

ENGINEERING  
TOMORROW



Technical Information

# Orbital Motors

## OMT and OMV



**Revision history**

*Table of revisions*

<b>Date</b>	<b>Changed</b>	<b>Rev</b>
September 2021	Updated catalogue to reflect current offerings	0801
	Changed document number from 'BC00000090' and '520L0407' to 'BC152886483862'	0702
March 2016	Engineering Tomorrow	0602
February 2016	Corrected Hardening specification for 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

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## Orbital motors

### Orbital Motors Introduction

Danfoss is a world leader within production of low speed orbital motors with high torque. We can offer more than 1500 different orbital motors, categorized in types, variants and sizes (including different shaft versions).

The motors size vary (rated displacement) from 130 to 800 cm<sup>3</sup> [7.9 to 48.9 in<sup>3</sup>] per revolution.

- Motor sizes:
  - OMT and OMV
  - TMK
  - TMT
  - TMTHW
  - TMVW

Speeds range up to approximate 600 min<sup>-1</sup> (rpm).

Maximum operating torques up to 3400 N·m [30090 lb·in] (peak) and maximum outputs up to 70 kW [95 hp].

### Orbital Motors Features

- 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
- High radial and axial bearing capacity
- Long life under extreme operating conditions
- Robust and compact design
- For applications in both open and closed loop hydraulic systems
- Suitable for a wide variety of hydraulics fluids

### Technical Features

The program is characterized by technical features appealing to a large number of applications and by motors that can be adapted to a given application.

*Adaptions comprise the following variants:*

- Motors with:
  - integrated negative holding brake
  - speed sensor
  - black finish paint
- Short motors without bearings or Ultra short motors
- Wheel motors with recessed mounting flange

### Orbital Motors Application Areas

The orbital motors are used in the following application areas:

- Construction equipment
- Agricultural equipment
- Material handling & Lifting equipment

### Orbital motors

- Forestry equipment
- Lawn and turf equipment
- Machine tools and stationary equipment
- Marine equipment
- Special purpose

### Orbital Motors Literature Overview

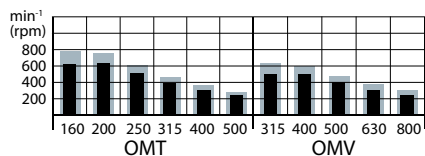
A general catalog of all Orbital Motors with technical data gives a quick motor reference based on: selection of orbital motor, function in hydraulic systems, power, torque, speed and capabilities. More detailed information can be found in an individual motor catalogs.

Literature title	Literature type	Reference number
Orbital Motors in General	Technical Information	BC152886483554
OMT and OMV Orbital Motors	Technical Information	BC152886483862
TMK, TMKW, TMK FL Orbital Motors	Technical Information	BC152886483785
TMT, TMTU, TMTW, TMT FL Orbital Motors	Technical Information	BC152886483631
TMTHW Orbital Motors	Technical Information	BC152986483537

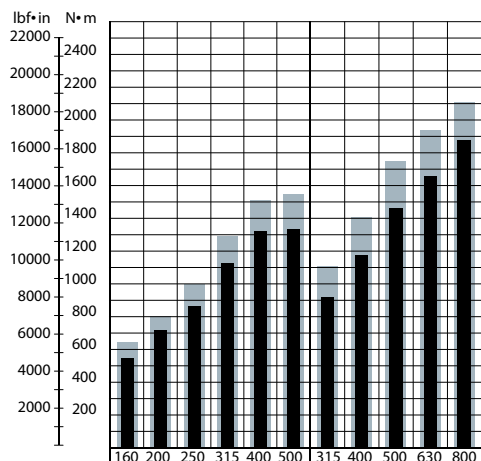
## Orbital motors

### Speed, torque, and output

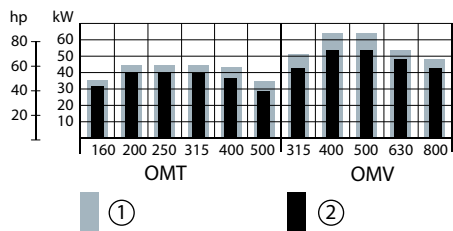
Maximum speed



Maximum torque



Maximum output



① Intermittent values  
 ② Continuous values

1. Intermittent 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 14, or [OMV function diagrams](#) on page 45.

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<sup>2</sup>/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 <sup>3</sup> ]					
	160	200	250	315	400	500
<b>151B</b>	3000	3001	3002	3003	3004	3005
<b>151B</b>	2050	2051	2052	2053	2054	2055
<b>151B</b>	3006	3007	3008	3009	3010	3011
<b>151B</b>	2056	2057	2058	2059	2060	2061
<b>151B</b>	3012	3013	3014	3015	3016	3017
<b>151B</b>	2062	2063	2064	2065	2066	2067



## OMT

OMT code numbers (continued)

Code Numbers	Displacement [cm <sup>3</sup> ]					
	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.

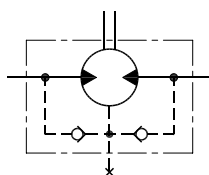
[Orders will not be accepted without the four digit prefix.](#)

## 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

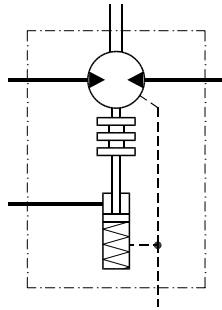
#### **Motor with check valves and with drain connection**

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]

**OMT**

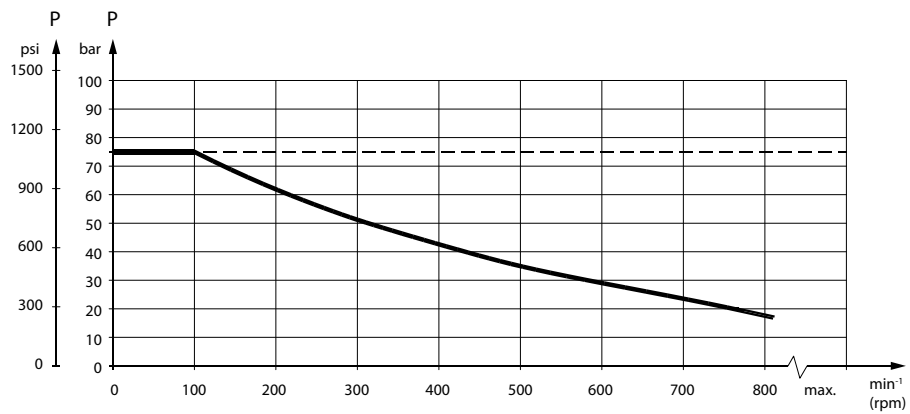


151-1405.10

**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



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	
<b>Motor size</b>		<b>160</b>	<b>200</b>	<b>250</b>	<b>315</b>	<b>400</b>	<b>500</b>	
Geometric displacement	cm <sup>3</sup> [in <sup>3</sup> ]	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 <sup>-1</sup> [rpm]	cont.	625	625	500	380	305	240
		int <sup>1)</sup>	780	750	600	460	365	285

## 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. <sup>1)</sup>	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. <sup>1)</sup>	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. <sup>1)</sup>	240 [3480]	240 [3480]	240 [3480]	240 [3480]	210 [3050]	180 [2610]
		peak <sup>2)</sup>	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. <sup>1)</sup>	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. <sup>1)</sup> Nm [lbf·in]		410 [3630]	520 [4600]	630 [5580]	890 [7880]	970 [8590]	1060 [9380]

<sup>1)</sup> Intermittent operation: the permissible values may occur for max. 10% of every minute.

<sup>2)</sup> 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. <sup>1)</sup>	250 [3630]	175 [2540]
	bar [psi]	peak <sup>2)</sup>	300 [4350]	210 [3050]

<sup>1)</sup> Intermittent operation: the permissible values may occur for maximum 10% of every minute.

<sup>2)</sup> Peak load: The permissible values may occur for maximum 1% of every minute.

## OMT

### Brake motors

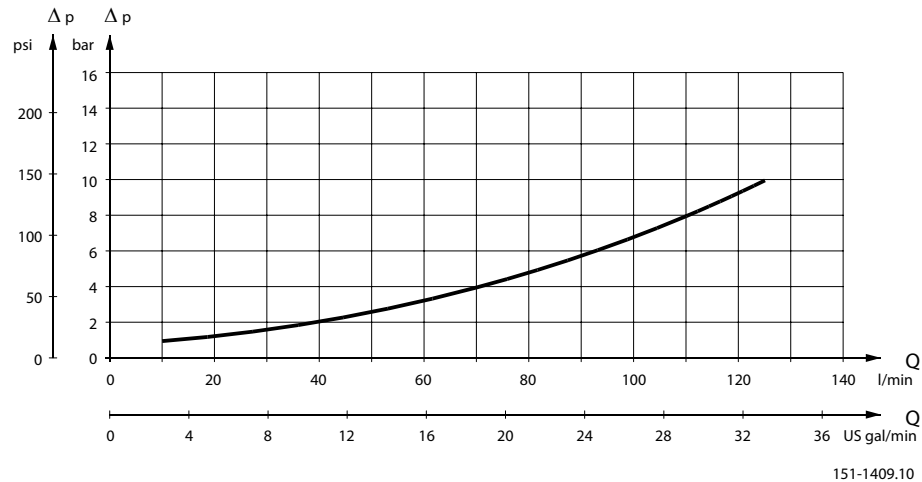
Type	Maximum pressure in drain line <sup>3)</sup>	Holding torque <sup>4)</sup>	Brake-release pressure <sup>3)</sup>	Maximum pressure in brake line
OMT FX, OMT FL	5 bar [70 psi]	1200 Nm [10620 lbf-in]	12 bar [170 psi]	30 bar [440 psi]
OMT FH	5 bar [70 psi]	1200 Nm [10620 lbf-in]	30 bar [440 psi]	280 bar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

<sup>3)</sup> 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.

<sup>4)</sup> 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 mm<sup>2</sup>/s [165 SUS]

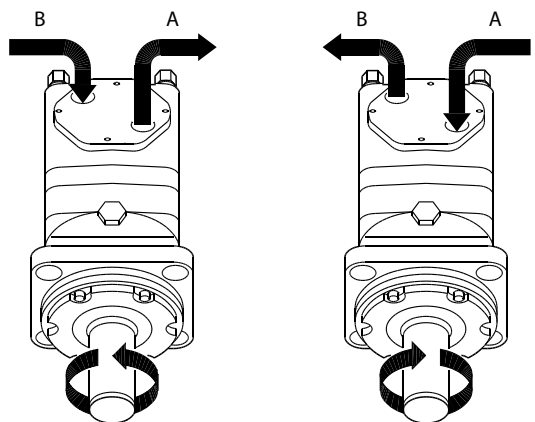
### Oil flow in drain line

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 <sup>2</sup> /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**



151-1050.10

**Permissible shaft loads for OMT**

**Mounting flange:**

Standard

**Shaft:**

All shaft types

**Mounting flange:**

Wheel

**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<sup>-1</sup>) 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*, **BC152886483554**.

**Mounting flange:**

Brake-wheel

**Shaft:**

All shaft types

**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<sup>-1</sup>) 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%.

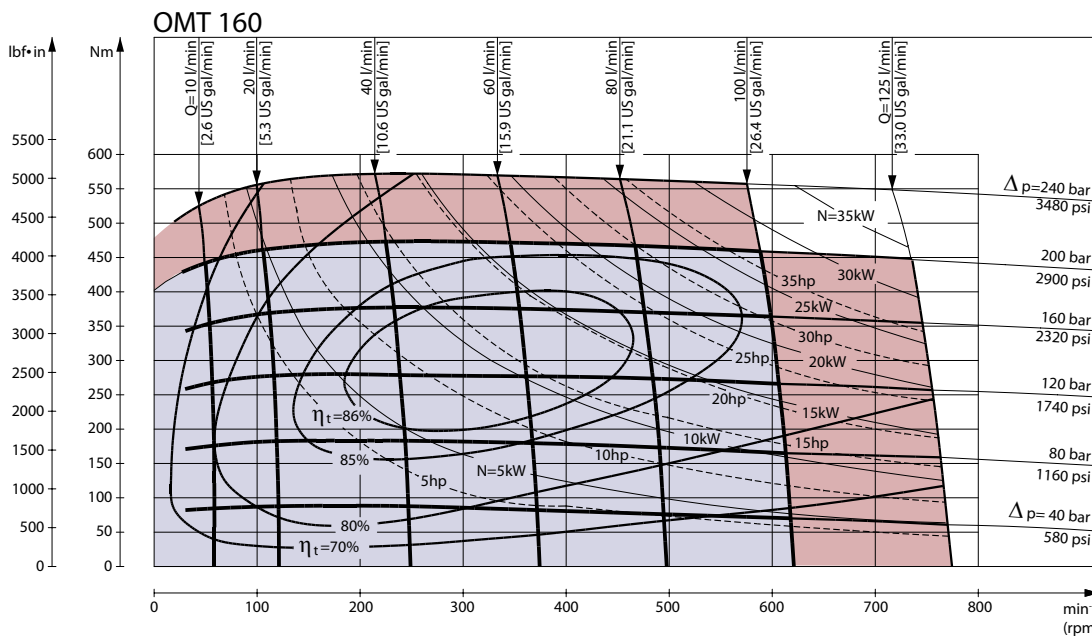
The dash curve shows max. radial shaft load. Any shaft load exceeding the values shown in the curve will involve a risk of breakage.

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**.

