

TMW Series

Torque Motors



ENGINEERING YOUR SUCCESS.



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Torque Motors - TMW Series

Overview

Description

Parker Torque motor is an innovative direct drive solution designed for industrial applications requiring high torque at low speed without any additional mechanical transmission system. Their usage results in more compact, more efficient, quieter and virtually maintenance free drive systems. Parker torque motors are permanent magnet brushless servo motors, with a high number of poles, able to deliver torques up to 22 000 Nm at speeds up to 400 min⁻¹.

Especially designed to replace direct current or induction motors and gearboxes, they offer specific features such as built-in thrust bearing or patent pending screw extraction mechanisms, making them particularly suitable for applications in segments such as plastics and rubber extrusion, injection molding, etc.

Basic versions of TM Torque Motors can also be used in many other similar applications such as winders, crushers, mixers, and more generally in all application segments requiring framed torque motors operated in speed control.

Example of energy savings

Removal of the gearbox has an immediate impact on the overall installation's efficiency, resulting in energy savings.

Example

- 100 kW extruder
- 7200 h annual operating
- Energy cost: 0.10 €/kWh

Overall efficiency improvement due to the installation of a torque motor: 5 %

Annual savings 3600 €

Features

- High power compact design
- Water or natural cooling
- Overtemperature protection built in
- Integrated thrust bearing
- Customizable shaft ends
- IP54 protection
- IM B3 or IM B34 mounting



Technical Characteristics - Overview

Torque range	1200...22 100 Nm (water-cooling)
Shaft heights	315, 400 mm
Rated Voltage	400 VAC and 480 VAC
Speed	<ul style="list-style-type: none"> • 50...400 min⁻¹ (size dependent) • Field weakening operation up to 1.2 x n_{rated} • Other speeds available on request
Cooling	<ul style="list-style-type: none"> • Water Jacket as standard • Natural ventilation with derating (consult us)
Mounting	IM B3 or IM B34
Protection degree	IP54
Thermal protection	<ul style="list-style-type: none"> • 1x KTY sensor and 2x PTC probes • Temperature alarm and default
Shaft end	<ul style="list-style-type: none"> • Solid or hollow shaft with key, keyway, spline profile • Customized interfaces available on request
Bearing	<ul style="list-style-type: none"> • Roller bearing • Ball bearing • Thrust bearing (SKF 294__E)
Feedback sensor	<ul style="list-style-type: none"> • EnDat Encoder (standard) • Direct EnDat Encoder with hollow shaft (option)

Technical Characteristics

Technical Data

400 VAC Power Supply¹⁾

Model	Pn [kW]	Nn [min ⁻¹]	Mn [Nm]	In [Arms]	Nmax [min ⁻¹]	Mmax [Nm]	Inertia [kgm ²]	Water flow rate [l/min]	Drive Power Stack reference ²⁾	Irms for 60s [Arms]	Mmax with Drive [Nm]
Motor Speed 75... 100 min⁻¹											
TMW305LT	39	95	3970	83	115	8620	4,4	17	710-4H0145-BE-0S-0000	137	6225
TMW308LU	76	110	6680	131	135	14500	6,5	27	710-4J0205-BE-0S-0000	236	11300
TMW406LS	108	100	10 400	218	125	19 400	16,2	28	710-4K0315-BE-0S-0000	330	14780
TMW408LP	148	100	14 300	308	120	26 600	19,4	38	710-4K0440-BE-0S-0000	485	20950
TMW40CLK	207	90	22 200	432	110	41 100	25,9	57	710-4L0590-NE-0S-0000	660	31600
Motor Speed 100... 150 min⁻¹											
TMW306LR	63	125	4870	127	155	10600	4,55	21	710-4J0180-BE-0S-0000	194	7055
TMW406LP	134	125	10 400	268	155	19 400	16,2	29	710-4K0380-BE-0S-0000	407	14770
TMW40CLI	274	120	22 200	540	150	41 100	25,9	57	710-4M0700-NE-0S-0000	815	31120
TMW305LP	59	145	3970	116	180	8620	4,4	17	710-4J0180-BE-0S-0000	194	6250
TMW406LJ	160	150	10 400	308	180	19 400	16,2	29	710-4K0440-BE-0S-0000	485	15070
TMW40CLG	318	140	22 200	631	175	41 100	25,9	57	710-4N0790-NE-0S-0000 *	960	31150
Motor Speed 150...200 min⁻¹											
TMW305LN	67	165	3970	131	205	8620	4,4	17	710-4J0205-BE-0S-0000	236	6640
TMW30ALN	135	155	8500	264	190	18 400	6,8	35	710-4K0380-BE-0S-0000	407	12350
TMW406LI	185	175	10 400	355	215	19 400	16,2	29	710-4L0530-NE-0S-0000	600	15930
TMW40ALE	324	175	18 300	631	205	34 000	25,1	48	710-4N0790-NE-0S-0000 *	960	25430
TMW304LM	58	185	3070	89	230	6660	3,45	14	710-4H0145-BE-0S-0000	137	3590
TMW30ALL	156	180	8500	301	225	18 400	6,8	35	710-4K0440-BE-0S-0000	485	12820
TMW408LF	289	200	14 300	542	250	26 600	19,4	39	710-4M0700-NE-0S-0000	815	19680
Motor Speed 200...400 min⁻¹											
TMW306LI	118	240	4870	221	300	10600	4,55	21	710-4K0380-BE-0S-0000	407	8230
TMW406LG	239	230	10 400	332	285	19 400	16,2	30	710-4L0530-NE-0S-0000	600	13000
TMW304LH	90	295	3070	164	350	6660	3,45	15	710-4J0260-BE-0S-0000	270	4660
TMW308LG	183	275	6680	338	340	14500	6,5	29	710-4L0530-NE-0S-0000	600	10800
TMW306LF	154	320	4870	278	385	10600	4,55	22	710-4K0440-BE-0S-0000	485	7690
TMW305LC	149	390	3970	267	450	8620	4,4	19	710-4K0380-BE-0S-0000	407	5455

1) Other voltages, speeds available, please consult us.

2) Power stacks defined for permanent In with 150% overload for 60s, at switching frequency = 4kHz (except those marked with a * which are at 3kHz)
To reach the maximum torque, contact us.

