

Technical Information

OMEW Standard and with Low Speed Option

Orbital Motors



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"For All Your Hydraulic Needs"

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Chapter

1

Orbital Motors Features

Topics:

- *Technical 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:
 - corrosion resistant parts
 - integrated negative holding brake
 - integrated flushing valve
 - speed sensor
 - tachometer connection
 - black finish paint
- Short motors without bearings or Ultra short motors
- Wheel motors with recessed mounting flange

Chapter

2

Introduction

The OMEW motor comes in two different versions. Both versions are designed mainly for propel applications, but they are optimize for different conditions.

A. OMEW standard version.

The advantage by this motor lies in the high speed area. When the flow exceeds 40 l/min this motor is to prefer due to a lower pressure drop.

B. OMEW with low speed option.

The advantage by this motor lies in the Low speed area. This motor has higher efficiency at low speed / medium pressure. When the flow is below 40 l/min this motor is to prefer.

This motor also has the Brake nose which makes it possible to add a drum brake to the motor.

Although the OMEW transmission motor was mainly designed for vehicles such as

- Walk-behind mowers
- Ride on mowers
- Scissor lifts
- Sweepers
- Road rollers

It is also suitable for a wide range of other applications that require a motor that is both compact and gives high efficiency.

Characteristic features that distinguish the OMEW motor are

- Compact design
- Low weight
- High total efficiency
- High starting torque
- Smooth low speed performance
- Larger bearing capacity
- High pressure shaft seal
- No drain line

Chapter

3

Versions

Topics:

- [Versions](#)
-

Versions

Mounting flange	Shaft	Port size	Pilot	Eur ope an vers ion	US vers ion	Clo ckw ise shaf t rota tion (C W vers ion)	Cou nter cloc kwi se shaf t rota tion (CC W vers ion) *	Sta nda rd vers ion	Low spee d vers ion	Painte d black	Main type design ation design ation	
Wheel, Standard	Tapered 1 1/4 in	7/8 - 14 UNF	3.25 in		X	X		X		Yes	OME W	
		7/8 - 14 UNF	3.25 in		X		X	X		Yes	OME W	
	Tapered 35 mm	G 1/2	82.5 mm		X		X		X		No	OME W
		G 1/2	82.5 mm		X			X	X		No	OME W
Wheel, Low Speed	Tapered 1 1/4 in	7/8 - 14 UNF	3.50 in		X	X			X	Yes	OME W	
		7/8 - 14 UNF	3.50 in		X		X		X	Yes	OME W	

In applications that mainly involves operation in one direction, we recommend a corresponding motor with either CW- or CCW-rotation.

High pressure seals

Since all OMEW motors are fitted with a high-pressure shaft seal, there is no need for a drain line.

* **Direction of rotation**

Chapter 4

Code numbers

Table 1: OMEW code numbers

	Displacement							
Code Numbers	100	125	160	200	250	315	345	400
151H	3108	3109	3110	3111	3112	3113	3114	3115
151H	3118	3119	3120	3121	3122	3123	3124	3125
151H	2002	2003	2004	2005	2006	2007		
151H	2011	2012	2013	2014	2015	2016		
151H	3080	3081	3082	3083	3084	3085	3086	3087
151H	3090	3091	3092	3093	3094	3095	3096	3097

Ordering

Add the four digit prefix “151H” to the four digit numbers from the chart for complete code number.

Example:

151H3084 for an OMEW 250 with 1 1/4 in tapered shaft, port size 7/8 - 14 UNF and clockwise rotation (CW).

Note:

Orders will not be accepted without the four digit prefix.

Chapter

5

Technical data

Topics:

- *Technical data for OMEW*
- *Maximum permissible shaft seal pressure*
- *Pressure drop in motor*
- *Direction of shaft rotation*
- *Permissible shaft loads for OMEW*

