

Technical Information

Orbital Motors

OMS, OMT and OMVpowersolutions.danfoss.com

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Technical Information OMS, OMT and OMV Orbital Motors

Revision history*Table of revisions*

Date	Changed	Rev
February 2016	Corrected Hardening specification for OMSS, OMTS, OMVS	0601
November 2014	Converted to Danfoss layout - DITA CMS	FA
December 2013	Table updated	EL
June 2013	Drawing corrected	EK
April 2013	Drawing corrected	EJ
January 2013	Correct drawing	EI
November 2012	Planetary Gears deleted	EH
July 2012	Typo in 'Major dia'	EG
November 2010	Dimensions changed	EF
November 2009	conversions, and layout adjusted	ED

Technical Information OMS, OMT and OMV Orbital Motors
Contents
Orbital motors

Characteristic, features and application areas of Orbital Motors.....	5
Characteristic features of Danfoss Orbital Motors.....	5
Technical features of Danfoss Orbital Motor.....	5
The Danfoss Orbital Motors are used in the following application areas:.....	6
Survey of literature with technical data on Danfoss Orbital Motors.....	6

OMS, OMT and OMV

Speed, torque and output.....	7
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OMS

Versions.....	9
Features.....	9
Code numbers.....	10
Ordering.....	10
Technical data.....	11
Maximum permissible shaft seal pressure.....	12
Motor with check valves and without use of drain connection.....	12
Maximum return pressure.....	12
Pressure drop in motor.....	13
Oil flow in drain line.....	13
Direction of shaft rotation.....	13
Permissible shaft loads for OMS.....	13
Function diagrams.....	18
Function diagram use.....	22
Shaft version.....	23
Port thread versions.....	26
Dimensions.....	26
Standard flange—European version.....	27
Standard flange—US version.....	29
Special flange—European version.....	31
A-2 flange—US version.....	32
Magneto flange—US version.....	34
SAE-B flange—US version.....	36
Wheel—European version.....	38
Wheel—US version.....	40
Short—European version.....	42
OMSS.....	43
Installing the OMSS.....	43
Attached component dimensions.....	43
Internal spline data for the component to be attached.....	43
Motor or attached component drain connection.....	44

OMT

Versions.....	46
Features.....	46
Code numbers.....	46
Ordering.....	47
Technical data.....	47
Maximum permissible shaft seal pressure.....	47
Motor with check valves and without use of drain connection.....	47
Motor with check valves and with drain connection.....	47
Maximum return pressure.....	48
OMT, OMTW, OMTS, OMT FX OMT FL and OMT FH.....	48
Pressure drop in motor.....	50
Oil flow in drain line.....	50
Direction of shaft rotation.....	51
Permissible shaft loads for OMT.....	51
Function diagrams.....	54
Function diagram use.....	56
Shaft version.....	57

Technical Information OMS, OMT and OMV Orbital Motors

Contents

Port thread versions.....	60
Dimensions.....	61
Standard flange—European version.....	61
Standard flange—US version.....	63
Wheel—European version.....	65
Wheel—US version.....	67
Brake-wheel—European version.....	69
Brake-standard—European version.....	71
Short—European version.....	72
OMTS.....	73
Installation.....	73
Attached component dimensions.....	73
Attached component internal splines.....	74
Motor or attached component drain connection.....	75

OMV

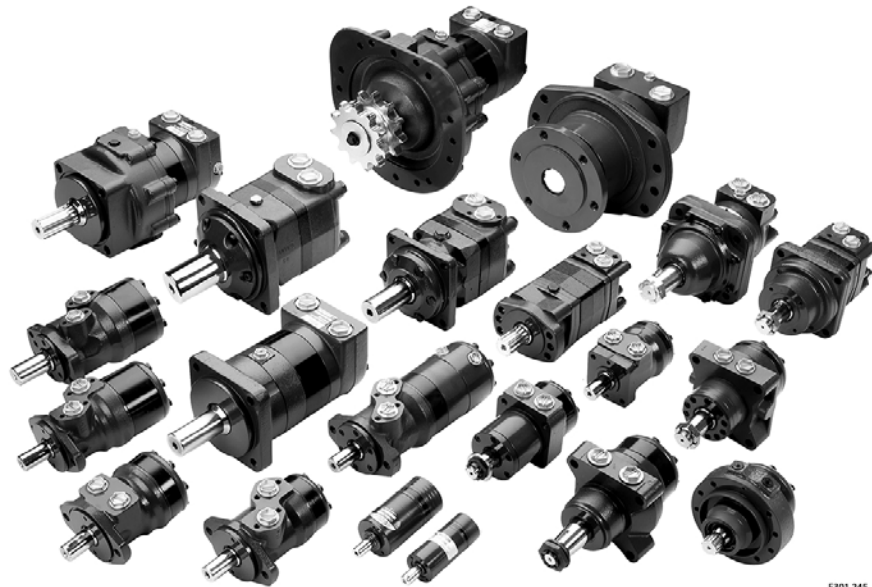
Versions.....	76
Features.....	76
Code numbers.....	76
Ordering.....	77
Technical data.....	77
Technical data for OMV, OMVW and OMVS.....	77
Maximum permissible shaft seal pressure.....	77
Motor with check valves and without use of drain connection.....	77
Maximum return pressure.....	78
Pressure drop in motor.....	78
Oil flow in drain line.....	79
Direction of shaft rotation.....	79
Permissible shaft loads for OMV.....	79
Function diagrams.....	81
Function diagram use.....	84
Shaft version.....	85
Port thread versions.....	88
Dimensions.....	89
Standard flange—European version.....	89
Standard flange—US version.....	91
SAE-C flange—US version.....	93
Wheel—European version.....	95
Wheel—US version.....	97
Short—European version.....	98
OMVS.....	99
Installation.....	99
Attached component dimensions.....	99
Attached component internal splines.....	100
Motor or attached component drain connection.....	101

Weight of motors

Code number and weight	102
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Orbital motors

Characteristic, features and application areas of Orbital Motors



F301 245

Danfoss is a world leader within production of low speed orbital motors with high torque. We can offer more than 3,000 different orbital motors, categorised in types, variants and sizes (including different shaft versions).

The motors vary in size (rated displacement) from 8 cm³ [0.50 in³] to 800 cm³ [48.9 in³] per revolution.

Speeds range up to approximate 2,500 min⁻¹ (rpm) for the smallest type and up to approximate 600 min⁻¹ (rpm) for the largest type.

Maximum operating torques vary from 13 N·m [115 lbf·in] to 2,700 N·m [24,000 lbf·in] (peak) and maximum outputs are from 2.0 kW [2.7 hp] to 70 kW [95 hp].

Characteristic features of Danfoss Orbital Motors

- Smooth running over the entire speed range
- Constant operating torque over a wide speed range
- High starting torque
- High return pressure without the use of drain line (High pressure shaft seal)
- High efficiency
- Long life under extreme operating conditions
- Robust and compact design
- High radial and axial bearing capacity
- For applications in both open and closed loop hydraulic systems
- Suitable for a wide variety of hydraulics fluids

Technical features of Danfoss Orbital Motor

The programme is characterised by technical features appealing to a large number of applications and a part of the programme is characterised by motors that can be adapted to a given application. Adaptions comprise the following variants among others:

Technical Information OMS, OMT and OMV Orbital Motors

Orbital motors

- Motors with corrosion resistant parts
- Wheel motors with recessed mounting flange
- OMP, OMR- motors with needle bearing
- OMR motor in low leakage version
- OMR motors in a super low leakage version
- Short motors without bearings
- Ultra short motors
- Motors with integrated positive holding brake
- Motors with integrated negative holding brake
- Motors with integrated flushing valve
- Motors with speed sensor
- Motors with tacho connection
- All motors are available with black finish paint

The Danfoss Orbital Motors are used in the following application areas:

- Construction equipment
- Agricultural equipment
- Material handling & Lifting equipment
- Forestry equipment
- Lawn and turf equipment
- Special purpose
- Machine tools and stationary equipment
- Marine equipment

Survey of literature with technical data on Danfoss Orbital Motors

Detailed data on all Danfoss Orbital Motors can be found in our motor catalogue, which is divided into more individual subcatalogues:

- General information on Danfoss Orbital Motors: function, use, selection of orbital motor, hydraulic systems, etc.
- Technical data on small motors: OML and OMM
- Technical data on medium sized motors: OMP, OMR, OMH
- Technical data on medium sized motors: DH and DS
- Technical data on medium sized motors: OMEW
- Technical data on medium sized motors: VMP
- Technical data on medium sized motors: VMR
- Technical data on large motors: OMS, OMT and OMV
- Technical data on large motors: TMK
- Technical data on large motors: TMT
- Technical data on large motors: TMTHW
- Technical data on large motors: TMVW

A general survey brochure on Danfoss Orbital Motors gives a quick motor reference based on power, torque, speed and capabilities.

Technical Information OMS, OMT and OMV Orbital Motors

OMS, OMT and OMV

- OMV *Function diagrams* on page 81

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 mm²/s [165 SUS] and a temperature of 50°C [120°F]. For further explanation concerning how to read and use the function diagrams, please consult the paragraph "Selection of motor size" in the technical information "General Orbital motors" 520L0232.

Technical Information OMS, OMT and OMV Orbital Motors
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

Technical Information OMS, OMT and OMV Orbital Motors
OMT
OMT code numbers (continued)

Code Numbers	Displacement [cm ³]					
	160	200	250	315	400	500
151B	3018	3019	3020	3021	3022	3023
151B	3024	3025	3026	3027	3028	3029
151B	3030	3031	3032	3033	3034	3035
151B	2080	2081	2082	2083	2084	2085
151B	3207	3208	3209	3210	3211	3212
151B	3200	3201	3202	3203	3204	3205
151B	4000	4001	4002	4003	4004	4005
151B	4007	4008	4009	4010	4011	4012
151B	4021	4022	4023	4024	4025	4026
151B	4028	4029	4030	4031	4032	4033
151B	3036	3037	3038	3039	3040	3041

Ordering

Add the four digit prefix "151B" to the four digit numbers from the chart for complete code number.

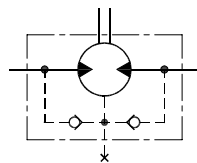
Example:

151B3002 for an OMT 250 with standard flange, cyl. 40 mm shaft and port size G 3/4.

Orders will not be accepted without the four digit prefix.

Technical data
Maximum permissible shaft seal pressure
Motor with check valves and without use of drain connection

The pressure on the shaft seal never exceeds the pressure in the return line.



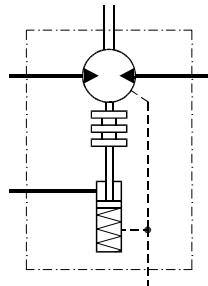
151-320.10

Motor with check valves and with drain connection

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

OMT FX, OMT FL and OMT FH must always be fitted with drain line.

