



Technical Information

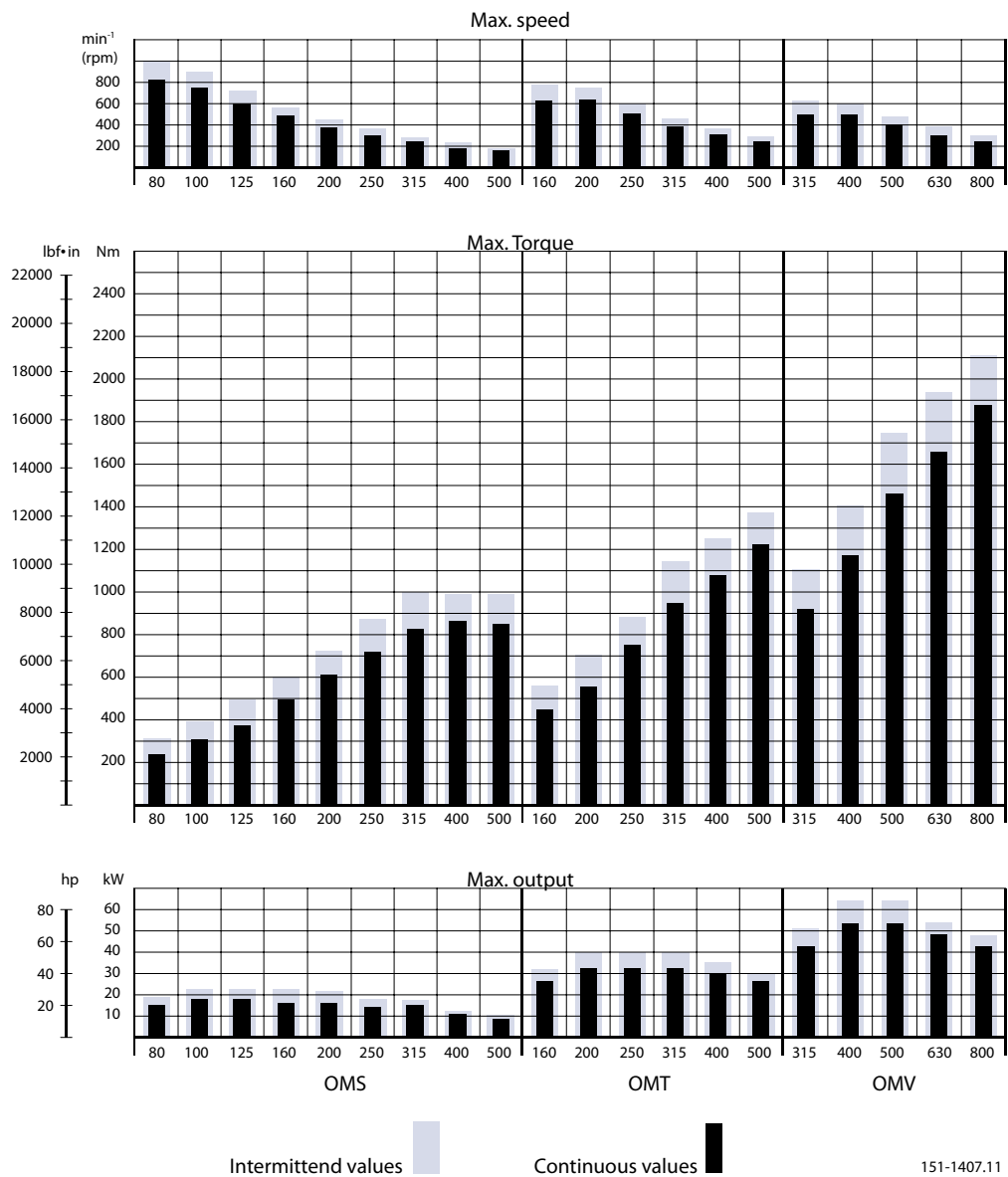
Orbital Motors

**OMS, OMT and OMV**



## OMS, OMT and OMV

### Speed, torque and output



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.

- OMS [Function diagrams](#) on page 18
- OMT [Function diagrams](#) on page 54

**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 mm<sup>2</sup>/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

### OMS

#### Versions

##### OMS versions

| Mounting flange | Shaft            | Port size  | European version | US version | Drain connection | Check valve | Main type designation |
|-----------------|------------------|------------|------------------|------------|------------------|-------------|-----------------------|
| Standard flange | Cyl. 32 mm       | G 1/2      | X                |            | Yes              | Yes         | OMS                   |
|                 | Cyl. 1.25 in     | 7/8-14 UNF |                  | X          | Yes              | Yes         | OMS                   |
|                 | Splined 1.25 in  | G 1/2      | X                |            | Yes              | Yes         | OMS                   |
|                 |                  | 7/8-14 UNF |                  | X          | Yes              | Yes         | OMS                   |
|                 | Tapered 35 mm    | G 1/2      | X                |            | Yes              | Yes         | OMS                   |
|                 | Tapered 1.25 in  | 7/8-14 UNF |                  | X          | Yes              | Yes         | OMS                   |
|                 | P.t.o.           | G 1/2      | X                |            | Yes              | Yes         | OMS                   |
| Special flange  | Splined 1.25 in  | G 1/2      | X                |            | Yes              | Yes         | OMS                   |
| A-2 flange      | Cyl. 1 in        | 7/8-14 UNF |                  | X          | Yes              | Yes         | OMS                   |
|                 | Cyl. 1.25 in     | 7/8-14 UNF |                  | X          | Yes              | Yes         | OMS                   |
|                 | Splined 1 in     | 7/8-14 UNF |                  | X          | Yes              | Yes         | OMS                   |
|                 | Splined 1.25 in  | 7/8-14 UNF |                  | X          | Yes              | Yes         | OMS                   |
|                 | Tapered 1.25 in  | 7/8-14 UNF |                  | X          | Yes              | Yes         | OMS                   |
| Magneto flange  | Cyl. 1 in        | 7/8-14 UNF |                  | X          | Yes              | Yes         | OMS                   |
|                 | Cyl. 1.25 in     | 7/8-14 UNF |                  | X          | Yes              | Yes         | OMS                   |
|                 | Splined 1 in     | 7/8-14 UNF |                  | X          | Yes              | Yes         | OMS                   |
|                 | Splined 1.25 in  | 7/8-14 UNF |                  | X          | Yes              | Yes         | OMS                   |
| SAE B flange    | Splined 1.25 in  | 7/8-14 UNF |                  | X          | Yes              | Yes         | OMS                   |
|                 | Splined 0.875 in | 7/8-14 UNF |                  | X          | Yes              | Yes         | OMS                   |
| Wheel           | Cyl. 32 mm       | G 1/2      | X                |            | Yes              | Yes         | OMSW                  |
|                 | Cyl. 1.25 in     | 7/8-14 UNF |                  | X          | Yes              | Yes         | OMSW                  |
|                 | Tapered 35 mm    | G 1/2      | X                |            | Yes              | Yes         | OMSW                  |
|                 | Tapered 1.25 in  | 7/8-14 UNF |                  | X          | Yes              | Yes         | OMSW                  |
| Short           | No output shaft  | G 1/2      | X                |            | Yes              | Yes         | OMSW                  |

#### Features

Features available (options):

- Speed sensor
- Motor with tachometer connection
- High pressure shaft seal
- Viton shaft seal
- Painted
- Ultra short
- Motor with drum brake

**OMS**
**Code numbers**
*OMS code numbers*

| Code Numbers | Displacement [cm <sup>3</sup> ] |      |      |      |      |      |      |      |      |
|--------------|---------------------------------|------|------|------|------|------|------|------|------|
|              | 80                              | 100  | 125  | 160  | 200  | 250  | 315  | 400  | 500  |
| <b>151F</b>  | 0500                            | 0501 | 0502 | 0503 | 0504 | 0505 | 0506 | 0605 | -    |
| <b>151F</b>  | 2200                            | 2201 | 2202 | 2203 | 2204 | 2205 | 2206 | 2261 | 2268 |
| <b>151F</b>  | 0507                            | 0508 | 0509 | 0510 | 0511 | 0512 | 0513 | -    | -    |
| <b>151F</b>  | 2207                            | 2208 | 2209 | 2210 | 2211 | 2212 | 2213 | 2262 | 2269 |
| <b>151F</b>  | 0514                            | 0515 | 0516 | 0517 | 0518 | 0519 | 0520 | -    | -    |
| <b>151F</b>  | 2214                            | 2215 | 2216 | 2217 | 2218 | 2219 | 2220 | 2264 | 2270 |
| <b>151F</b>  | 0560                            | 0561 | 0562 | 0563 | 0564 | 0565 | 0566 | -    | -    |
| <b>151F</b>  | 0542                            | 0543 | 0544 | 0545 | 0546 | 0547 | 0548 | -    | -    |
| <b>151F</b>  | 2300                            | 2301 | 2302 | 2303 | 2304 | 2305 | 2306 | 2307 | 2345 |
| <b>151F</b>  | 2316                            | 2317 | 2318 | 2319 | 2320 | 2321 | 2322 | 2323 | 2347 |
| <b>151F</b>  | 2308                            | 2309 | 2310 | 2311 | 2312 | 2313 | 2314 | 2315 | 2346 |
| <b>151F</b>  | 2324                            | 2325 | 2326 | 2327 | 2328 | 2329 | 2330 | 2331 | 2348 |
| <b>151F</b>  | 2332                            | 2333 | 2334 | 2335 | 2336 | 2337 | 2338 | 2339 | 2349 |
| <b>151F</b>  | 2377                            | 2378 | 2379 | 2380 | 2381 | 2382 | 2383 | 2384 | 2385 |
| <b>151F</b>  | 2368                            | 2369 | 2370 | 2371 | 2372 | 2373 | 2374 | 2375 | 2376 |
| <b>151F</b>  | 2359                            | 2360 | 2361 | 2362 | 2363 | 2364 | 2365 | 2366 | 2367 |
| <b>151F</b>  | 2350                            | 2351 | 2352 | 2353 | 2354 | 2355 | 2356 | 2357 | 2358 |
| <b>151F</b>  | 2395                            | 2396 | 2397 | 2398 | 2399 | 2400 | 2401 | 2402 | 2403 |
| <b>151F</b>  | 2413                            | 2414 | 2415 | 2416 | 2417 | -    | -    | -    | -    |
| <b>151F</b>  | 0521                            | 0522 | 0523 | 0524 | 0525 | 0526 | 0527 | 0610 | -    |
| <b>151F</b>  | 2235                            | 2236 | 2237 | 2238 | 2239 | 2240 | 2241 | 2265 | 2266 |
| <b>151F</b>  | 0528                            | 0529 | 0530 | 0531 | 0532 | 0533 | 0534 | 0609 | -    |
| <b>151F</b>  | 2242                            | 2243 | 2244 | 2245 | 2246 | 2247 | 2248 | 2263 | 2267 |
| <b>151F</b>  | 0535                            | 0536 | 0537 | 0538 | 0539 | 0540 | 0541 | 0608 | -    |

**Ordering**

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

Example:

151F0504 for an OMS 200 with standard flange, cyl. 32 mm shaft and port size G 1/2.

Orders will not be accepted without the four digit prefix.

## Technical Information OMS, OMT and OMV Orbital Motors

### OMS

#### Technical data

| Type                                          |                                                       |                    | OMS<br>OMSW<br>OMSS | OMS<br>OMSW<br>OMSS | OMS<br>OMSW<br>OMSS | OMS<br>OMSW<br>OMSS | OMS<br>OMSW<br>OMSS | OMS<br>OMSW<br>OMSS | OMS<br>OMSW<br>OMSS | OMS<br>OMSW<br>OMSS | OMS<br>OMSW<br>OMSS |
|-----------------------------------------------|-------------------------------------------------------|--------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Motor size                                    |                                                       |                    | 80                  | 100                 | 125                 | 160                 | 200                 | 250                 | 315                 | 400                 | 500                 |
| Geometric displacement                        | cm <sup>3</sup><br>[in <sup>3</sup> ]                 |                    | 80.5<br>[4.91]      | 100.0<br>[6.10]     | 125.7<br>[7.67]     | 159.7<br>[9.75]     | 200.0<br>[12.20]    | 250.0<br>[15.26]    | 314.9<br>[19.22]    | 393.0<br>[23.98]    | 488.0<br>[29.78]    |
| Max. speed                                    | min <sup>-1</sup><br>[rpm]                            | cont.              | 810                 | 750                 | 600                 | 470                 | 375                 | 300                 | 240                 | 190                 | 155                 |
|                                               |                                                       | int. <sup>1)</sup> | 1000                | 900                 | 720                 | 560                 | 450                 | 360                 | 285                 | 230                 | 185                 |
| Max. torque                                   | Nm<br>[lbf-in]                                        | cont.              | 240<br>[2120]       | 305<br>[2700]       | 375<br>[3320]       | 490<br>[4340]       | 610<br>[5400]       | 720<br>[6370]       | 825<br>[7300]       | 865<br>[7660]       | 850<br>[7520]       |
|                                               |                                                       | int. <sup>1)</sup> | 310<br>[2740]       | 390<br>[3450]       | 490<br>[4340]       | 600<br>[5310]       | 720<br>[6370]       | 870<br>[7700]       | 1000<br>[8850]      | 990<br>[8760]       | 990<br>[8760]       |
| Max. output                                   | kW<br>[hp]                                            | cont.              | 15.5<br>[20.8]      | 18.0<br>[24.1]      | 18.0<br>[24.1]      | 16.5<br>[22.1]      | 16.5<br>[22.1]      | 14.5<br>[19.4]      | 15.0<br>[20.1]      | 11.0<br>[14.8]      | 9.0<br>[12.1]       |
|                                               |                                                       | int. <sup>1)</sup> | 19.5<br>[26.2]      | 22.5<br>[30.2]      | 22.5<br>[30.2]      | 23.0<br>[30.8]      | 22.0<br>[29.5]      | 18.0<br>[24.1]      | 17.0<br>[22.8]      | 12.5<br>[16.8]      | 10.5<br>[14.1]      |
| Max. pressure drop                            | bar<br>[psi]                                          | cont.              | 210<br>[3050]       | 210<br>[3050]       | 210<br>[3050]       | 210<br>[3050]       | 210<br>[3050]       | 200<br>[2900]       | 200<br>[2900]       | 160<br>[2320]       | 120<br>[1740]       |
|                                               |                                                       | int. <sup>1)</sup> | 275<br>[3990]       | 275<br>[3990]       | 275<br>[3990]       | 260<br>[3770]       | 250<br>[3630]       | 250<br>[3630]       | 240<br>[3480]       | 190<br>[2760]       | 140<br>[2030]       |
|                                               |                                                       | peak <sup>2)</sup> | 295<br>[4280]       | 295<br>[4280]       | 295<br>[4280]       | 280<br>[4060]       | 270<br>[3920]       | 270<br>[3920]       | 260<br>[3770]       | 210<br>[3050]       | 160<br>[2320]       |
| Max. oil flow                                 | l/min<br>[USgal/min]                                  | cont.              | 65<br>[17.2]        | 75<br>[19.8]        | 75<br>[19.8]        | 75<br>[19.8]        | 75<br>[19.8]        | 75<br>[19.8]        | 75<br>[19.8]        | 75<br>[19.8]        | 75<br>[19.8]        |
|                                               |                                                       | int. <sup>1)</sup> | 80<br>[21.1]        | 90<br>[23.8]        | 90<br>[23.8]        | 90<br>[23.8]        | 90<br>[23.8]        | 90<br>[23.8]        | 90<br>[23.8]        | 90<br>[23.8]        | 90<br>[23.8]        |
| Max. starting pressure<br>with unloaded shaft | bar<br>[psi]                                          |                    | 12<br>[175]         | 10<br>[145]         | 10<br>[145]         | 8<br>[115]          | 8<br>[115]          | 8<br>[115]          | 8<br>[115]          | 8<br>[115]          | 8<br>[115]          |
| Min. starting torque                          | at max. press. drop cont.<br>Nm [lbf-in]              |                    | 180<br>[1590]       | 230<br>[2040]       | 290<br>[2570]       | 370<br>[3270]       | 470<br>[4160]       | 560<br>[4960]       | 710<br>[6280]       | 710<br>[6280]       | 660<br>[5840]       |
|                                               | at max. press. drop int. <sup>1)</sup><br>Nm [lbf-in] |                    | 235<br>[2080]       | 300<br>[2660]       | 380<br>[3360]       | 460<br>[4070]       | 560<br>[4960]       | 700<br>[6200]       | 850<br>[7520]       | 840<br>[7430]       | 770<br>[6820]       |