Technical data for OMEW

Table 2: Technical Data for OMEW with 35 mm and 1 1/4 in Tapered Shaft

Type			OME W	OME W	OME W	OME W	OME W	OME W	OME W	OME W
Motor Size			100	125	160	200	250	315	345	400
Geometric displacement	cm ³		99.8	124.1	155.4	198.2	248.1	310.1	341.8	390.7
	[in ³]		[6.11]	[7.60]	[9.51]	[12.13]	[15.18]	[18.98]	[20.86]	[23.83]
Max speed	min ⁻¹	cont.	600	475	375	300	240	190	175	150
	[rpm]	int.	750	695	470	375	300	240	220	190
Max torque	N•m	cont.	250	320	410	400	470	550	610	700
			[2210]	[2830]	[3630]	[3540]	[4160]	[4868]	[5400]	[6195]
		int. ¹⁾	270	340	430	570	710	850	860	870
Max output	kW	cont.	12	12	12	11	10	9	9	9
			[16.1]	[16.1]	[16.1]	[14.75]	[13.41]	[12.07]	[12.07]	[12.07]
		int. ¹⁾	15	15	15	16	16	15	14	12
Max pressure drop	bar	cont.	200	200	200	150	140	130	130	130
			[2900]	[2900]	[2900]	[2175]	[2030]	[1885]	[1885]	[1885]
		int. ¹⁾	210	210	210	210	210	200	185	160
Max oil flow	l/min	cont.	60	60	60	60	60	60	60	60
			[15.9]	[15.9]	[15.9]	[15.9]	[15.9]	[15.9]	[15.9]	[15.9]
		int. ¹⁾	75	75	75	75	75	75	75	75
		[19.8]	[19.8]	[19.8]	[19.8]	[19.8]	[19.8]	[19.8]	[19.8]	

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

Type		OME W	OME W	OME W	OME W	OME W	OME W	OME W	OME W	
Motor Size		100	125	160	200	250	315	345	400	
Max starting pressure with unloaded shaft	bar	10	7	7	7	7	7	7	7	
	[psi]	[145]	[100]	[100]	[100]	[100]	[100]	[100]	[100]	
Min starting torque	at max press drop cont.		230	290	360	330	390	460	500	580
		N•m [lbf•in]	[2040]	[2570]	[3190]	[2920]	[3451]	[4071]	[4425]	[5133]
	at max press drop int. ¹⁾		240	300	380	470	580	700	710	710
		N•m [lbf•in]	[2120]	[2660]	[3360]	[4160]	[5133]	[6195]	[6284]	[6284]

Table 3:

Type			Max Inlet Pressure	Max Return Pressure
OMEW 100 - 400	bar	cont.	200	200
	[psi]		[2900]	[2900]
	bar	int. ¹⁾	210	210
	[psi]		[3050]	[3050]
	bar	peak	225	225
	[psi]		[3260]	[3260]

Maximum permissible shaft seal pressure

OMEW with high pressure shaft seal

CW version (clockwise rotation)

1. By clockwise rotation: The shaft seal pressure equals the return pressure.
2. By counter clockwise rotation: The shaft seal pressure equals the input pressure

CCW version (counter clockwise rotation)

1. By counter clockwise rotation: The shaft seal pressure equals the return pressure.
2. By clockwise rotation: The shaft seal pressure equals the input pressure

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.

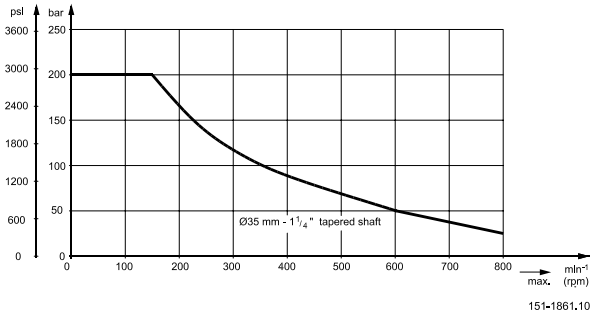
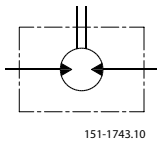


Figure 1: Max permissible shaft seal pressure

Pressure drop in motor

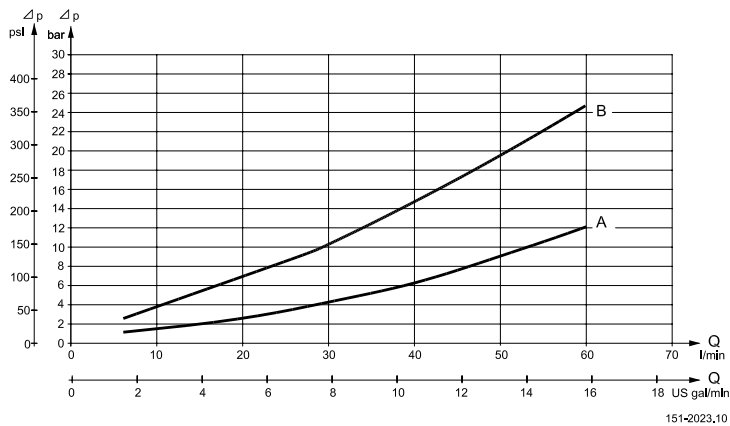
Standard

A: OMEW 100 - 400

Low Speed

A: OMEW 100 - 160

B: OMEW 200 - 400



The curve applies to an unloaded motor shaft and an oil viscosity of $35 \text{ mm}^2/\text{s}$ [165 SUS]

