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Torqmotor™

Series

TE / TJ / TF / TL / TG / TH



ENGINEERING YOUR SUCCESS.

DE Hinweis

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Excellence of Design

The producers of Parker Hannifin's **Torqmotor™** Series motors have a history of manufacturing reliable, precision parts that stretches back over a century. Milestones include the first patent on roller vane rotor sets for low speed, high torque hydraulic motors. That was forty years ago. Today the technological advances continue.

In the Development Laboratory, engineers continuously measure and analyze motor data to move existing products to even higher levels of performance and to develop new products to serve the ever changing needs of our customers. Design integrity is assured by exhaustive testing on endurance stands. To be sure that this translates into superior performance, advanced manufacturing techniques are employed as well.



Excellence of Manufacturing

Central to manufacturing excellence is the understanding that quality parts make quality motors. The instrumentation in our Quality Assurance laboratory includes devices such as coordinate measuring machines, to accurately measure the parts that we manufacture as well as those that we purchase. Quality cannot be inspected in, however. It must be manufactured. Each machine operator is responsible for the quality of the part that comes off that machine. Efficiency is enhanced by our cellular manufacturing techniques. Accuracy is assured by statistical process control methods. Micrometers and specialized gages are at the disposal of the operator. As a final check, every motor is tested before shipment to our customer. Parker understands that our customers cannot produce quality products unless we do.

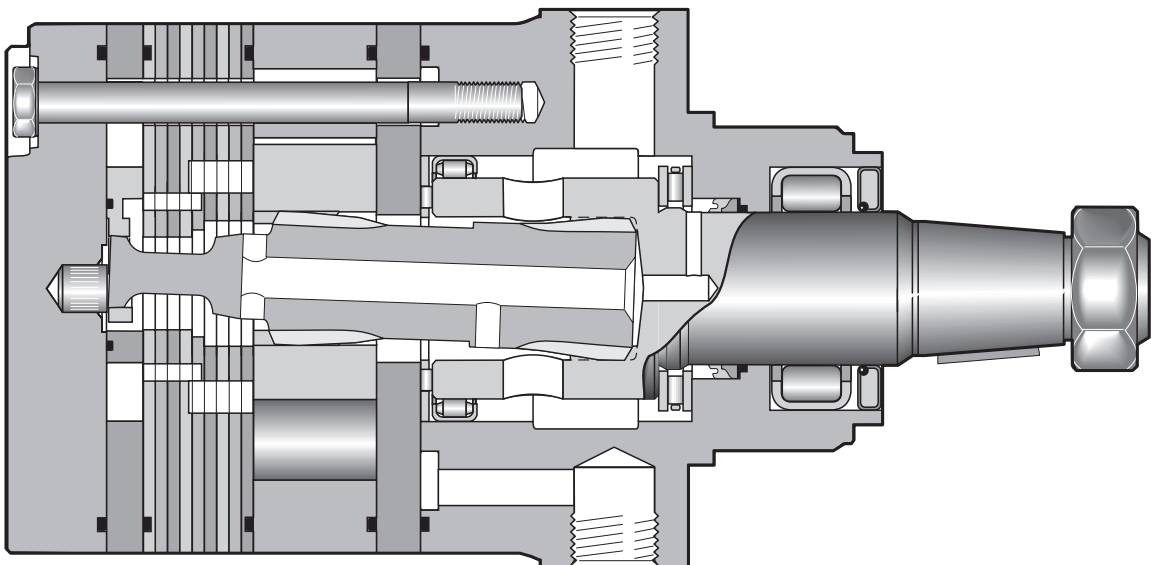


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Series	DE	UK	FR	IT	Page
TF/TG TF/TG/TH	Schockventil ext. Schockventil int.	Crossover relief valve ext. Crossover relief valve int.	Valve antichoc ext. Valve antichoc int.	Valvola anti-urto esterno Valvola anti-urto interno	62 63
TF/TG TF/ TG/TH	Drehzahlsensor Beispiel	Speed sensor Example	Compte-tours Exemple	Contagiri Esempio	64 66
all all all	Optionen Codes Betrieb Produktüber- sicht	Option Codes Operation Motor range	Option Codes Mise en service Gamme de moteurs	Codici opzioni Istruzioni per l' uso Gamma di motori	67 68 69

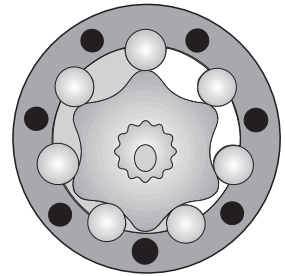
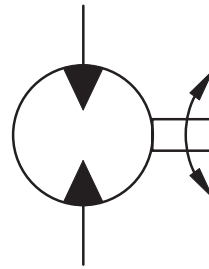
Features / Merkmale / Caractéristique / Carratteristiche

- **Langsamlaufender Gerotor-Motor**
- **Spezielle Orbital-Steuerung**
Geringe interne Leckage
Hoher volumetrischer Wirkungsgrad
- **Rollen im Rotorsatz**
Reduzierte Reibung
Lange Lebensdauer
- **Patentierter Hochdruckwellendichtung**
Keine Leckölleitung
Keine Rückschlagventile
- **Vielzahl von Varianten**
Großer Einsatzbereich
- **Low Speed Gerotor Motor**
- **Zero leak commutation valve**
For greater, more consistent volumetric efficiency
- **Roller vane rotor set**
Reduces friction and internal leakage
Maintaining efficiency throughout the life of the motor
- **A patented high-pressure shaft seal**
No check valves needed
No extra plumbing
- **Wide choice of displacement range, flange and shaft options**
Greater efficiency in systems design to suit your application
- **Moteur lent système Gerotor**
- **Une distribution orbitale particulière assure**
fuites internes minimales
rendements volumétriques élevés
- **Le rotor à rouleaux**
réduit les frottements
augmente la durée de vie
- **Par l'utilisation de joints d'arbre haute pression brevetés**
pas de conduite de drainage
pas de clapets anti-retour
- **Grâce à de nombreuses variantes**
larges domaines d'application
- **Motore orbitale a bassa velocità**
- **Una particolare distribuzione orbitale assicura**
trafilamento ridotto
elevato rendimento volumetrico
- **Con lo statore a rullini**
si riduce l'attrito interno
si mantiene nel tempo l'efficienza del motore
- **Una guarnizione di tenuta ad alta pressione brevettata elimina la necessità**
di una linea di drenaggio esterna
e di valvole di non ritorno
- **Un'ampia gamma di cilindrata, flange ed alberi**
consentono scelte adeguate ad ogni esigenza costruttiva



Performance / Kenndaten / Puissance / Prestazioni

Drehzahl Speed Vitesse de rotation Velocità di rotazione	max. 710 rev/min
Schluckstrom Oil flow Débit d'huile Portata	max. 115 l/min
Eingangsdruck Supply pressure Pression entrée Pressione in entrata	max. 300 bar
Torque Couple Coppia	max. 1490 Nm
Seitenlast Side load Charges latérales Carico radiale	max. 16.000 N See page 51



Motor series TG	Geom. Schluckvolumen Geometric displacement Cylindrée Cilindrata	Max. Drehzahl Max. speed Vitesse de rotation Velocità di rotazione	Max. Schluckstrom Max. oil flow Débit d'huile Portata max	Max. Druckdifferenz Max. differential pressure Chute de pression Caduta di pressione	Max. Eingangsdruck Max. supply pressure Pression maxi entrée Pressione max in entrata	Max. Drehmoment Max. torque Couple maxi Coppia max	Max. Leistungabgabe Max. performance Puissance de sortie Potenza meccanica max	Min. Anlaufmoment Min. starting torque Couple min. fourni au démarrage Coppia min. di spunto
	[cm ³ /U] [cm ³ /rev]	cont / int* [U/min] [rev/min]	cont / int* [l/min]	cont / int* [bar]	max [bar]	cont / int* [Nm]	cont / int* [KW]	cont / int* [Nm]
TG 140	141	530/710	75/100	210/280	300	400/545	33	320/436
TG 170	169	440/575	75/100	210/280	300	485/670	33	388/536
TG 195	195	380/510	75/100	210/280	300	560/770	33	448/616
TG 240	238	320/420	75/100	210/280	300	685/945	32	548/756
TG 280	280	270/350	75/100	210/280	300	800/1100	31	675/880
TG 335	337	225/290	75/100	210/280	300	980/1350	30	784/1080
TG 405	405	185/245	75/100	170/240	300	960/1350	27	791/1145
TG 475	477	160/240	75/115	140/210	300	960/1400	28	768/1120
TG 530	529	140/215	75/115	140/170	300	1050/1280	23	874/1091
TG 625	613	120/185	75/115	120/160	300	1040/1360	20	895/1165
TG 785	786	95/145	75/115	100/140	300	1150/1490	17	991/1341
TG 960	959	78/119	75/115	70/100	300	925/1390	12	763/1177

*int. =

Intermittierende Werte maximal: 10% von jeder Betriebsminute.

Intermittent operation rating applies to 10% of every minute.

Fonctionnement interm.: 10% max. de chaque minute d'utilisation.

Servizio intermittente: 10% max di ogni minuto di utilizzazione.

** Druckdifferenz Δp zwischen Ein- und Ausgang

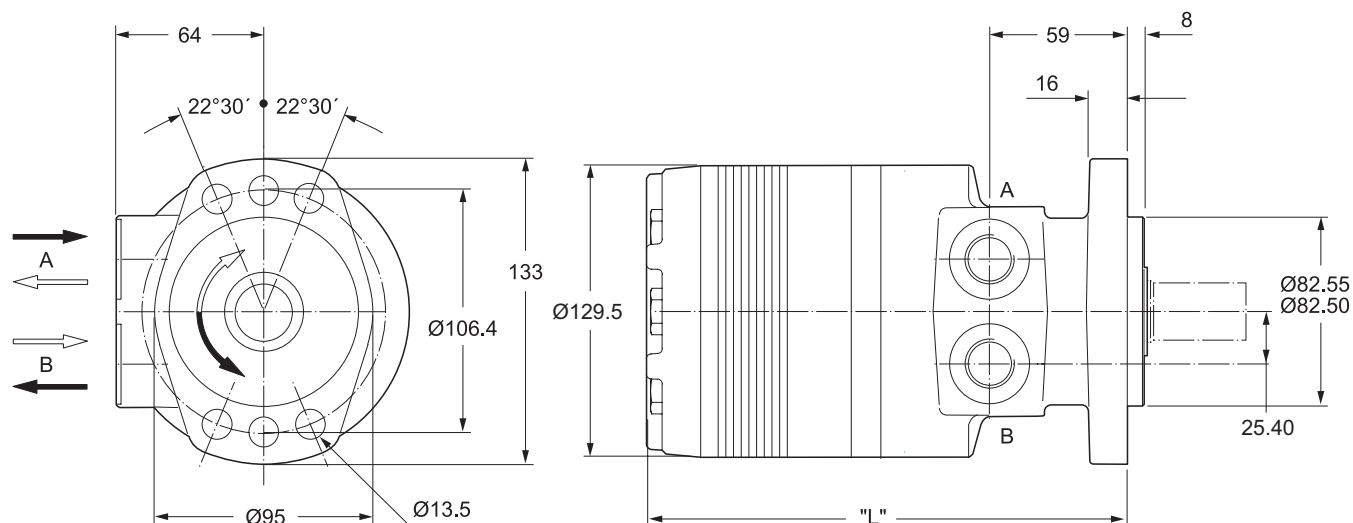
** Pressure difference is Δp between input and output