Maximum pressure in drain line is 5 bar [75 psi]

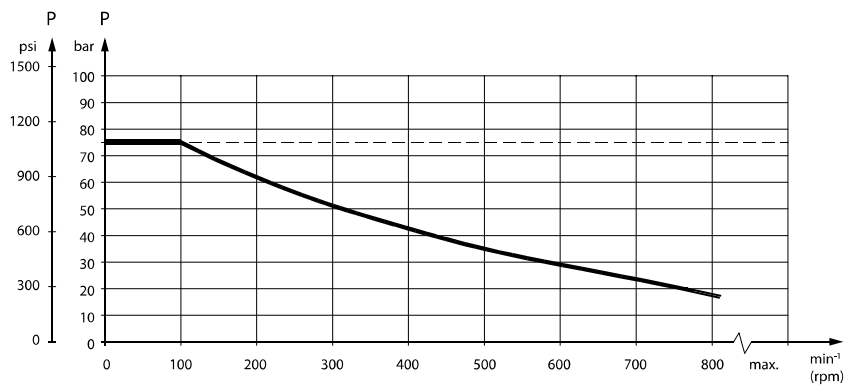
Technical Information OMS, OMT and OMV Orbital Motors
OMT


151-1405.10

Maximum return pressure

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

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



151-1674.10

----- 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

Technical Information OMS, OMT and OMV Orbital Motors
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 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]
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]		340 [3010]	430 [3810]	530 [4690]	740 [6550]	840 [7430]	950 [8410]
	at maximum pressure drop int. ¹⁾ Nm [lbf-in]		410 [3630]	520 [4600]	630 [5580]	890 [7880]	970 [8590]	1060 [9380]

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.

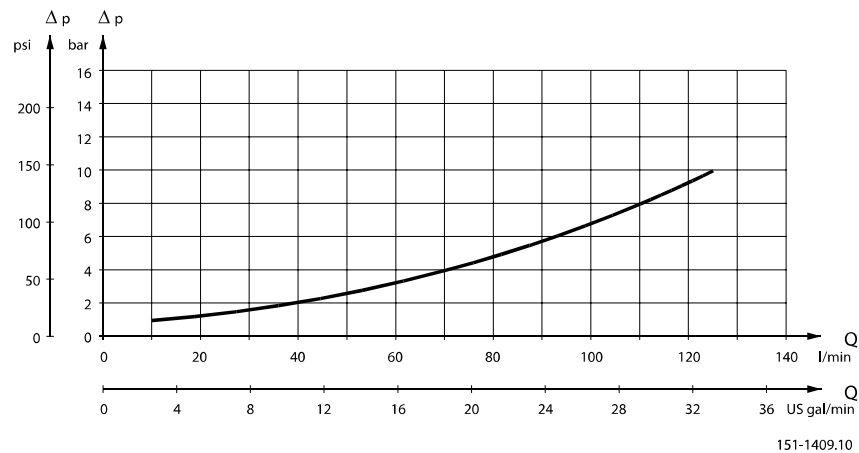
Type			Maximum inlet pressure	Maximum return pressure with drain line
OMT, OMTW, OMTS, OMT FX, OMT FL, OMT FH	bar [psi]	cont.	210 [3050]	140 [2030]
	bar [psi]	int. ¹⁾	250 [3630]	175 [2540]
	bar [psi]	peak ²⁾	300 [4350]	210 [3050]

Technical Information OMS, OMT and OMV Orbital Motors
OMT
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]

- 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.
- 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.

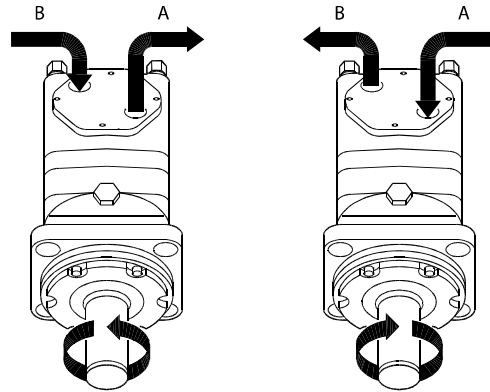
Pressure drop in motor


The curve applies to an unloaded motor shaft and an oil viscosity of 35 mm²/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 bar [psi]	Viscosity mm ² /s [SUS]	Oil flow in drain line 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


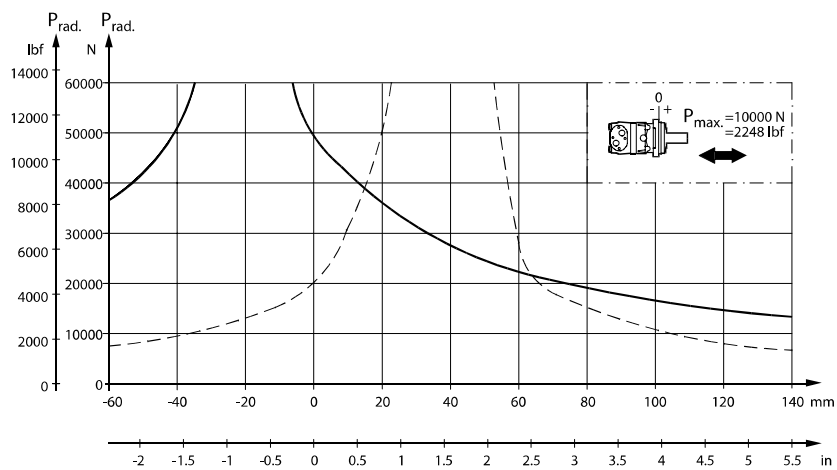
151-1050.10

Permissible shaft loads for OMT
Mounting flange:

Standard

Shaft:

All shaft types



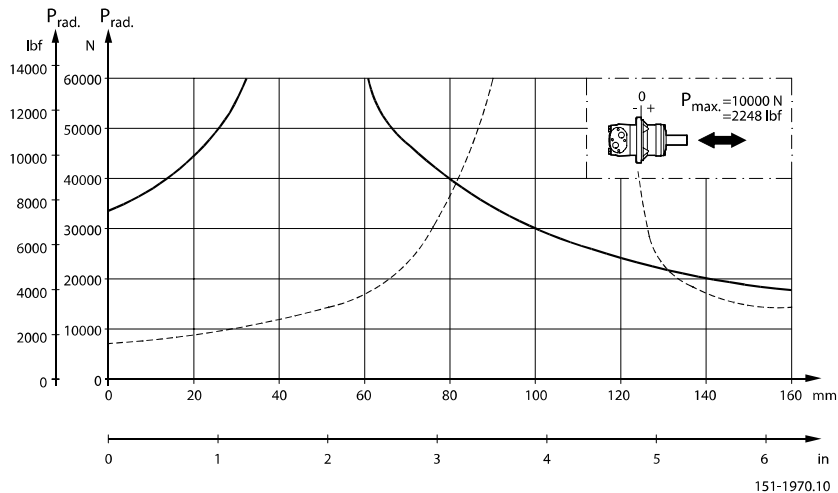
151-1967.10

Mounting flange:

Wheel

Shaft:

All shaft types

OMT


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 curve is 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 maximum radial shaft load. Any shaft load exceeding the values shown in the curve will involve a risk of breakage.

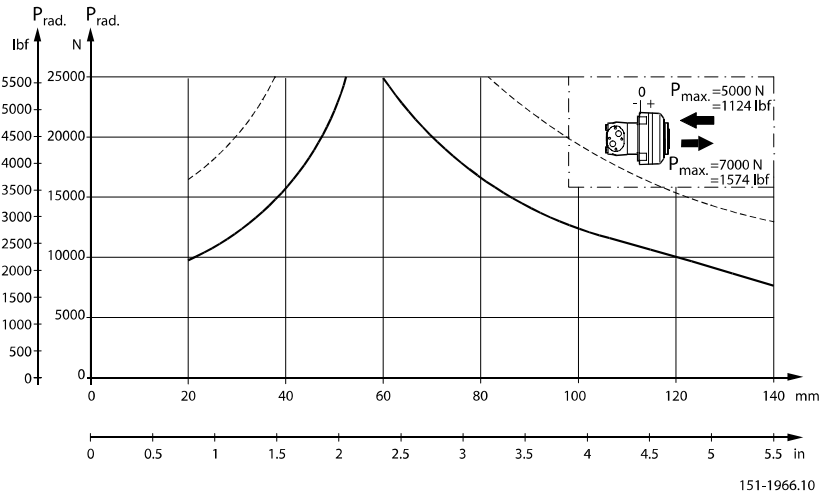
Bearing life calculations can be made using the explanation and formula provided in the chapter "Bearing dimensioning" in the technical information "General Orbital motors" 520L0232.

Mounting flange:

Brake-wheel

Shaft:

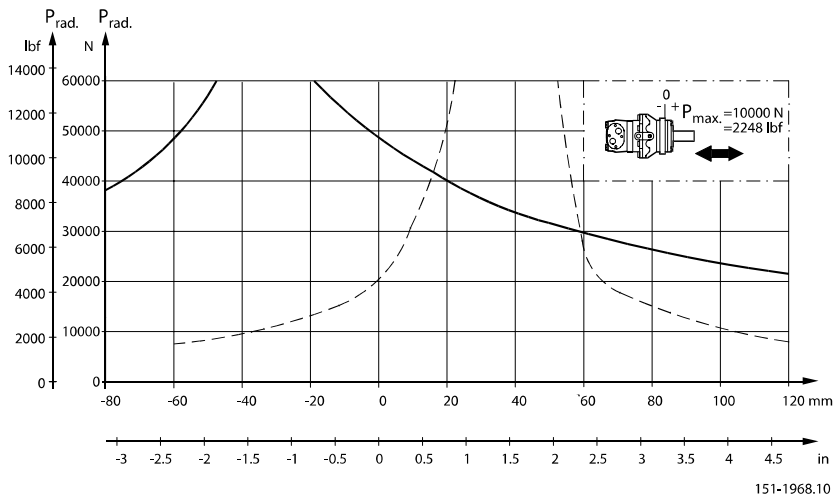
All shaft types

Technical Information OMS, OMT and OMV Orbital Motors
OMT

Mounting flange:

Brake-standard

Shaft:

All shaft types



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 curve is 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.

