24 28 - 32 35 - 38	14 - 16 19 - 22 24 - 28 32 - 35 38 - 42 45 - 48

JUEGO ANGULAR

	1 tren	2 tren	3 tren
Estándar (TR053...TR190)	**5'**	**5'**	**7'**
Reducido (TR060...TR190)	**3'**	**3'**	**5'**

RELACIÓN DE TRANSMISIÓN

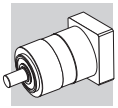
TRENES DE REDUCCIÓN
1, **2**, **3**

TAMAÑO
053, **060**, **080**, **105**, **130**, **160**, **190**

FORMA CONSTRUCTIVA
— = coaxial
IS = eje de entrada cilíndrico
G = ortogonal
MB = ortogonal con eje de salida hueco pasante

SERIE
TR

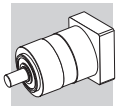
Variante opcional



2 DATOS TÉCNICOS REDUCTORES

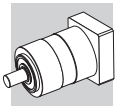
2.1 TR 053

TR 053													
i	M_{n2} [Nm]	M_{a2} [Nm]	M_{p2} [Nm]	M_r [Nm]	n_1 [min^{-1}]	n_{1max} [min^{-1}]	φ_S [arcmin]	φ_R [arcmin]	C_t [Nm/arcmin]	R_{n1} [N]	R_{n2} [N]	A_{n2} [N]	η %
TR 053 1_ 3	12	22	40	0.3	3300	4000	5'	-	1	200	500	600	97
TR 053 1_ 4	15	28	45	0.3	3500	5000	5'	-	1	200	500	600	97
TR 053 1_ 5	15	28	45	0.3	3500	5000	5'	-	1	200	500	600	97
TR 053 1_ 6	15	28	45	0.3	3500	5000	5'	-	1	200	500	600	97
TR 053 1_ 7	15	28	45	0.3	4000	6000	5'	-	1	200	500	600	97
TR 053 1_ 9	12	22	40	0.3	4000	6000	5'	-	1	200	500	600	97
TR 053 2_ 12	20	30	60	0.5	3300	4000	5'	-	0.9	200	500	600	94
TR 053 2_ 15	20	30	60	0.5	3300	4000	5'	-	0.9	200	500	600	94
TR 053 2_ 16	20	30	60	0.5	3500	5000	5'	-	0.9	200	500	600	94
TR 053 2_ 20	20	30	60	0.5	3500	5000	5'	-	0.9	200	500	600	94
TR 053 2_ 25	20	30	60	0.5	3500	5000	5'	-	0.9	200	500	600	94
TR 053 2_ 28	20	30	60	0.5	4000	6000	5'	-	0.9	200	500	600	94
TR 053 2_ 35	20	30	60	0.5	4000	6000	5'	-	0.9	200	500	600	94
TR 053 2_ 36	15	28	45	0.5	4000	6000	5'	-	0.9	200	500	600	94
TR 053 2_ 45	20	30	60	0.5	4000	6000	5'	-	0.9	200	500	600	94
TR 053 3_ 60	20	30	60	3	3500	5000	7'	-	0.7	200	500	600	90
TR 053 2_ 81	12	22	40	0.5	4000	6000	5'	-	0.9	200	500	600	94
TR 053 3_ 48	20	30	60	3	3500	5000	7'	-	0.7	200	500	600	90
TR 053 3_ 64	20	30	60	3	3500	5000	7'	-	0.7	200	500	600	90
TR 053 3_ 75	20	30	60	3	3500	5000	7'	-	0.7	200	500	600	90
TR 053 3_ 80	20	30	60	3	3500	5000	7'	-	0.7	200	500	600	90
TR 053 3_ 84	20	30	60	3	4000	6000	7'	-	0.7	200	500	600	90
TR 053 3_ 100	20	30	60	3	3500	5000	7'	-	0.7	200	500	600	90
TR 053 3_ 112	20	30	60	3	4000	6000	7'	-	0.7	200	500	600	90
TR 053 3_ 125	20	30	60	3	3500	5000	7'	-	0.7	200	500	600	90
TR 053 3_ 140	20	30	60	3	4000	6000	7'	-	0.7	200	500	600	90
TR 053 3_ 144	20	30	60	3	4000	6000	7'	-	0.7	200	500	600	90
TR 053 3_ 175	20	30	60	3	4000	6000	7'	-	0.7	200	500	600	90
TR 053 3_ 180	20	30	60	3	4000	6000	7'	-	0.7	200	500	600	90
TR 053 3_ 216	20	30	60	3	3500	5000	7'	-	0.7	200	500	600	90
TR 053 3_ 225	20	30	60	3	4000	6000	7'	-	0.7	200	500	600	90
TR 053 3_ 245	20	30	60	3	4000	6000	7'	-	0.7	200	500	600	90
TR 053 3_ 252	20	30	60	3	4000	6000	7'	-	0.7	200	500	600	90
TR 053 3_ 324	20	30	60	3	4000	6000	7'	-	0.7	200	500	600	90
TR 053 3_ 405	20	30	60	3	4000	6000	7'	-	0.7	200	500	600	90
TR 053 3_ 567	20	30	60	3	4000	6000	7'	-	0.7	200	500	600	90
TR 053 3_ 729	12	22	40	3	4000	6000	7'	-	0.7	200	500	600	90



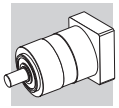
2.2 TR 060

TR 060													
i	M_{n2} [Nm]	M_{a2} [Nm]	M_{p2} [Nm]	M_r [Nm]	n_1 [min^{-1}]	n_{1max} [min^{-1}]	φ_S [arcmin]	φ_R [arcmin]	C_t [Nm/arcmin]	R_{n1} [N]	R_{n2} [N]	A_{n2} [N]	η %
TR 060 1_ 3	18	35	70	0.4	3300	4000	5'	3'	3.0	200	600	700	97
TR 060 1_ 4	25	40	90	0.4	3500	5000	5'	3'	3.0	200	600	700	97
TR 060 1_ 5	25	40	90	0.4	3500	5000	5'	3'	3.0	200	600	700	97
TR 060 1_ 6	25	40	90	0.4	3500	5000	5'	3'	3.0	200	600	700	97
TR 060 1_ 7	25	40	90	0.4	4000	6000	5'	3'	3.0	200	600	700	97
TR 060 1_ 10	18	35	70	0.4	4000	6000	5'	3'	3.0	200	600	700	97
TR 060 2_ 9	18	35	70	0.6	3300	4000	5'	3'	2.5	200	600	700	94
TR 060 2_ 12	30	45	100	0.6	3300	4000	5'	3'	2.5	200	600	700	94
TR 060 2_ 15	30	45	100	0.6	3300	4000	5'	3'	2.5	200	600	700	94
TR 060 2_ 16	30	45	100	0.6	3500	5000	5'	3'	2.5	200	600	700	94
TR 060 2_ 20	30	45	100	0.6	3500	5000	5'	3'	2.5	200	600	700	94
TR 060 2_ 25	30	45	100	0.6	3500	5000	5'	3'	2.5	200	600	700	94
TR 060 2_ 28	30	45	100	0.6	4000	6000	5'	3'	2.5	200	600	700	94
TR 060 2_ 30	18	35	70	0.6	4000	6000	5'	3'	2.5	200	600	700	94
TR 060 2_ 35	30	45	100	0.6	4000	6000	5'	3'	2.5	200	600	700	94
TR 060 2_ 36	25	40	90	0.6	3500	5000	5'	3'	2.5	200	600	700	94
TR 060 2_ 40	30	45	100	0.6	4000	6000	5'	3'	2.5	200	600	700	94
TR 060 2_ 50	30	45	100	0.6	4000	6000	5'	3'	2.5	200	600	700	94
TR 060 2_ 70	30	45	100	0.6	4000	6000	5'	3'	2.5	200	600	700	94
TR 060 2_ 100	18	35	70	0.6	4000	6000	5'	3'	2.5	200	600	700	94
TR 060 3_ 48	30	45	100	3.5	3500	5000	7'	5'	2.0	200	600	700	90
TR 060 3_ 64	30	45	100	3.5	3500	5000	7'	5'	2.0	200	600	700	90
TR 060 3_ 75	30	45	100	3.5	3500	5000	7'	5'	2.0	200	600	700	90
TR 060 3_ 80	30	45	100	3.5	3500	5000	7'	5'	2.0	200	600	700	90
TR 060 3_ 84	30	45	100	3.5	4000	6000	7'	5'	2.0	200	600	700	90
TR 060 3_ 90	18	35	70	3.5	4000	6000	7'	5'	2.0	200	600	700	90
TR 060 3_ 120	30	45	100	3.5	4000	6000	7'	5'	2.0	200	600	700	90
TR 060 3_ 125	30	45	100	3.5	3500	5000	7'	5'	2.0	200	600	700	90
TR 060 3_ 140	30	45	100	3.5	4000	6000	7'	5'	2.0	200	600	700	90
TR 060 3_ 150	30	45	100	3.5	4000	6000	7'	5'	2.0	200	600	700	90
TR 060 3_ 160	30	45	100	3.5	4000	6000	7'	5'	2.0	200	600	700	90
TR 060 3_ 175	30	45	100	3.5	4000	6000	7'	5'	2.0	200	600	700	90
TR 060 3_ 200	30	45	100	3.5	4000	6000	7'	5'	2.0	200	600	700	90
TR 060 3_ 210	30	45	100	3.5	4000	6000	7'	5'	2.0	200	600	700	90
TR 060 3_ 216	30	45	100	3.5	3500	5000	7'	5'	2.0	200	600	700	90
TR 060 3_ 250	30	45	100	3.5	4000	6000	7'	5'	2.0	200	600	700	90
TR 060 3_ 280	30	45	100	3.5	4000	6000	7'	5'	2.0	200	600	700	90
TR 060 3_ 350	30	45	100	3.5	4000	6000	7'	5'	2.0	200	600	700	90
TR 060 3_ 400	30	45	100	3.5	4000	6000	7'	5'	2.0	200	600	700	90
TR 060 3_ 500	30	45	100	3.5	4000	6000	7'	5'	2.0	200	600	700	90
TR 060 3_ 700	30	45	100	3.5	4000	6000	7'	5'	2.0	200	600	700	90
TR 060 3_ 1000	18	35	70	3.5	4000	6000	7'	5'	2.0	200	600	700	90



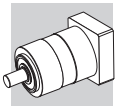
2.3 TR 080

TR 080													
i	M_{n2} [Nm]	M_{a2} [Nm]	M_{p2} [Nm]	M_r [Nm]	n_1 [min^{-1}]	n_{1max} [min^{-1}]	φ_S [arcmin]	φ_R [arcmin]	C_t [Nm/arcmin]	R_{n1} [N]	R_{n2} [N]	A_{n2} [N]	η %
TR 080 1_ 3	40	80	180	0.5	2900	3500	5'	3'	8.0	400	2500	3000	97
TR 080 1_ 4	50	80	200	0.5	3100	4500	5'	3'	8.0	400	2500	3000	97
TR 080 1_ 5	50	80	200	0.5	3200	4500	5'	3'	8.0	400	2500	3000	97
TR 080 1_ 6	50	80	200	0.5	3200	4500	5'	3'	8.0	400	2500	3000	97
TR 080 1_ 7	50	80	200	0.5	4000	6000	5'	3'	8.0	400	2500	3000	97
TR 080 1_ 10	40	80	180	0.5	4000	6000	5'	3'	8.0	400	2500	3000	97
TR 080 2_ 9	40	80	180	0.8	2900	3500	5'	3'	6.5	400	2500	3000	94
TR 080 2_ 12	70	100	250	0.8	2900	3500	5'	3'	6.5	400	2500	3000	94
TR 080 2_ 15	70	100	250	0.8	2900	3500	5'	3'	6.5	400	2500	3000	94
TR 080 2_ 16	70	100	250	0.8	3100	4500	5'	3'	6.5	400	2500	3000	94
TR 080 2_ 20	70	100	250	0.8	3200	4500	5'	3'	6.5	400	2500	3000	94
TR 080 2_ 25	70	100	250	0.8	3200	4500	5'	3'	6.5	400	2500	3000	94
TR 080 2_ 28	70	100	250	0.8	4000	6000	5'	3'	6.5	400	2500	3000	94
TR 080 2_ 30	40	80	180	0.8	4000	6000	5'	3'	6.5	400	2500	3000	94
TR 080 2_ 35	70	100	250	0.8	4000	6000	5'	3'	6.5	400	2500	3000	94
TR 080 2_ 36	50	80	200	0.8	3200	4500	5'	3'	6.5	400	2500	3000	94
TR 080 2_ 40	70	100	250	0.8	4000	6000	5'	3'	6.5	400	2500	3000	94
TR 080 2_ 50	70	100	250	0.8	4000	6000	5'	3'	6.5	400	2500	3000	94
TR 080 2_ 70	70	100	250	0.8	4000	6000	5'	3'	6.5	400	2500	3000	94
TR 080 2_ 100	40	80	180	0.8	4000	6000	5'	3'	6.5	400	2500	3000	94
TR 080 3_ 48	70	100	250	5	3100	4500	7'	5'	5.5	400	2500	3000	90
TR 080 3_ 64	70	100	250	5	3100	4500	7'	5'	5.5	400	2500	3000	90
TR 080 3_ 75	70	100	250	5	3200	4500	7'	5'	5.5	400	2500	3000	90
TR 080 3_ 80	70	100	250	5	3100	4500	7'	5'	5.5	400	2500	3000	90
TR 080 3_ 84	70	100	250	5	4000	6000	7'	5'	5.5	400	2500	3000	90
TR 080 3_ 90	40	80	180	5	4000	6000	7'	5'	5.5	400	2500	3000	90
TR 080 3_ 120	70	100	250	5	4000	6000	7'	5'	5.5	400	2500	3000	90
TR 080 3_ 125	70	100	250	5	3200	4500	7'	5'	5.5	400	2500	3000	90
TR 080 3_ 140	70	100	250	5	4000	6000	7'	5'	5.5	400	2500	3000	90
TR 080 3_ 150	70	100	250	5	4000	6000	7'	5'	5.5	400	2500	3000	90
TR 080 3_ 160	70	100	250	5	4000	6000	7'	5'	5.5	400	2500	3000	90
TR 080 3_ 175	70	100	250	5	4000	6000	7'	5'	5.5	400	2500	3000	90
TR 080 3_ 200	70	100	250	5	4000	6000	7'	5'	5.5	400	2500	3000	90
TR 080 3_ 210	70	100	250	5	4000	6000	7'	5'	5.5	400	2500	3000	90
TR 080 3_ 216	70	100	250	5	3200	4500	7'	5'	5.5	400	2500	3000	90
TR 080 3_ 250	70	100	250	5	4000	6000	7'	5'	5.5	400	2500	3000	90
TR 080 3_ 280	70	100	250	5	4000	6000	7'	5'	5.5	400	2500	3000	90
TR 080 3_ 350	70	100	250	5	4000	6000	7'	5'	5.5	400	2500	3000	90
TR 080 3_ 400	70	100	250	5	4000	6000	7'	5'	5.5	400	2500	3000	90
TR 080 3_ 500	70	100	250	5	4000	6000	7'	5'	5.5	400	2500	3000	90
TR 080 3_ 700	70	100	250	5	4000	6000	7'	5'	5.5	400	2500	3000	90
TR 080 3_ 1000	40	80	180	5	4000	6000	7'	5'	5.5	400	2500	3000	90



