



HANSA-TMP

MANUFACTURING YOUR SUCCESS

HT 19 / A / 307 / 0423 / E

THE PRODUCTION LINE OF HANSA-TMP

Variable Displacement Radial Piston Motor

TMR05



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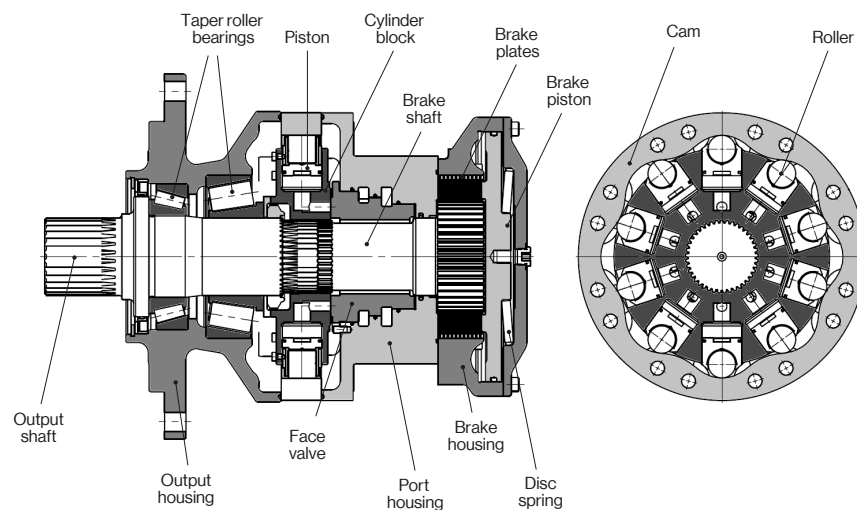
TMR05

The TMR05 is the smallest of the range with displacements from 260 to 565 cc/rev.

The TMR05 motor has a range of features and options designed to suit your specific application:

- Radial piston, multi-stroke operation
- Modular design
- Two speed options
- Parking brake options
- Freewheel capability
- Multiple mounting arrangements
- 350 bar continuous pressure
- Fast delivery options

The motor is designed with a rotating cylinder block connected to the drive shaft, which is mounted in taper roller bearings within the motor housing. This offers a high radial and axial load carrying capacity.



The pistons are located radially within the bores of the cylinder block. When oil is fed under pressure through the face valve and into the cylinder block, the pistons attempt to move outwards. The rollers react on the incline of the cam profile and this action produces rotation of the cylinder block.

The rate of flow to the motor will determine the speed at which the piston moves out against the cam ring and consequently the rotational speed of the motor. Once the power stroke is complete, the pistons return into the bore by the action of the reverse cam slope, ready for the next pressure cycle.

With units operating all over the world in a variety of applications including industrial, mobile and marine.

PRODUCT FEATURES

Fluids	HL; HLP to DIN 51524 Other specified fluids are possible.
Normal operating viscosity range	20 to 200 cSt
Maximum intermittent viscosity range	10 to 2,000 cSt
Normal operating temperature range	+15°C to +70°C [+59°F to +158°F]
Maximum intermittent temperature range	-20° to +80° C [-4°F to +176°F]
Fluid cleanliness	NAS 1638 class 9 / ISO code 18/15

FIRST DISPLACEMENT

Displacement option	Y	A	B	C	D	E
Geometric displacement (cc/rev) [in ³]	260 [15.9]	373 [22.8]	424 [25.9]	472 [28.8]	519 [31.7]	565 [34.5]
Specific torque (Nm/bar) [lbf.ft/psi]	4.1 [0.21]	5.9 [0.30]	6.7 [0.34]	7.5 [0.38]	8.3 [0.42]	9.0 [0.46]
Max. continuous speed (rpm)	300	250	230	210	200	180
Max. continuous power (kW) [hp]	29 [38.9]	29 [38.9]	29 [38.9]	29 [38.9]	29 [38.9]	29 [38.9]
Max. continuous pressure (bar) [psi]	350 [5,076]	350 [5,076]	350 [5,076]	350 [5,076]	350 [5,076]	350 [5,076]
Max. pressure (bar)* [psi]	450 [6,527]	450 [6,527]	450 [6,527]	450 [6,527]	450 [6,527]	450 [6,527]

SECOND DISPLACEMENT

Nominal displacement (cc/rev)	Y	A	B	C	D	E
Geometric displacement (cc/rev) [in ³]	130 [7.9]	187 [11.4]	212 [12.9]	236 [14.4]	260 [15.9]	283 [17.3]
Specific torque (Nm/bar) [lbf.ft/psi]	2.1 [0.11]	3.0 [0.15]	3.4 [0.17]	3.8 [0.19]	4.1 [0.21]	4.5 [0.23]
Max. continuous speed (rpm)	330	310	280	260	240	220
Max. continuous power (kW) preferred direction [hp]	19 [25.5]	19 [25.5]	19 [25.5]	19 [25.5]	19 [25.5]	19 [25.5]
Max. continuous power (kW) non-preferred direction [hp]	15 [20.1]	15 [20.1]	15 [20.1]	15 [20.1]	15 [20.1]	15 [20.1]
Max. continuous pressure (bar) [psi]	350 [5,076]	350 [5,076]	350 [5,076]	350 [5,076]	350 [5,076]	350 [5,076]
Max. pressure (bar)* [psi]	450 [6,527]	450 [6,527]	450 [6,527]	450 [6,527]	450 [6,527]	450 [6,527]

*Maximum values should only be applied for a small portion of the duty cycle.



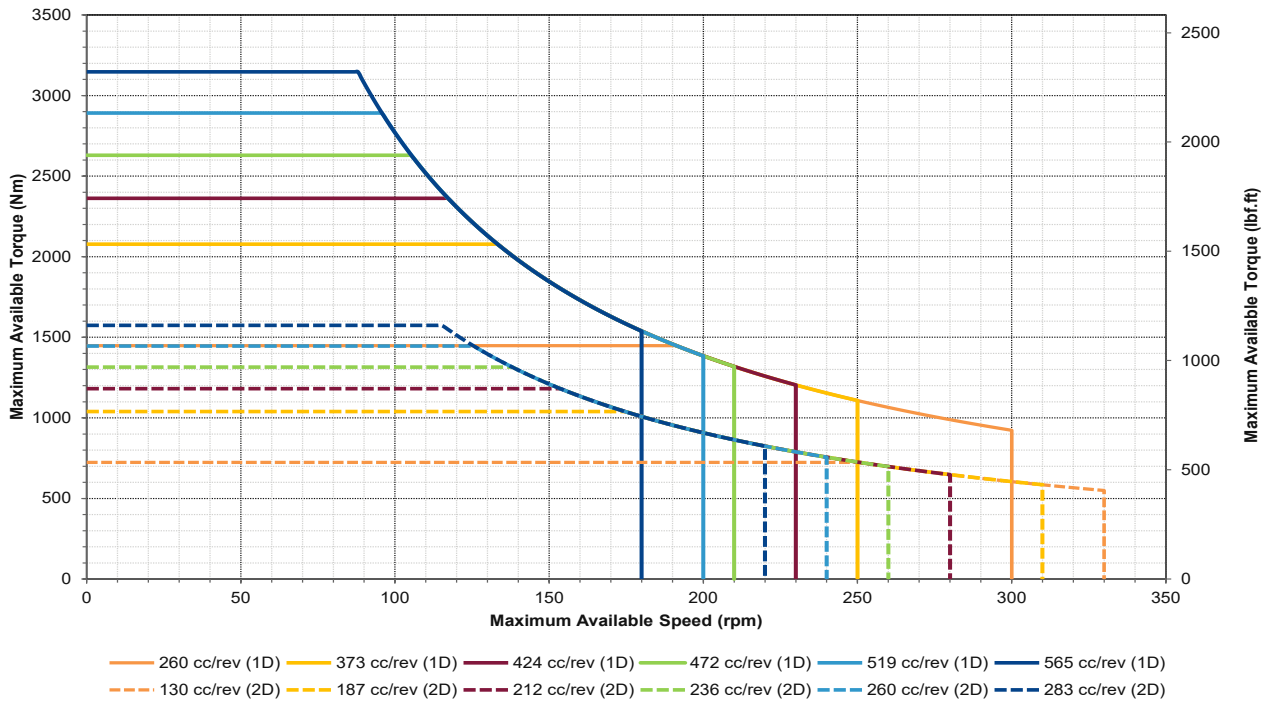
Weight of motor without oil



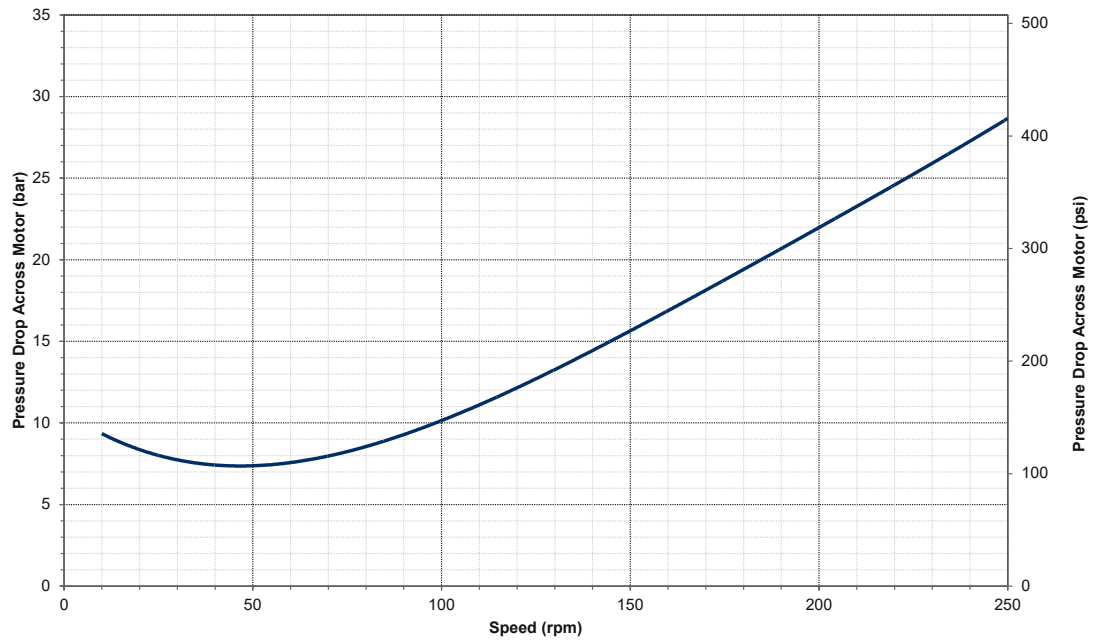
Sizes are listed in mm, inches shown in brackets