Direction of shaft rotation

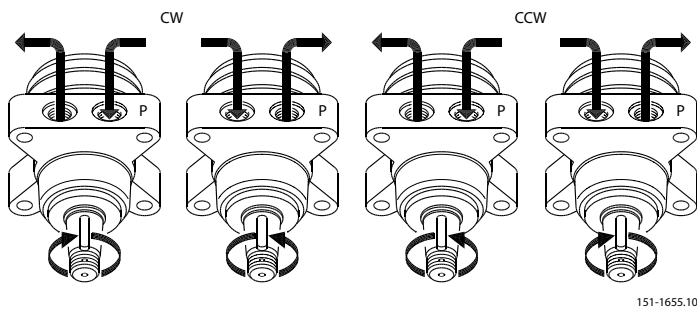


Figure 2: CW - motor / CCW - motor

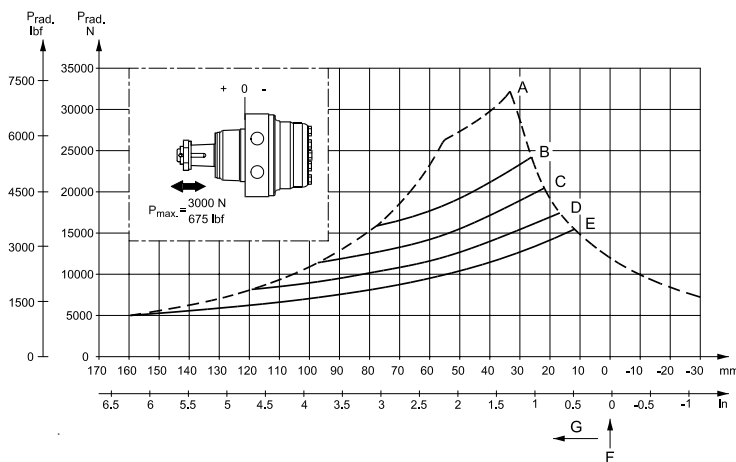
Permissible shaft loads for OMEW

As the OMEW output shaft is embedded in needle bearings and the mounting flange is recessed it is possible to fit a wheel hub direct onto the shaft so that the radial load acts midway between the needle bearings.

Based upon the requested max. speed and the point of action of the radial load the permissible shaft load can be read from the curved shown below.

Curve A shows the max. radial load. If the radial load exceeds these values there is a potential risk of breakdown.

The other curves apply to a B10 bearing life of 2000 hours at the indicated speed when applying a hydraulic mineral oil with an adequate content of anti-wear additives.



- A: Max. radial load
- B: $n = 50 \text{ min}^{-1}$ (rpm)
- C: $n = 100 \text{ min}^{-1}$ (rpm)
- D: $n = 200 \text{ min}^{-1}$ (rpm)
- E: $n = 400 \text{ min}^{-1}$ (rpm)
- F: Front flange
- G: Direction toward shaft

Chapter

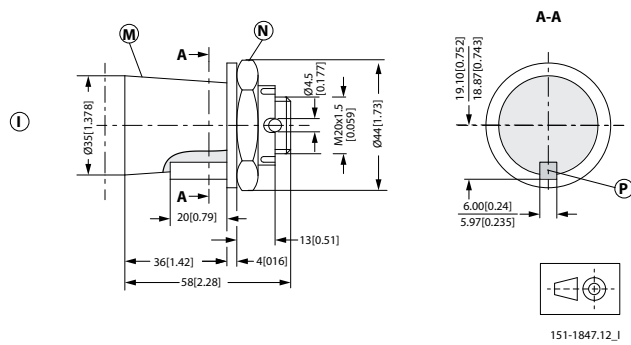
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Shaft version

Topics:

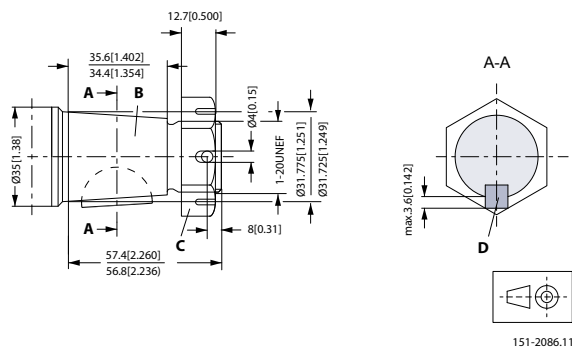
- *OMEW shaft version*
 - *OMEW port thread version*
-