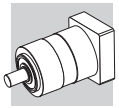
2.4 TR 105

TR 105													
i	M_{n2} [Nm]	M_{a2} [Nm]	M_{p2} [Nm]	M_r [Nm]	n_1 [min^{-1}]	n_{1max} [min^{-1}]	φ_S [arcmin]	φ_R [arcmin]	C_t [Nm/arcmin]	R_{n1} [N]	R_{n2} [N]	A_{n2} [N]	η %
TR 105 1_ 3	100	180	360	0.90	2500	3500	5'	3'	24	600	3800	4000	97
TR 105 1_ 4	140	210	450	0.90	2800	4500	5'	3'	24	600	3800	4000	97
TR 105 1_ 5	140	210	450	0.90	3000	4500	5'	3'	24	600	3800	4000	97
TR 105 1_ 6	140	210	450	0.90	3000	4500	5'	3'	24	600	3800	4000	97
TR 105 1_ 7	140	210	450	0.90	3500	5000	5'	3'	24	600	3800	4000	97
TR 105 1_ 10	100	180	360	0.90	3500	5000	5'	3'	24	600	3800	4000	97
TR 105 2_ 9	100	180	360	2.5	2500	3500	5'	3'	21.5	600	3800	4000	94
TR 105 2_ 12	170	250	600	2.5	2500	3500	5'	3'	21.5	600	3800	4000	94
TR 105 2_ 15	170	250	600	2.5	2500	3500	5'	3'	21.5	600	3800	4000	94
TR 105 2_ 16	170	250	600	2.5	2800	4500	5'	3'	21.5	600	3800	4000	94
TR 105 2_ 20	170	250	600	2.5	3000	4500	5'	3'	21.5	600	3800	4000	94
TR 105 2_ 25	170	250	600	2.5	3000	4500	5'	3'	21.5	600	3800	4000	94
TR 105 2_ 28	170	250	600	2.5	3500	5000	5'	3'	21.5	600	3800	4000	94
TR 105 2_ 30	100	180	360	2.5	3500	5000	5'	3'	21.5	600	3800	4000	94
TR 105 2_ 35	170	250	600	2.5	3500	5000	5'	3'	21.5	600	3800	4000	94
TR 105 2_ 36	140	210	450	2.5	3000	4500	5'	3'	21.5	600	3800	4000	94
TR 105 2_ 40	170	250	600	2.5	3500	5000	5'	3'	21.5	600	3800	4000	94
TR 105 2_ 50	170	250	600	2.5	3500	5000	5'	3'	21.5	600	3800	4000	94
TR 105 2_ 70	170	250	600	2.5	3500	5000	5'	3'	21.5	600	3800	4000	94
TR 105 2_ 100	100	180	360	2.5	3500	5000	5'	3'	21.5	600	3800	4000	94
TR 105 3_ 48	170	250	600	10	2800	4500	7'	5'	18	600	3800	4000	90
TR 105 3_ 64	170	250	600	10	2800	4500	7'	5'	18	600	3800	4000	90
TR 105 3_ 75	170	250	600	10	3000	4500	7'	5'	18	600	3800	4000	90
TR 105 3_ 80	170	250	600	10	2800	4500	7'	5'	18	600	3800	4000	90
TR 105 3_ 84	170	250	600	10	3500	5000	7'	5'	18	600	3800	4000	90
TR 105 3_ 90	100	180	360	10	3500	5000	7'	5'	18	600	3800	4000	90
TR 105 3_ 120	170	250	600	10	3500	5000	7'	5'	18	600	3800	4000	90
TR 105 3_ 125	170	250	600	10	3000	4500	7'	5'	18	600	3800	4000	90
TR 105 3_ 140	170	250	600	10	3500	5000	7'	5'	18	600	3800	4000	90
TR 105 3_ 150	170	250	600	10	3500	5000	7'	5'	18	600	3800	4000	90
TR 105 3_ 160	170	250	600	10	3500	5000	7'	5'	18	600	3800	4000	90
TR 105 3_ 175	170	250	600	10	3500	5000	7'	5'	18	600	3800	4000	90
TR 105 3_ 200	170	250	600	10	3500	5000	7'	5'	18	600	3800	4000	90
TR 105 3_ 210	170	250	600	10	3500	5000	7'	5'	18	600	3800	4000	90
TR 105 3_ 216	170	250	600	10	3000	4500	7'	5'	18	600	3800	4000	90
TR 105 3_ 250	170	250	600	10	3500	5000	7'	5'	18	600	3800	4000	90
TR 105 3_ 280	170	250	600	10	3500	5000	7'	5'	18	600	3800	4000	90
TR 105 3_ 350	170	250	600	10	3500	5000	7'	5'	18	600	3800	4000	90
TR 105 3_ 400	170	250	600	10	3500	5000	7'	5'	18	600	3800	4000	90
TR 105 3_ 500	170	250	600	10	3500	5000	7'	5'	18	600	3800	4000	90
TR 105 3_ 700	170	250	600	10	3500	5000	7'	5'	18	600	3800	4000	90
TR 105 3_ 1000	100	180	360	10	3500	5000	7'	5'	18	600	3800	4000	90



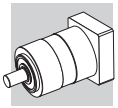
2.5 TR 130

TR 130													
i	M_{n2} [Nm]	M_{a2} [Nm]	M_{p2} [Nm]	M_r [Nm]	n_1 [min^{-1}]	n_{1max} [min^{-1}]	φ_S [arcmin]	φ_R [arcmin]	C_t [Nm/arcmin]	R_{n1} [N]	R_{n2} [N]	A_{n2} [N]	η %
TR 130 1_ 3	215	400	800	1.2	2100	3000	5'	3'	45	800	5500	6500	97
TR 130 1_ 4	380	600	1100	1.2	2400	3500	5'	3'	45	800	5500	6500	97
TR 130 1_ 5	380	600	1100	1.2	2900	3500	5'	3'	45	800	5500	6500	97
TR 130 1_ 6	380	600	1100	1.2	2900	3500	5'	3'	45	800	5500	6500	97
TR 130 1_ 7	380	600	1100	1.2	3200	4000	5'	3'	45	800	5500	6500	97
TR 130 1_ 10	215	400	800	1.2	3200	4000	5'	3'	45	800	5500	6500	97
TR 130 2_ 9	215	400	800	5	2100	3000	5'	3'	38.5	800	5500	6500	94
TR 130 2_ 12	450	700	1300	5	2100	3000	5'	3'	38.5	800	5500	6500	94
TR 130 2_ 15	450	700	1300	5	2100	3000	5'	3'	38.5	800	5500	6500	94
TR 130 2_ 16	450	700	1300	5	2400	3500	5'	3'	38.5	800	5500	6500	94
TR 130 2_ 20	450	700	1300	5	2900	3500	5'	3'	38.5	800	5500	6500	94
TR 130 2_ 25	450	700	1300	5	2900	3500	5'	3'	38.5	800	5500	6500	94
TR 130 2_ 28	450	700	1300	5	3200	4000	5'	3'	38.5	800	5500	6500	94
TR 130 2_ 30	215	400	800	5	3200	4000	5'	3'	38.5	800	5500	6500	94
TR 130 2_ 35	450	700	1300	5	3200	4000	5'	3'	38.5	800	5500	6500	94
TR 130 2_ 36	380	600	1100	5	2900	3500	5'	3'	38.5	800	5500	6500	94
TR 130 2_ 40	450	700	1300	5	3200	4000	5'	3'	38.5	800	5500	6500	94
TR 130 2_ 50	450	700	1300	5	3200	4000	5'	3'	38.5	800	5500	6500	94
TR 130 2_ 70	450	700	1300	5	3200	4000	5'	3'	38.5	800	5500	6500	94
TR 130 2_ 100	215	400	800	5	3200	4000	5'	3'	38.5	800	5500	6500	94
TR 130 3_ 48	450	700	1300	20	2400	3500	7'	5'	30	800	5500	6500	90
TR 130 3_ 64	450	700	1300	20	2400	3500	7'	5'	30	800	5500	6500	90
TR 130 3_ 75	450	700	1300	20	2900	3500	7'	5'	30	800	5500	6500	90
TR 130 3_ 80	450	700	1300	20	2400	3500	7'	5'	30	800	5500	6500	90
TR 130 3_ 84	450	700	1300	20	3200	4000	7'	5'	30	800	5500	6500	90
TR 130 3_ 90	215	400	800	20	3200	4000	7'	5'	30	800	5500	6500	90
TR 130 3_ 120	450	700	1300	20	3200	4000	7'	5'	30	800	5500	6500	90
TR 130 3_ 125	450	700	1300	20	2900	3500	7'	5'	30	800	5500	6500	90
TR 130 3_ 140	450	700	1300	20	3200	4000	7'	5'	30	800	5500	6500	90
TR 130 3_ 150	450	700	1300	20	3200	4000	7'	5'	30	800	5500	6500	90
TR 130 3_ 160	450	700	1300	20	3200	4000	7'	5'	30	800	5500	6500	90
TR 130 3_ 175	450	700	1300	20	3200	4000	7'	5'	30	800	5500	6500	90
TR 130 3_ 200	450	700	1300	20	3200	4000	7'	5'	30	800	5500	6500	90
TR 130 3_ 210	450	700	1300	20	3200	4000	7'	5'	30	800	5500	6500	90
TR 130 3_ 216	450	700	1300	20	2900	3500	7'	5'	30	800	5500	6500	90
TR 130 3_ 250	450	700	1300	20	3200	4000	7'	5'	30	800	5500	6500	90
TR 130 3_ 280	450	700	1300	20	3200	4000	7'	5'	30	800	5500	6500	90
TR 130 3_ 350	450	700	1300	20	3200	4000	7'	5'	30	800	5500	6500	90
TR 130 3_ 400	450	700	1300	20	3200	4000	7'	5'	30	800	5500	6500	90
TR 130 3_ 500	450	700	1300	20	3200	4000	7'	5'	30	800	5500	6500	90
TR 130 3_ 700	450	700	1300	20	3200	4000	7'	5'	30	800	5500	6500	90
TR 130 3_ 1000	215	400	800	20	3200	4000	7'	5'	30	800	5500	6500	90



2.6 TR 160

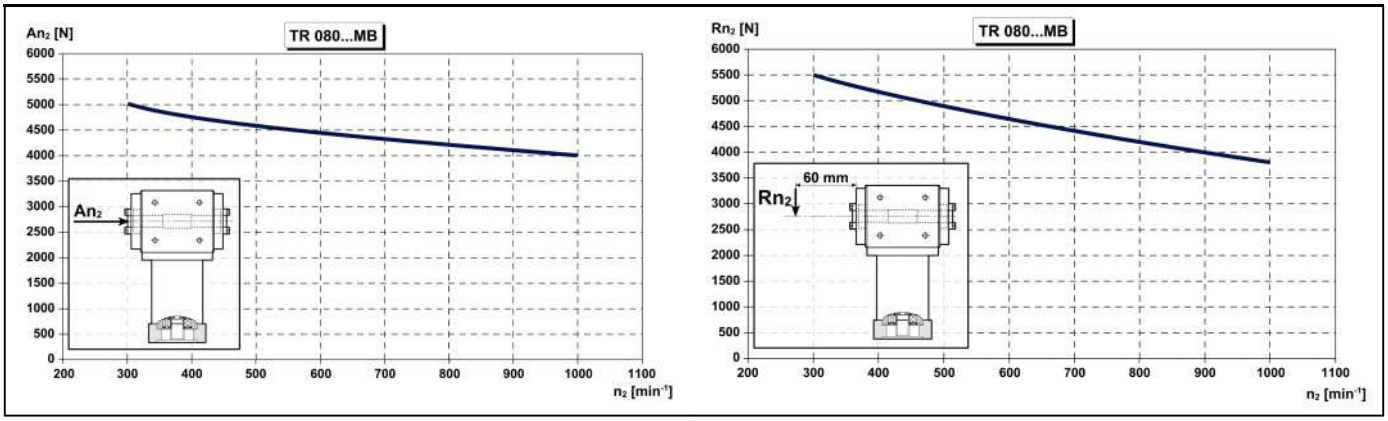
TR 160													
i	M_{n2} [Nm]	M_{a2} [Nm]	M_{p2} [Nm]	M_r [Nm]	n_1 [min^{-1}]	n_{1max} [min^{-1}]	φ_S [arcmin]	φ_R [arcmin]	C_t [Nm/arcmin]	R_{n1} [N]	R_{n2} [N]	A_n [N]	η %
TR 160 1_ 3	350	660	1200	1.3	1900	3000	5'	3'	90	1200	6500	7500	97
TR 160 1_ 4	500	750	1400	1.3	2200	3500	5'	3'	90	1200	6500	7500	97
TR 160 1_ 5	500	750	1400	1.3	2500	3500	5'	3'	90	1200	6500	7500	97
TR 160 1_ 6	500	750	1400	1.3	2500	3500	5'	3'	90	1200	6500	7500	97
TR 160 1_ 7	500	750	1400	1.3	3000	4000	5'	3'	90	1200	6500	7500	97
TR 160 1_ 10	350	660	1200	1.3	3000	4000	5'	3'	90	1200	6500	7500	97
TR 160 2_ 9	350	660	1200	6	1900	3000	5'	3'	83.5	1200	6500	7500	94
TR 160 2_ 12	700	950	1800	6	1900	3000	5'	3'	83.5	1200	6500	7500	94
TR 160 2_ 15	700	950	1800	6	1900	3000	5'	3'	83.5	1200	6500	7500	94
TR 160 2_ 16	700	950	1800	6	2200	3500	5'	3'	83.5	1200	6500	7500	94
TR 160 2_ 20	700	950	1800	6	2500	3500	5'	3'	83.5	1200	6500	7500	94
TR 160 2_ 25	700	950	1800	6	2500	3500	5'	3'	83.5	1200	6500	7500	94
TR 160 2_ 28	700	950	1800	6	3000	4000	5'	3'	83.5	1200	6500	7500	94
TR 160 2_ 30	350	660	1200	6	3000	4000	5'	3'	83.5	1200	6500	7500	94
TR 160 2_ 35	700	950	1800	6	3000	4000	5'	3'	83.5	1200	6500	7500	94
TR 160 2_ 36	500	750	1400	6	2500	3500	5'	3'	83.5	1200	6500	7500	94
TR 160 2_ 40	700	950	1800	6	3000	4000	5'	3'	83.5	1200	6500	7500	94
TR 160 2_ 50	700	950	1800	6	3000	4000	5'	3'	83.5	1200	6500	7500	94
TR 160 2_ 70	700	950	1800	6	3000	4000	5'	3'	83.5	1200	6500	7500	94
TR 160 2_ 100	350	660	1200	6	3000	4000	5'	3'	83.5	1200	6500	7500	94
TR 160 3_ 48	700	950	1800	23	2200	3500	7'	5'	60	1200	6500	7500	90
TR 160 3_ 64	700	950	1800	23	2200	3500	7'	5'	60	1200	6500	7500	90
TR 160 3_ 75	700	950	1800	23	2500	3500	7'	5'	60	1200	6500	7500	90
TR 160 3_ 80	700	950	1800	23	2200	3500	7'	5'	60	1200	6500	7500	90
TR 160 3_ 84	700	950	1800	23	3000	4000	7'	5'	60	1200	6500	7500	90
TR 160 3_ 90	350	660	1200	23	3000	4000	7'	5'	60	1200	6500	7500	90
TR 160 3_ 120	700	950	1800	23	3000	4000	7'	5'	60	1200	6500	7500	90
TR 160 3_ 125	700	950	1800	23	2500	3500	7'	5'	60	1200	6500	7500	90
TR 160 3_ 140	700	950	1800	23	3000	4000	7'	5'	60	1200	6500	7500	90
TR 160 3_ 150	700	950	1800	23	3000	4000	7'	5'	60	1200	6500	7500	90
TR 160 3_ 160	700	950	1800	23	3000	4000	7'	5'	60	1200	6500	7500	90
TR 160 3_ 175	700	950	1800	23	3000	4000	7'	5'	60	1200	6500	7500	90
TR 160 3_ 200	700	950	1800	23	3000	4000	7'	5'	60	1200	6500	7500	90
TR 160 3_ 210	700	950	1800	23	3000	4000	7'	5'	60	1200	6500	7500	90
TR 160 3_ 216	700	950	1800	23	2500	3500	7'	5'	60	1200	6500	7500	90
TR 160 3_ 250	700	950	1800	23	3000	4000	7'	5'	60	1200	6500	7500	90
TR 160 3_ 280	700	950	1800	23	3000	4000	7'	5'	60	1200	6500	7500	90
TR 160 3_ 350	700	950	1800	23	3000	4000	7'	5'	60	1200	6500	7500	90
TR 160 3_ 400	700	950	1800	23	3000	4000	7'	5'	60	1200	6500	7500	90
TR 160 3_ 500	700	950	1800	23	3000	4000	7'	5'	60	1200	6500	7500	90
TR 160 3_ 700	700	950	1800	23	3000	4000	7'	5'	60	1200	6500	7500	90
TR 160 3_ 1000	350	660	1200	23	3000	4000	7'	5'	60	1200	6500	7500	90