| Type                |           |                    | Max. inlet pressure | Max. return pressure<br>with drain line |
|---------------------|-----------|--------------------|---------------------|-----------------------------------------|
| OMS<br>OMSW<br>OMSS | bar [psi] | cont.              | 230 [3340]          | 140<br>[2030]                           |
|                     | bar [psi] | int. <sup>1)</sup> | 295 [4280]          | 175 [2540]                              |
|                     | bar [psi] | peak <sup>2)</sup> | 300 [4350]          | 210 [3050]                              |

|                            |                |                    | Splined 1 in | Cyl. 1 in  | Splined 0.875 in |
|----------------------------|----------------|--------------------|--------------|------------|------------------|
| *Max torque for shaft type | Nm<br>[lbf-in] | cont.              | 360 [3190]   | 300 [2660] | 200 [1770]       |
|                            |                | int. <sup>1)</sup> | 450 [3980]   | 410 [3630] | 200 [1770]       |

<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.

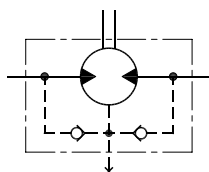
[For max. permissible combination of flow and pressure, see function diagram for actual motor.](#)

## OMS

### 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.

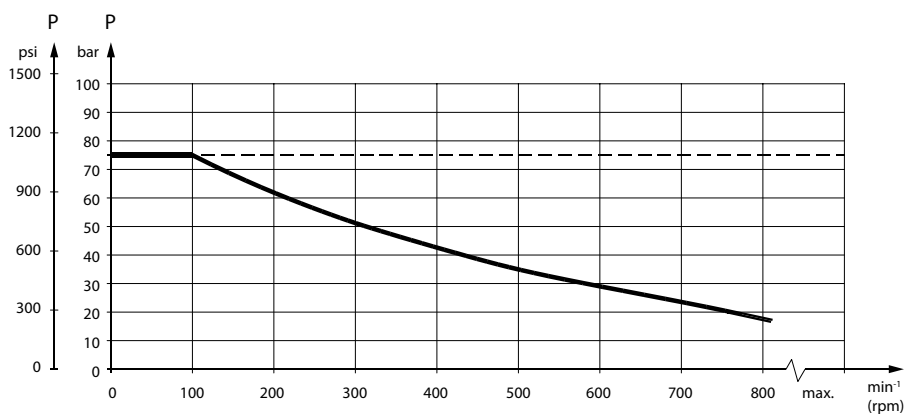


151-320.10

### 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*



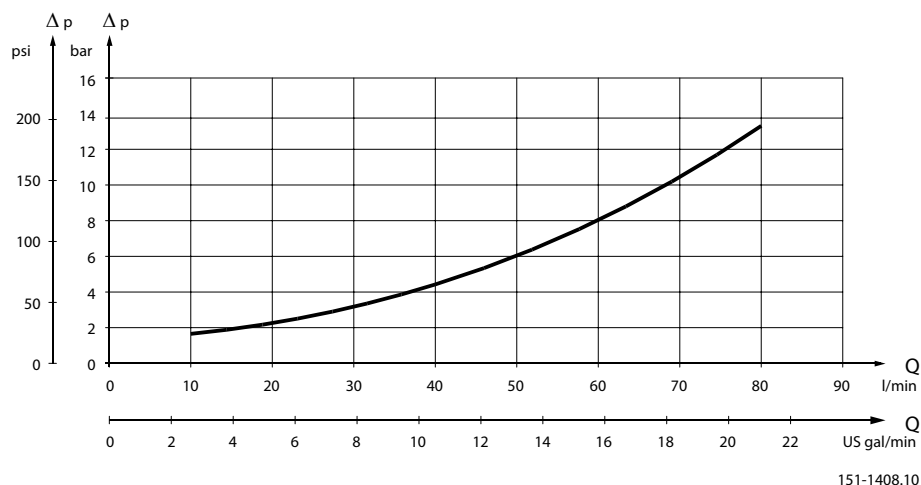
151-1674.10

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

— Continuous operation

## OMS

### Pressure drop in motor



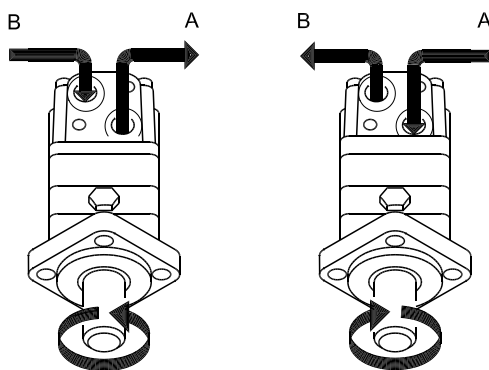
The curve applies to an unloaded motor shaft and an oil viscosity of 35 mm<sup>2</sup>/s [165 SUS]

### 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<br>bar [psi] | Viscosity<br>mm <sup>2</sup> /s [SUS] | Oil flow in drain line<br>l/min [US gal/min] |
|----------------------------|---------------------------------------|----------------------------------------------|
| 140 [2030]                 | 20 [100]                              | 1.5 [0.40]                                   |
|                            | 35 [165]                              | 1.0 [0.26]                                   |
| 210 [3050]                 | 20 [100]                              | 3.0 [0.79]                                   |
|                            | 35 [165]                              | 2.0 [0.53]                                   |

### Direction of shaft rotation



151-843.10

### Permissible shaft loads for OMS

#### Mounting flange:

Standard – A-2 – Magneto – SAE B

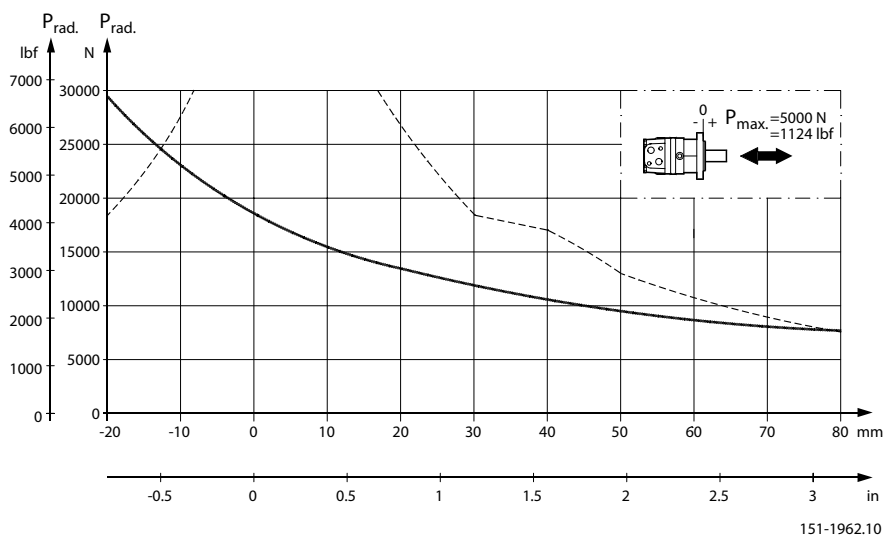


# OMS

## Shaft:

Cyl. 32 mm – Cyl. 1.25 in – Splined 1.25 in.

Tapered 35 mm – Tapered 1.25 in – P.t.o.

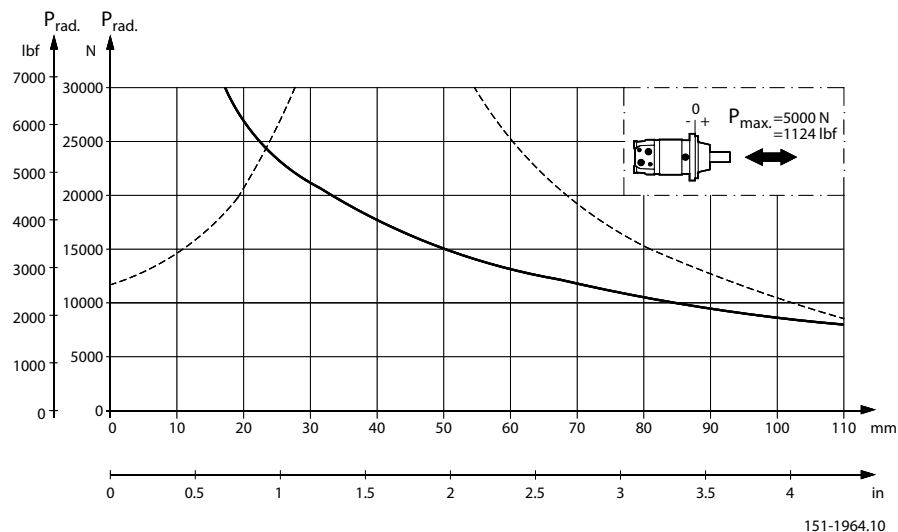


## Mounting flange:

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.

## OMS

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.

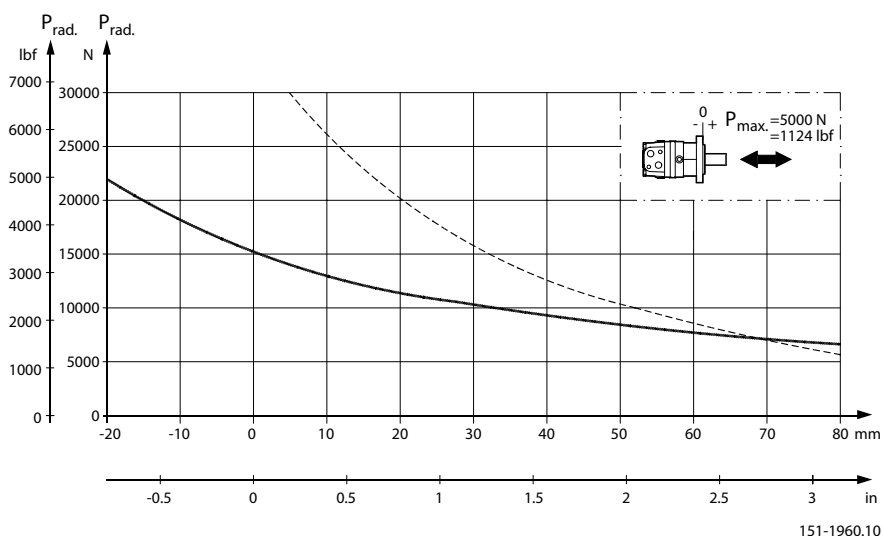
Bearing life calculations can be made using the explanation and formula provided in the chapter "Bearing dimensioning" in the technical information "General Orbital motors" 520L0232.

### ***Mounting flange:***

Special

### ***Shaft:***

Splined 1.25 in



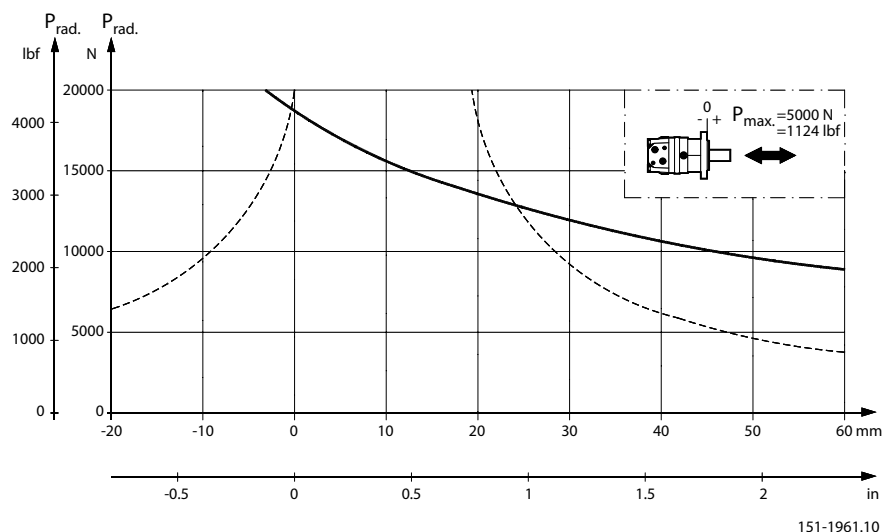
### ***Mounting flange:***

A-2 – Magneto

### ***Shaft:***

Cyl. 1 in – Splined 1 in

## OMS



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  $100 \text{ min}^{-1}$ ) 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" 520L0232.

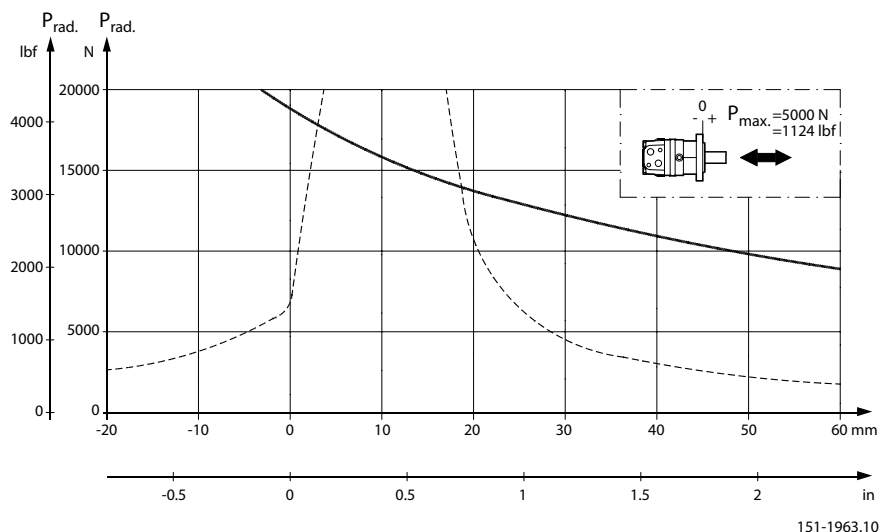
### ***Mounting flange:***

SAE B

### ***Shaft:***

Splined 0.875 in

## OMS



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  $100 \text{ min}^{-1}$ ) 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" 520L0232.