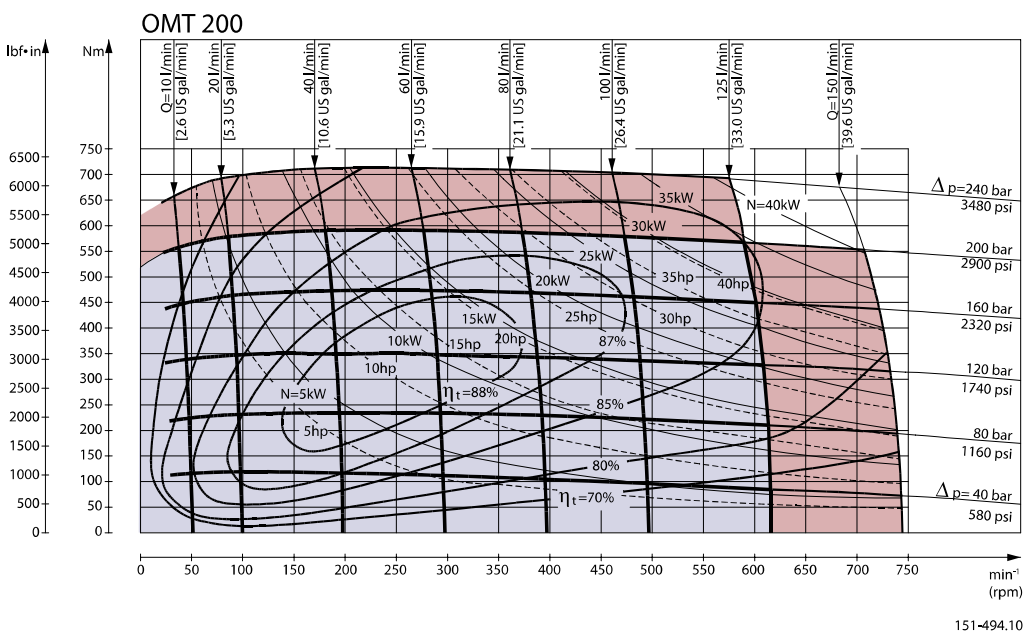
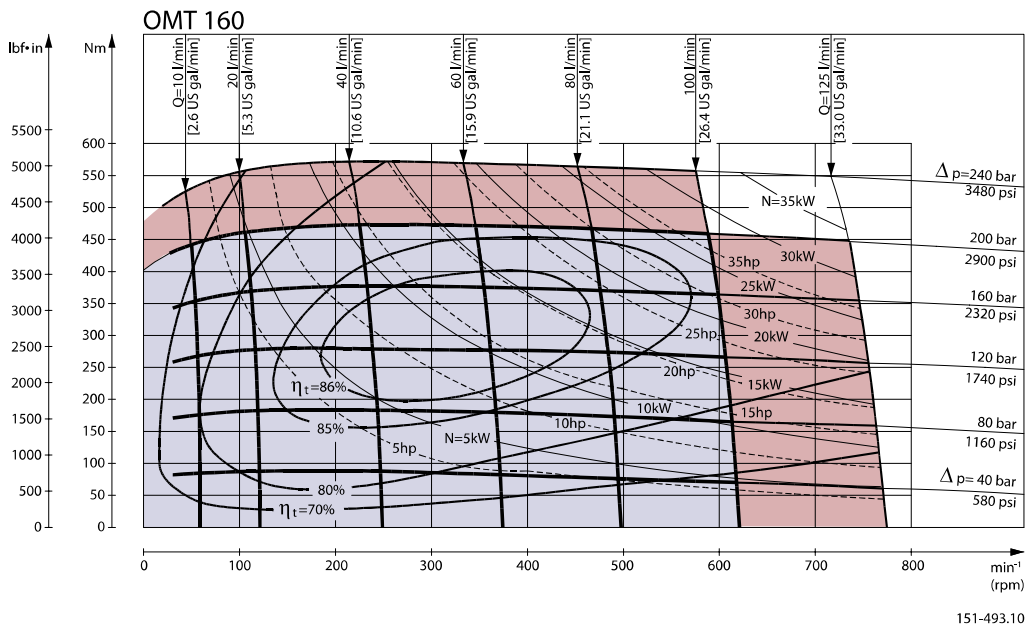
Technical Information OMS, OMT and OMV Orbital Motors
OMT

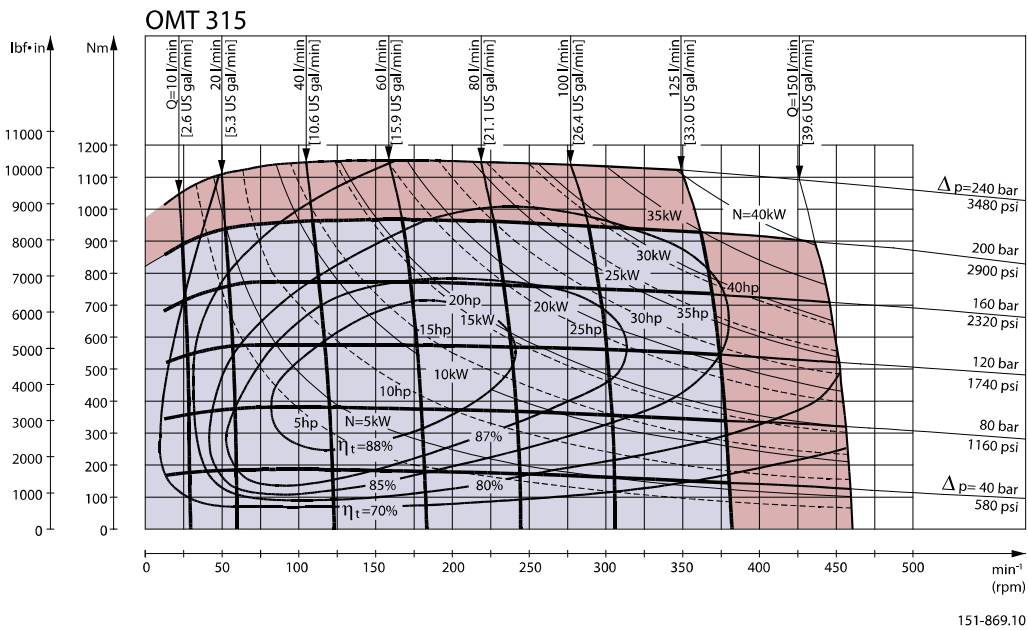
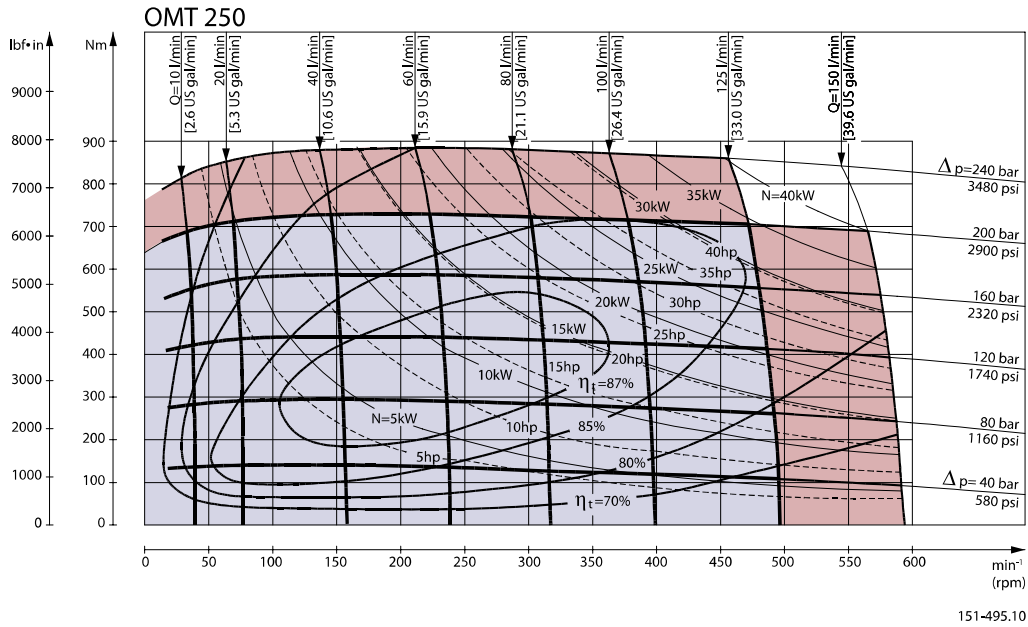
Bearing life calculations can be made using the explanation and formula provided in the chapter "Bearing dimensioning" in the technical information "General Orbital motors" 520L0232.

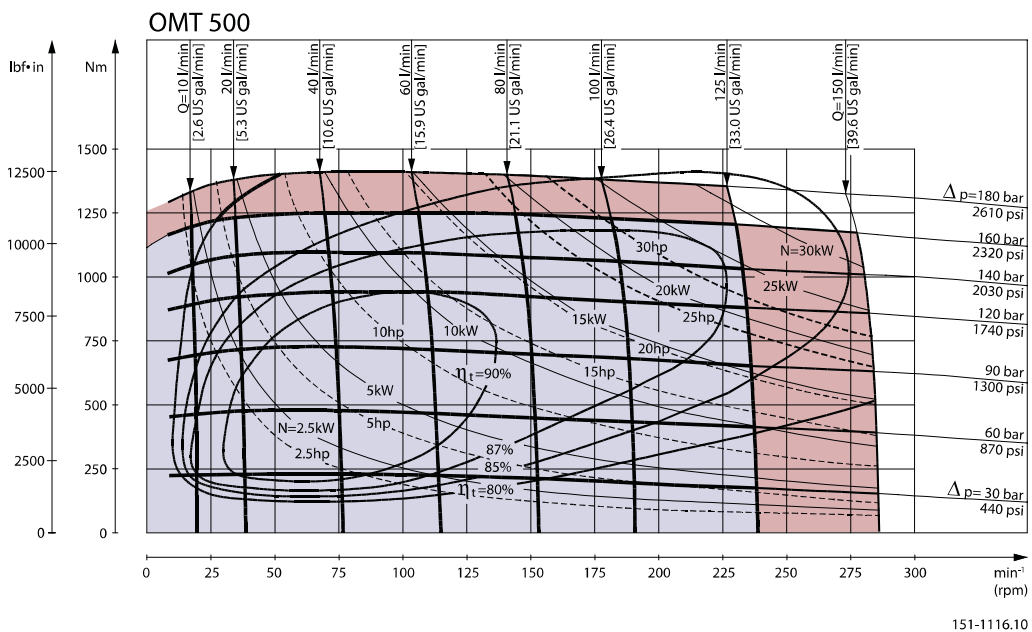
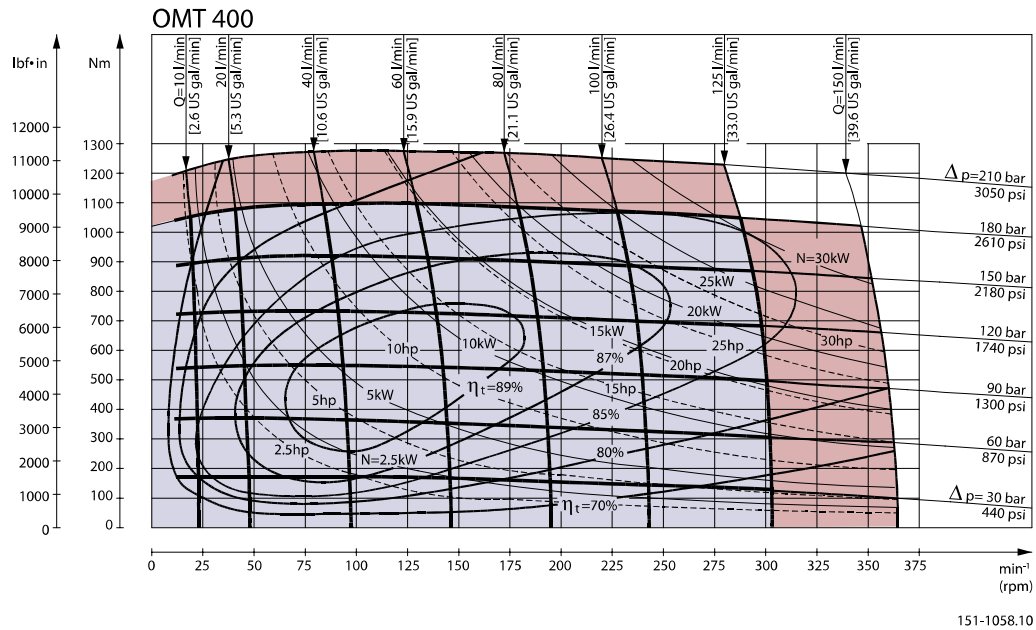
Function diagrams

Continuous range

Intermittent range (maximum 10% operation every minute)



Technical Information OMS, OMT and OMV Orbital Motors
OMT


Technical Information OMS, OMT and OMV Orbital Motors
OMT

Function diagram use

Explanation of function diagram use, basis and conditions, see [Speed, torque and output](#) on page 7.