Note: Control card to be added to the power stack: Reference 30A-2S-0000

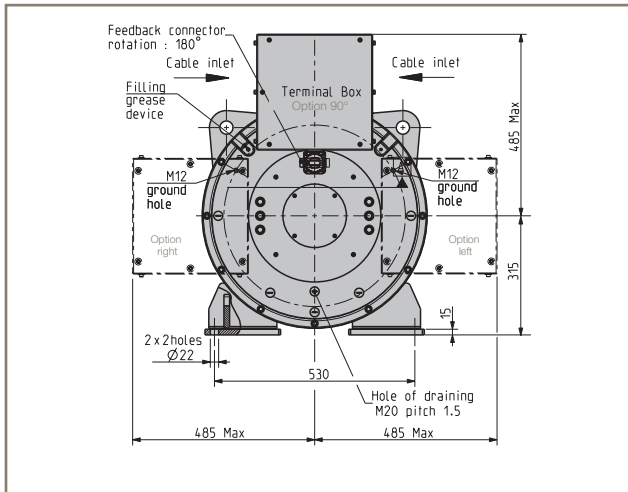
Dimensions

TMW30x-01

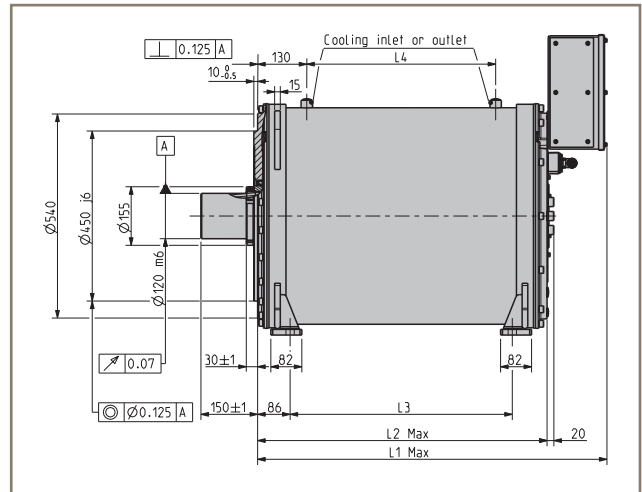
Dimensions [mm]

Shaft Height 315 mm / Roller Bearing

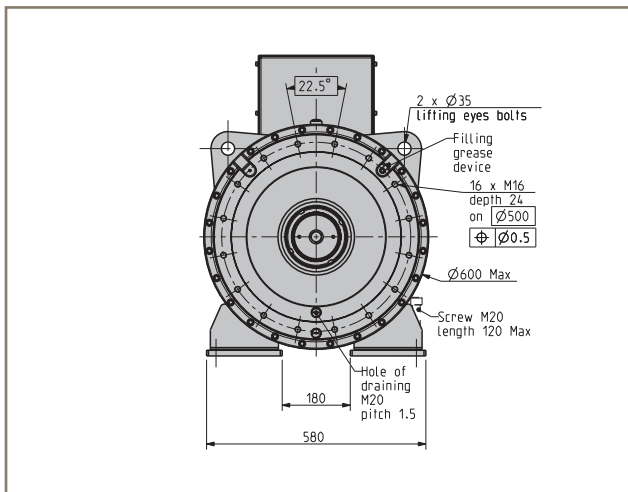
Rear view



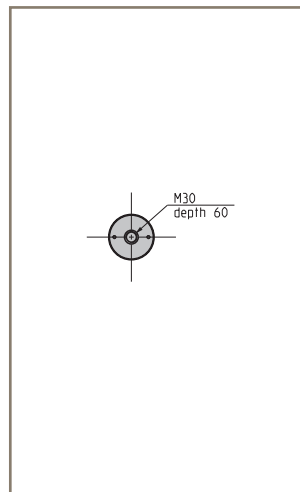
Side view



Front view



Shaft End



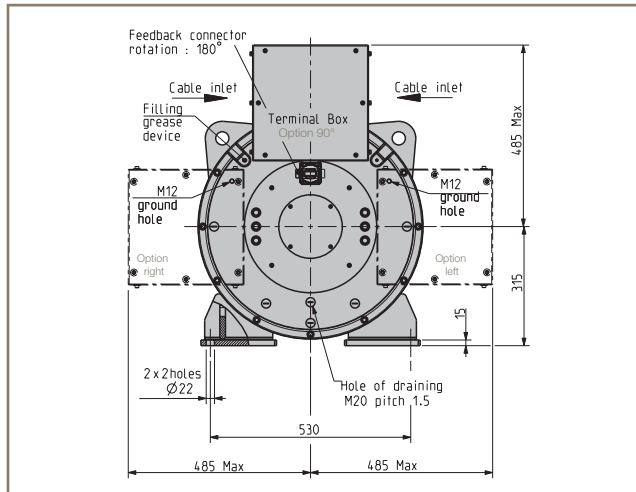
Model	L1 Max [mm]	L2 Max [mm]	L3 [mm]	L4 [mm]	Weight [kg]
TMW304	630	470	288	200	520
TMW305	730	570	388	300	580
TMW306	730	570	388	300	600
TMW308	930	770	588	500	715
TMW30A	930	770	588	500	755

TMW30x-00

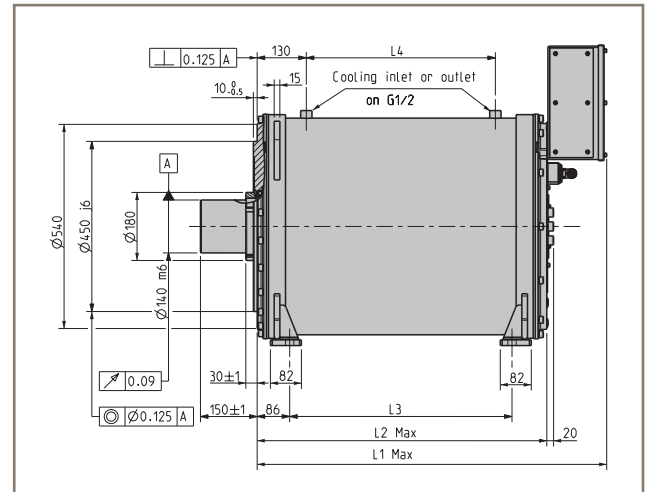
Dimensions [mm]