QUICK SELECTION DIAGRAM

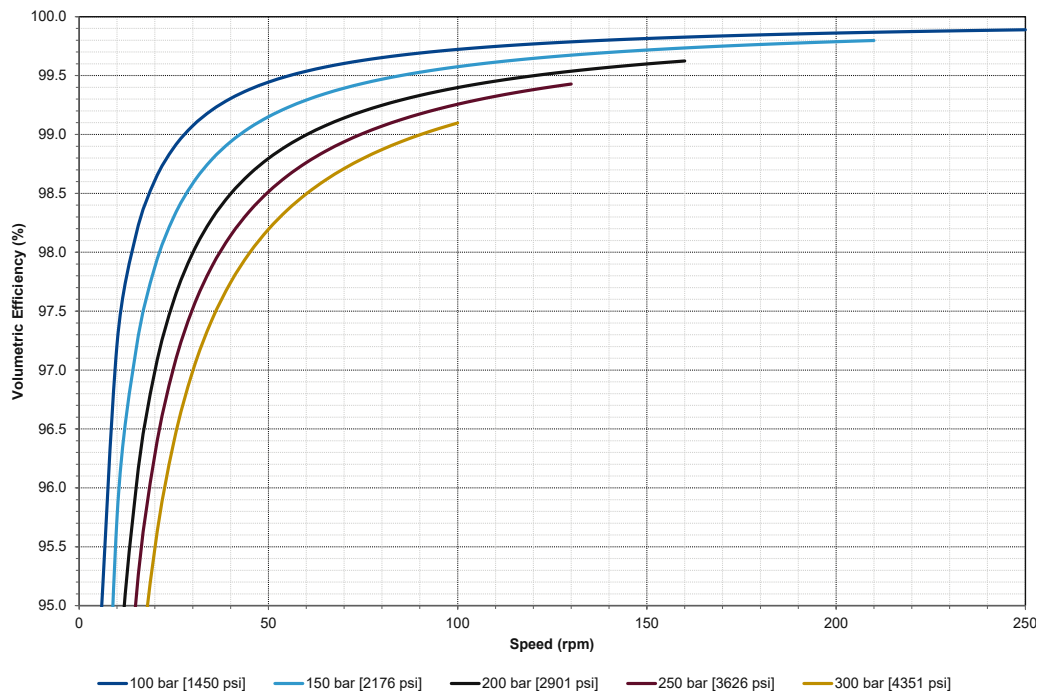
Based on your torque and speed requirements, the diagram below can be used to help determine which cam size best suits your application. Shown for both maximum displacement (1D) and minimum displacement (2D), the diagram outlines the limits of the motor based on its continuous power rating.



NO LOAD PRESSURE DROP

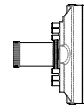
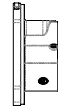
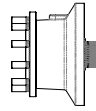


VOLUMETRIC EFFICIENCY



All performance graphs plotted for maximum displacement (565 cc/rev) using ISO46 fluid at 50°C.

MOTOR ORDER CODE



PRODUCT
01

CAM
02

FRONT MODULE
03 04 05 06 07

PORT MODULE
08 09 10 11 12

REAR BRAKE
13

OPTIONS
14 15 16

SPECIALS
17

DESIGN
18

TMR05

00

A2

PRODUCT

01	TMR05	Radial piston motor
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CAM - DISPLACEMENT

02	Y	260 cc/rev
	A	373 cc/rev
	B	424 cc/rev
	C	472 cc/rev
	D	519 cc/rev
	E	565 cc/rev

FRONT MODULE - CASE STYLE

03	T	Torque unit
	S	Shaft motor front case flange
	W	Wheel motor no case flange

FRONT MODULE - OUTPUT SHAFT

04	N	No shaft (torque unit DIN 5480 - N48 x 2 x 30 x 22 x 9H spline)
	E	No shaft (torque unit DIN 5480 - N50 x 2 x 30 x 24 x 9H spline)
	A	Keyed shaft - Ø50
	B	Keyed shaft DIN
	D	Splined shaft (DIN 5480 - W55 x 3 x 30 x 17 x 8f)
	C	Compact wheel output 5 off, Ø140 PCD, Ø92.7 spigot
	K	Wheel output 10 off, Ø140 PCD, Ø92.7 spigot
	P	Wheel output 5 off, Ø140 PCD, Ø92.7 spigot
	L	Large wheel output 6 off, Ø205 PCD, Ø160.7 spigot

FRONT MODULE - OUTPUT FITTINGS

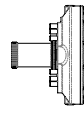
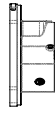
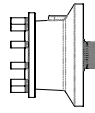
05	N	None (torque unit or shaft motor)
	A	Wheel flange with M14 x 1.5 studs fitted
	B	Wheel flange with M14 x 1.5 studs & nuts fitted
	C	Wheel flange with M12 x 1.5p tapped holes
	F	Wheel flange with Ø22 through holes
	G	Wheel flange with M18 x 1.5 studs and nuts fitted
	H	Wheel flange with M14 x 1.5p tapped holes

FRONT MODULE - SHAFT SEAL CONFIGURATION

06	1	Standard
	3	Standard plus heavy duty dirt excluder

FRONT MODULE - FRONT BRAKE

07	N	No brake (standard)
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PRODUCT 01	CAM 02	03	FRONT MODULE 04 05 06 07	PORT MODULE 08 09 10 11 12	REAR BRAKE 13	OPTIONS 14 15 16	SPECIALS 17	DESIGN 18
TMR05							00	A2

PORT MODULE - MOUNTING FLANGE

08	N	No flange (torque units and shaft motors)
	H	Horseshoe flange (wheel motors only)
	L	Lug fixing flange (wheel motors only)

PORT MODULE - SPEED AND ROTATION

09	1R	Single speed - flow port A = CW rotation
	1L	Single speed - flow port A = ACW rotation
	RA	Two speed (Ratio 2:1) - flow port A = CW preferred rotation
	LA	Two speed (Ratio 2:1) - flow port A = ACW preferred rotation

PORT MODULE - HYDRAULIC CONNECTIONS (SEE PAGE 23 FOR PORT DESIGNATIONS)

10	0	No port block
	1	All ports SAE J514 O ring boss
	3	All ports BSP ('G' Ports)

PORT MODULE - ADDITIONAL CIRCUIT VALVING

11	N	None
	B	Purge and relief valve with standard orifice (1.5 mm)

PORT MODULE - SPEED SENSOR

12	N	None
	S	Speed sensor port in port housing (M12 x 1.0p)
	U	Speed sensor port in port housing (incl. sensor and connector)

REAR BRAKE

13	N	None
	Q	"Q" parking brake (4,220 Nm) with screwed on cover
	R	"R" parking brake (4,220 Nm) with press fit cover

OPTIONS

14 15 16	0	None
	B	Face valve with round porting
	H	Heavy duty 16mm horseshoe flange (single speed only)
	G	Special paint (specify RAL No)
	P	Shaft-up vent port
	V	Viton seal material

SPECIALS

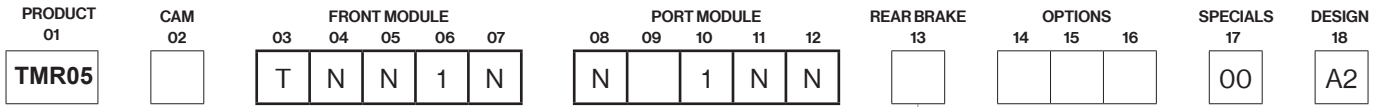
17	00	Specials (Rotary Power specified)
	01	Compact housing (torque units only)

DESIGN SERIES

18	A2	Design series (Rotary Power specified)
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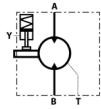
TORQUE UNIT


SINGLE SPEED OPTION

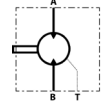


(For models shown below)

 35 kg [77.2] with brake



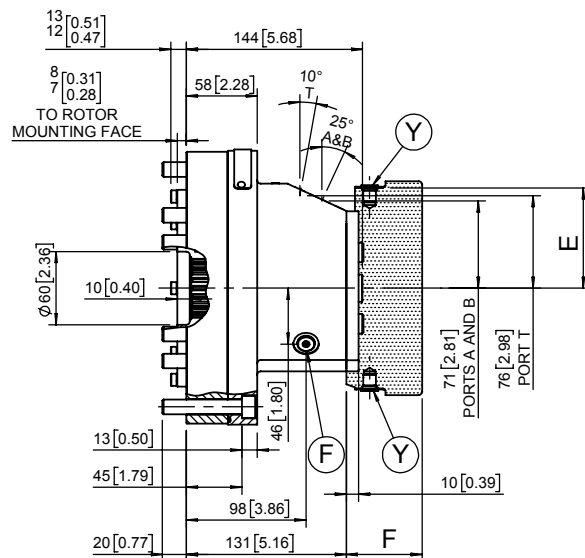
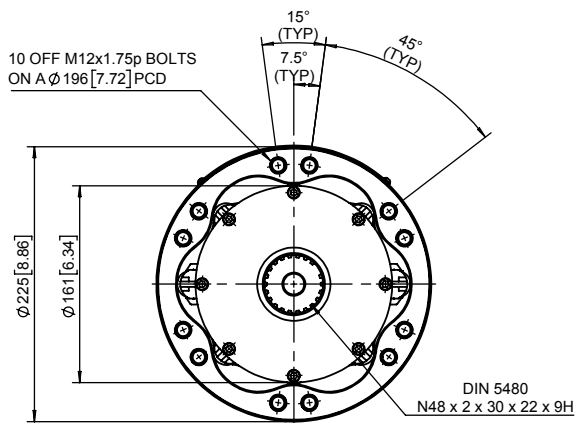
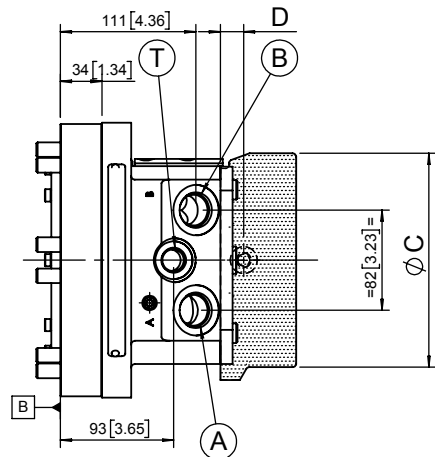
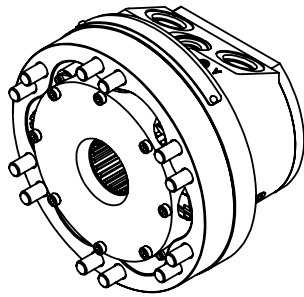
 25 kg [55.1 lb] without brake



Option	Rated holding torque	C	D	E	F	Weight
Q - screwed cover	4,220 Nm [3,113 lbf.ft]	Ø175 [6.89]	19 [0.75]	83 [3.15]	72 [2.83]	10 kg [22 lb]
R - press fit cover	4,220 Nm [3,113 lbf.ft]	Ø175 [6.89]	19 [0.75]	83 [3.15]	64 [2.52]	10 kg [22 lb]

Rotor spline
DIN 5480: N48 x 2 x 30 x 22 x 9H


Other spline options available, contact us for more information.
See page 23 for hydraulic connection options.