** La différence de pression est Δp entre l'entrée et la sortie

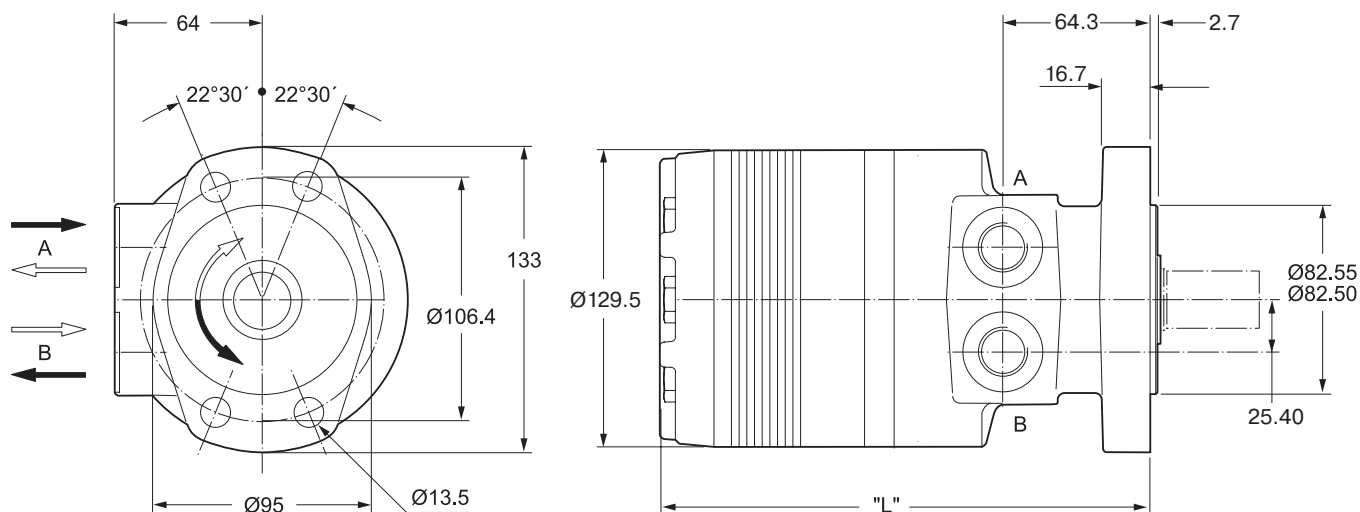
** La differenza di pressione corrisponde al Δp tra ingresso e uscita

Housing / Gehäuse / Carter / Corpo

Code E

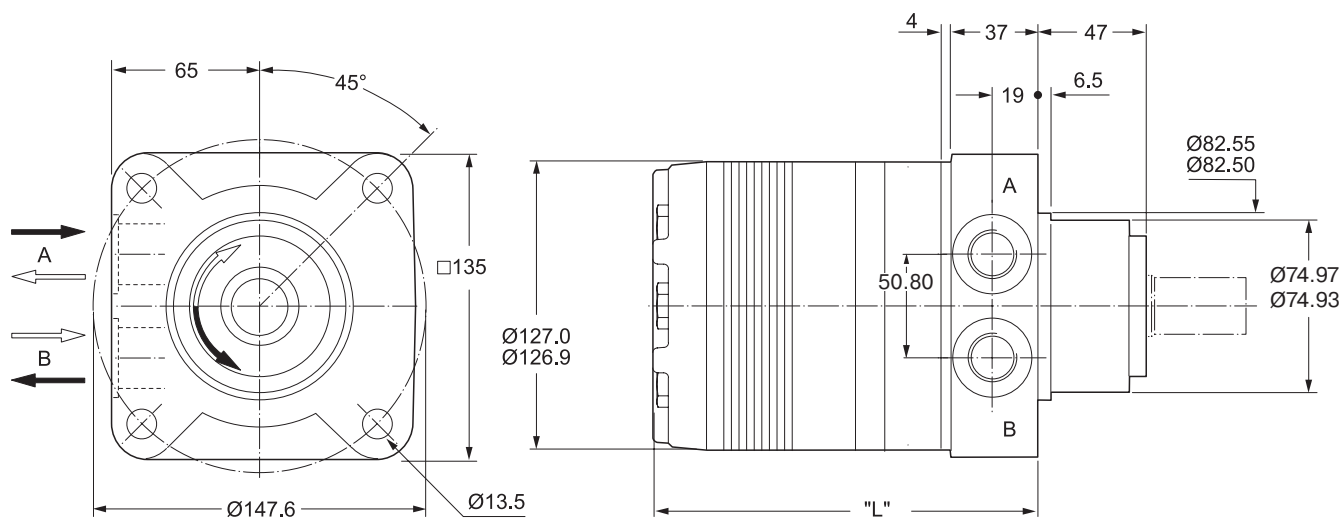


Code M

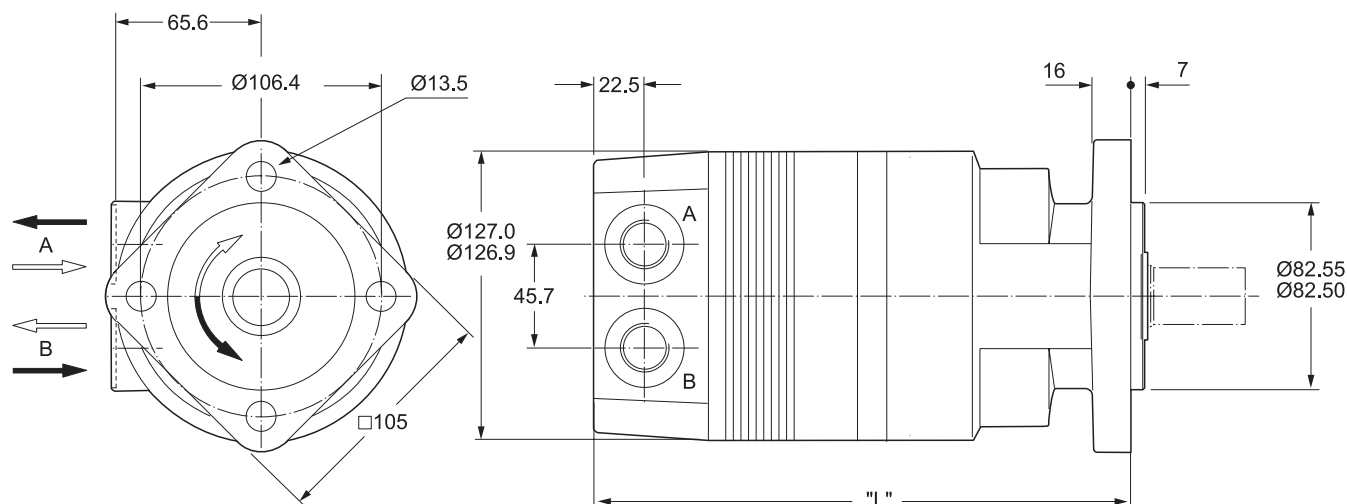


		Series TG											
		140	170	195	240	280	335	405	475	530	625	785	960
Gewicht / Weight Poids / Peso [kg]		14.2	14.5	14.7	15.1	15.5	15.9	16.5	17.2	17.9	18.6	20.2	22.0
Code E	„L“ [mm]	191	194	197	202	207	213	220	229	235	245	264	283
Code M	„L“ [mm]	196	199	202	208	212	218	225	234	240	250	269	288

Code H



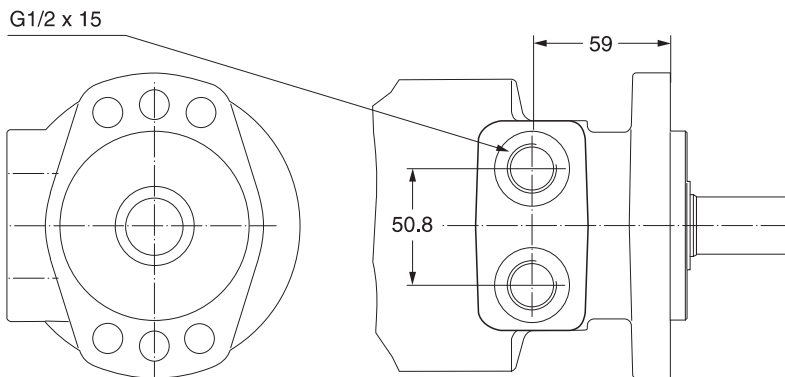
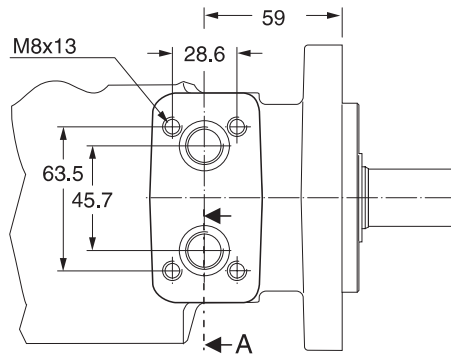
Code V



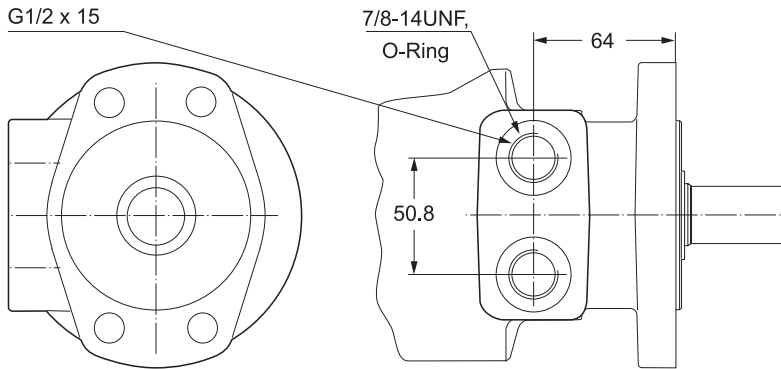
		Series TG											
		140	170	195	240	280	335	405	475	530	625	785	960
Gewicht / Weight Poids / Peso [kg]		16.1	16.3	16.6	17.0	17.4	17.8	18.4	19.0	19.8	20.5	22.0	23.7
Code H	„L“ [mm]	150	154	157	162	166	173	180	188	195	204	223	242
Code V	„L“ [mm]	217	220	224	228	233	238	246	255	262	272	290	309

Front Ports / Anschlüsse vorn / Orifices avant / Connessioni anteriori

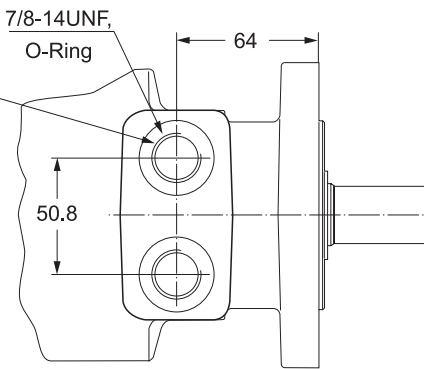
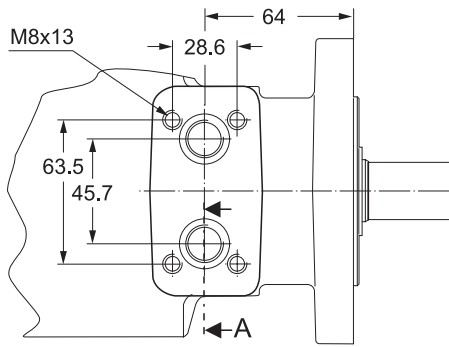
Code W