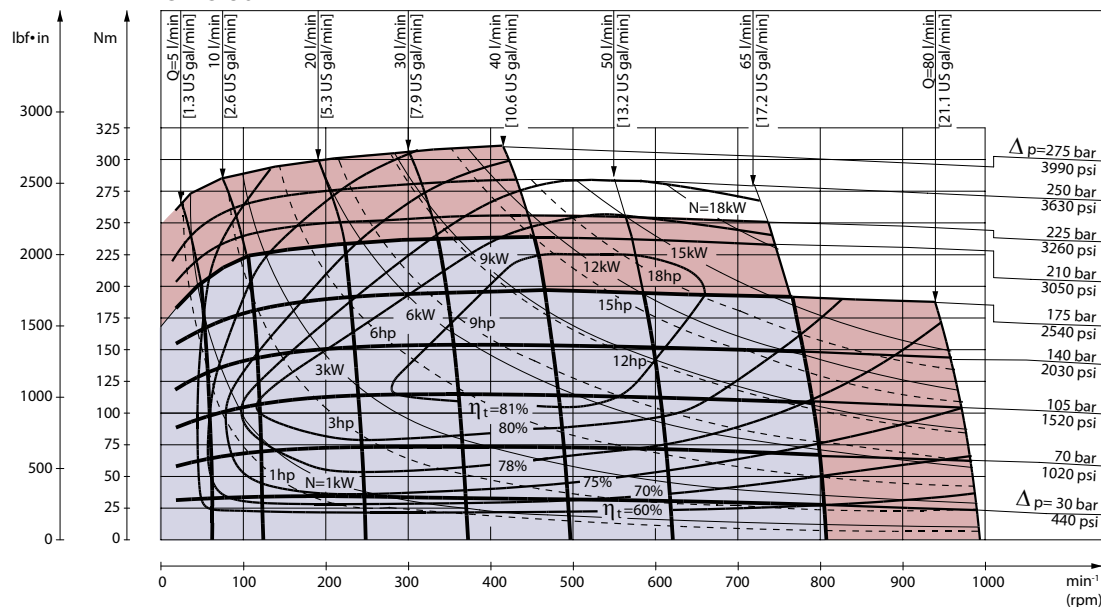
# OMS

## Function diagrams

Continuous range

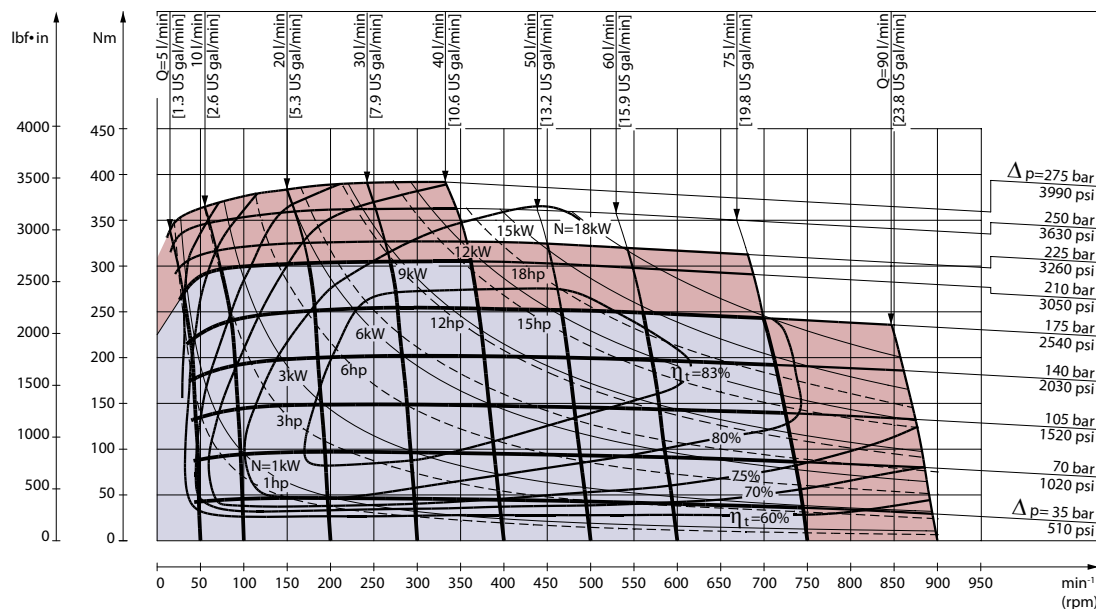
Intermittent range (maximum 10% operation every minute)

OMS 80



151-901.10

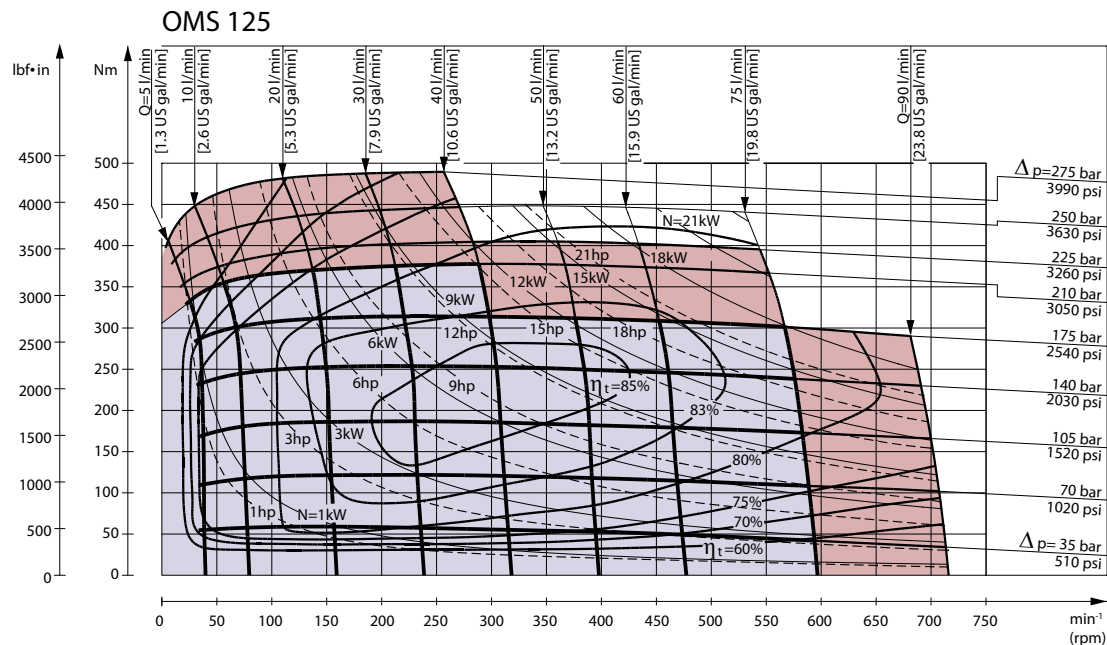
OMS 100



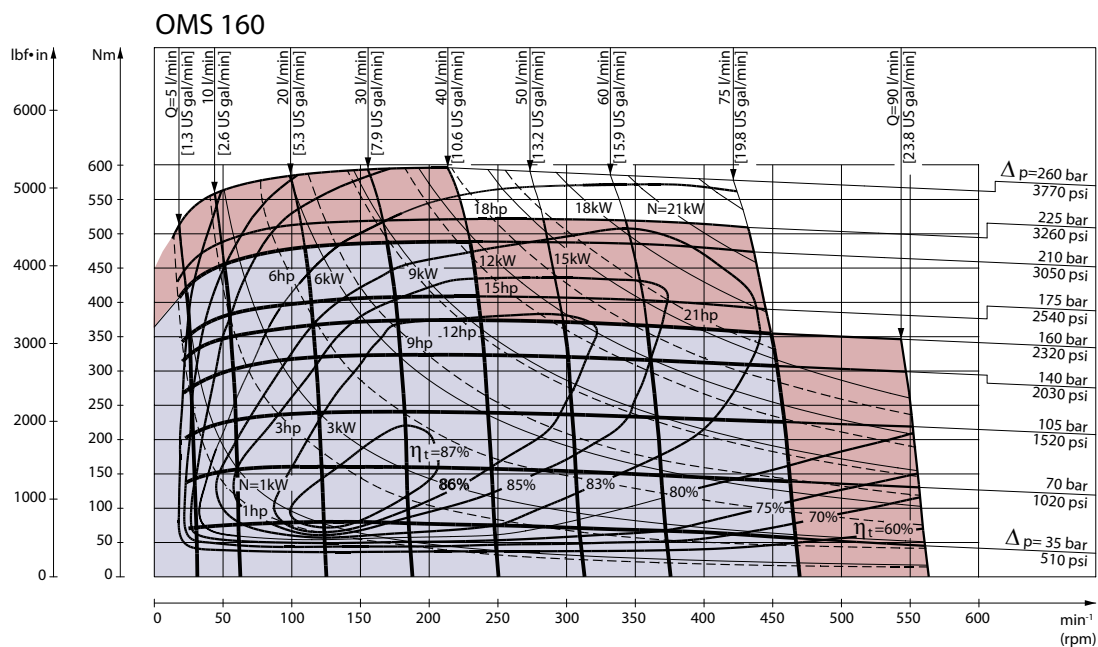
151-902.10

9hp

**OMS**

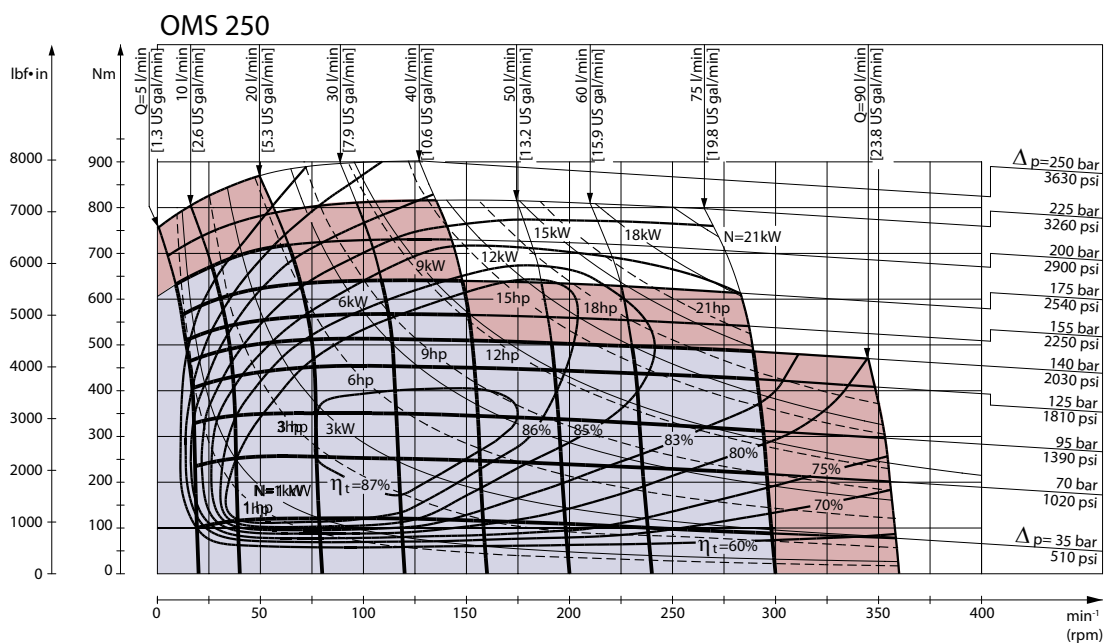
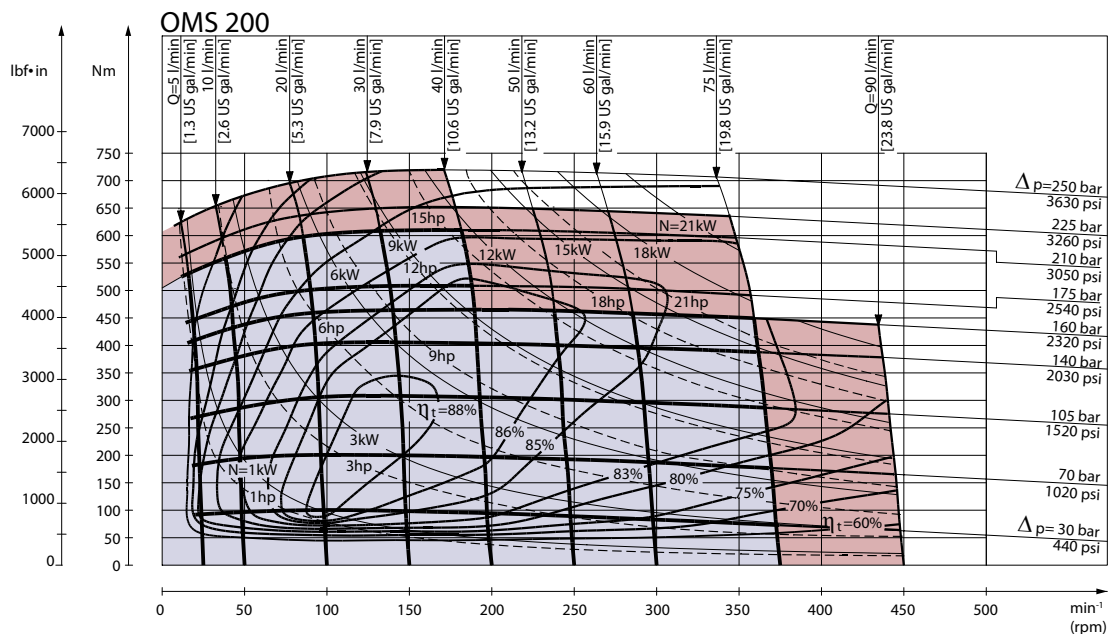