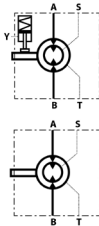
TORQUE UNIT TWO SPEED OPTION

PRODUCT 01	CAM 02	FRONT MODULE 03 04 05 06 07					PORT MODULE 08 09 10 11 12					REAR BRAKE 13	OPTIONS 14 15 16			SPECIALS 17	DESIGN 18
TMR05		T	N	N	1	N	N		1	N	N					00	A2

(For models shown below)

 38kg [83.8 lb] with brake

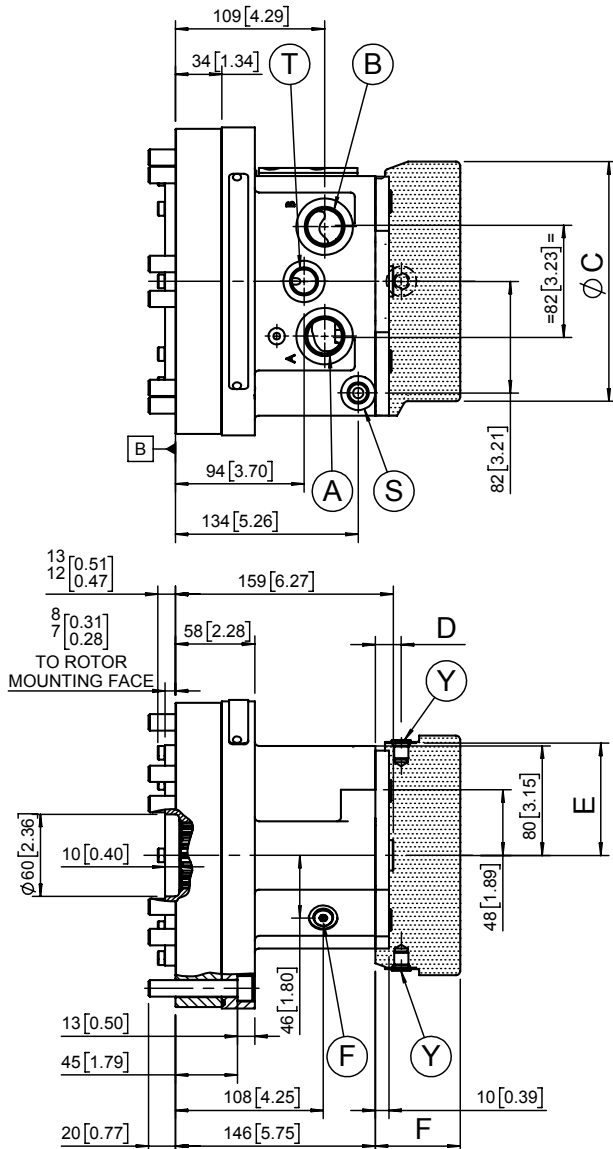
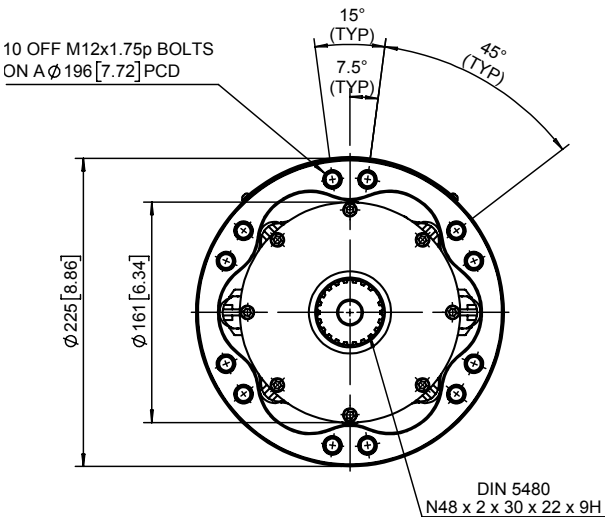
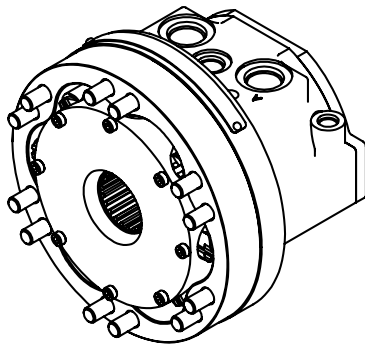
 28kg [61.7 lb] without brake



Option	Rated holding torque	C	D	E	F	Weight
Q - screwed cover	4,220 Nm [3,113 lbf.ft]	Ø175 [6.89]	19 [0.75]	83 [3.15]	72 [2.76]	10 kg [22 lb]
R - press fit cover	4,220 Nm [3113 lbf.ft]	Ø175 [6.89]	19 [0.75]	83 [3.15]	64 [2.52]	10 kg [22 lb]

Rotor spline
DIN 5480:N48 x 2 x 30 x 22 x 9H


Other spline options available, contact us for more information.
See page 23 for hydraulic connection options.

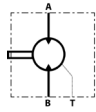


TORQUE UNIT COMPACT HOUSING

PRODUCT	CAM	FRONT MODULE					PORT MODULE					REAR BRAKE	OPTIONS			SPECIALS	DESIGN
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18
TMR05		T	E	N	1	N	N		1	N	N	N				01	A2

(For models shown below)

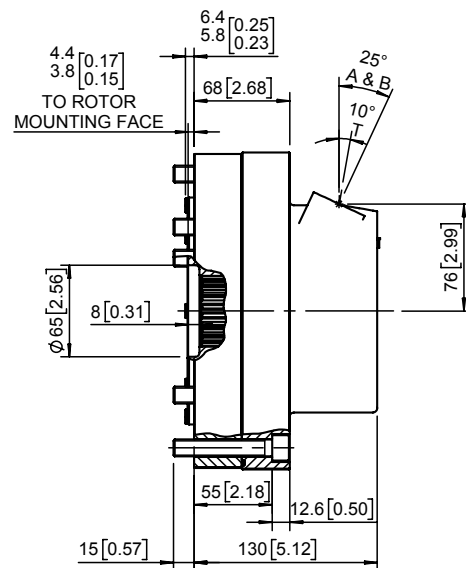
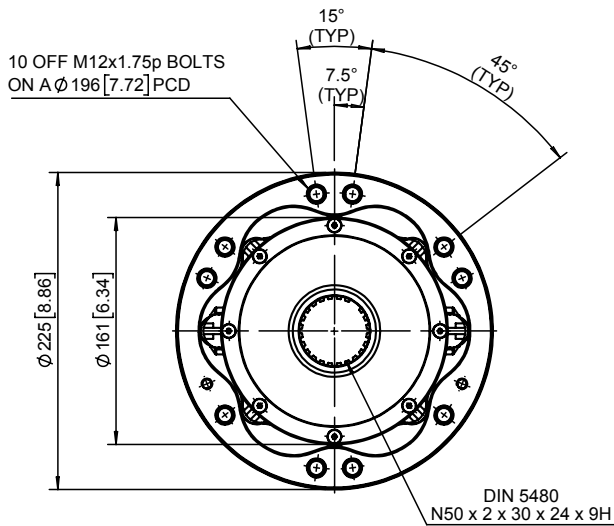
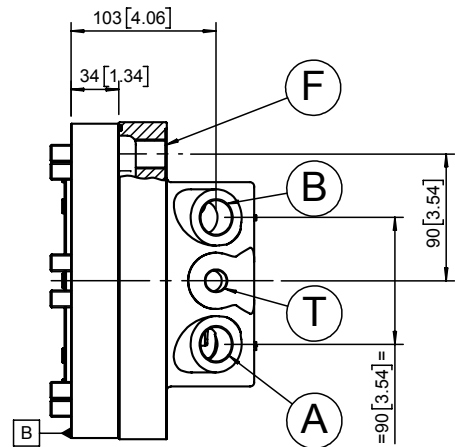
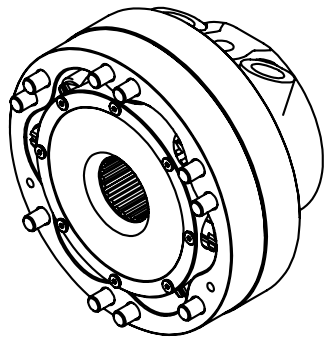
 21 kg [46.3 lb] without brake



Rear parking brake not available with compact housing.
Compact housing is only available in single speed.

Rotor spline
DIN 5480: N50 X 2 X 30 X 24 X 9H


Other spline options available, contact us for more information.
See page 23 for hydraulic connection options.

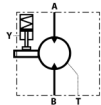



SHAFT MOTOR SINGLE SPEED WITH SPLINE

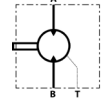
PRODUCT 01	CAM 02	FRONT MODULE 03 04 05 06 07					PORT MODULE 08 09 10 11 12					REAR BRAKE 13	OPTIONS 14 15 16			SPECIALS 17	DESIGN 18
TMR05		S	D	N	1	N	N		1	N	N					00	A2

(For models shown below)

 54 kg [119.1 lb] with brake

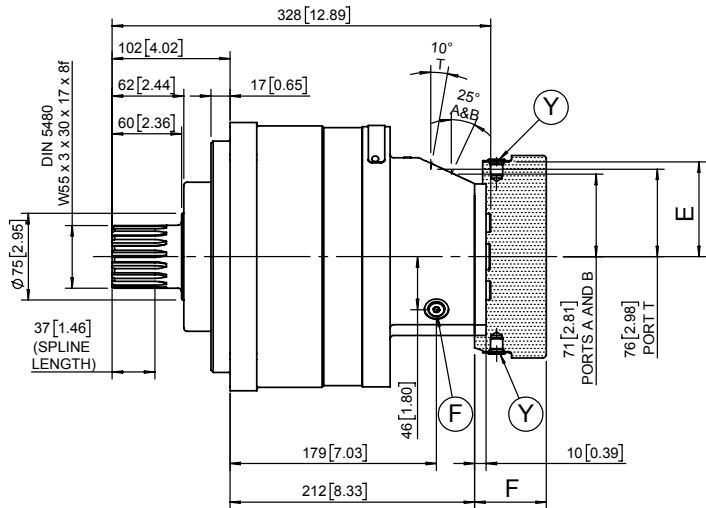
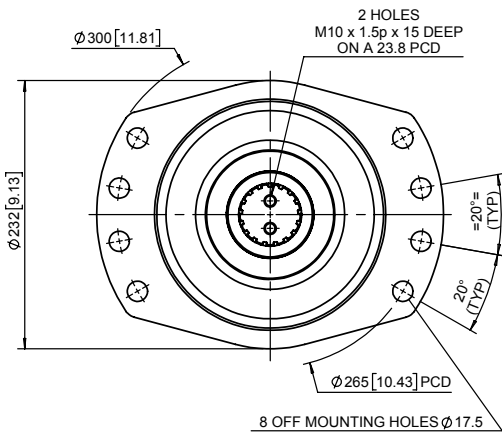
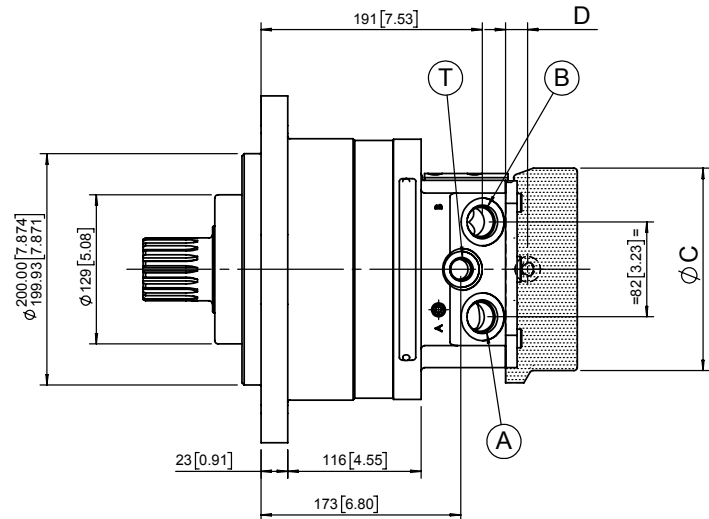
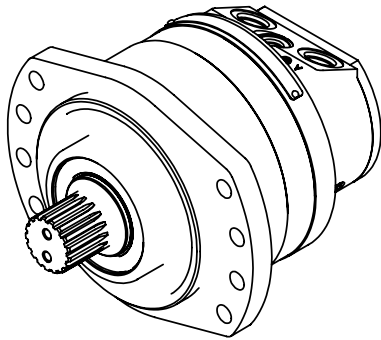


 44 kg [97.0 lb] without brake



Option	Rated holding torque	C	D	E	F	Weight
Q - screwed cover	4,220 Nm [3,113 lbf.ft]	Ø175 [6.89]	19 [0.75]	83 [3.15]	72 [2.83]	10 kg [22 lb]
R - press fit cover	4,220 Nm [3,113 lbf.ft]	Ø175 [6.89]	19 [0.75]	83 [3.15]	64 [2.52]	10 kg [22 lb]

See page 23 for hydraulic connection options.