**Code: N**

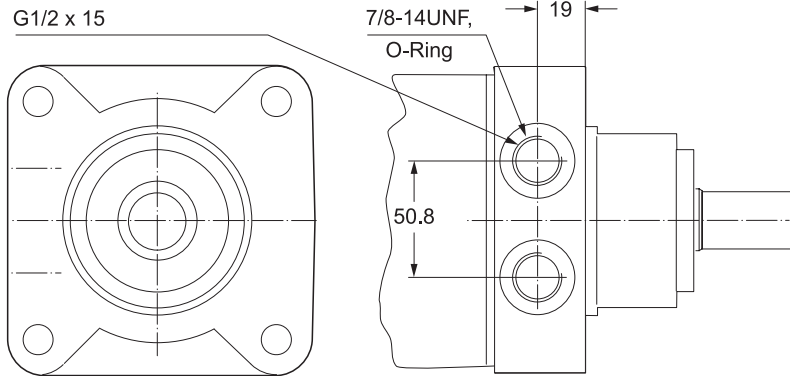
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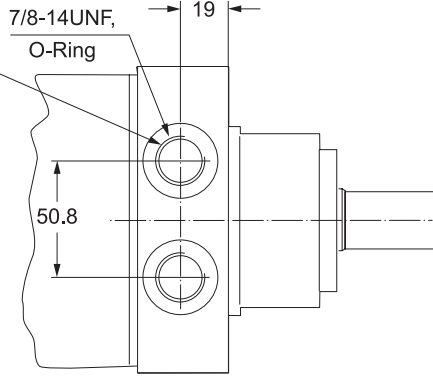
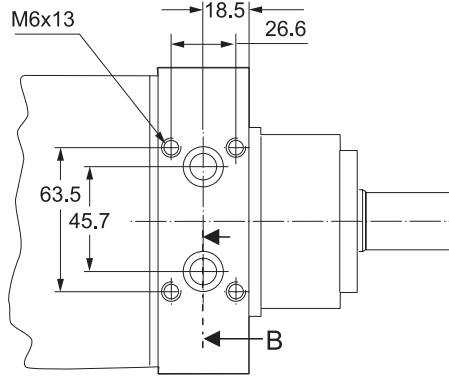
Code V

**Code N**

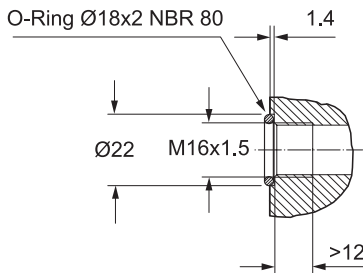
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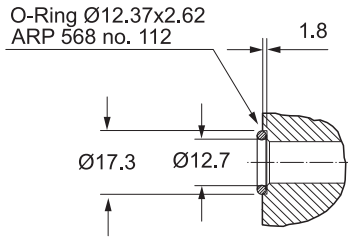
Code V

**Code K**

Section A



Section B



Zum Motor mit Universalanschluss werden
2 O-Ringe geliefert.

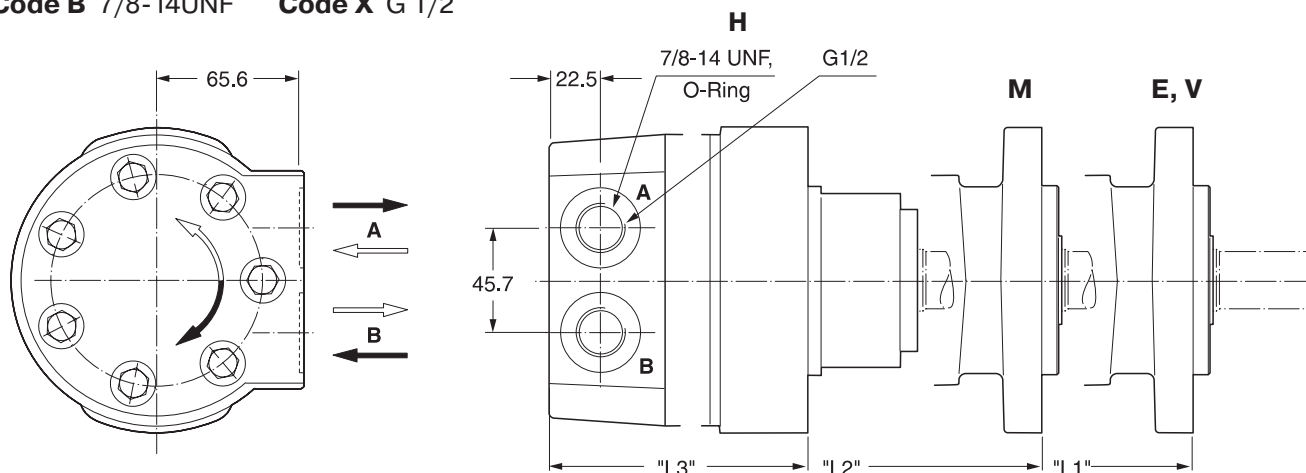
Motor with manifold mount is supplied with 2 O-rings.

Deux joints toriques sont livrés avec les moteurs au plan de raccordement universel.

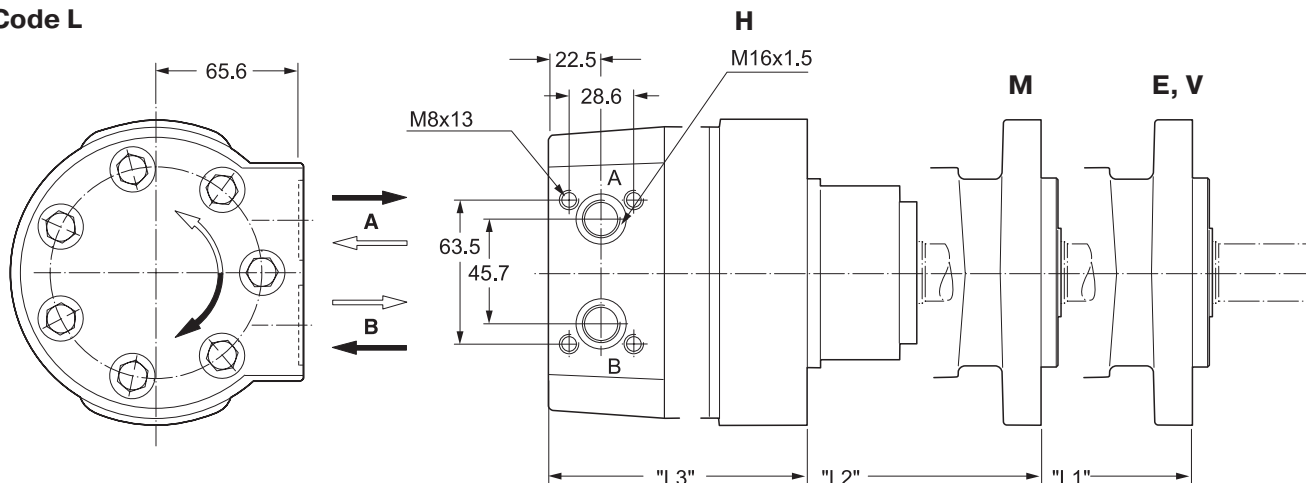
Il blocchetto connessioni è corredato da 2
OR.

Rear Ports / Anschlüsse hinten / orifices arrière/ Connessioni posteriori

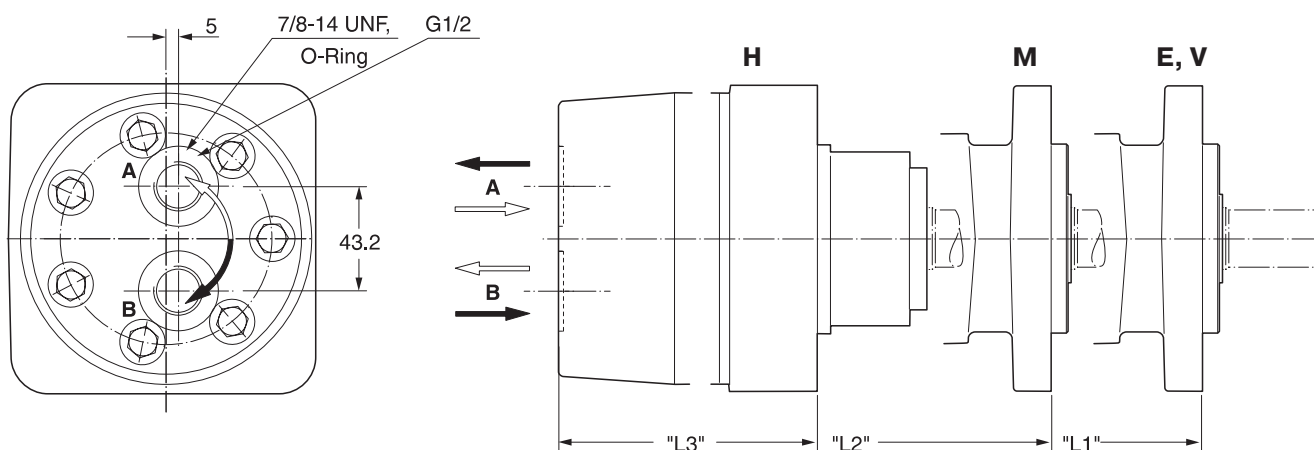
Code B 7/8-14UNF **Code X** G 1/2



Code L



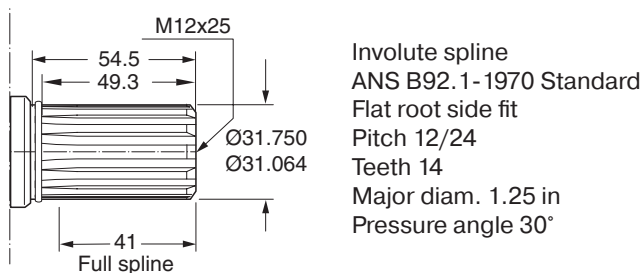
Code A 7/8-14UNF **Code Y** G 1/2



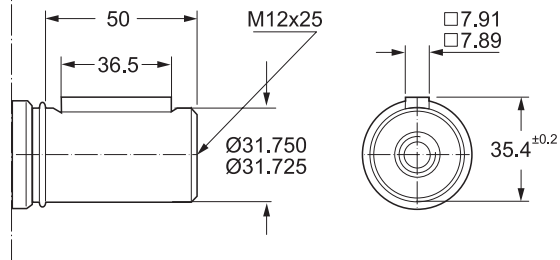
		Series TG											
		140	170	195	240	280	335	405	475	530	625	785	960
Gewicht / Weight Poids / Peso [kg]		16.1	16.3	16.6	17.0	17.4	17.8	18.4	19.0	19.8	20.5	22.0	23.7
Code B, X, L A, Y	„L1“ [mm]	216	219	222	227	232	238	245	254	260	270	289	308
	„L2“ [mm]	221	224	227	232	237	243	250	259	265	275	294	313
	„L3“ [mm]	175	179	182	187	191	198	205	213	220	229	247	267