**OMT Function diagrams**

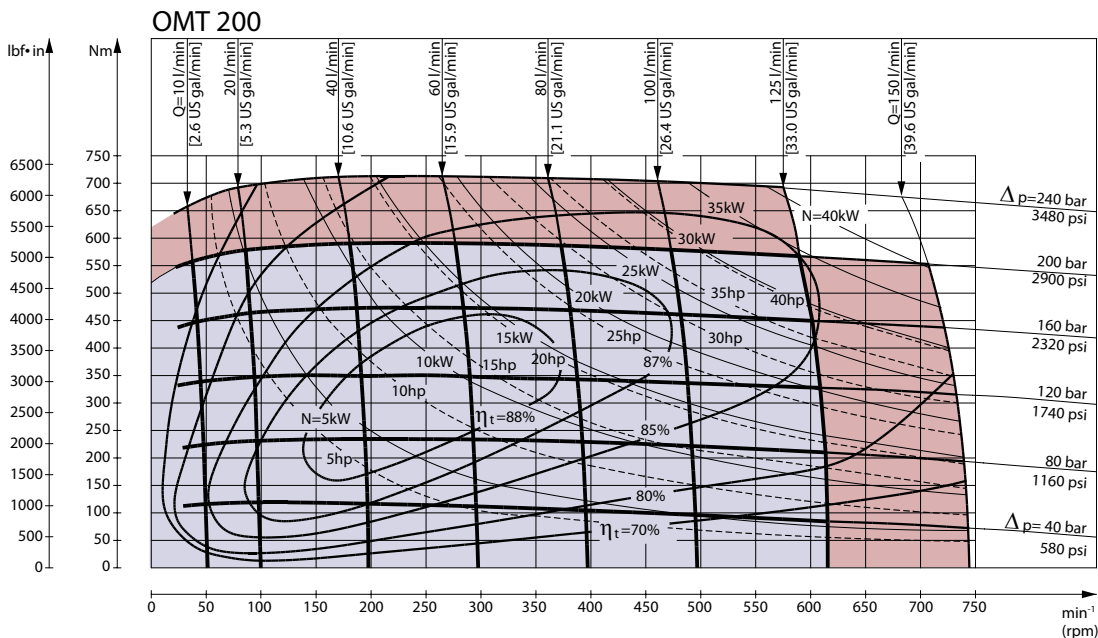
**Continuous range**

**Intermittent range (maximum 10% operation every minute)**

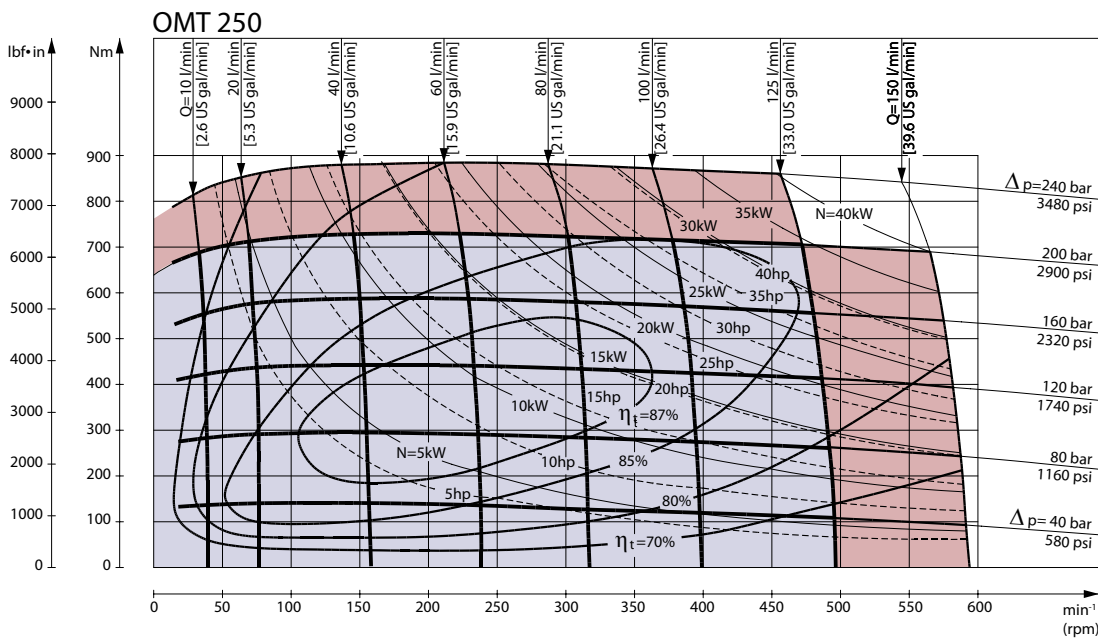


151-493.10

**OMT**



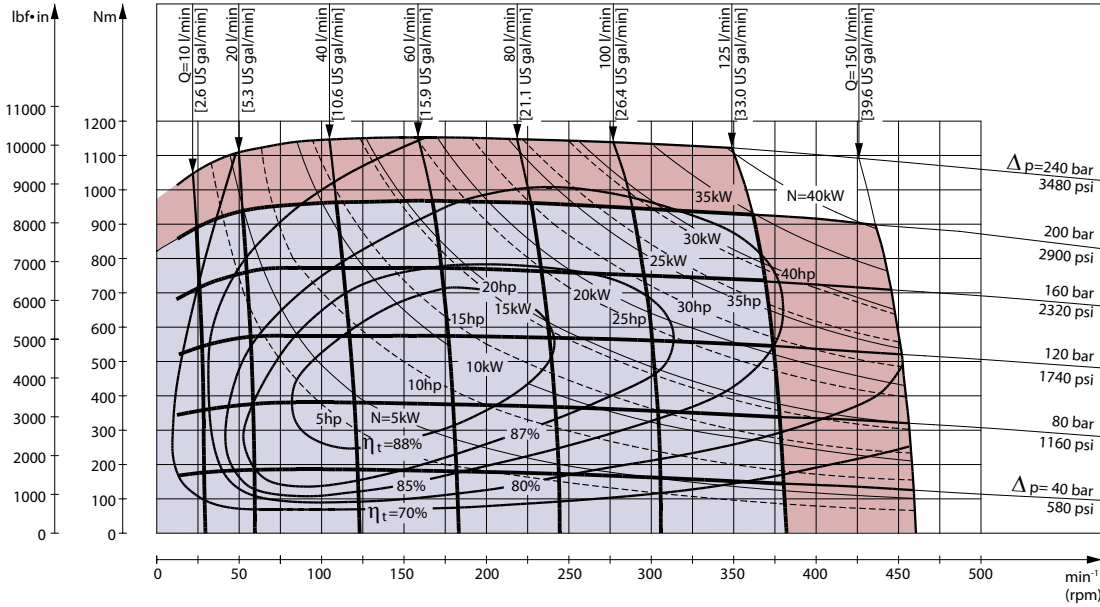
151-494.10



151-495.10

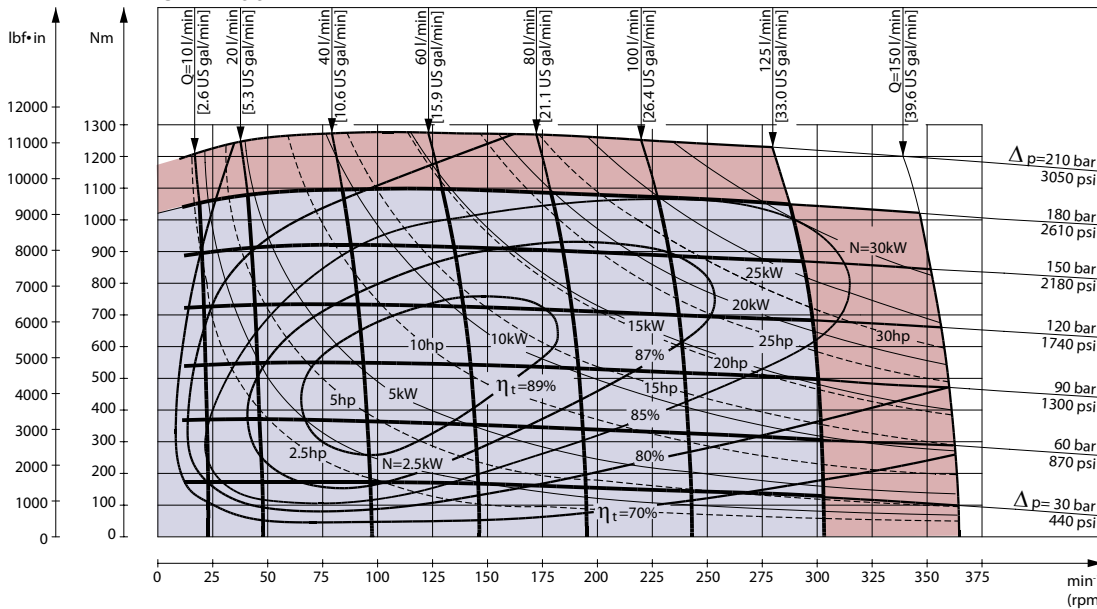
**OMT**

**OMT 315**



151-869.10

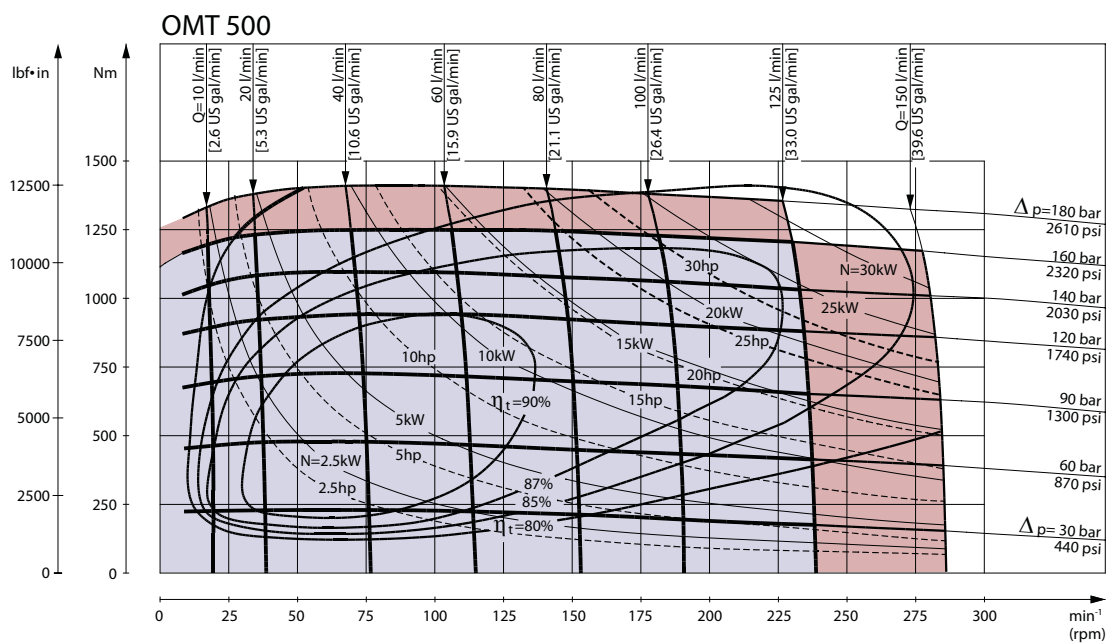
**OMT 400**



151-1058.10



**OMT**



151-1116.10

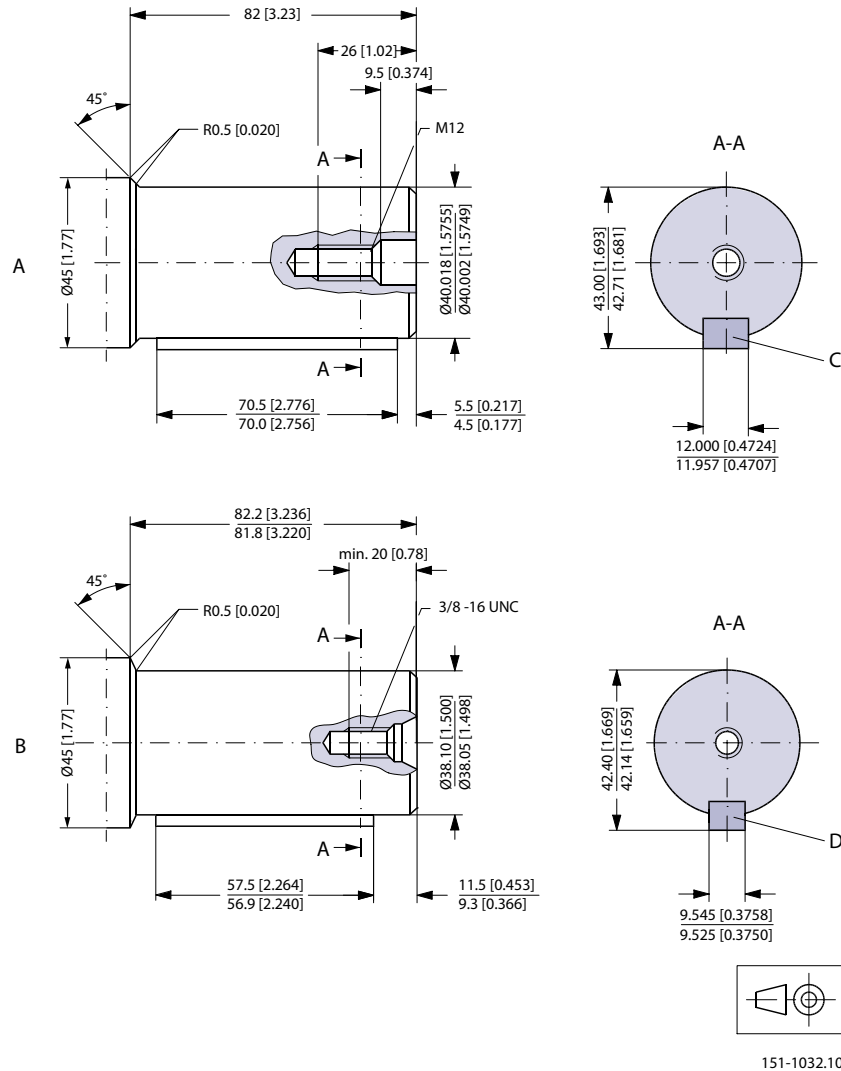
**Function diagram use**

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.