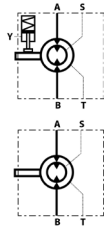
SHAFT MOTOR TWO SPEED WITH SPLINE

PRODUCT 01	CAM 02	FRONT MODULE					PORT MODULE					REAR BRAKE 13	OPTIONS			SPECIALS 17	DESIGN 18
TMR05		S	D	N	1	N	N		1	N	N					00	A2

(For models shown below)

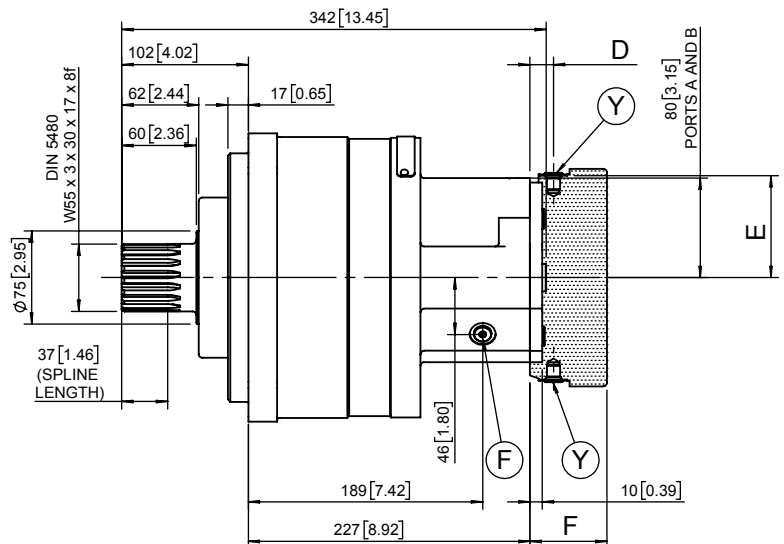
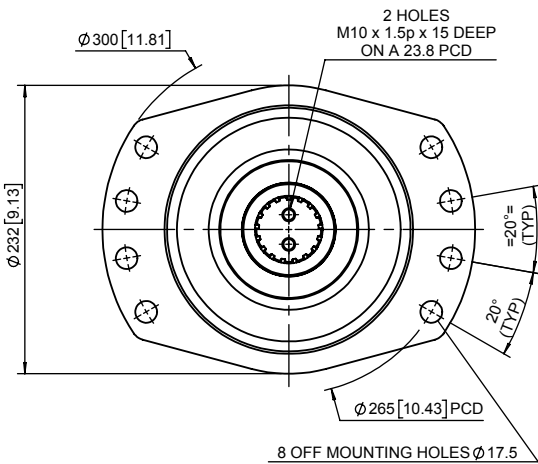
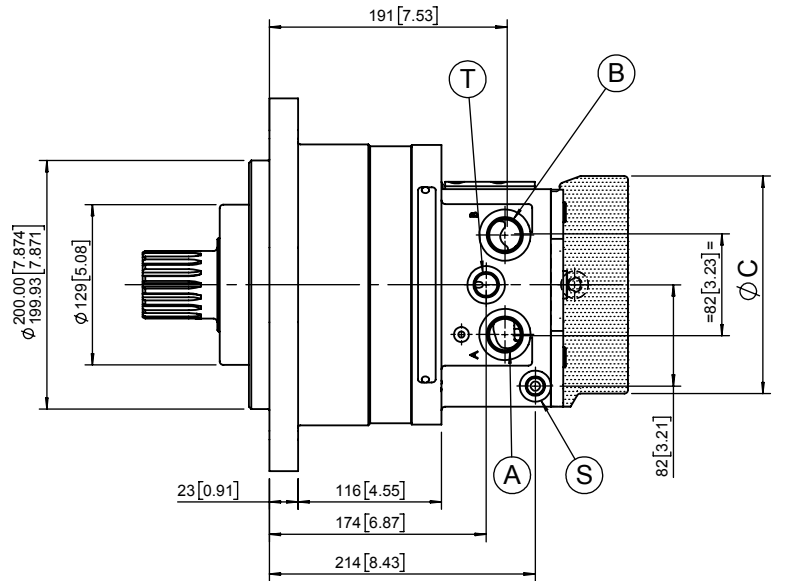
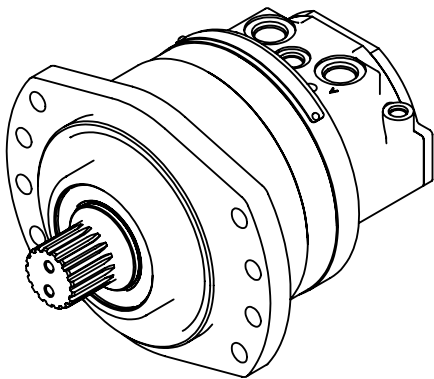
kg 57 kg [125.7 lb] with brake

kg 47 kg [103.6 lb] without brake



Option	Rated holding torque	C	D	E	F	Weight
Q - screwed cover	4,220 Nm [3,113 lbf.ft]	Ø175 [6.89]	19 [0.75]	83 [3.15]	72 [2.83]	10 kg [22 lb]
R - press fit cover	4,220 Nm [3113 lbf.ft]	Ø175 [6.89]	19 [0.75]	83 [3.15]	64 [2.52]	10 kg [22 lb]

See page 23 for hydraulic connection options.

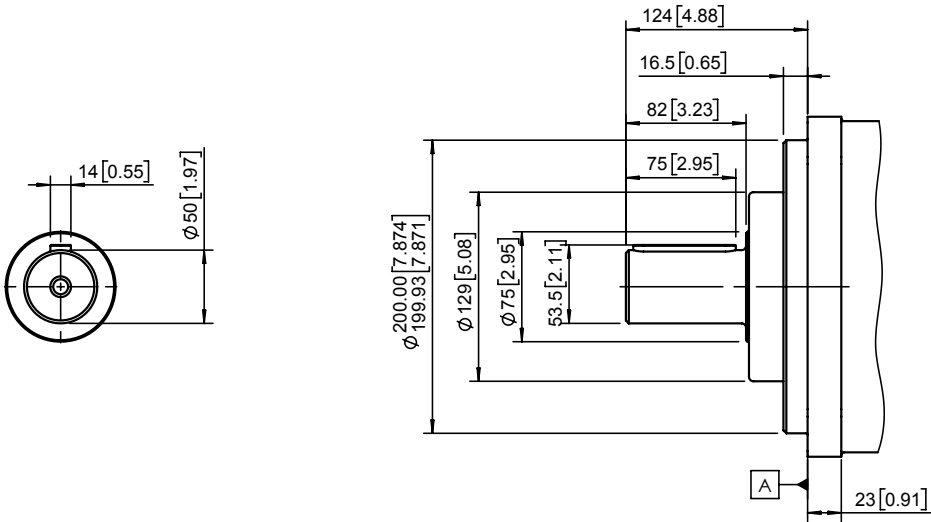


SHAFT MOTOR OUTPUT OPTIONS

PRODUCT 01	CAM 02	FRONT MODULE 03 04 05 06 07					PORT MODULE 08 09 10 11 12					REAR MODULE 13	OPTIONS 14 15 16			SPECIALS 17	DESIGN 18
TMR05																00	A2