Coupling shaft / Abtriebswelle / Arbore / Alberi

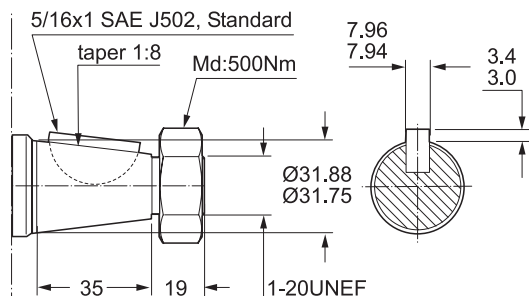
Code 44



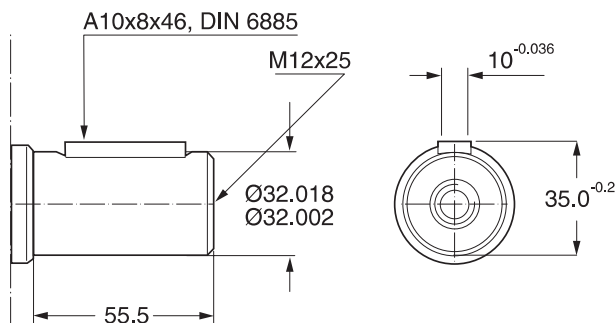
Code 45



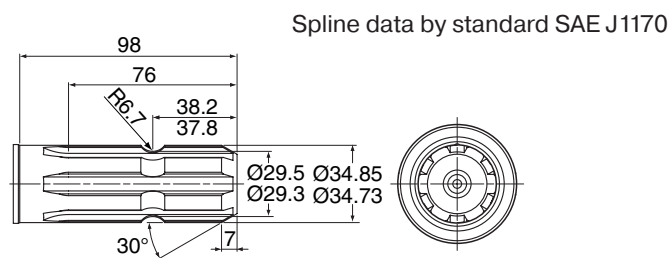
Code 08



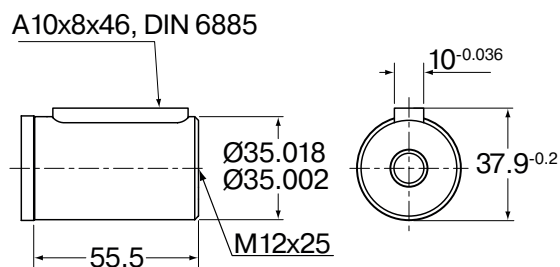
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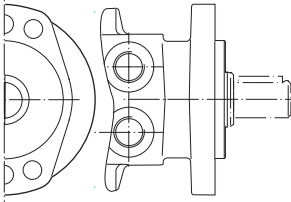
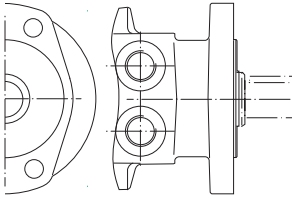
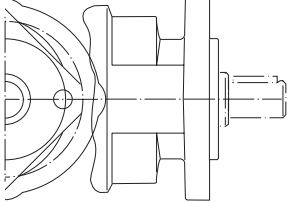
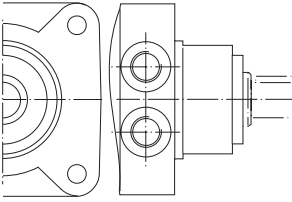
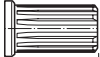
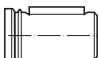
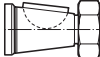
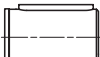


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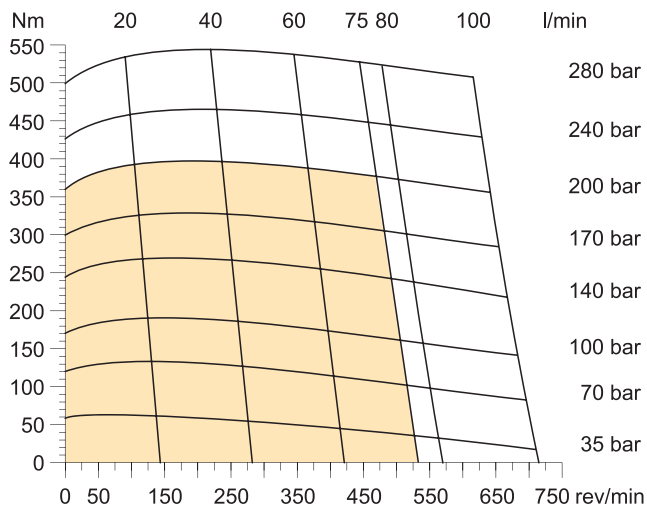
Code 94



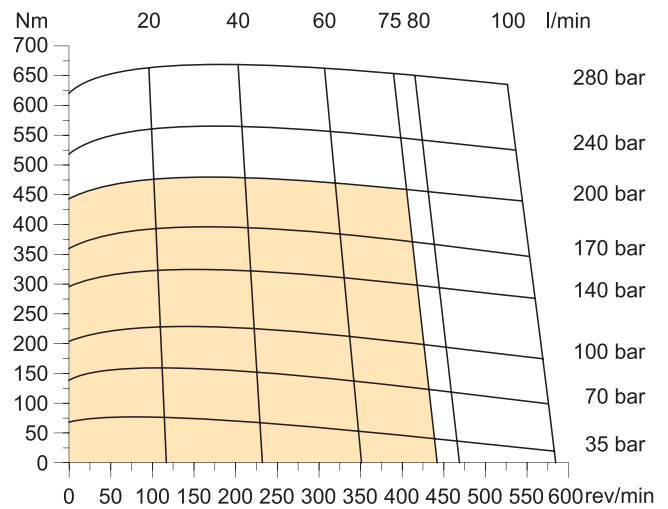
	E	M	V	H
				
Code 44	 65	 60	 64	 105
Code 45	 65	 60	 64	 105
Code 08	 67	 62	 66	 107
Code 46	 65	 60	 64	 105
Code 92	 106	 101	 105	 146
Code 94	 65	 60	 64	 105

Diagrams / Diagramme / Diagrammes / Diagrammi

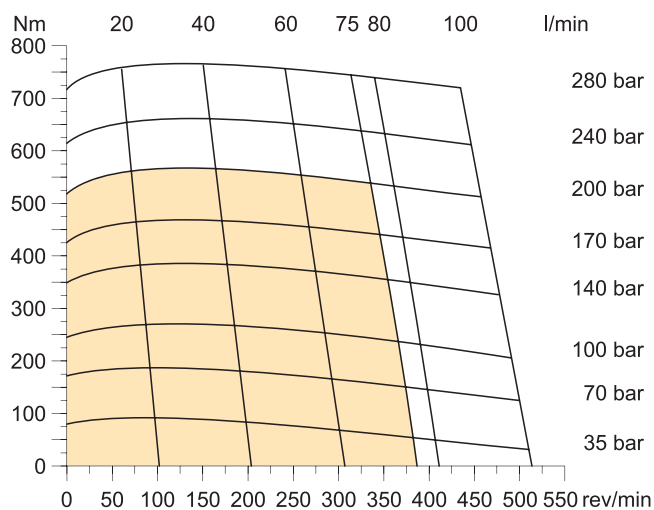
TG 140



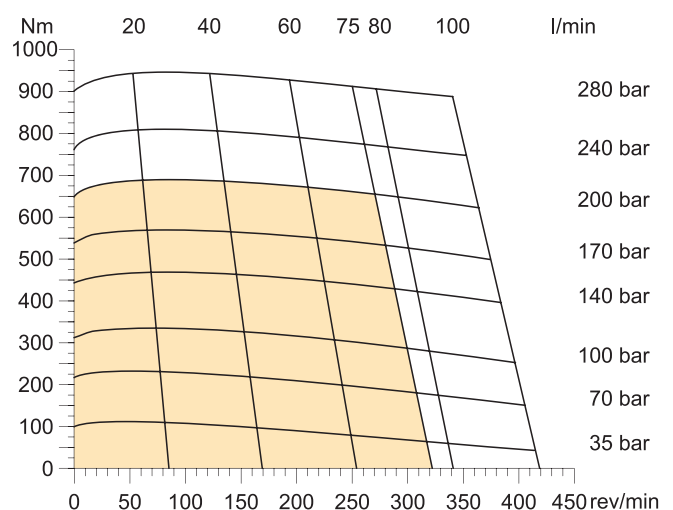
TG 170



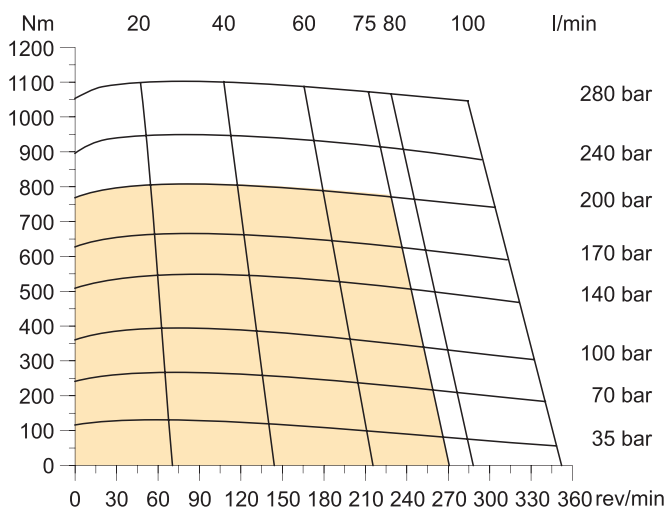
TG 195



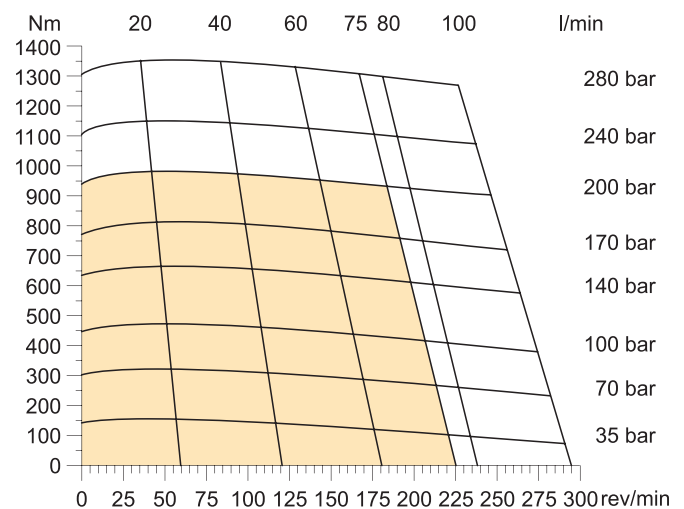
TG 240



TG 280



TG 335



Cont.

Int.

int. =

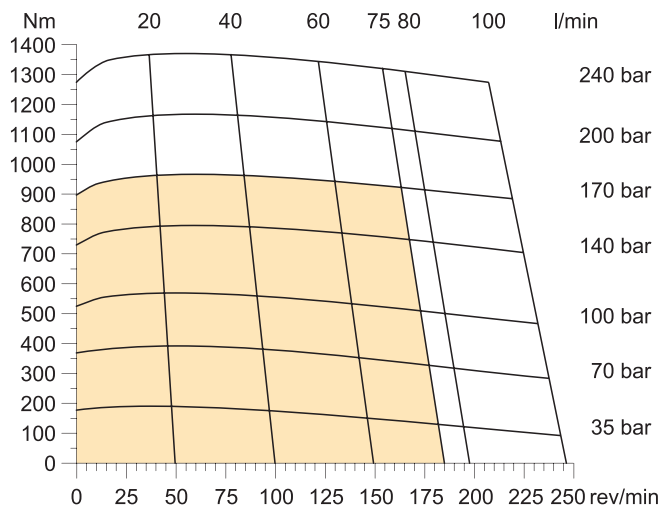
Intermittierende Werte maximal: 10% von jeder Betriebsminute.

Intermittent operation rating applies to 10% of every minute.