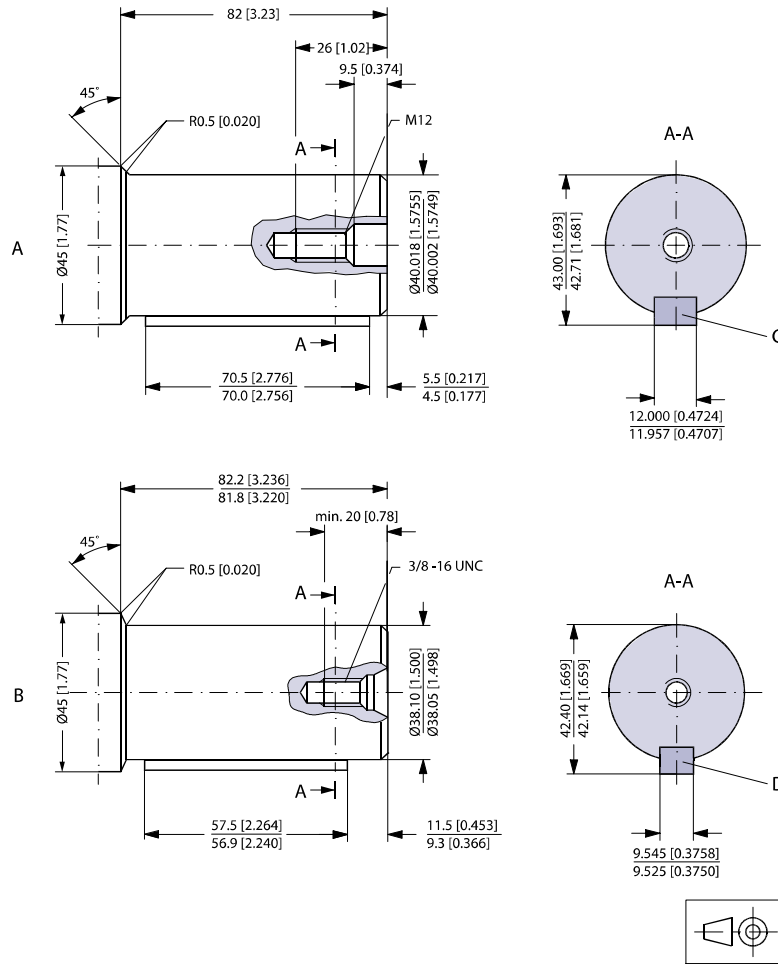
Intermittent pressure drop and oil flow must not occur simultaneously.



Technical Information OMS, OMT and OMV Orbital Motors

OMT

Shaft version

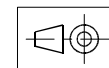
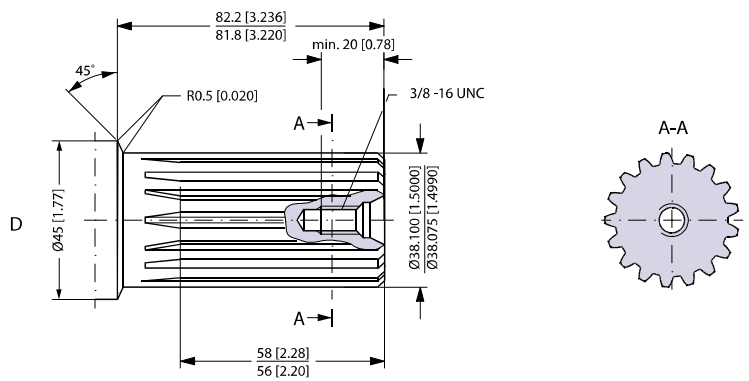
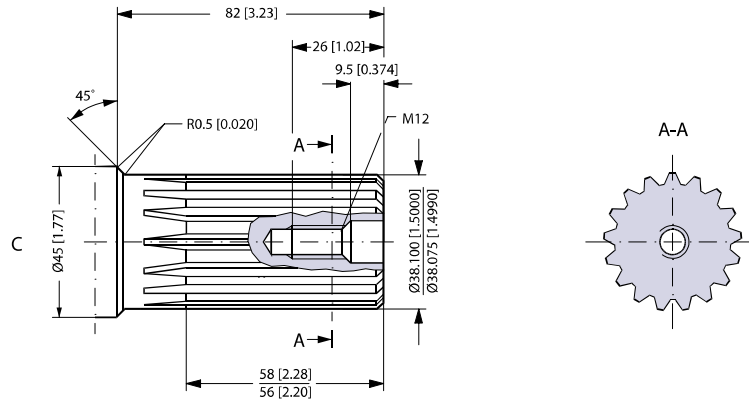


- A** Cylindrical 40 mm shaft
- C** Parallel key
A12 × 8 × 70
DIN 6885
Keyway deviates from standard

- B** Cylindrical 1.5 in shaft
- D** Parallel key
3/8 × 3/8 × 21/4 in
B.S. 46
Keyway deviates from standard

Technical Information OMS, OMT and OMV Orbital Motors

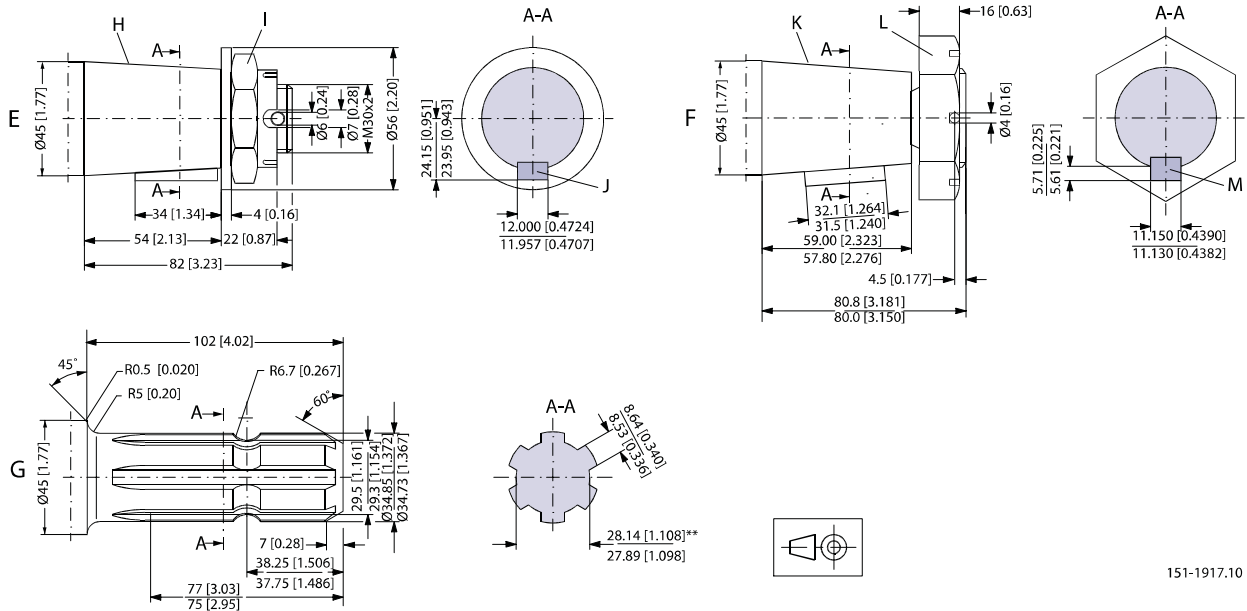
OMT



151-1916.10

- C** Involute splined shaft
ANS B92.1 - 1970 standard
Flat root side fit
Pitch 12/24
Teeth 17
Major diameter 1.50 in
Pressure angle 30°

- D** **US version**
Involute splined shaft
ANS B92.1 - 1970 standard
Flat root side fit
Pitch 12/24
Teeth 17
Major diameter 1.50 in
Pressure angle 30°

Technical Information OMS, OMT and OMV Orbital Motors
OMT


151-1917.10

E Tapered 45 mm shaft (ISO/R775)

I DIN 937

Across flats: 46 mm

Tightening torque: 500 ± 30 Nm [4430 ± 270 lbf-in]

H Taper 1:10

J Parallel key

B12 × 8 × 28

DIN 6885

Keyway deviates from standard

F Tapered 1.75 in shaft

K Cone 1:8

SAE J501

L 1 1/4 - 18 UNEF

Across flats 2 3/16 in

Tightening torque: 500 ± 10 Nm (4425 ± 90 lbf-in)

M Parallel key

7/16 × 7/16 × 1 1/4

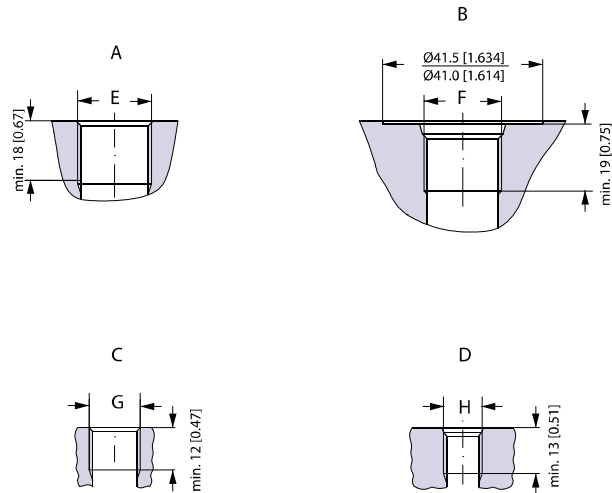
B.S. 46

Keyway deviates from standard

G P.t.o. shaft

DIN 9611 Form 1 (ISO/R500 without pin hole)

