# Danfoss OMV 800 151B2159 orbital hydraulic motor

Manufacturer: Danfoss

Manufacturer part number / published order designation: 151B2159

Published model: 151B2159

## About this compilation

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

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

## Execution notes and conditions

Factory model code: OMV-0800-A-NN-G34-AV-2F-E26-A-A-2C-1-N-NN-NNNNN-NN-NN-NN-SP-NNN

Current exact factory article verified separately from the October 2024 technical reference.

Representative factory photograph; use the applicable execution drawings.

Separate catalogue limits; check operating point, shaft loading and drain requirements.

## Source-page index

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

## Source A: Danfoss OMV technical information - October 2024


| Original pages | Compiled pages | Relevant content |
|---|---|---|
| 38-43 | 2-7 | Applicable original version, hydraulic limits, installation, shaft, ports or mounting drawing |
| 47 | 8 | Size-specific performance diagram |
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| 58-59 | 12-13 | Applicable original version, hydraulic limits, installation, shaft, ports or mounting drawing |

## OMV

### OMV versions and code numbers

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

#### OMV standard motors

*Mounting flange: Standard 4 hole flange*

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

*Code numbers OMV Standard 4 hole flange*

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

*Mounting flange: OMV SAE-C flange*

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

*Code numbers OMV - SAE-C flange*

| **Conf. code** | **Displacement** | | | | |
|---|---|---|---|---|---|
| | **315** | **400** | **500** | **630** | **800** |
| ***B1*** | 151B2183 | 151B2184 | 151B2185 | 151B2186 | 151B2187 |
| ***B2*** | 151B2188 | 151B2189 | 151B2190 | 151B2191 | 151B2192 |

## OMV

*Mounting flange: OMV Wheel*

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

*Code numbers OMVW*

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

*Mounting flange: OMV Short*

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

*Code numbers OMVS*

| **Conf. code** | **Displacement** | | | | |
|---|---|---|---|---|---|
| | **315** | **400** | **500** | **630** | **800** |
| ***D1*** | 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

### OMV, OMVW, OMVS technical data

| Type | | | OMV OMVW OMVS | OMV OMVW OMVS | OMV OMVW OMVS | OMV OMVW OMVS | OMV OMVW OMVS |
|---|---|---|---|---|---|---|---|
| **Motor size** | | | **315** | **400** | **500** | **630** | **800** |
| Geometric displacement | $cm^3$ [$in^3$] | | 314.5 [19.19] | 400.9 [24.46] | 499.6 [30.49] | 629.1 [38.39] | 801.8 [48.93] |
| Maximum speed | $min^{-1}$ [rpm] | cont. | 510 | 500 | 400 | 315 | 250 |
| | | int.[1] | 630 | 600 | 480 | 380 | 300 |
| Maximum torque | N•m [lbf•in] | cont. | 920 [8140] | 1180 [10440] | 1460 [12920] | 1660 [14690] | 1880 [16640] |
| | | int.[1] | 1110 [9820] | 1410 [12480] | 1760 [15580] | 1940 [17170] | 2110 [18680] |
| Maximum output | kW [hp] | cont. | 42.5 [57.0] | 53.5 [71.7] | 53.5 [71.7] | 48.0 [64.4] | 42.5 [57.0] |
| | | int.[1] | 51.0 [68.4] | 64.0 [85.8] | 64.0 [85.8] | 56.0 [75.1] | 48.0 [64.4] |
| Maximum pressure drop | bar [psi] | cont. | 200 [2900] | 200 [2900] | 200 [2900] | 180 [2610] | 160 [2320] |
| | | int.[1] | 240 [3480] | 240 [3480] | 240 [3480] | 210 [3050] | 180 [2610] |
| | | peak[2] | 280 [4060] | 280 [4060] | 280 [4060] | 240 [3480] | 210 [3050] |
| Maximum oil flow | l/min [USgal/min] | cont. | 160 [42.3] | 200 [52.8] | 200 [52.8] | 200 [52.8] | 200 [52.8] |
| | | int.[1] | 200 [52.8] | 240 [63.4] | 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.[1] N•m [lbf•in] | | 850 [7520] | 1090 [9650] | 1360 [12040] | 1550 [13720] | 1700 [15050] |

[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.