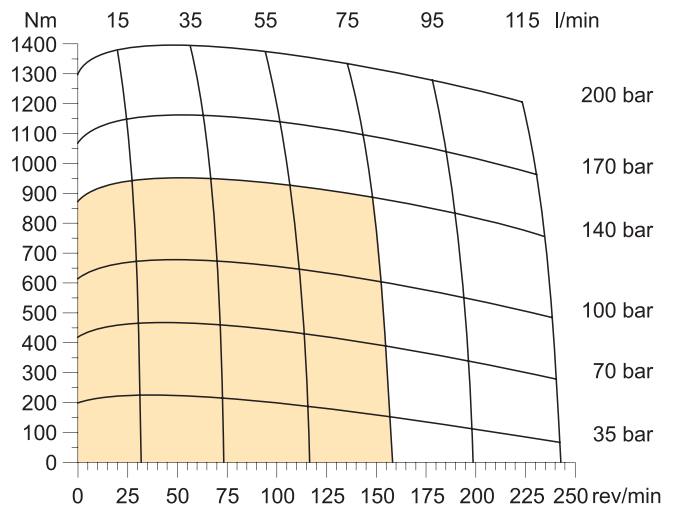
Fonctionnement interm.: 10% max. de chaque minute d'utilisation.

Servizio intermittente: 10% max di ogni minuto di utilizzazione.

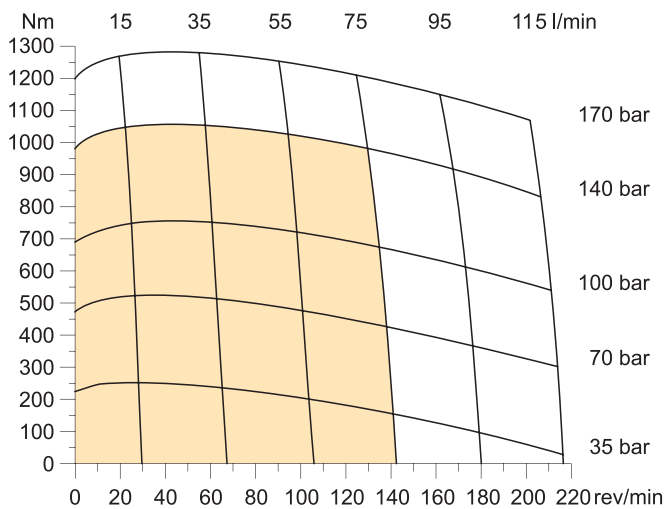
TG 405



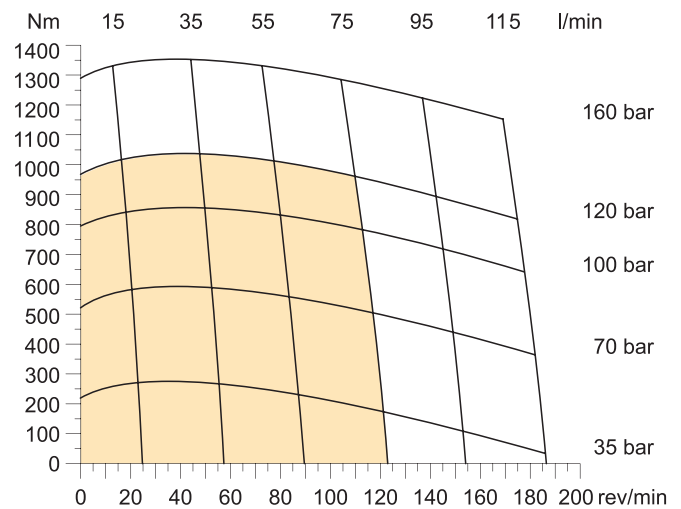
TG 475



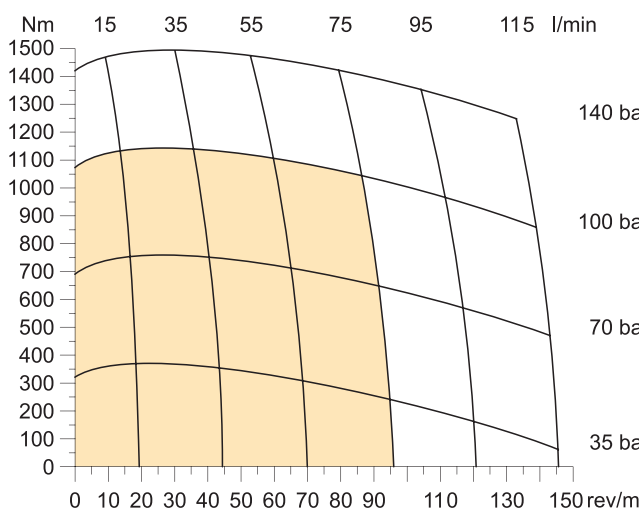
TG 530



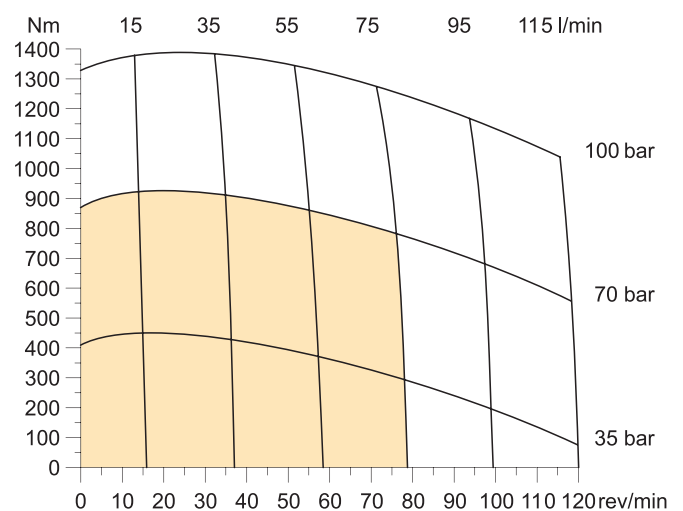
TG 625



TG 785



TG 960



■ Cont.

□ Int.

int. =

Intermittierende Werte maximal: 10% von jeder Betriebsminute.

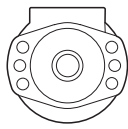
Intermittent operation rating applies to 10% of every minute.

Fonctionnement interm.: 10% max. de chaque minute d'utilisation.

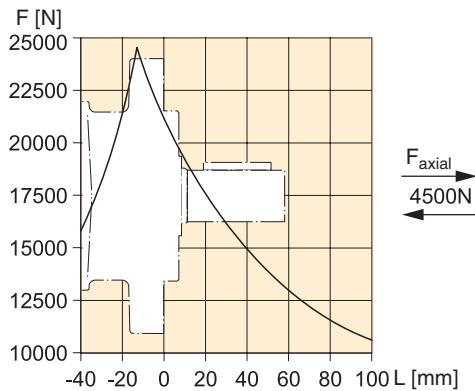
Servizio intermittente: 10% max di ogni minuto di utilizzazione.

Life Time / Lebensdauer / Durée de vie / Durata

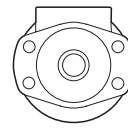
Code E



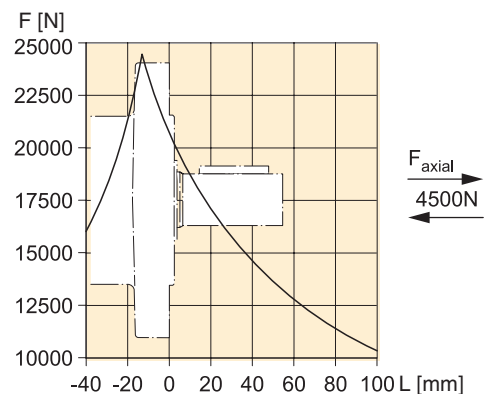
$$L_h = \frac{\left(\frac{670000}{F_R \cdot \left(1.10 + \frac{L}{88\text{mm}} \right)} \right)^{3.3}}{n}$$



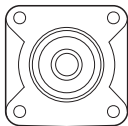
Code M



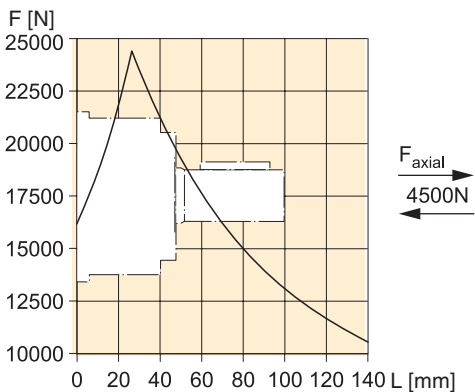
$$L_h = \frac{\left(\frac{670000}{F_R \cdot \left(1.16 + \frac{L}{88\text{mm}} \right)} \right)^{3.3}}{n}$$



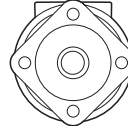
Code H



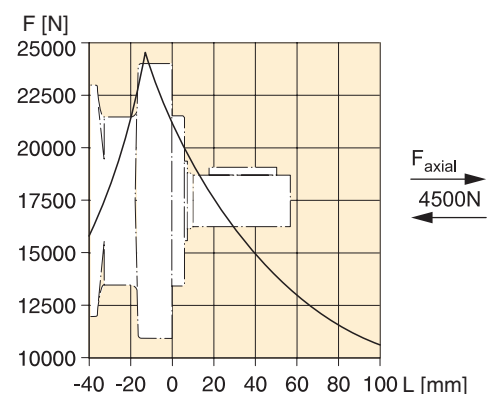
$$L_h = \frac{\left(\frac{670000}{F_R \cdot \left(0.56 + \frac{L}{88\text{mm}} \right)} \right)^{3.3}}{n}$$



Code V



$$L_h = \frac{\left(\frac{670000}{F_R \cdot \left(1.11 + \frac{L}{88\text{mm}} \right)} \right)^{3.3}}{n}$$



Die Lebensdauer der Radiallager (L_h in Stunden) lässt sich nach folgender Formel berechnen. Die Größe F_R ist durch die mechanische Festigkeit der Abtriebswelle begrenzt (siehe Diagramm). Das Maß "L" ist das Längenmaß vom Gehäuseflansch bis zum Angriffspunkt der Radialkraft F_R .

Life time (L_h in hours) of the radial bearings can be calculated with the following formula. The value F_R is limited by the mechanical strength of the shaft (see diagram). The measurement "L" is the length from the housing flange up to the point of impact of the radial force F_R .

La durée de vie des roulements radiaux (L_h en heures) peut être calculée par les formules suivantes. La grandeur F_R est limitée par les résistances mécaniques de l'arbre de sortie (voir diagramme). La cote "L" est la longueur entre la bride du carter jusqu'au point d'appui de l'effort radial F_R .

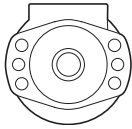
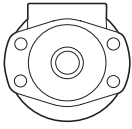
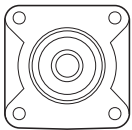
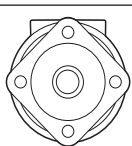
La durata dei cuscinetti (L_h in ore) può essere calcolata con la seguente formula. Il valore F_R è limitato dalla resistenza meccanica dell'albero (vedi diagramma). La quota "L" è la distanza tra la flangia del corpo ed il punto di applicazione della forza radiale F_R .

Vorstehende Formeln gelten für eine B10-Lebensdauer.
 The preceding formulas are valid for a B10 duration of life.
 Les formules précédentes sont valables pour une durée de vie B10.
 Le formule precedenti sono valide per una durata della vita B10.