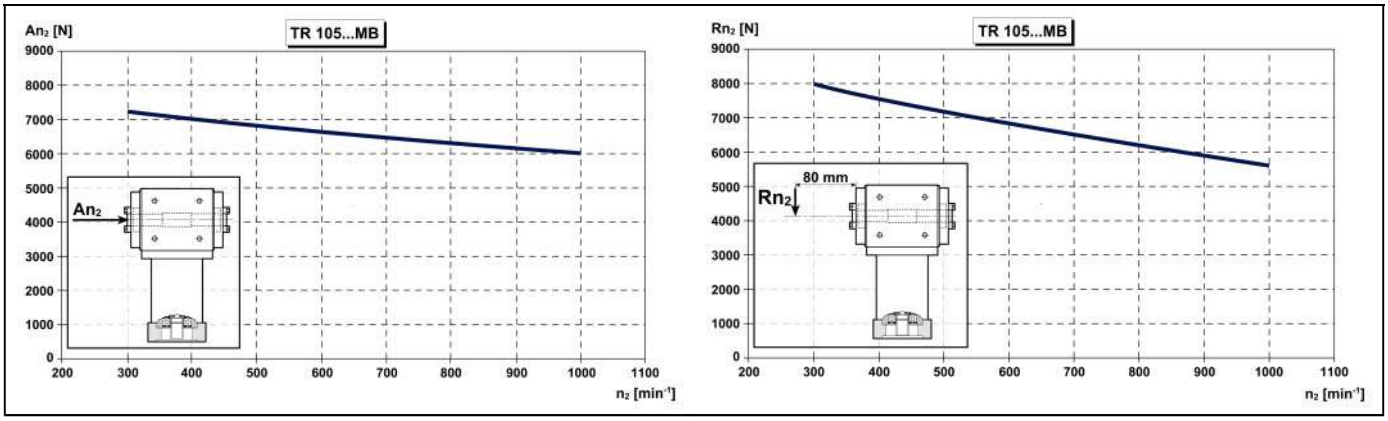


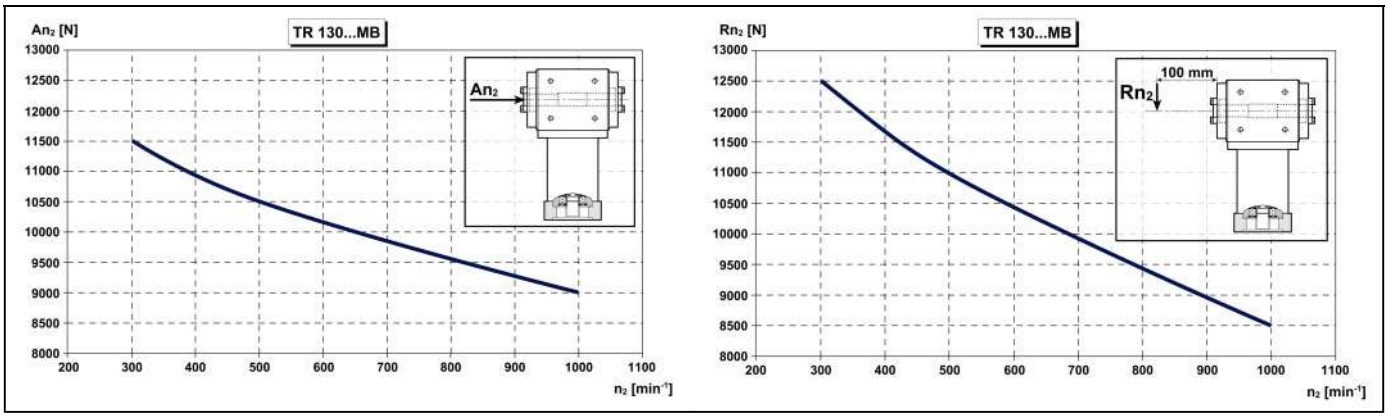
2.7 TR 190

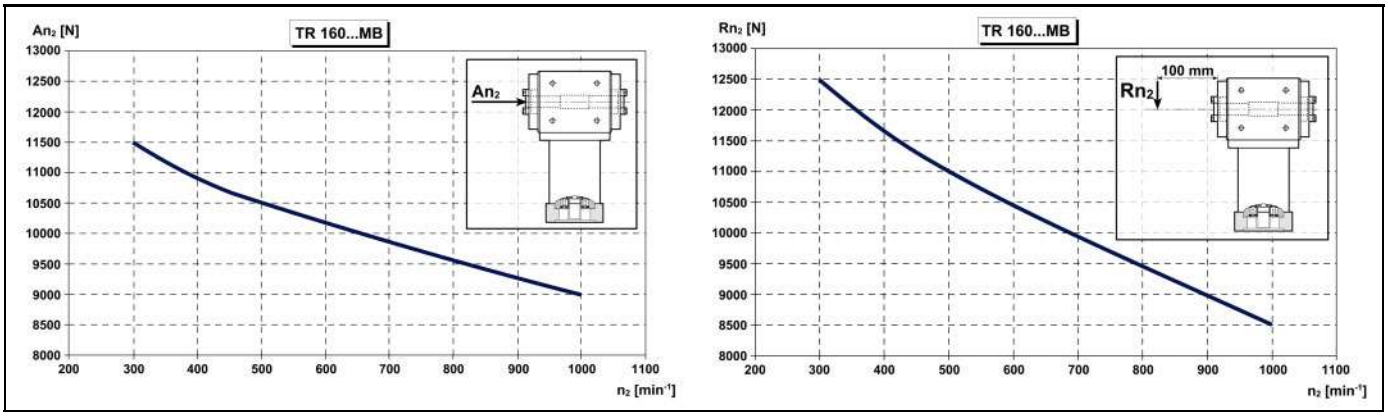
TR 190												
i	M_{n2} [Nm]	M_{a2} [Nm]	M_{p2} [Nm]	M_r [Nm]	n_1 [min^{-1}]	n_{1max} [min^{-1}]	φ_S [arcmin]	φ_R [arcmin]	C_t [Nm/arcmin]	R_{n2} [N]	A_{n2} [N]	η %
TR 190 1_ 3	500	800	1400	3	1500	2500	5'	3'	130	14000	15000	97
TR 190 1_ 4	700	950	1800	3	2100	3000	5'	3'	130	14000	15000	97
TR 190 1_ 5	700	950	1800	3	2300	3000	5'	3'	130	14000	15000	97
TR 190 1_ 6	700	950	1800	3	2300	3000	5'	3'	130	14000	15000	97
TR 190 1_ 7	700	950	1800	3	2900	3500	5'	3'	130	14000	15000	97
TR 190 1_ 10	500	800	1400	3	2900	3500	5'	3'	130	14000	15000	97
TR 190 2_ 9	500	800	1400	7.5	1500	2500	5'	3'	100	14000	15000	94
TR 190 2_ 12	1000	1200	2200	7.5	1500	2500	5'	3'	100	14000	15000	94
TR 190 2_ 15	1000	1200	2200	7.5	1500	2500	5'	3'	100	14000	15000	94
TR 190 2_ 16	1000	1200	2200	7.5	2100	3000	5'	3'	100	14000	15000	94
TR 190 2_ 20	1000	1200	2200	7.5	2300	3000	5'	3'	100	14000	15000	94
TR 190 2_ 25	1000	1200	2200	7.5	2300	3000	5'	3'	100	14000	15000	94
TR 190 2_ 28	1000	1200	2200	7.5	2900	3500	5'	3'	100	14000	15000	94
TR 190 2_ 30	500	800	1400	7.5	2900	3500	5'	3'	100	14000	15000	94
TR 190 2_ 35	1000	1200	2200	7.5	2900	3500	5'	3'	100	14000	15000	94
TR 190 2_ 36	700	950	1800	7.5	2300	3000	5'	3'	100	14000	15000	94
TR 190 2_ 40	1000	1200	2200	7.5	2900	3500	5'	3'	100	14000	15000	94
TR 190 2_ 50	1000	1200	2200	7.5	2900	3500	5'	3'	100	14000	15000	94
TR 190 2_ 70	1000	1200	2200	7.5	2900	3500	5'	3'	100	14000	15000	94
TR 190 2_ 100	500	800	1400	7.5	2900	3500	5'	3'	100	14000	15000	94
TR 190 3_ 48	1000	1200	2200	28	2100	3000	7'	5'	90	14000	15000	90
TR 190 3_ 64	1000	1200	2200	28	2100	3000	7'	5'	90	14000	15000	90
TR 190 3_ 75	1000	1200	2200	28	2300	3000	7'	5'	90	14000	15000	90
TR 190 3_ 80	1000	1200	2200	28	2100	3000	7'	5'	90	14000	15000	90
TR 190 3_ 84	1000	1200	2200	28	2900	3500	7'	5'	90	14000	15000	90
TR 190 3_ 90	500	800	1400	28	2900	3500	7'	5'	90	14000	15000	90
TR 190 3_ 120	1000	1200	2200	28	2900	3500	7'	5'	90	14000	15000	90
TR 190 3_ 125	1000	1200	2200	28	2300	3000	7'	5'	90	14000	15000	90
TR 190 3_ 140	1000	1200	2200	28	2900	3500	7'	5'	90	14000	15000	90
TR 190 3_ 150	1000	1200	2200	28	2900	3500	7'	5'	90	14000	15000	90
TR 190 3_ 160	1000	1200	2200	28	2900	3500	7'	5'	90	14000	15000	90
TR 190 3_ 175	1000	1200	2200	28	2900	3500	7'	5'	90	14000	15000	90
TR 190 3_ 200	1000	1200	2200	28	2900	3500	7'	5'	90	14000	15000	90
TR 190 3_ 210	1000	1200	2200	28	2900	3500	7'	5'	90	14000	15000	90
TR 190 3_ 216	1000	1200	2200	28	2300	3000	7'	5'	90	14000	15000	90
TR 190 3_ 250	1000	1200	2200	28	2900	3500	7'	5'	90	14000	15000	90
TR 190 3_ 280	1000	1200	2200	28	2900	3500	7'	5'	90	14000	15000	90
TR 190 3_ 350	1000	1200	2200	28	2900	3500	7'	5'	90	14000	15000	90
TR 190 3_ 400	1000	1200	2200	28	2900	3500	7'	5'	90	14000	15000	90
TR 190 3_ 500	1000	1200	2200	28	2900	3500	7'	5'	90	14000	15000	90
TR 190 3_ 700	1000	1200	2200	28	2900	3500	7'	5'	90	14000	15000	90
TR 190 3_ 1000	500	800	1400	28	2900	3500	7'	5'	90	14000	15000	90