**OMT**

**Shaft version**

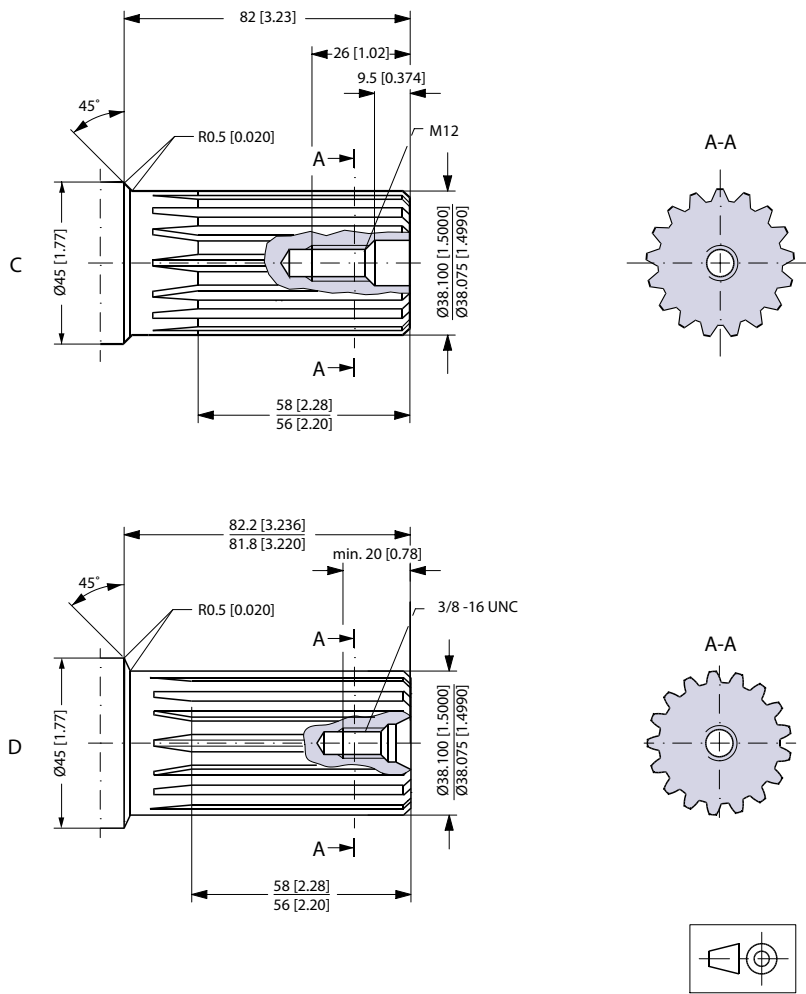


151-1032.10

- 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**

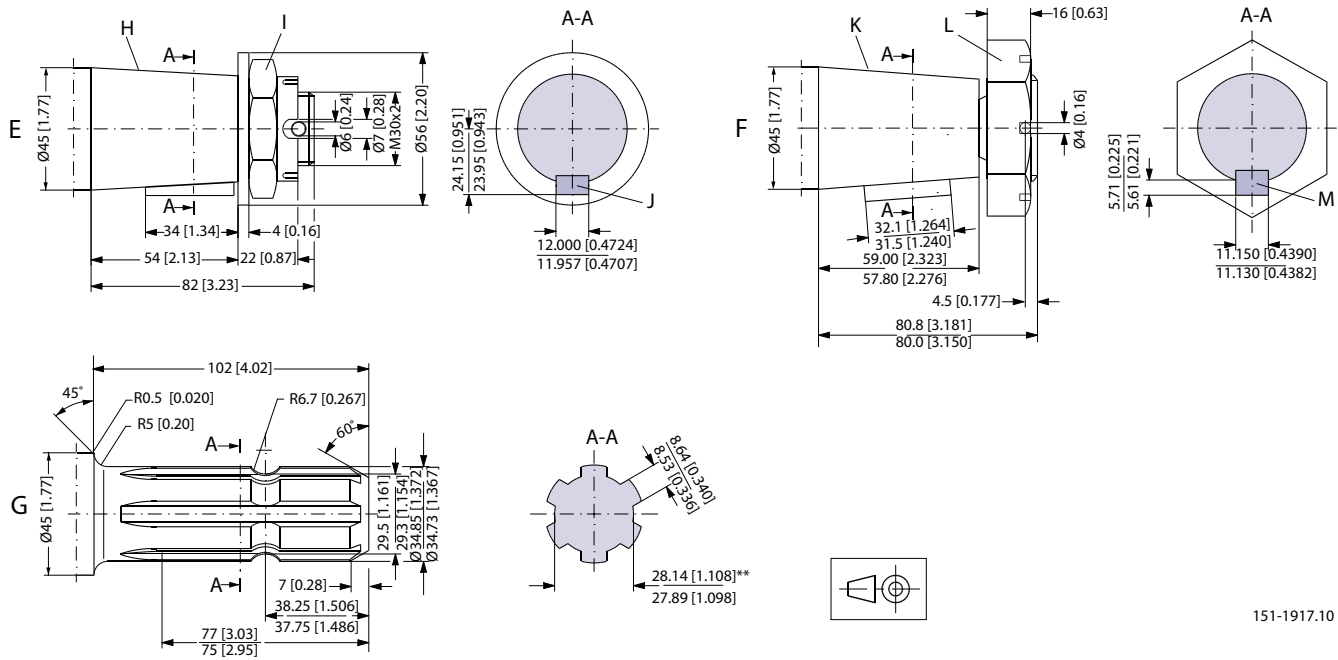


151-1916.10

**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°

**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

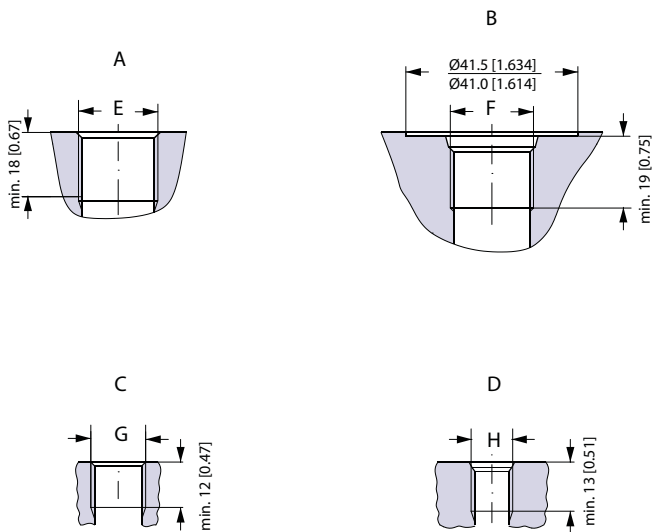
**G** P.t.o. shaft

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

\*\* Deviates from DIN 9611

**OMT**

**Port thread versions**



151-1977.11

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



**OMT**

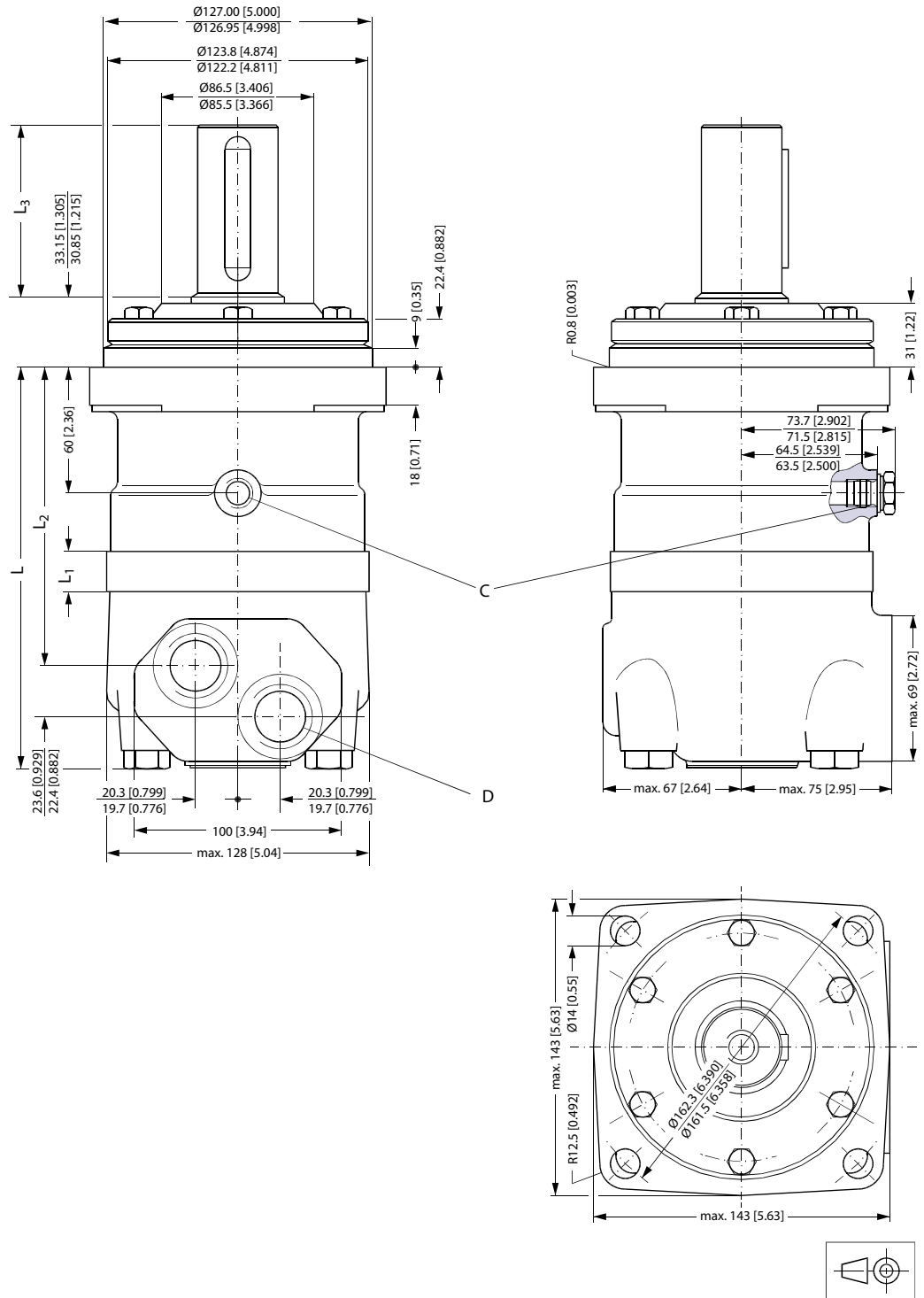
Type		OMT 160	OMT 200	OMT 250	OMT 315	OMT 400	OMT 500
L <sub>Max.</sub>	mm	192	197	203	213	223	237
	[in]	[7.56]	[7.76]	[7.99]	[8.39]	[8.78]	[9.33]
L <sub>1</sub> <sup>*</sup>	mm	16.5	21.5	27.8	37.0	47.5	61.5
	[in]	[0.650]	[0.846]	[1.094]	[1.457]	[1.870]	[2.421]
L <sub>2</sub>	mm	140	145	151	161	171	185
	[in]	[5.51]	[5.71]	[5.94]	[6.34]	[6.73]	[7.28]
Weight	kg	20.0	20.5	21.0	22.0	23.0	24.0
	[lb]	[44.1]	[45.2]	[46.3]	[48.5]	[50.7]	[52.9]

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

Output shaft		All shafts except P.t.o. shaft	P.t.o. shaft
L <sub>3</sub>	mm	82	102
	[in]	[3.23]	[4.02]

**OMT**

**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



**OMT**

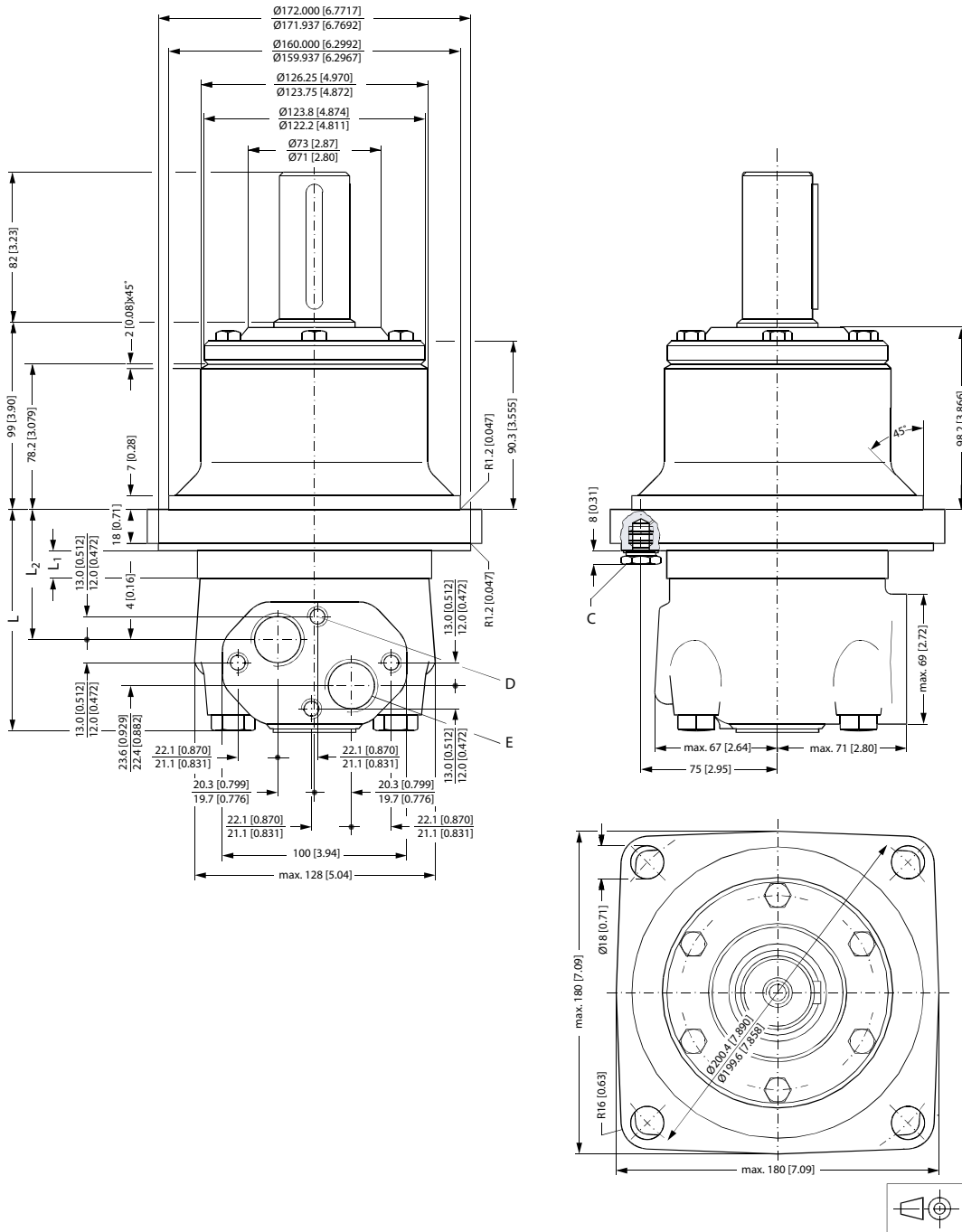
Type		OMT 160	OMT 200	OMT 250	OMT 315	OMT 400	OMT 500
L <sub>Max.</sub>	mm	192	197	203	213	223	237
	[in]	[7.56]	[7.76]	[7.99]	[8.39]	[8.78]	[9.33]
L <sub>1</sub> *	mm	16.5	21.5	27.8	37.0	47.5	61.5
	[in]	[0.650]	[0.846]	[1.094]	[1.457]	[1.870]	[2.421]
L <sub>2</sub>	mm	140	145	151	161	171	185
	[in]	[5.51]	[5.71]	[5.94]	[6.34]	[6.73]	[7.28]
Weight	kg	20.0	20.5	21.0	22.0	23.0	24.0
	[lb]	[44.1]	[45.2]	[46.3]	[48.5]	[50.7]	[52.9]

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

Output shaft		Cyl. 1.5 in, Splined 1.5 in	Tapered 1.75 in
L <sub>3</sub>	mm	82	80.4
	[in]	[3.23]	[3.17]

**OMT**

**OMT Wheel - European version**



151-897.12

- 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

**OMT**

Type		OMTW 160	OMTW 200	OMTW 250	OMTW 315	OMTW 400	OMTW 500
L <sub>Max</sub>	mm	126	131	137	146	157	171
	[in]	[4.96]	[5.16]	[5.39]	[5.75]	[6.18]	[6.73]
L <sub>1</sub> <sup>*</sup>	mm	16.5	21.5	27.8	37.0	47.5	61.5
	[in]	[0.650]	[0.846]	[1.094]	[1.457]	[1.870]	[2.421]
L <sub>2</sub>	mm	73	78	84	94	104	118
	[in]	[2.87]	[3.07]	[3.31]	[3.70]	[4.09]	[4.65]
Weight	kg	22.0	22.5	23.0	24.0	25.0	26.0
	[lb]	[48.5]	[49.6]	[50.7]	[52.9]	[55.1]	[57.3]

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



**OMT**

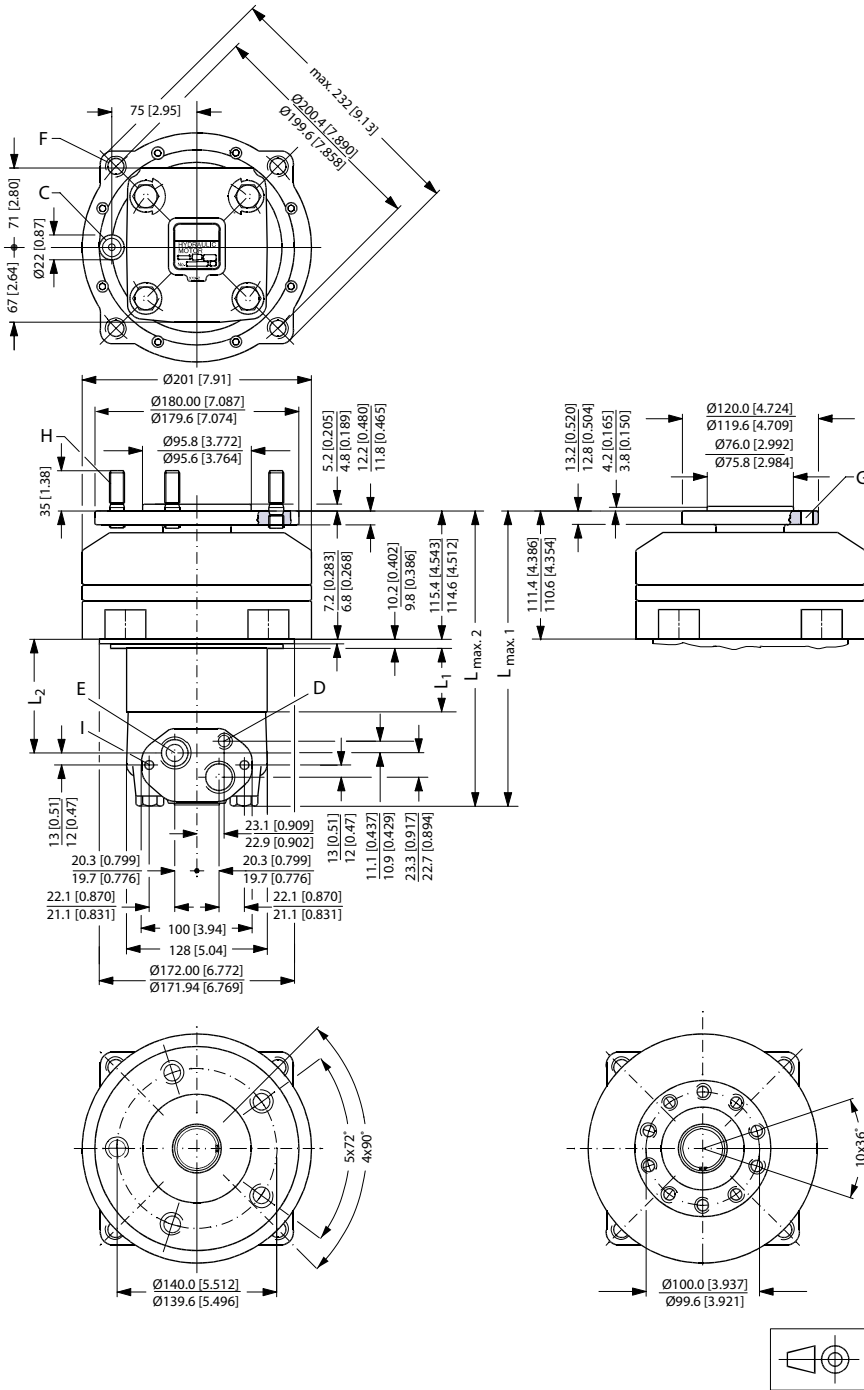
Type		OMTW 160	OMTW 200	OMTW 250	OMTW 315	OMTW 400	OMTW 500
L <sub>Max</sub>	mm	126	131	137	146	157	171
	[in]	[4.96]	[5.16]	[5.39]	[5.75]	[6.18]	[6.73]
L <sub>1</sub>	mm	16.5	21.5	27.8	37.0	47.5	61.5
	[in]	[0.650]	[0.846]	[1.094]	[1.457]	[1.870]	[2.421]
L <sub>2</sub>	mm	73	78	84	94	104	118
	[in]	[2.87]	[3.07]	[3.31]	[3.70]	[4.09]	[4.65]
Weight	kg	22.0	22.5	23.0	24.0	25.0	26.0
	[lb]	[48.5]	[49.6]	[50.7]	[52.9]	[55.1]	[57.3]

Type	L <sub>max</sub> mm [in]	L <sub>1</sub> * mm [in]	L <sub>2</sub> 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 L<sub>1</sub> dimensions