L_h = [h]
 L = [mm]
 F_R = F [N]
 n = [rev/min]

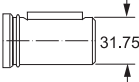
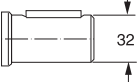
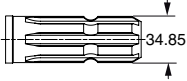
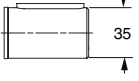
TG							A	A	A	B
Serie Series Série Serie	Schluckvolumen Displacement Cylindrée Cilindrata	Gehäuse Housing Carter Corpo motore	Anschluss Ports Plan de raccordement Conessioni	Welle Shaft Arbre Albero	Drehrichtung Direction of rotation Direction de rotation Direzione di rotazione	Option	For further options different to standard 'AAAB' see page 67.			

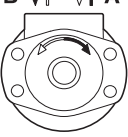
Code	cm ³ /rev
0140	140
0170	169
0195	195
0240	237
0280	280
0335	337
0405	405
0475	476
0530	529
0625	624
0785	786
0960	958

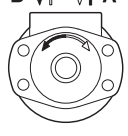
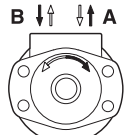
Code	Housing
E	
M	
H	
V ¹⁾	

Code	Front port
W	G 1/2
V	7/8-14 UNF O-Ring
N ²⁾	Universal-M8x13
K ³⁾	Universal-M6x12

Code	Rear port
Y	G 1/2 Axial
A	7/8-14 UNF Axial
X	G 1/2 Radial
B	7/8-14 UNF Radial
L	Universal Radial M8x13

Code	Shaft
44	 Pitch 12/24
45	 31.75
08	
46	 32
92	 34.85
94	 35

Code	Front port
0	 Standard
1	

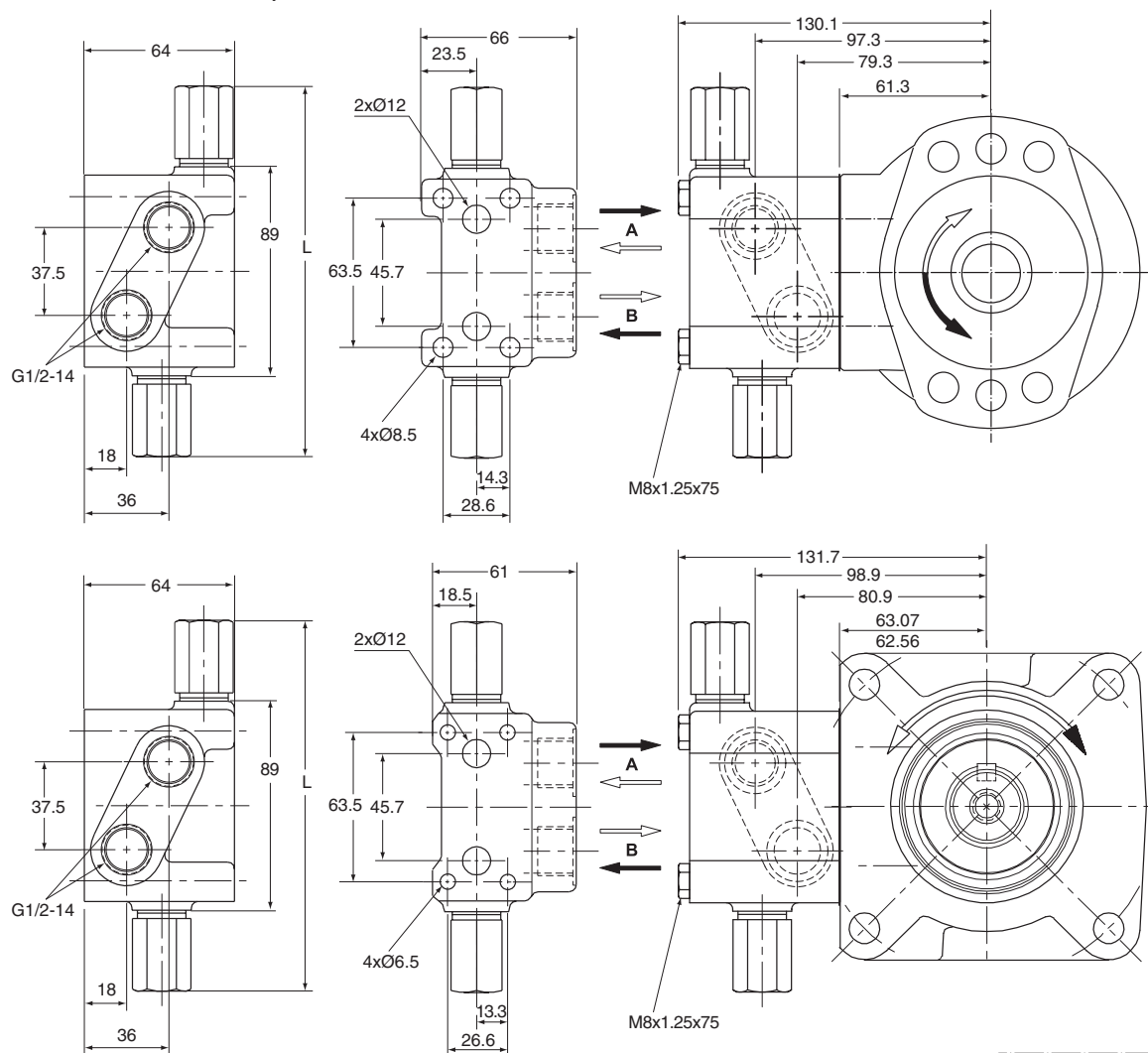
Code	Rear port
0	 Standard
1	

¹⁾Nur verfügbar mit Endanschluss
Only possible with rear port
Possible seulement avec orifice arrière
Possible solo con connessioni posteriori

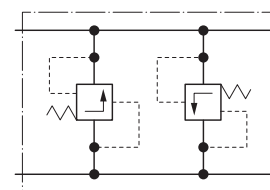
²⁾Nicht verfügbar für Gehäuse "H"
Not possible for housing "H"
Pas disponible pour carter "H"
Non Disponibile con il corpo codice "H"

³⁾Nicht verfügbar für Gehäuse "M, E, V"
Not possible for housing "M, E, V"
Pas disponible pour carter "M, E, V"
Non disponibile con il corpo codice "M, E, V"

**Crossover Relief Valve external / Crossover Überdruckventil extern /
Valve antichoc externe / Valvola anti-urto esterno**



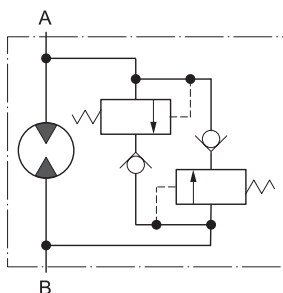
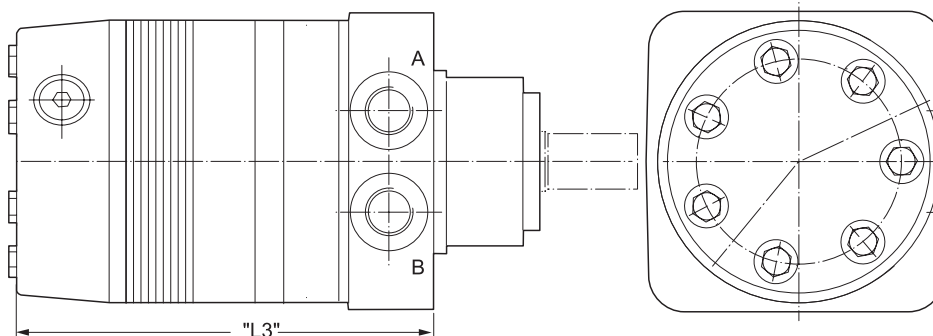
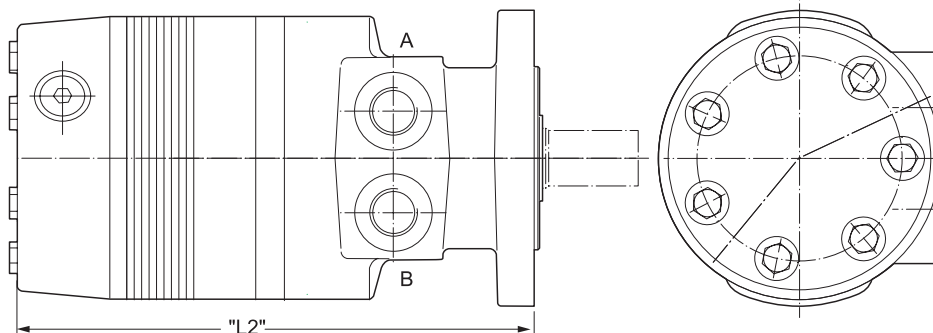
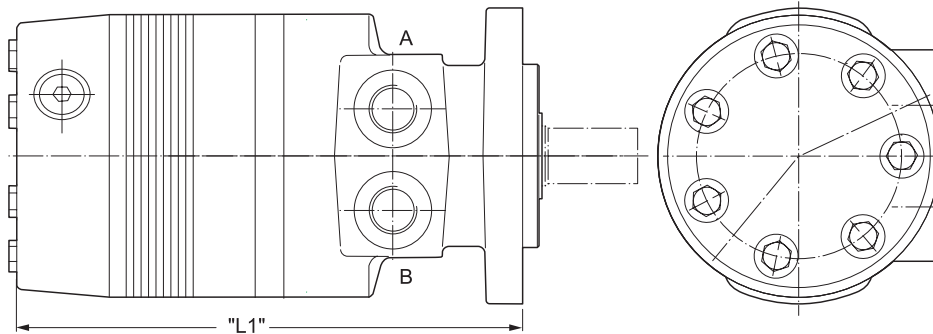
**Bestellschlüssel / Ordering Code / Système de commande /
Sistema di ordinazione**



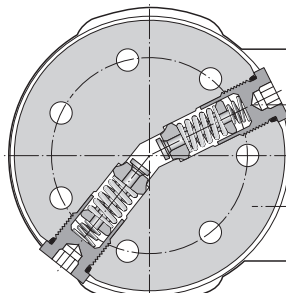
Opening pressure	Single valve		Option code	Option code	Length "L"
	Order no. (M8)	Order no. (M6)			
100 bar	410017-100	410018-100	HAAP	HAAP	158 mm
140 bar	410017-140	410018-140	HAAU	HAAH	158 mm
170 bar	410017-170	410018-170	HAAX	HAAX	158 mm
200 bar	410017-200	410018-200	HABA	HAAM	158 mm

Zubehör / Fixtures / Fournitures / Part. di fissaggio
4 x M8 (M6) x 75mm ; 2 x O-Ring

**Crossover Relief Valve internal / Crossover Überdruckventil intern /
Valve antichoc interne / Valvola anti-urto interno**



Ventilcurve auf Anfrage
Valve curve available on
request
La courbe caractéristique
de la vanne est disponible
sur demande
Curva della valvola
disponibile su richiesta



Motor Series	"L1" mm	"L2" mm	"L3" mm
TF80	213.5	218.5	173.2
TF100	213.5	218.5	173.2
TF130	216.5	221.5	176.3
TF140	218.3	223.3	178.1
TG140	218.3	223.3	178.1
TH140		243.6	201.2
TF170	221.3	226.3	181.1
TG170	221.6	226.6	180.4
TH170		246.9	204.3
TF195	224.6	229.6	184.4
TG195	224.6	229.6	184.4
TH195		250.0	207.6
TF240	229.2	234.2	189.0
TG240	229.2	234.2	189.0
TH240		254.8	212.2
TF280	234.0	239.0	193.8
TG280	234.0	239.0	193.8
TH280		259.6	217.0
TG330	240.4	245.4	200.2
TH330		266.0	223.3
TF365	243.7	248.7	203.5
TF405	247.7	252.7	207.5
TG405	247.7	252.7	207.5
TH405		275.3	230.7
TF475	256.4	261.4	216.2
TG475	256.4	261.4	216.2
TH475		281.7	239.3
TG530	262.7	267.7	222.5
TH530		288.1	245.7
TG620	272.1	277.1	231.9
TH620		297.8	255.1
TG790	291.2	296.2	251.0
TH790		316.8	274.1
TG960	310.2	315.2	270.0
TH960		335.9	293.2