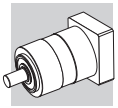
2.8 CARGAS AXIALES Y RADIALES TR ... MB







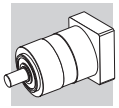




2.9 MOMENTO DE INERCIA

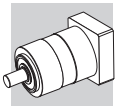
2.9.1 TR 053

TR 053		
	J [kgcm^2]	
i	D = Ø6...Ø9.52	D = Ø11...Ø14
TR 053 1_ 3	0.06	0.08
TR 053 1_ 4	0.05	0.06
TR 053 1_ 5	0.04	0.06
TR 053 1_ 6	0.03	0.05
TR 053 1_ 7	0.03	0.05
TR 053 1_ 9	0.03	0.05
TR 053 2_ 12	0.06	0.08
TR 053 2_ 15	0.06	0.08
TR 053 2_ 16	0.05	0.06
TR 053 2_ 20	0.04	0.06
TR 053 2_ 25	0.04	0.06
TR 053 2_ 28	0.03	0.05
TR 053 2_ 35	0.03	0.05
TR 053 2_ 36	0.03	0.05
TR 053 2_ 45	0.03	0.05
TR 053 2_ 81	0.03	0.05
TR 053 3_ 48	0.05	0.07
TR 053 3_ 60	0.05	0.07
TR 053 3_ 64	0.05	0.06
TR 053 3_ 75	0.04	0.06
TR 053 3_ 80	0.05	0.06
TR 053 3_ 84	0.03	0.05
TR 053 3_ 100	0.04	0.06
TR 053 3_ 112	0.03	0.05
TR 053 3_ 125	0.04	0.06
TR 053 3_ 140	0.03	0.05
TR 053 3_ 144	0.03	0.05
TR 053 3_ 175	0.03	0.05
TR 053 3_ 180	0.03	0.05
TR 053 3_ 216	0.03	0.05
TR 053 3_ 225	0.03	0.05
TR 053 3_ 245	0.03	0.05
TR 053 3_ 252	0.05	0.06
TR 053 3_ 324	0.03	0.05
TR 053 3_ 405	0.03	0.05
TR 053 3_ 567	0.03	0.05
TR 053 3_ 729	0.03	0.05



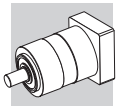
2.9.2 TR 060

TR 060		
	J [kgcm^2]	
i	D = Ø6...Ø9.52	D= Ø11...Ø14
TR 060 1_ 3	0.10	0.11
TR 060 1_ 4	0.06	0.08
TR 060 1_ 5	0.05	0.07
TR 060 1_ 6	0.04	0.06
TR 060 1_ 7	0.04	0.06
TR 060 1_ 10	0.03	0.05
TR 060 2_ 9	0.10	0.12
TR 060 2_ 12	0.10	0.11
TR 060 2_ 15	0.09	0.11
TR 060 2_ 16	0.06	0.08
TR 060 2_ 20	0.05	0.07
TR 060 2_ 25	0.05	0.06
TR 060 2_ 28	0.04	0.06
TR 060 2_ 30	0.03	0.05
TR 060 2_ 35	0.04	0.06
TR 060 2_ 36	0.04	0.06
TR 060 2_ 40	0.03	0.05
TR 060 2_ 50	0.03	0.05
TR 060 2_ 70	0.03	0.05
TR 060 2_ 100	0.03	0.05
TR 060 3_ 48	0.06	0.08
TR 060 3_ 64	0.06	0.08
TR 060 3_ 75	0.05	0.07
TR 060 3_ 80	0.06	0.08
TR 060 3_ 84	0.04	0.06
TR 060 3_ 90	0.03	0.05
TR 060 3_ 120	0.03	0.05
TR 060 3_ 125	0.05	0.07
TR 060 3_ 140	0.04	0.06
TR 060 3_ 150	0.03	0.05
TR 060 3_ 160	0.03	0.05
TR 060 3_ 175	0.04	0.06
TR 060 3_ 200	0.03	0.05
TR 060 3_ 210	0.03	0.05
TR 060 3_ 216	0.04	0.06
TR 060 3_ 250	0.03	0.05
TR 060 3_ 280	0.03	0.05
TR 060 3_ 350	0.03	0.05
TR 060 3_ 400	0.03	0.05
TR 060 3_ 500	0.03	0.05
TR 060 3_ 700	0.03	0.05
TR 060 3_ 1000	0.03	0.05



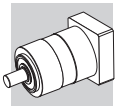
2.9.3 TR 080

TR 080		
	J [kgcm^2]	
i	D = Ø8...Ø12.7	D = Ø14...Ø19
TR 080 1_ 3	0.50	0.59
TR 080 1_ 4	0.34	0.43
TR 080 1_ 5	0.28	0.37
TR 080 1_ 6	0.21	0.30
TR 080 1_ 7	0.23	0.32
TR 080 1_ 10	0.20	0.29
TR 080 2_ 9	0.49	0.58
TR 080 2_ 12	0.47	0.56
TR 080 2_ 15	0.46	0.55
TR 080 2_ 16	0.32	0.41
TR 080 2_ 20	0.27	0.36
TR 080 2_ 25	0.27	0.36
TR 080 2_ 28	0.22	0.31
TR 080 2_ 30	0.20	0.29
TR 080 2_ 35	0.22	0.31
TR 080 2_ 36	0.20	0.29
TR 080 2_ 40	0.20	0.29
TR 080 2_ 50	0.19	0.28
TR 080 2_ 70	0.19	0.28
TR 080 2_ 100	0.19	0.28
TR 080 3_ 48	0.33	0.42
TR 080 3_ 64	0.32	0.41
TR 080 3_ 75	0.27	0.36
TR 080 3_ 80	0.32	0.41
TR 080 3_ 84	0.23	0.32
TR 080 3_ 90	0.20	0.29
TR 080 3_ 120	0.20	0.29
TR 080 3_ 125	0.27	0.36
TR 080 3_ 140	0.22	0.31
TR 080 3_ 150	0.20	0.29
TR 080 3_ 160	0.20	0.29
TR 080 3_ 175	0.22	0.31
TR 080 3_ 200	0.20	0.29
TR 080 3_ 210	0.20	0.29
TR 080 3_ 216	0.20	0.29
TR 080 3_ 250	0.19	0.28
TR 080 3_ 280	0.19	0.28
TR 080 3_ 350	0.19	0.28
TR 080 3_ 400	0.19	0.28
TR 080 3_ 500	0.19	0.28
TR 080 3_ 700	0.19	0.28
TR 080 3_ 1000	0.19	0.28



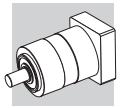
2.9.4 TR 105

TR 105				
	J [kgcm^2]			
i	D = Ø11...Ø12.7	D = Ø14...Ø19	D = Ø22...Ø24	D = Ø28...Ø32
TR 105 1_ 3	1.7	1.8	2.2	2.6
TR 105 1_ 4	0.99	1.1	1.5	1.9
TR 105 1_ 5	0.72	0.79	1.23	1.6
TR 105 1_ 6	0.36	0.43	0.88	1.2
TR 105 1_ 7	0.47	0.55	0.99	1.4
TR 105 1_ 10	0.33	0.41	0.85	1.2
TR 105 2_ 9	1.6	1.6	2.1	2.4
TR 105 2_ 12	1.5	1.6	2.0	2.4
TR 105 2_ 15	1.5	1.5	2.0	2.4
TR 105 2_ 16	0.87	0.95	1.4	1.8
TR 105 2_ 20	0.86	0.93	1.4	1.7
TR 105 2_ 25	0.63	0.71	1.1	1.5
TR 105 2_ 28	0.43	0.51	0.95	1.3
TR 105 2_ 30	0.32	0.40	0.84	1.2
TR 105 2_ 35	0.43	0.50	0.95	1.3
TR 105 2_ 36	0.32	0.39	0.84	1.2
TR 105 2_ 40	0.31	0.39	0.83	1.2
TR 105 2_ 50	0.31	0.39	0.83	1.2
TR 105 2_ 70	0.31	0.38	0.83	1.2
TR 105 2_ 100	0.31	0.38	0.83	1.2
TR 105 3_ 48	0.91	0.98	1.4	1.8
TR 105 3_ 64	0.87	0.94	1.4	1.7
TR 105 3_ 75	0.66	0.74	1.2	1.5
TR 105 3_ 80	0.86	0.94	1.4	1.7
TR 105 3_ 84	0.44	0.52	0.96	1.3
TR 105 3_ 90	0.32	0.39	0.84	1.2
TR 105 3_ 120	0.32	0.39	0.84	1.2
TR 105 3_ 125	0.63	0.70	1.1	1.5
TR 105 3_ 140	0.43	0.51	0.95	1.3
TR 105 3_ 150	0.32	0.39	0.84	1.2
TR 105 3_ 160	0.31	0.39	0.83	1.2
TR 105 3_ 175	0.43	0.50	0.95	1.3
TR 105 3_ 200	0.31	0.39	0.83	1.2
TR 105 3_ 210	0.32	0.39	0.84	1.2
TR 105 3_ 216	0.31	0.39	0.83	1.2
TR 105 3_ 250	0.31	0.39	0.83	1.2
TR 105 3_ 280	0.31	0.38	0.83	1.2
TR 105 3_ 350	0.31	0.38	0.83	1.2
TR 105 3_ 400	0.31	0.38	0.83	1.2
TR 105 3_ 500	0.31	0.38	0.83	1.2
TR 105 3_ 700	0.31	0.38	0.83	1.2
TR 105 3_ 1000	0.31	0.38	0.83	1.2



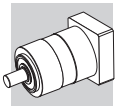
2.9.5 TR 130

TR 130				
	J [kgcm^2]			
i	D = Ø14...Ø19	D = Ø22...Ø24	D = Ø28...Ø32	D = Ø35...Ø38
TR 130 1_ 3	5.3	5.5	5.8	7.2
TR 130 1_ 4	3.1	3.3	3.6	5.0
TR 130 1_ 5	2.2	2.4	2.8	4.1
TR 130 1_ 6	1.2	1.4	1.7	3.1
TR 130 1_ 7	1.5	1.7	2.0	3.4
TR 130 1_ 10	1.0	1.2	1.6	3.0
TR 130 2_ 9	4.8	5.0	5.4	6.7
TR 130 2_ 12	4.6	4.8	5.1	6.5
TR 130 2_ 15	4.5	4.7	5.0	6.4
TR 130 2_ 16	2.7	2.9	3.2	4.6
TR 130 2_ 20	2.0	2.2	2.5	3.9
TR 130 2_ 25	1.9	2.1	2.5	3.8
TR 130 2_ 28	1.3	1.6	1.9	3.3
TR 130 2_ 30	1.0	1.2	1.6	2.9
TR 130 2_ 35	1.3	1.5	1.9	3.2
TR 130 2_ 36	1.1	1.3	1.6	3.0
TR 130 2_ 40	0.98	1.2	1.5	2.9
TR 130 2_ 50	0.97	1.2	1.5	2.9
TR 130 2_ 70	0.96	1.2	1.5	2.9
TR 130 2_ 100	0.96	1.2	1.5	2.9
TR 130 3_ 48	2.8	3.0	3.3	4.7
TR 130 3_ 64	2.6	2.9	3.2	4.6
TR 130 3_ 75	2.0	2.2	2.6	3.9
TR 130 3_ 80	2.6	2.9	3.2	4.6
TR 130 3_ 84	1.4	1.6	1.9	3.3
TR 130 3_ 90	1.0	1.2	1.6	2.9
TR 130 3_ 120	0.99	1.20	1.55	2.90
TR 130 3_ 125	1.9	2.1	2.5	3.8
TR 130 3_ 140	1.3	1.5	1.9	3.2
TR 130 3_ 150	0.99	1.2	1.6	2.9
TR 130 3_ 160	0.98	1.2	1.5	2.9
TR 130 3_ 175	1.3	1.5	1.9	3.2
TR 130 3_ 200	0.97	1.2	1.5	2.9
TR 130 3_ 210	0.99	1.2	1.6	2.9
TR 130 3_ 216	1.0	1.3	1.6	3.0
TR 130 3_ 250	0.97	1.2	1.5	2.9
TR 130 3_ 280	0.96	1.2	1.5	2.9
TR 130 3_ 350	0.96	1.2	1.5	2.9
TR 130 3_ 400	0.96	1.2	1.5	2.9
TR 130 3_ 500	0.96	1.2	1.5	2.9
TR 130 3_ 700	0.96	1.2	1.5	2.9
TR 130 3_ 1000	0.96	1.2	1.5	2.9



2.9.6 TR 160

TR 160				
	J [kgcm^2]			
i	D = Ø14...Ø19	D = Ø22...Ø24	D = Ø28...Ø32	D = Ø35...Ø38
TR 160 1_ 3	8.4	8.6	8.9	10.3
TR 160 1_ 4	4.7	4.9	5.2	6.6
TR 160 1_ 5	3.3	3.5	3.8	5.2
TR 160 1_ 6	1.3	1.5	1.9	3.2
TR 160 1_ 7	2.0	2.2	2.6	3.9
TR 160 1_ 10	1.3	1.5	1.9	3.2
TR 160 2_ 9	7.5	7.7	8.1	9.4
TR 160 2_ 12	7.1	7.3	7.7	9.0
TR 160 2_ 15	6.9	7.1	7.5	8.9
TR 160 2_ 16	4.0	4.2	4.5	5.9
TR 160 2_ 20	2.8	3.0	3.4	4.7
TR 160 2_ 25	2.8	3.0	3.3	4.7
TR 160 2_ 28	1.8	2.0	2.4	3.7
TR 160 2_ 30	1.2	1.5	1.8	3.2
TR 160 2_ 35	1.8	2.0	2.3	3.7
TR 160 2_ 36	1.1	1.3	1.6	3.0
TR 160 2_ 40	1.2	1.4	1.8	3.1
TR 160 2_ 50	1.2	1.4	1.8	3.1
TR 160 2_ 70	1.2	1.4	1.7	3.1
TR 160 2_ 100	1.2	1.4	1.7	3.1
TR 160 3_ 48	4.1	4.3	4.7	6.0
TR 160 3_ 64	3.9	4.1	4.5	5.8
TR 160 3_ 75	2.9	3.1	3.5	4.8
TR 160 3_ 80	3.9	4.1	4.5	5.8
TR 160 3_ 84	1.8	2.1	2.4	3.8
TR 160 3_ 90	1.2	1.4	1.8	3.1
TR 160 3_ 120	1.2	1.4	1.8	3.1
TR 160 3_ 125	2.7	2.9	3.3	4.6
TR 160 3_ 140	1.8	2.0	2.3	3.7
TR 160 3_ 150	1.2	1.4	1.8	3.1
TR 160 3_ 160	1.2	1.4	1.8	3.1
TR 160 3_ 175	1.8	2.0	2.3	3.7
TR 160 3_ 200	1.2	1.4	1.8	3.1
TR 160 3_ 210	1.2	1.4	1.8	3.1
TR 160 3_ 216	1.1	1.3	1.6	3.0
TR 160 3_ 250	1.2	1.4	1.7	3.1
TR 160 3_ 280	1.2	1.4	1.7	3.1
TR 160 3_ 350	1.2	1.4	1.7	3.1
TR 160 3_ 400	1.2	1.4	1.7	3.1
TR 160 3_ 500	1.2	1.4	1.7	3.1
TR 160 3_ 700	1.2	1.4	1.7	3.1
TR 160 3_ 1000	1.2	1.4	1.7	3.1