** Deviates from DIN 9611

OMT
Port thread versions


151-1977.11

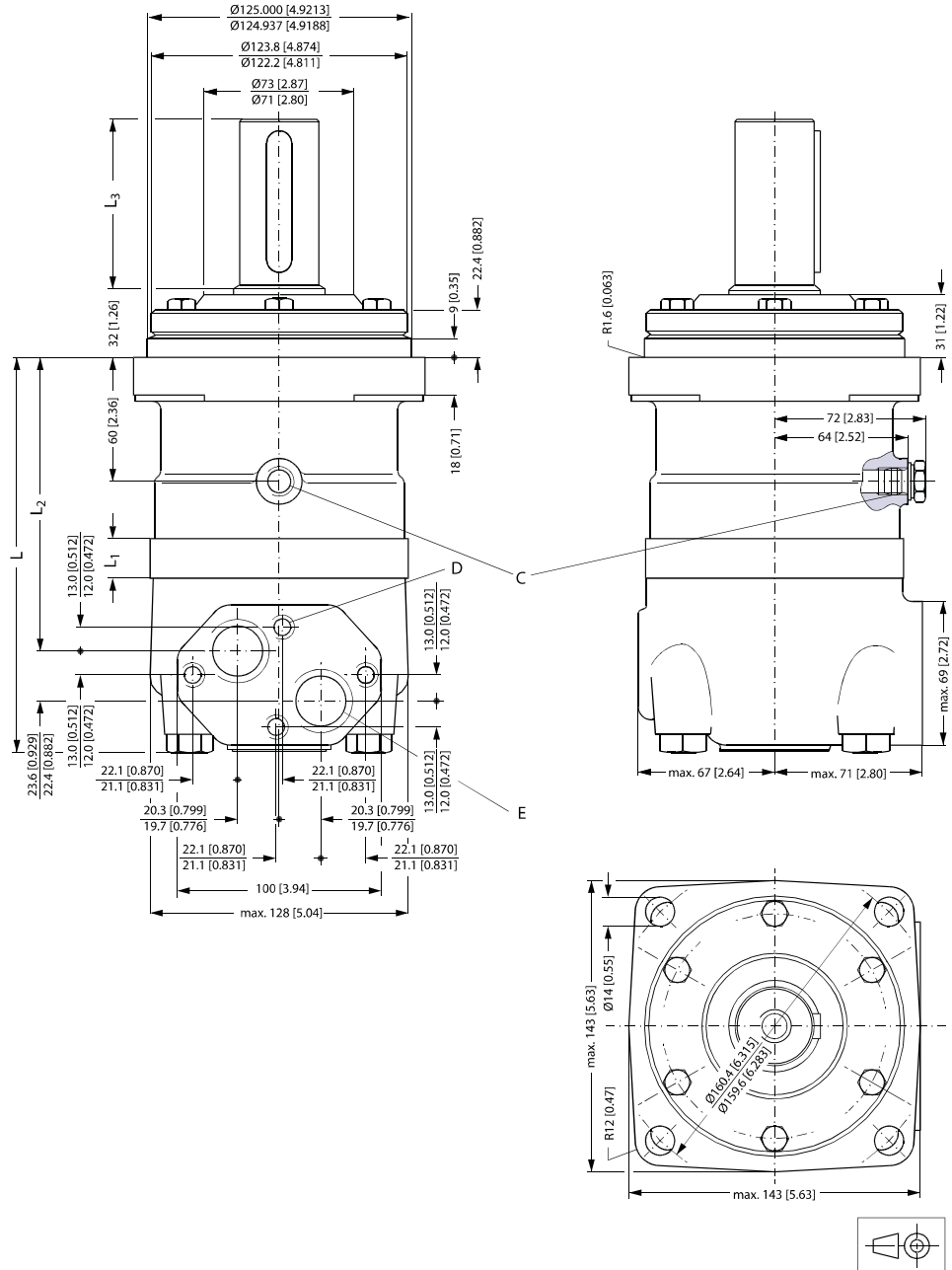
A	G main ports	B	UN main ports
E	ISO 228/1 - G3/4 O-ring boss port	F	1 1/16 - 12 UN
C	G drain port	D	UNF drain port
G	G: ISO 228/1 - G1/4 O-ring boss port	H	9/16 - 18 UNF

Technical Information OMS, OMT and OMV Orbital Motors

OMT

Dimensions

Standard flange—European version



151-889.11

C: Drain connection
G 1/4; 12 mm [0.47 in] deep

D: M10; 10 mm [0.39 in] deep

E: G 3/4; 17 mm [0.67 in] deep

Technical Information OMS, OMT and OMV Orbital Motors

OMT

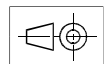
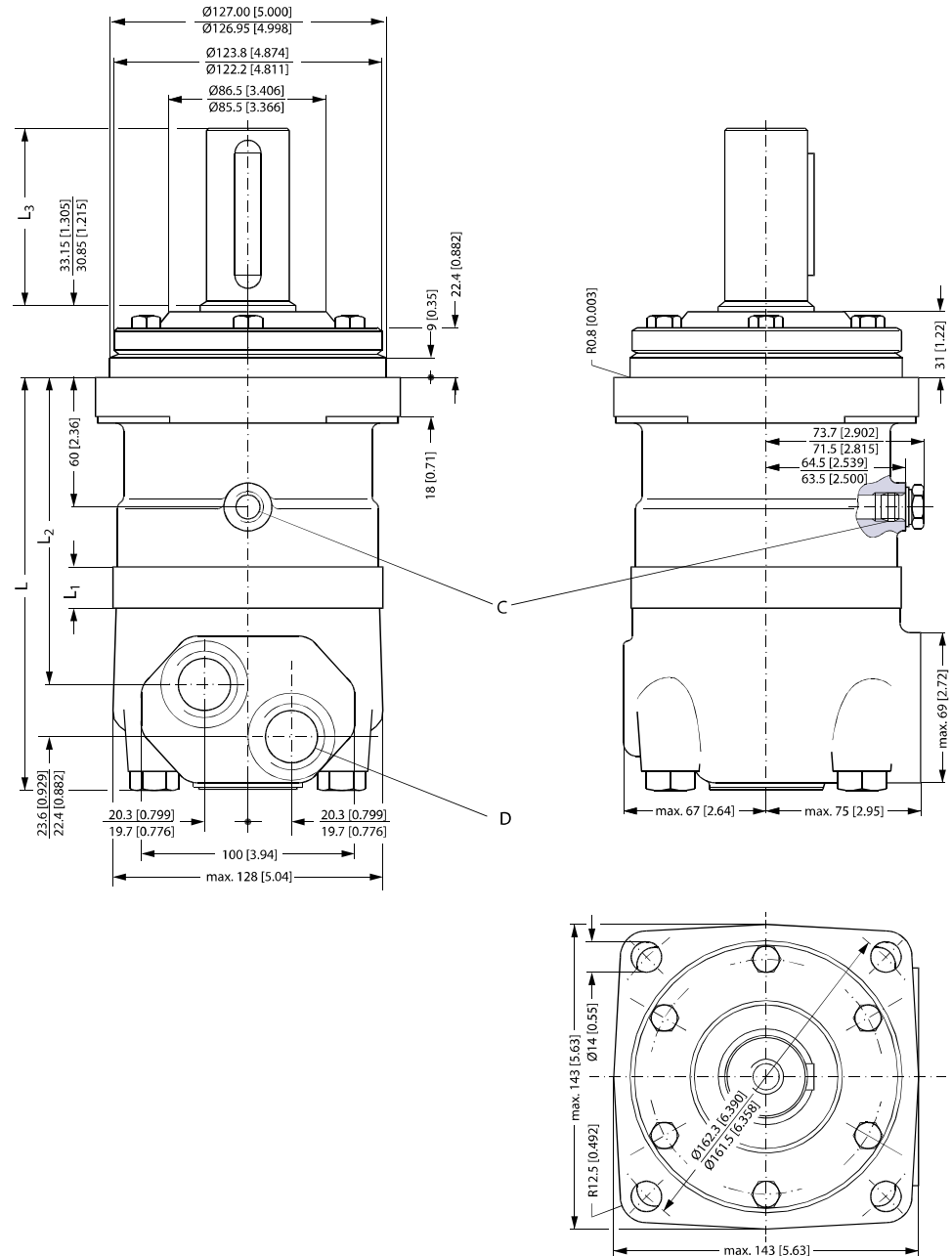
Type	L _{max} mm [in]	L ₁ * mm [in]	L ₂ mm [in]
OMT 160	190 [7.48]	16.5 [0.650]	140 [5.51]
OMT 200	195 [7.68]	21.5 [0.846]	145 [5.71]
OMT 250	201 [7.91]	27.8 [1.094]	151 [5.94]
OMT 315	211 [8.31]	37.0 [1.457]	161 [6.34]
OMT 400	221 [8.70]	47.5 [1.870]	171 [6.73]
OMT 500	235 [9.25]	61.5 [2.421]	185 [7.28]

* The gearwheel set is 3.5 mm [0.138 in] wider across the rollers than the L1 dimensions

Output shaft		L ₃ mm [in]
All shafts except P.t.o. shaft	max.	82 [3.23]
P.t.o. shaft	max.	102 [4.02]

OMT

Standard flange—US version



151-889.11.22

C: Drain connection 9/16 - 18 UNF; 13 mm [0.51 in] deep O-ring boss port

D: 1 1/16 - 12 UN; 19 mm [0.75 in] deep O-ring boss port

Technical Information OMS, OMT and OMV Orbital Motors

OMT

Type	L _{max} mm [in]	L ₁ * mm [in]	L ₂ mm [in]
OMT 160	190 [7.48]	16.5 [0.650]	140 [5.51]
OMT 200	195 [7.68]	21.5 [0.846]	145 [5.71]
OMT 250	201 [7.91]	27.8 [1.094]	151 [5.94]
OMT 315	211 [8.31]	37.0 [1.457]	161 [6.34]
OMT 400	221 [8.70]	47.5 [1.870]	171 [6.73]
OMT 500	235 [9.25]	61.5 [2.421]	185 [7.28]

* The gearwheel set is 3.5 mm [0.138 in] wider across the rollers than the L1 dimensions

Output shaft	L ₃ mm [in]
Cyl. 1.5 in Splined 1.5 in	82 [3.23]
Tapered 1.75 in	80.4 [3.17]

Technical Information OMS, OMT and OMV Orbital Motors

OMT

Type	L _{max} mm [in]	L ₁ *mm [in]	L ₂ mm [in]
OMTW 250	134 [5.28]	27.8 [1.094]	84 [3.31]
OMTW 315	144 [5.67]	37.0 [1.457]	94 [3.70]
OMTW 400	154 [6.06]	47.5 [1.870]	104 [4.09]
OMTW 500	168 [6.61]	61.5 [2.421]	118 [4.65]