Bestellschlüssel / Ordering Code / Système de commande / Sistema di ordinazione

Option code	Opening pressure
BBBM	70 bar
BBBJ	100 bar
BBBN	140 bar
BBCG	170 bar
BBBF	200 bar

Speed Sensor / Drehzahlsensor / Compte-tours / Contagiri

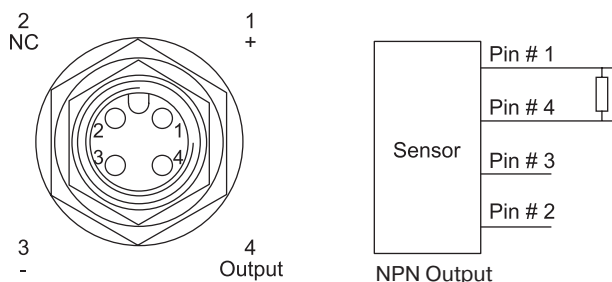
Dieser robuste, wetterfeste Drehzahlaufnehmer arbeitet nach dem Halleffekt. Es werden 30 Rechteckimpulse pro Abtriebswellenumdrehung erzeugt. Durch Erfassung der positiven und negativen Wellenflanken sind 60 Impulse pro Umdrehung möglich. Der Sensor führt zu keiner Leistungsbeschränkung des Motors. Die volle Radiallastkapazität bleibt erhalten.

This rugged, weather resistant speed sensor is a Hall effect device. When externally powered, 30 square wave digital pulses per output shaft revolution are produced. By signal multiplication, 60 pulses per revolution can be obtained. The installation of this economical sensor does not affect the torque or side load capability of the motor into which it is installed.

Un capteur économique pour mesure de la vitesse. Ce capteur robuste et résistant aux intempéries est à effet Hall. Alimenté par une source externe, il fournit 30 impulsions carrées par tour. Par multiplication électronique, on obtient 60 impulsions par tour. Son montage ne modifie pas le couple ni la charge radiale du moteur qui le reçoit.

Sensore di velocità ad effetto Hall, estremamente robusto e resistente alle condizioni ambientali. Genera 30 impulsi al giro, con uscita digitale ad onda quadra. Il numero di impulsi può essere elettronicamente raddoppiato. L'utilizzo di questo sensore, non influisce sulle caratteristiche di coppia o di potenza del motore idraulico.

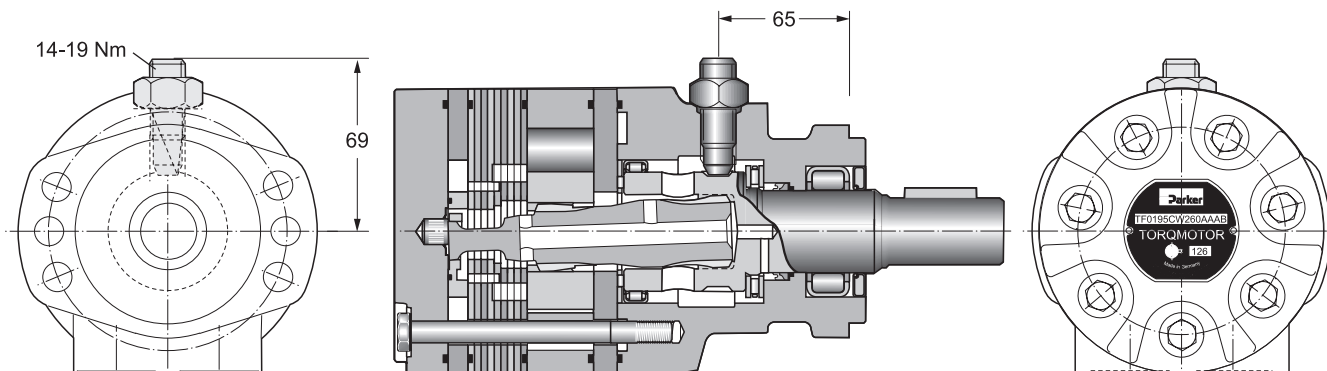
Series TF / TG



Versorgungsspannung Operating voltage range Courant d'alimentation Tensione di alimentazione	4.5...24 V (DC)
Arbeitstemperatur Operating temperature Température Temperatura di funzionamento	-30°...100° C
Arbeitsfrequenz Operating frequency range Fréquence d'utilisation Frequenza di lavoro	0...10 KHZ
Erforderlicher Laststrom Sink current Courant de charge Corrente di alimentazione	0...20 mA (max.)
Anschluss Connection Raccordement Connessione elettrica	4 Pin (12mm) DIN Standard

Formel Pullup-Widerstand	(0.25 Watt, Tol. 5%)	Spannung/Voltage Courant/Tensione	4.5...24 V	= Widerstand Resistor Résistance Resistenze
Formula pull-up resistor value	(0.25 Watt, 5% tol.)	Laststrom/Sink current Courant/Corrente	0...20 mA	
Formule valeur pull-up resistor	(0.25 Watt, tol. 5%)	Status: aus/State: off Courant: off/Condizione: off (95% +V)		
Calcolo resistenza di carico	(0.25 Watt, toll. 5%)	+ V		Status: ein/State: on Courant: on/Condizione: on (max. 0.4 V DC)
		0 V		

Option: FSAB



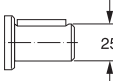
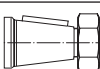
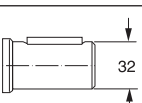
Der Sensor ist gegen Verpolung der Versorgungsspannung, jedoch nicht gegen Kurzschluss geschützt.

The sensor has reverse polarity protection but no short circuit protection.

Le capteur est protégé contre l'inversion de polarité la tension d'alimentation, mais pas contre les courts-circuits.

Il sensore è protetto contro l'inversione della polarità della tensione di alimentazione, ma non contro corto circuito.

Ordering Code / Bestellcode / Système d. commande / Sistema di ordinazione

							F	S	A	B
Serie Series Série Serie	Schluckvolumen Displacement Cylindrée Cilindrata	Gehäuse Housing Carter Corpo motore	Anschluss Ports Plan de raccordement Conessioni	Welle Shaft Arbre Albero	Drehrichtung Direction of rotation Direction de rotation Direzioe di rotazione	Option				
Code										
TF										
TG										
Code TG	cm³/rev	Code	Housing	Code	Shaft	Code	Direction			
0080	81	E		26 ¹⁾		0				
0100	100			08			Standard			
0130	128			46		1				
0140	141									
0170	169									
0195	195									
0240	237									
0280	280									
0360	364									
0405	405									
0475	477									
Code TG	cm³/rev	Code	Port							
0140	140	W	G 1/2							
0170	169									
0195	195									
0240	237									
0280	280									
0335	337									
0405	405									
0475	476									
0530	529									
0625	624									
0785	786									
0960	958									

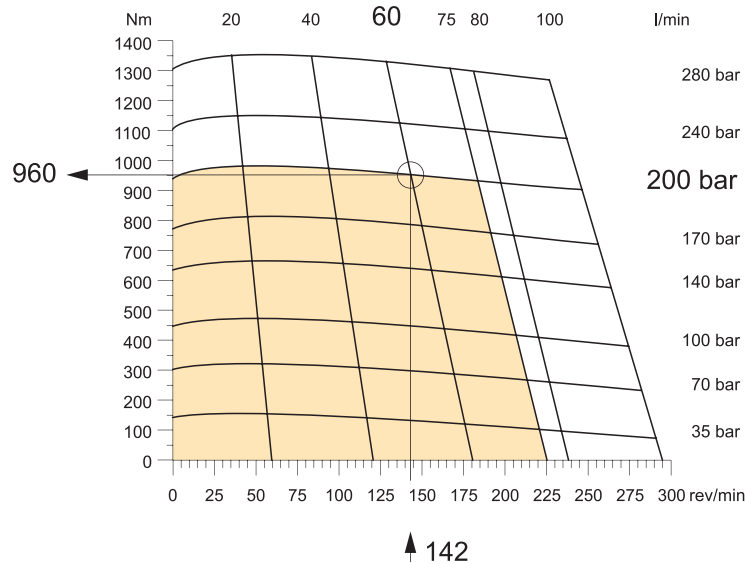
¹⁾ Nur für TF Motoren
Only possible for TF motors
Possible seulement avec TF moteur
Possible solo con motore TF

¹⁾ Nur für TF Motoren
Only possible for TF motors
Possible seulement avec TF moteur
Possible solo con motore TF

Calculation of efficiency and output power
Berechnung von Wirkungsgrad und Leistung
Détermination du rendement et de la puissance
Calcoli di rendimento e potenza utile

TG 335

Md = 960 Nm
n = 142 rev/min
Δp = 200 bar
V = 337 cm³/rev
Q = 60 l/min



Hydraulisch-mechanischer Wirkungsgrad (η_{hm})
Hydraulic-mechanical efficiency
Rendement hydro-mécanique
Rendimento idro-meccanico

$$\eta_{hm} = \frac{Md \cdot 20 \cdot \pi}{\Delta p \cdot V} = \frac{960 \cdot 20 \cdot \pi}{200 \cdot 337}$$

$$\eta_{hm} = 0.89$$

Volumetrischer Wirkungsgrad (η_{vol})
Volumetric efficiency
Rendement volumétrique
Rendimento volumetrico

$$\eta_{vol} = \frac{n \cdot V}{Q \cdot 10^3} = \frac{142 \cdot 337}{60 \cdot 10^3}$$

$$\eta_{vol} = 0.80$$

Gesamtwirkungsgrad (η_{ges})
Overall efficiency
Rendement global
Rendimento totale

$$\eta_{ges} = \eta_{vol} \cdot \eta_{hm} = 0.80 \cdot 0.89$$

$$\eta_{ges} = 0.71$$

Leistung P (kW)
Power P
Puissance P
Potenza P

$$P = \frac{Md \cdot n \cdot \pi}{10^4 \cdot 3} = \frac{960 \cdot 142 \cdot \pi}{10^4 \cdot 3}$$

$$P = 14.3 \text{ kW}$$

Option Code	Description	Series	TE/TJ	TF	TL	TG	TH
AAAA	black paint		x	x	x	x	x
AAAB	standard (no paint)		x	x	x	x	x
AAAH	FPM seals (no paint)		x	x		x	x
BBBF	internal relief valve 200bar			x		x	x
BBBJ	internal relief valve 100bar			x		x	x
BBBM	internal relief valve 70bar			x		x	x
BBBN	internal relief valve 140bar			x		x	x
BBCG	internal relief valve 170bar			x		x	x
HAAF	external relief valve 100bar (M6)			x		x	
HAAP	external relief valve 100bar (M8)		x	x		x	x
HAAH	external relief valve 140bar (M6)			x		x	
HAAU	external relief valve 140bar (M8)		x	x		x	x
HAAK	external relief valve 170bar (M6)			x		x	
HAAX	external relief valve 170bar (M8)			x		x	x
HAAM	external relief valve 200bar (M6)			x		x	
HABA	external relief valve 200bar (M8)			x		x	x
FSAB	Speedsensor		X	x		x	
FSAA	Speedsensor + black paint		x	x		x	

Operation / Betrieb / Mise en service / Istruzioni per l'uso

Empfohlen wird die Verwendung eines Hydrauliköls auf Mineralölbasis mit mindestens 0,1% Zinkadditiv als Antiverschleißzusatz. Vor Einsatz anderer Flüssigkeiten bitten wir um Rücksprache mit unserer Technik.