151-903.10



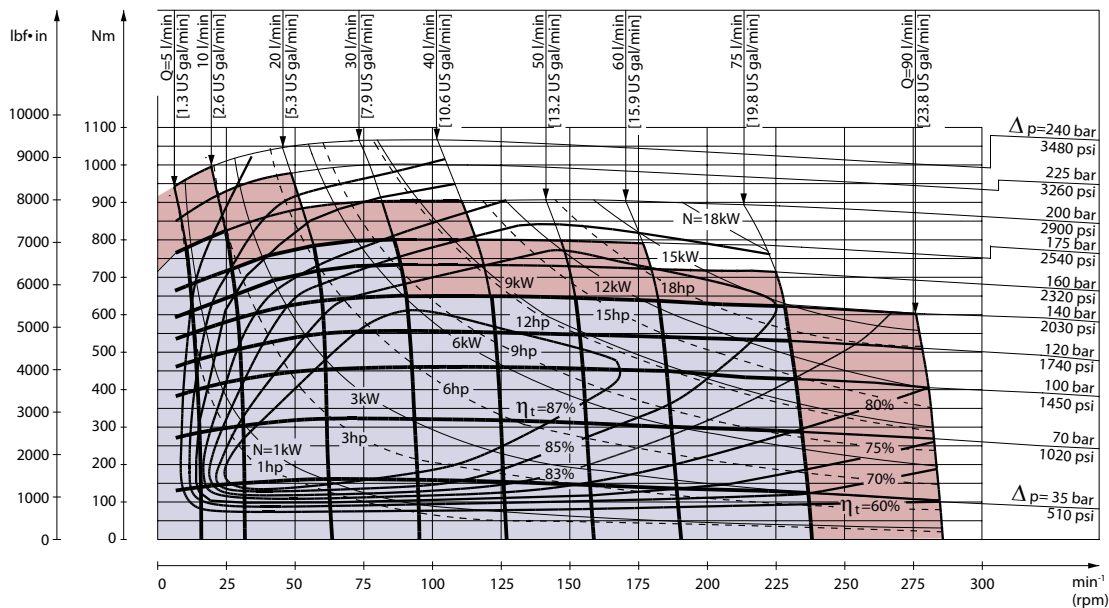
151-904.11

OMS



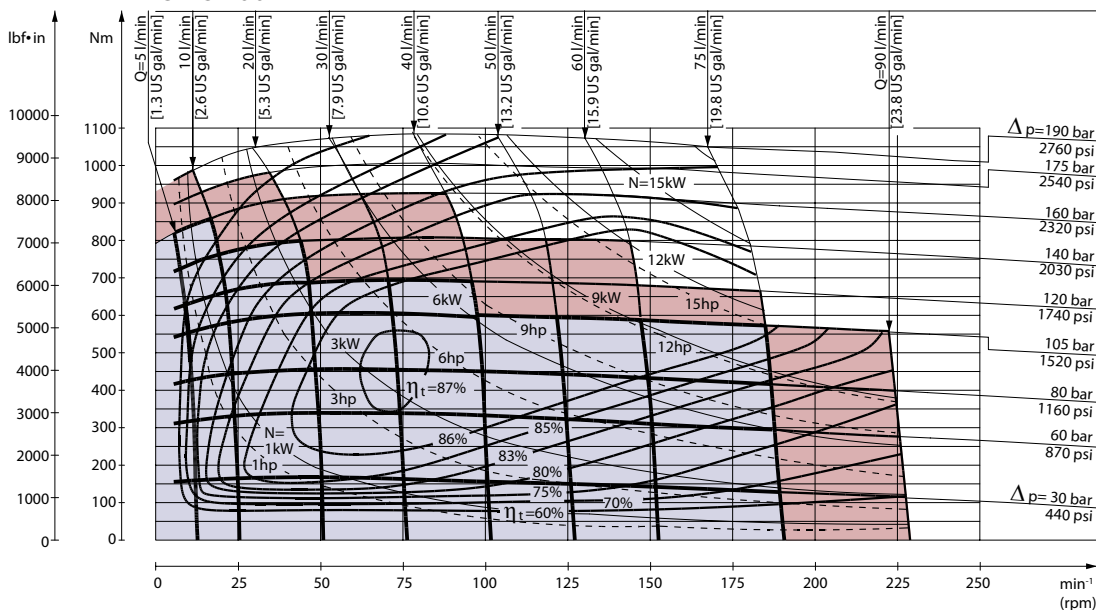
OMS

OMS 315



151-906.10

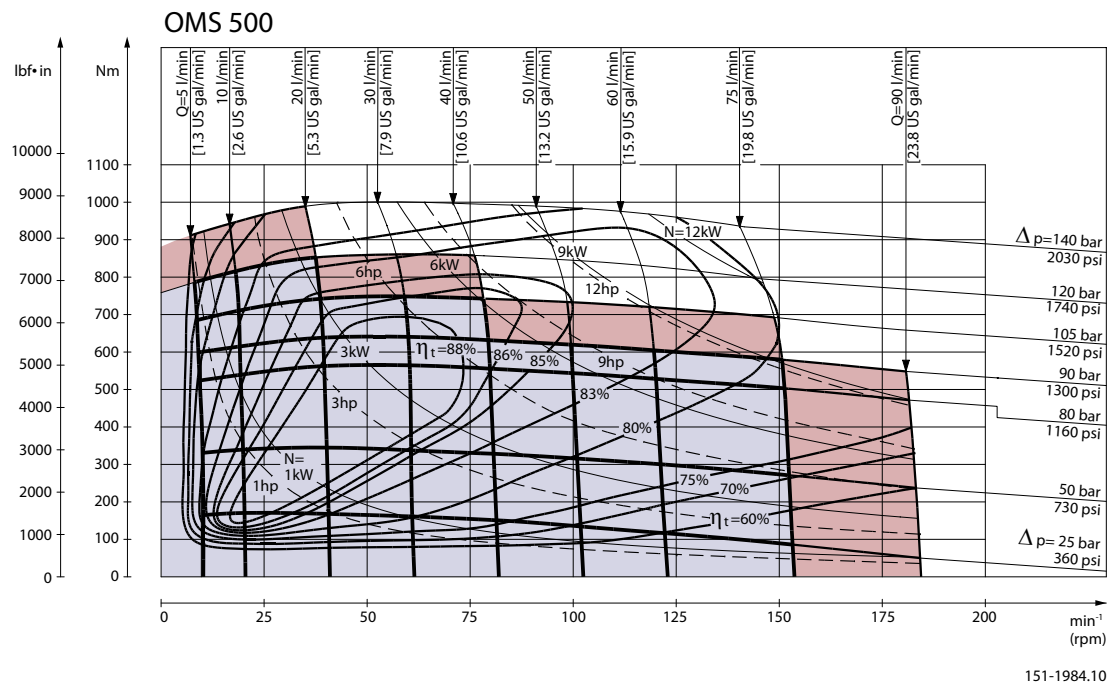
OMS 400



151-1491.10



# OMS



## Function diagram use

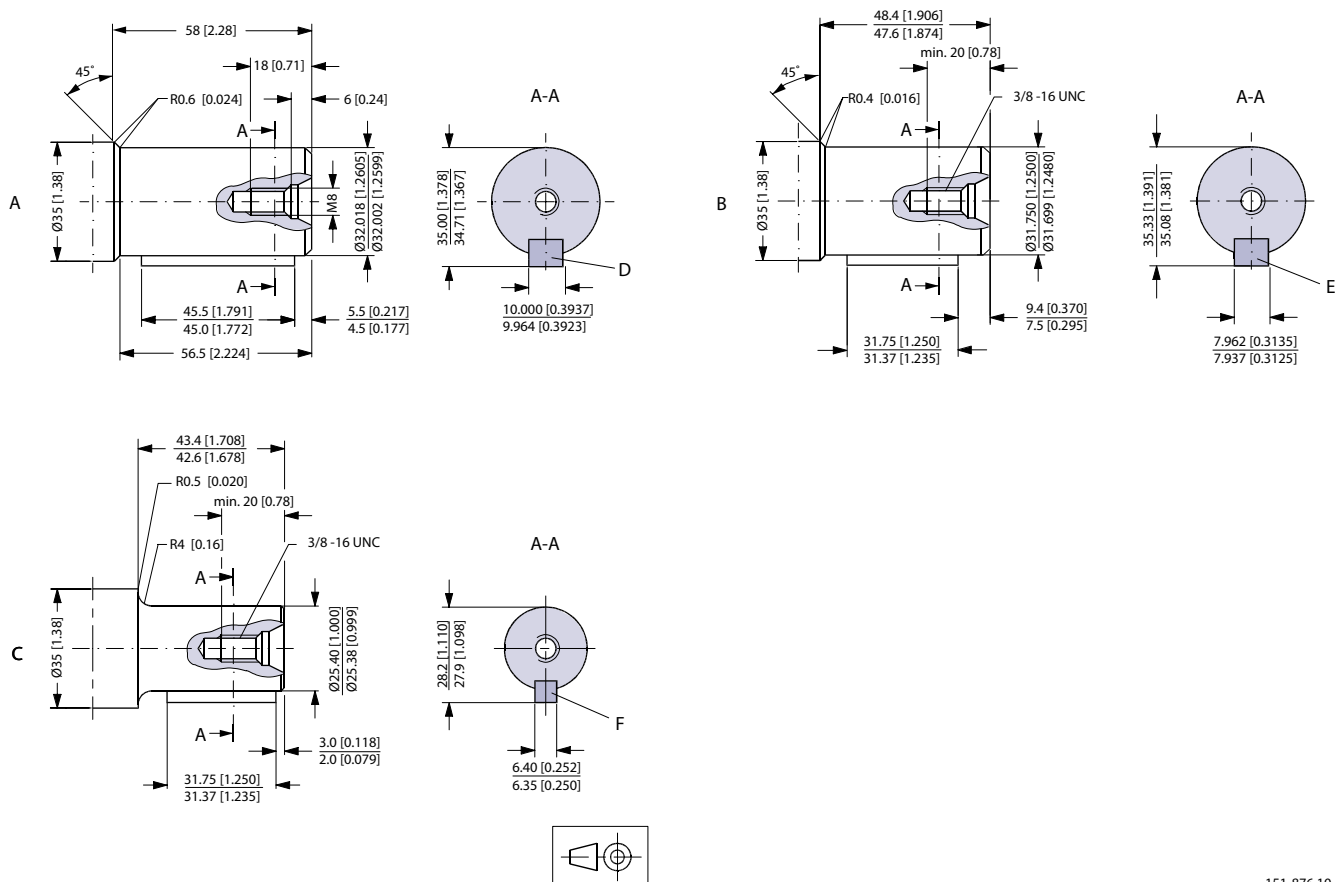
Explanation of function diagram use, basis and conditions, see [Speed, torque and output](#) on page 7.

Maximum permissible continuous/intermittent torque for the actual shaft version, see [Technical data](#) on page 11.

Intermittent pressure drop and oil flow must not occur simultaneously.