Shaft Height 315 mm / Ball Bearing

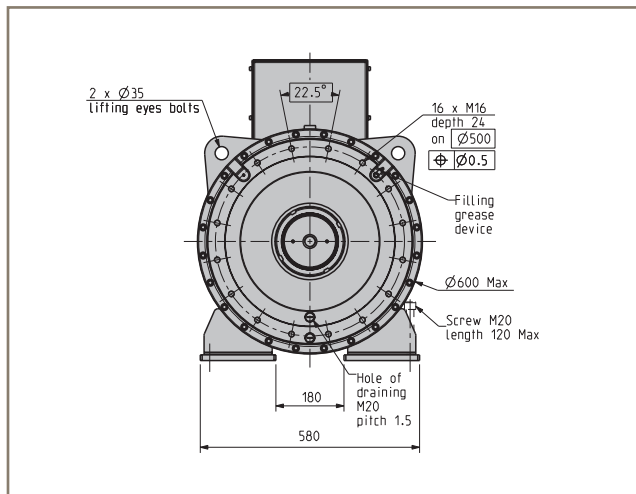
Rear view



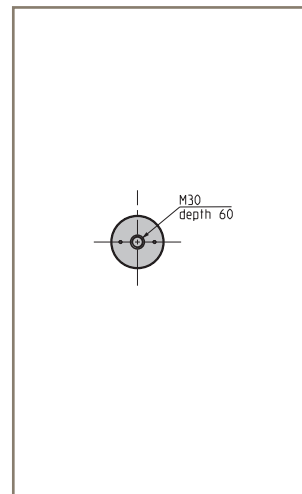
Side view



Front view



Shaft End

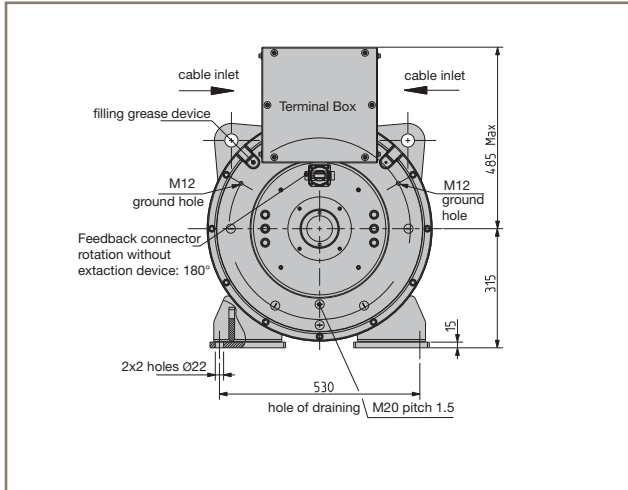


Model	L1 Max [mm]	L2 Max [mm]	L3 [mm]	L4 [mm]	Weight [kg]
TMW304	630	470	288	200	525
TMW305	730	570	388	300	585
TMW306	730	570	388	300	605
TMW308	930	770	588	500	720
TMW30A	930	770	588	500	760

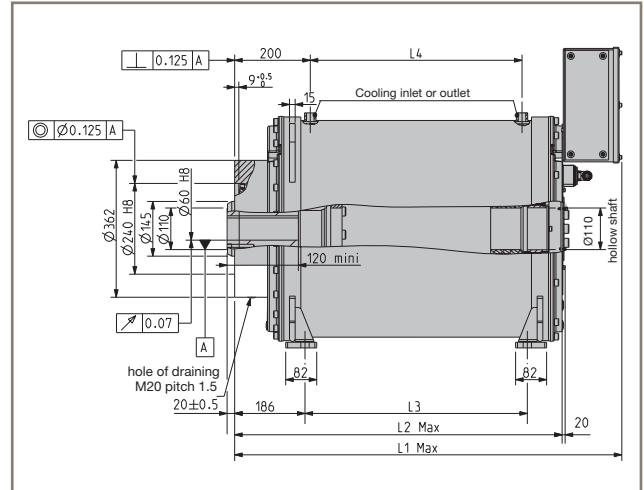
TMW30x-22

Shaft Height 315 mm / Thrust Bearing 29422

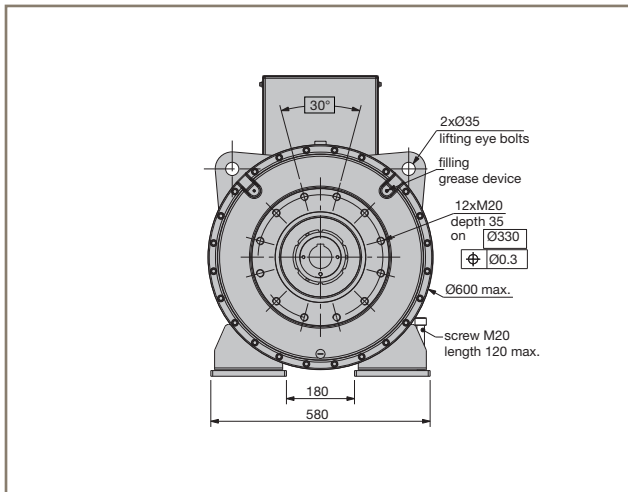
Rear view



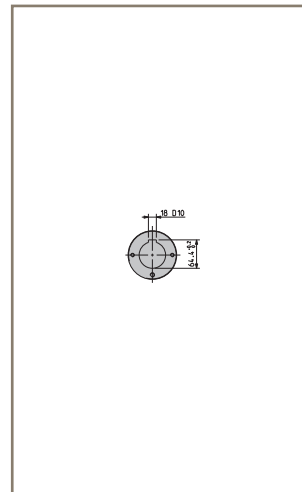
Side view



Front view



Shaft End



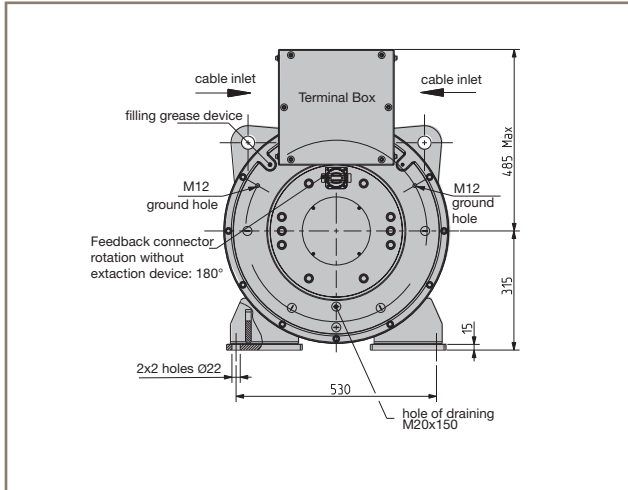
Model	L1 Max [mm]	L2 Max [mm]	L3 [mm]	L4 [mm]	Weight [kg]
TMW304	730	570	288	260	585
TMW305	830	670	388	360	645
TMW306	830	670	388	360	665
TMW308	1030	870	588	560	780
TMW30A	1030	870	588	560	820

TMW30x-26

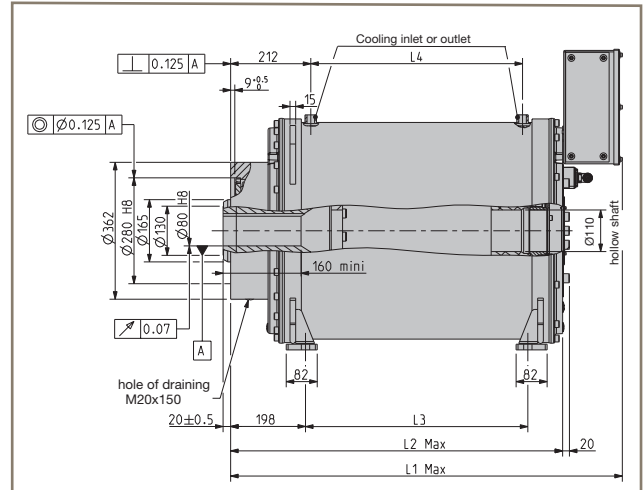
Dimensions [mm]

