Danfoss OMT T 315 151B3045 orbital hydraulic motor

Manufacturer: Danfoss

Manufacturer part number / published order designation: 151B3045

Published model: 151B3045

About this compilation

Prepared by Hydmaster from selected manufacturer documentation. Original technical pages follow without cropped drawings, rewritten data or altered units. This cover and index are Hydmaster editorial material, not a manufacturer-issued exact-execution datasheet.

Coverage: selected pages relevant to the identified size and configuration. Other options or neighbouring models retained on an original page apply only where explicitly identified.

Execution notes and conditions

Factory article identity verified on the current manufacturer page. Original manufacturer source editions retained.

Use the exact drawing and part-number row for rear tacho-drive dimensions and assembly length.

The series photograph is representative. Shaft loading, drain conditions and the operating point require the applicable original limits.

Factory model code: OMT-0315-A-NN-G21-AD-1D-A31-A-A-1B-1-N-TA-NNNNN-NN-NN-NN-SP-NNN

Source-page index

Source page numbers below are physical pages of each complete original PDF. The original printed page labels and technical content remain unchanged. Compiled page numbers count this cover/index.

Source A: Danfoss OMT/OMV - October 2024

Original pages	Compiled pages	Relevant content
7-8	2-3	OMT T 315 applicable original technical data, execution, conditions or interface
10-13	4-7	OMT T 315 applicable original technical data, execution, conditions or interface
16	8	OMT T 315 applicable original technical data, execution, conditions or interface
18	9	OMT T 315 applicable original technical data, execution, conditions or interface
21	10	OMT T 315 applicable original technical data, execution, conditions or interface

Source B: Danfoss orbital motors - December 2021

Supplemental stage/component reference; not a complete assembly drawing.

Original pages	Compiled pages	Relevant content
11	11	OMT T 315 applicable original technical data, execution, conditions or interface

Source C: Danfoss OMT T assembly drawing

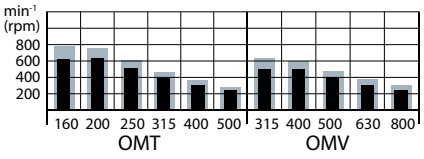
Supplemental stage/component reference; not a complete assembly drawing.

Original pages	Compiled pages	Relevant content
1	12	Rear tacho drive and overall dimensions

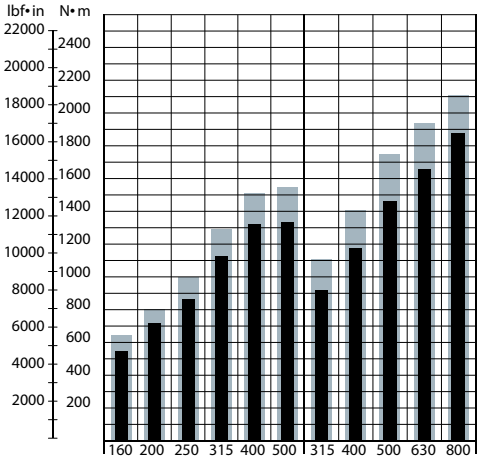
Orbital motors

Speed, torque, and output

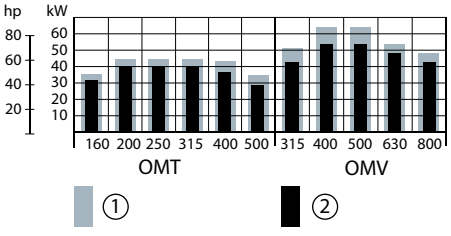
Maximum speed



Maximum torque



Maximum output



1. Intermittend values
2. Continuous values

The bar diagrams above are useful for a quick selection of relevant motor size for the application. The final motor size can be determined by using the function diagram for each motor size: see *OMT Function diagrams* on page 15, or *OMV function diagrams* on page 44.

The function diagrams are based on actual tests on a representative number of motors from our production. The diagrams apply to a return pressure between 5 and 10 bar [75 and 150 psi] when using mineral based hydraulic oil with a viscosity of 35 mm^2/s [165 SUS] and a temperature of 50°C [120°F].