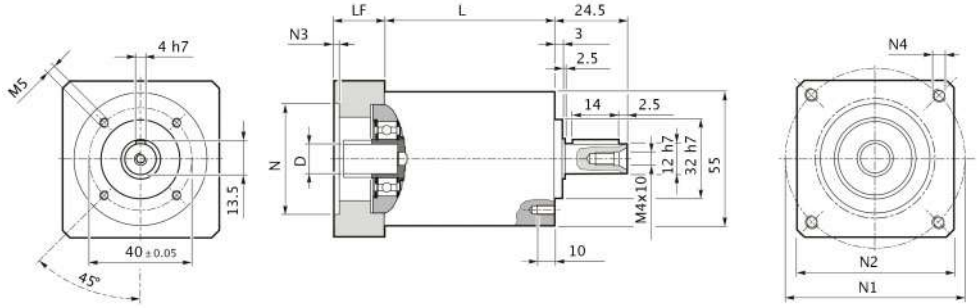
2.9.7 TR 190

TR 190					
	J [kgcm^2]				
i	D = Ø14...Ø24	D = Ø28...Ø32	D = Ø35...Ø38	D = Ø42	D = Ø45...Ø48
TR 190 1_ 3	24.2	24.9	25.6	29.3	29.9
TR 190 1_ 4	13.4	14.1	14.9	18.5	19.1
TR 190 1_ 5	9.3	10.0	10.8	14.4	15.0
TR 190 1_ 6	2.9	3.6	4.3	8.0	8.6
TR 190 1_ 7	5.7	6.4	7.1	10.8	11.4
TR 190 1_ 10	3.6	4.2	5.0	8.7	9.3
TR 190 2_ 9	23.2	23.9	24.7	28.3	28.9
TR 190 2_ 12	22.0	22.7	23.5	27.1	27.7
TR 190 2_ 15	21.6	22.3	23.0	26.7	27.3
TR 190 2_ 16	12.2	12.9	13.6	17.3	17.9
TR 190 2_ 20	8.5	9.2	10.0	13.6	14.2
TR 190 2_ 25	8.4	9.1	9.8	13.5	14.1
TR 190 2_ 28	5.3	6.0	6.7	10.4	11.0
TR 190 2_ 30	3.5	4.2	4.9	8.6	9.2
TR 190 2_ 35	5.2	5.9	6.6	10.3	10.9
TR 190 2_ 36	2.2	2.9	3.6	7.3	7.9
TR 190 2_ 40	3.4	4.1	4.8	8.5	9.1
TR 190 2_ 50	3.3	4.0	4.8	8.4	9.0
TR 190 2_ 70	3.3	4.0	4.7	8.4	9.0
TR 190 2_ 100	3.3	4.0	4.7	8.4	9.0
TR 190 3_ 48	12.7	13.4	14.2	17.8	18.4
TR 190 3_ 64	12.1	12.8	13.5	17.2	17.8
TR 190 3_ 75	8.9	9.5	10.3	14.0	14.6
TR 190 3_ 80	12.1	12.8	13.5	17.2	17.8
TR 190 3_ 84	5.5	6.1	6.9	10.6	11.2
TR 190 3_ 90	3.5	4.1	4.9	8.6	9.2
TR 190 3_ 120	3.5	4.1	4.9	8.6	9.2
TR 190 3_ 125	8.3	9.0	9.8	13.4	14.0
TR 190 3_ 140	5.2	5.9	6.7	10.3	10.9
TR 190 3_ 150	3.5	4.1	4.9	8.6	9.2
TR 190 3_ 160	3.4	4.0	4.8	8.5	9.1
TR 190 3_ 175	5.2	5.9	6.6	10.3	10.9
TR 190 3_ 200	3.4	4.0	4.8	8.5	9.1
TR 190 3_ 210	3.5	4.1	4.9	8.6	9.2
TR 190 3_ 216	2.2	2.8	3.6	7.3	7.9
TR 190 3_ 250	3.3	4.0	4.8	8.4	9.0
TR 190 3_ 280	3.3	4.0	4.7	8.4	9.0
TR 190 3_ 350	3.3	4.0	4.7	8.4	9.0
TR 190 3_ 400	3.3	4.0	4.7	8.4	9.0
TR 190 3_ 500	3.3	4.0	4.7	8.4	9.0
TR 190 3_ 700	3.3	4.0	4.7	8.4	9.0
TR 190 3_ 1000	3.3	4.0	4.7	8.4	9.0

3 DIMENSIONES

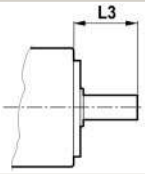
3.1 TR 053

_

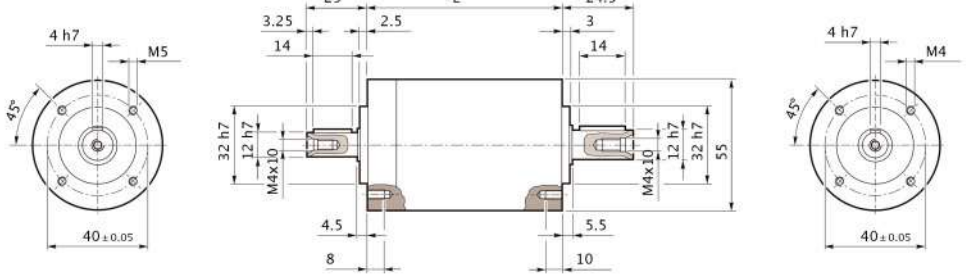


	L	Kg
TR 053 1	53	0.8
TR 053 2	66.8	1.0
TR 053 3	80.6	1.3

MOTOR

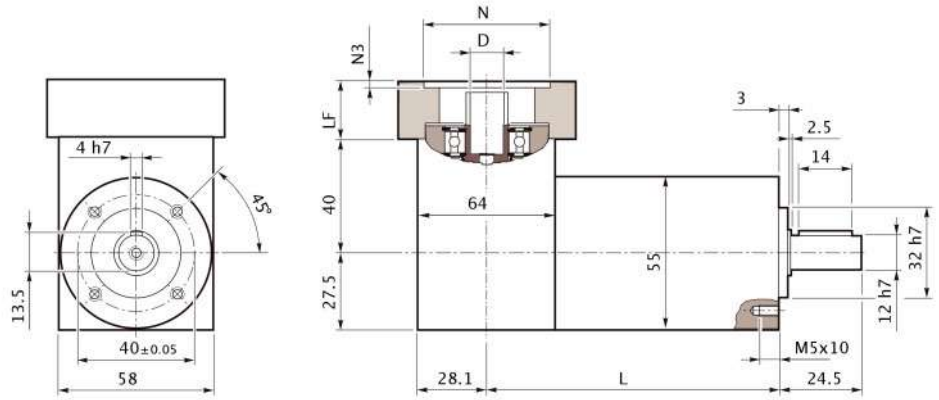


IS



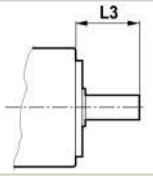
	L	Kg
TR 053 1	58.2	0.8
TR 053 2	72	1.0
TR 053 3	85.8	1.3

G



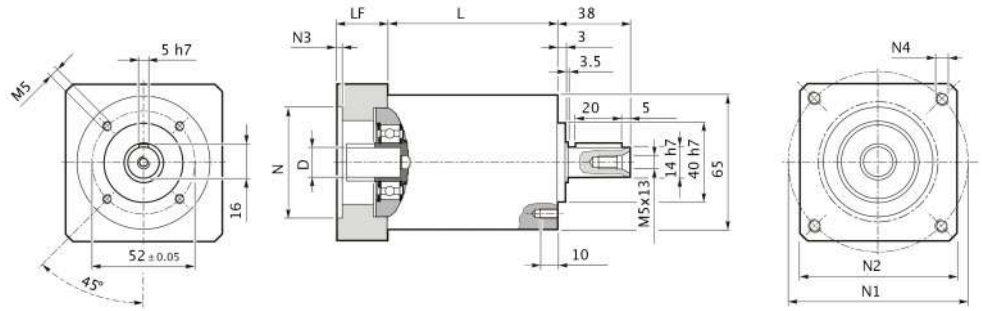
	L	Kg
TR 053 1	88.9	1.3
TR 053 2	102.7	1.5
TR 053 3	116.5	1.8

MOTOR



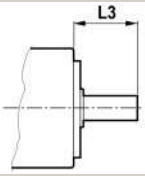
	D	N	N1	N2	N3	N4	LF	L3
TR 053_ 6...9 25 25...36 36...48	⩽ 9 mm	25...36	36...48	55	4	4.5	25	25
TR 053_ 6...12 25 38.1 66.6	⩽ 12 mm	38.1	66.6	60	3	M4x10	18	25
TR 053_ 6...12 25 40 63		40	63	60	3	M4x10	18	25
TR 053_ 6...12 25 50 60		50	60	60	3	M4x10	18	25
TR 053_ 6...12 25 60 75		60	75	63	3	M5x12	18	25
TR 053_ 6...14 30 50 65	⩽ 14 mm	50	65	60	3	M5x12	23	30
TR 053_ 6...14 30 50 70		50	70	60	3	M4x10	23	30
TR 053_ 6...14 30 60 75		60	75	63	3	M5x12	23	30
TR 053_ 6...14 30 60 90		60	90	75	3	M5x12	23	30
TR 053_ 6...14 30 70 85		70	85	75	3	M6x15	23	30
TR 053_ 6...14 30 70 90		70	90	75	3	M5x12	23	30
TR 053_ 6...14 32 73 98.4		73	98.4	85	3	M5x12	25	32
TR 053_ 6...14 30 80 100		80	100	85	3	M6x15	23	30

3.2 TR 060

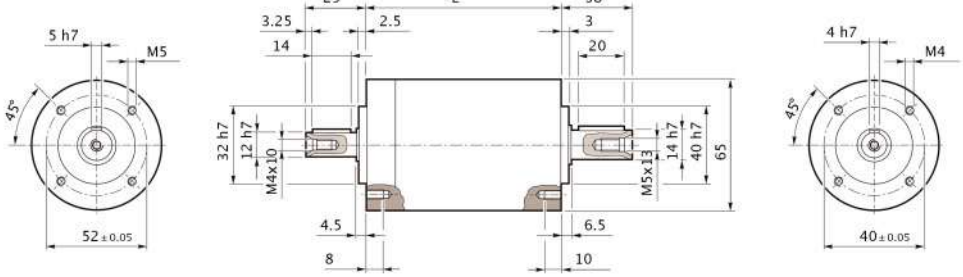


	L	Kg
TR 060 1	57.55	1.2
TR 060 2	74.25	1.7
TR 060 3	90.95	2.0

MOTOR

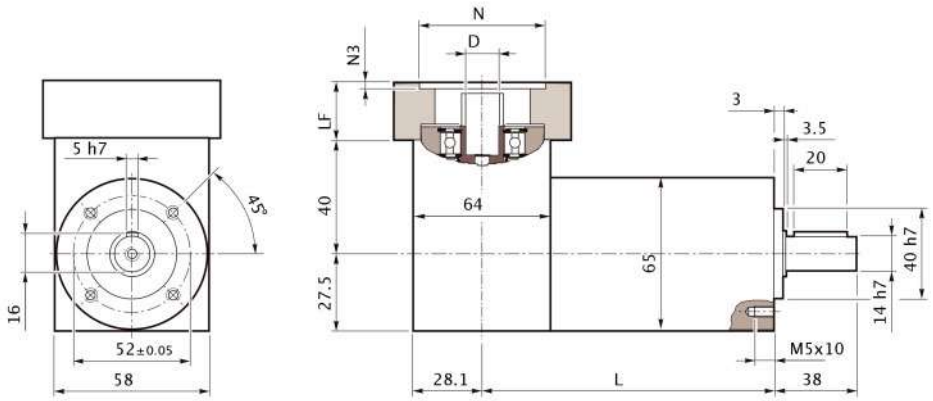


IS



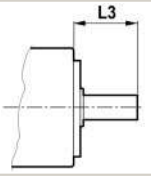
	L	Kg
TR 060 1	62.75	1.2
TR 060 2	79.45	1.7
TR 060 3	96.15	2.0

G



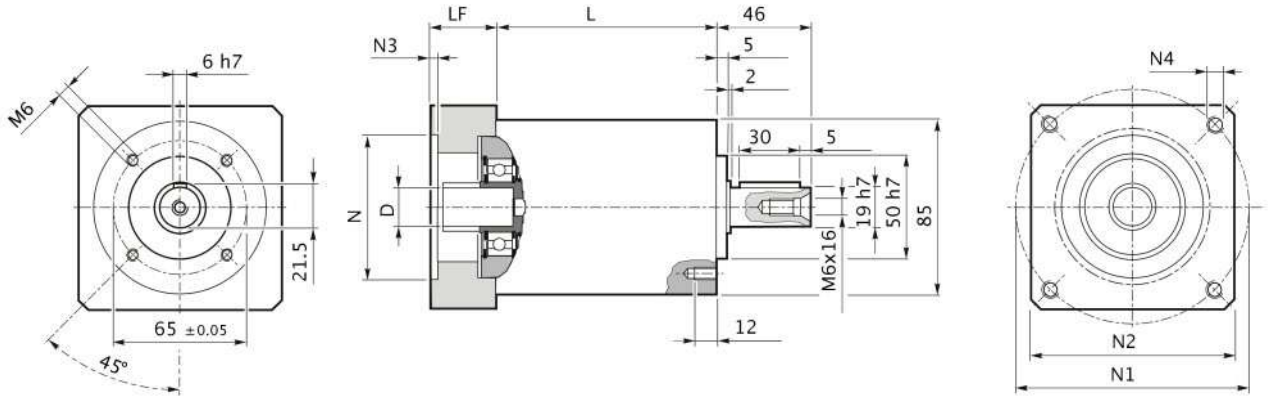
	L	Kg
TR 060 1	93.45	1.7
TR 060 2	110.15	2.2
TR 060 3	126.85	2.5

