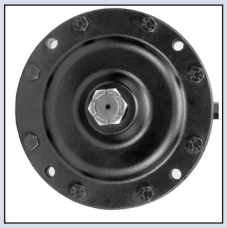
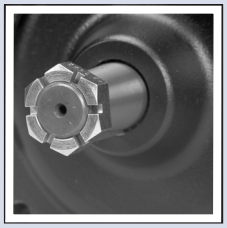
SAUER DANFOSS

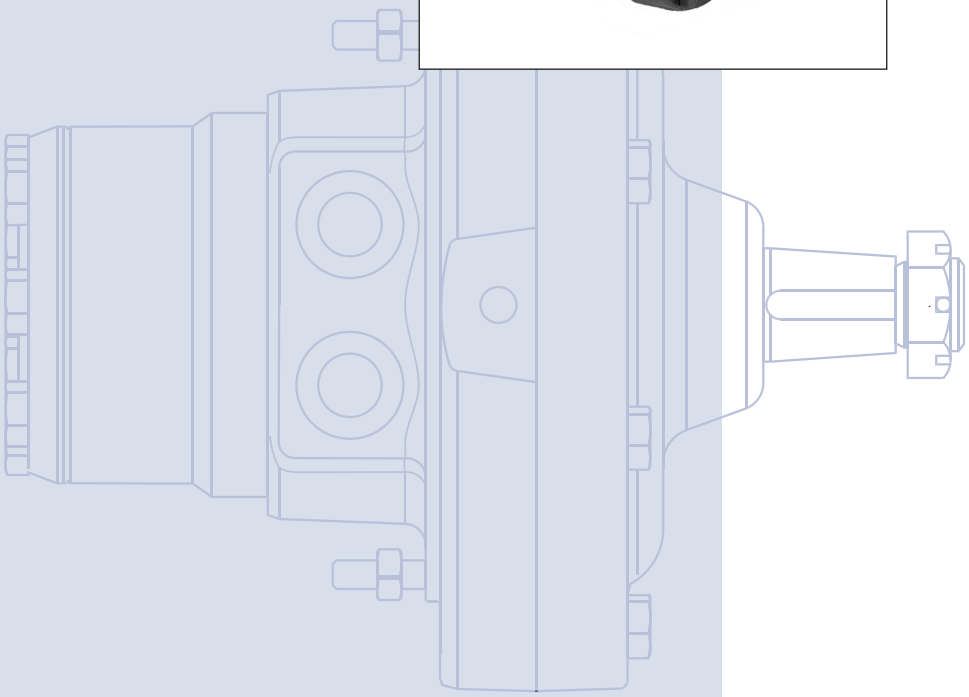
OMEW F

Orbital Motors

Tech Note







OMEW F
Tech Note
Contents

Front cover illustrations: F301076, F301077, F301078, F301079
Drawing: 151-2045

Introduction

Sauer-Danfoss now offers OMEW motors with an integrated parking brake, making them even more ideal as transmission motors in small vehicles.

The OMEW F motor is specially designed for scissor lifts, but is also suitable for a wide range of other vehicle applications that require a motor that is both compact and highly efficient. Characteristic feature that distinguish the OMEW F motor are:

- Compact design
- Low weight
- High total efficiency
- High starting torque
- Smooth low speed performance
- Large bearing capacity
- High pressure shaft seal
- No drain line
- Black paint standard
- Integrate parking brake

Versions

Mounting flangeM	Shaft	Port size	European version	US version	Clochwise shaft rotation (CW version)[1]	counter clochwise shaft rotation (CCW version)[1]	Flange port version	Standard shaft seal	Drain connection	Check valve	Specials	Main type designation
Wheel brake	Tapered 1.25 in	3/4 - 16 UNF		❍	❍		❍		❍	No	No	OMEW F
	Tapered 1.25 in	3/4 - 16 UNF		❍		❍	❍		❍	No	No	OMEW F

1) Direction of rotation
If the application mainly involves operation in one direction, we recommend the corresponding motor with either CW- or CCW-rotation, which will optimize seal life.

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

Motors are painted black

Code numbers

→	Code numbers	Displacement (cm3)								Technical data - page	Dimensions - page
→		100	125	160	200	250	315	345	400		
	1101	6157	6159	6160	6161	6192	6193	6194	6195	6	11
	1101	6198	6199	6200	6201	6202	6203	6204	6205	6	11

Ordering

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

Example:
151H3064 for an OMEW F 250 with 1.25 in tapered shaft, port size 3/4 - 16 UNF and clockwise rotation (CW).

