

## VMR Orbital Motors

### Introduction

By introducing the VMR, Sauer-Danfoss is introducing the second Orbital Motor of a new Series. In order to meet the demands for motors that have the right duty cycle and efficiency capabilities for a given function, Sauer-Danfoss now has 3 Orbital Motor Series:

- T-Series: The Highest Torque
- O-Series: The Flexible Choice
- V-Series: The Core Solution

The V-Series is your quality benchmark in the medium duty market. Based on proven technology, these reliable motors will reduce your overall system costs while adding value to your machine. Perfect for many tasks.

The VMR Motor is designed by Sauer-Danfoss in Denmark, who for more than 50 years has been developing state-of-the-art orbital motors. It is based upon the same design principles as the well-proven Sauer-Danfoss OMR Motor.



*VMR 160 shown*

### Key Data

- Displacement range 80 to 315 cc
- Pressure drop up to 165 bar [2395 psi]
- Flow up to 75 l/min [19.8 US gal/min]
- Port connection G 1/2, [7/8-14 UNF]
- Output shaft  $\varnothing$  25 mm cylindrical shaft [1 inch cylindrical shaft]
- Mounting flange A2
- Pilot diameter  $\varnothing$  82.5 [3.25 in]

### Features

- High pressure shaft seal
- All motors with drain connections
- All motors with check valves
- Proven orbital motor design
- 3-chamber motor design
- Suitable for medium and low duty

### Benefits

- High power density
- High efficiency
- High constant quality
- Reliable

### Applications

- Sweeper
- Winch
- Conveyor
- Crane
- Aerial lift
- Combine Harvester
- Seeder
- Spreader
- Auger
- Machine tool
- And more

Local Address:

*G1/2 side-port version with A2 mounting flange, ø25 mm cyl. Shaft, drain connection and check-valves*

| With black paint | VMR 80   | VMR 100  | VMR 125  | VMR 160  | VMR 200  | VMR 250  | VMR 315  |
|------------------|----------|----------|----------|----------|----------|----------|----------|
| NO               | 11136673 | 11136674 | 11136675 | 11136676 | 11136677 | 11136678 | 11136679 |
| YES              | 11125716 | 11125719 | 11125720 | 11125721 | 11125722 | 11125723 | 11125724 |

*7/8-14 UNF side-port version with A2 mounting flange, ø1 inch cyl. Shaft, drain connection and check-valves*

| With black paint | VMR 80   | VMR 100  | VMR 125  | VMR 160  | VMR 200  | VMR 250  | VMR 315  |
|------------------|----------|----------|----------|----------|----------|----------|----------|
| NO               | 11141128 | 11141129 | 11141130 | 11141131 | 11141132 | 11141133 | 11141134 |
| YES              | 11141135 | 11141136 | 11141137 | 11141138 | 11141139 | 11141140 | 11141141 |