**OMT**

**OMT Brake-wheel - European version**



151-1443.11

- 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

## OMT

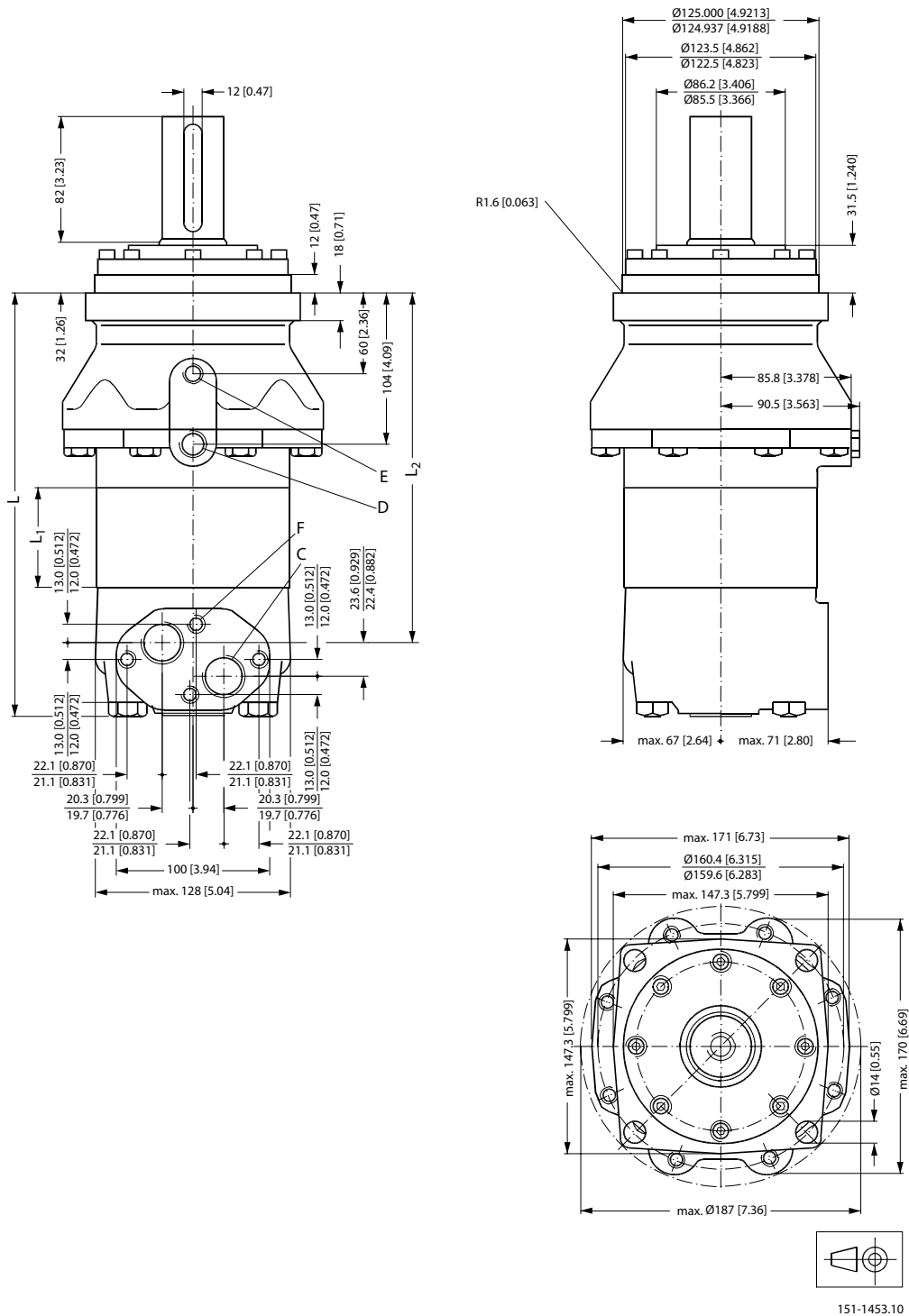
- F:** 4 × M12; 27 mm [1.06 in] deep  
**G:** 10 × M12  
**H:** Wheel bolts 5 × M14 × 1.5  
**I:** M10; 10 mm [0.39 in] deep

Type		OMT 160 FX	OMT 200 FX	OMT 250 FX	OMT 315 FX	OMT 400 FX	OMT 500 FX
L <sub>Max. 1</sub>	mm	225	230	236	245	256	270
	[in]	[8.86]	[9.06]	[9.29]	[9.65]	[10.08]	[10.63]
L <sub>Max. 2</sub>	mm	228	234	240	249	260	274
	[in]	[8.98]	[9.21]	[9.45]	[9.80]	[10.24]	[10.79]
L <sub>1</sub> <sup>*</sup>	mm	16.5	21.5	27.8	37.0	47.5	61.5
	[in]	[0.650]	[0.846]	[1.094]	[1.457]	[1.870]	[2.421]
L <sub>2</sub>	mm	62	67	74	83	93	107
	[in]	[2.45]	[2.65]	[2.89]	[3.26]	[3.67]	[4.22]
Weight	kg	31.0	31.5	32.0	33.0	34.0	35.0
	[lb]	[68.3]	[69.4]	[70.5]	[72.8]	[75.0]	[77.2]

\* The gearwheel set is 3.5 mm [0.138 in] wider across the rollers than the L<sub>1</sub> dimensions

**OMT**

**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



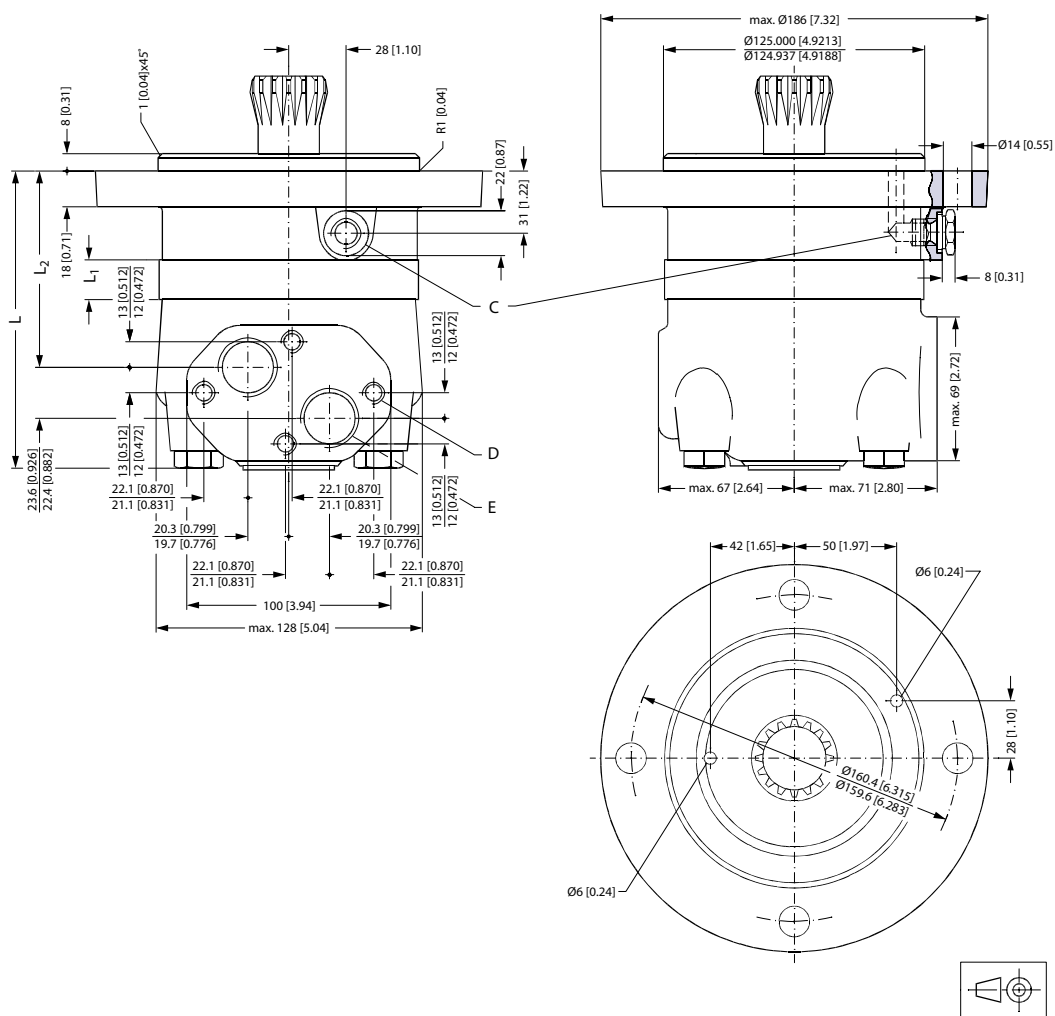
**OMT**

**F:** M10; 10 mm [0.39 in] deep

Type		OMT 160 FL/FH	OMT 200 FL/FH	OMT 250 FL/FH	OMT 315 FL/FH	OMT 400 FL/FH	OMT 500 FL/FH
L <sub>Max.</sub>	mm	230	233	241	250	261	275
	[in]	[9.06]	[9.17]	[9.49]	[9.84]	[10.28]	[10.83]
L <sub>1</sub> *	mm	16.5	21.5	27.8	37.0	47.5	61.5
	[in]	[0.650]	[0.846]	[1.094]	[1.457]	[1.870]	[2.421]
L <sub>2</sub>	mm	178	183	189	199	209	223
	[in]	[7.01]	[7.20]	[7.44]	[7.83]	[8.23]	[8.78]
Weight	kg	24.5	25.0	25.5	26.5	27.5	28.5
	[lb]	[54.0]	[55.1]	[56.2]	[58.4]	[60.6]	[62.8]

\* The gearwheel set is 3.5 mm [0.138 in] wider across the rollers than the L<sub>1</sub> dimensions

**OMT short - European version**



151-898.11

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

## OMT

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

\*

Type		OMTS 160	OMTS 200	OMTS 250	OMTS 315	OMTS 400	OMTS 500
L <sub>Max.</sub>	mm	146	151	157	166	177	191
	[in]	[5.75]	[5.94]	[6.18]	[6.54]	[6.97]	[7.52]
L <sub>1</sub>	mm	16.5	21.5	27.8	37.0	47.5	61.5
	[in]	[0.650]	[0.846]	[1.094]	[1.457]	[1.870]	[2.421]
L <sub>2</sub>	mm	96	101	107	116	127	142
	[in]	[3.78]	[3.98]	[4.21]	[4.57]	[5.00]	[5.59]
Weight	kg						
	[lb]						

Type	L <sub>max</sub>	L <sub>1</sub>	L <sub>2</sub>
OMTS 500			

## 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).

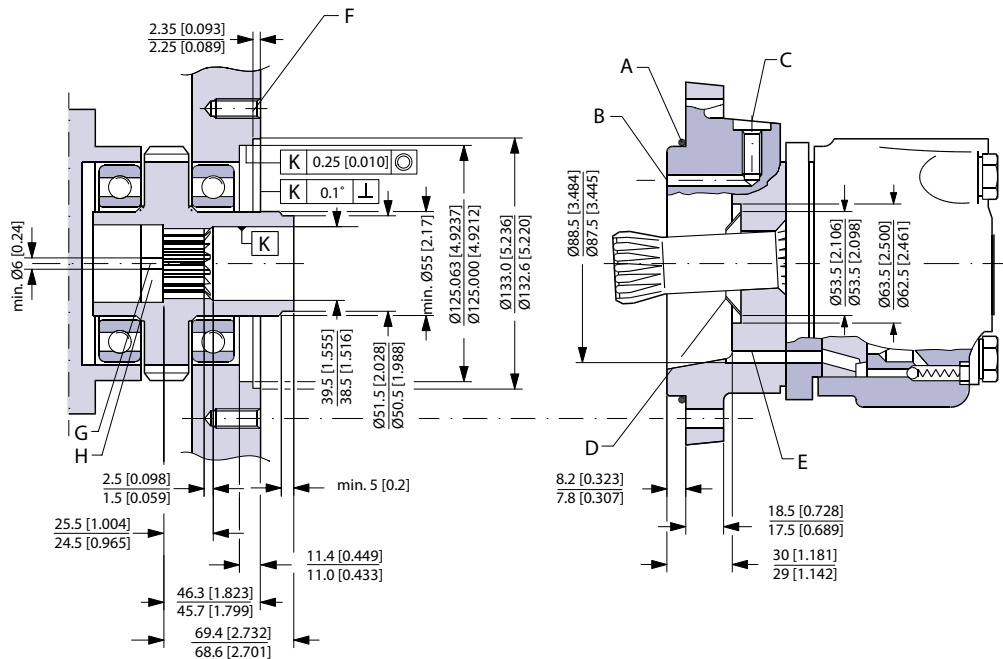
We recommend an O-ring between motor and attached component. The O-ring (code no. 151B1040) is supplied with the motor. If motor and attached component have been separated, remember to refill before starting up. Fill the oil through the drain connection.

\* The gearwheel set is 3.5 mm [0.138 in] wider across the rollers than the L<sub>1</sub> dimensions

**OMT**

**Attached component dimensions**

*OMTs dimensions of the attached component in millimeter [inches]*



151-452.10

- |          |   |          |                                |
|----------|---|----------|--------------------------------|
| <b>A</b> | O-ring: 125 × 3 mm                              | <b>B</b> | External drain channel         |
| <b>C</b> | Drain connection<br>G 1/4; 12 mm [0.47 in] deep | <b>D</b> | Conical seal ring              |
| <b>E</b> | Internal drain channel                          | <b>F</b> | M12; min. 18 mm [0.71 in] deep |
| <b>G</b> | Oil circulation hole                            | <b>H</b> | 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/mm<sup>2</sup>) or SAE 8620.

**OMT**

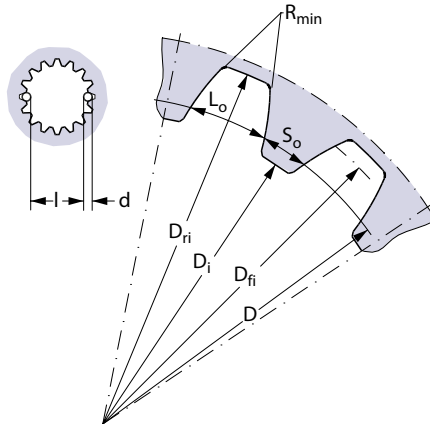
**Hardening specification:**

- 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)	$L_o$	$4.516^{\pm 0.037}$	$0.1777^{\pm 0.0014}$
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	$4.834^{\pm 0.001}$	$0.1903^{\pm 0.00004}$

\* Finished dimensions (when hardened).



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.

**OMT versions and code numbers**

This section shows the different versions/configuration codes and the ordering numbers.

- Section [OMT technical data](#), specify the technical data for OMT for each shaft type.
- In section [OMT function diagrams](#), the diagram for each motor size is shown.
- See [OMT dimensions](#) for outer main dimensions for the different OMT motor types.

### OMV versions and code numbers

This section shows the different versions/configuration codes and the ordering numbers.

- Section [OMV technical data](#) on page 40, specify the technical data for OMV for each shaft type.
- In section [OMV function diagrams](#) on page 45, the diagram for each motor size is shown.
- See [OMV dimensions](#) on page 53 for outer main dimensions for the different OMV motor types.