* The gearwheel set is 3.5 mm [0.138 in] wider across the rollers than the L1 dimensions

Technical Information OMS, OMT and OMV Orbital Motors

OMT

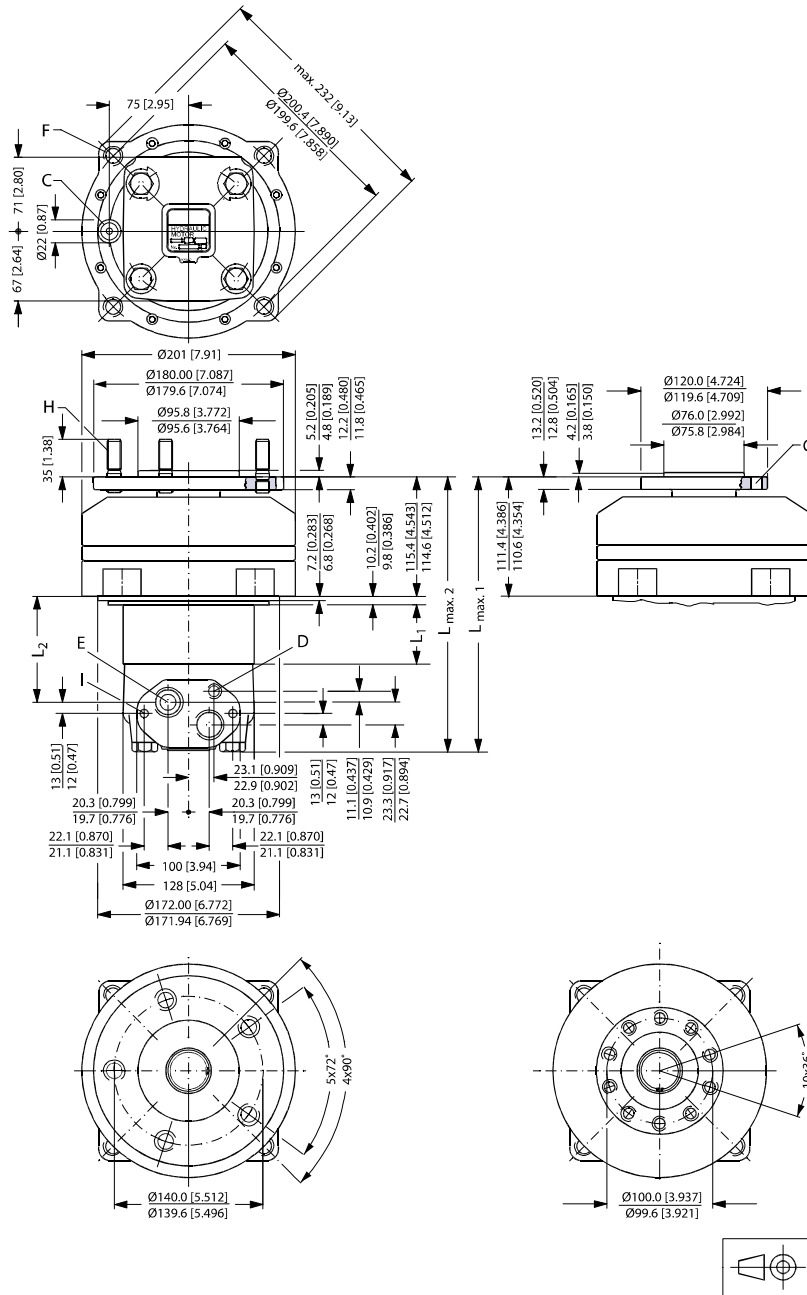
Type	L _{max} mm [in]	L ₁ * mm [in]	L ₂ mm [in]
OMTW 160	123 [4.84]	16.5 [0.650]	73 [2.87]
OMTW 200	128 [5.04]	21.5 [0.846]	78 [3.07]
OMTW 250	134 [5.28]	27.8 [1.094]	84 [3.31]
OMTW 315	144 [5.67]	37.0 [1.457]	94 [3.70]
OMTW 400	154 [6.06]	47.5 [1.870]	104 [4.09]
OMTW 500	168 [6.61]	61.5 [2.421]	118 [4.65]

* The gearwheel set is 3.5 mm [0.138 in] wider across the rollers than the L1 dimensions

Technical Information OMS, OMT and OMV Orbital Motors

OMT

Brake-wheel—European version



- C:** Brake-release port G 1/4; 12 mm [0.47 in] deep (BS/ISO 228/1)
- D:** Drain connection G 1/4; 12 mm [0.47 in] deep
- E:** G 3/4; 17 mm [0.67 in] deep
- F:** 4 × M12; 27 mm [1.06 in] deep
- G:** 10 × M12
- H:** Wheel bolts 5 × M14 × 1.5
- I:** M10; 10 mm [0.39 in] deep

Technical Information OMS, OMT and OMV Orbital Motors

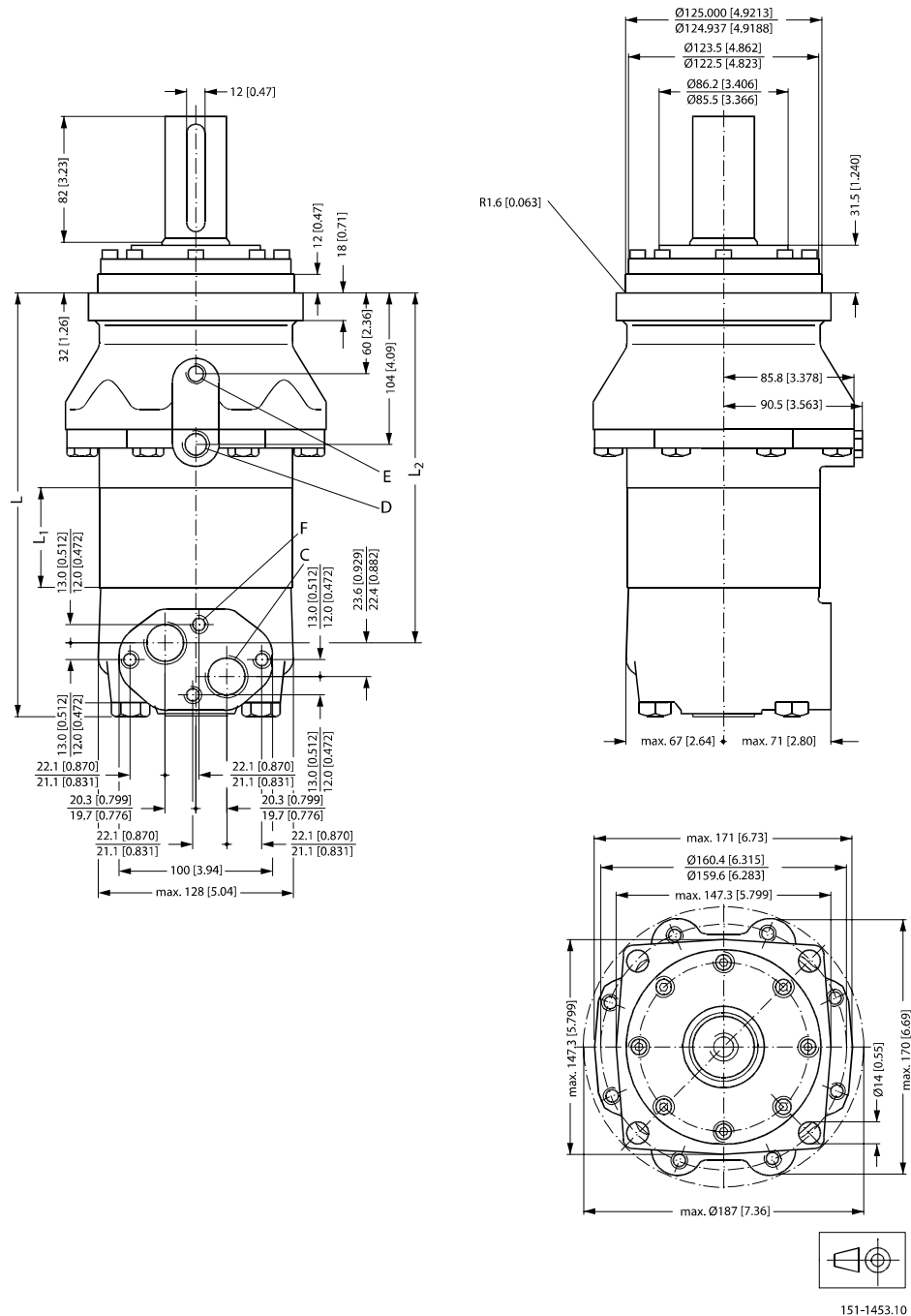
OMT

Type	L _{max 1} mm [in]	L _{max 2} mm [in]	L ₁ * mm [in]	L ₂ mm [in]
OMT 160 FX	223 [8.78]	227 [8.94]	16.5 [0.650]	62 [2.45]
OMT 200 FX	228 [8.98]	232 [9.13]	21.5 [0.846]	67 [2.65]
OMT 250 FX	234 [9.21]	238 [9.37]	27.8 [1.094]	74 [2.89]
OMT 315 FX	243 [9.57]	247 [9.72]	37.0 [1.457]	83 [3.26]
OMT 400 FX	254 [10.00]	258 [10.16]	47.5 [1.870]	93 [3.67]
OMT 500 FX	268 [10.55]	272 [10.71]	61.5 [2.421]	107 [4.22]

* The gearwheel set is 3.5 mm [0.138 in] wider across the rollers than the L1 dimensions

OMT

Brake-standard—European version



C: G 3/4; 17 mm [0.67 in] deep (BS/ISO 228/1) **D:** Drain connection G 3/8; 14 mm [0.55 in] deep **E:** Brake-release port G 1/4; 12 mm [0.47 in] deep **F:** M10; 10 mm [0.39 in] deep