Orders will not be accepted without the four digit prefix

Technical data for OMEW F with 1 1/4 in tapered shaft

Type / Motorsize			OMEW F 100	OMEW F 125	OMEW F 160	OMEW F 200	OMEW F 250	OMEW F 315	OMEW F 345	OMEW F 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.[1]	750	695	470	375	300	240	220	190
Max. torque	N•m [lbf.in]	cont.	250 [2210]	320 [2830]	410 [3630]	400 [3540]	470 [4160]	550 [4868]	610 [5400]	700 [6195]
		int.[1]	270 [2390]	340 [3010]	430 [3810]	570 [5045]	710 [6284]	850 [7523]	860 [7612]	870 [7700]
Max. output	kW [hp]	cont.	12 [16.1]	12 [16.1]	12 [16.1]	11 [14.75]	10 [13.41]	9 [12.07]	9 [12.07]	9 [12.07]
		int.[1]	15 [20.1]	15 [20.1]	15 [20.1]	16 [21.5]	16 [21.5]	15 [20.1]	14 [18.8]	12 [16.1]
Max. pressure drop	bar [psi]	cont.	200 [2900]	200 [2900]	200 [2900]	150 [2175]	140 [2030]	130 [1885]	130 [1885]	130 [1885]
		int[1]	210 [3050]	210 [3050]	210 [3050]	210 [3050]	210 [3050]	200 [2900]	185 [2683]	160 [2320]
Max. oil flow		cont.	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]
		int.[1]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]
Max. starting pressure with unloaded shaft	bar [psi]		10 [145]	7 [100]	7 [100]	7 [100]	7 [100]	7 [100]	7 [100]	7 [100]
Min. starting torque	at max. press. drop cont. N•m [lbf•in]		230 [2040]	290 [2570]	360 [3190]	330 [2920]	390 [3451]	460 [4071]	500 [4425]	580 [5133]
	at max. press. drop int[1] N•m [lbf•in]		240 [2120]	300 [2660]	380 [3360]	470 [4160]	580 [5133]	700 [6195]	710 [6284]	710 [6284]

Type			Nax. inlet pressure	Max. return pressure
OMEW F 100 - 400	bar [psi]	cont.	200 [2900]	200 [2900]
	bar [psi]	int.[1]	210 [3050]	210 [3050]
	bar [psi]	peak[2]	225 [3260]	225 [3260]

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.

Technical data for brake motor OMEW F	
Holding torque [1]	840 N•m [7435 lbf•in]
Min. release pressure	17 bar [245 psi]
Max. pressure in brake line	225 bar [3260 psi]

[1] This brake is to be used only as a passive parking brake. It may not be used for dynamic braking.

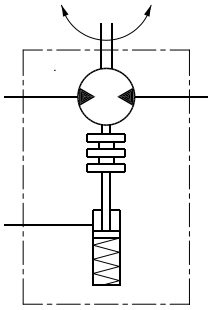
When the pressure in the brake release line is greater then 2 bar [29 psi], the holding torque depends inversely proportional on the actual pressure in the brake release line.
At ≤≤ 2 bar [29 psi] - holding torque = 840 N•m [7453 lbf•in]
At ≥≥ 17 bar [245 psi] - holding torque = 0 N•m [0 lbf•in]

Max. Permissible Shaft Seal Pressure

OMEW F with high pressure shaft seal

CW version (clockwise rotation)

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



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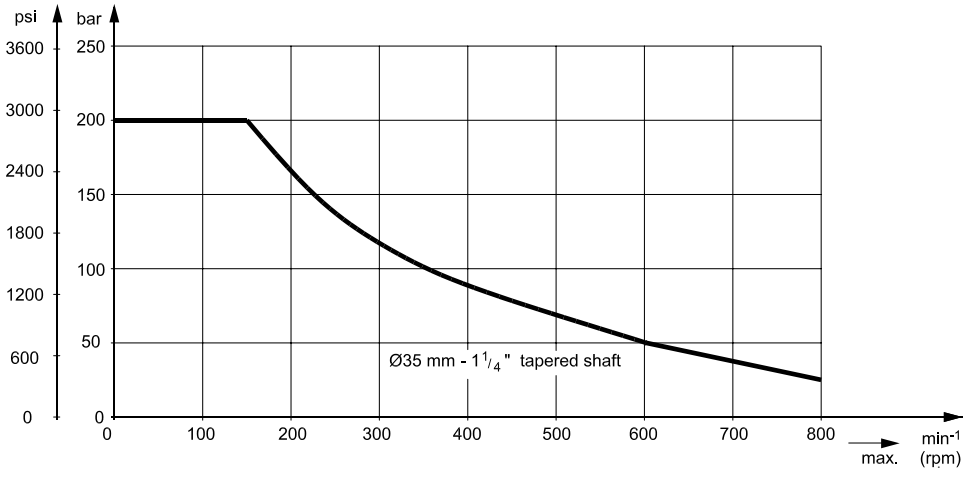
CCW version (counter clockwise rotation)