OMT

Versions

OMT versions

Mounting flange	Shaft	Port size	European version	US version	Drain connection	Check valve	Low pressure release	High pressure release	Main type designation
Standard flange	Cyl. 40 mm	G 3/4	X		Yes	Yes			OMT
	Cyl. 1.5 in	1 1/16-12 UN		X	Yes	Yes			OMT
	Splined 1.5 in	G 3/4	X		Yes	Yes			OMT
		1 1/16-12 UN		X	Yes	Yes			OMT
	Tapered 45 mm	G 3/4	X		Yes	Yes			OMT
	Tapered 1.75 in	1 1/16-12 UN		X	Yes	Yes			OMT
	P.t.o.	G 3/4	X		Yes	Yes			OMT
Wheel	Cyl. 40 mm	G 3/4	X		Yes	Yes			OMTW
	Tapered 45 mm	G 3/4	X		Yes	Yes			OMTW
	Tapered 1.75 in	1 1/16-12 UN		X	Yes	Yes			OMTW
Brake-wheel	Wheel bolt flange	G 3/4	X		Yes	No	X		OMT FX
	Thread hole flange	G 3/4	X		Yes	No	X		OMT FX
Brake-standard	Cyl. 40 mm	G 3/4	X		Yes	No	X		OMT FL
	Splined 1.5 in	G 3/4	X		Yes	No	X		OMT FL
	Cyl. 40 mm	G 3/4	X		Yes	No		X	OMT FH
	Splined 1.5 in	G 3/4	X		Yes	No		X	OMT FH
Short	No output shaft	G 3/4	X		Yes	Yes			OMTS

Features

Features available (options):

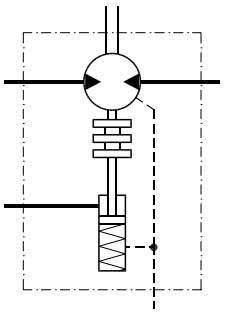
- Speed sensor
- Motor with tacho connection
- Viton shaft seal
- Painted
- Ultra short

Code numbers

OMT code numbers

Code Numbers	Displacement [cm^3]					
	160	**200**	**250**	**315**	**400**	**500**
151B	3000	3001	3002	3003	3004	3005
151B	2050	2051	2052	2053	2054	2055
151B	3006	3007	3008	3009	3010	3011
151B	2056	2057	2058	2059	2060	2061
151B	3012	3013	3014	3015	3016	3017
151B	2062	2063	2064	2065	2066	2067

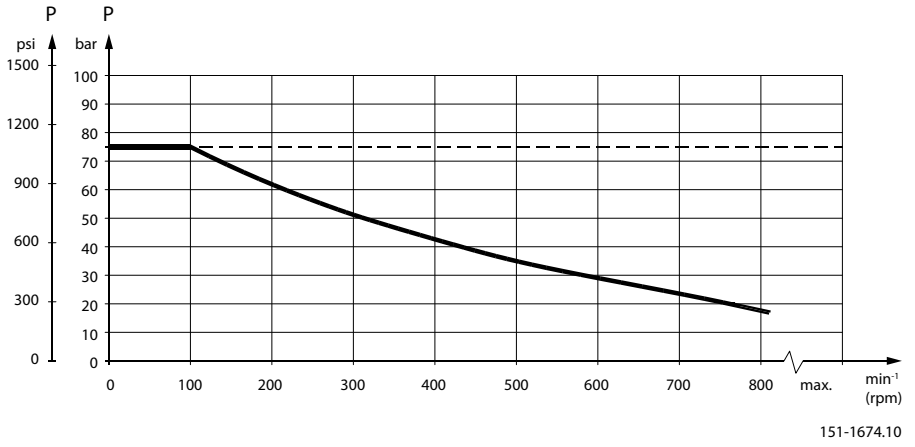
OMT



Motor with check valves and with drain connection

The shaft seal pressure equals the pressure on the drain line.

Maximum return pressure without drain line or maximum pressure in the drain line



– – – – Intermittent operation: the permissible values may occur for max. 10% of every minute.

——— Continuous operation

OMT, OMTW, OMTS, OMT FX OMT FL and OMT FH

Technical data for OMT, OMTW, OMTS, OMT FX OMT FL and OMT FH

Type			**OMT OMTW OMTS OMT FX OMT FL OMT FH**	**OMT OMTW OMTS OMT FX OMT FL OMT FH**	**OMT OMTW OMTS OMT FX OMT FL OMT FH**	**OMT OMTW OMTS OMT FX OMT FL OMT FH**	**OMT OMTW OMTS OMT FX OMT FL OMT FH**	**OMT OMTW OMTS OMT FX OMT FL OMT FH**
Motor size			**160**	**200**	**250**	**315**	**400**	**500**
Geometric displacement	cm^3 [in^3]		161.1 [9.83]	201.4 [12.29]	251.8 [15.37]	326.3 [19.91]	410.9 [25.07]	523.6 [31.95]
Maximum speed	min^{-1} [rpm]	cont.	625	625	500	380	305	240
		int[1)]	780	750	600	460	365	285
Maximum torque	Nm [lbf·in]	cont.	470 [4160]	590 [5220]	730 [6460]	950 [8410]	1080 [9560]	1220 [10800]
		int.[1)]	560 [4960]	710 [6280]	880 [7790]	1140 [10090]	1260 [11150]	1370 [12130]

OMT

Technical data for OMT, OMTW, OMTS, OMT FX OMT FL and OMT FH (continued)