Shaft Height 315 mm / Thrust Bearing 29426

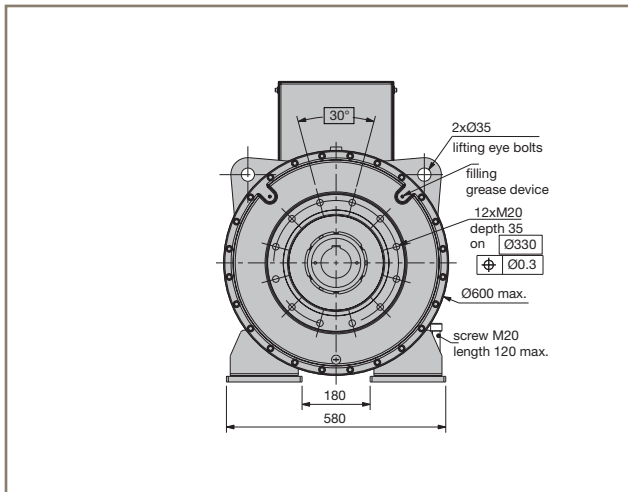
Rear view



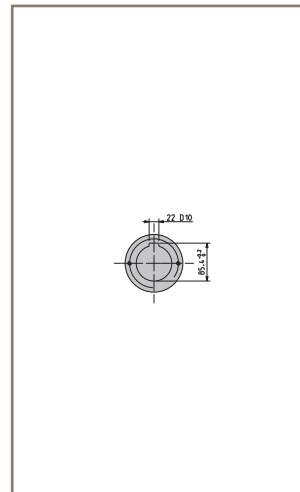
Side view



Front view



Shaft End



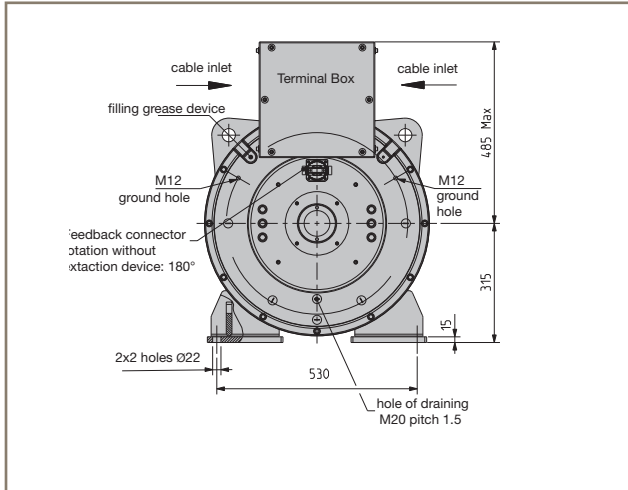
Model	L1 Max [mm]	L2 Max [mm]	L3 [mm]	L4 [mm]	Weight [kg]
TMW304	740	580	288	260	585
TMW305	840	680	388	360	645
TMW306	840	680	388	360	665
TMW308	1040	880	588	560	780
TMW30A	1040	880	588	560	820

Dimensions [mm]

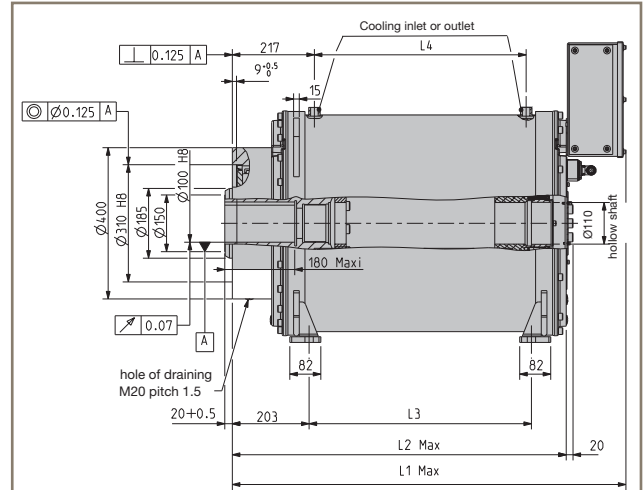
TMW30x-30

Shaft Height 315 mm / Thrust Bearing 29430

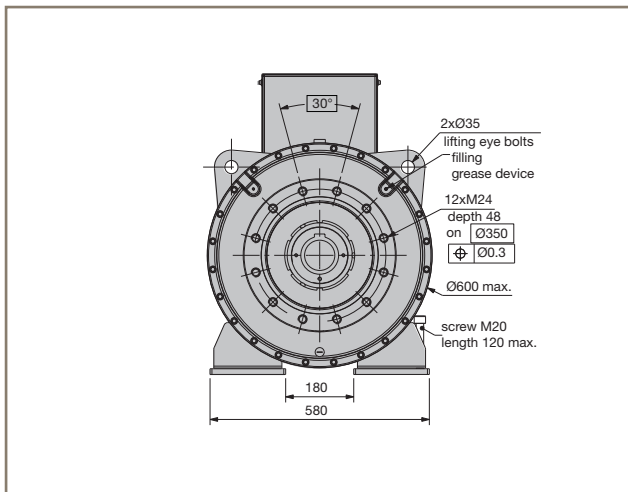
Rear view



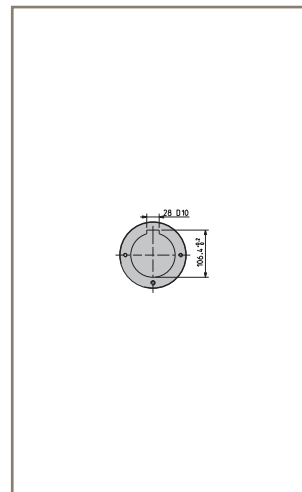
Side view



Front view



Shaft End



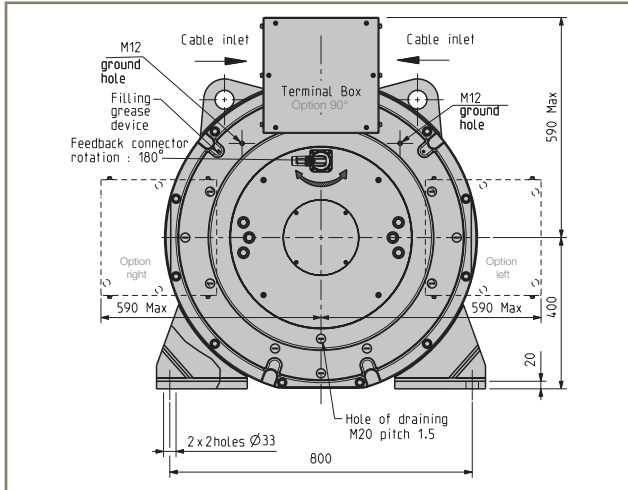
Model	L1 Max [mm]	L2 Max [mm]	L3 [mm]	L4 [mm]	Weight [kg]
TMW304	745	585	288	260	605
TMW305	845	685	388	360	665
TMW306	845	685	388	360	685
TMW308	1045	885	588	560	800
TMW30A	1045	885	588	560	840

TMW40x-01

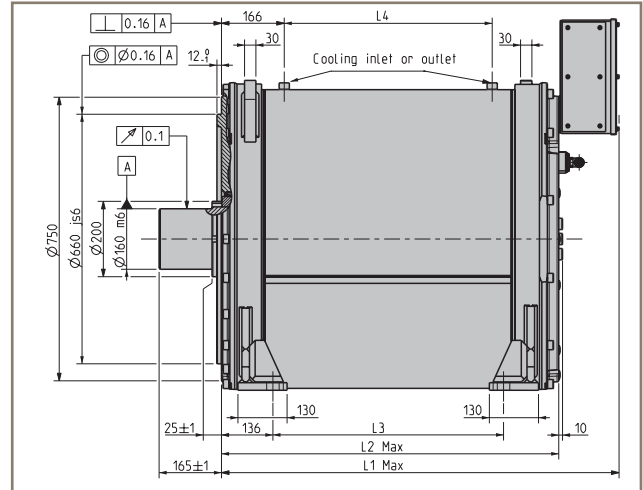
Dimensions [mm]