1) With counter clockwise rotation:
   The shaft seal pressure equals the return pressure.
2) With clockwise rotation:
   The shaft seal prressure equals the input pressure

Max. permissible shaft seal pressure



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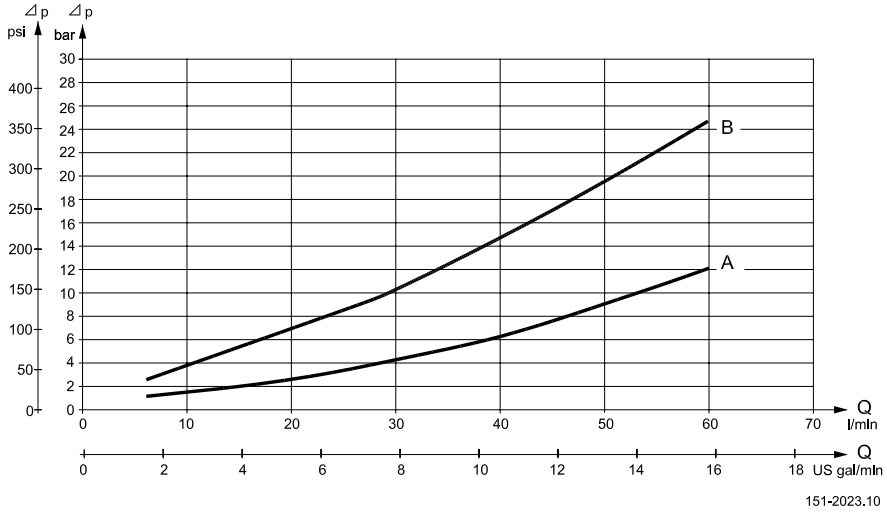
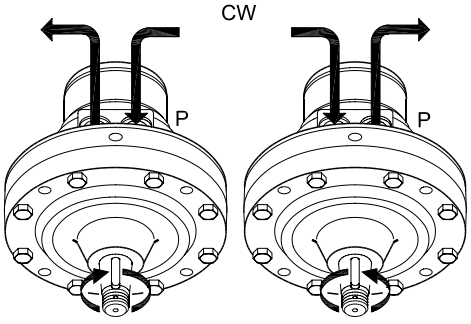
Pressure Drop in Motor



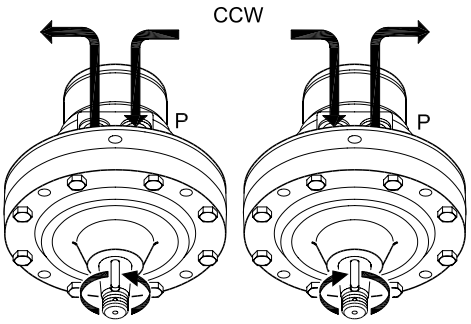
A: OMEW F 100 - 160
B: OMEW F 200 - 400

The curve applies to an unloaded motor shaft and an oil viscosity of 35 mm²/s [165 SUS]