### OMV versions and code numbers

#### OMV standard motors

Mounting flange: Standard 4 hole flange

<b>Spigot diameter</b>	Ø160 mm [6.30 in]						
<b>Bolt circle diameter</b>	Ø200 mm [7.89 in]						
<b>Shaft</b>	<b>Main Port size</b>	<b>Drain Port size</b>	<b>Check valve</b>	<b>European version</b>	<b>US version</b>	<b>Main type designation</b>	<b>Conf. code</b>
Cyl. Ø50 mm	G 1	G 1/4	Yes	Yes	-	OMV	<b>A1</b>
Splined 2.125 in	G 1	G 1/4	Yes	Yes	-	OMV	<b>A2</b>
Tapered 60 mm	G 1	G 1/4	Yes	Yes	-	OMV	<b>A3</b>
Cyl. 2.25 in	1 5/16-12 UN	9/16-18 UNF	Yes	-	Yes	OMV	<b>A4</b>
Splined 2.125 in	1 5/16-12 UN	9/16-18 UNF	Yes	-	Yes	OMV	<b>A5</b>
Tapered 2.25 in	1 5/16-12 UN	9/16-18 UNF	Yes	-	Yes	OMV	<b>A6</b>

Code numbers OMV Standard 4 hole flange

Conf. code	Displacement				
	315	400	500	630	800
<b>A1</b>	151B3100	151B3101	151B3102	151B3103	151B3104
<b>A2</b>	151B3105	151B3106	151B3107	151B3108	151B3109
<b>A3</b>	151B3110	151B3111	151B3112	151B3113	151B3114
<b>A4</b>	151B2150	151B2151	151B2152	151B2153	151B2154
<b>A5</b>	151B2155	151B2156	151B2157	151B2158	151B2159
<b>A6</b>	151B2160	151B2161	151B2162	151B2163	151B2164

Mounting flange: OMV SAE-C flange

<b>Spigot diameter</b>	Ø127 mm [5.00 in]						
<b>Bolt circle diameter</b>	Ø161.9 mm [6.37 in]						
<b>Shaft</b>	<b>Main Port size</b>	<b>Drain Port size</b>	<b>European version</b>	<b>US version</b>	<b>Check valve</b>	<b>Main type designation</b>	<b>Conf. code</b>
Cyl. 2.25 in	1 5/16-12 UN	9/16-18 UNF	-	Yes	Yes	OMV	<b>B1</b>
Splined 2.125 in	1 5/16-12 UN	9/16-18 UNF	-	Yes	Yes	OMV	<b>B2</b>

Code numbers OMV - SAE-C flange

Conf. code	Displacement				
	315	400	500	630	800
<b>B1</b>	151B2183	151B2184	151B2185	151B2186	151B2187
<b>B2</b>	151B2188	151B2189	151B2190	151B2191	151B2192

## OMV versions and code numbers

Mounting flange: OMV Wheel

<b>Spigot diameter</b>	Ø180 mm [7.09 in]						
<b>Bolt circle diameter</b>	Ø224 mm [8.82 in]						
<b>Shaft</b>	<b>Main Port size</b>	<b>Drain Port size</b>	<b>Check valve</b>	<b>European version</b>	<b>US version</b>	<b>Main type designation</b>	<b>Conf. code</b>
Cyl. Ø50 mm	G 1	G 1/4	Yes	Yes	-	OMVW	<b>C1</b>
Splined 2.125 in	G 1	G 1/4	Yes	Yes	-	OMVW	<b>C2</b>
Tapered 2.25 in	1 5/16-12 UN	9/16-18 UNF	Yes	-	Yes	OMVW	<b>C3</b>

Code numbers OMVW

Conf. code	Displacement				
	315	400	500	630	800
<b>C1</b>	151B3115	151B3116	151B3117	151B3118	151B3119
<b>C2</b>	151B3120	151B3121	151B3122	151B3123	151B3124
<b>C3</b>	151B2170	151B2171	151B2172	151B2173	151B2174

Mounting flange: OMV Short

<b>Spigot diameter</b>	Ø140 mm [5.51 in]						
<b>Bolt circle diameter</b>	Ø180 mm [7.09 in]						
<b>Shaft</b>	<b>Main Port size</b>	<b>Drain Port size</b>	<b>Check valve</b>	<b>European version</b>	<b>US version</b>	<b>Main type designation</b>	<b>Conf. code</b>
No output shaft	G 1	G 1/4	Yes	Yes	-	OMVS	<b>D1</b>

Code numbers OMVS

Conf. code	Displacement				
	315	400	500	630	800
<b>D1</b>	151B3125	151B3126	151B3127	151B3128	151B3129

### OMV features

Features available (options):

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

OMV technical data

OMV, OMVW, OMVS technical data

Type		OMV OMVW OMVS	OMV OMVW OMVS	OMV OMVW OMVS	OMV OMVW OMVS	OMV OMVW OMVS
<b>Motor size</b>		<b>315</b>	<b>400</b>	<b>500</b>	<b>630</b>	<b>800</b>
Geometric displacement	cm <sup>3</sup> [in <sup>3</sup> ]	314.5 [19.19]	400.9 [24.46]	499.6 [30.49]	629.1 [38.39]	801.8 [48.93]
Maximum speed	min <sup>-1</sup> [rpm]	cont.	510	500	400	315
		int. <sup>1)</sup>	630	600	480	380
Maximum torque	N·m [lbf·in]	cont.	920 [8140]	1180 [10440]	1460 [12920]	1660 [14690]
		int. <sup>1)</sup>	1110 [9820]	1410 [12480]	1760 [15580]	1940 [17170]
Maximum output	kW [hp]	cont.	42.5 [57.0]	53.5 [71.7]	53.5 [71.7]	48.0 [64.4]
		int. <sup>1)</sup>	51.0 [68.4]	64.0 [85.8]	64.0 [85.8]	56.0 [75.1]
Maximum pressure drop	bar [psi]	cont.	200 [2900]	200 [2900]	200 [2900]	180 [2610]
		int. <sup>1)</sup>	240 [3480]	240 [3480]	240 [3480]	210 [3050]
		peak <sup>2)</sup>	280 [4060]	280 [4060]	280 [4060]	240 [3480]
Maximum oil flow	l/min [USgal/ min]	cont.	160 [42.3]	200 [52.8]	200 [52.8]	200 [52.8]
		int. <sup>1)</sup>	200 [52.8]	240 [63.4]	240 [63.4]	240 [63.4]
Maximum starting pressure with unloaded shaft	bar [psi]	8 [116]	8 [116]	8 [116]	8 [116]	8 [116]
Minimum starting torque	at max. press. drop cont. N·m [lbf·in]	710 [6280]	910 [8050]	1130 [10000]	1330 [11770]	1510 [13360]
	at max. press. drop int. <sup>1)</sup> N·m [lbf·in]	850 [7520]	1090 [9650]	1360 [12040]	1550 [13720]	1700 [15050]

<sup>1)</sup> Intermittent operation: the permissible values may occur for max. 10% of every minute.

<sup>2)</sup> Peak load: The permissible values may occur for max. 1% of every minute.

Type			Maximum inlet pressure	Maximum return pressure with drain line
OMV OMVW OMVS	bar [psi]	cont.	210 [3050]	140 [2030]
	bar [psi]	int. <sup>1)</sup>	250 [3630]	175 [2540]
	bar [psi]	peak <sup>2)</sup>	300 [4350]	210 [3050]

<sup>1)</sup> Intermittent operation: the permissible values may occur for max. 10% of every minute.

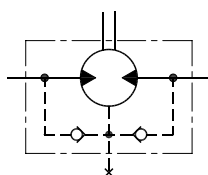
<sup>2)</sup> Peak load: The permissible values may occur for max. 1% of every minute.

[For maximum permissible combination of flow and pressure, see OMV function diagrams on page 45 for actual motor.](#)

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

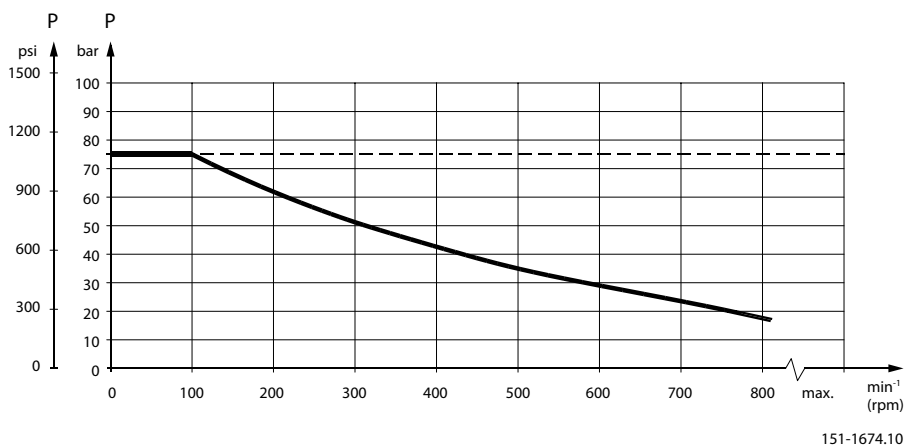


**OMV technical data**

**Motor with check valves and with drain connection**

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

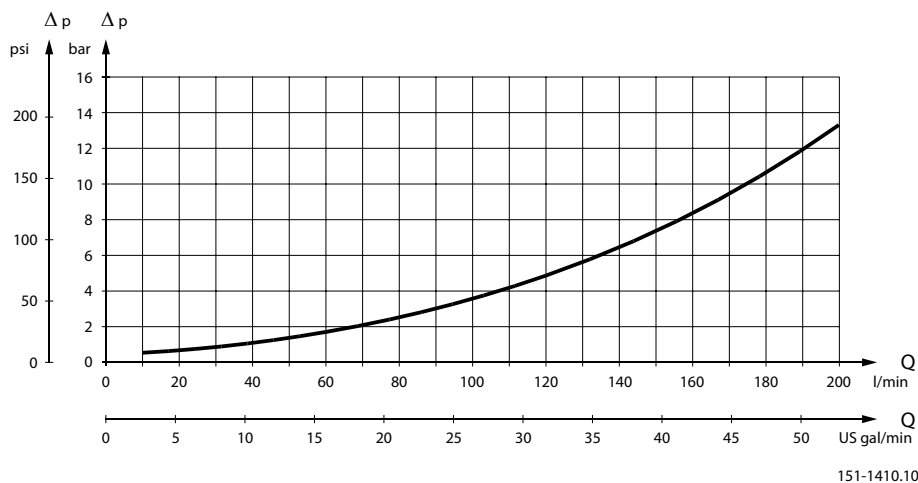
*Maximum return pressure without drain line or maximum pressure in the drain line*



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

— Continuous operation

**Pressure drop in motor**



The curve applies to an unloaded motor shaft and an oil viscosity of 35 mm<sup>2</sup>/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]*

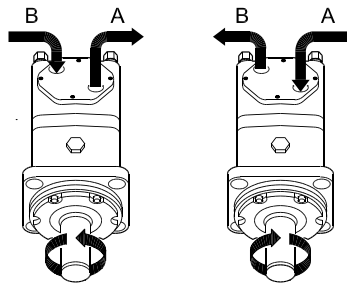
Pressure drop		Viscosity		Oil flow in drain line	
bar	[psi]	mm <sup>2</sup> /s	[SUS]	l/min	[US gal/min]
140	[2030]	20	[100]	3.0	[0.79]
		35	[165]	2.0	[0.53]

**OMV technical data**

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

Pressure drop		Viscosity		Oil flow in drain line	
bar	[psi]	mm <sup>2</sup> /s	[SUS]	l/min	[US gal/min]
210	[3050]	20	[100]	6.0	[1.59]
		35	[165]	4.0	[1.06]

**Direction of shaft rotation**



151-394.10

**Permissible shaft loads**

**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 curve is based on B10 bearing life (2000 hours or 12,000,000 shaft revolutions at 100 min<sup>-1</sup>) 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.

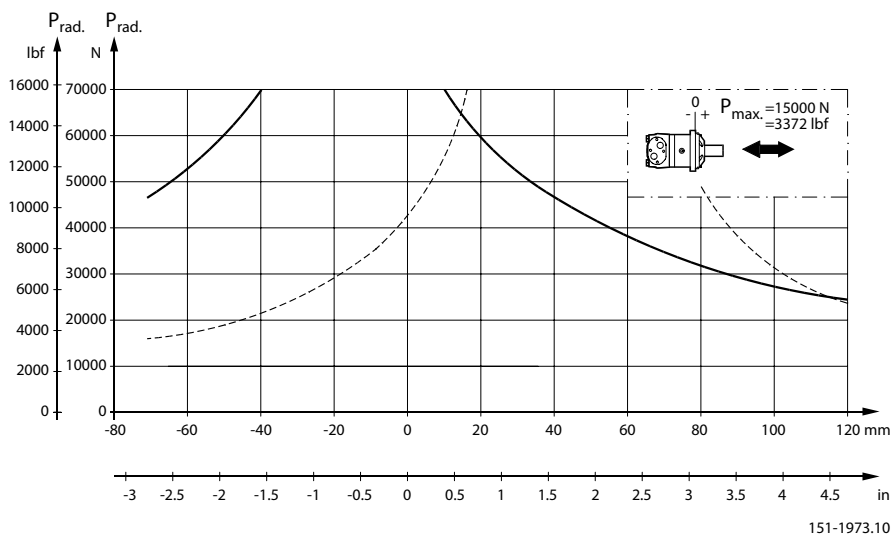
Bearing life calculations can be made using the explanation and formula provided in the chapter *Bearing dimensioning* in the technical information *General Orbital Motors*, **BC152886483554**.

**OMV mounting flange: Standard**

**Shaft:**

All shaft types

**OMV technical data**

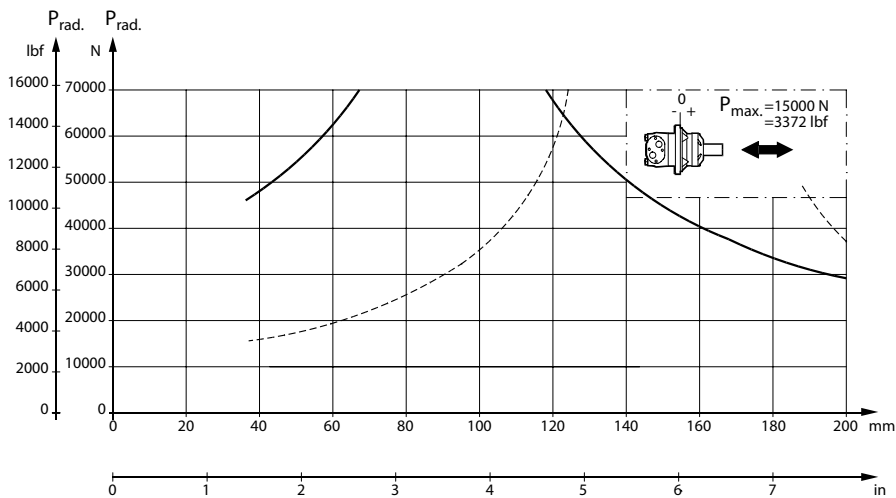


151-1973.10

**OMV mounting flange: Wheel**

**Shaft:**

All shaft types



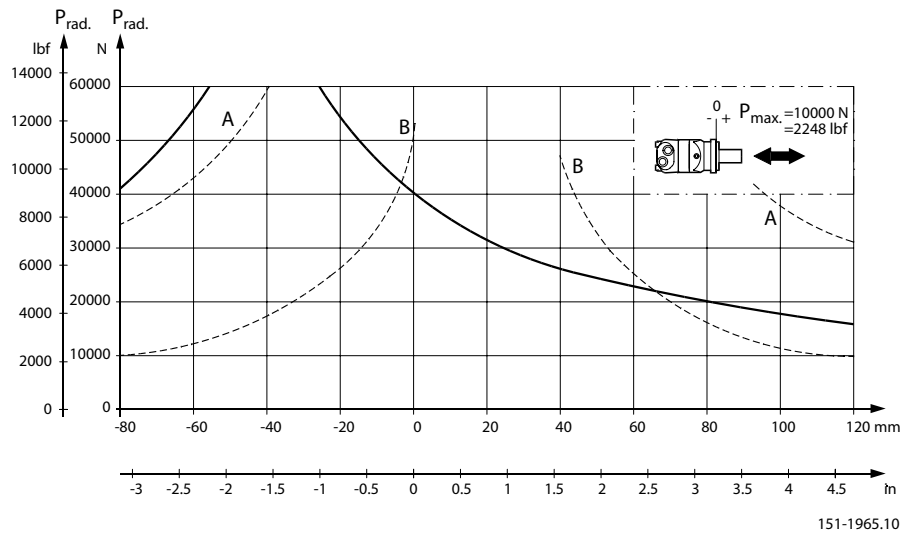
151-1969.10

**OMV mounting flange: SAE-C**

**Shaft:**

All shaft types

**OMV technical data**



- A:** Cyl. 2.25 in shaft
- B:** Splined 2.125 in shaft

### OMV function diagrams

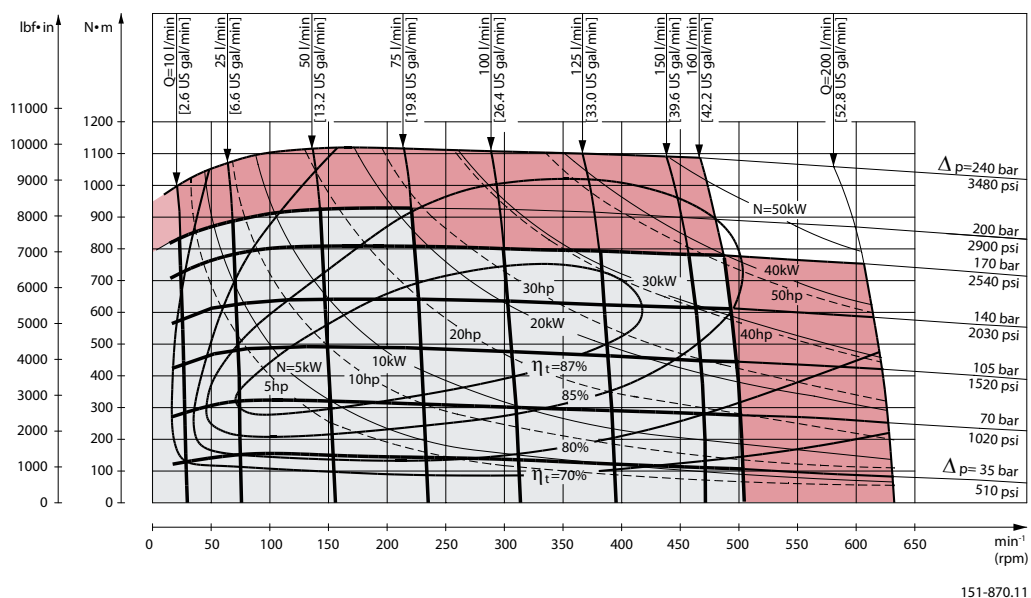
Explanation of function diagram use, basis and conditions can be found in [Speed, torque, and output](#) on page 7.

