



Parker Denison Calzoni Motor MR MRE

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Fixed displacement radial piston motor

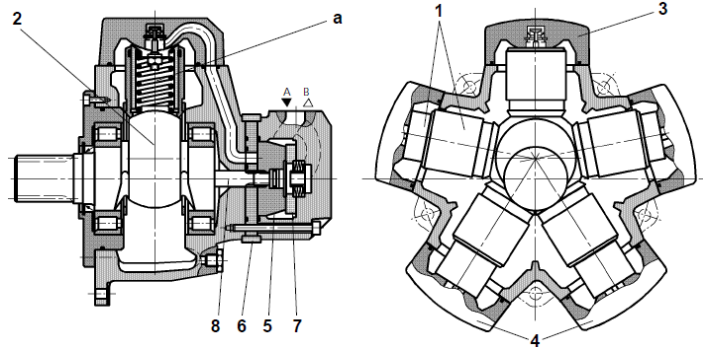
Maximum pressure up to 420 bar (6000 psi)

Torque up to 35000 Nm (25815 lbf.ft)

Temperature range -30 to +80 °C (-22° to +176°F)

MR motor: MR350 MR450 MR600 MR700 MR1100 MR1600 MR1800 MR2400 MR2800 MR3600 MR4500 MR6500 MR7000

MRE motor: MRE330 MRE500 MRE800 MRE1400 MRE2100 MRE3100 MRE5400 MRE8200



The outstanding performance of this motor is the result of an original and patented design.

The principle is to transmit the effort from the stator to the rotating shaft (2) by means of a pressurized column of oil (a) instead of the more common connecting rods, pistons, pads and pins. This oil column is contained by a telescopic cylinder (1) with a mechanical connection at the lips at each end which seal against the spherical surfaces of the cylinder-heads (3) and the spherical surface of the rotating shaft (4). These lips retain their circular cross section when stressed by the pressure so there is no alteration in the sealing geometry. The particular selection of materials and optimization of design has minimized both the friction and the leakage. Another advantage of this design stems from the elimination of any connecting rods; the cylinder can only expand and retract linearly so there are no transverse components of the thrust. This means no oval wear on the moving parts and no side forces on the cylinder joints. A consequence of this novel design is a significant reduction in weight and overall size compared with other motors of the same capacity. The timing system is realized by means of a rotary valve (5) driven by the rotary valve driving shaft (8) that it is connected to the rotating shaft. The rotary valve rotates between the rotary valve plates (6) and the reaction ring (7) which is fixed with the motor's housing. This timing system is also of a patented design being pressure balanced and self compensating for thermal expansion. The advantages of this type of valve coupled with a revolutionary cylinder arrangement produce a motor with extremely high values of mechanical and volumetric efficiency. The torque output is smooth even at very low speed and the motor gives a high performance starting under load.

Features and Benefits

- high power to weight ratio
- high volumetric and mechanical efficiency
- high resistance to thermal shock
- very low operating noise levels
- suitable for fire-resistant and biologically degradable fluids
- extremely well suited for control engineering applications
- reversible operation (motor and pump)



Technical Data

Table of values (theoretical values)