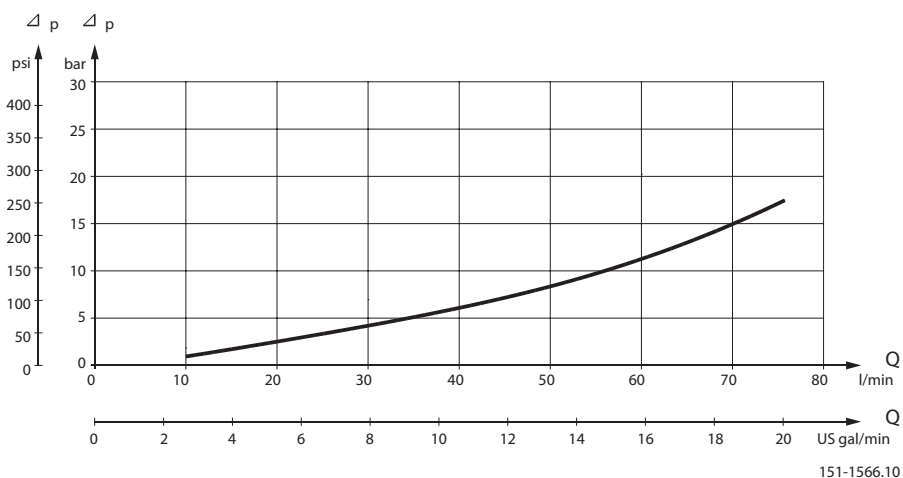
*Technical data for VMR*

| Type                   | Motorsize                               |                    | VMR 80        | VMR 100       | VMR 125        | VMR 160        | VMR 200         | VMR 250         | VMR 315         |
|------------------------|-----------------------------------------|--------------------|---------------|---------------|----------------|----------------|-----------------|-----------------|-----------------|
| Geometric displacement | cm <sup>3</sup><br>[inch <sup>3</sup> ] |                    | 80.3<br>[4.9] | 99.8<br>[6.1] | 124.1<br>[7.6] | 155.4<br>[9.5] | 198.2<br>[12.1] | 248.1<br>[15.1] | 310.1<br>[18.9] |
| Max. pressure drop     | bar (psi)                               | cont.              | 140<br>[2030] | 140<br>[2030] | 140<br>[2030]  | 140<br>[2030]  | 110<br>[1595]   | 80<br>[1160]    | 70<br>[1015]    |
|                        |                                         | int. <sup>1)</sup> | 165<br>[2395] | 165<br>[2395] | 165<br>[2395]  | 165<br>[2395]  | 140<br>[2195]   | 110<br>[1595]   | 100<br>[1450]   |
| Max. oil flow          | l/min<br>[US gal/min]                   | cont.              | 40<br>[10.6]  | 60<br>[15.9]  | 60<br>[15.9]   | 60<br>[15.9]   | 60<br>[15.9]    | 60<br>[15.9]    | 60<br>[15.9]    |
|                        |                                         | int. <sup>1)</sup> | 50<br>[13.2]  | 75<br>[19.8]  | 75<br>[19.8]   | 75<br>[19.8]   | 75<br>[19.8]    | 75<br>[19.8]    | 75<br>[19.8]    |

| Type         |              |                    | Max inlet pressure | Max return pressure with drain line |
|--------------|--------------|--------------------|--------------------|-------------------------------------|
| VMR 80 - 315 | bar<br>[psi] | cont.              | 165<br>[2395]      | 165<br>[2395]                       |
|              |              | int. <sup>1)</sup> | 185<br>[2695]      | 185<br>[2695]                       |

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

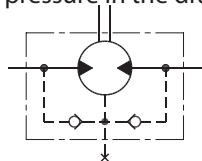
## Pressure Drop in Motor



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

### VMR with High Pressure Shaft Seal (HPS)

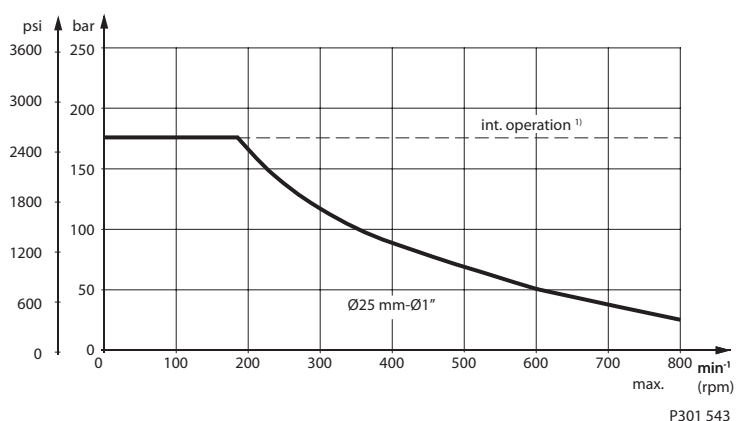
VMR with HPS, check valves and drain connection:  
The shaft seal pressure equals the pressure in the drain line.