Type			**OMT OMTW OMTS OMT FX OMT FL OMT FH**	**OMT OMTW OMTS OMT FX OMT FL OMT FH**	**OMT OMTW OMTS OMT FX OMT FL OMT FH**	**OMT OMTW OMTS OMT FX OMT FL OMT FH**	**OMT OMTW OMTS OMT FX OMT FL OMT FH**	**OMT OMTW OMTS OMT FX OMT FL OMT FH**
Motor size			**160**	**200**	**250**	**315**	**400**	**500**
Maximum output	kW [hp]	cont.	26.5 [35.5]	33.5 [44.9]	33.5 [44.9]	33.5 [44.9]	30.0 [40.2]	26.5 [35.5]
		int.[1)]	32.0 [42.9]	40.0 [53.6]	40.0 [53.6]	40.0 [53.6]	35.0 [46.9]	30.0 [40.2]
Maximum pressure drop	bar [psi]	cont.	200 [2900]	200 [2900]	200 [2900]	200 [2900]	180 [2610]	160 [2320]
		int.[1)]	240 [3480]	240 [3480]	240 [3480]	240 [3480]	210 [3050]	180 [2610]
		peak[2)]	280 [4060]	280 [4060]	280 [4060]	280 [4060]	240 [3480]	210 [3050]
Maximum oil flow	l/min [USgal/min]	cont.	100 [26.4]	125 [33.0]	125 [33.0]	125 [33.0]	125 [33.0]	125 [33.0]
		int.[1)]	125 [33.0]	150 [39.6]	150 [39.6]	150 [39.6]	150 [39.6]	150 [39.6]
Maximum starting pressure with unloaded shaft	bar [psi]		10 [145]	10 [145]	10 [145]	10 [145]	10 [145]	10 [145]
Minimum starting torque	at maximum pressure drop cont. Nm [lbf·in]		200 [2900]	200 [2900]	200 [2900]	200 [2900]	180 [2610]	160 [2320]
	at maximum pressure drop int.[1)] Nm [lbf·in]		240 [3480]	240 [3480]	240 [3480]	240 [3480]	210 [3050]	180 [2610]

[1)] Intermittent operation: the permissible values may occur for max. 10% of every minute.

[2)] Peak load: the permissible values may occur for max. 1% of every minute.

For maximum permissible combination of flow and pressure, see function diagram for actual motor.

Type			**Maximum inlet pressure**	**Maximum return pressure with drain line**
OMT, OMTW, OMTS, OMT FX, OMT FL, OMT FH	bar [psi]	cont.	210 [3050]	140 [2030]
	bar [psi]	int.[1)]	250 [3630]	175 [2540]
	bar [psi]	peak[2)]	300 [4350]	210 [3050]

[1)] Intermittent operation: the permissible values may occur for maximum 10% of every minute.

[2)] Peak load: The permissible values may occur for maximum 1% of every minute.

Brake motors

Type	**Maximum pressure in drain line[3)]**	**Holding torque[4)]**	**Brake-release pressure[3)]**	**Maximum pressure in brake line**
OMT FX, OMT FL	5 bar [70 psi]	1200 Nm [10620 lbf·in]	12 bar [170 psi]	30 bar [440 psi]
OMT FH	5 bar [70 psi]	1200 Nm [10620 lbf·in]	30 bar [440 psi]	280 bar [4060 psi]

[3)] Brake motors must always have a drain line. The brake-release pressure is the difference between the pressure in the brake line and the pressure in the drain line.

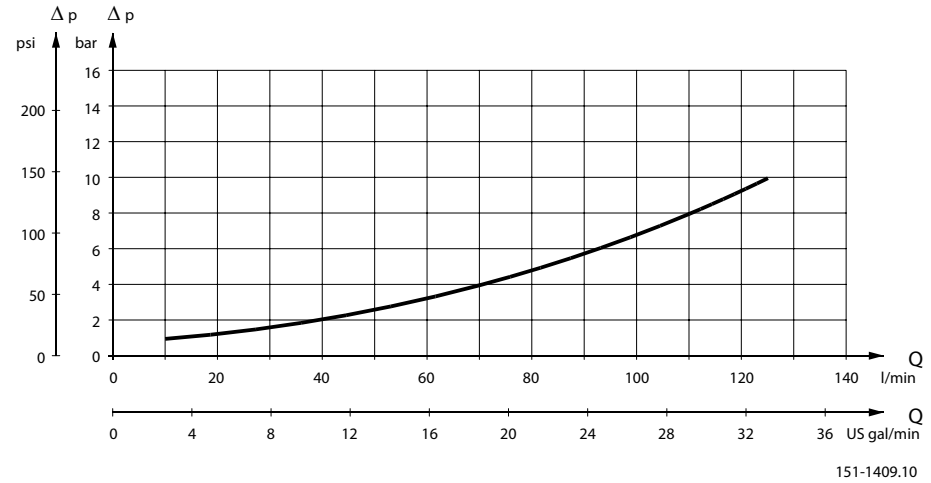
[4)] For the supply of motors with holding torques higher than those stated, please contact the Danfoss sales organization.