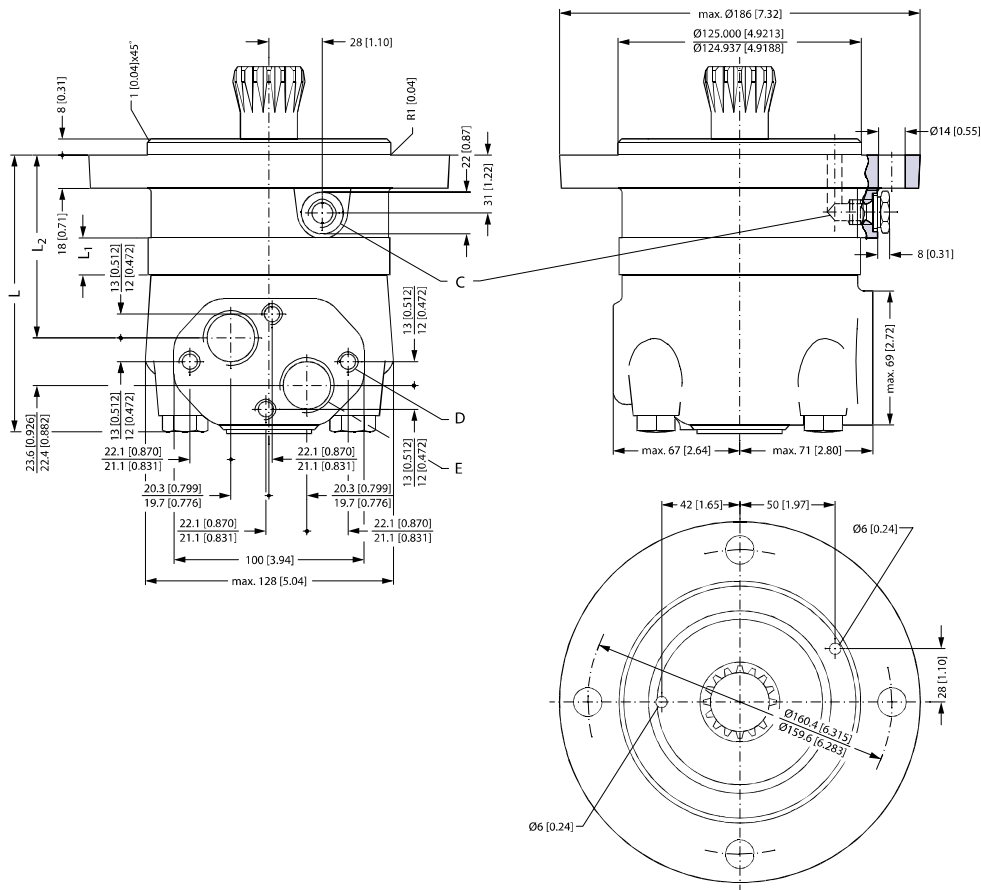
Technical Information OMS, OMT and OMV Orbital Motors

OMT

Type	L _{max} mm [in]	L ₁ * mm [in]	L ₂ mm [in]
OMT 160 FL/FH	228 [8.98]	16.5 [0.650]	178 [7.01]
OMT 200 FL/FH	233 [9.17]	21.5 [0.846]	183 [7.20]
OMT 250 FL/FH	239 [9.41]	27.8 [1.094]	189 [7.44]
OMT 315 FL/FH	248 [9.76]	37.0 [1.457]	199 [7.83]
OMT 400 FL/FH	259 [10.20]	47.5 [1.870]	209 [8.23]
OMT 500 FL/FH	273 [10.75]	61.5 [2.421]	223 [8.78]

* The gearwheel set is 3.5 mm [0.138 in] wider across the rollers than the L₁ dimensions

Short—European version



151-898.11

C: Drain connection G 1/4; 12 mm [0.47 in] deep

D: M10; 10 mm [0.39 in] deep **E:** G 3/4; 17 mm [0.67 in] deep

Type	L _{max} mm [in]	L ₁ * mm [in]	L ₂ mm [in]
OMTS 160	146 [5.75]	16.5 [0.650]	96 [3.78]
OMTS 200	151 [5.94]	21.5 [0.846]	101 [3.98]

Technical Information OMS, OMT and OMV Orbital Motors
OMT

Type	L _{max} mm [in]	L ₁ * mm [in]	L ₂ mm [in]
OMTS 250	157 [6.18]	27.8 [1.094]	107 [4.21]
OMTS 315	166 [6.54]	37.0 [1.457]	116 [4.57]
OMTS 400	177 [6.97]	47.5 [1.870]	127 [5.00]
OMTS 500	191 [7.52]	61.5 [2.421]	142 [5.59]

* The gearwheel set is 3.5 mm [0.138 in] wider across the rollers than the L₁ dimensions

OMTS
Installation

The cardan shaft of the OMTS motor acts as an "output shaft". Because of the movement of the shaft, no seal can be fitted at the shaft output.

Internal oil leakage from the motor will therefore flow into the attached component.

During start and operation it is important that the spline connection and the bearings in the attached component receive oil and are adequately lubricated. To ensure that the spline connection receives sufficient oil, a conical sealing ring between the shaft of the attached component and the motor intermediate plate is recommended. This method is used in the OMT.

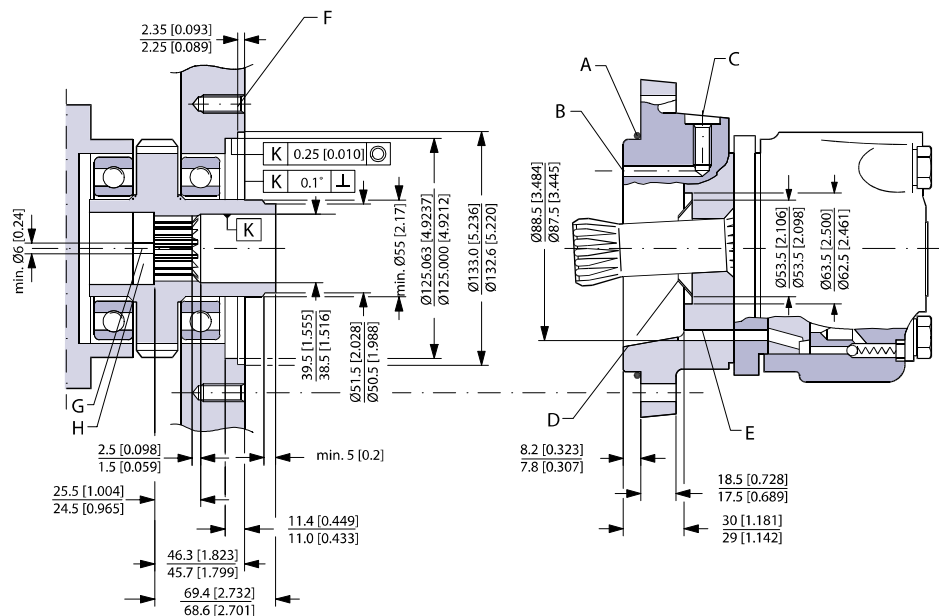
The conical sealing ring (code. no. 633B9022) is supplied with the motor.

To ensure that oil runs to the bearings and other parts of the attached component, the stop plate must have a hole in it (see fig. below).

We recommend an O-ring between motor and attached component. The O-ring (code no. 151B1040) is supplied with the motor. If motor and attached component have been separated, remember to refill before starting up. Fill the oil through the drain connection.

Attached component dimensions

OMTS dimensions of the attached component in millimeter [inches]



151-452.10

Technical Information OMS, OMT and OMV Orbital Motors
OMT

A	O-ring: 125 × 3 mm	B	External drain channel
C	Drain connection G 1/4; 12 mm [0.47 in] deep	D	Conical seal ring
E	Internal drain channel	F	M12; min. 18 mm [0.71 in] deep
G	Oil circulation hole	H	Hardened stop plate

Attached component internal splines

The attached component must have internal splines corresponding to the external splines on the motor cardan shaft (see the following drawing).

Material:

Case hardening steel with a tensile strength corresponding at least to 20 MoCr4 (900 N/mm²) or SAE 8620.

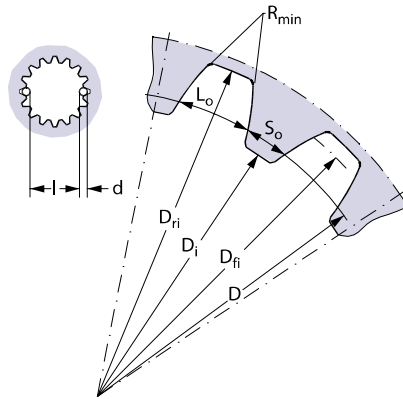
Hardening specification:

- On the surface: HV = 750 ± 50
- 0.7 ± 0.2 mm under the surface: HV = 560

Internal involute spline data; Standard ANS B92.1-1970, class 5 (corrected $m \cdot X = 1$; $m = 2.1166$)

Flat root side fit		mm	in
Number of teeth	z	16	16
Pitch	DP	12/24	12/24
Pressure angle		30°	30°
Pitch dia.	D	33.8656	1.3333
Major dia.	D _{ri}	38.4 ₀ ^{+0.4}	1.5118 ₀ ^{+0.0157}
Form dia. (min.)	D _{fi}	37.6	1.4803
Minor dia.	D _i	32.150 ₀ ^{+0.04}	1.2657 ₀ ^{+0.00157}
Space width (circular)	L _o	4.516 ^{±0.037}	0.1777 ^{±0.0014}
Tooth thickness (circular)	S _o	2.170	0.0854
Fillet radius	R _{min.}	0.5	0.02
Max. measurement between pins*	l	26.9 ₀ ^{+0.1}	1.059 ₀ ^{+0.004}
Pin dia.	d	4.834 ^{±0.001}	0.1903 ^{±0.00004}

* Finished dimensions (when hardened).

OMT


151-455.10

Motor or attached component drain connection

Use the drain line when pressure in the return line exceeds the permissible pressure on the shaft seal of the attached component.

Connect the drain line either at the:

- Motor drain connection
- Drain connection of the attached component

If a drain line is fitted to the attached component, it must be possible for oil to flow freely between motor and attached component.

The drain line must be led to the tank in such a way that there is no risk of the motor and attached component being drained of oil when at rest.

The maximum pressure in the drain line is limited by the attached component and its shaft seal.