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VMR with HPS, check valves and without drain connection:  
The shaft seal pressure equals the pressure in the return line.

### Max. permissible shaft seal pressure

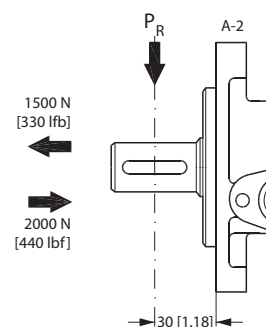
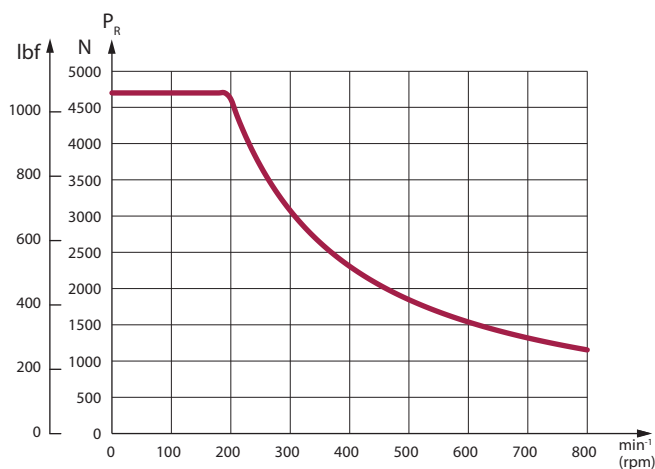


### Permissible Shaft Load

The permissible shaft load ( $P_R$ ) depends on:

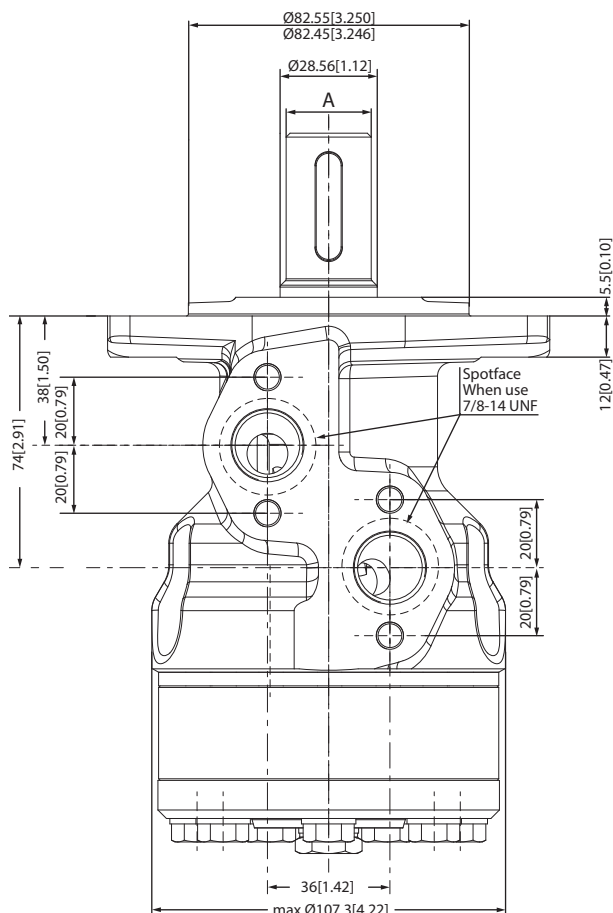
- $n$  = Speed ( $\text{min}^{-1}$ )
- $L$  = Distance from the point of load to the mounting flange mm, [in]

|                                              |                                                           |
|----------------------------------------------|-----------------------------------------------------------|
| Permissible shaft load ( $P_R$ ) - l in mm   | $\frac{800}{n} \cdot \frac{150000}{100 + L} \text{ N}^*$  |
| Permissible shaft load ( $P_R$ ) - l in inch | $\frac{800}{n} \cdot \frac{1330}{3.94 + L} \text{ lbf}^*$ |