For maximum permissible combination of flow and pressure, see function diagram for actual motor.

OMT

Pressure drop in motor

OMT 160, 200, 250, 315, 400, 500 pressure drop



The curve applies to an unloaded motor shaft and an oil viscosity of 35 mm^2/s [165 SUS]

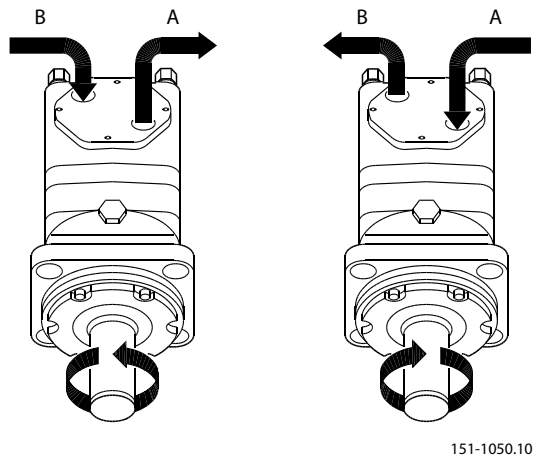
Oil flow in drain line

Maximum oil flow in the drain line at a return pressure less than 5-10 bar [75-150 psi]

Pressure drop		Viscosity		Oil flow in drain line	
bar	**[psi]**	**mm^2/s**	**[SUS]**	**l/min**	**[US gal/min]**
140	[2030]	20	[100]	2.5	[0.66]
		35	[165]	1.5	[0.40]
210	[3050]	20	[100]	5.0	[1.32]
		35	[165]	3.0	[0.79]

OMT direction of shaft rotation

Standard rotation



OMT

Permissible shaft loads for OMT

Shaft load and bearing life time

The output shaft runs in tapered roller bearings that permit high axial and radial forces.

The permissible radial load on the shaft is shown for an axial load of 0 N as a function of the distance from the mounting flange to the point of load application.

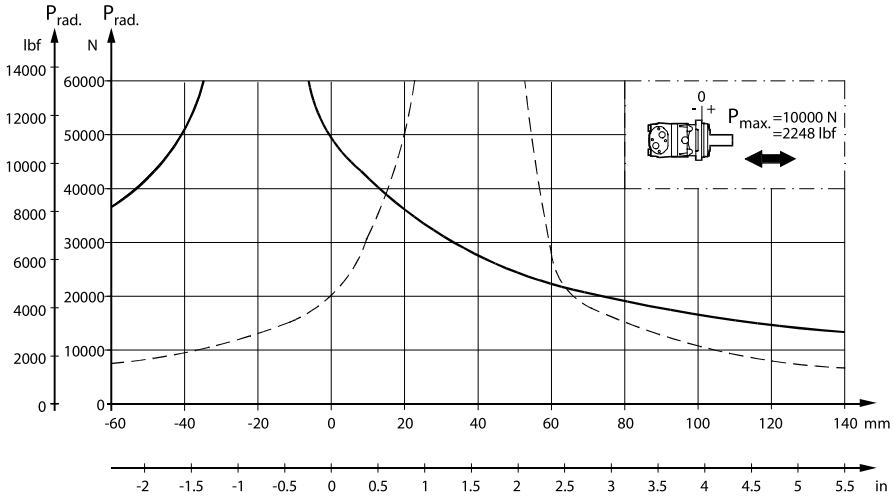
The curves are based on B10 bearing life (2000 hours or 12,000,000 shaft revolutions at 100 min^{-1}) at rated output torque, when mineral-based hydraulic oil with a sufficient content of anti-wear additives, is used.

For 3,000,000 shaft revolutions or 500 hours – increase these shaft loads with 52%.