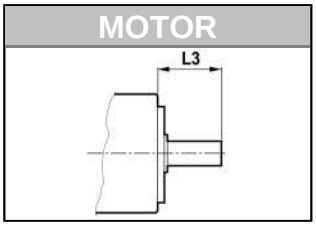
MOTOR



	D	N	N1	N2	N3	N4	LF	L3
TR 060_ 6...9 25 25...30 39...56	⩽ 9 mm	25...30	39...56	65	4	4.5	25	25
TR 060_ 6...12 25 38.1 66.6	⩽ 12 mm	38.1	66.6	60	3	M4x10	18	25
TR 060_ 6...12 25 40 63		40	63	60	3	M4x10	18	25
TR 060_ 6...12 25 50 60		50	60	60	3	M4x10	18	25
TR 060_ 6...12 25 60 75		60	75	63	3	M5x12	18	25
TR 060_ 6...14 30 50 65	⩽ 14 mm	50	65	60	3	M5x12	23	30
TR 060_ 6...14 30 50 65 TH		50	65	60	3	5	25	30
TR 060_ 6...14 30 50 70		50	70	60	3	M4x10	23	30
TR 060_ 6...14 30 60 75		60	75	63	3	M5x12	23	30
TR 060_ 6...14 30 60 90		60	90	75	3	M5x12	23	30
TR 060_ 6...14 30 70 85		70	85	75	3	M5x12	23	30
TR 060_ 6...14 30 70 90		70	90	75	3	M5x12	23	30
TR 060_ 6...14 32 73 98.4		73	98.4	85	3	M5x12	25	32
TR 060_ 6...14 30 80 100		80	100	85	3	M6x15	23	30

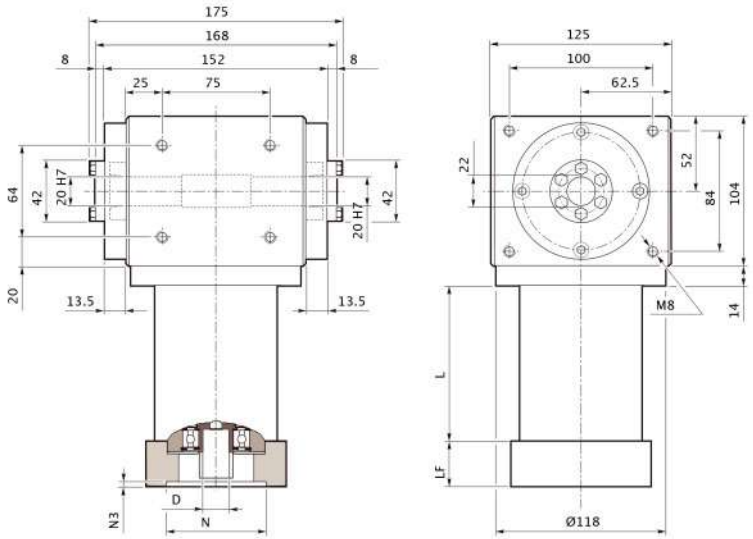
3.3 TR 080

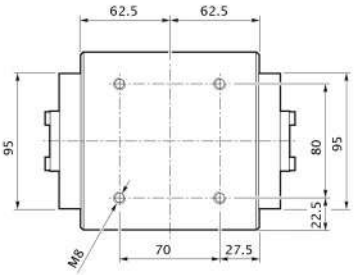


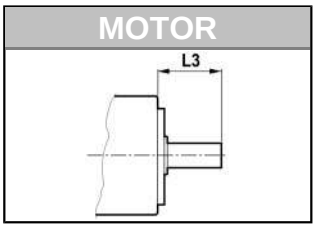


	L	Kg
TR 080 1	83.5	4.0
TR 080 2	108	4.6
TR 080 3	132.5	5.2

MB

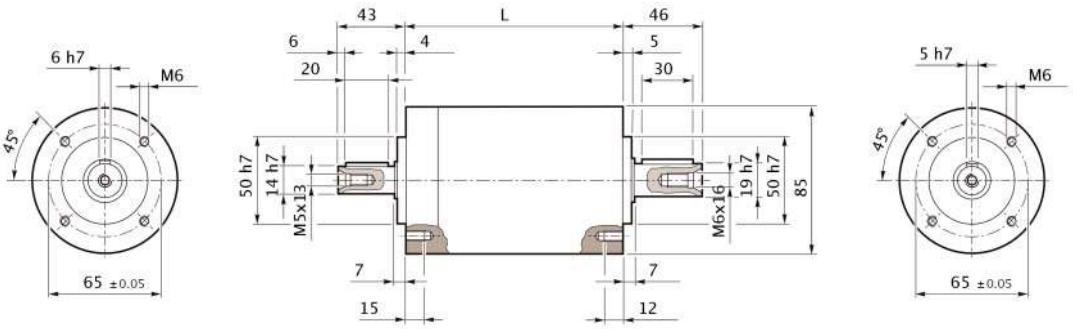






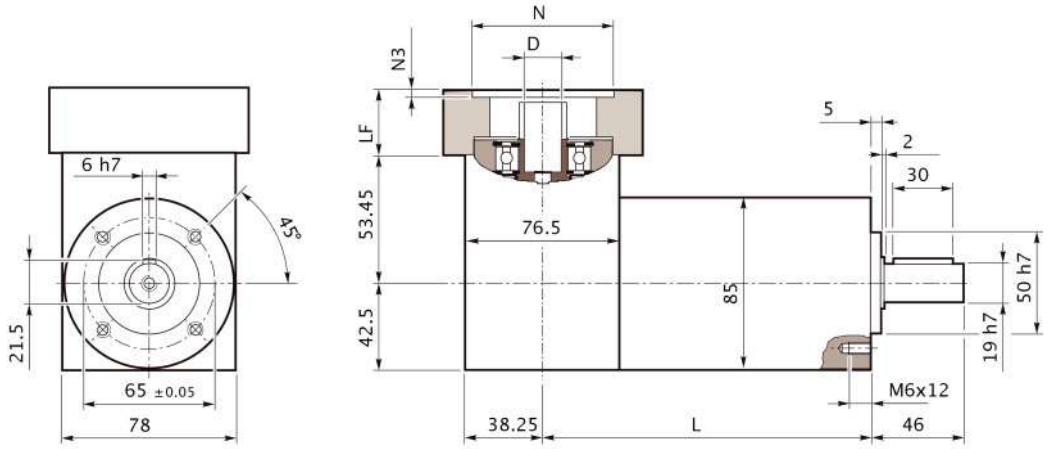
	L	Kg
TR 080 1	83.5	14
TR 080 2	108	15
TR 080 3	132.5	16

IS

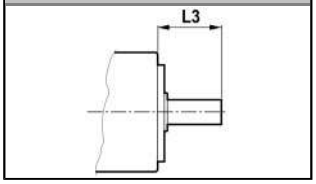


	L	Kg
TR 080 1	105.3	4
TR 080 2	129.8	4.6
TR 080 3	154.3	5.2

G



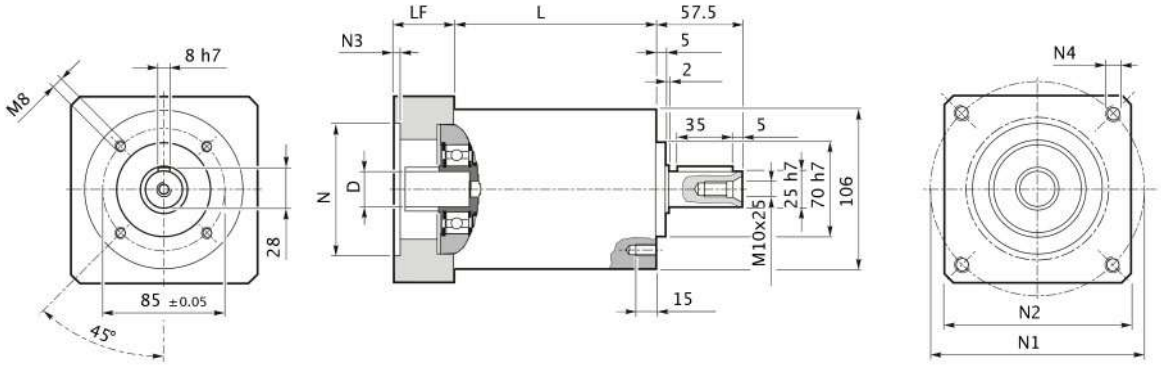
MOTOR

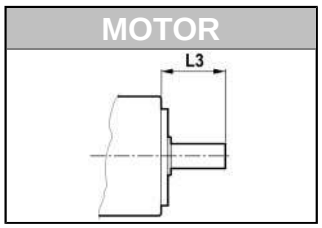


	L	Kg
TR 080 1	143.55	5.2
TR 080 2	168.05	5.8
TR 080 3	192.55	6.4

	D	N	N1	N2	N3	N4	LF	L3
TR 080_ 8...14 40 50 65	⩽ 14 mm	50	65	80	4	M5x16	34	40
TR 080_ 8...14 40 50 65 TH		50	65	80	4	5	34	40
TR 080_ 8...14 40 50 70		50	70	80	4	M4x10	34	40
TR 080_ 9...14 40 50 95		50	95	80	4	M6x10	34	40
TR 080_ 8...14 40 60 75		60	75	65	4	M5x16	34	40
TR 080_ 8...14 40 60 75 TH		60	75	65	4	5	34	40
TR 080_ 8...14 40 73 98.4		73	98.4	85	4	M5x16	34	40
TR 080_ 8...14 40 78 63.5		78	63.5	90	4	Ø6.5	34	40
TR 080_ 8...16 40 60 90	⩽ 16 mm	60	90	80	4	M5x16	34	40
TR 080_ 8...19 40 55.5 125.7	⩽ 19 mm	55.5	125.7	105	4	M6x16	34	40
TR 080_ 8...19 40 70 85		70	85	80	4	M6x20	34	40
TR 080_ 8...19 40 70 85 TH		70	85	80	4	6	34	40
TR 080_ 8...19 40 70 90		70	90	80	4	M5x16	34	40
TR 080_ 8...19 40 80 100		80	100	90	4	M6x16	34	40
TR 080_ 8...19 40 95 115		95	115	100	4	M8x20	34	40
TR 080_ 8...19 40 95 130		95	130	115	4	M8x20	34	40
TR 080_ 8...19 40 110 130		110	130	115	4	M8x20	34	40
TR 080_ 8...19 50 110 145		110	145	120	6.5	M8x20	44	50
TR 080_ 8...19 60 110 145		110	145	120	6.5	M8x20	54	60

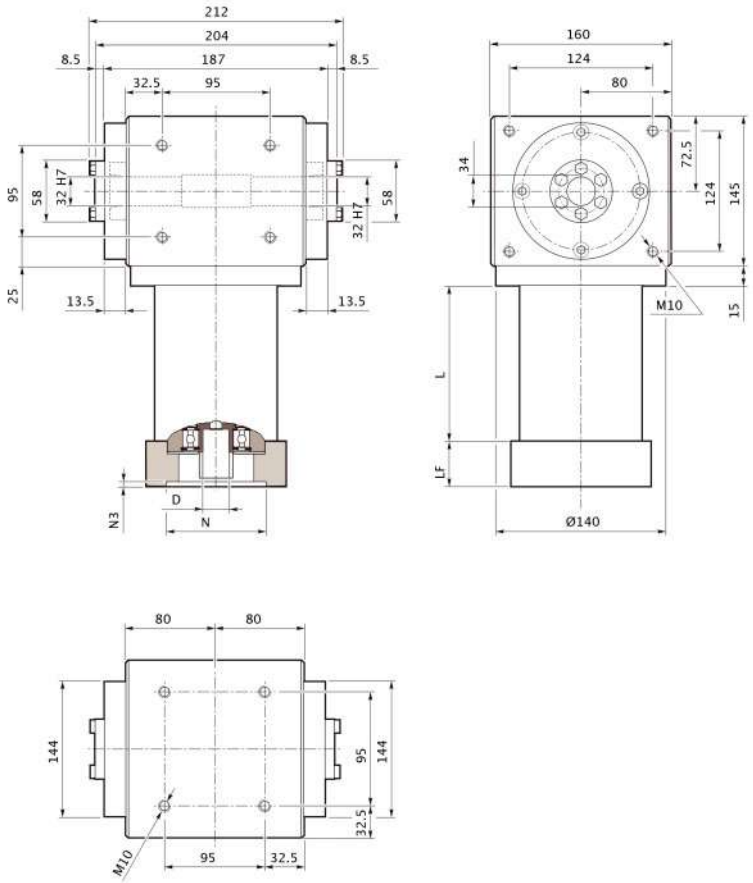
3.4 TR 105

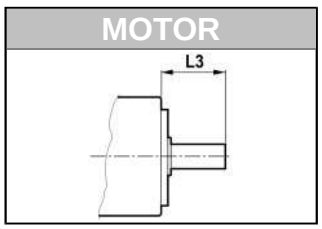




	L	Kg
TR 105 1	107.5	6.5
TR 105 2	140	8.5
TR 105 3	172.5	10.5

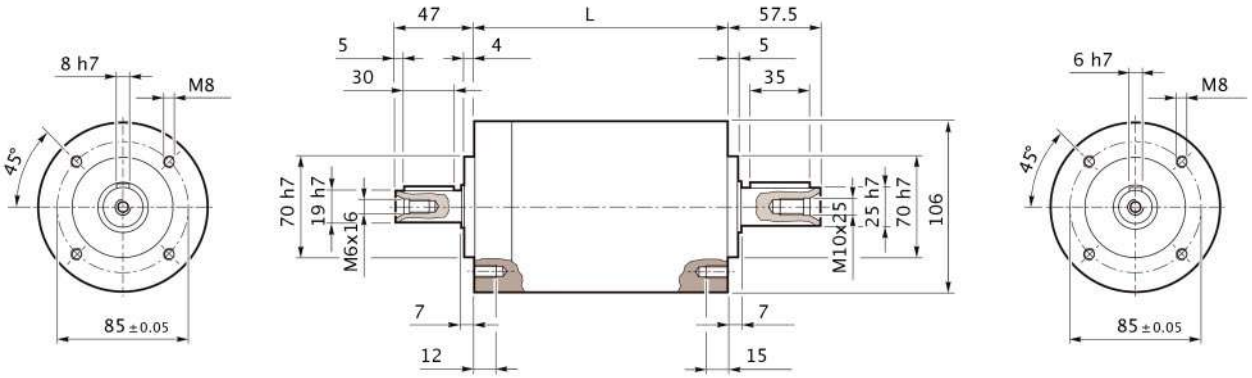
MB





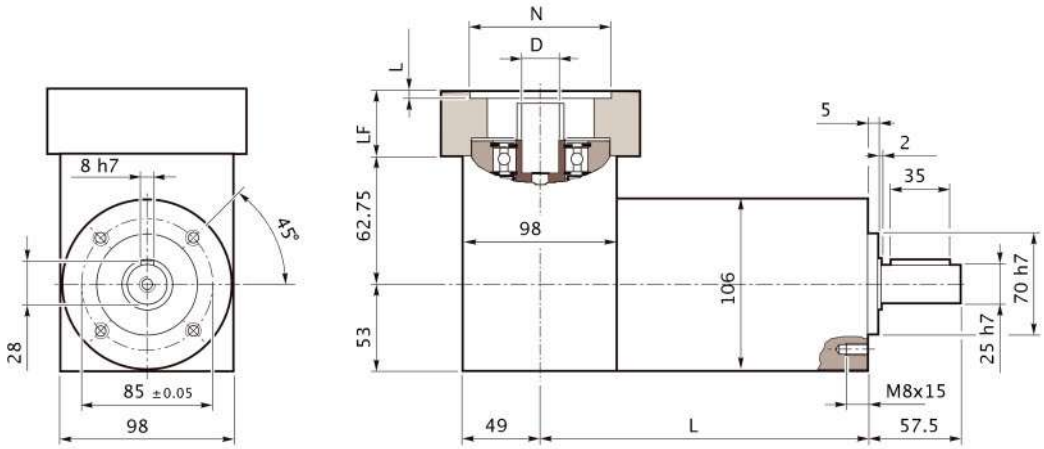
	L	Kg
TR 105 1	107.5	32
TR 105 2	140	34
TR 105 3	172.5	36