## OMS

### Shaft version



151-876.10

**A** Cylindrical 32 mm shaft

**D** Parallel key

A10 × 8 × 45

DIN 6885

Keyway deviates from standard

**B** Cylindrical 1.25 in shaft

**E** Parallel key

5/16 × 5/16 × 11/4 in

SAE J744

Keyway deviates from standard

**C** Cylindrical 1 in shaft

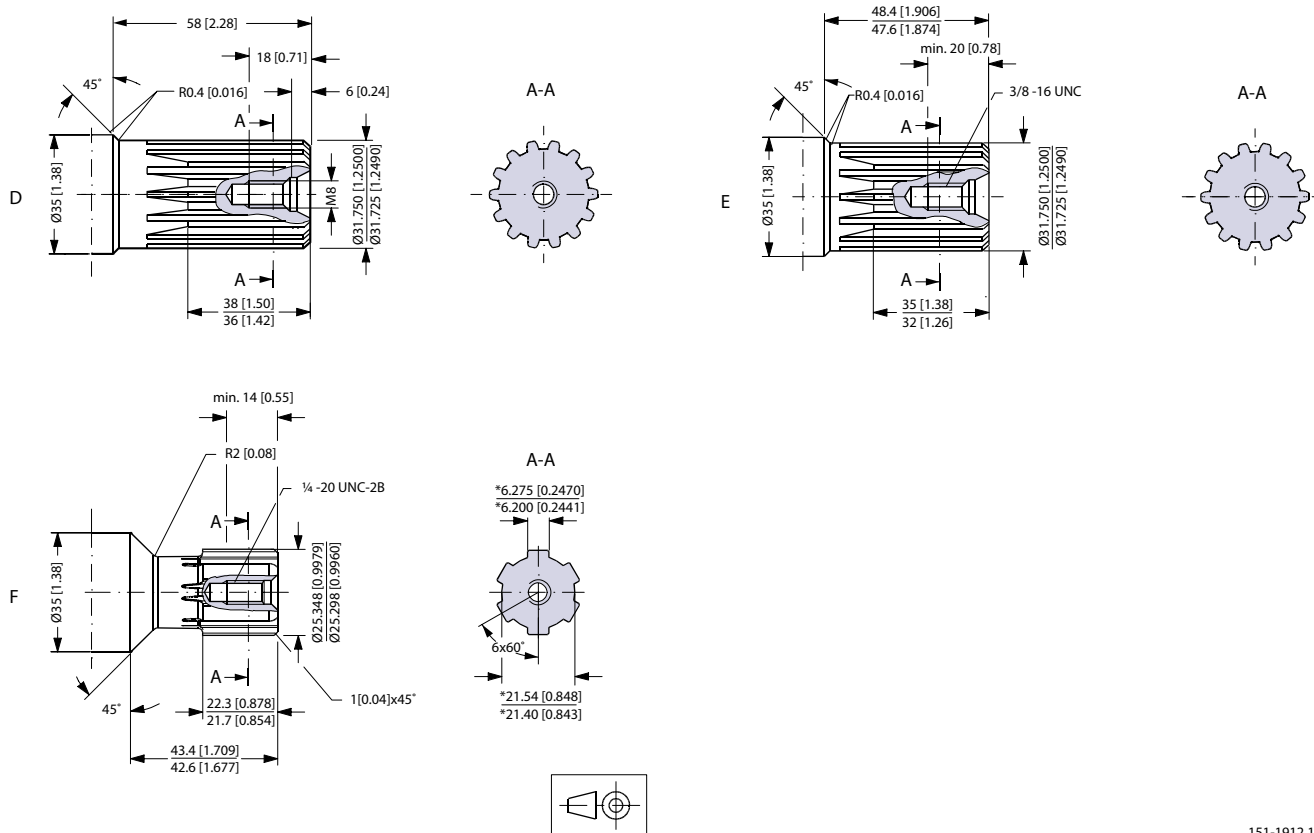
**F** Parallel key

1/4 × 1/4 × 11/4 in

B.S. 46

Keyway deviates from standard

# OMS



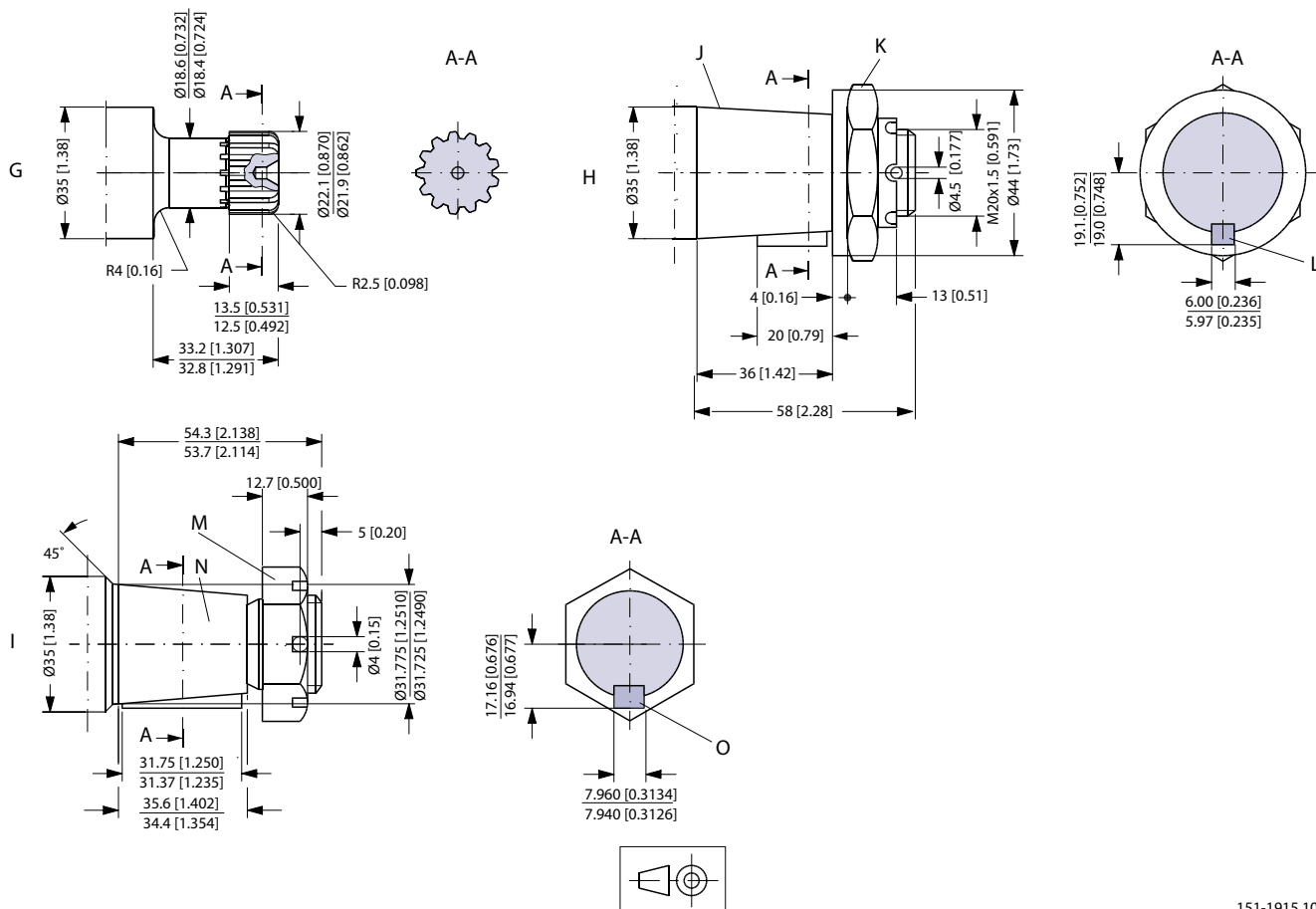
151-1912.11

**D** Involute splined shaft  
ANS B92.1 - 1970 standard  
Flat root side fit  
Pitch 12/24  
Teeth 14  
Major diameter 1.25 in  
Pressure angle 30°

**E US version**  
Involute splined shaft  
ANS B92.1 - 1970 standard  
Flat root side fit  
Pitch 12/24  
Teeth 14  
Major diameter 1.25 in  
Pressure angle 30°

**F** Splined shaft  
SAE 6 B (B.S. 2059)  
Straight-sided, bottom fitting, deep  
Fit 2  
Nominal size 1 in  
\*Deviates from SAE 6 B (B.S. 2059)

# OMS



151-1915.10

- G** Involute splined shaft  
ANS B92.1 - 1970 standard  
Flat root side fit  
Pitch 16/32  
Teeth 13  
Major dia. 0.875 in  
Pressure angle 30°

- I** Tapered 1 1/4 in shaft

- H** Tapered 35 mm shaft  
(ISO/R775)

- K** DIN 937  
Across flats: 41 mm  
Tightening torque: 200 ± 10 Nm [1770 ± 85 lbf-in]

- J** Taper 1:10

- L** Parallel key  
B6 × 6 × 20  
DIN 6885  
Keyway deviates from standard

- I** Tapered 1 1/4 in shaft

- M** 1 - 20 UNEF  
Across flats 1 7/16 in  
Tightening torque: 200 ± 10 Nm (1770 ± 85 lbf-in)

- N** Cone 1:8  
SAE J501

- O** Parallel key  
5/16 × 5/16 × 1 1/4  
SAE J501  
Keyway deviates from standard

Technical drawing of a 3-spoke valve. The drawing includes a side view and a cross-section A-A.

**Side View Dimensions:**

- Overall length: 100 [3.94]
- Spoke length: 77 [3.03] / 75 [2.95]
- Spoke thickness: 7 [0.28]
- Spoke width at base: 38.25 [1.506] / 37.75 [1.486]
- Spoke width at tip: 29.5 [1.161] / 29.3 [1.154]
- Spoke width at base (inner): 34.85 [1.372] / 34.73 [1.367]
- Spoke width at tip (inner): 29.5 [1.161] / 29.3 [1.154]
- Spoke width at base (outer): 34.85 [1.372] / 34.73 [1.367]
- Spoke width at tip (outer): 29.5 [1.161] / 29.3 [1.154]
- Spoke width at base (inner): 34.85 [1.372] / 34.73 [1.367]
- Spoke width at tip (inner): 29.5 [1.161] / 29.3 [1.154]
- Spoke width at base (outer): 34.85 [1.372] / 34.73 [1.367]
- Spoke width at tip (outer): 29.5 [1.161] / 29.3 [1.154]

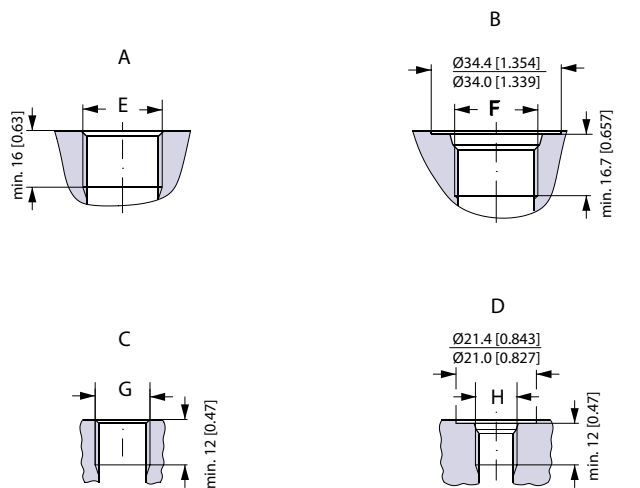
**Cross-section A-A Dimensions:**

- Overall width: 28.14 [1.108] / 27.89 [1.098]
- Spoke width: 8.64 [0.340] / 8.53 [0.336]
- Spoke width (inner): 8.64 [0.340] / 8.53 [0.336]
- Spoke width (outer): 8.64 [0.340] / 8.53 [0.336]

**Other Dimensions:**

- Spoke width at base: 7 [0.28]
- Spoke width at tip: 29.5 [1.161] / 29.3 [1.154]
- Spoke width at base (inner): 34.85 [1.372] / 34.73 [1.367]
- Spoke width at tip (inner): 29.5 [1.161] / 29.3 [1.154]
- Spoke width at base (outer): 34.85 [1.372] / 34.73 [1.367]
- Spoke width at tip (outer): 29.5 [1.161] / 29.3 [1.154]

## Port thread versions



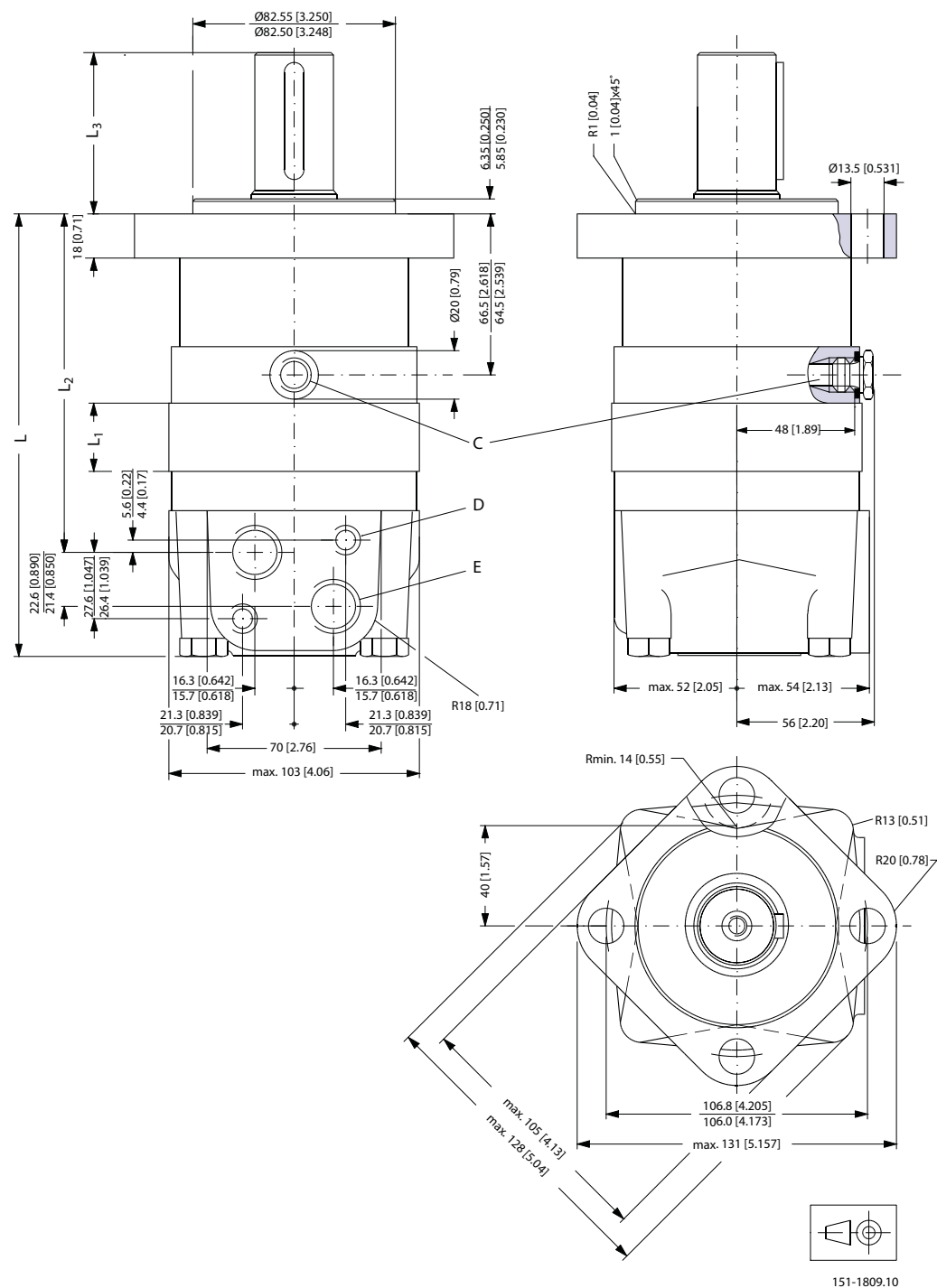
151-1971.11

|          |                |
|----------|----------------|
| <b>B</b> | UNF main ports |
| <b>F</b> | 7/8 - 14 UNF   |
| <b>D</b> | UNF drain port |
| <b>H</b> | 7/16 - 20 UNF  |

## Dimensions

OMS

Standard flange—European version



**OMS**

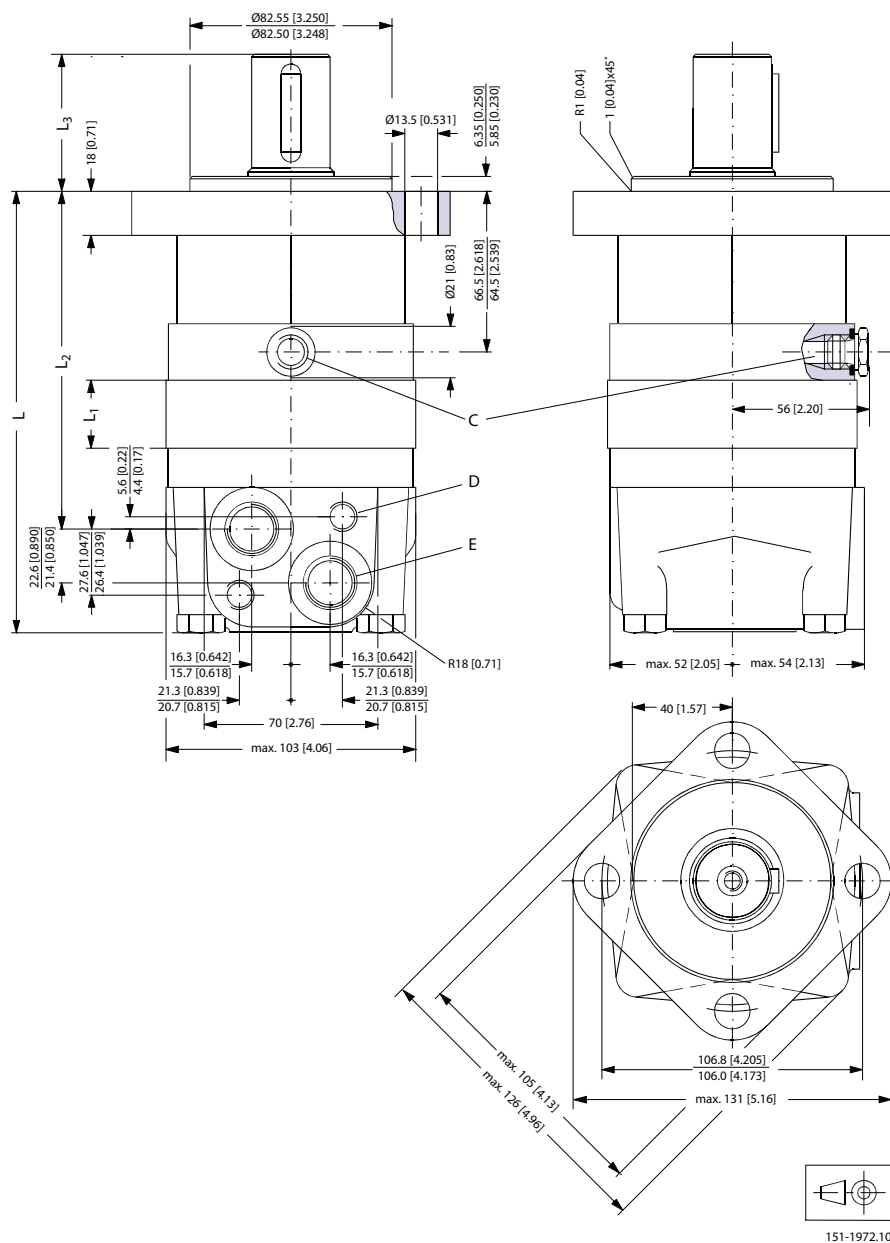
| Type    | L <sub>max</sub> mm [in] | L <sub>1</sub> mm [in] | L <sub>2</sub> mm [in] |
|---------|--------------------------|------------------------|------------------------|
| OMS 80  | 167 [6.57]               | 14.0 [0.551]           | 124 [4.88]             |
| OMS 100 | 170 [6.69]               | 17.4 [0.685]           | 127 [5.00]             |
| OMS 125 | 175 [6.89]               | 21.8 [0.858]           | 132 [5.20]             |
| OMS 160 | 181 [7.13]               | 27.8 [1.094]           | 138 [5.43]             |
| OMS 200 | 188 [7.40]               | 34.8 [1.370]           | 145 [5.71]             |
| OMS 250 | 196 [7.72]               | 43.5 [1.713]           | 153 [6.02]             |
| OMS 315 | 208 [8.19]               | 54.8 [2.157]           | 165 [6.50]             |
| OMS 400 | 221 [8.70]               | 68.4 [2.693]           | 178 [7.01]             |

| Output shaft                   |     | L <sub>3</sub> mm [in] |
|--------------------------------|-----|------------------------|
| All shafts except P.t.o. shaft | max | 67 [2.64]              |
|                                | min | 65 [2.56]              |
| P.t.o. shaft                   | max | 109 [4.29]             |
|                                | min | 107 [4.21]             |