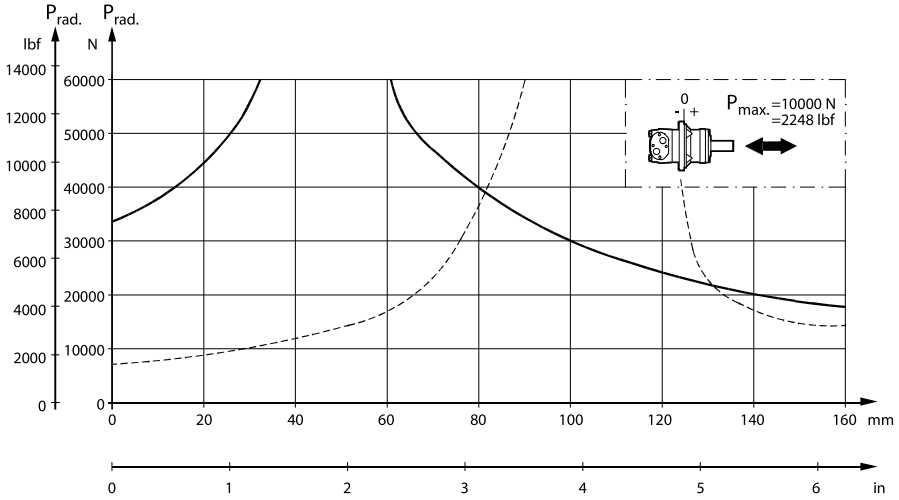
The dash curve shows max. radial shaft load. Any shaft load exceeding the values shown in the curve will involve a risk of breakage.

Bearing life calculations can be made using the explanation and formula provided in the chapter *Bearing dimensioning* in the technical information *General Orbital Motors*, **BC152886483554**.

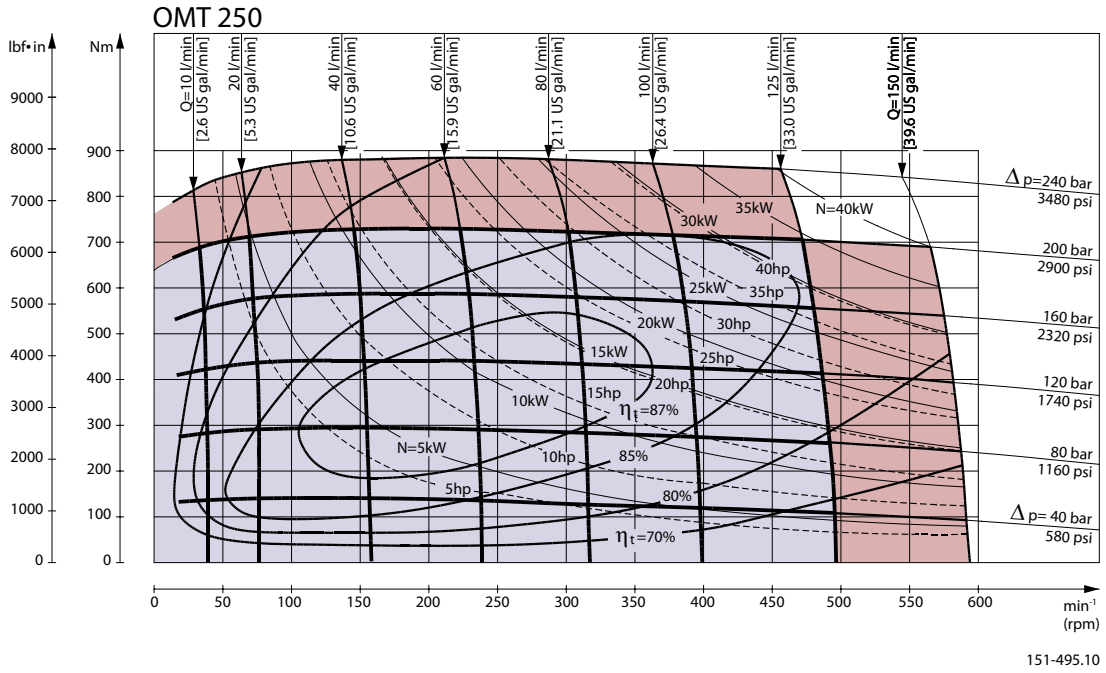
Standard mounting flange with all shaft types