- Continuous range
- Intermittent range (max. 10% operation every minute)

Maximum permissible continuous/intermittent pressure drop for the actual shaft version can be found in [OMV technical data](#) on page 40.

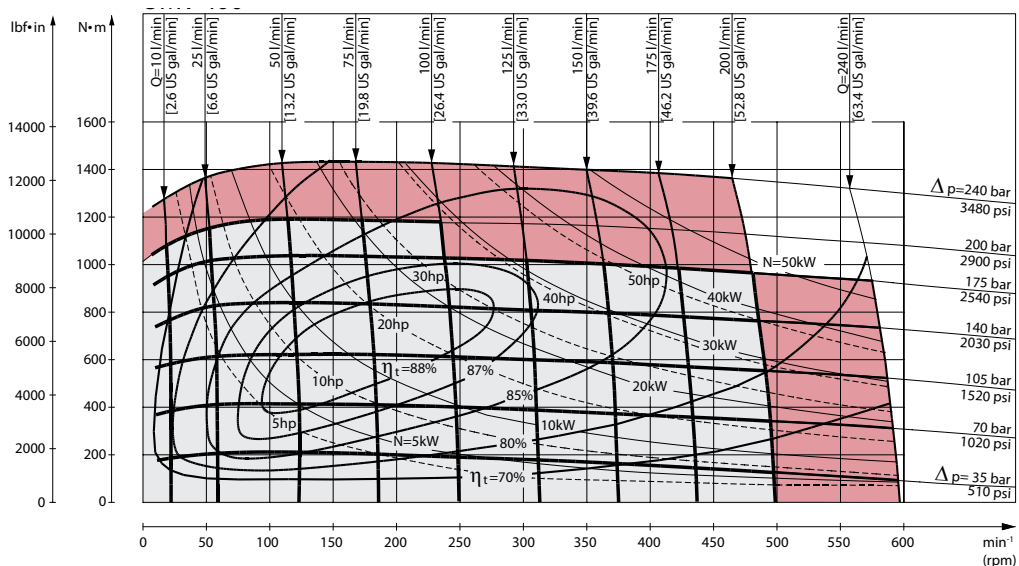
Intermittent pressure drop and oil flow must not occur simultaneously.

#### OMV 315 function diagram



151-870.11

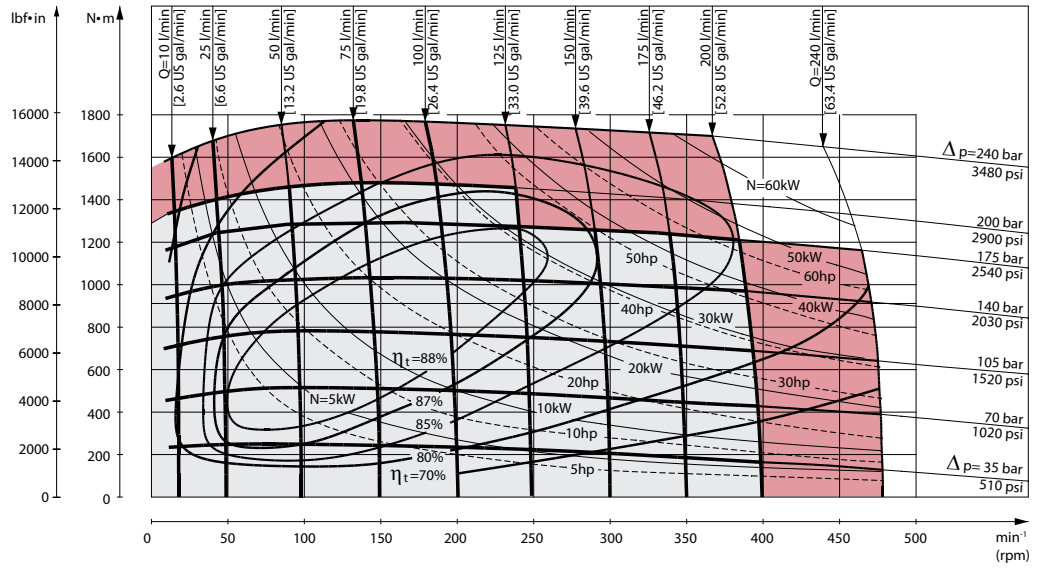
#### OMV 400 function diagram



151-871.11

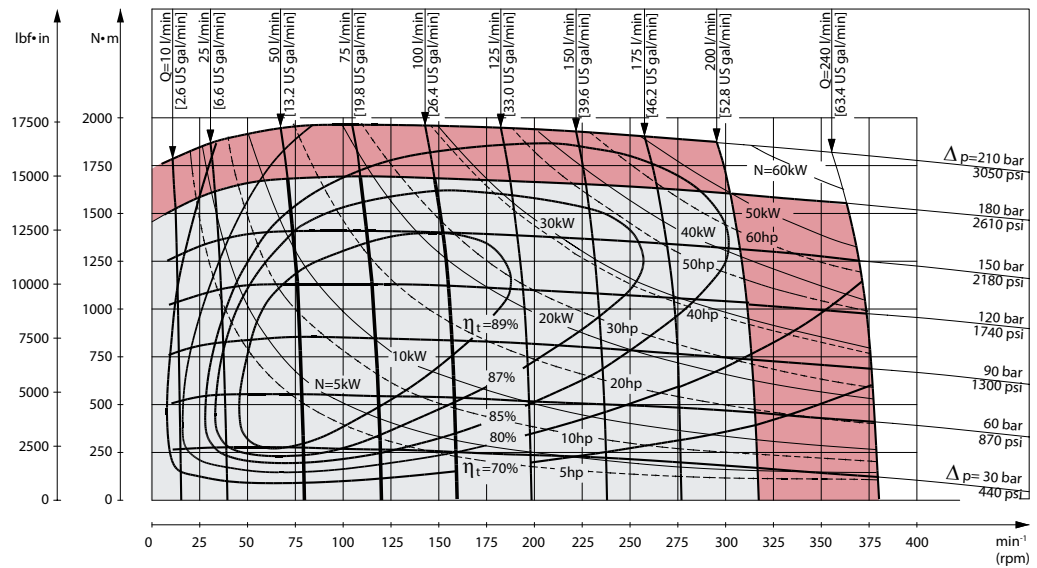
**OMV function diagrams**

**OMV 500 function diagram**



151-872.11

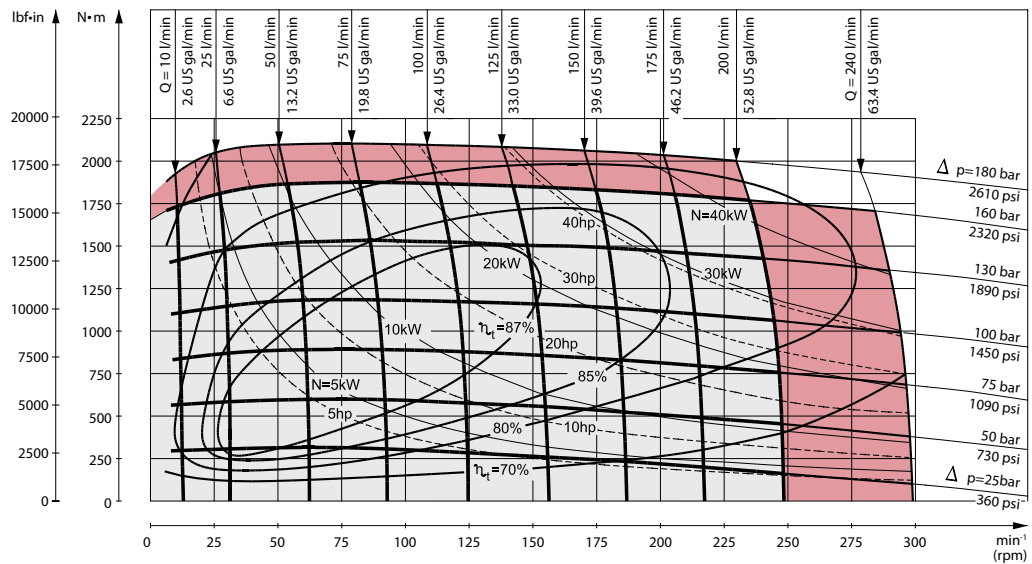
**OMV 630 function diagram**



151-879.11

**OMV function diagrams**

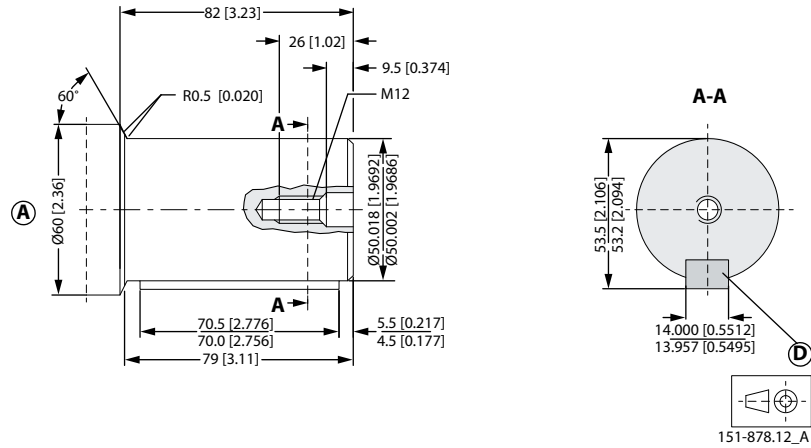
**OMV 800 function diagram**



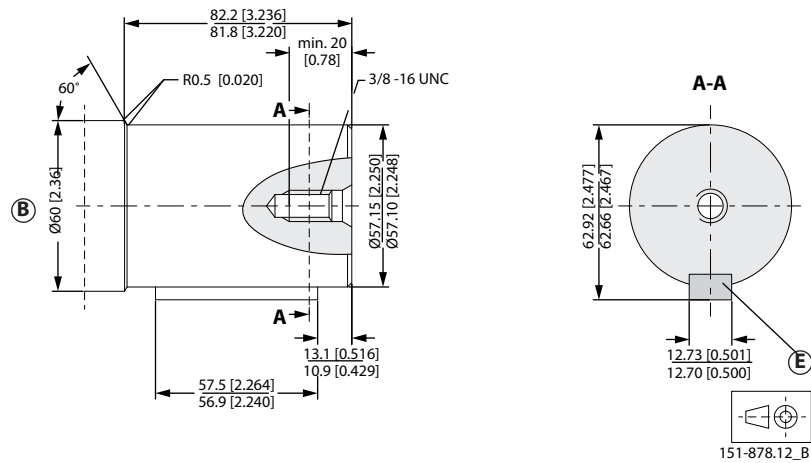
P301 250.11

**Shaft version**

**OMV shaft version**



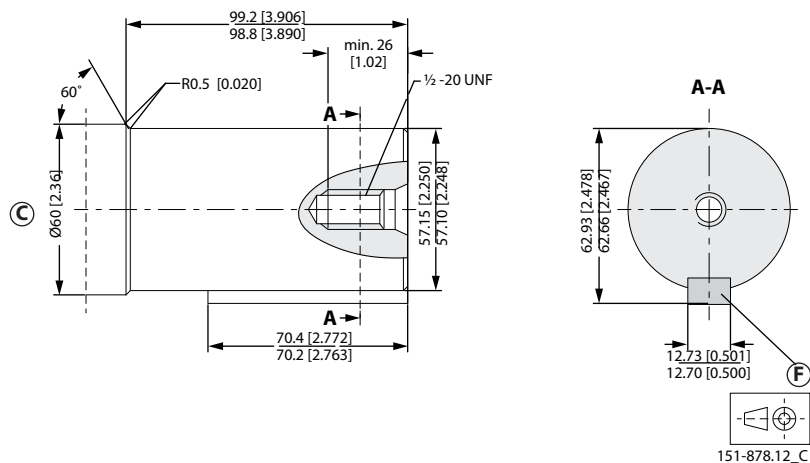
- A:** Cylindrical 50 mm shaft
- D:** Parallel key  
 A14 × 9 × 70; DIN 6885  
 Keyway deviates from standard



- B:** Cylindrical 2.25 in shaft for OMV with standard mounting flange
- E:** Parallel key  
 1/2 × 1/2 × 2 1/4 in; B.S. 46  
 Keyway deviates from standard