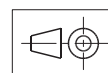
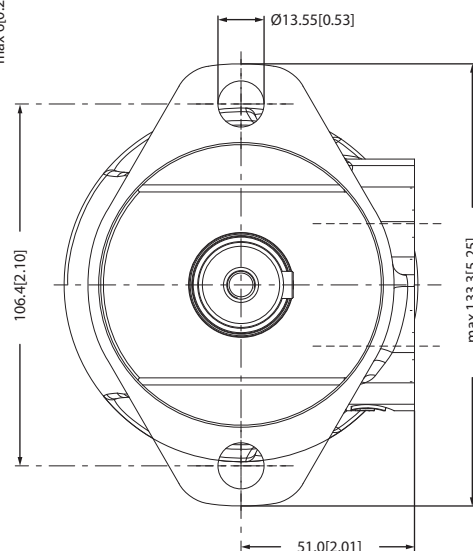
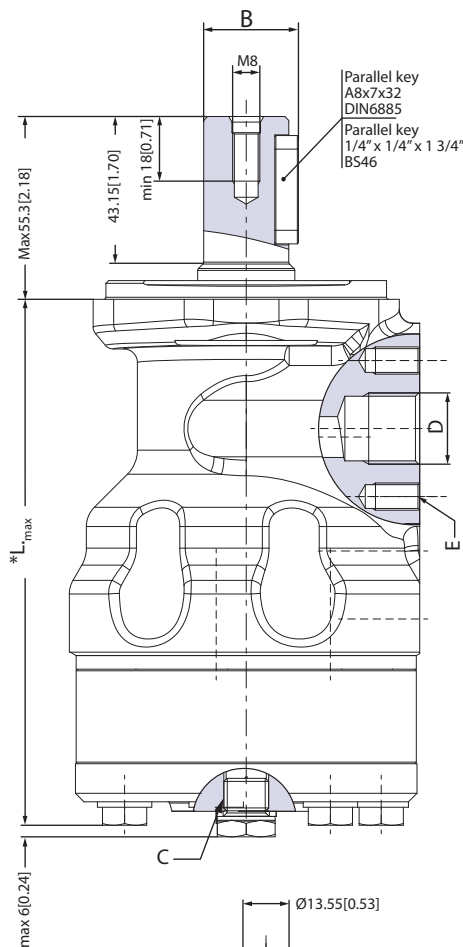
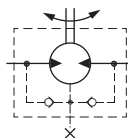
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## Dimension



- A: Shaft Ø 25 (25.02-25.00)  
Shaft Ø1" (1.000-0.999)
- B: Shaft Ø 25 (28.00-27.71)  
Shaft Ø1" (1.11-1.10)
- C: Drain connection,  
G1/4 min. 12 [0.472] deep  
7/16-20 UNF min. 12 [0.472] deep
- D: Port connection,  
G1/2 min 15 [0.591] deep  
7/8-14 UNF min. 16.7 [0.657] deep
- E: M8, 13 [0.512] deep (4 pcs)

Tolerance for basic dimensions =  $\pm 1$  [0.039]



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| Type    | L <sub>MAX</sub><br>mm [in] | Weight<br>kg [lb] |
|---------|-----------------------------|-------------------|
| VMR 80  | 143.1 [5.63]                | 6.3 [13.9]        |
| VMR 100 | 143.1 [5.63]                | 6.3 [13.9]        |
| VMR 125 | 146.7 [5.78]                | 6.4 [14.1]        |
| VMR 160 | 150.9 [5.94]                | 6.7 [14.8]        |
| VMR 200 | 156.9 [6.18]                | 6.9 [15.2]        |
| VMR 250 | 163.9 [6.45]                | 7.3 [16.1]        |
| VMR 315 | 172.6 [6.80]                | 7.7 [17.0]        |