Direction of Shaft Rotation



CW - motor



CCW - motor

Permissible Shaft Loads for OMEW F

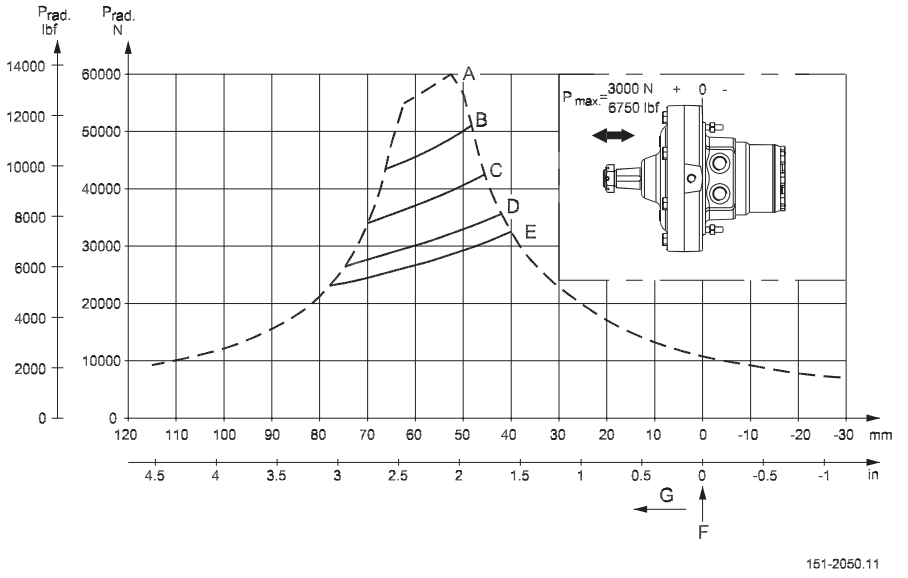
Due to the position of the output shaft bearings in relation to the mounting flange, it is possible to position a wheel hub on the shaft so that the radial load acts midway between the two needle bearings.

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.

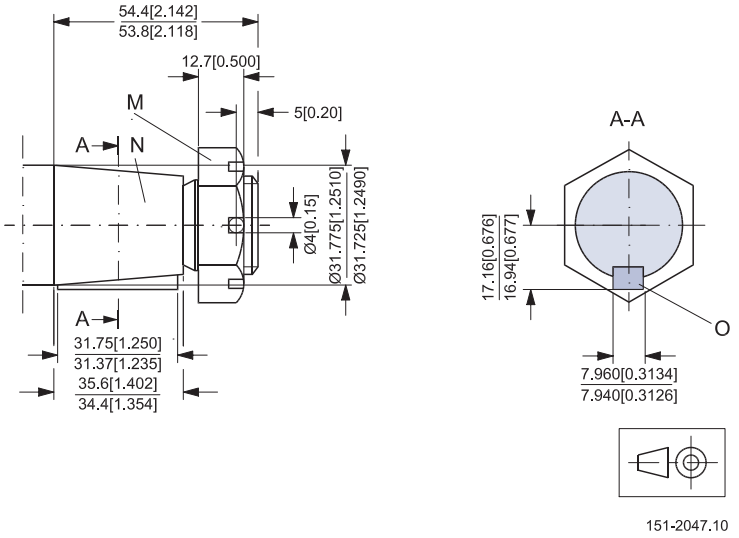
The longevity can also be calculated by means of the *"Bearing dimensions"* instructions in the technical information *»General« DKMH.PK.100.G3.02 520L0232.*



A: Max. radial load
B: n = 25 min^{-1} (rpm)
C: n = 50 min^{-1} (rpm)
D: n = 100 min^{-1} (rpm)
E: n = 150 min^{-1} (rpm)
F: Front flange
G: Direction toward shaft

Shaft Version

I: Tapered shaft 1.25 in shaft
N: Cone 1:8
SAE J501
M: 1 - 20 UNEF
Across flats 1 7/16 in
Tightening torque:
200 ± 10 N•m [1770 ± 85 lbf•in]
G: Parallel key
5/16 × 5/16 × 1 1/4
SAE J501



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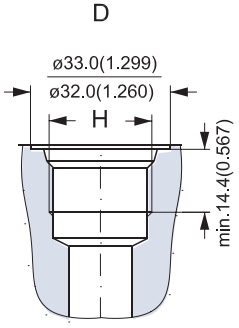
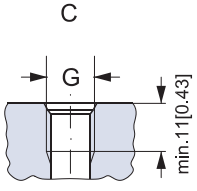
Port Thread Version