**Shaft version**

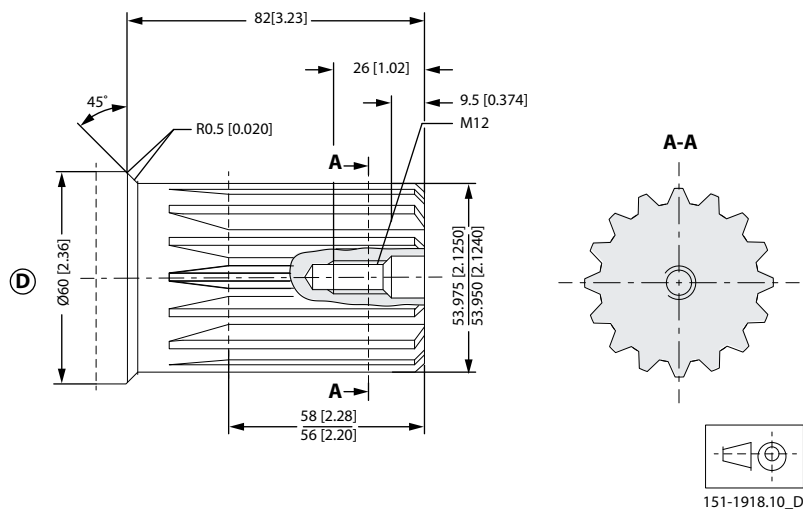


**C** Cylindrical 2.25 in shaft for OMV with mounting flange SAE-C

**F** Parallel key

1/2 × 1/2 × 2<sup>1</sup>/<sub>4</sub> in; B.S. 46

Keyway deviates from standard



**D:** Involute splined shaft ANS B92.1 - 1996 standard

Flat root side fit

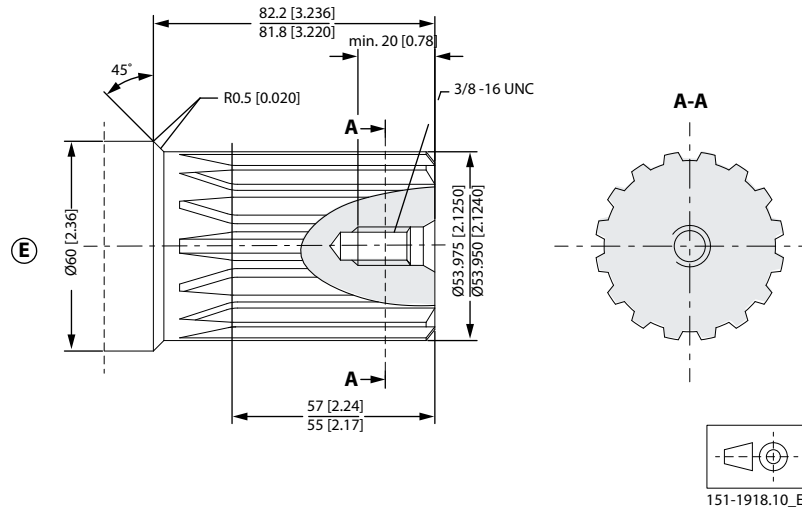
Pitch 8/16; Teeth 16

Major dia. 2.125 in

Pressure angle 30°

**Shaft version**

*US version*



**E:** Involute splined shaft for OMV with standard mounting flange ANS B92.1 - 1996 standard

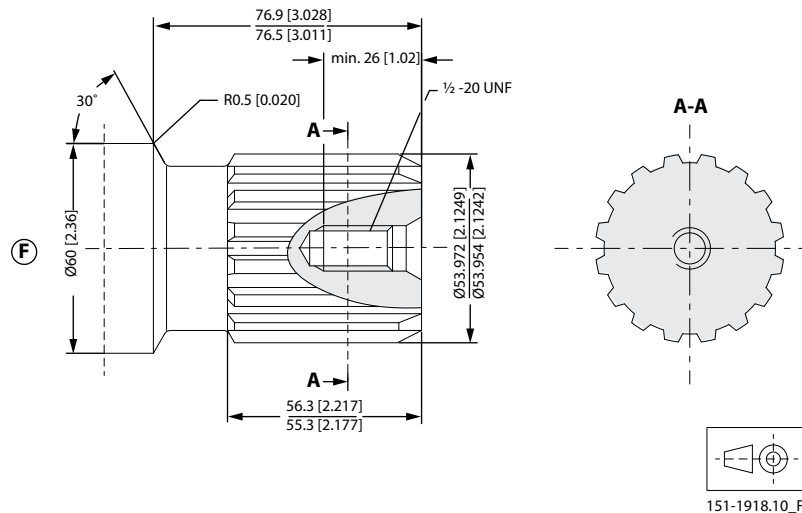
Flat root side fit

Pitch 8/16; Teeth 16

Major dia. 2.125 in

Pressure angle 30°

*US version*



**F:** Involute splined shaft for OMV with mounting flange SAE-C ANS B92.1 - 1996 standard

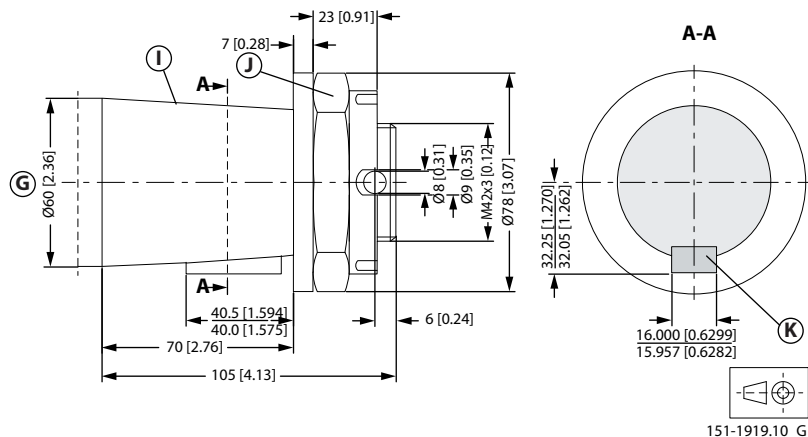
Flat root side fit

Pitch 8/16; Teeth 16

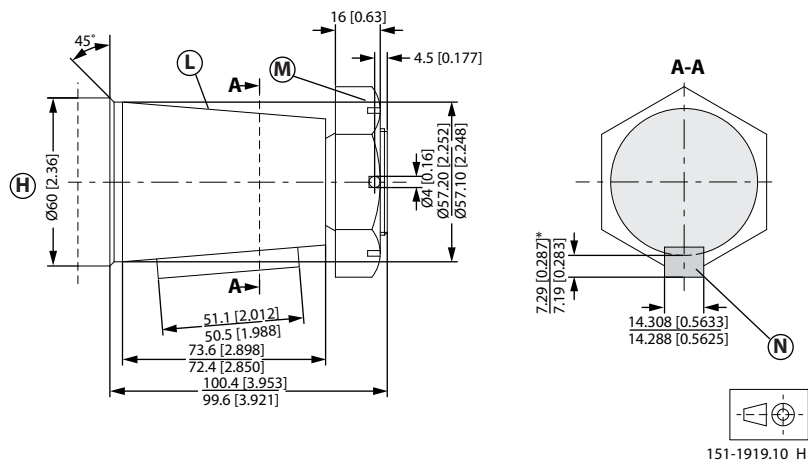
Major dia. 2.125 in

Pressure angle 30°

**Shaft version**



- G:** Tapered 60 mm shaft
- J:** DIN 937  
 Across flats: 65 mm  
 Tightening torque: 750 ±50 N•m [6640 ±440 lbf•in]
- I:** Taper 1:10
- K:** Parallel key B16 × 10 × 32  
 DIN 6885  
 Keyway deviates from standard



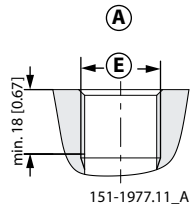
- H:** Tapered 2.25 in shaft
- L:** Cone 1:8  
 SAE J501
- M:** 11/2 - 18 UNEF  
 Across flats: 2 3/8 in  
 Tightening torque: 750 ±50 N•m [6640 ±440 lbf•in]
- N:** Parallel key  
 9/16 × 9/16 × 2 in

**Shaft version**

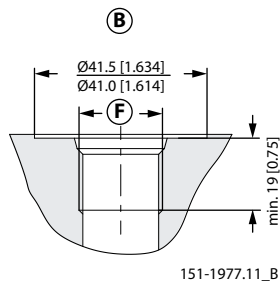
B.S. 46

Keyway deviates from standard

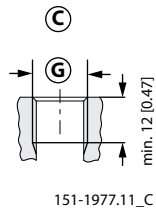
**OMV port thread versions**



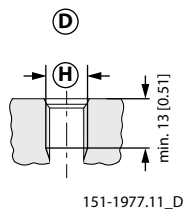
- A:** G main ports
- E:** ISO 228/1 - G1



- B:** UN main ports
- F:** 1 5/16 - 12 UN O-ring boss port



- C:** G drain port
- G:** ISO 228/1 - G1/4



- D:** UNF drain port
- H:** 9/16 - 18 UNF O-ring boss port



**OMV dimensions**

**D:** M12; 12 mm [0.47 in] deep

**E:** G 1; 18 mm [0.71 in] deep

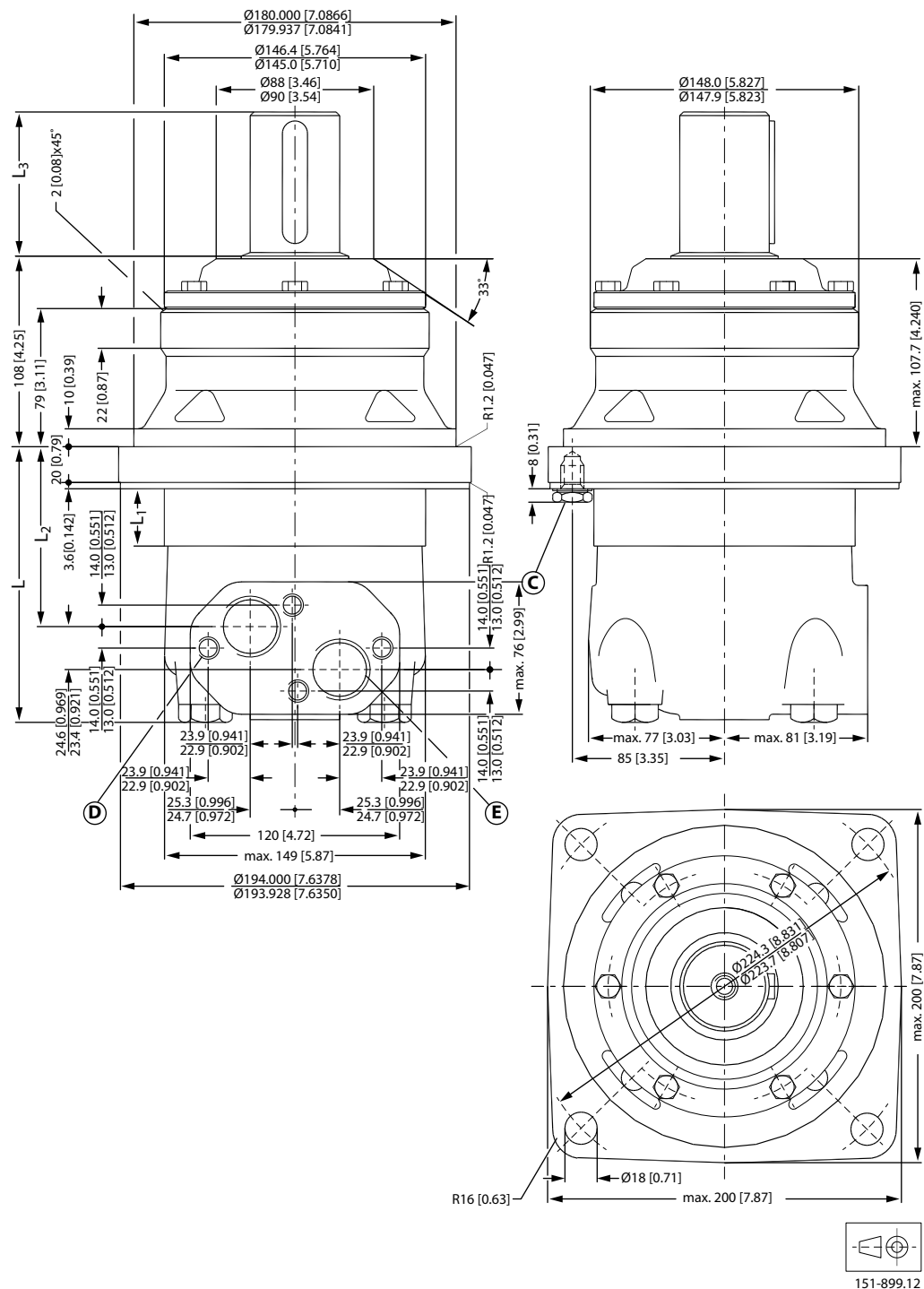
Type		OMV 315	OMV 400	OMV 500	OMV 630	OMV 800
L <sub>Max.</sub>	mm [in]	216 [8.50]	223 [8.78]	231 [9.09]	242 [9.53]	256 [10.08]
L <sub>1</sub> *	mm [in]	22.0 [0.866]	29.0 [1.142]	37.0 [1.457]	47.5 [1.870]	61.5 [2.421]
L <sub>2</sub>	mm [in]	160 [6.30]	167 [6.57]	175 [6.89]	186 [7.32]	200 [7.87]
Weight	kg [lb]	31.8 [70.1]	32.6 [71.9]	33.5 [73.9]	34.9 [76.9]	36.5 [80.5]

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

Output shaft		Cyl. 50 mm Splined 2.125 in	Tapered 60 mm
L <sub>3</sub>	mm [in]	82 [3.23]	105 [4.13]

**OMV dimensions**

**OMV Wheel - European version**



- C:** Drain connection G 1/4; 12 mm [0.47 in] deep
- D:** M12; 12 mm [0.47 in] deep
- E:** G 1; 18 mm [0.71 in] deep

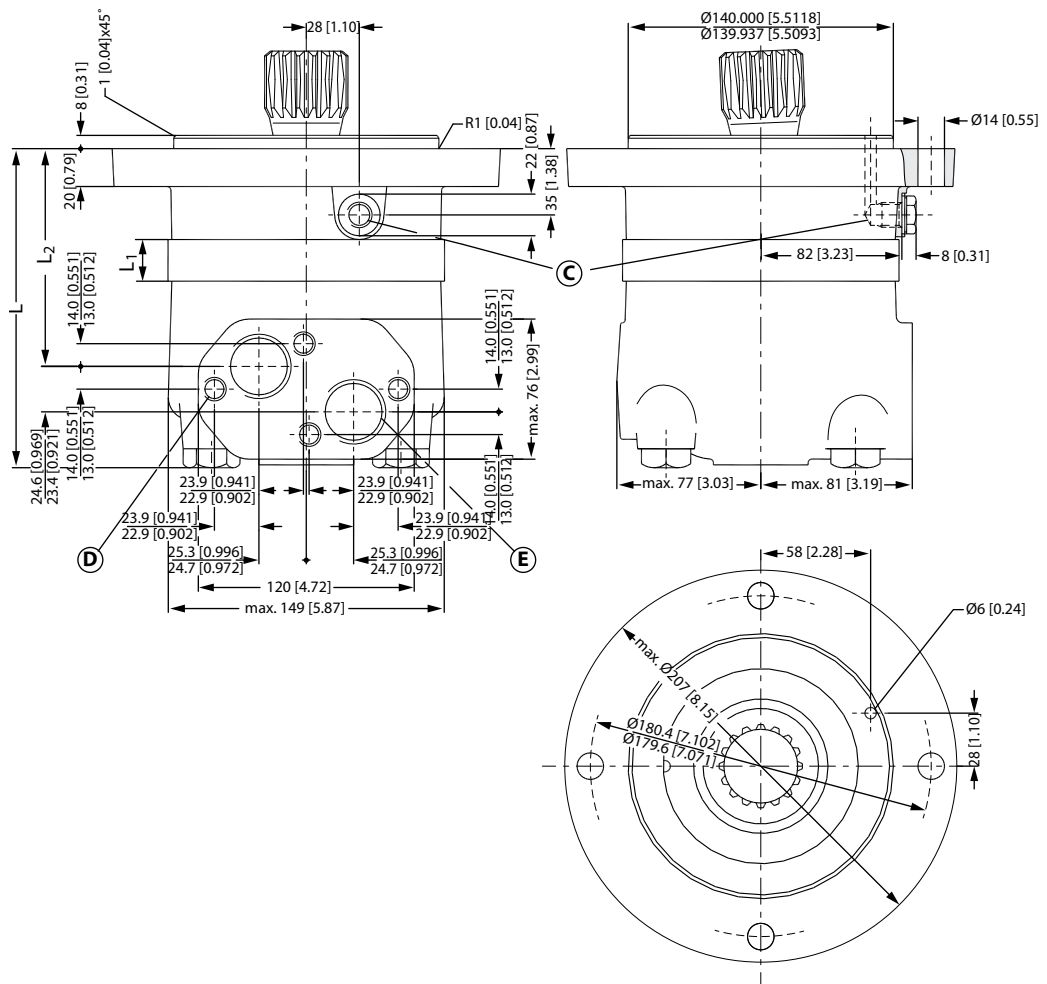
**OMV dimensions**

Type		OMV 315	OMV 400	OMV 500	OMV 630	OMV 800
L <sub>Max.</sub>	mm [in]	148 [5.83]	155 [6.10]	163 [6.42]	174 [6.85]	188 [7.40]
L <sub>1</sub> *	mm [in]	22.0 [0.866]	29.0 [1.142]	37.0 [1.457]	47.5 [1.870]	61.5 [2.421]
L <sub>2</sub>	mm [in]	92 [3.62]	99 [3.90]	107 [4.21]	118 [4.65]	132 [5.20]
Weight	kg [lb]	32.4 [71.4]	33.2 [73.2]	34.1 [35.5]	35.5 [78.3]	37.1 [81.8]

\* The gearwheel set is 3.5 mm [0.138 in] wider across the rollers than the L<sub>1</sub> dimensions

Output shaft		Cyl. 50 mm	Tapered 60 mm
L <sub>3</sub>	mm [in]	82 [3.23]	105 [4.13]

**OMV short - European version**



- C:** Drain connection G 1/4; 12 mm [0.47 in] deep
- D:** M12; 12 mm [0.47 in] deep
- E:** G 1; 18 mm [0.71 in] deep



**OMV dimensions**

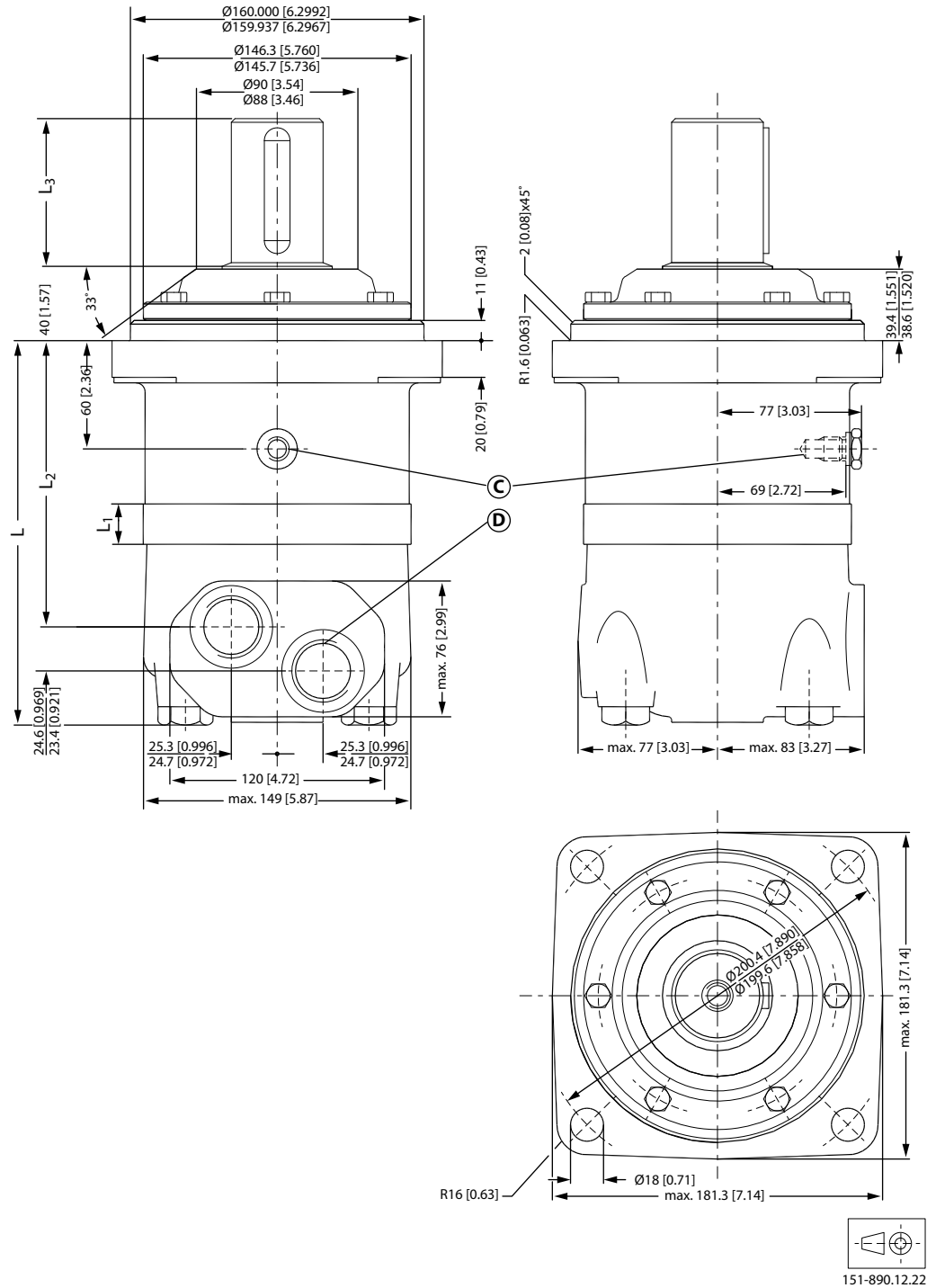
Type		OMV 315	OMV 400	OMV 500	OMV 630	OMV 800
L <sub>Max.</sub>	mm [in]	173 [6.81]	180 [7.09]	188 [7.40]	199 [7.83]	213 [8.39]
L <sub>1</sub> <sup>*</sup>	mm [in]	22.0 [0.866]	29.0 [1.142]	37.0 [1.457]	47.5 [1.870]	61.5 [2.421]
L <sub>2</sub>	mm [in]	117 [4.61]	124 [4.88]	132 [5.20]	143 [5.63]	157 [6.18]
Weight	kg [lb]	22.7 [50.1]	23.5 [78.3]	24.4 [53.8]	25.6 [56.4]	27.2 [61.1]