Shaft Height 400 mm / Roller Bearing

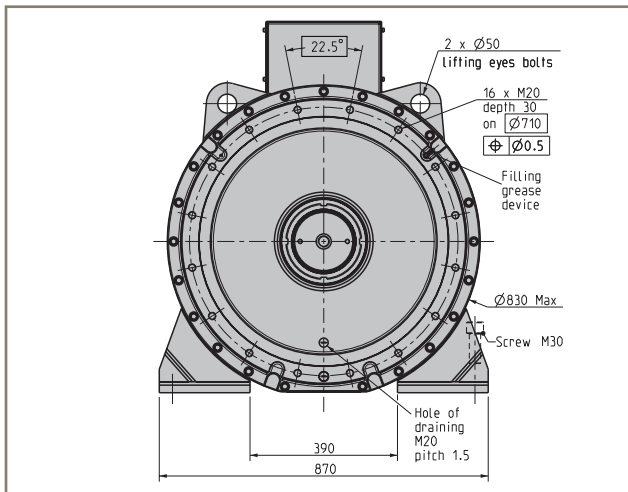
Rear view



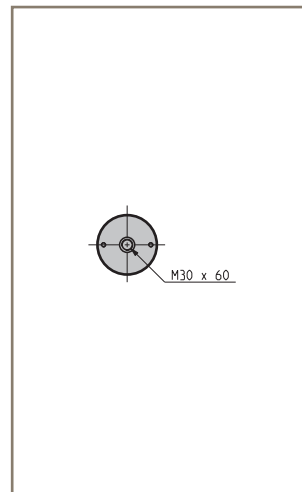
Side view



Front view



Shaft End



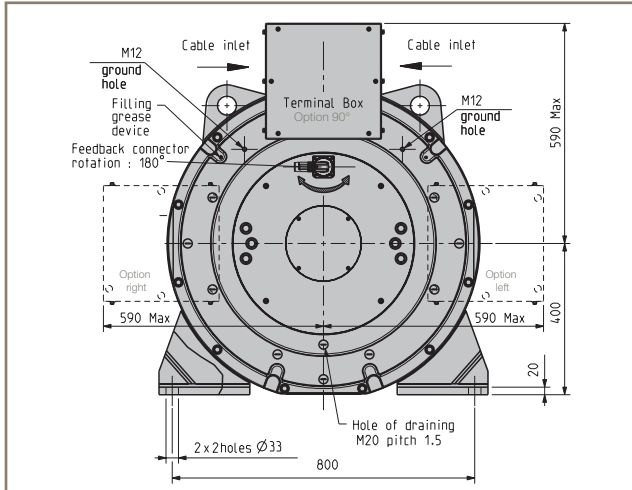
Model	L1 Max [mm]	L2 Max [mm]	L3 [mm]	L4 [mm]	Weight [kg]
TMW406	754	594	310	250	1290
TMW408	854	694	410	350	1430
TMW40A	1054	894	610	550	1620
TMW40C	1054	894	610	550	1700

Dimensions [mm]

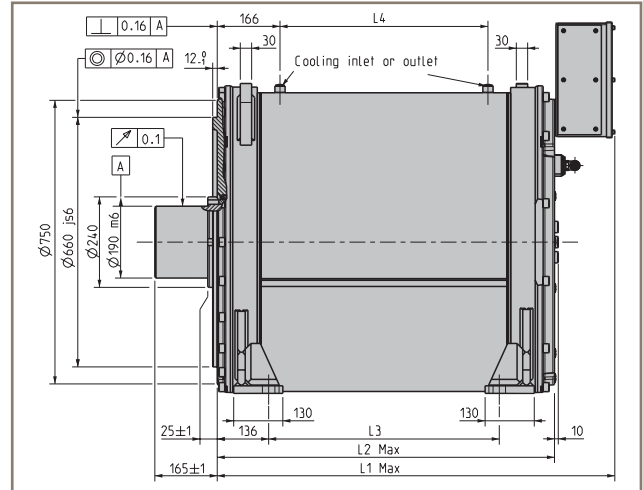
TMW40x-00

Shaft Height 400 mm / Ball Bearing

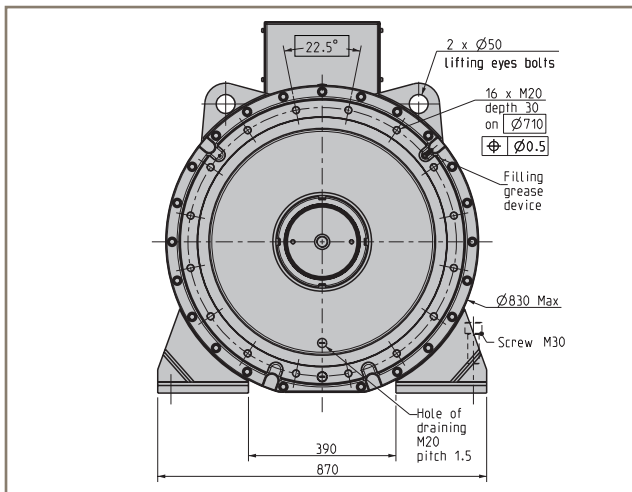
Rear view



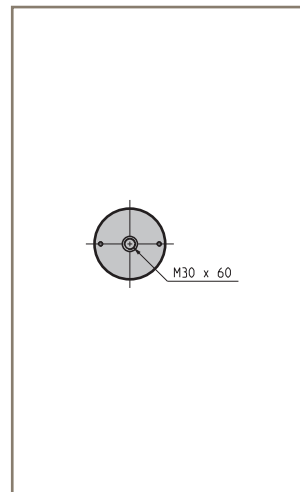
Side view



Front view



Shaft End



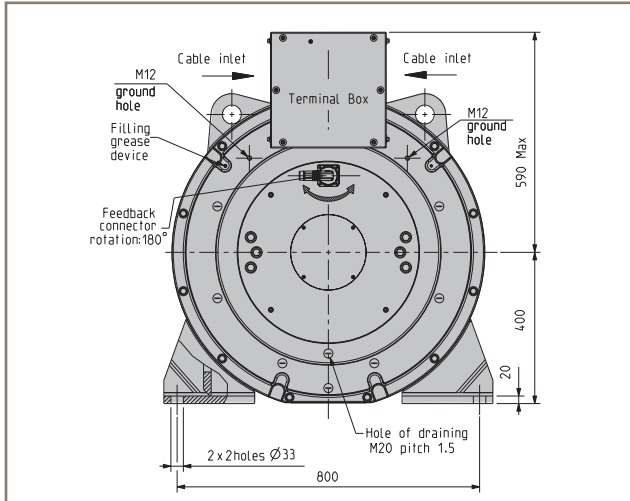
Model	L1 Max [mm]	L2 Max [mm]	L3 [mm]	L4 [mm]	Weight [kg]
TMW406	754	594	310	250	1290
TMW408	854	694	410	350	1430
TMW40A	1054	894	610	550	1620
TMW40C	1054	894	610	550	1700