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

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

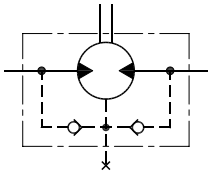
[2] Peak load: The permissible values may occur for max. 1% of every minute.

For maximum permissible combination of flow and pressure, see *OMV function diagrams* on page 44 for actual motor.

### Maximum permissible shaft seal pressure

***Motor with check valves and <u>without</u> use of drain connection***

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



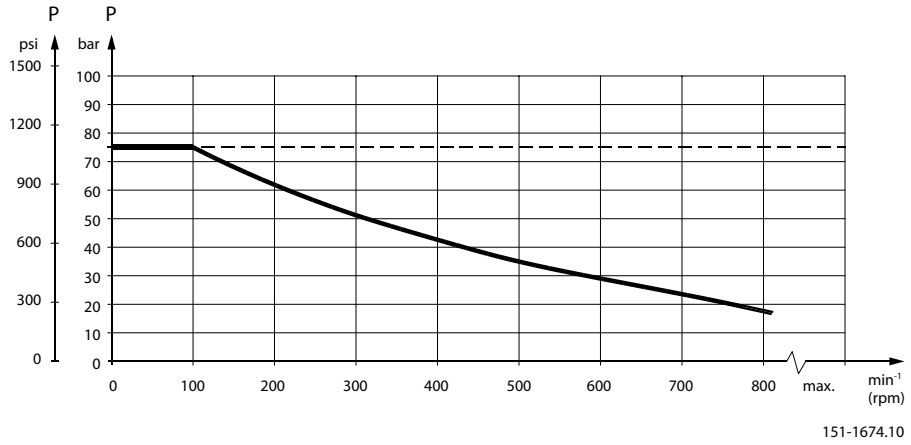
151-320.10

## OMV

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

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

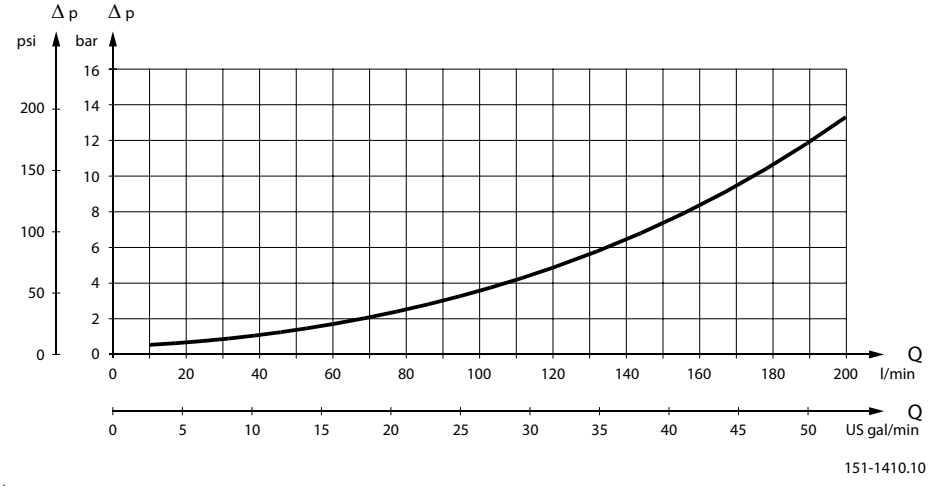
*Maximum return pressure without drain line or maximum pressure in the drain line*




– – – – 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 $mm^2/s$ [165 SUS]

### Oil flow in drain line

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

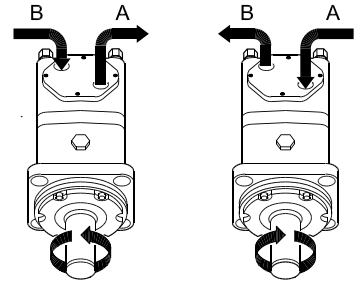
| Pressure drop | | Viscosity | | Oil flow in drain line | |
|---|---|---|---|---|---|
| **bar** | **[psi]** | **$mm^2/s$** | **[SUS]** | **l/min** | **[US gal/min]** |
| 140 | [2030] | 20 | [100] | 3.0 | [0.79] |
| | | 35 | [165] | 2.0 | [0.53] |