OMS

Standard flange—US version

Standard flange



**C:** Drain connection  
7/16 - 20 UNF;  
12 mm [0.47 in] deep  
O-ring boss port

**D:** M10; 13 mm [0.51 in] deep

**E:** 7/8 - 14 UNF;  
16.7 mm [0.657 in] deep  
O-ring boss port

| Type    | L <sub>max</sub> mm [in] | L <sub>1</sub> mm [in] | L <sub>2</sub> mm [in] |
|---------|--------------------------|------------------------|------------------------|
| OMS 80  | 167 [6.57]               | 14.0 [0.551]           | 124 [4.88]             |
| OMS 100 | 170 [6.69]               | 17.4 [0.685]           | 127 [5.00]             |
| OMS 125 | 175 [6.89]               | 21.8 [0.858]           | 132 [5.20]             |



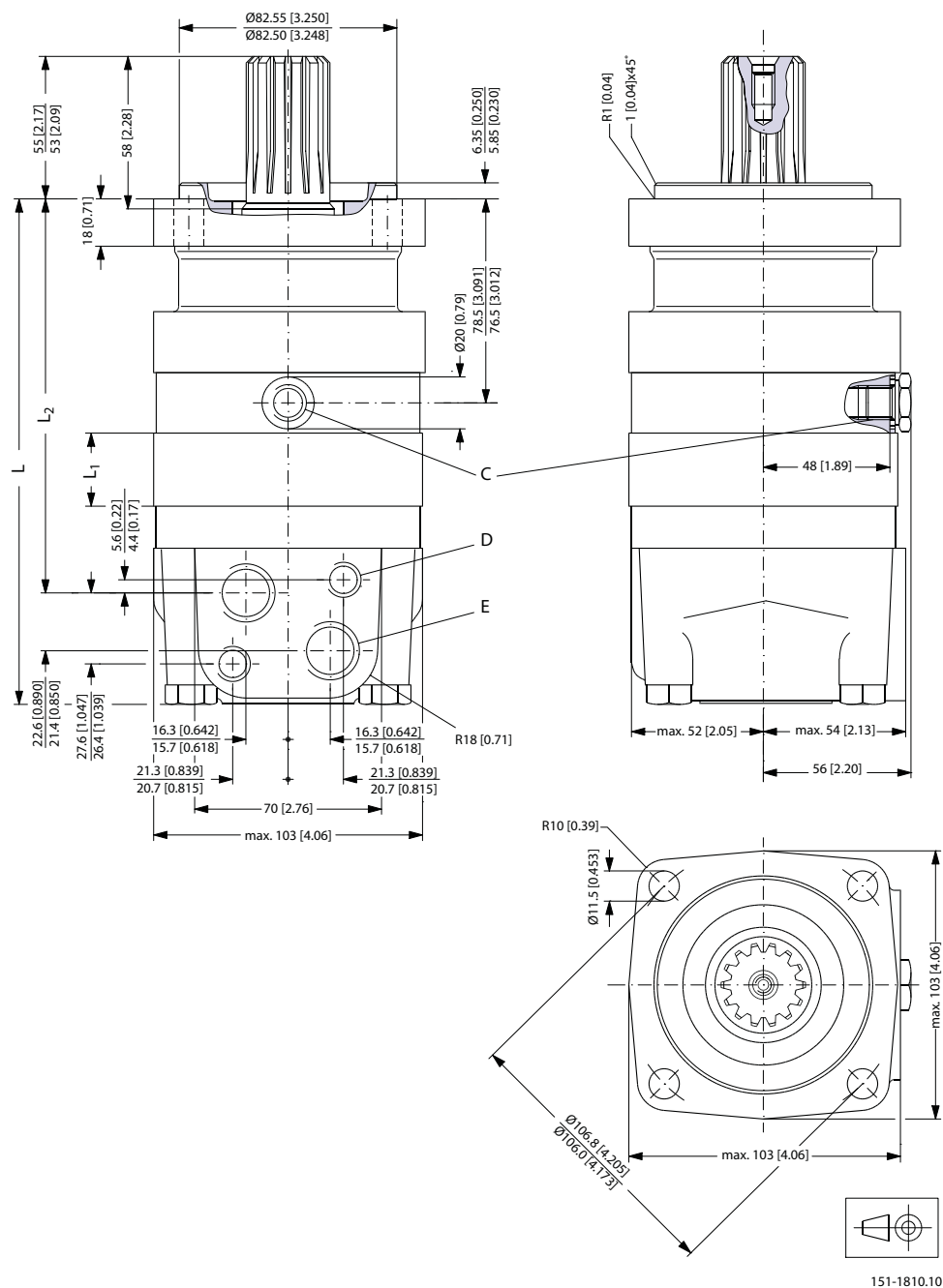
**OMS**

| Type    | L <sub>max</sub> mm [in] | L <sub>1</sub> mm [in] | L <sub>2</sub> mm [in] |
|---------|--------------------------|------------------------|------------------------|
| OMS 160 | 181 [7.13]               | 27.8 [1.094]           | 138 [5.43]             |
| OMS 200 | 188 [7.40]               | 34.8 [1.370]           | 145 [5.71]             |
| OMS 250 | 196 [7.72]               | 43.5 [1.713]           | 153 [6.02]             |
| OMS 315 | 208 [8.19]               | 54.8 [2.157]           | 165 [6.50]             |
| OMS 400 | 221 [8.70]               | 68.4 [2.693]           | 178 [7.01]             |
| OMS 500 | 221 [8.70]               | 68.4 [2.693]           | 178 [7.01]             |

| Output shaft                   |     | L <sub>3</sub> mm [in] |
|--------------------------------|-----|------------------------|
| Cyl.1.25 in<br>Splined 1.25 in | max | 57 [2.24]              |
|                                | min | 55 [2.17]              |
| Tapered 1.25 in                | max | 67 [2.64]              |
|                                | min | 65 [2.56]              |

OMS

Special flange—European version



**C:** Drain connection  
G 1/4; 12 mm [0.47 in] deep  
**E:** G 1/2; 15 mm [0.59 in] deep

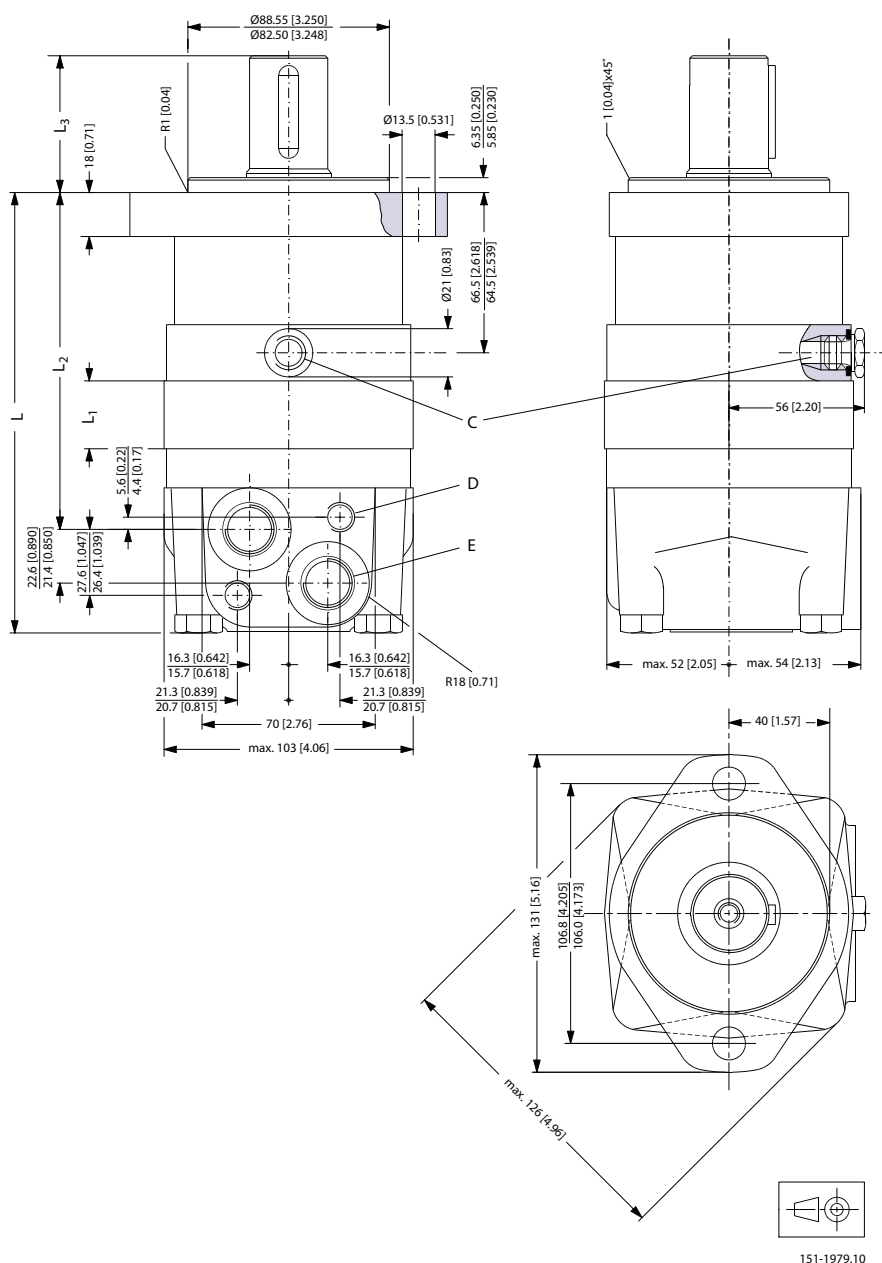
**D:** M10; 13 mm [0.51 in] deep

| Type    | L <sub>max</sub> mm [in] | L <sub>1</sub> mm [in] | L <sub>2</sub> mm [in] |
|---------|--------------------------|------------------------|------------------------|
| OMS 80  | 178 [7.01]               | 14.0 [0.551]           | 136 [5.35]             |
| OMS 100 | 182 [7.17]               | 17.4 [0.685]           | 140 [5.51]             |

OMS

| Type    | L <sub>max</sub> mm [in] | L <sub>1</sub> mm [in] | L <sub>2</sub> mm [in] |
|---------|--------------------------|------------------------|------------------------|
| OMS 125 | 186 [7.32]               | 21.8 [0.858]           | 144 [5.67]             |
| OMS 160 | 192 [7.56]               | 27.8 [1.094]           | 150 [5.91]             |
| OMS 200 | 199 [7.83]               | 34.8 [1.370]           | 157 [6.18]             |
| OMS 250 | 208 [8.19]               | 43.5 [1.713]           | 166 [6.54]             |
| OMS 315 | 219 [8.62]               | 54.8 [2.157]           | 177 [6.97]             |
| OMS 400 | 232 [9.13]               | 68.4 [2.693]           | 190 [7.48]             |

A-2 flange—US version



**C:** Drain connection  
7/16 - 20 UNF;

**D:** M10; 13 mm [0.51 in] deep

## Technical Information OMS, OMT and OMV Orbital Motors

### OMS

12 mm [0.47 in] deep  
O-ring boss port

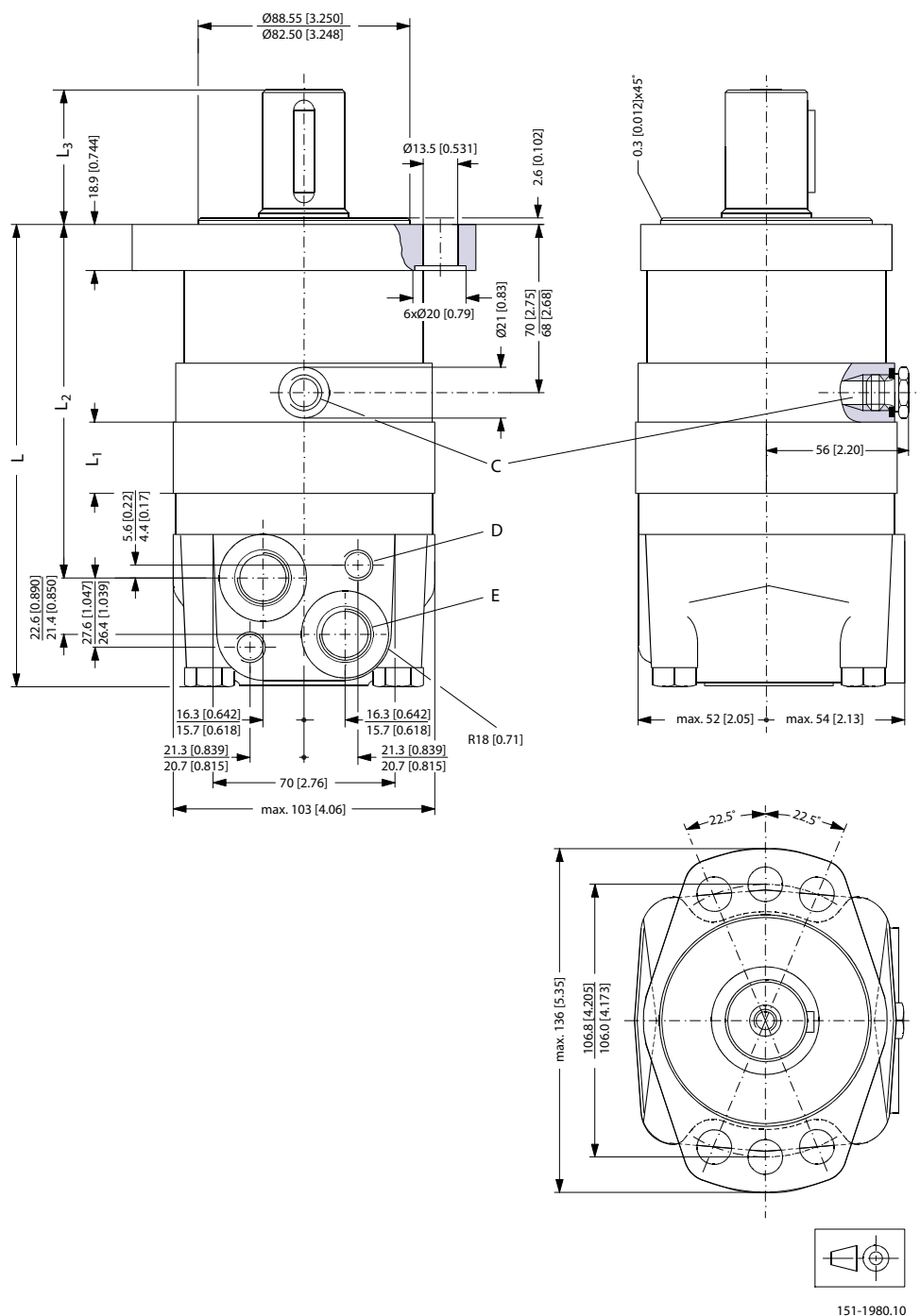
**E:** 7/8 - 14 UNF;  
16.7 mm [0.657 in] deep  
O-ring boss port