TMW40x-30

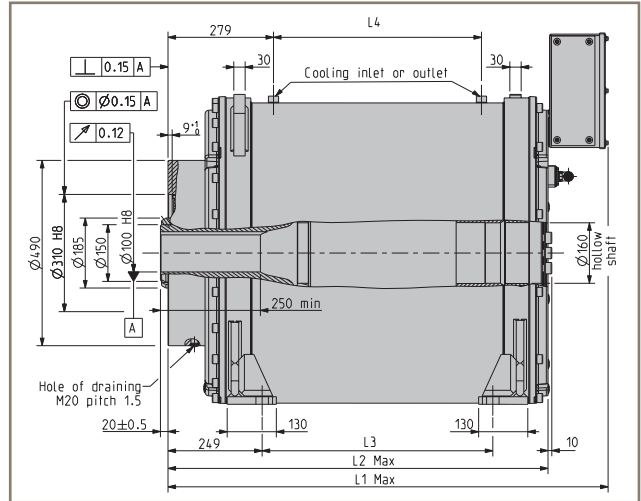
Dimensions [mm]

Shaft Height 400 mm / Thrust Bearing 29430

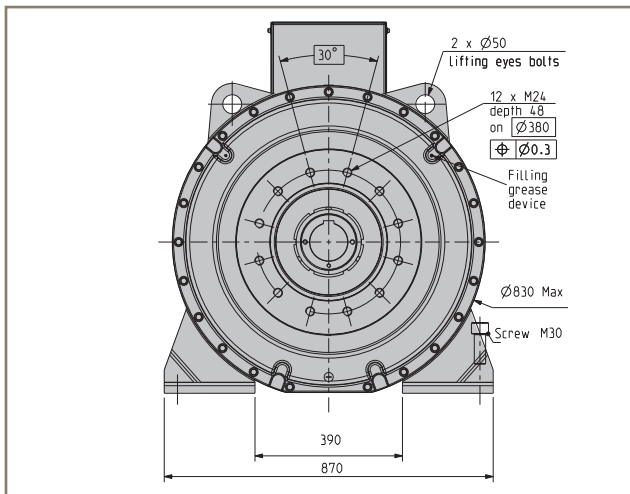
Rear view



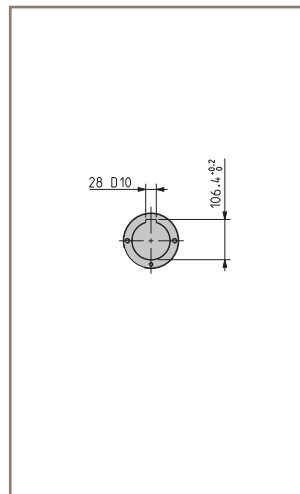
Side view



Front view



Shaft End



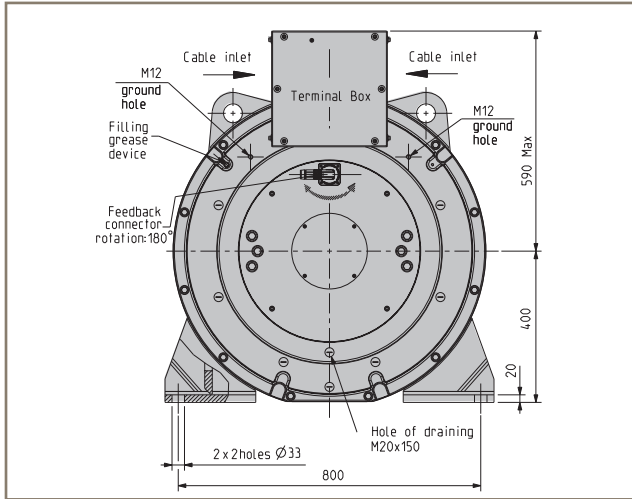
Model	L1 Max [mm]	L2 Max [mm]	L3 [mm]	L4 [mm]	Weight [kg]
TMW406	867	707	310	250	1410
TMW408	967	807	410	350	1550
TMW40A	1167	1007	610	550	1740
TMW40C	1167	1007	610	550	1820

Dimensions [mm]

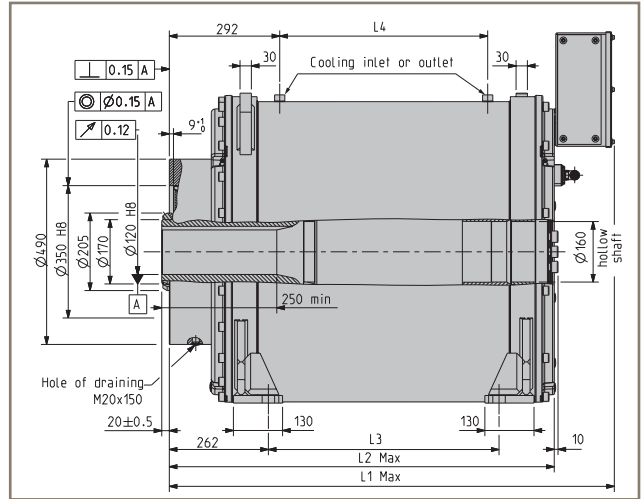
TMW40x-34

Shaft Height 400 mm / Thrust Bearing 29434

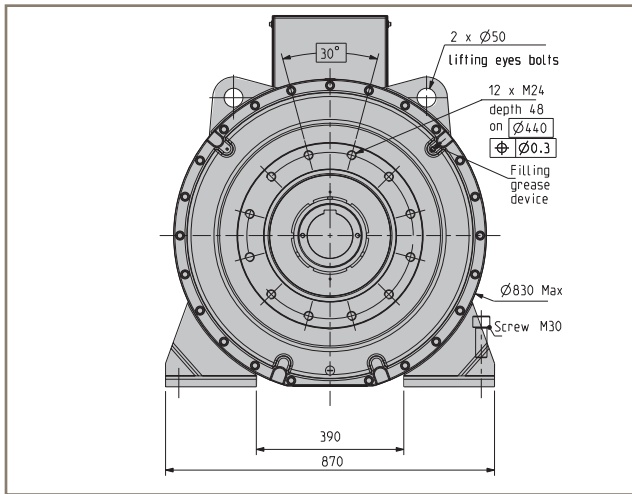
Rear view



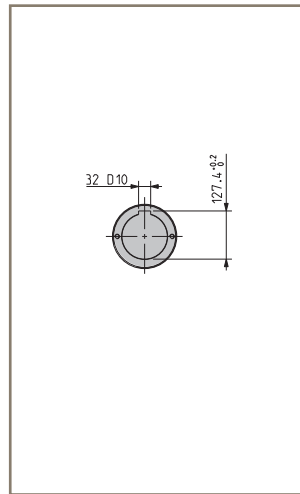
Side view



Front view



Shaft End



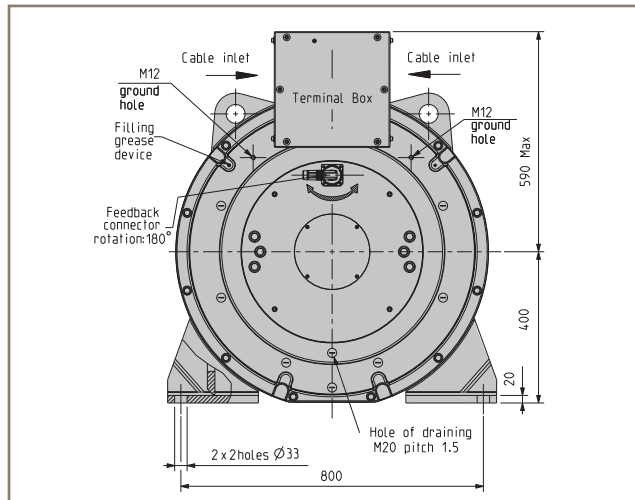
Model	L1 Max [mm]	L2 Max [mm]	L3 [mm]	L4 [mm]	Weight [kg]
TMW406	880	720	310	250	1410
TMW408	980	820	410	350	1550
TMW40A	1180	1020	610	550	1750
TMW40C	1180	1020	610	550	1820