OMEW shaft version



- I:** Tapered shaft 35 mm
N: DIN 937, NV 41; Tightening torque: $200 \pm 10 \text{ N}\cdot\text{m}$ [$1770 \pm 85 \text{ lbf}\cdot\text{in}$]
M: Taper 1:10
P: Parallel key B6 • 6 • 20, DIN 6885

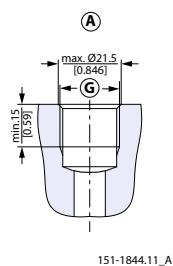
Figure 3: Tapered shaft 35 mm



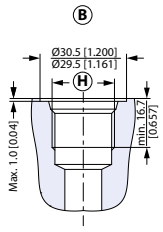
- B:** Cone 1:8, SAE J501
C: 1 - 20 UNEF, Across flats 1 7/16; Tightening torque: $400 \pm 10 \text{ N}\cdot\text{m}$ [$3540 \pm 85 \text{ lbf}\cdot\text{in}$]
D: Woodruff key 5/16 × 1, SAE J502 1a

Figure 4: Tapered shaft 1 1/4 in

OMEW port thread version



- A:** G main ports
G: ISO 228/1-G1/2



151-1844.11_B

- B:** UNF main ports
- H:** 7/8-14 UNF O-ring boss port

Chapter

7

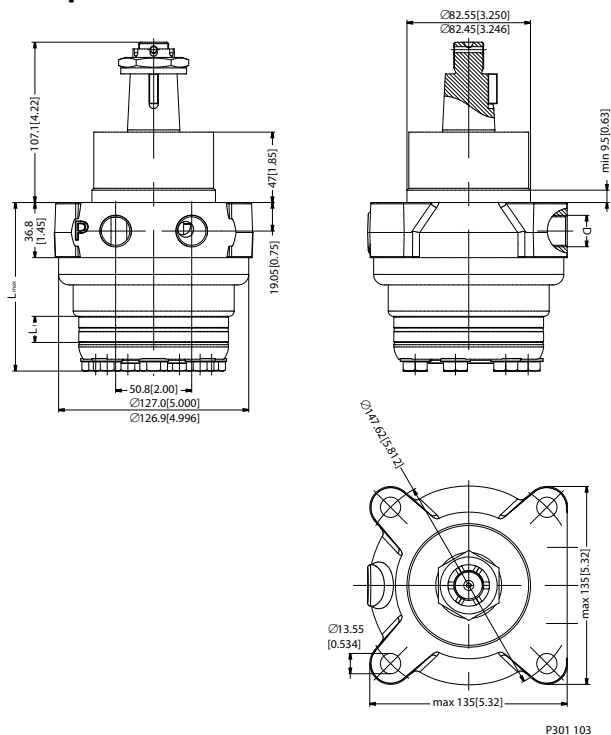
Dimensions

Topics:

- *OMEW dimensions*
-

OMEW dimensions

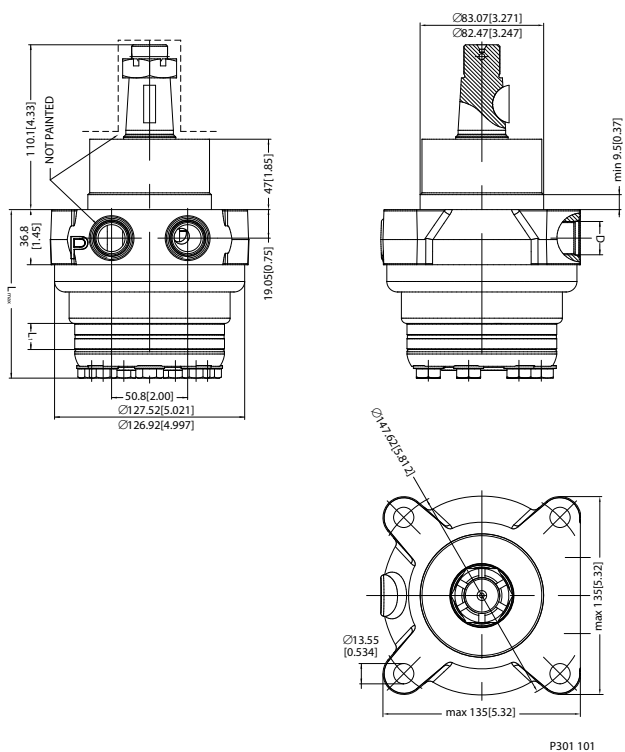
European version



D: G 1/2, 15 mm [0.59] deep

Table 4: OMEW European version

Type	L _{max}		L ₁		Weight	
	mm	[in]	mm	[in]	kg	[lb]
OMEW 100	112.0	[4.41]	14.0	[0.55]	9.3	[20.5]
OMEW 125	115.4	[4.54]	17.4	[0.69]	9.5	[20.9]
OMEW 160	119.8	[4.72]	21.8	[0.86]	9.8	[21.6]
OMEW 200	125.8	[4.95]	27.8	[1.09]	10.3	[22.7]
OMEW 250	132.8	[5.23]	34.8	[1.37]	10.8	[23.8]
OMEW 315	137.4	[5.41]	43.5	[1.71]	11.3	[24.9]



D: 7/8 - 14 UNF, 16.7 [0.66] deep

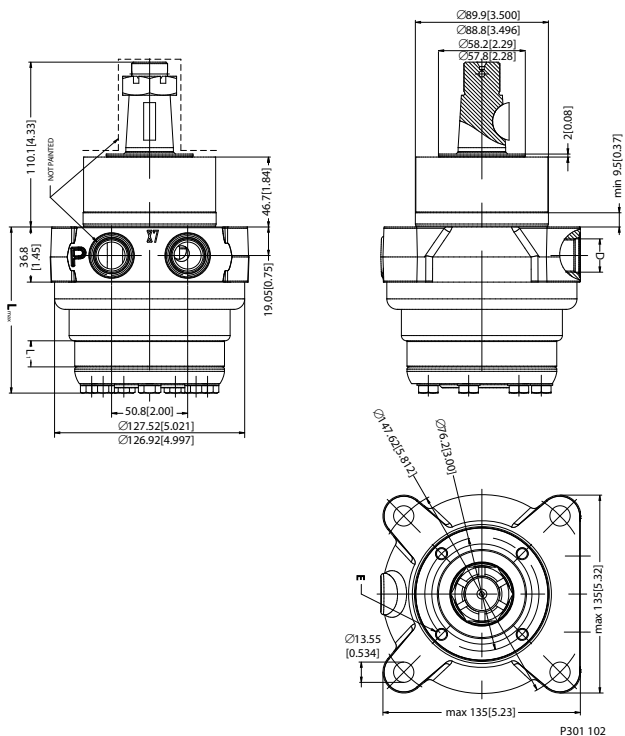
--- Not painted

Note: The stated dimension is with paint

Table 5: OMEW European version

Type	L _{max}		L ₁		Weight	
	mm	[in]	mm	[in]	kg	[lb]
OMEW 100	112.0	[4.41]	14.0	[0.55]	9.3	[20.5]
OMEW 125	115.4	[4.54]	17.4	[0.69]	9.5	[20.9]
OMEW 160	119.8	[4.72]	21.8	[0.86]	9.8	[21.6]
OMEW 200	125.8	[4.95]	27.8	[1.09]	10.3	[22.7]
OMEW 250	132.8	[5.23]	34.8	[1.37]	10.8	[23.8]
OMEW 315	141.5	[5.57]	43.5	[1.71]	11.3	[24.9]
OMEW 345	145.9	[5.74]	48.0	[1.89]	11.6	[25.6]
OMEW 400	152.8	[6.02]	54.9	[2.16]	12.0	[26.5]

US version



D: 7/8 - 14 UNF, 16.7 [0.66] deep

E: Thread for external brake 4 x 5/16-18 UNC, min 20 [0.79] deep

--- Not painted

Note: The stated dimension is with paint

Table 6: OMEW US version

Type	L _{max}		L ₁		Weight	
	mm	[in]	mm	[in]	kg	[lb]
OMEW 100	110.1	[4.33]	14.0	[0.55]	9.3	[20.5]
OMEW 125	113.5	[4.47]	17.4	[0.69]	9.5	[20.9]
OMEW 160	117.9	[4.64]	21.8	[0.86]	9.8	[21.6]
OMEW 200	123.9	[4.88]	27.8	[1.09]	10.3	[22.7]
OMEW 250	130.9	[5.15]	34.8	[1.37]	10.8	[23.8]
OMEW 315	139.6	[5.50]	43.5	[1.71]	11.3	[24.9]
OMEW 345	144.0	[5.67]	47.9	[1.89]	11.6	[25.6]
OMEW 400	150.9	[5.94]	54.8	[2.16]	12.0	[26.5]