## OMV

*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]** | **$mm^2/s$** | **[SUS]** | **l/min** | **[US gal/min]** |
| 210 | [3050] | 20 | [100] | 6.0 | [1.59] |
| | | 35 | [165] | 4.0 | [1.06] |

### Direction of shaft rotation



## OMV

### Permissible shaft loads for OMV

#### *Shaft load and bearing life time*

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

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

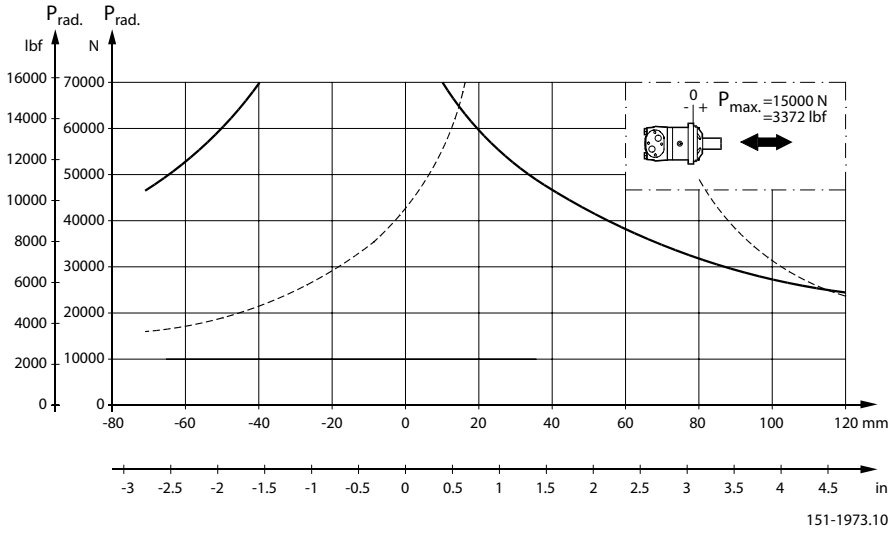
The curves are based on B10 bearing life (2000 hours or 12,000,000 shaft revolutions at 100 $min^{-1}$) at rated output torque, when mineral-based hydraulic oil with a sufficient content of anti-wear additives, is used.

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

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

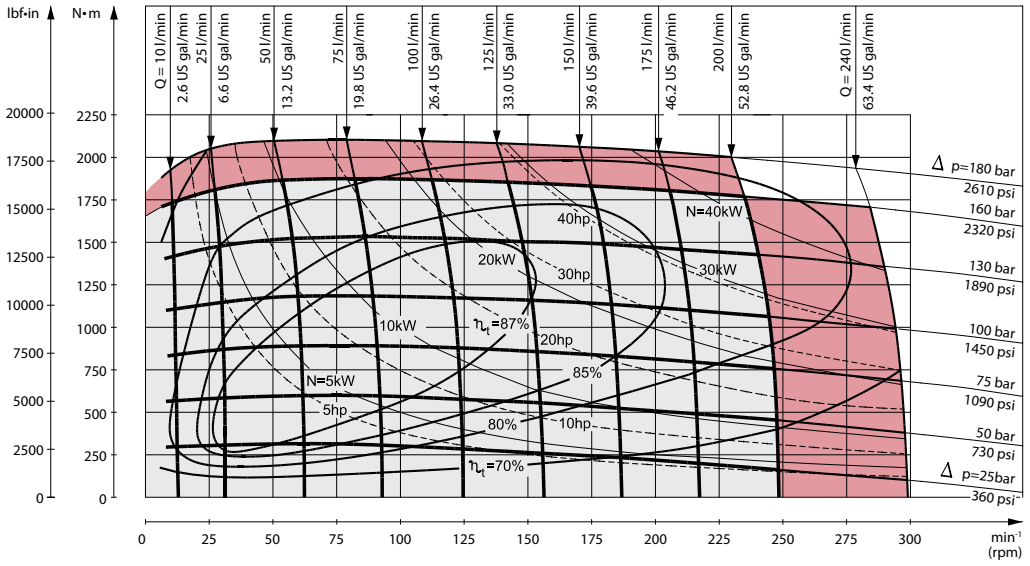
Bearing life calculations can be made using the explanation and formula provided in the chapter *Bearing dimensioning* in the technical information *General Orbital Motors*, **BC152886483554**.