TMW40x-40

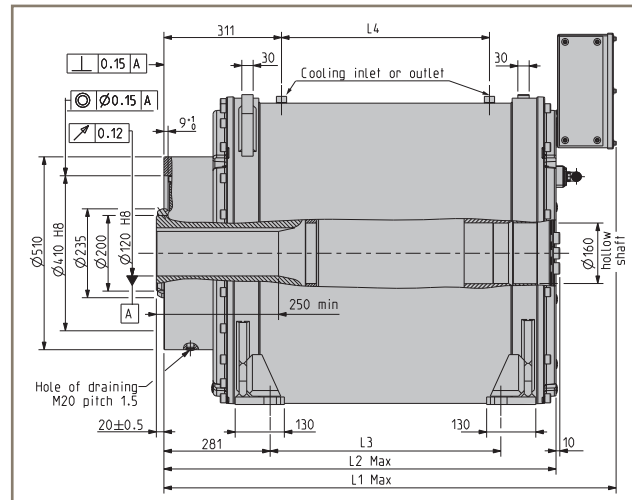
Dimensions [mm]

Shaft Height 400 mm / Thrust Bearing 29440

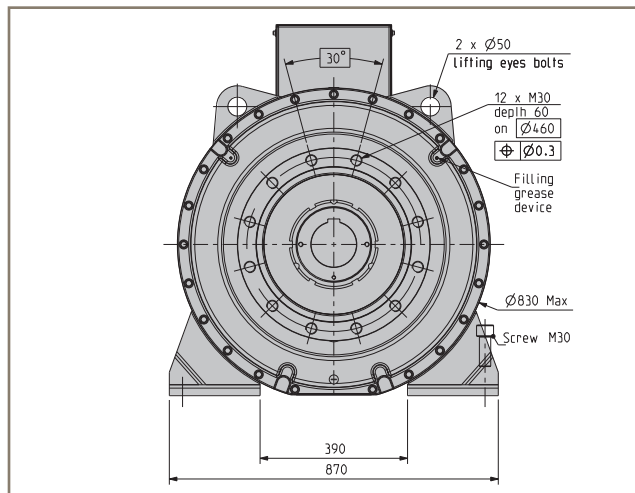
Rear view



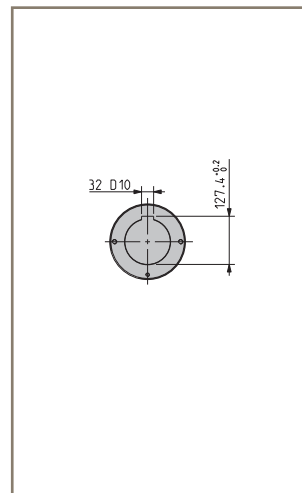
Side view



Front view



Shaft End



Model	L1 Max [mm]	L2 Max [mm]	L3 [mm]	L4 [mm]	Weight [kg]
TMW406	899	739	310	250	1445
TMW408	999	839	410	350	1585
TMW40A	1199	1039	610	550	1775
TMW40C	1199	1039	610	550	1855

User Data Checklist for Extruders

General application data

Nominal power		[kW]
Nominal/max. speed		[min ⁻¹]
Nominal/max. torque		[Nm]
Water cooling availability		[Y/N]

Extruder data

Screw diameter		[mm]
Cylinder pressure		[bar]
Screw extraction		[Front/Back]
Screw cooling		[Y/N]

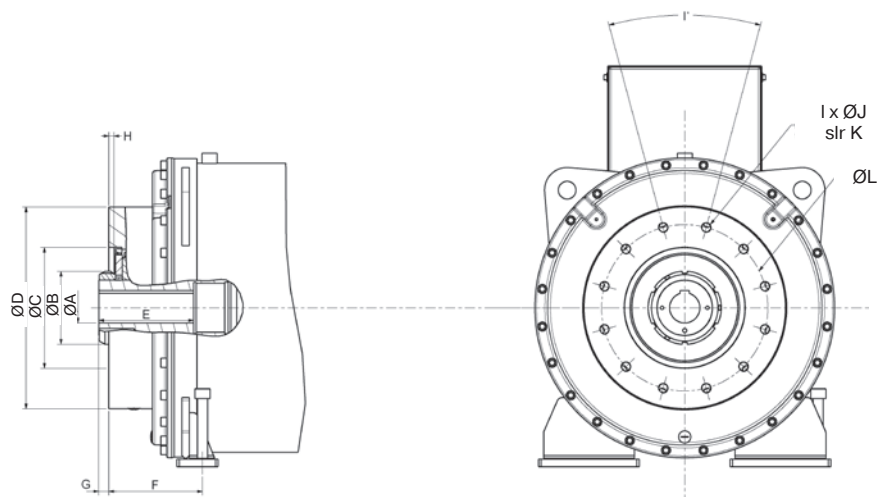
Mechanical Interface

Customized Interface - Dimension Limits [mm]							
Motor		TMW300			TMW400		
Thrust bearing		29422	29426	29430	29430	29434	29440
Hollow shaft Ø max.	A	60	80	110	110	120	150
External shaft Ø	B	145	165	185	185	205	235
Centering Ø min.	C	240	280	310	310	350	410
External front Ø	D	400	400	400	490	490	510
Length keyway max. (with G max)	E	179	179	179	270	270	270
Front length min.	F	186	198	203	249	262	281
Shaft length min. (with F min.)	G	20	20	20	20	20	20
Shaft length max. (with F min.)	G	45	33	28	55	42	23
Centering depth max.	H	9	9	9	9	9	9
Other dimensions	I to L	free	free	free	free	free	free
Screw extraction from the rear							
Hollow shaft Ø max.	A	60	80	90 (*)	110	120	135 (*)