IS

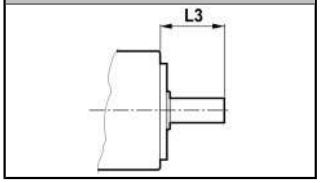


	L	Kg
TR 105 1	121.3	6.5
TR 105 2	153.8	8.5
TR 105 3	186.3	10.5

G



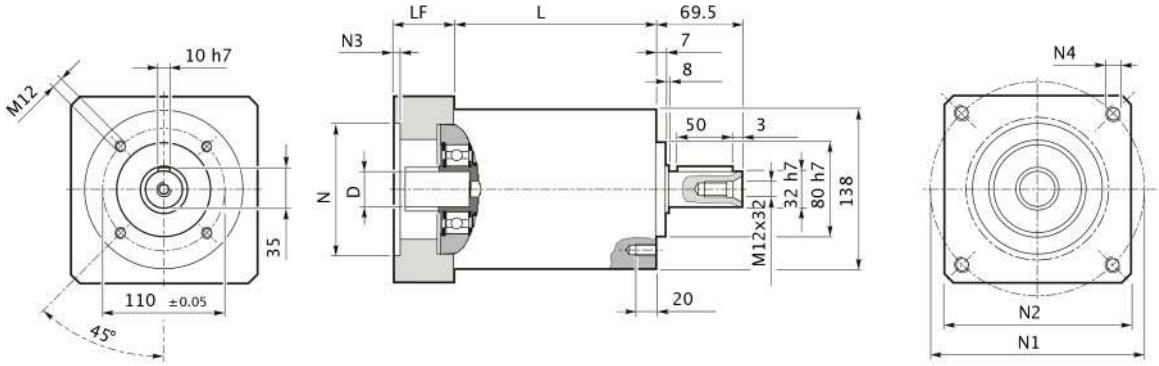
MOTOR

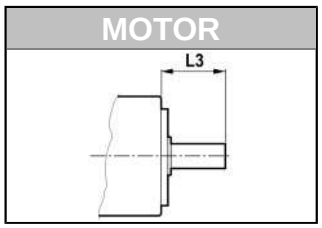


	L	Kg
TR 105 1	170.3	8.5
TR 105 2	202.8	10.5
TR 105 3	235.3	12.5

	D	N	N1	N2	N3	N4	LF	L3
TR 105_ 11...19 40 50 95		50	95	100	5	M6x14	28	40
TR 105_ 11...19 40 55.5 125.7		55.5	125.7	105	5	M6x16	28	40
TR 105_ 11...19 40 60 75		60	75	100	5	M5x14	28	40
TR 105_ 11...19 40 60 75 TH		60	75	100	5	5	33	40
TR 105_ 11...19 40 70 85		70	85	100	5	M6x14	28	40
TR 105_ 11...19 40 70 85 TH	⩽ 19 mm	70	85	100	5	6	33	40
TR 105_ 11...19 40 70 90		70	90	100	5	M5x12	28	40
TR 105_ 11...19 40 80 100		80	100	100	5	M6x16	28	40
TR 105_ 11...19 40 95 115		95	115	100	5	M8x18	28	40
TR 105_ 11...19 40 95 130		95	130	115	5	M8x18	28	40
TR 105_ 11...19 40 110 130		110	130	115	5	M8x18	28	40
TR 105_ 11...24 50 95 115		95	115	100	5	M8x18	38	50
TR 105_ 11...24 50 110 130		110	130	115	6.5	M8x20	38	50
TR 105_ 11...24 50 110 145	⩽ 24 mm	110	145	120	6.5	M8x20	38	50
TR 105_ 11...24 60 110 145		110	145	120	6.5	M8x20	48	60
TR 105_ 11...24 50 130 165		130	165	140	6.5	M10x20	38	50
TR 105_ 11...32 60 130 165	⩽ 32 mm	130	165	140	6.5	M10x25	48	60

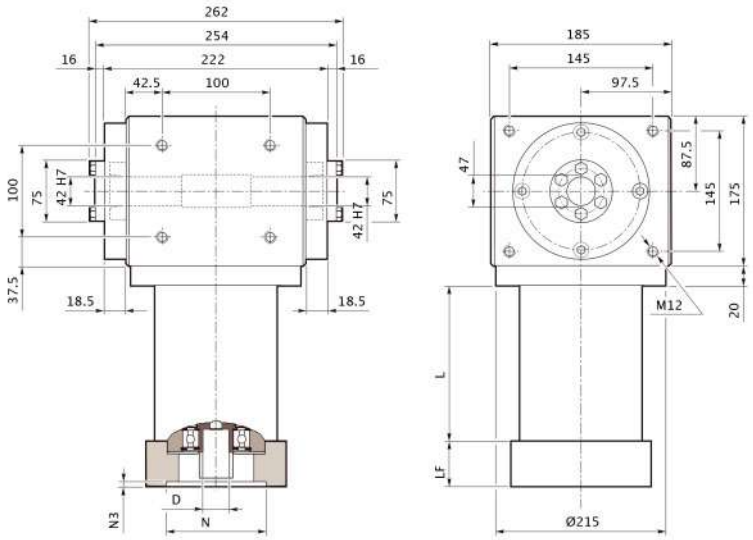
3.5 TR 130

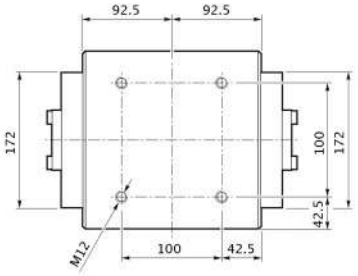


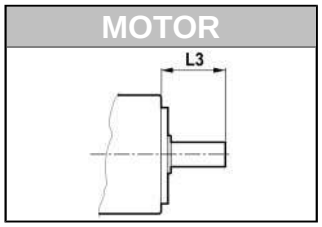


	L	Kg
TR 130 1	126	12
TR 130 2	165.5	15.5
TR 130 3	205	18.5

MB

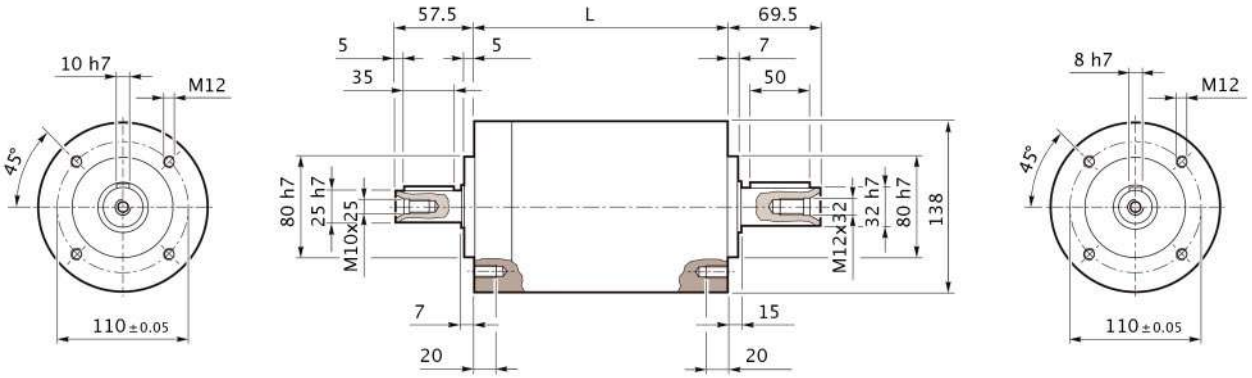






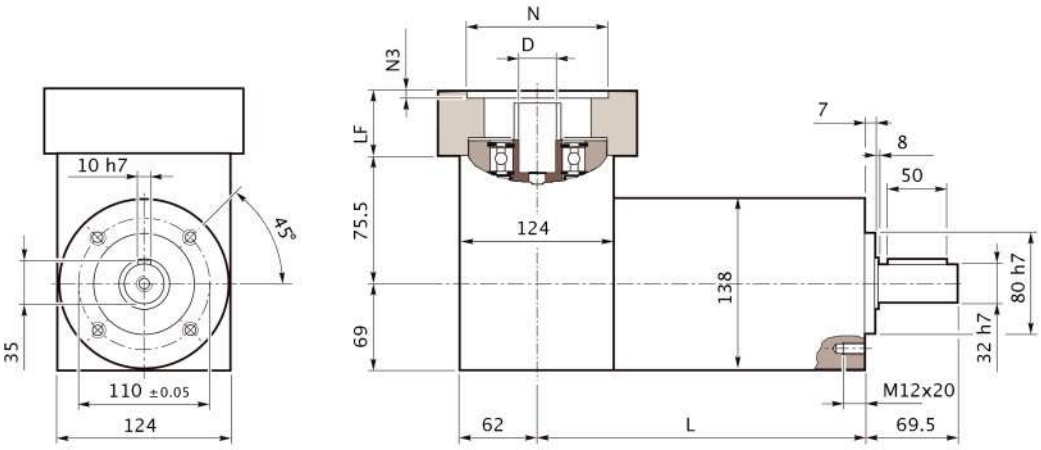
	L	Kg
TR 130 1	126	54
TR 130 2	165.5	58
TR 130 3	205	61

IS

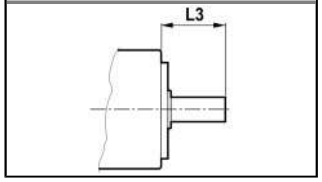


	L	Kg
TR 130 1	151.2	12
TR 130 2	190.7	15.5
TR 130 3	230.2	18.5

G



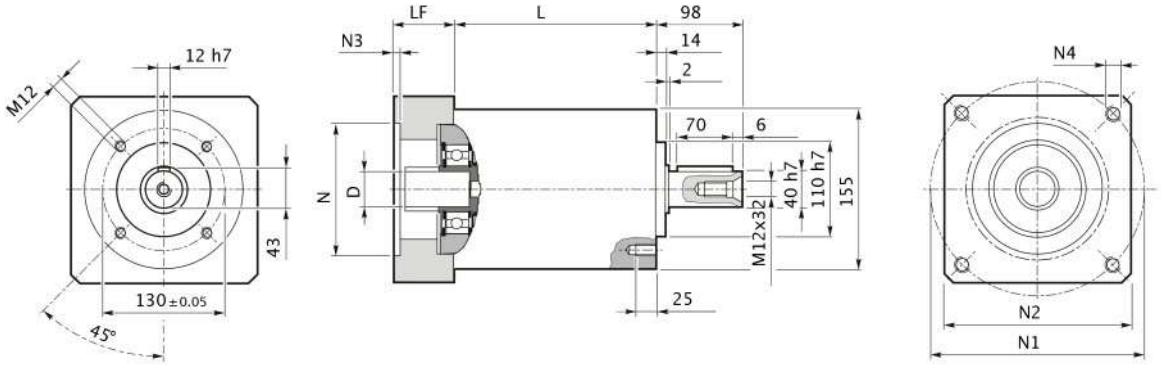
MOTOR

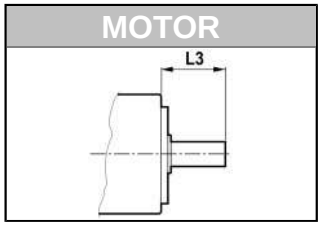


	L	Kg
TR 130 1	213.2	16
TR 130 2	252.7	19.5
TR 130 3	292.2	22.5

	D	N	N1	N2	N3	N4	LF	L3
TR 130_ 14...19 50 55.5 125.7	⩽ 19 mm	55.5	125.7	130	4	M6x15	39.5	50
TR 130_ 14...19 50 80 100		80	100	130	4	M6x15	39.5	50
TR 130_ 14...24 50 95 115	⩽ 24 mm	95	115	130	4	M8x20	39.5	50
TR 130_ 14...24 50 110 130		110	130	130	4	M8x20	39.5	50
TR 130_ 14...24 60 110 145		110	145	130	6.5	M8x20	49.5	60
TR 130_ 14...24 50 130 165		130	165	140	4	M10x20	39.5	50
TR 130_ 14...32 60 130 165	⩽ 32 mm	130	165	140	4	M10x20	49.5	60
TR 130_ 14...32 60 180 215		180	215	190	5.5	M14x25	49.5	60
TR 130_ 14...38 80 114.3 200	⩽ 38 mm	114.3	200	170	5.5	M12x25	69.5	80
TR 130_ 14...38 80 180 215		180	215	190	5.5	M14x25	69.5	80