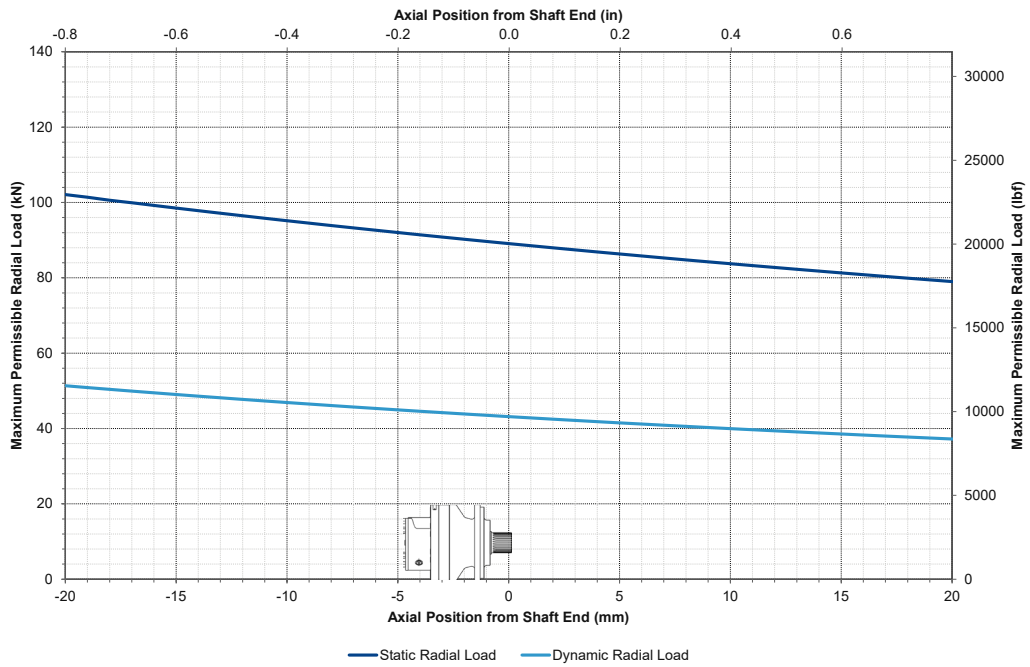
TMR05 HOUSING - KEYED OUTPUT

FRONT MODULE				
03	04	05	06	07
S	A	N	1	N

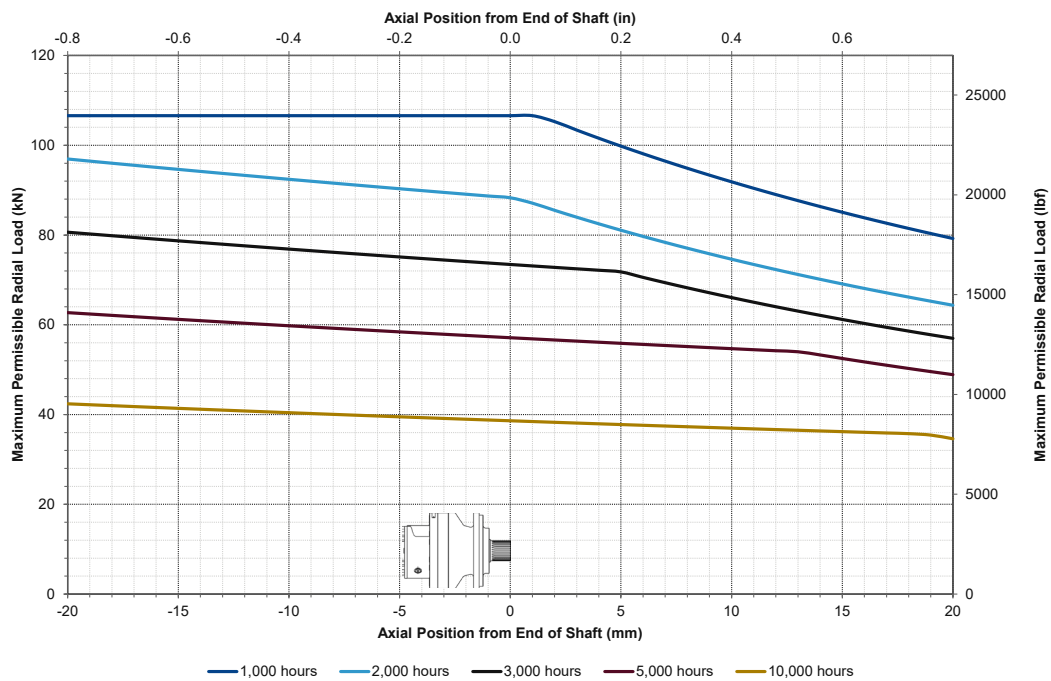


NOTE: ALL DIMENSIONS BEYOND FACE A ARE AS PER MAIN DRAWING

SHAFT MOTOR PERMISSIBLE DYNAMIC AND STATIC RADIAL LOAD



SHAFT MOTOR L10 LIFE AT 150 BAR, 100 RPM




$$\text{New life (hours)} = \frac{\text{plotted speed (rpm)} \times \text{plotted life (hours)}}{\text{desired speed (rpm)}}$$

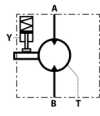
Contact us for alternative cycle duties.
All data is based on the standard spline motor output shaft, option D.
All data is based on theoretical calculations.


WHEEL MOTOR SINGLE SPEED OPTION

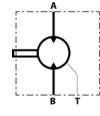
PRODUCT 01	CAM 02	FRONT MODULE 03 04 05 06 07					PORT MODULE 08 09 10 11 12					REAR BRAKE 13	OPTIONS 14 15 16			SPECIALS 17	DESIGN 18
TMR05		W	K		1	N	H		1	N	N					00	A2

(For models shown below)

 48 kg [105.8] with brake



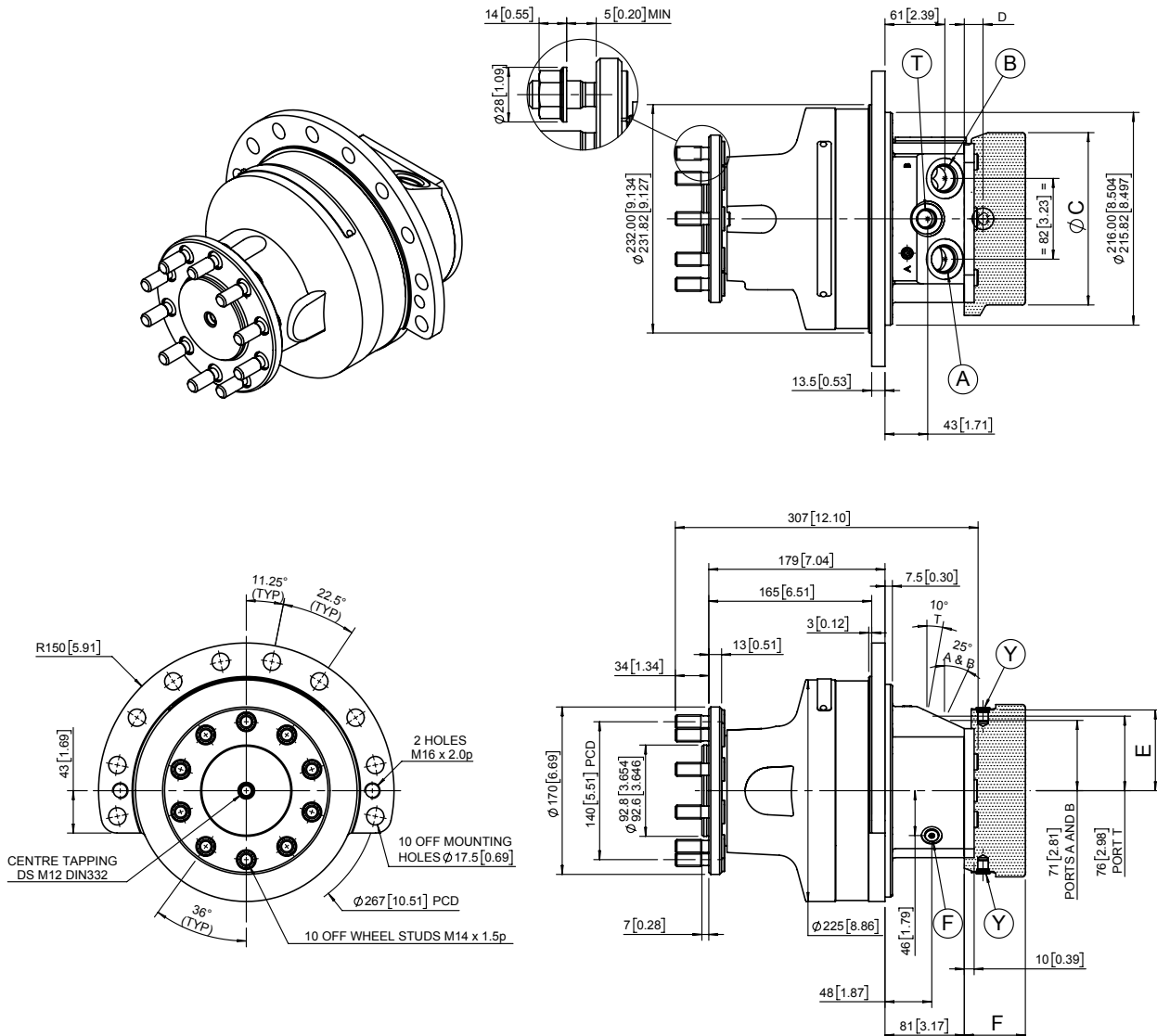
 38 kg [83.8 lb] without brake



Option	Rated holding torque	C	D	E	F	Weight
Q - screwed cover	4,220 Nm [3,113 lbf.ft]	Ø175 [6.89]	19 [0.75]	83 [3.15]	72 [2.83]	10 kg [22 lb]
R - press fit cover	4,220 Nm [3,113 lbf.ft]	Ø175 [6.89]	19 [0.75]	83 [3.15]	64 [2.52]	10 kg [22 lb]

Option	Output fittings
A	M14x1.5 studs fitted
B	M14x1.5 studs & nuts fitted
C	M12x1.5p tapped holes
F	Ø22 through holes
G	M18x1.5 studs and nuts fitted
H	M14x1.5p tapped holes

See page 23 for hydraulic connection options.



WHEEL MOTOR TWO SPEED OPTION

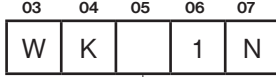
PRODUCT
01

TMR05

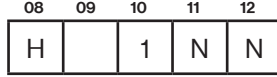
CAM
02



FRONT MODULE



PORT MODULE



REAR BRAKE



OPTIONS



SPECIALS



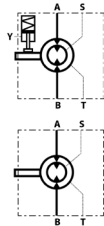
DESIGN



(For models shown below)

51 kg [112.4] with brake

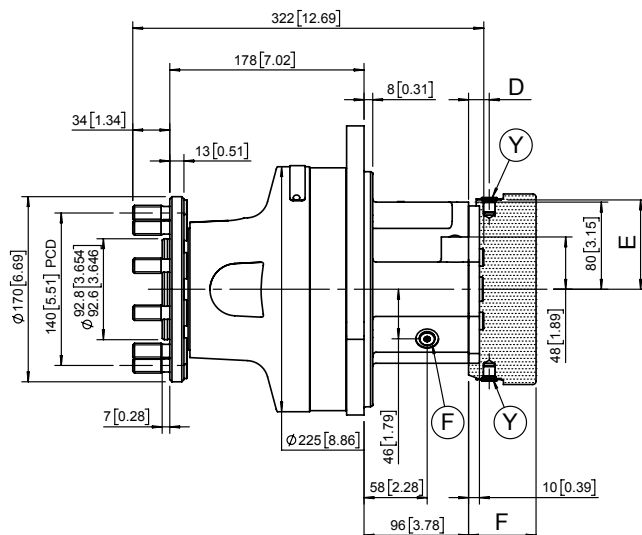
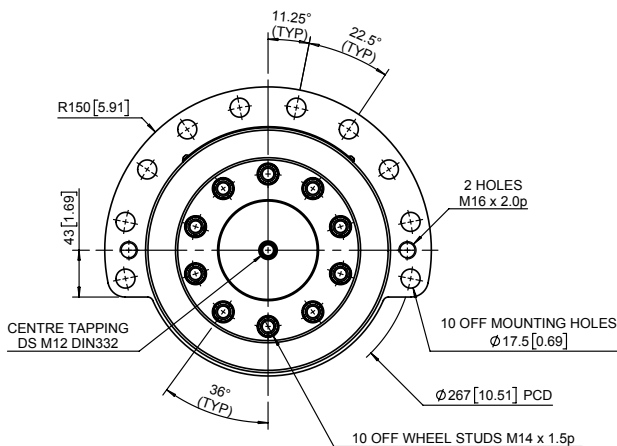
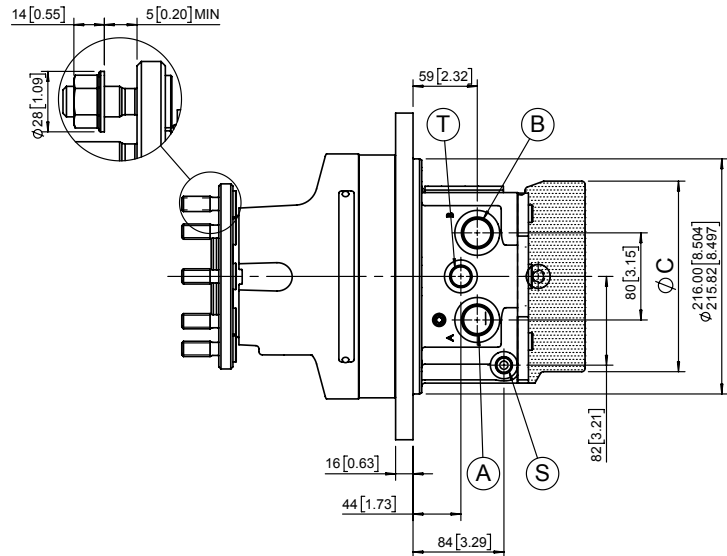
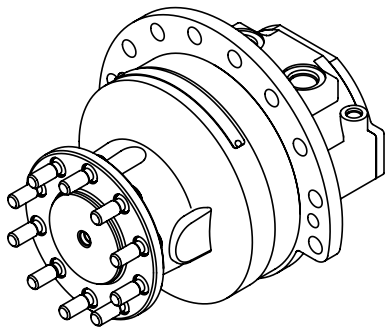
41 kg [90.4 lb] without brake