| Type    | L <sub>max</sub> mm [in] | L <sub>1</sub> mm [in] | L <sub>2</sub> mm [in] |
|---------|--------------------------|------------------------|------------------------|
| OMS 80  | 167 [6.57]               | 14.0 [0.551]           | 124 [4.88]             |
| OMS 100 | 170 [6.69]               | 17.4 [0.685]           | 127 [5.00]             |
| OMS 125 | 175 [6.89]               | 21.8 [0.858]           | 132 [5.20]             |
| OMS 160 | 181 [7.13]               | 27.8 [1.094]           | 138 [5.43]             |
| OMS 200 | 188 [7.40]               | 34.8 [1.370]           | 145 [5.71]             |
| OMS 250 | 196 [7.72]               | 43.5 [1.713]           | 153 [6.02]             |
| OMS 315 | 208 [8.19]               | 54.8 [2.157]           | 165 [6.50]             |
| OMS 400 | 221 [8.70]               | 68.4 [2.693]           | 178 [7.01]             |
| OMS 500 | 221 [8.70]               | 68.4 [2.693]           | 178 [7.01]             |

| Output shaft                   |     | L <sub>3</sub> mm [in] |
|--------------------------------|-----|------------------------|
| Cyl.1 in<br>Splined 1 in       | max | 52 [2.05]              |
|                                | min | 50 [1.97]              |
| Cyl.1.25 in<br>Splined 1.25 in | max | 57 [2.24]              |
|                                | min | 55 [2.17]              |
| Tapered 1.25 in                | max | 67 [2.64]              |
|                                | min | 65 [2.56]              |

**OMS**

### Magneto flange—US version



**C:** Drain connection  
7/16 - 20 UNF;  
12 mm [0.47 in] deep  
O-ring boss port

**D:** M10; 13 mm [0.51 in] deep

**E:** 7/8 - 14 UNF;  
16.7 mm [0.657 in] deep  
O-ring boss port

## Technical Information OMS, OMT and OMV Orbital Motors

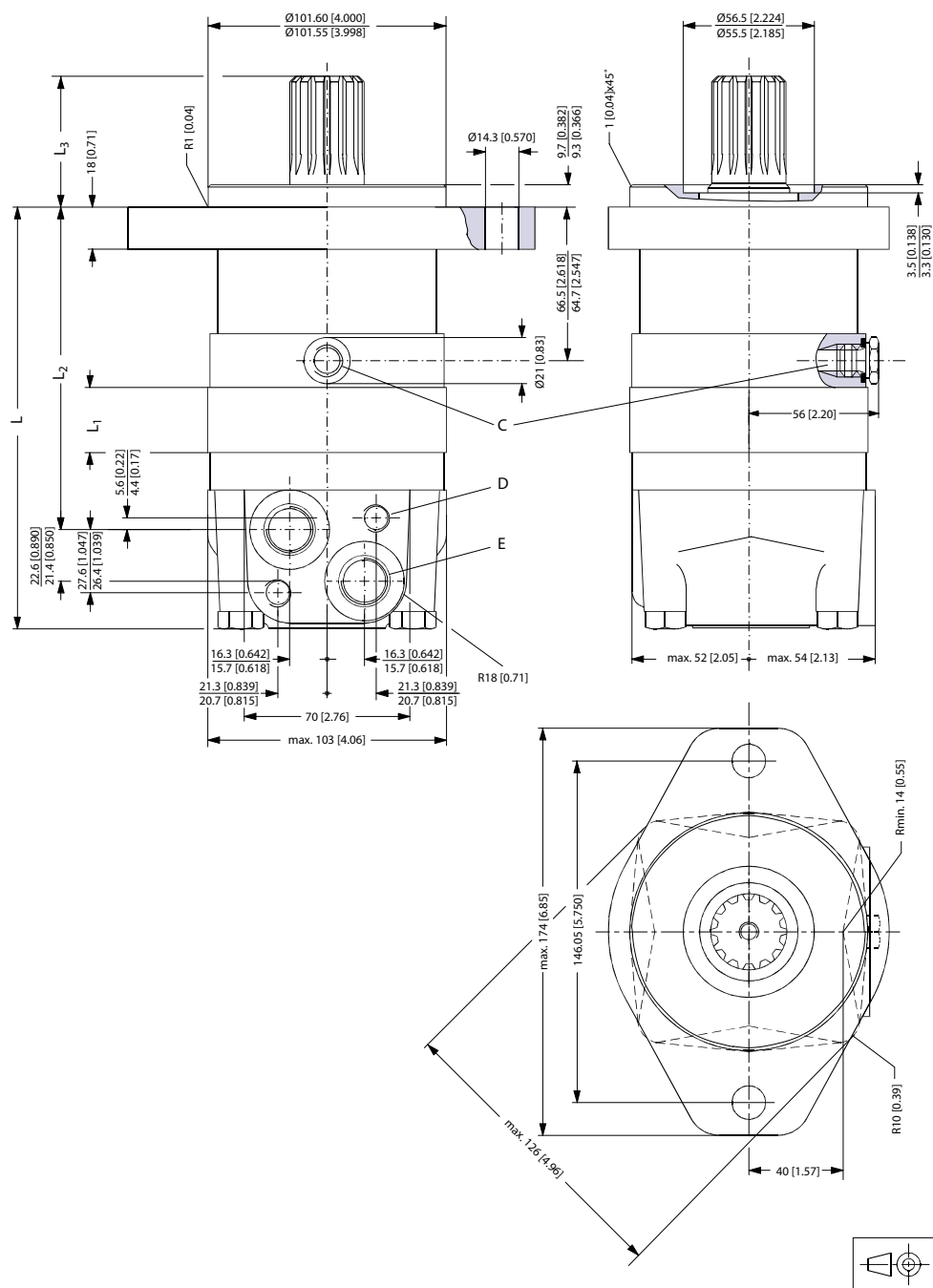
### OMS

| Type    | L <sub>max</sub> mm [in] | L <sub>1</sub> mm [in] | L <sub>2</sub> mm [in] |
|---------|--------------------------|------------------------|------------------------|
| OMS 80  | 171 [6.73]               | 14.0 [0.551]           | 128 [5.04]             |
| OMS 100 | 174 [6.85]               | 17.4 [0.685]           | 131 [5.16]             |
| OMS 125 | 179 [7.05]               | 21.8 [0.858]           | 136 [5.35]             |
| OMS 160 | 185 [7.28]               | 27.8 [1.094]           | 142 [5.59]             |
| OMS 200 | 192 [7.56]               | 34.8 [1.370]           | 149 [5.87]             |
| OMS 250 | 200 [7.87]               | 43.5 [1.713]           | 157 [6.18]             |
| OMS 315 | 212 [8.35]               | 54.8 [2.157]           | 169 [6.65]             |
| OMS 400 | 225 [8.86]               | 68.4 [2.693]           | 182 [7.17]             |
| OMS 500 | 225 [8.86]               | 68.4 [2.693]           | 182 [7.17]             |

| Output shaft                   |     | L <sub>3</sub> mm [in] |
|--------------------------------|-----|------------------------|
| Cyl.1 in<br>Splined 1 in       | max | 49 [1.93]              |
|                                | min | 47 [1.85]              |
| Cyl.1.25 in<br>Splined 1.25 in | max | 54 [2.13]              |
|                                | min | 52 [2.05]              |

OMS

SAE-B flange—US version



**C:** Drain connection  
7/16 - 20 UNF;  
12 mm [0.47 in] deep  
O-ring boss port

**E:** 7/8 - 14 UNF;  
16.7 mm [0.657 in] deep  
O-ring boss port

**D:** M10; 13 mm [0.51 in] deep

151-1981.10

## Technical Information OMS, OMT and OMV Orbital Motors

### OMS

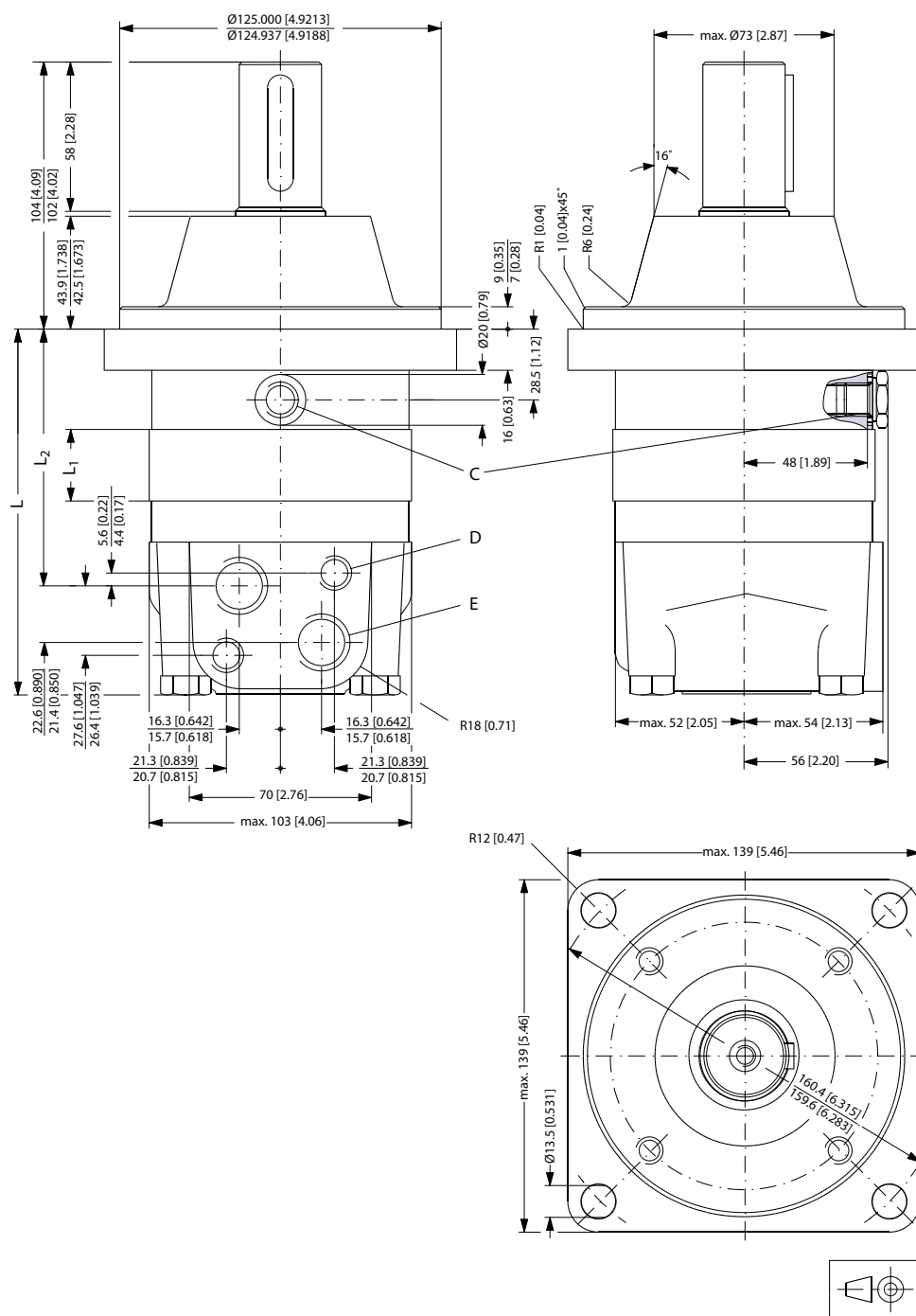
| Type    | L <sub>max</sub> mm [in] | L <sub>1</sub> mm [in] | L <sub>2</sub> mm [in] |
|---------|--------------------------|------------------------|------------------------|
| OMS 80  | 167 [6.57]               | 14.0 [0.551]           | 124 [4.88]             |
| OMS 100 | 170 [6.69]               | 17.4 [0.685]           | 127 [5.00]             |
| OMS 125 | 175 [6.89]               | 21.8 [0.858]           | 132 [5.20]             |
| OMS 160 | 181 [7.13]               | 27.8 [1.094]           | 138 [5.43]             |
| OMS 200 | 188 [7.40]               | 34.8 [1.370]           | 145 [5.71]             |
| OMS 250 | 196 [7.72]               | 43.5 [1.713]           | 153 [6.02]             |
| OMS 315 | 208 [8.19]               | 54.8 [2.157]           | 165 [6.50]             |
| OMS 400 | 221 [8.70]               | 68.4 [2.693]           | 178 [7.01]             |
| OMS 500 | 221 [8.70]               | 68.4 [2.693]           | 178 [7.01]             |

| Output shaft     |     | L <sub>3</sub> mm [in] |
|------------------|-----|------------------------|
| Splined 1.25 in  | max | 57 [2.24]              |
|                  | min | 55 [2.17]              |
| Splined 0.875 in | max | 42 [1.65]              |
|                  | min | 40 [1.57]              |



**OMS**

### Wheel—European version



151-1812.10

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

**E:** G 1/2; 15 mm [0.59 in] deep

**D:** M10; 13 mm [0.51 in] deep

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**Technical Information    OMS, OMT and OMV Orbital Motors**