(*) don't forget the key or other part on extruder screw

Required drawings

1. Screw interface
2. Barrel interface



Order Code

	1	2	3	4	5	6	7	8	9	10
Order example	TM	W	30	6LR	C	22	U	F	R	0003

1 Motor type	TM	Torque Motor
2 Cooling method	W	Water cooling (standard)
	A	Natural convection (with derating, consult local sales office for details)
3 Shaft height	30	315 mm
	40	400 mm
4 Torque/speed characteristics		(see motors data tables "Technical Data")
5 Feedback sensor	C	EnDat encoder (standard) Cable Ref. CS4UV1F3R0xxx*
	B	Direct EnDat encoder (option) Cable Ref. CS4UV1F3R0xxx*
		* xxx = Cable length in meter
6 Bearing	22	Thrust bearing 29422 only for TMW304...30A
	26	Thrust bearing 29426 only for TMW304...30A
	30	Thrust bearing 29430 only for TMW305...30A, TMW406...40C
	34	Thrust bearing 29434 only for TMW406...40C
	40	Thrust bearing 29440 only for TMW406...40C
	00	Ball bearing
	01	Roller bearing
7 Terminal Box	U	Upper rear (standard)
	R	At the rear on the right side (front view) (option)
	L	At the rear on the left side (front view) (option)
8 Extruder Screw Extraction/Cooling	F	Front extruder screw extraction
	P	Front extruder screw extraction (extruder screw cooling possible)
	R	Rear extruder screw extraction (extruder screw cooling possible) (consult us)
	Z	No screw extraction - no screw cooling
9 Fixed character	R	Fixed character
10 Shaft type and mechanical interface	0003	Hollow shaft with keyway Ø60 for TM300 with 29422
	0004	Hollow shaft with keyway Ø80 for TM300 with 29426
	0005	Hollow shaft with keyway Ø100 for TM300 with 29430
	0006	Hollow shaft with keyway Ø100 for TM400 with 29430
	0007	Hollow shaft with keyway Ø120 for TM400 with 29434
	0008	Hollow shaft with keyway Ø120 for TM400 with 29440
	7003	Solid shaft Ø120 for TM300 with roller bearing
	7004	Solid shaft Ø140 for TM300 with ball bearing
	7005	Solid shaft Ø160 for TM400 with roller bearing
	7006	Solid shaft Ø190 for TM400 with ball bearing
	xxxx	Other shaft interface, please consult us



Parker's Motion & Control Technologies

At Parker, we're guided by a relentless drive to help our customers become more productive and achieve higher levels of profitability by engineering the best systems for their requirements. It means looking at customer applications from many angles to find new ways to create value. Whatever the motion and control technology need, Parker has the experience, breadth of product and global reach to consistently deliver. No company knows more about motion and control technology than Parker. For further info call 00800 27 27 5374



Aerospace Key Markets

Aftermarket services
Commercial transports
Engines
General & business aviation
Helicopters
Launch vehicles
Military aircraft
Missiles
Power generation
Regional transports
Unmanned aerial vehicles

Key Products

Control systems & actuation products
Engine systems & components
Fluid conveyance systems & components
Fluid metering, delivery & atomization devices
Fuel systems & components
Fuel tank inerting systems
Hydraulic systems & components
Thermal management
Wheels & brakes



Climate Control Key Markets

Agriculture
Air conditioning
Construction Machinery
Food & beverage
Industrial machinery
Life sciences
Oil & gas
Precision cooling
Process
Refrigeration
Transportation

Key Products

Accumulators
Advanced actuators
CO₂ controls
Electronic controllers
Filter driers
Hand shut-off valves
Heat exchangers
Hose & fittings
Pressure regulating valves
Refrigerant distributors
Safety relief valves
Smart pumps
Solenoid valves
Thermostatic expansion valves



Electromechanical Key Markets

Aerospace
Factory automation
Life science & medical
Machine tools
Packaging machinery
Paper machinery
Plastics machinery & converting
Primary metals
Semiconductor & electronics
Textile
Wire & cable

Key Products

AC/DC drives & systems
Electric actuators, gantry robots & slides
Electrohydraulic actuation systems
Electromechanical actuation systems
Human machine interface
Linear motors
Stepper motors, servo motors, drives & controls
Structural extrusions



Filtration Key Markets

Aerospace
Food & beverage
Industrial plant & equipment
Life sciences
Marine
Mobile equipment
Oil & gas
Power generation & renewable energy
Process
Transportation
Water Purification

Key Products

Analytical gas generators
Compressed air filters & dryers
Engine air, coolant, fuel & oil filtration systems
Fluid condition monitoring systems
Hydraulic & lubrication filters
Hydrogen, nitrogen & zero air generators
Instrumentation filters
Membrane & fiber filters
Microfiltration
Sterile air filtration
Water desalination & purification filters & systems



Fluid & Gas Handling Key Markets

Aerial lift
Agriculture
Bulk chemical handling
Construction machinery
Food & beverage
Fuel & gas delivery
Industrial machinery
Life sciences
Marine
Mining
Mobile
Oil & gas
Renewable energy
Transportation

Key Products

Check valves
Connectors for low pressure fluid conveyance
Deep sea umbilicals
Diagnostic equipment
Hose couplings
Industrial hose
Mooring systems & power cables
PTFE hose & tubing
Quick couplings
Rubber & thermoplastic hose
Tube fittings & adapters
Tubing & plastic fittings

Hydraulics Key Markets

Aerial lift
Agriculture
Alternative energy
Construction machinery
Forestry
Industrial machinery
Machine tools
Marine
Material handling
Mining
Oil & gas
Power generation
Refuse vehicles
Renewable energy
Truck hydraulics
Turf equipment

Key Products

Accumulators
Cartridge valves
Electrohydraulic actuators
Human machine interfaces
Hybrid drives
Hydraulic cylinders
Hydraulic motors & pumps
Hydraulic systems
Hydraulic valves & controls
Hydrostatic steering
Integrated hydraulic circuits
Power take-offs
Power units
Rotary actuators
Sensors

Pneumatics Key Markets

Aerospace
Conveyor & material handling
Factory automation
Life science & medical
Machine tools
Packaging machinery
Transportation & automotive

Key Products

Air preparation
Brass fittings & valves
Manifolds
Pneumatic accessories
Pneumatic actuators & grippers
Pneumatic valves & controls
Quick disconnects
Rotary actuators
Rubber & thermoplastic hose & couplings
Structural extrusions
Thermoplastic tubing & fittings
Vacuum generators, cups & sensors

Process Control Key Markets

Alternative fuels
Biopharmaceuticals
Chemical & refining
Food & beverage
Marine & shipbuilding
Medical & dental
Microelectronics
Nuclear Power
Offshore oil exploration
Oil & gas
Pharmaceuticals
Power generation
Pulp & paper
Steel
Water/wastewater

Key Products

Analytical Instruments
Analytical sample conditioning products & systems
Chemical injection fittings & valves
Fluoropolymer chemical delivery fittings, valves & pumps
High purity gas delivery fittings, valves, regulators & digital flow controllers
Industrial mass flow meters/ controllers
Permanent no-weld tube fittings
Precision industrial regulators & flow controllers
Process control double block & bleeds
Process control fittings, valves, regulators & manifold valves

Sealing & Shielding Key Markets

Aerospace
Chemical processing
Consumer
Fluid power
General Industrial
Information technology
Life sciences
Microelectronics
Military
Oil & gas
Power generation
Renewable energy
Telecommunications
Transportation

Key Products

Dynamic seals
Elastomeric o-rings
Electro-medical instrument design & assembly
EMI shielding
Extruded & precision-cut, fabricated elastomeric seals
High temperature metal seals
Homogeneous & inserted elastomeric shapes
Medical device fabrication & assembly
Metal & plastic retained composite seals
Shielded optical windows
Silicone tubing & extrusions
Thermal management
Vibration dampening

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