\* The gearwheel set is 3.5 mm [0.138 in] wider across the rollers than the L<sub>1</sub> dimensions

**OMV dimensions - US version**

**OMV dimensions**

**OMV standard flange - US version**



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

**D:** 1 5/16 - 12 UN; 19 mm [0.75 in] deep O-ring boss port

### OMV dimensions

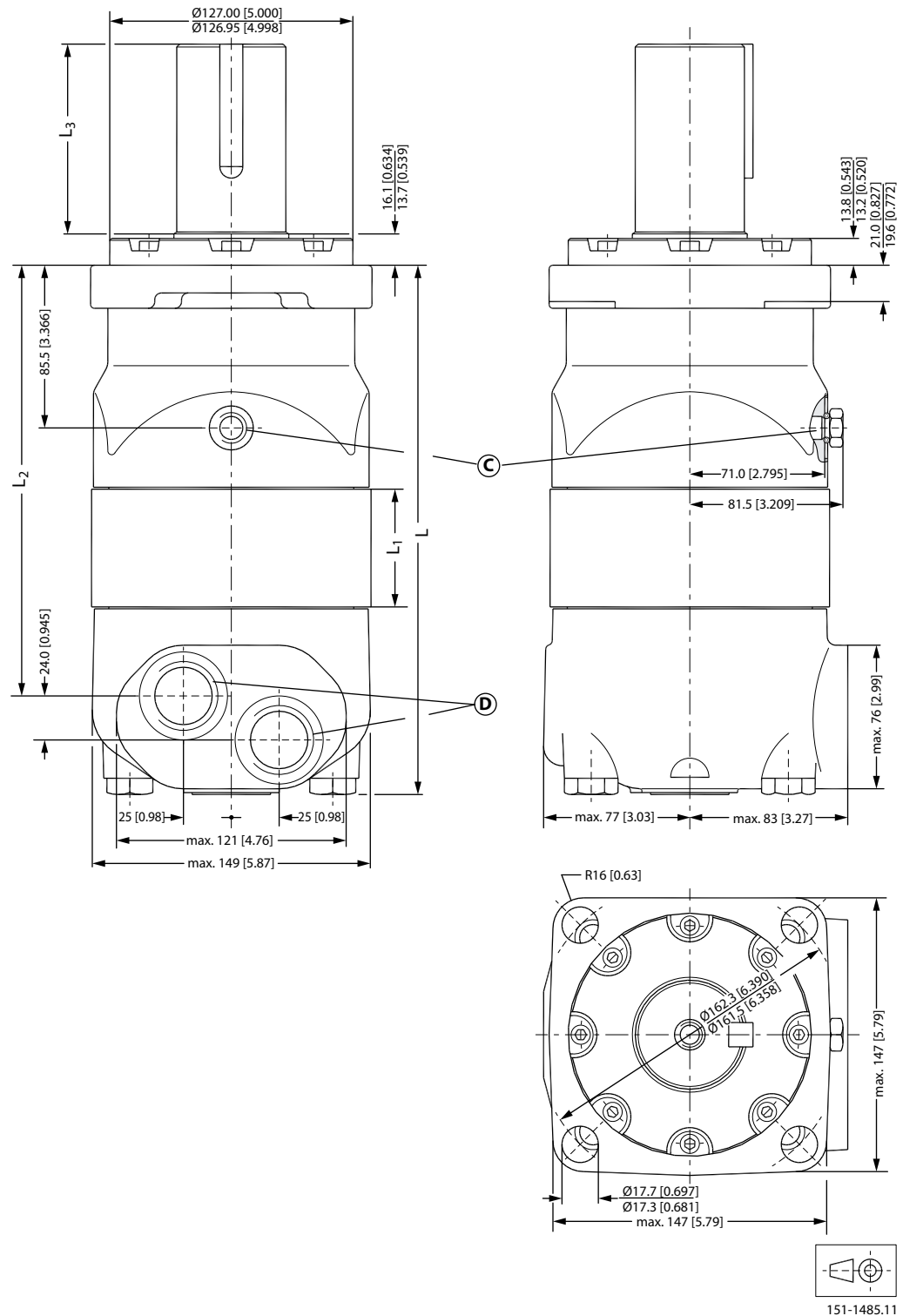
Type		OMV 315	OMV 400	OMV 500	OMV 630	OMV 800
L <sub>Max.</sub>	mm [in]	216 [8.50]	223 [8.78]	231 [9.09]	242 [9.53]	256 [10.08]
L <sub>1</sub> <sup>*</sup>	mm [in]	22.0 [0.866]	29.0 [1.142]	37.0 [1.457]	47.5 [1.870]	61.5 [2.421]
L <sub>2</sub>	mm [in]	160 [6.30]	167 [6.57]	175 [6.89]	186 [7.32]	200 [7.87]
Weight	kg [lb]	31.8 [70.1]	32.6 [71.9]	33.5 [73.9]	34.9 [76.9]	36.5 [80.5]

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

Output shaft		Cyl. 2.25 in Splined 2.125 in	Tapered 2.25 in
L <sub>3</sub>	mm [in]	82 [3.23]	100 [3.94]

**OMV dimensions**

**OMV SAE-C flange - US version**



- C:** Drain connection 9/16 - 18 UNF; 13 mm [0.51 in] deep O-ring boss port
- D:** 1 5/16 - 12 UN; 19 mm [0.75 in] deep O-ring boss port

### OMV dimensions

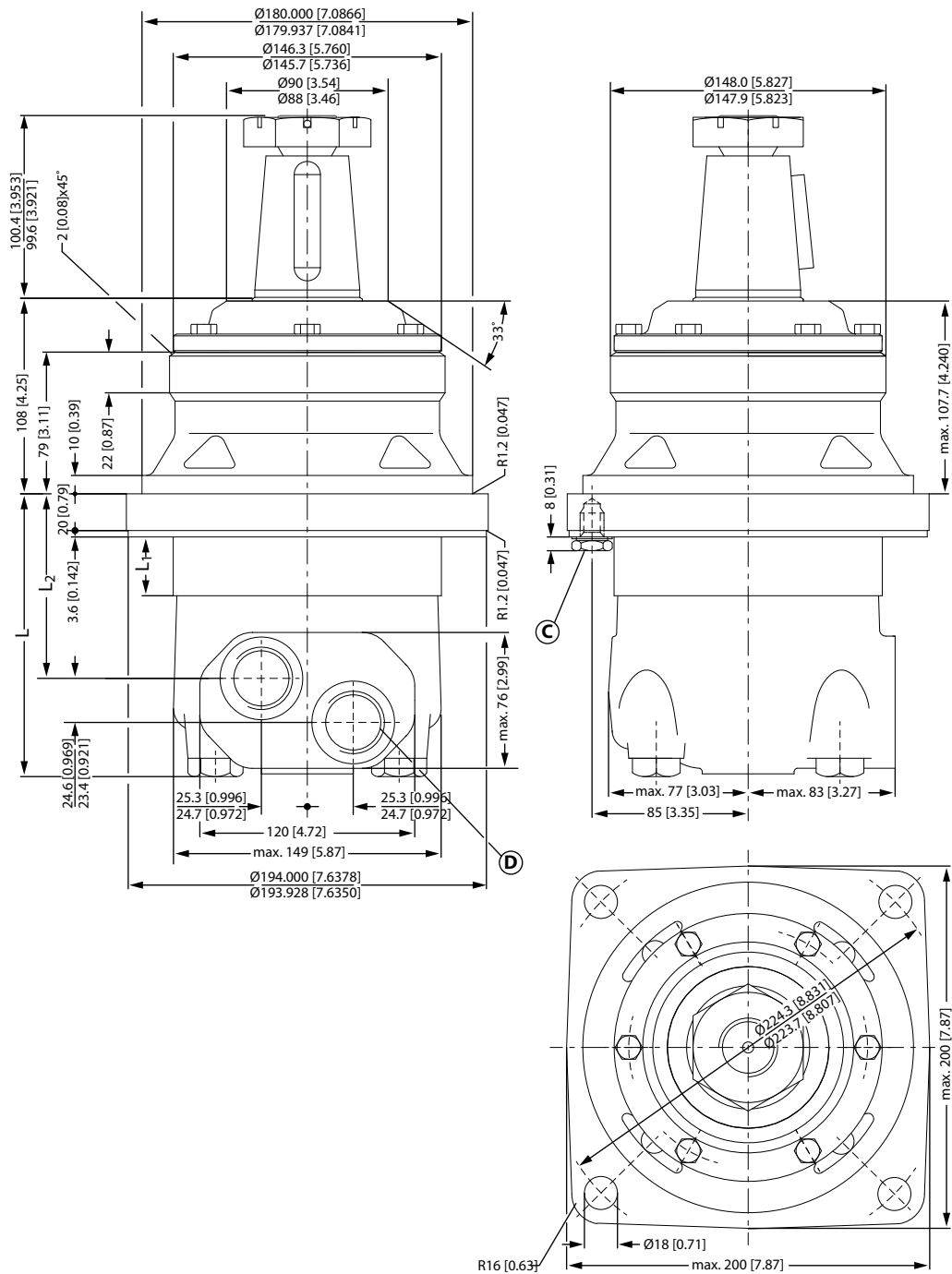
Type		OMV 315	OMV 400	OMV 500	OMV 630	OMV 800
L <sub>Max.</sub>	mm [in]	240 [9.45]	247 [9.72]	255 [10.04]	266 [10.47]	280 [11.02]
L <sub>1</sub> <sup>*</sup>	mm [in]	22.0 [0.866]	29.0 [1.142]	37.0 [1.457]	47.5 [1.870]	61.5 [2.421]
L <sub>2</sub>	mm [in]	185 [7.28]	192 [7.56]	200 [7.87]	211 [8.31]	225 [8.86]
Weight	kg [lb]	30.0 [66.2]	30.8 [67.9]	31.7 [69.9]	33.1 [73.0]	34.7 [76.5]

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

Output shaft		Cyl. 2.25 in	Splined 2.125 in
L <sub>3</sub>	mm [in]	99 [3.90]	76.7 [3.02]

**OMV dimensions**

**OMV wheel - US version**



- C:** Drain connection 9/16 - 18 UNF; 13 mm [0.51 in] deep O-ring boss port
- D:** 1 5/16 - 12 UN; 19 mm [0.75 in] deep O-ring boss port

**OMV dimensions**

Type		OMV 315	OMV 400	OMV 500	OMV 630	OMV 800
L <sub>Max.</sub>	mm [in]	148 [5.83]	155 [6.10]	163 [6.42]	174 [6.85]	188 [7.40]
L <sub>1</sub> <sup>*</sup>	mm [in]	22.0 [0.866]	29.0 [1.142]	37.0 [1.457]	47.5 [1.870]	61.5 [2.421]
L <sub>2</sub>	mm [in]	92 [3.62]	99 [3.90]	107 [4.21]	118 [4.65]	132 [5.20]
Weight	kg [lb]	32.4 [71.4]	33.2 [73.2]	34.1 [35.5]	35.5 [78.3]	37.1 [81.8]

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

## OMVS

### Installing the OMVS

The cardan shaft of the OMVS 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 OMV.

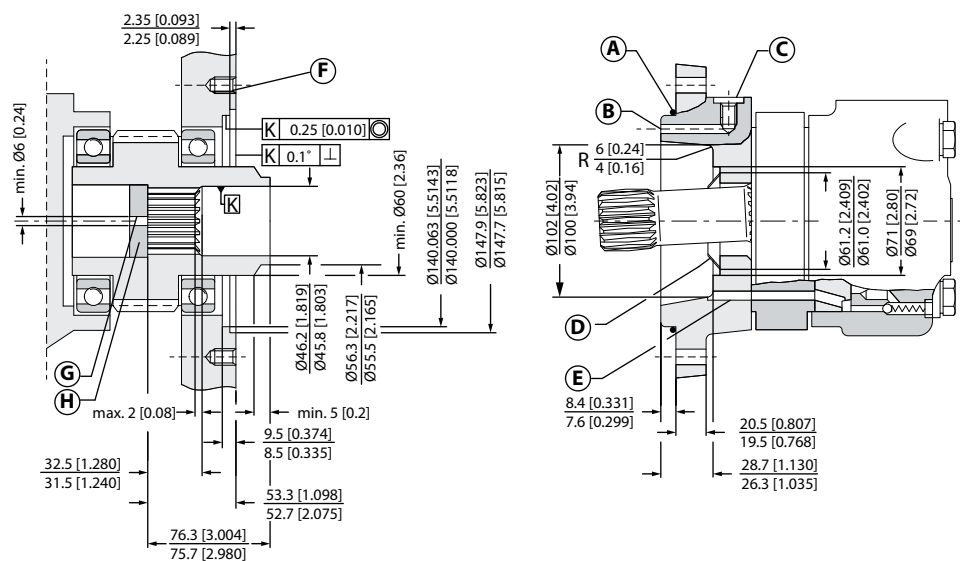
The conical sealing ring (code. no. 633B9021) is supplied with the motor.

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. 151B1041) 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 for OMVS

*OMVS dimensions of the attached component in millimeter [inches]*



151-815.11

- A:** O-ring: 140 × 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; minimum 18 mm [0.71 in] deep
- G:** Oil circulation hole
- H:** Hardened stop plate



## OMVS

### Attached component internal splines for OMVS

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/mm<sup>2</sup>) or SAE 8620.

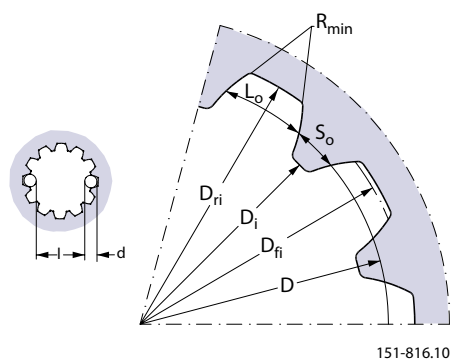
#### Hardening specification

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

*Internal involute spline data; Standard ANS B92.1-1996, class 5 (corrected  $m \cdot X = 1$ ;  $m = 2.54$ )*

Flat root side fit		mm	[in]
Number of teeth	z	16	
Pitch	DP	10/20	
Pressure angle		30°	
Pitch diameter	D	40.640	[1.6]
Major diameter	D <sub>ri</sub>	45.2 <sub>0</sub> <sup>+0.4</sup>	[1.780 <sub>0</sub> <sup>+0.016</sup> ]
Form diameter (minimum)	D <sub>fi</sub>	44.6	[1.756]
Minor diameter	D <sub>i</sub>	38.5 <sub>0</sub> <sup>+0.039</sup>	[1.516 <sub>0</sub> <sup>+0.0015</sup> ]
Space width (circular)	L <sub>o</sub>	5.180 ± 0.037	[0.204 ± 0.0015]
Tooth thickness (circular)	S <sub>o</sub>	2.835	[0.1116]
Fillet radius	R <sub>min.</sub>	0.4	[0.015]
Maximum measurement between pins*	l	32.47 <sub>0</sub> <sup>+0.15</sup>	[1.278 <sub>0</sub> <sup>+0.006</sup> ]
Pin diameter	d	5.6 ± 0.001	[0.22 ± 0.00004]

\* Finished dimensions (when hardened)



151-816.10

### 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.

## **OMVS**

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.

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