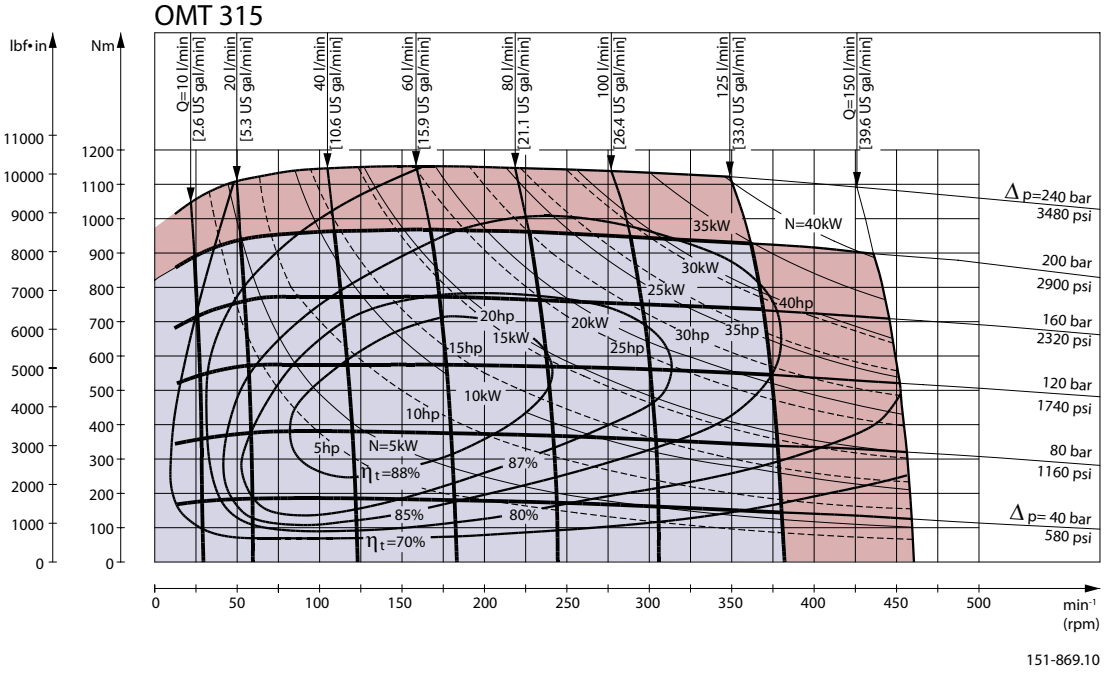


Wheel mounting flange with all shaft types



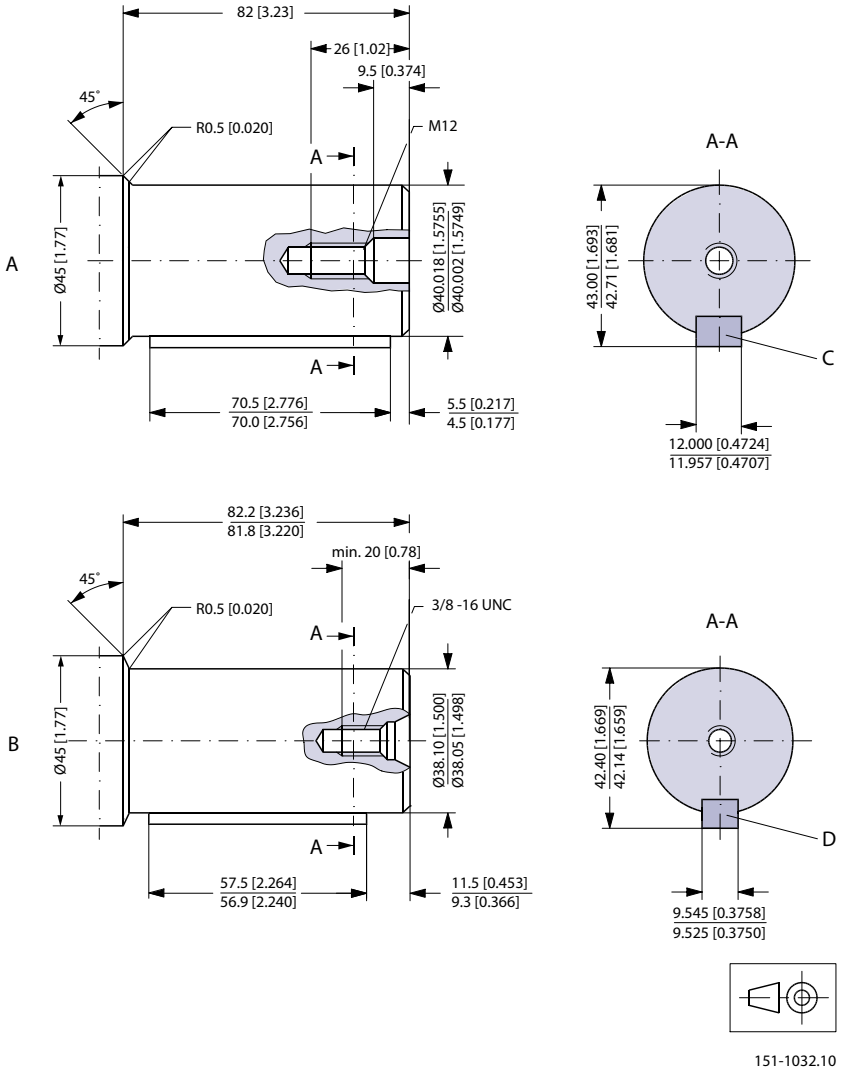
OMT


OMT 250
lbf•in
Nm
Q=10 l/min [2.6 US gal/min]
20 l/min [5.3 US gal/min]
40 l/min [10.6 US gal/min]
60 l/min [15.9 US gal/min]
80 l/min [21.1 US gal/min]
100 l/min [26.4 US gal/min]
125 l/min [33.0 US gal/min]
Q=150 l/min [39.6 US gal/min]
Δp=240 bar 3480 psi
200 bar 2900 psi
160 bar 2320 psi
120 bar 1740 psi
80 bar 1160 psi
Δp= 40 bar 580 psi
N=40kW
35kW
30kW
40hp
25kW
35hp
20kW
30hp
15kW
25hp
20hp
15hp
10kW
ηt=87%
N=5kW
10hp
85%
5hp
80%
ηt=70%
min-1 (rpm)
151-495.10