#### *Standard mounting flange with all shaft types*



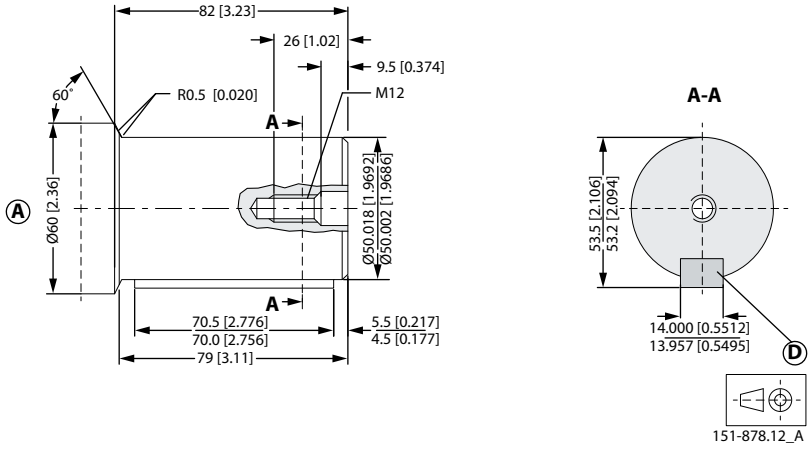
## OMV

### OMV 800 function diagram




## Shaft version

### OMV shaft version



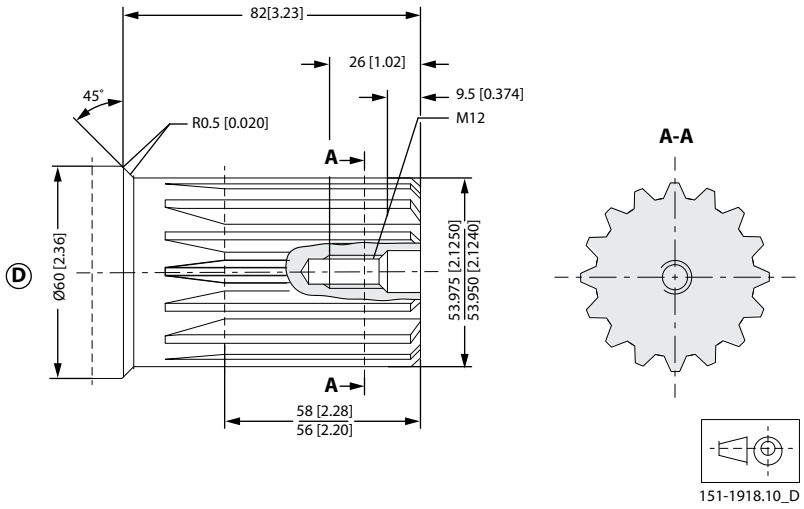

**A:** Cylindrical 50 mm shaft

**D:** Parallel key

A14 × 9 × 70; DIN 6885

Keyway deviates from standard

## OMV




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

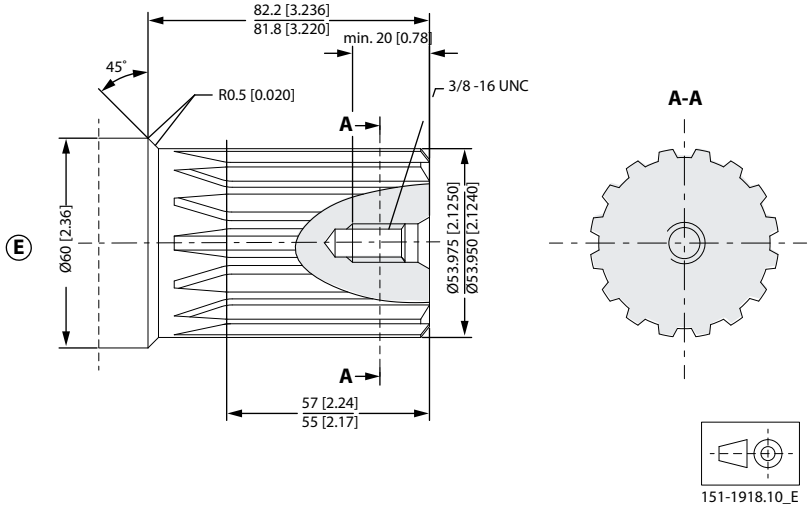
Flat root side fit

Pitch 8/16; Teeth 16

Major dia. 2.125 in

Pressure angle 30°

*US version*




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

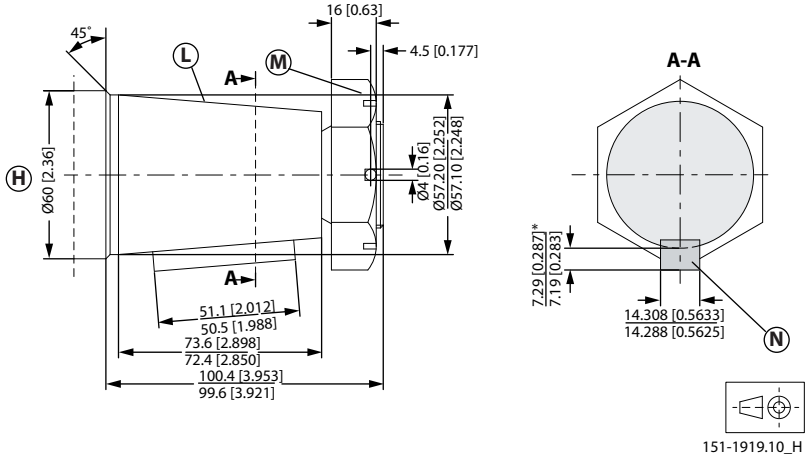