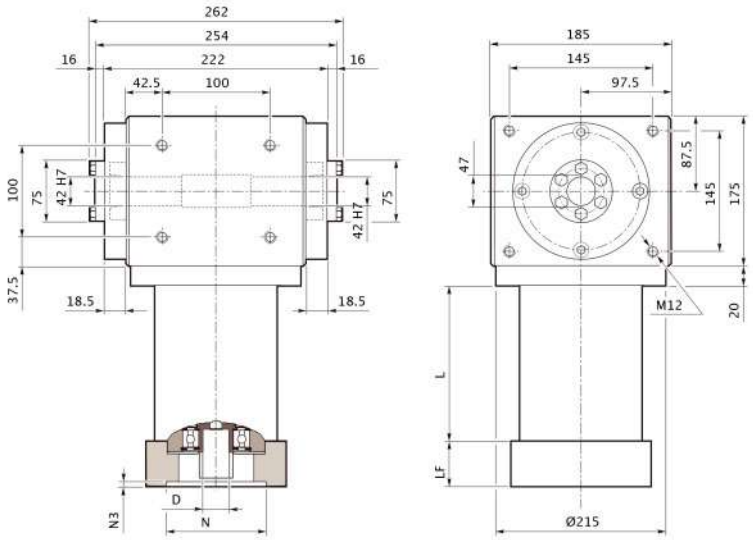
3.6 TR 160

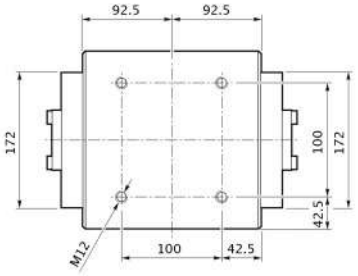


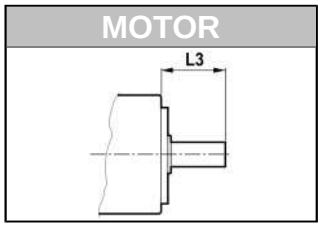


	L	Kg
TR 160 1	130	17
TR 160 2	169.5	21
TR 160 3	209	28

MB

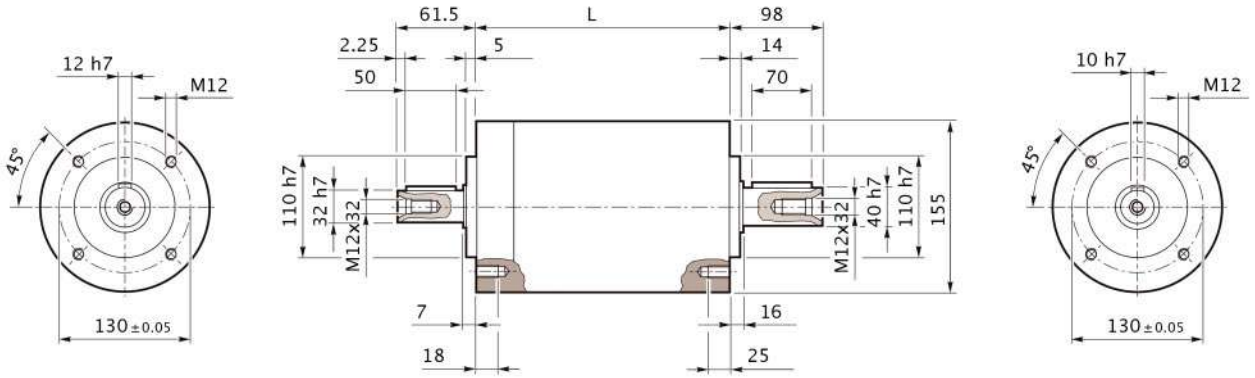






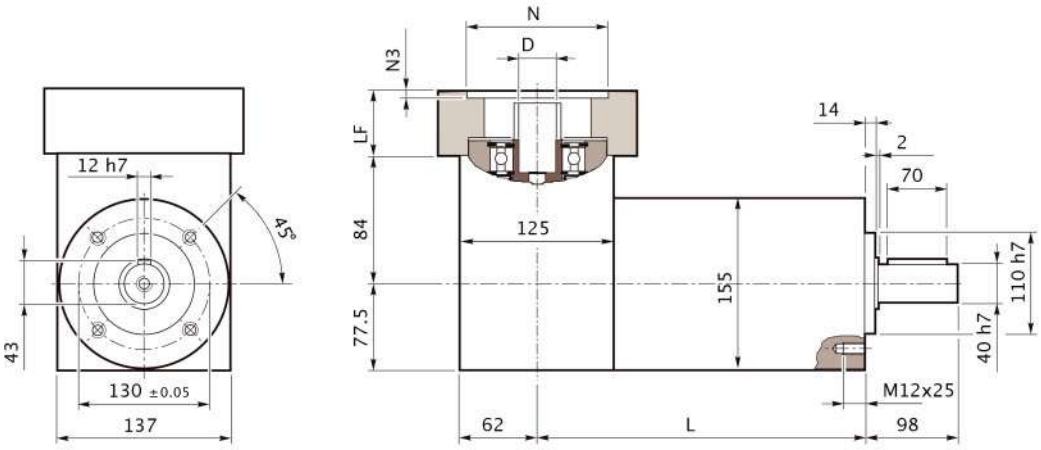
	L	Kg
TR 160 1	130	54
TR 160 2	169.5	58
TR 160 3	209	61

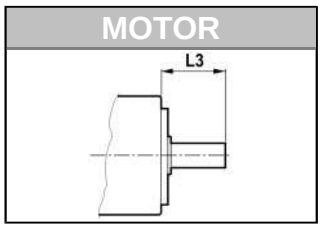
IS



	L	Kg
TR 160 1	155.2	17
TR 160 2	194.7	21
TR 160 3	234.2	28

G

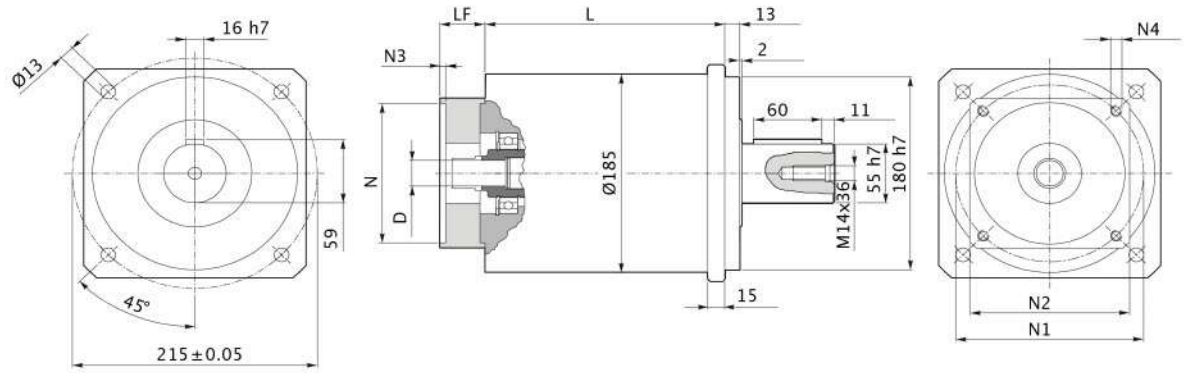




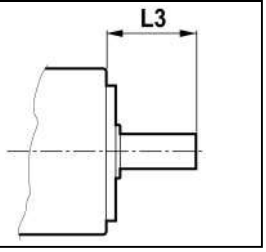
	L	Kg
TR 160 1	218.2	24
TR 160 2	257.7	28
TR 160 3	297.2	34

	D	N	N1	N2	N3	N4	LF	L3
TR 160_ 14...19 50 55.5 125.7	⩽ 19	55.5	125.7	140	5	M6x15	39.5	50
TR 160_ 14...19 50 80 100		80	100	140	5	M6x15	39.5	50
TR 160_ 14...24 50 95 115	⩽ 24	95	115	140	5	M8x20	39.5	50
TR 160_ 14...24 50 110 130		110	130	140	5	M8x20	39.5	50
TR 160_ 14...24 60 110 145		110	145	140	6.5	M8x20	49.5	60
TR 160_ 14...24 50 130 165		130	165	140	5	M10x20	39.5	50
TR 160_ 14...32 60 130 165	⩽ 32	130	165	140	5	M10x20	49.5	60
TR 160_ 14...32 60 180 215		180	215	190	5.5	M14x25	49.5	60
TR 160_ 14...38 80 114.3 200	⩽ 38	114.3	200	170	6.5	M12x25	69.5	80
TR 160_ 14...38 80 180 215		180	215	190	6.5	M14x25	69.5	80

3.7 TR 190



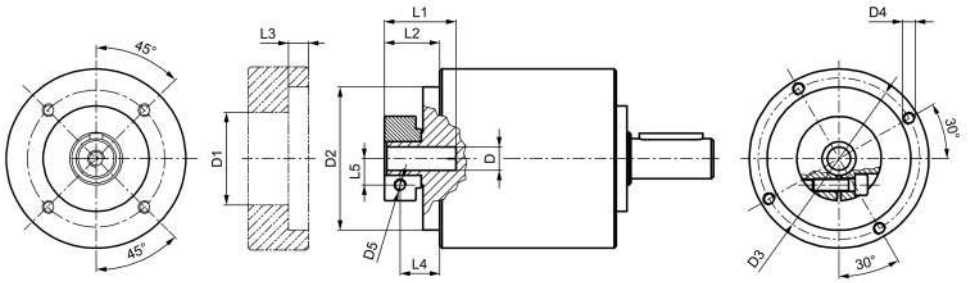
MOTOR



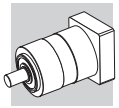
	L	Kg
TR 190 1	158.7	25
TR 190 2	210.4	29
TR 190 3	262.1	34

	D	N	N1	N2	N3	N4	LF	L3
TR 190_ 14...19 50 55.5 125.7	⩽ 19	55.5	125.7	140	5	M6x15	39.5	50
TR 190_ 14...19 50 80 100		80	100	140	5	M6x15	39.5	50
TR 190_ 14...24 50 95 115	⩽ 24	95	115	140	5	M8x20	39.5	50
TR 190_ 14...24 50 110 130		110	130	140	5	M8x20	39.5	50
TR 190_ 14...24 60 110 145		110	145	140	6.5	M8x20	49.5	60
TR 190_ 14...24 50 130 165		130	165	140	5	M10x20	39.5	50
TR 190_ 14...32 60 130 165	⩽ 32	130	165	140	5	M10x20	49.5	60
TR 190_ 14...32 60 180 215		180	215	190	5.5	M14x25	49.5	60
TR 190_ 14...38 80 114.3 200	⩽ 38	114.3	200	170	6.5	M12x25	69.5	80
TR 190_ 14...38 80 180 215		180	215	190	6.5	M14x25	69.5	80

3.8 REDUCTOR SIN BRIDA ATAQUE MOTOR



	D (F7)	D1	D2 (h7)	D3	D4	D5	L1	L2	L3 +0.1 +0.2	L4	L5
TR 053	6 - 6.35 - 7	32.5	50	42.5	M4x8	M4	21.7	13.2	3	8.2	8
	8 - 9 - 9.52 - 10	32.5	50	42.5	M4x8	M4	21.7	13.2	3	8.2	9
	11 - 12 - 12.7	35.5	50	42.5	M4x8	M4	22	13.5	3	8.5	11
	14	35.5	50	42.5	M4x8	M4	26.5	18	3	13	11.5
TR 060	6 - 6.35 - 7	32.5	50	42.5	M4x8	M4	21.7	13.2	3	8.2	8
	8 - 9 - 9.52 - 10	32.5	50	42.5	M4x8	M4	21.7	13.2	3	8.2	9
	11 - 12 - 12.7	35.5	50	42.5	M4x8	M4	22	13.5	3	8.5	11
	14	35.5	50	42.5	M4x8	M4	26.5	18	3	13	11.5
TR 080	8 - 9 - 9.52	38	68	76.5	M6x10	M6	34	26.3	9.5	18.8	10.5
	11 - 12 - 12.7	43	68	76.5	M6x10	M6	34	26.3	9.5	18.8	12.5
	14 - 15.875 - 16 - 17	48	68	76.5	M6x10	M6	34	26.3	9.5	18.8	14.5
	19 - 19.05	51	68	76.5	M6x10	M6	34	26.3	9.5	18.8	16.5
TR 105	11 - 12 - 12.7	43	90	98	M6x15	M6	33.5	20	7.6	12.5	12.5
	14 - 15 - 15.875 - 16	48	90	98	M6x15	M6	33.5	20	7.6	12.5	14.5
	19	51	90	98	M6x15	M6	33.5	20	7.6	12.5	16.5
	22 - 24	56.5	90	98	M6x15	M6	36.5	23	7.6	14	19
	28	67	90	98	M6x15	M8	36.5	23	7.6	14	22.5
	32	71	90	98	M6x15	M8	38	24.5	7.6	15.5	24.5
TR 130	14 - 15.875 - 16	48	113	125.5	M8x15	M6	40	27.5	6	20	14.5
	19	51	113	125.5	M8x15	M6	40	27.5	6	20	16.5
	22 - 24	56.5	113	125.5	M8x15	M6	41	28.5	6	19.5	19
	28	67	113	125.5	M8x15	M8	41	28.5	6	19.5	22.5
	32	71	113	125.5	M8x15	M8	40	27.5	6	18.5	24.5
	35	73	113	125.5	M8x15	M8	50	37.5	11.25	26	26
	38	77.5	113	125.5	M8x15	M8	50	37.5	11.25	26	28
TR 160	14 - 15.875 - 16	48	130	142.5	M8x16	M6	40	27.5	6	20	14.5
	19	51	130	142.5	M8x16	M6	40	27.5	6	20	16.5
	22 - 24	56.5	130	142.5	M8x16	M6	41	28.5	6	19.5	19
	28	67	130	142.5	M8x16	M8	41	28.5	6	19.5	22.5
	32	71	130	142.5	M8x16	M8	40	27.5	6	18.5	24.5
	35	73	130	142.5	M8x16	M8	50	37.5	11.25	26	26
	38	77.5	130	142.5	M8x16	M8	50	37.5	11.25	26	28
TR 190	14 - 16	48	130	142.5	M8x14	M6	45.5	27.5	6	20	14.5
	19	51	130	142.5	M8x14	M6	45.5	27.5	6	20	16.5
	22 - 24	56.5	130	142.5	M8x14	M6	47	29	6	20	19
	28	67	130	142.5	M8x14	M8	47	29	6	20	22.5
	32	71	130	142.5	M8x14	M8	47	29	6	20	24.5
	35	73	130	142.5	M8x14	M8	54.5	36.5	6	25	26
	38	77.5	130	142.5	M8x14	M8	54.5	36.5	6	25	28
	42	92	130	142.5	M8x14	M10	60.5	40	6	25	33
	45	95	130	142.5	M8x14	M10	60.5	40	6	25	33
	48	97	130	142.5	M8x14	M10	60.5	40	6	25	33



ÍNDICE DE REVISIONES R0

DOCUMENTO	SECCIÓN	DESCRIPCIÓN