OMT 315
lbf•in
Nm
Q=10 l/min [2.6 US gal/min]
20 l/min [5.3 US gal/min]
40 l/min [10.6 US gal/min]
60 l/min [15.9 US gal/min]
80 l/min [21.1 US gal/min]
100 l/min [26.4 US gal/min]
125 l/min [33.0 US gal/min]
Q=150 l/min [39.6 US gal/min]
Δp=240 bar 3480 psi
200 bar 2900 psi
160 bar 2320 psi
120 bar 1740 psi
80 bar 1160 psi
Δp= 40 bar 580 psi
N=40kW
35kW
30kW
25kW
40hp
20hp
20kW
30hp
35hp
15hp
15kW
25hp
10kW
10hp
5hp
N=5kW
ηt=88%
87%
85%
80%
ηt=70%
min-1 (rpm)
151-869.10

OMT

Shaft version



A Cylindrical 40 mm shaft

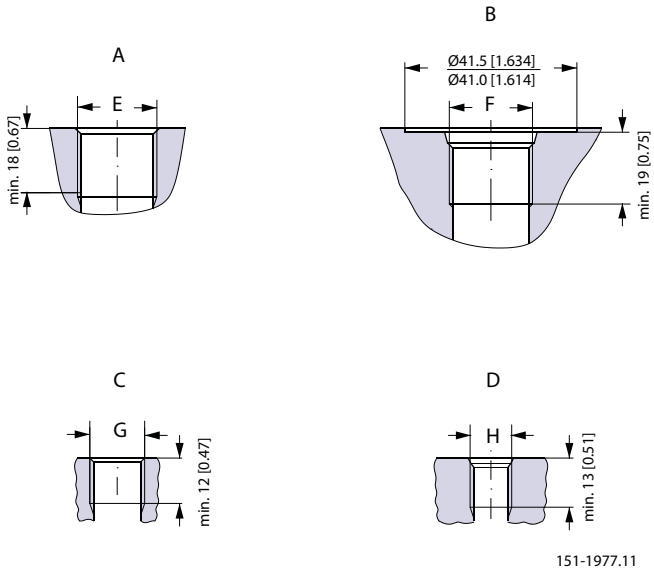
C Parallel key
A12 × 8 × 70
DIN 6885
Keyway deviates from standard

B Cylindrical 1.5 in shaft

D Parallel key
3/8 × 3/8 × 21/4 in
B.S. 46
Keyway deviates from standard

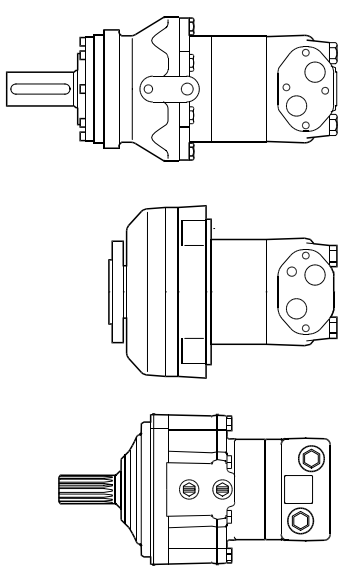
OMT

Port thread versions



A	G main ports	**B**	UN main ports
E	ISO 228/1 - G3/4 O-ring boss port	**F**	1 1/16 - 12 UN
C	G drain port	**D**	UNF drain port
G	G: ISO 228/1 - G1/4 O-ring boss port	**H**	9/16 - 18 UNF

Selection of Motor Type



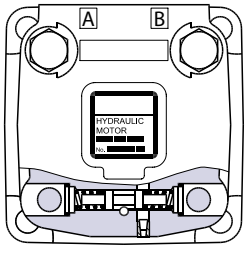
151-1425.10

Motors with integrated flushing valve

Without any change to their outer dimensions, OMT, OMV and TMT are available with an integrated flushing valve.

The integrated flushing valve ensures continuous renewal and cooling of the oil in the closed circuit. The flushing valve is activated by the high pressure side of the motor and allows the flushing flow to pass to the drain line and the tank.

Type designation: OMT V, OMV V and TMT V .