Die normale Arbeitstemperatur sollte im Bereich von +30 °C bis +60 °C liegen.

Die Maximaltemperatur darf +90 °C nicht überschreiten, während die Mindesttemperatur auf -30 °C begrenzt ist.

Wird die normale Arbeitstemperatur wesentlich überschritten, wird die Lebensdauer des Öls stark verkürzt.

Die Viskosität im Arbeitstemperaturbereich sollte 20 bis 120 mm²/s betragen.

Zweckmäßig ist eine Filtereinheit von 20 – 50 µm.

Die im Katalog angegebenen technischen Daten gelten für den Motorbetrieb.

Arbeitet der Motor als Pumpe, ist das auf die Antriebswelle wirkende Moment auf den angegebenen kontinuierlichen Maximalwert zu begrenzen. Dabei muss ein Vorspanndruck von 5 – 10 bar, abhängig vom Förderstrom, vorhanden sein (Kavitationsgefahr).

It is recommended to use a mineral based hydraulic oil with minimum 0.1% of zinc as anti-wear additive.

Before using other liquids, please consult our engineering department.

Normal working temperatures should be in the range of between +30 °C and +60 °C.

Maximum temperatures must not exceed +90 °C while minimum temperatures should be limited to -30 °C.

If normal working temperatures are substantially exceeded this will result in reduced life duration of the oil used.

Viscosity in the range of working temperatures should be 20 to 120mm²/s.

It is advisable to use a filtering fineness of 20 – 50 µm.

The technical data are applicable to motor operation.

If the motor is used as a pump, the input torque on the coupling shaft must be limited to the indicated continuous maximum value. For this, an inlet pressure of 5 – 10 bar must be applied depending on oil flow (danger of cavitation).

Il est recommandé d'utiliser une huile hydraulique à base minérale contenant au minimum 0,1% d'additif zinc comme produit anti-usure.

La température normale d'utilisation devrait être située entre +30 °C à +60 °C.

La température maximale d'utilisation ne doit pas être supérieure à +90 °C, alors que la température minimale est limitée à -30 °C.

Lorsque la température de service est largement dépassée, la durée de vie de l'huile est fortement diminuée.

Dans la plage de température de service, la viscosité devrait être située entre 20 et 120 mm²/s.

Dans ce but, la filtration est de 20 à 50 µm.

Les caractéristiques techniques indiquées dans le catalogue sont considérées pour une utilisation en fonction moteur.

Si le moteur fonctionne en pompe, il faut limiter le couple à la valeur maximale indiquée. Dans ce cas, en fonction du débit, il faut créer une contre-pression de 5 à 10 bar (danger de cavitation).

Si consiglia l'impiego di olio idraulico a base di olio minerale con almeno 0,1% di zinco come additivo anti usura. Prima dell'impiego di altri liquidi si prega di contattare il nostro ufficio tecnico.

La temperatura normale di esercizio dovrebbe essere da +30 °C a +60 °C.

La temperatura massima non deve superare +90 °C, mentre la temperatura minima è limitata a -30 °C.

Se la temperatura normale di esercizio viene sostanzialmente superata, la durata dell'olio diminuisce sensibilmente.

La viscosità nel campo della temperatura di esercizio dovrebbe essere da 20 a 120 mm²/s.

Si deve prevedere un sistema filtrante per 20...50 micron.

I dati sopraesposti sono validi negli impieghi come motore. Se il motore viene usato come pompa, la coppia sull'albero deve essere limitata a quella massima ammessa. Pertanto il motore deve essere pressurizzato a 5...10 bar in funzione della portata d'olio per evitare cavitazione.

Produktübersicht Motor range Gamme de moteurs Serie di motori	Geom. Schluckvolumen Geometric displacement Cylindrée Cilindrata	Max. Drehzahl Max. speed Vitesse de rotation Velocità di rotazione	Max. Schluckstrom Max. oil flow Débit d'huile Portata max	Max. Druckdifferenz ** Max. differential pressure Caduta di pressione	Max. Eingangsdruck Max. supply pressure Pression max entrée Pressione max in entrata	Max. Drehmoment Max. torque Couple max Coppia max	Max. Leistungabgabe Max. performance Puissance de sortie Potenza meccanica max
TE/TJ	cm ³ /rev	cont/int* rev/min	cont/int* l/min	cont/int* bar	max bar	cont/int* Nm	cont/int* KW
TE/TJ 36	36	930/1160	35/40	140/190	200	55/71	9
TE/TJ 45	41	810/1024	35/41	140/190	200	70/100	10
TE/TJ 50	50	725/1020	35/50	140/190	200	90/127	13
TE/TJ 65	66	705/940	45/60	140/190	200	125/176	15
TE/TJ 80	82	560/750	45/60	140/190	200	160/220	17
TE/TJ 100	98	470/630	45/60	140/190	200	190/264	17
TE/TJ 130	130	350/470	45/60	140/1960	200	255/352	17
TE/TJ 165	163	280/375	45/60	140/190	200	310/436	17
TE/TJ 195	196	235/315	45/60	140/190	200	390/528	17
TE/TJ 230	228	265/330	60/75	120/165	200	380/514	18
TE/TJ 260	261	230/290	60/75	110/155	200	400/550	17
TE/TJ 295	293	200/255	60/75	100/145	200	428/582	16
TE/TJ 330	326	185/235	60/75	100/135	200	443/600	15
TE/TJ 365	370	150/200	60/75	95/125	200	467/648	14
TE/TJ 390	392	152/190	60/75	85/120	200	445/628	13

Radiale Wellen-
belastung
Side loads
Charges latérales
Carico radiale
TE 7.000 N
TJ 14.000 N

TF	cm ³ /rev	cont/int* rev/min	cont/int* l/min	cont/int* bar	max bar	cont/int* Nm	cont/int* KW
TF 80	81	550/730	45/60	210/280	300	220/295	22
TF 100	100	600/750	60/75	160/240	300	200/320	25
TF 130	128	470/580	60/75	140/210	300	230/360	22
TF 140	141	370/530	60/75	140/210	300	250/390	22
TF 170	169	355/440	60/75	140/210	300	320/490	23
TF 195	197	300/380	60/75	140/210	300	365/560	22
TF 240	238	320/420	75/100	140/210	300	430/670	28
TF 280	280	270/350	75/100	140/210	300	550/800	28
TF 360	364	200/260	75/100	130/190	300	590/910	24
TF 405	405	170/230	75/100	130/175	300	660/920	22
TF 475	477	150/200	75/100	115/140	300	680/850	17

Radiale Wellen-
belastung
Side loads
Charges latérales
Carico radiale
TF 16.000 N

TL	cm ³ /rev	cont/int* rev/min	cont/int* l/min	cont/int* bar	max bar	cont/int* Nm	cont/int* KW
TL 140	140	613	68/95	190/241	300	364/463	30
TL 170	169	512	68/95	190/241	300	449/570	31
TL 195	195	484	68/95	190/241	300	511/648	34
TL 240	238	399	68/95	190/241	300	620/790	34
TL 280	280	335	68/95	190/241	300	730/929	34
TL 310	310	310	68/95	190/241	300	847/1079	36
TL 360	364	255	68/95	172/224	300	890/1163	31

Radiale Wellen-
belastung
Side loads
Charges latérales
Carico radiale
TL 16.000 N

*int. =

Intermittierende Werte maximal: 10% von jeder Betriebsminute.
Intermittent operation rating applies to 10% of every minute.
Fonctionnement interm.: 10% max. de chaque minute d'utilisation.
Servizio intermittente: 10% max di ogni minuto di utilizzazione.

** Druckdifferenz Δp zwischen Ein- und Ausgang

** Pressure difference is Δp between input and output

** La différence de pression est Δp entre l'entrée et la sortie

** La differenza di pressione corrisponde al Δp tra ingresso e uscita

Produktübersicht Motor range Gamme de moteurs Serie di motori	Geom. Schluckvolumen Geometric displacement Cylindrée Cilindrata	Max. Drehzahl Max. speed Vitesse de rotation maxi Velocità di rotazione max	Max. Schluckstrom Max. oil flow Débit d'huile max Portata max	Max. Druckdifferenz Max. pressure difference Chute de pression ** Caduta di pressione max **	Max. Eingangsdruck Max. supply pressure Pression max entrée Pressione max in entrata	MMax. Drehmoment Max. torque Couple max Coppia max	Max. Leistungabgabe Max. performance Puissance de sortie max Potenza meccanica max
TG	cm ³ /rev	cont/int* rev/min	cont/int* l/min	cont/int* bar	max bar	cont/int* Nm	cont/int* KW
TG 140	141	530/710	75/100	210/280	300	400/545	33
TG 170	169	440/575	75/100	210/280	300	485/670	33
TG 195	195	380/510	75/100	210/280	300	560/770	33
TG 240	238	320/420	75/100	210/280	300	685/945	32
TG 280	280	270/350	75/100	210/280	300	800/1100	31
TG 335	337	225/290	75/100	210/280	300	980/1350	30
TG 405	405	185/245	75/100	170/240	300	960/1350	27
TG 475	477	160/240	75/115	140/210	300	960/1400	28
TG 530	529	140/215	75/115	140/170	300	1050/1280	23
TG 625	613	120/185	75/115	120/160	300	1040/1360	20
TG 785	786	95/145	75/115	100/140	300	1150/1490	17
TG 960	959	78/119	75/115	70/100	300	925/1390	12

Radiale Wellen-
belastung
Side loads
Charges latérales
Carico radiale
TG/BG 16.000 N
TH 30.000 N

TH	cm ³ /rev	cont/int* rev/min	cont/int* l/min	cont/int* bar	max bar	cont/int* Nm	cont/int* KW
TH 140	141	530/710	75/100	210/280	300	400/545	33
TH 170	169	440/575	75/100	210/280	300	485/670	33
TH 195	195	380/510	75/100	210/280	300	560/770	33
TH 240	238	320/420	75/100	210/280	300	685/945	32
TH 280	280	270/350	75/100	210/280	300	800/1100	31
TH 335	337	225/290	75/100	210/280	300	980/1350	30
TH 405	405	185/245	75/100	170/240	300	960/1350	27
TH 475	477	160/240	75/115	140/210	300	960/1400	28
TH 530	529	140/215	75/115	140/170	300	1050/1280	23
TH 625	613	120/185	75/115	120/160	300	1040/1360	20
TH 785	786	95/145	75/115	100/140	300	1150/1490	17
TH 960	959	78/119	75/115	70/100	300	925/1390	12

Radiale Wellen-
belastung
Side loads
Charges latérales
Carico radiale
TG/BG 16.000 N
TH 30.000 N

*int. =

Intermittierende Werte maximal: 10% von jeder Betriebsminute.
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Fonctionnement interm.: 10% max. de chaque minute d'utilisation.
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** Druckdifferenz Δp zwischen Ein- und Ausgang

** Pressure difference is Δp between input and output

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www.parker.com



European Headquarters
La Tuilière 6, 1163 Etoy,
Switzerland
Tel: +41 21 821 85 00

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