Option	Rated holding torque	C	D	E	F	Weight
Q - screwed cover	4,220 Nm [3,113 lbf.ft]	Ø175 [6.89]	19 [0.75]	83 [3.15]	72 [2.83]	10 kg [22 lb]
R - press fit cover	4,220 Nm [3,113 lbf.ft]	Ø175 [6.89]	19 [0.75]	83 [3.15]	64 [2.52]	10 kg [22 lb]

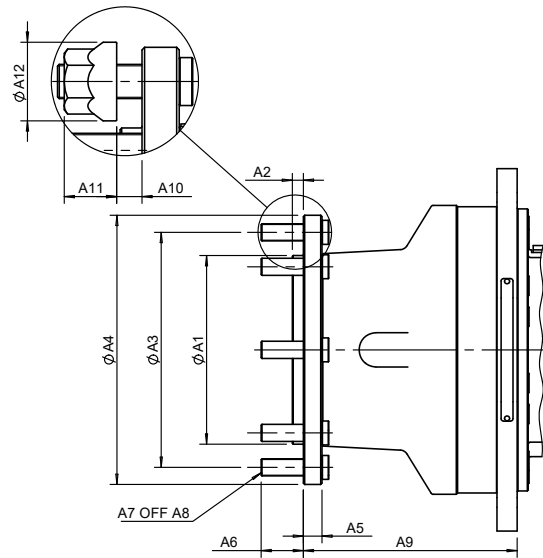
Option	Output fittings
A	M14x1.5 studs fitted
B	M14x1.5 studs & nuts fitted
C	M12x1.5p tapped holes
F	Ø22 through holes
G	M18x1.5 studs and nuts fitted
H	M14x1.5p tapped holes

See page 23 for hydraulic connection options.



WHEEL MOTOR OUTPUT OPTIONS

PRODUCT 01	CAM 02	FRONT MODULE 03 04 05 06 07					PORT MODULE 08 09 10 11 12					REAR BRAKE 13	OPTIONS 14 15 16			SPECIALS 17	DESIGN 18
TMR05		W														00	A2

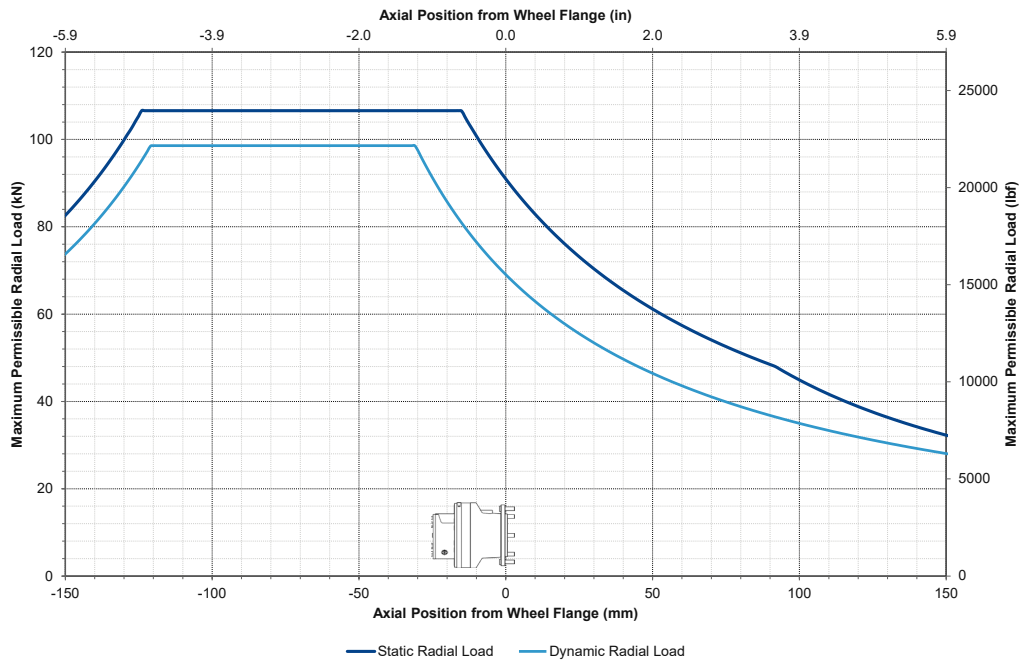


WHEEL MOTOR - OUTPUT SHAFT

Option	Type	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10 (min)	A11	A12
C	Compact wheel	Ø92.7 [3.65]	7 [0.28]	Ø140 [5.51]	Ø180 [7.09]	10.5 [0.41]	32.5 [1.28]	5	M14x1.5p (studs)	145 [5.71]	5 [0.20]	14 [0.55]	28 [1.10]
K	Standard wheel	Ø92.7 [3.65]	7 [0.28]	140 [5.51]	170 [6.69]	13 [0.51]	34 [1.34]	10	M14x1.5p (studs) M12x1.5p (holes) Ø22 (holes)	178 [7.01]	5 [0.20]	14 [0.55]	28 [1.10]
P	Standard wheel	Ø92.7 [3.65]	7 [0.28]	140 [5.51]	170 [6.69]	13 [0.51]	34 [1.34]	10	M14x1.5p (studs) Ø22 (holes)	178 [7.01]	5 [0.20]	14 [0.55]	28 [1.10]
L	Large wheel	Ø160.7 [6.33]	14 [0.55]	Ø205 [8.07]	Ø245 [9.65]	13 [0.51]	40 [1.57]	6	M18 x 1.5p (studs)	178 [7.01]	5 [0.20]	18 [0.71]	Ø28 [1.10]

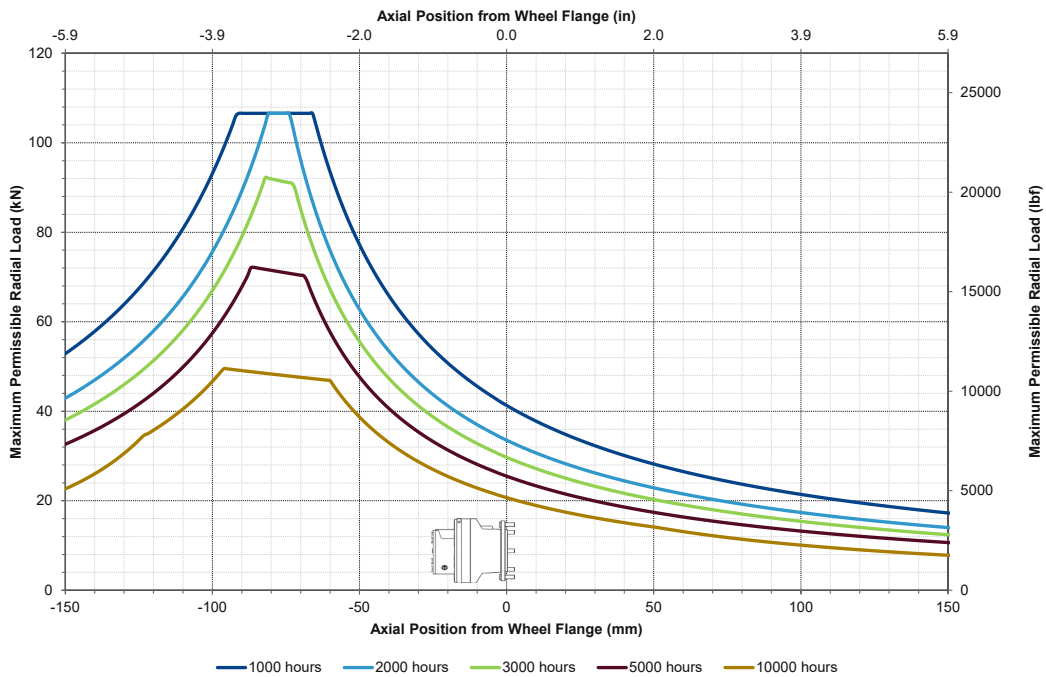
WHEEL MOTOR

PERMISSIBLE DYNAMIC AND STATIC RADIAL LOAD



WHEEL MOTOR

L10 LIFE AT 150 BAR, 100RPM



$$\text{New life (hours)} = \frac{\text{plotted speed (rpm)} \times \text{plotted life (hours)}}{\text{desired speed (rpm)}}$$

Contact us for alternative cycle duties.
 All data is based on the standard wheel motor output shaft, option L.
 All data is based on theoretical calculations.

PARKING BRAKES

PRODUCT 01	CAM 02	FRONT MODULE 03 04 05 06 07					PORT MODULE 08 09 10 11 12					REAR BRAKE 13	OPTIONS 14 15 16			SPECIALS 17	DESIGN 18
TMR05																	

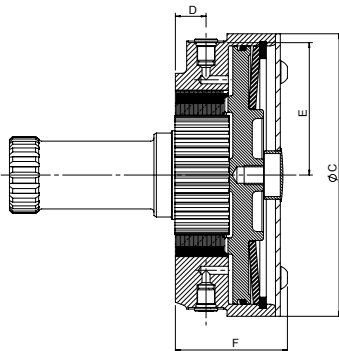
Option	Rated holding torque	C	D	E	F	Weight
Q - screwed cover	4,220 Nm [3,113 lbf.ft]	Ø175 [6.89]	19 [0.75]	83 [3.15]	72 [2.83]	10 kg [22 lb]
R - press fit cover	4,220 Nm [3113 lbf.ft]	Ø175 [6.89]	19 [0.75]	83 [3.15]	64 [2.52]	10 kg [22 lb]

The TMR05 multi-disc parking brake is a spring applied, hydraulic release, fail safe brake designed to be used with TMR05 motors in static situations.

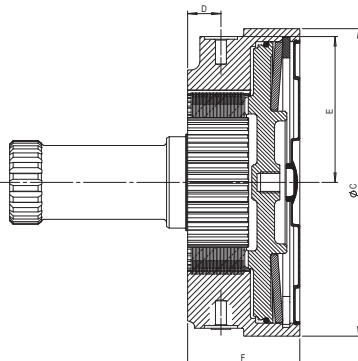
The multi-disc brake has a modular design which ensures it can be connected to any variant of the TMR05 motor.

The brake has two hydraulic release ports, one at the top of the housing and one at the bottom. The brake can be manually released by removing the plug in the cover and using an M12 screw to pull the piston back.

Q BRAKE



R BRAKE



	Q brake and R brake
Brake static capacity when new	4220 Nm [3,113 lbf.ft]
Static capacity after ten dynamic uses	3,207.2 - 3,671.4 Nm ⁽¹⁾ ⁽²⁾ ⁽³⁾ [2,365.5 - 2,707.8 lbf.ft] ⁽¹⁾ ⁽²⁾ ⁽³⁾
Volume to fill	100 cc [6.1 in ³]
Volume to fully release brake	60 cc [3.6 in ³]
Min. pressure to fully release brake	12 bar [174 psi]
Max. acceptable pressure	30 bar [435 psi]
Time to release brake	< 0.5 seconds ⁽⁴⁾ ⁽⁵⁾
Time to engage brake	< 1 second ⁽⁴⁾ ⁽⁵⁾
Emergency release fitting	M12 torqued to 60 Nm [45 lbf.ft]
Weight	10 kg [22 lbs]

(1) Do not run in brake, wearing the plates will reduce the static capacity.