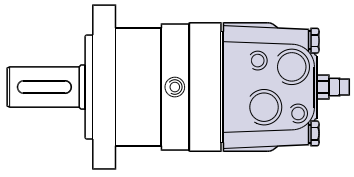


151-1627.10

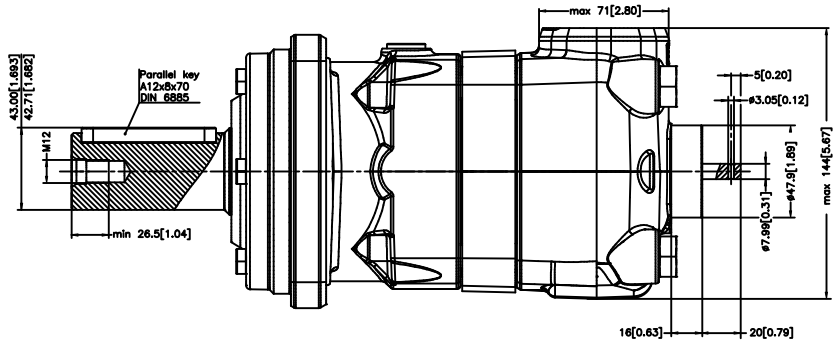
Motors with tacho connection

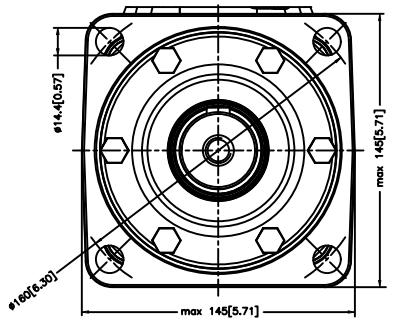
OMT and OMV motors are available in a version with tacho drive shaft. With a tacho connection the speed of the motor can be registered.

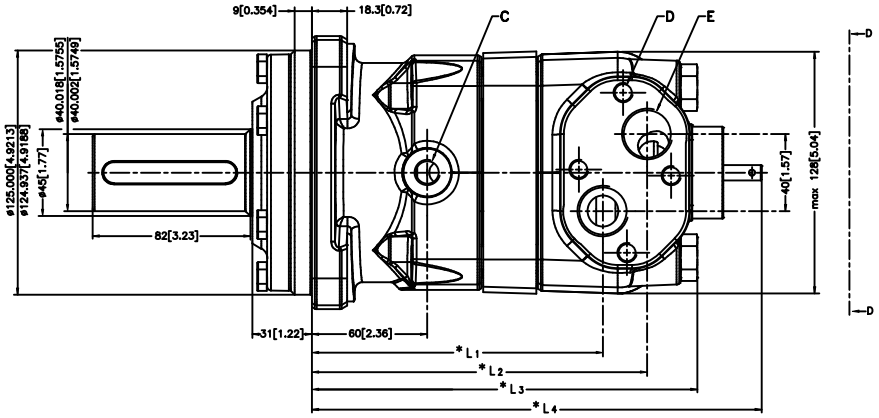
Type designations are OMT T and OMV T.

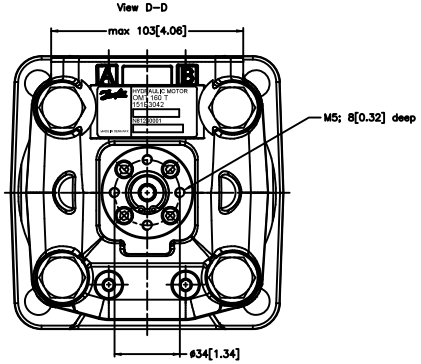


151-1372.10

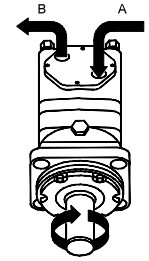








Code Number	CCM	* L 1 mm./inch.	* L 2 mm./inch.	* L 3max mm./inch.	* L 4max mm./inch.
151B3042	160	140.0[5.51]	163.0[6.42]	max. 192.2[7.57]	max. 223.0[8.78]
151B3043	200	145.0[5.71]	168.0[6.61]	max. 197.2[7.76]	max. 228.0[8.98]
151B3044	250	151.3[5.96]	174.3[6.86]	max. 203.5[8.01]	max. 234.3[9.22]
151B3045	315	160.5[6.32]	183.5[7.22]	max. 212.7[8.37]	max. 243.5[9.59]
151B3057	400	171.0[6.73]	194.0[7.64]	max. 223.2[8.79]	max. 254.0[10.00]
151B3062	500	185.0[7.28]	208.0[8.19]	max. 237.2[9.34]	max. 268.0[10.55]



C: Drain connection
G 1/4; 12[0.47] deep
D: M10; 10[0.39] deep
E: G 3/4; 17[0.67] deep



Tolerance for basic dimensions = ±1 mm (0.04 inch)

Altered	Reason	Date
–	–	–

Scale 1:1 | Projection

Date 2013.12.19

Design ASJ | Approb.

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OMT T
ø40 mm. cyl.

No. 8_151D0830