D: UNF main ports
H: 3/4 - 16 UNF
O-ring boss port



C: UNF brake release port
G: 7/16 - 20 UNF
O-ring boss port



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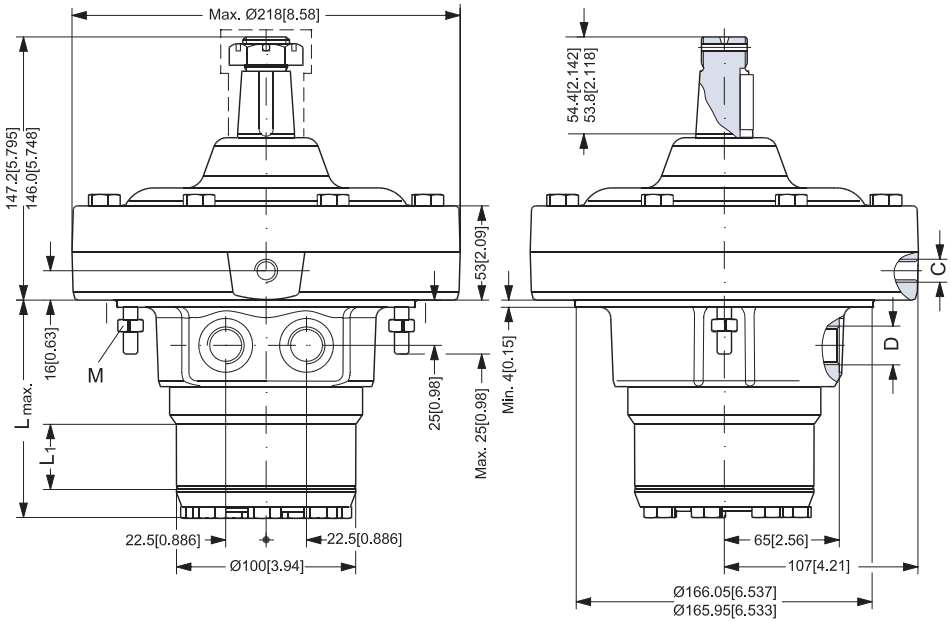
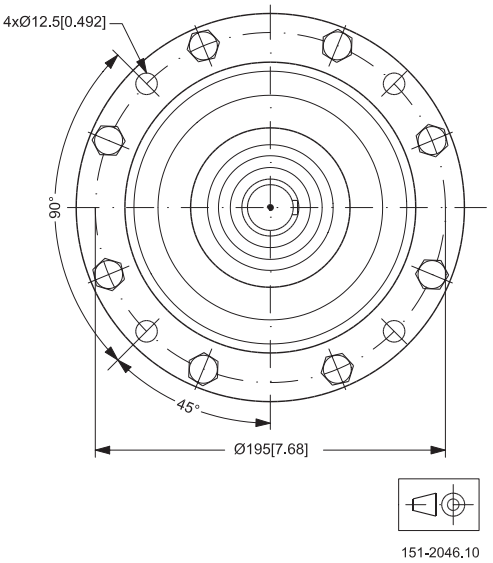
Dimensions and Weights

Dimensions





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Weight of Motors

Type	Weight		Length	
	kg	[lb]	L_{max}	L_1
OMEW F 100	21.2	[46.7]	101.2 [3.98]	14.0 [0.55]
OMEW F 125	21.4	[47.2]	104.6 [4.12]	17.4 [0.67]
OMEW F 160	21.7	[47.8]	109.0 [4.29]	21.8 [0.86]
OMEW F 200	22.2	[48.9]	115.0 [4.53]	27.8 [1.09]
OMEW F 250	22.7	[50.0]	122.0 [4.80]	34.8 [1.37]
OMEW F 315	23.2	[51.1]	130.7 [5.15]	43.5 [1.71]
OMEW F 345	23.5	[51.8]	135.1 [5.32]	47.9 [1.89]
OMEW F 400	23.9	[52.7]	141.5 [5.57]	54.3 [2.12]

D: 3/4 - 16 UNF, 14.4 [0.57 in] deep
C: 7/16 - 20 UNF, 11.5 [0.45 in] deep

M: 2 x manual brake release (13 mm wrench)

----- Not painted

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Sauer-Danfoss (US) Company
2800 East 13th Street
Ames, IA 50010, USA
Phone: +1 515 239-6000, Fax: +1 515 239-6618

Sauer-Danfoss (Neumünster) GmbH & Co. OHG
Postfach 2460, D-24531 Neumünster
Krokamp 35, D-24539 Neumünster, Germany
Phone: +49 4321 871-0, Fax: +49 4321 871-122

Sauer-Danfoss ApS
DK-6430 Nordborg, Denmark
Phone: +45 7488 4444, Fax: +45 7488 4400

www.sauer-danfoss.com