Size Motor version	Displace ment	Moment inertia of rotating	Theoretical specific torque	Min. start. torque / Theoretical	Maximum Pressure					Speed range		Maximum		Weight	
					input					flushing		flushing			
					cont.	int.	peak	A+B	Drain	without	with	without	with		
					p	p	p	p	p	n	n	P	P		m
	V	J	lb.ft/psi	%	psi	psi	psi	psi	psi	rpm	rpm	Hp	Hp	lb	
	in ³	lb.in ²													
M R	MR33	1.96	1.48	0.025	90	3626	4351	6092	5802	72.5 (218 psi with shaft seal)	1-1400	1-1400	8.9	13.4	66.14
	MR57	3.44	1.59	0.046	90						1-1300	1-1300	14.8	22.8	66.14
	MR73	4.43	4.79	0.061	90						1-1200	1-1200	20.2	26.8	83.78
	MR93	5.65	5.16	0.076	90						1-1150	1-1150	22.8	33.5	83.78
	MR110	6.65	5.53	0.087	90						1-1100	1-1100	24.1	37.6	83.78
	MR125	7.61	19.44	0.102	90						1-900	1-900	22.8	33.5	101.4
	MR160	9.75	19.65	0.129	90						1-900	1-900	26.8	40.2	101.4
	MR190	11.69	19.89	0.155	90						1-850	1-850	32.2	48.3	101.4
	MR200	12.16	19.56	0.163	90						1-800	1-800	33.5	51.0	110.2
	MR250	15.31	20.78	0.203	90						1-800	1-800	42.9	64.4	110.2
	MR300	18.56	22.36	0.244	90						1-750	1-750	46.9	71.1	110.2
	MR350	21.33	77.19	0.283	90						1-640	1-640	55.0	83.1	169.8
	MR450	27.56	78.53	0.366	90						1-600	1-600	61.7	100.6	169.8
	MR600	37.10	90.58	0.493	90						1-520	1-520	75.1	112.6	213.8
	MR700	43.09	122.47	0.575	90						1-500	1-500	87.2	130.1	213.8
	MR1100	68.7	154.28	0.910	90						0.5-330	0.5-330	103.3	159.6	308.6
	MR1600	97.5	227.73	1.292	90						0.5-260	0.5-260	128.7	193.1	460.8
	MR1800	110.4	291.86	1.465	90						0.5-250	0.5-250	138.1	205.2	460.8
	MR2400	139.9	968.89	1.937	90						0.5-220	0.5-220	160.9	245.4	716.5
	MR2800	170.4	1016.83	2.263	90						0.5-215	0.5-215	170.3	260.2	716.5
MR3600	221.9	1657.78	2.944	90	0.5-150	0.5-180	164.9	248.1	1120						
MR4500	274.8	1713.72	3.346	91	0.5-130	0.5-170	187.7	281.6	1120						
MR6500	394.2	3887.52	5.267	91	0.5-110	0.5-130	221.3	321.8	1764						
MR7000	408.7	3887.52	5.665	91	0.5-100	0.5-130	228	335.3	1764						
M R E	MRE330	20.28	22.38	0.270	90	3046	3626	5076	5802	72.5 (218 psi with "F1" shaft)	1-750	1-750	42.9	65.7	110.2
	MRE500	30.38	78.53	0.403	90						1-600	1-600	61.7	93.9	169.8
	MRE800	49.08	122.47	0.651	90						1-450	1-450	87.2	124.7	213.8
	MRE1400	83.6	154.28	1.109	92						0.5-280	0.5-280	103.3	136.8	319.7
	MRE2100	127.6	291.86	1.693	91						0.5-250	0.5-250	134.1	198.5	487.2
	MRE3100	189.4	1016.83	2.512	91						0.5-215	0.5-215	167.6	254.8	725.3
	MRE5400	329.6	1713.72	4.374	92						0.5-120	0.5-160	187.7	281.6	1129
	MRE8200	502	3887.52	6.657	92						0.5-90	0.5-120	228	335.3	1786

At a certain ambient temperature, the operating temperature in the circuit is 122°F (50°C). In the optimum operating viscosity range, this corresponds to viscosity grades VG 46 or VG 68; VG 68 should be selected. **IMPORTANT:** The drain oil temperature is influenced by pressure and speed and is usually higher than the circuit temperature or the tank temperature. At no point in the system, however, may the temperature be higher than 176°F (80°C).

If the optimum conditions cannot be met due to the extreme operating parameters or high ambient temperature, we always recommend flushing the motor case in order to operate within the viscosity limits.



OPERATING VISCOSITY RANGE

The viscosity, quality and cleanliness of operating fluids are decisive factors in determining the reliability, performance and life-time of an hydraulic component. The maximum life-time and performance are achieved within the recommended viscosity range. For applications that go beyond this range, this viscosity refers to the temperature of the fluid entering the motor, and at the same time to the temperature inside the motor housing (case temperature). We recommend selecting the viscosity of the fluid based on the maximum operating temperature, to remain within the recommended viscosity range. To reach the value of maximum continuous power the operating viscosity should be within the recommended viscosity range of 30 - 50 CST.

CHOOSING THE TYPE OF FLUID ACCORDING TO THE OPERATING TEMPERATURE

The operating temperature of the motor is defined as the greater temperature between that of the incoming fluid and that of the fluid inside the motor housing (case temperature). We recommend that you choose the viscosity of the fluid based on the maximum operating temperature, to remain within the recommended viscosity range. We recommend that the higher viscosity grade must be selected in each case. The motor life also depends on the fluid filtration.

Motor START-UP

The motor does not require any special running in, but all residual impurities in the system must be eliminated by running the motor at low speed and with no applied load, granting the minimum necessary inlet pressure.

After a brief period in service, the system filters should be cleaned. This operation will also lead to the air venting from motor cylinders; air inside the motor cylinders may increase the possible noise at the start-up of the motor.

Make sure the motor case has been filled.