(2) Dynamic use of the brake is not recommended and should only be used in emergency situations.

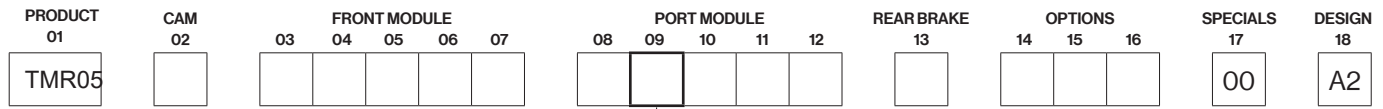
(3) The disc pack should be replaced after ten dynamic uses.

(4) Times may vary depending on fluid viscosity and valves used.

(5) During low temperature applications, flushing the brake housing is recommended to maintain a constant oil viscosity.

All data is based on ISO46 fluid at 50°C/122°F. If a different fluid will be used, please consult Rotary Power.

DIRECTION OF SHAFT ROTATION



PORT MODULE - SPEED AND ROTATION

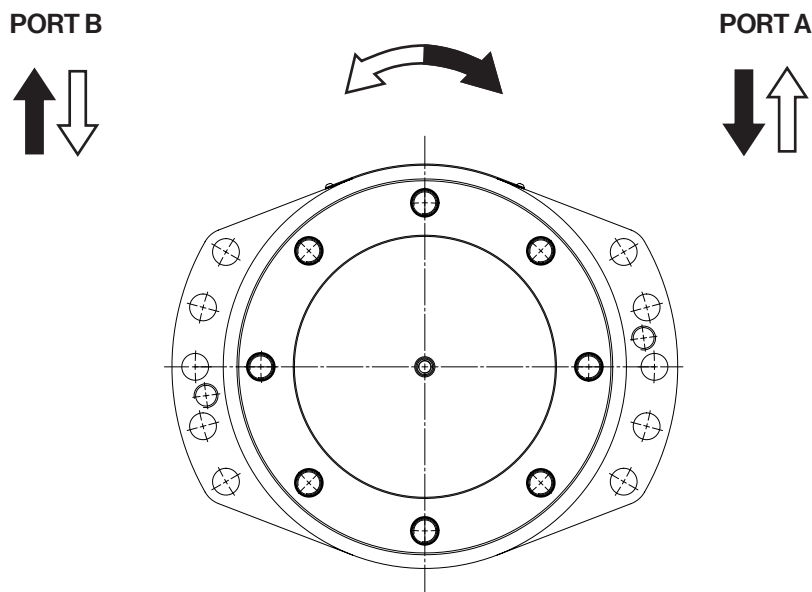
1R	Single speed - flow to port A = CW rotation
1L	Single speed - flow to port A = ACW rotation
RA	Two speed (Ratio 2:1) - flow to port A = CW preferred rotation
LA	Two speed (Ratio 2:1) - flow to port A = ACW preferred rotation

The TMR05 motor code defines the starting direction of the motor. This is selected by the customer to best suit their application needs.

The starting direction is based on flow being supplied to port A. A single speed motor can have its starting direction reversed by supplying flow to port B.

In two speed motors, pressurising port A is preferred as this prevents the motor from recirculating high pressure oil when shifted into second displacement. It is important to select the correct starting direction of a two speed motor to ensure optimum performance in the required direction.

DIRECTION OF SHAFT ROTATION VIEWED FROM THE SHAFT END



HYDRAULIC CONNECTIONS

PRODUCT 01	CAM 02	FRONT MODULE 03 04 05 06 07					PORT MODULE 08 09 10 11 12				REAR BRAKE 13	OPTIONS 14 15 16			SPECIALS 17	DESIGN 18	
TMR05																00	A2

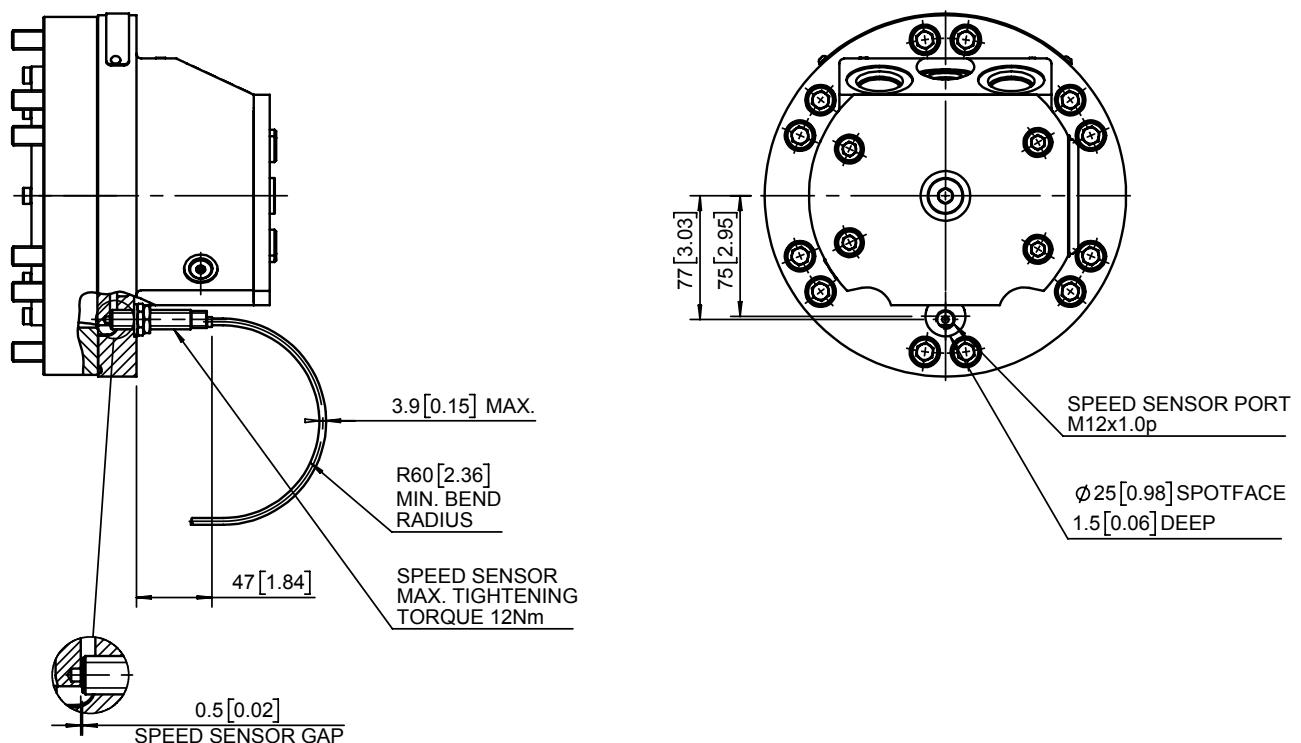
	Port	Power supply		Drain	Speed change	Flushing	Parking brake
		A	B	T	S	F	Y
TMR05 housing options	1	3/4" SAE J514 (1-1/16"-12 UNF)		1/2" SAE J514 (3/4"-16 UNF)	3/8" SAE J514 (9/16"-18 UNF)	1/4" SAE J514 (7/16"-20 UNF)	1/4" SAE J514 (7/16"-20 UNF)
	3	G 3/4" BSPP		G 3/8" BSPP	G 3/8" BSPP	G 1/4" BSPP	G 1/4" BSPP
Max. pressures	bar [psi]	450 [6,527]		6 [90]	40 [580]	6 [90]	30 [435]

EXTRA OPTIONS

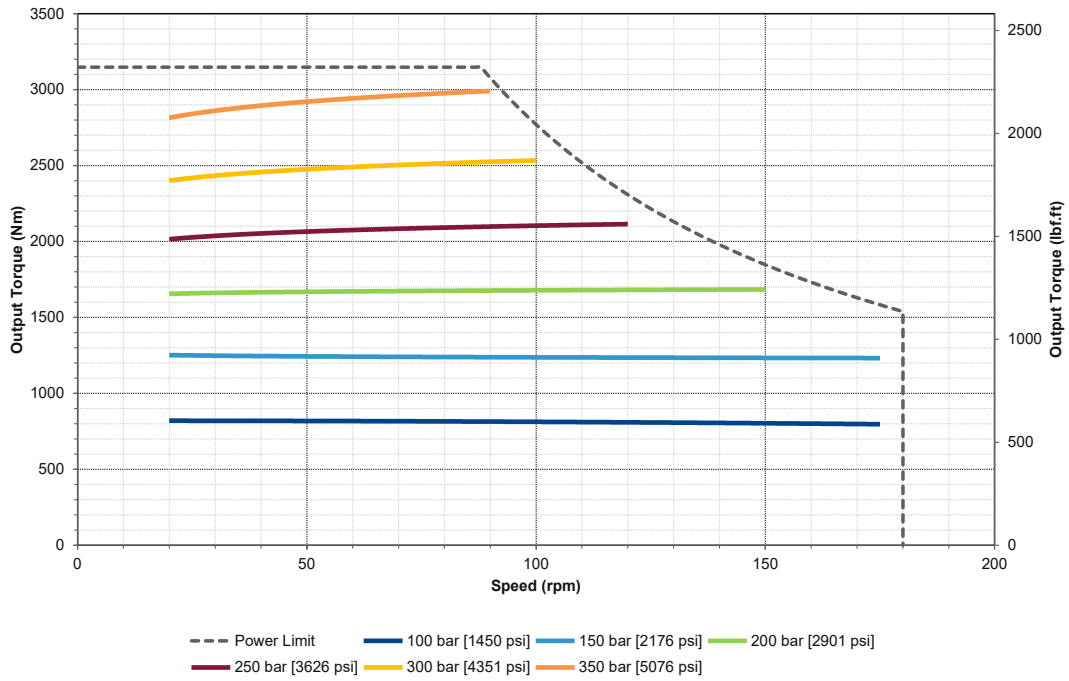
SPEED SENSOR

This sensor provides a square wave signal used to calculate motor speed. Note that the sensor target is constructed using a modified TMR05 rotor. Integrating the sensor target into the rotor allows the envelope of the motor to remain consistent with standard sizes.