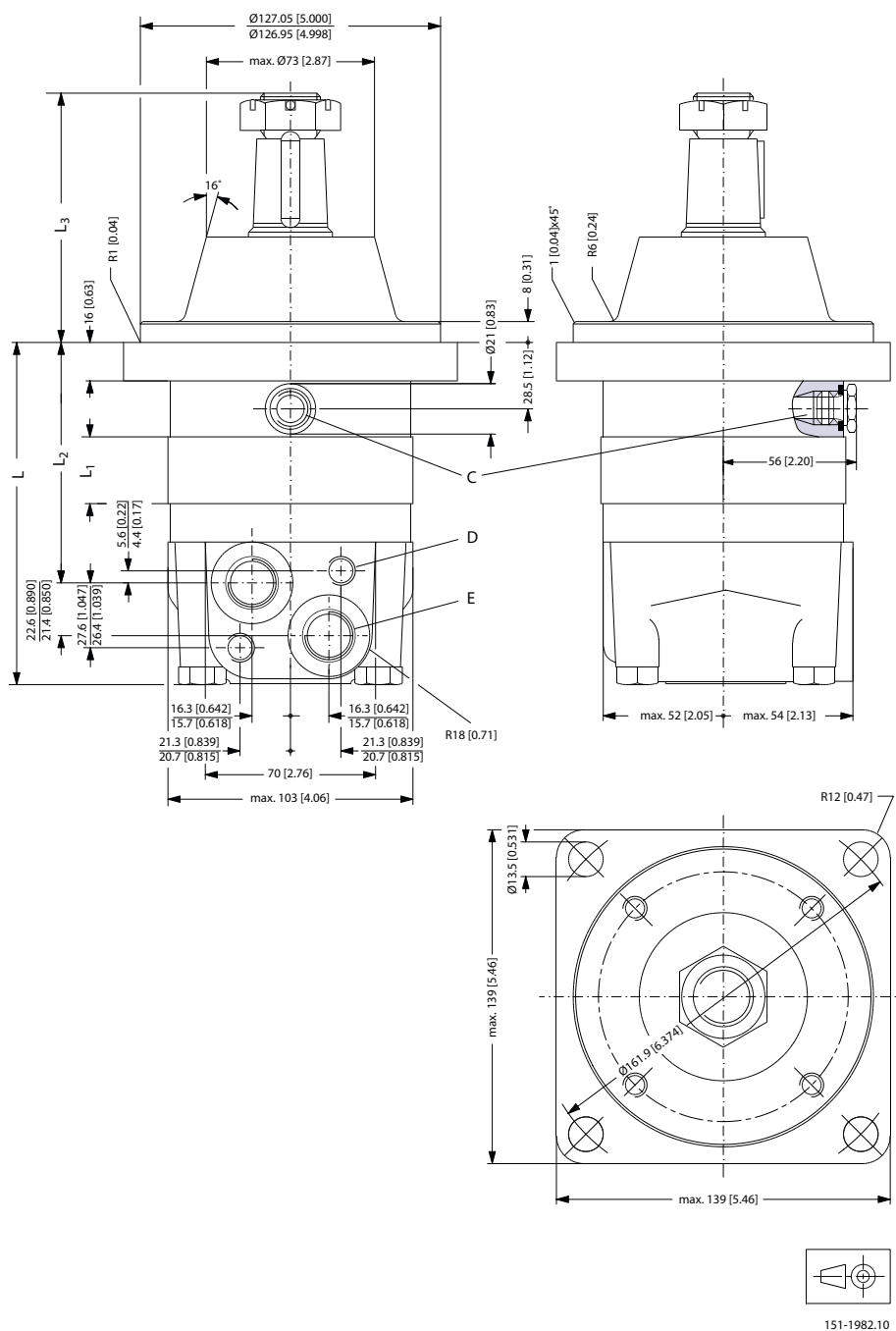
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**OMS**

| Type     | L <sub>max</sub> mm [in] | L <sub>1</sub> mm [in] | L <sub>2</sub> mm [in] |
|----------|--------------------------|------------------------|------------------------|
| OMSW 80  | 129 [5.08]               | 14.0 [0.551]           | 87 [3.43]              |
| OMSW 100 | 132 [5.20]               | 17.4 [0.685]           | 90 [3.54]              |
| OMSW 125 | 137 [5.39]               | 21.8 [0.858]           | 95 [3.74]              |
| OMSW 160 | 143 [5.63]               | 27.8 [1.094]           | 101 [3.98]             |
| OMSW 200 | 150 [5.91]               | 34.8 [1.370]           | 108 [4.25]             |
| OMSW 250 | 158 [6.22]               | 43.5 [1.713]           | 116 [4.57]             |
| OMSW 315 | 170 [6.69]               | 54.8 [2.157]           | 128 [5.04]             |
| OMSW 400 | 183 [7.20]               | 68.4 [2.693]           | 142 [5.59]             |

**OMS**

### Wheel—US version



**C:** Drain connection  
7/16 - 20 UNF;  
12 mm [0.47 in] deep  
O-ring boss port

**D:** M10; 13 mm [0.51 in] deep

**E:** 7/8 - 14 UNF;  
16.7 mm [0.657 in] deep  
O-ring boss port

| Type     | L <sub>max</sub> mm [in] | L <sub>1</sub> mm [in] | L <sub>2</sub> mm [in] |
|----------|--------------------------|------------------------|------------------------|
| OMSW 80  | 130 [5.12]               | 14.0 [0.551]           | 88 [3.46]              |
| OMSW 100 | 133 [5.24]               | 17.4 [0.685]           | 91 [3.58]              |

## Technical Information OMS, OMT and OMV Orbital Motors

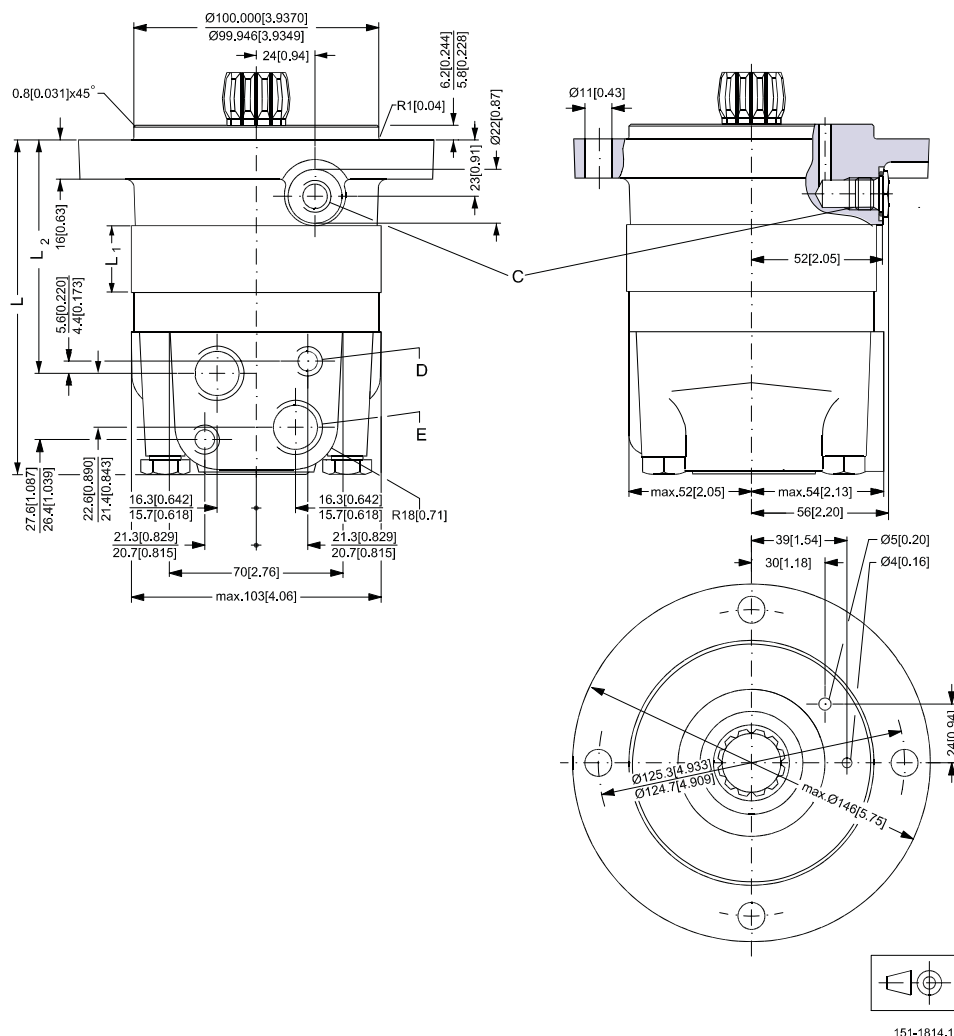
### OMS

| Type     | L <sub>max</sub> mm [in] | L <sub>1</sub> mm [in] | L <sub>2</sub> mm [in] |
|----------|--------------------------|------------------------|------------------------|
| OMSW 125 | 138 [5.43]               | 21.8 [0.858]           | 96 [3.78]              |
| OMSW 160 | 144 [5.67]               | 27.8 [1.094]           | 102 [4.02]             |
| OMSW 200 | 151 [5.94]               | 34.8 [1.370]           | 109 [4.29]             |
| OMSW 250 | 159 [6.26]               | 43.5 [1.713]           | 117 [4.61]             |
| OMSW 315 | 171 [6.73]               | 54.8 [2.157]           | 129 [5.08]             |
| OMSW 400 | 184 [7.24]               | 68.4 [2.693]           | 142 [5.59]             |
| OMSW 500 | 184 [7.24]               | 68.4 [2.693]           | 142 [5.59]             |

| Output shaft    |     | L <sub>3</sub> mm [in] |
|-----------------|-----|------------------------|
| Cyl.1.25 in     | max | 94 [3.70]              |
|                 | min | 92 [3.62]              |
| Tapered 1.25 in | max | 104 [4.09]             |
|                 | min | 102 [4.02]             |

OMS

Short—European version



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

**D:** M10; 13 mm [0.51 in] deep

**E:** G 1/2; 15 mm [0.59 in] deep

| Type     | L <sub>max</sub> mm [in] | L <sub>1</sub> mm [in] | L <sub>2</sub> mm [in] |
|----------|--------------------------|------------------------|------------------------|
| OMSS 80  | 124 [4.88]               | 14.0 [0.551]           | 83 [3.27]              |
| OMSS 100 | 128 [5.04]               | 17.4 [0.685]           | 86 [3.39]              |
| OMSS 125 | 132 [5.20]               | 21.8 [0.858]           | 90 [3.54]              |
| OMSS 160 | 138 [5.43]               | 27.8 [1.094]           | 96 [3.78]              |
| OMSS 200 | 145 [5.71]               | 34.8 [1.370]           | 103 [4.06]             |
| OMSS 250 | 154 [6.06]               | 43.5 [1.713]           | 112 [4.41]             |
| OMSS 315 | 165 [6.50]               | 54.8 [2.157]           | 123 [4.84]             |
| OMSS 400 | 179 [7.05]               | 68.4 [2.693]           | 137 [5.39]             |

**OMS**

**OMSS**

**Installing the OMSS**

The cardan shaft of the OMSS 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 OMS.

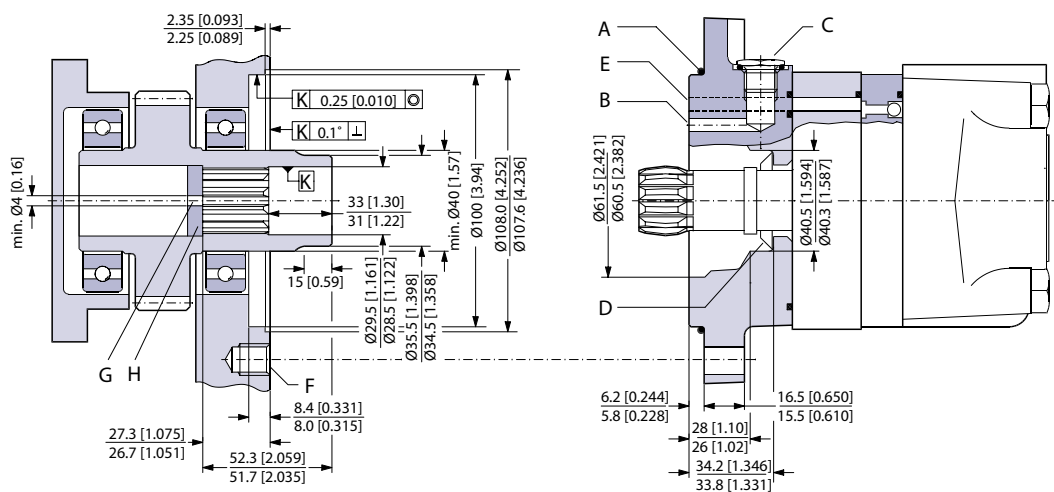
The conical sealing ring (code. no. 633B9023) is supplied with the motor.

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. 151F1033) 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**

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



151-873.10

- |                               |                                 |                                                       |
|-------------------------------|---------------------------------|-------------------------------------------------------|
| <b>A</b> O-ring: 100 × 3 mm   | <b>B</b> External drain channel | <b>C</b> Drain connection G 1/4; 12 mm [0.47 in] deep |
| <b>D</b> Conical seal ring    | <b>E</b> Internal drain channel | <b>F</b> M10; min. 15 mm [0.59 in] deep               |
| <b>G</b> Oil circulation hole | <b>H</b> Hardened stop plate    |                                                       |

**Internal spline data for the component to be attached**

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

## OMS

### Material:

Case hardening steel with a tensile strength corresponding at least to 20 MoCr4 (900 N/mm<sup>2</sup>) or SAE 8620.

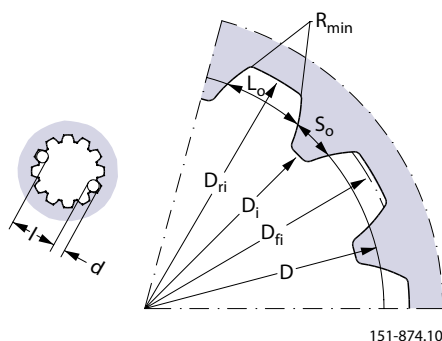
### Hardening specification:

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

Internal involute spline data; Standard ANS B92.1-1970, class 5 (corrected  $m \cdot X = 0.8$ ;  $m = 2.1166$ )

| Flat root side fit             |                   | mm                                  | in                                     |
|--------------------------------|-------------------|-------------------------------------|----------------------------------------|
| Number of teeth                | z                 | 12                                  | 12                                     |
| Pitch                          | DP                | 12/24                               | 12/24                                  |
| Pressure angle                 |                   | 30°                                 | 30°                                    |
| Pitch dia.                     | D                 | 25.4                                | 1.0                                    |
| Major dia.                     | D <sub>ri</sub>   | 28.0 <sup>0</sup> <sub>-0.1</sub>   | 1.10 0-0.004                           |
| Form dia. (min.)               | D <sub>fi</sub>   | 27.6                                | 1.09                                   |
| Minor dia.                     | D <sub>i</sub>    | 23.0 <sup>0</sup> <sub>+0.033</sub> | 0.9055 <sup>0</sup> <sub>+0.0013</sub> |
| Space width (circular)         | L <sub>o</sub>    | 4.308 <sup>±0.020</sup>             | 0.1696 <sup>±0.0008</sup>              |
| Tooth thickness (circular)     | S <sub>o</sub>    | 2.341                               | 0.09217                                |
| Fillet radius                  | R <sub>min.</sub> | 0.2                                 | 0.008                                  |
| Max. measurement between pins* | I                 | 17.62 <sup>0</sup> <sub>+0.15</sub> | 0.700 <sup>0</sup> <sub>-0.006</sub>   |
| Pin dia.                       | d                 | 4.835 <sup>±0.001</sup>             | 0.1903 <sup>±0.00004</sup>             |

\* Finished dimensions (when hardened).



151-874.10

### 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.

**OMS**

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.