Technical Information OMS, OMT and OMV Orbital Motors

Weight of motors
Code number and weight
Code number and weight of motors

Code no	Weight	
	kg	[lb]
151B2050	20.0	44.1
151B2051	20.5	45.2
151B2052	21.0	46.3
151B2053	22.0	48.5
151B2054	23.0	50.7
151B2055	24.0	52.9
151B2056	20.0	44.1
151B2057	20.5	45.2
151B2058	21.0	46.3
151B2059	22.0	48.5
151B2060	23.0	50.7
151B2061	24.0	52.9
151B2062	20.0	44.1
151B2063	20.5	45.2
151B2064	21.0	46.3
151B2065	22.0	48.5
151B2066	23.0	50.7
151B2067	24.0	52.9
151B2080	22.0	48.5
151B2081	22.5	49.6
151B2082	23.0	50.7
151B2083	24.0	52.9
151B2084	25.0	55.1
151B2085	26.0	57.3
151B2150	31.8	70.1
151B2151	32.6	71.9
151B2152	33.5	73.9
151B2153	34.9	76.9
151B2154	36.5	80.5
151B2155	31.8	70.1
151B2156	32.6	71.9
151B2157	33.5	73.9
151B2158	34.9	76.9
151B2159	36.5	80.5
151B2160	31.8	70.1
151B2161	32.6	71.9
151B2162	33.5	73.9
151B2163	34.9	76.9

Technical Information OMS, OMT and OMV Orbital Motors
Weight of motors
Code number and weight of motors (continued)

Code no	Weight	
	kg	[lb]
151B2164	36.5	80.5
151B2170	32.4	71.4
151B2171	33.2	73.2
151B2172	34.1	75.2
151B2173	35.5	78.3
151B2174	37.1	81.8
151B2183	30.0	66.2
151B2184	30.8	67.9
151B2185	31.7	69.9
151B2186	33.1	73.0
151B2187	34.7	76.5
151B2188	30.0	66.2
151B2189	30.8	67.9
151B2190	31.7	69.9
151B2191	33.1	73.0
151B2192	34.7	76.5
151B3000	20.0	44.1
151B3001	20.5	45.2
151B3002	21.0	46.3
151B3003	22.0	48.5
151B3004	23.0	50.7
151B3005	24.0	52.9
151B3006	20.0	44.1
151B3007	20.5	45.2
151B3008	21.0	46.3
151B3009	22.0	48.5
151B3010	23.0	50.7
151B3011	24.0	52.9
151B3012	20.0	44.1
151B3013	20.5	45.2
151B3014	21.0	46.3
151B3015	22.0	48.5
151B3016	23.0	50.7
151B3017	24.0	52.9
151B3018	20.0	44.1
151B3019	20.5	45.2
151B3020	21.0	46.3
151B3021	22.0	48.5
151B3022	23.0	50.7
151B3023	24.0	52.9

Technical Information OMS, OMT and OMV Orbital Motors
Weight of motors
Code number and weight of motors (continued)

Code no	Weight	
	kg	[lb]
151B3024	22.0	48.5
151B3025	22.5	49.6
151B3026	23.0	50.7
151B3027	24.0	52.9
151B3028	25.0	55.1
151B3029	26.0	57.3
151B3030	22.0	48.5
151B3031	22.5	49.6
151B3032	23.0	50.7
151B3033	24.0	52.9
151B3034	25.0	55.1
151B3035	26.0	57.3
151B3036	15.0	33.1
151B3037	15.5	34.2
151B3038	16.0	35.3
151B3039	17.0	37.5
151B3040	18.0	39.7
151B3041	19.0	41.9
151B3100	31.8	70.1
151B3101	32.6	71.9
151B3102	33.5	73.9
151B3103	34.9	76.9
151B3104	36.5	80.5
151B3105	31.8	70.1
151B3106	32.6	71.9
151B3107	33.5	73.9
151B3108	34.9	76.9
151B3109	36.5	80.5
151B3110	31.8	70.1
151B3111	32.6	71.9
151B3112	33.5	73.9
151B3113	34.9	76.9
151B3114	36.5	80.5
151B3115	32.4	71.4
151B3116	33.2	73.2
151B3117	34.1	75.2
151B3118	35.5	78.3
151B3119	37.1	81.8
151B3120	32.4	71.4
151B3121	33.2	73.2

Technical Information OMS, OMT and OMV Orbital Motors
Weight of motors
Code number and weight of motors (continued)

Code no	Weight	
	kg	[lb]
151B3122	34.1	75.2
151B3123	35.5	78.3
151B3124	37.1	81.8
151B3125	22.7	50.1
151B3126	23.5	51.8
151B3127	24.4	53.8
151B3128	25.6	56.4
151B3129	27.7	61.1
151B3200	31.0	68.3
151B3201	31.5	69.4
151B3202	32.0	70.5
151B3203	33.0	72.8
151B3204	34.0	75.0
151B3205	35.0	77.2
151B3207	31.0	68.3
151B3208	31.5	69.4
151B3209	32.0	70.5
151B3210	33.0	72.8
151B3211	34.0	75.0
151B3212	35.0	77.2
151B4000	24.5	54.0
151B4001	25.0	55.1
151B4002	25.5	56.2
151B4003	26.5	58.4
151B4004	27.5	60.6
151B4005	28.5	62.8
151B4007	24.5	54.0
151B4008	25.0	55.1
151B4009	25.5	56.2
151B4010	26.5	58.4
151B4011	27.5	60.6
151B4012	28.5	62.8
151B4021	24.5	54.0
151B4022	25.0	55.1
151B4023	25.5	56.2
151B4024	26.5	58.4
151B4025	27.5	60.6
151B4026	28.5	62.8
151B4028	24.5	54.0
151B4029	25.0	55.1

Technical Information OMS, OMT and OMV Orbital Motors
Weight of motors
Code number and weight of motors (continued)

Code no	Weight	
	kg	[lb]
151B4030	25.5	56.2
151B4031	26.5	58.4
151B4032	27.5	60.6
151B4033	28.5	62.8
151F0500	9.8	21.6
151F0501	10.0	22.1
151F0502	10.3	22.7
151F0503	10.7	23.6
151F0504	11.1	24.5
151F0505	11.6	25.6
151F0506	12.3	27.1
151F0507	9.8	21.6
151F0508	10.0	22.1
151F0509	10.3	22.7
151F0510	10.7	23.6
151F0511	11.1	24.5
151F0512	11.6	25.6
151F0513	12.3	27.1
151F0514	9.8	21.6
151F0515	10.0	22.1
151F0516	10.3	22.7
151F0517	10.7	23.6
151F0518	11.1	24.5
151F0519	11.6	25.6
151F0520	12.3	27.1
151F0521	10.3	22.7
151F0522	10.5	23.1
151F0523	10.8	23.8
151F0524	11.2	24.7
151F0525	11.6	25.6
151F0526	12.1	26.7
151F0527	12.8	28.2
151F0528	10.3	22.7
151F0529	10.5	23.1
151F0530	10.8	23.8
151F0531	11.2	24.7
151F0532	11.6	25.6
151F0533	12.1	26.7
151F0534	12.8	28.2
151F0535	7.8	17.2

Technical Information OMS, OMT and OMV Orbital Motors
Weight of motors
Code number and weight of motors (continued)

Code no	Weight	
	kg	[lb]
151F0536	8.0	17.6
151F0537	8.3	18.3
151F0538	8.7	19.2
151F0539	9.1	20.1
151F0540	9.6	21.2
151F0541	10.3	22.7
151F0542	10.2	22.5
151F0543	10.4	22.9
151F0544	10.7	23.6
151F0545	11.1	24.5
151F0546	11.5	25.4
151F0547	12.0	26.5
151F0548	12.7	28.0
151F0560	9.8	21.6
151F0561	10.0	22.1
151F0562	10.3	22.7
151F0563	10.7	23.6
151F0564	11.1	24.5
151F0565	11.6	25.6
151F0566	12.3	27.1
151F0605	13.1	28.9
151F0608	11.1	24.5
151F0609	13.6	30.0
151F0610	13.6	30.0
151F2200	9.8	21.6
151F2201	10.0	22.1
151F2202	10.3	22.7
151F2203	10.7	23.6
151F2204	11.1	24.5
151F2205	11.6	25.6
151F2206	12.3	27.1
151F2207	9.8	21.6
151F2208	10.0	22.1
151F2209	10.3	22.7
151F2210	10.7	23.6
151F2211	11.1	24.5
151F2212	11.6	25.6
151F2213	12.3	27.1
151F2214	9.8	21.6
151F2215	10.0	22.1

Technical Information OMS, OMT and OMV Orbital Motors
Weight of motors
Code number and weight of motors (continued)

Code no	Weight	
	kg	[lb]
151F2216	10.3	22.7
151F2217	10.7	23.6
151F2218	11.1	24.5
151F2219	11.6	25.6
151F2220	12.3	27.1
151F2235	10.3	22.7
151F2236	10.5	23.1
151F2237	10.8	23.8
151F2238	11.2	24.7
151F2239	11.6	25.6
151F2240	12.1	26.7
151F2241	12.8	28.2
151F2242	10.3	22.7
151F2243	10.5	23.1
151F2244	10.8	23.8
151F2245	11.2	24.7
151F2246	11.6	25.6
151F2247	12.1	26.7
151F2248	12.8	28.2
151F2261	13.1	28.9
151F2262	13.1	28.9
151F2263	13.6	30.0
151F2264	13.1	28.9
151F2265	13.6	30.0
151F2300	9.8	21.6
151F2301	10.0	22.1
151F2302	10.3	22.7
151F2303	10.7	23.6
151F2304	11.1	24.5
151F2305	11.6	25.6
151F2306	12.3	27.1
151F2307	13.1	28.9
151F2308	9.8	21.6
151F2309	10.0	22.1
151F2310	10.3	22.7
151F2311	10.7	23.6
151F2312	11.1	24.5
151F2313	11.6	25.6
151F2314	12.3	27.1
151F2315	13.1	28.9

Technical Information OMS, OMT and OMV Orbital Motors
Weight of motors
Code number and weight of motors (continued)

Code no	Weight	
	kg	[lb]
151F2316	9.8	21.6
151F2317	10.0	22.1
151F2318	10.3	22.7
151F2319	10.7	23.6
151F2320	11.1	24.5
151F2321	11.6	25.6
151F2322	12.3	27.1
151F2323	13.1	28.9
151F2324	9.8	21.6
151F2325	10.0	22.1
151F2326	10.3	22.7
151F2327	10.7	23.6
151F2328	11.1	24.5
151F2329	11.6	25.6
151F2330	12.3	27.1
151F2331	13.1	28.9
151F2332	9.8	21.6
151F2333	10.0	22.1
151F2334	10.3	22.7
151F2335	10.7	23.6
151F2336	11.1	24.5
151F2337	11.6	25.6
151F2338	12.3	27.1
151F2339	13.1	28.9
151F2345	14.0	30.9
151F2346	14.0	30.9
151F2347	14.0	30.9
151F2348	14.0	30.9
151F2349	14.0	30.9
151F2350	9.8	21.6
151F2351	10.0	22.1
151F2352	10.3	22.7
151F2353	10.7	23.6
151F2354	11.1	24.5
151F2355	11.6	25.6
151F2356	12.3	27.1
151F2357	13.1	28.9
151F2358	14.0	30.9
151F2359	9.8	21.6
151F2360	10.0	22.1

Technical Information OMS, OMT and OMV Orbital Motors

Weight of motors
Code number and weight of motors (continued)

Code no	Weight	
	kg	[lb]
151F2361	10.3	22.7
151F2362	10.7	23.6
151F2363	11.1	24.5
151F2364	11.6	25.6
151F2365	12.3	27.1
151F2366	13.1	28.9
151F2367	14.0	30.9
151F2368	9.8	21.6
151F2369	10.0	22.1
151F2370	10.3	22.7
151F2371	10.7	23.6
151F2372	11.1	24.5
151F2373	11.6	25.6
151F2374	12.3	27.1
151F2375	13.1	28.9
151F2376	14.0	30.9
151F2395	9.8	21.6
151F2396	10.0	22.1
151F2397	10.3	22.7
151F2398	10.7	23.6
151F2399	11.1	24.5
151F2400	11.6	25.6
151F2401	12.3	27.1
151F2402	13.1	28.9
151F2403	14.0	30.9
151F2413	9.8	21.6
151F2414	10.0	22.1
151F2415	10.3	22.7
151F2416	10.7	23.6
151F2417	11.1	24.5



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