Sensor type	Differential hall effect speed sensor
Rotary Power part number	W949000005
Supply voltage	8 – 32 VDC
Current consumption	<ul style="list-style-type: none"> Max. without load: 15 mA Max. with load: 30 mA
Plug type	AMP 282105-1, 3 pins <ul style="list-style-type: none"> Integrated cable and connector only Cable length (including connector): 350 mm ± 20 mm
Signal output	<ul style="list-style-type: none"> Square wave Push-pull outputs: $I_{max} = \pm 20 \text{ mA}$ <ul style="list-style-type: none"> With pull-up resistor (for $R=560 \text{ Ohm}$): $U_{low} < 2.5\text{V}$, $U_{high} > 0.95 * U_{supply}$ With pull-down resistor (for $R=560 \text{ Ohm}$): $U_{low} < 0.1\text{V}$, $U_{high} > U_{supply} - 4.0 \text{ V}$
Frequency range	5 Hz – 20 kHz
Standard number of pulses per revolution	53
Operating temperature	-40°C to +125°C [-40°F to +257°F]
Protection rating	<ul style="list-style-type: none"> Sensor head: IP68 Cable outlet: IP67

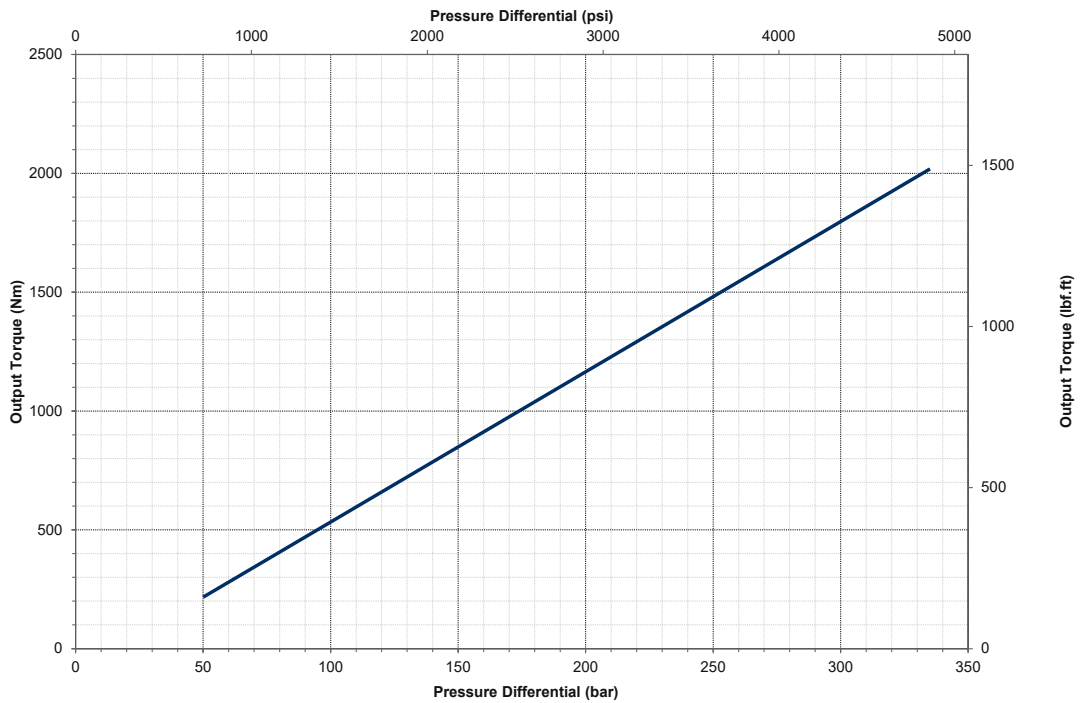


TORQUE OUTPUT



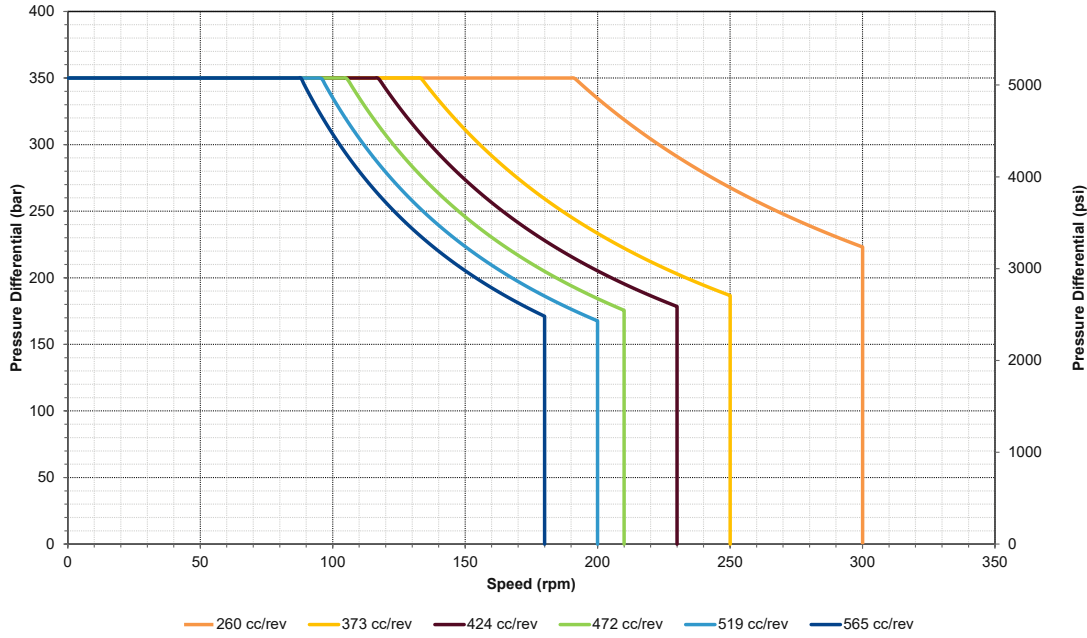
STARTING TORQUE

MAX. AVAILABLE TORQUE AT ZERO RPM

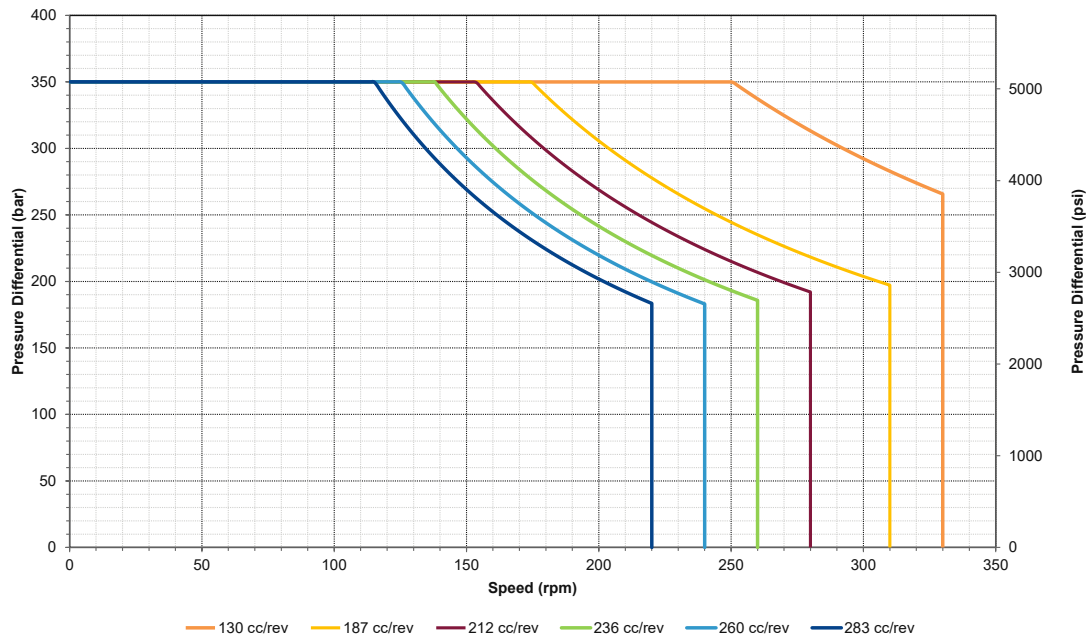


All performance graphs plotted for maximum displacement (565 cc/rev) using ISO46 fluid at 50°C.

POWER ENVELOPE
 SINGLE SPEED 29KW MAX. CONTINUOUS POWER



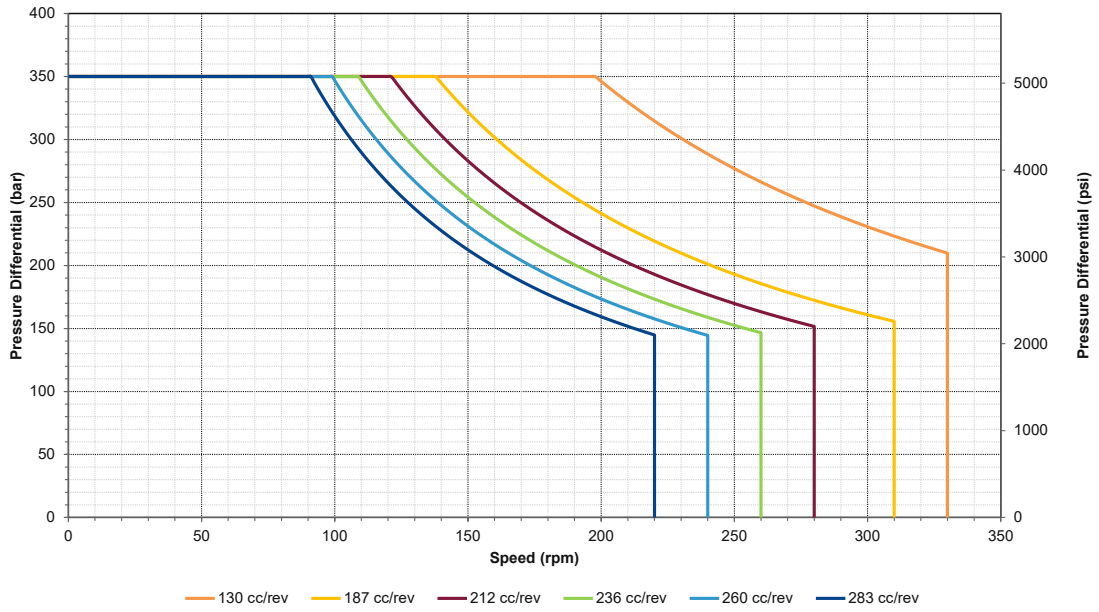
POWER ENVELOPE
 TWO SPEED 19KW MAX. CONTINUOUS POWER
 MIN. DISPLACEMENT - PREFERRED DIRECTION



POWER ENVELOPE

TWO SPEED 15KW MAX CONTINUOUS POWER

MIN. DISPLACEMENT - NON PREFERRED DIRECTION



CALCULATIONS

$$\text{Output torque (Nm)} = \frac{\text{Motor displacement (cc)} \times \text{delta pressure (bar)} \times \eta_m}{20\pi}$$

$$\text{Flow (lpm)} = \frac{\text{Motor displacement (cc)} \times \text{rotational speed (rpm)}}{1000 \times \eta_v}$$

$$\text{Output power (kW)} = \frac{\text{Output torque (Nm)} \times \text{rotational speed (rpm)}}{9,550}$$

Where:

η_m = Mechanical efficiency

η_v = Volumetric efficiency

For approximate estimates of performance use:

$\eta_m = 0.95$

$\eta_v = 0.95$

CONVERSIONS

$$\text{Nm} \rightarrow \text{lbf.ft} = \times 0.7376$$

$$\text{N} \rightarrow \text{lbf} = \times 0.2248$$

$$\text{bar} \rightarrow \text{psi} = \times 14.5038$$

$$\text{cc} \rightarrow \text{in}^3 = \times 0.061$$

$$\text{lpm} \rightarrow \text{U.S. gpm} = \times 0.2641$$

$$\text{kW} \rightarrow \text{hp} = \times 1.341$$

$$\text{kg} \rightarrow \text{lb} = \times 2.2046$$

As HANSA-TMP has a very extensive range of products and some products have a variety of applications, the information supplied may often only apply to specific situations.

If the catalogue does not supply all the information required, please contact HANSA-TMP.

In order to provide a comprehensive reply to queries we may require specific data regarding the proposed application.

Whilst every reasonable endeavour has been made to ensure accuracy, this publication cannot be considered to represent part of any contract, whether expressed or implied.

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