Flat root side fit

Pitch 8/16; Teeth 16

Major dia. 2.125 in

Pressure angle 30°

## OMV




**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]

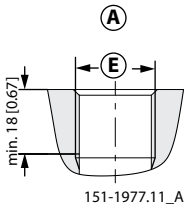
**N:** Parallel key

9/16 × 9/16 × 2 in

B.S. 46

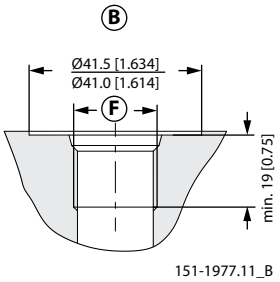
Keyway deviates from standard

### OMV port thread versions




**A:** G main ports

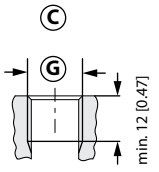
**E:** ISO 228/1 - G1




**B:** UN main ports

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

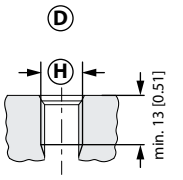
## OMV




151-1977.11_C

**C:** G drain port

**G:** ISO 228/1 - G1/4




151-1977.11_D

**D:** UNF drain port

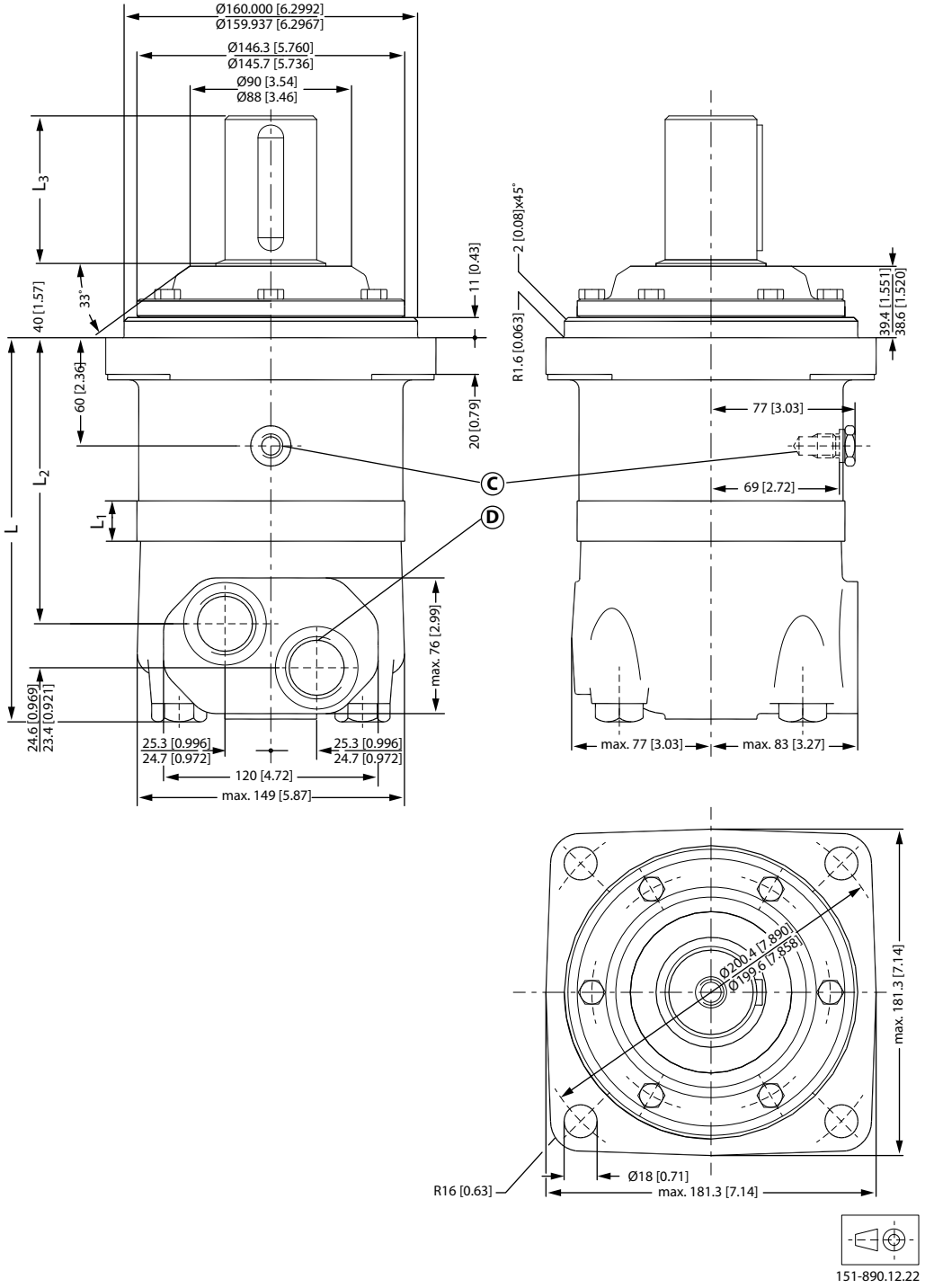
**H:** 9/16 - 18 UNF O-ring boss port

## OMV dimensions

**OMV dimensions - European version**

## OMV

***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

| Type | | OMV 315 | OMV 400 | OMV 500 | OMV 630 | OMV 800 |
|---|---|---|---|---|---|---|
| $L_{Max.}$ | mm [in] | 216 [8.50] | 223 [8.78] | 231 [9.09] | 242 [9.53] | 256 [10.08] |
| $L_1$* | mm [in] | 22.0 [0.866] | 29.0 [1.142] | 37.0 [1.457] | 47.5 [1.870] | 61.5 [2.421] |
| $L_2$ | 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 |
|---|---|---|---|
| $L_3$ | mm [in] | 82 [3.23] | 100 [3.94] |