



NORTH AMERICAN HYDRAULICS

North American Hydraulics, (NAHI, LLC), partnering with Rotary Power (SMA) heavy duty, radial piston, eccentric configuration motors. The efficient design includes a hardened high tensile steel crankshaft supported on hydrostatic and taper roller bearings.

The SMA can withstand both high mechanical and high hydraulic shock loads offering excellent life and continuous high power use. Speed and power ratings are significantly higher than stand high torque low speed (HTLS) motors.

Features and Benefits:

- Freewheel capabilities
- Displacements available from 12.6in³ – 1000in³
- Continuous pressure of 5075psi
- Suitable for use with most hydraulic fluids
- Withstands high peak pressures
- Minimal no-load pressure drop even at high speed
- High power options
- Two speed options

Proven Solutions for:

- Construction
- Recycling & Municipal Vehicles
- Agriculture & Forestry
- Mining & Bulk Material Handling
- Marine & Offshore
- Oil & Gas

Please contact NAHI for additional information.

The above information should be used as a guide and is subject to change without notice.

Please contact NAHI for proper selection.



Radial Piston Motors Solution Providers



SMA Radial Piston Motor							
SMA	Displacement		Max Speed (rpm)		Max Pressure psi	Max Power (hp)	
	in ³	cc	Standard	High Power		Standard	High Power
SMA0480	12.6	206				37	72
	17.6	288				53	101
	20.6	337	480	1,000	6,500	64	119
	22.6	370				64	119
SMA0500	29.3	480				91	169
	30.5	500	430	700	6,500	81	138
	46.1	755	380	620		112	183
	52.2	855	350	620	6,500	127	203
SMA1230*	60.7	995	350	600		134	250
	70.8	1160	283	580		166	262
	81.8	1340	320	565		167	296
	97.7	1601	300	565	6,500	188	354
SMA2200*	135.9	2227	216	406		261	354
	122.2	2002	285			221	298
	152.9	2505	285			248	373
	170.9	2800	260	380	6,500	268	402
SMA3200	192.1	3148	240			318	478
	213.8	3503	---	350		---	480
	265.3	4347	---	240	6,500	---	536
	305.7	5009	---	210		---	603
SMA6250	381.3	6248	---	190	6,500	---	737
	427.7	7008	---			---	658
	530.7	8696	---	240	6,500	---	817
	450.4	7380	---	180		---	594
SMA10L	537.7	8811	---	150	6,500	---	708
	640.6	10497	---	125		---	884
	793.3	13000	---			---	1,100
	1000.7	16398	---	125	6,500	---	1,206
Note:	* 2-Speed option available on some models (inquire within) All torque values are theoretical at max pressure with no inefficiencies --- Not Available						



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DESCRIPTION OF OPERATION

The motor function is achieved by five pistons carried radially in a cylinder block mounted on an eccentric on the driveshaft. Hydraulic fluid under pressure is fed to each piston in turn from axial galleries in the crankshaft through a timing slot in the eccentric. The pistons are supported by flat reaction pads inside the motor case. Pressurising the pistons produces a turning moment on the eccentric by direct hydraulic pressure, thus eliminating connecting rods or other mechanical linkage between piston and crankshaft and the resultant losses associated with such components. Each piston is supported at the reaction pad end by a hydrostatic bearing and is free to float sideways to accommodate the orbiting action of the cylinder block. Correct location of the cylinder block relative to the reaction pads is maintained by a coupling. The crankshaft is supported on large taper roller bearings capable of accepting both radial and axial external loads. Fluid is fed to and from the crankshaft galleries through a rotating distributor system at the non-drive end of the shaft.

FREE-WHEEL ABILITY

The ability to free-wheel is an inherent feature of the SMA range. Only hydraulic system pressure retains the pistons against their respective pads; therefore if the motor is isolated from the rest of the system the piston sleeves are free to retract, thus allowing the cylinder block to orbit without pumping fluid and consequently with negligible resistance. Piston retraction is achieved by pressurising the motor case. Drive is re-engaged by opening the hydraulic supply to the motor, when the pistons resume their normal working position against their respective pads. During this process the large hydrostatic bearing surface has a dampening effect, preventing harsh contact between each piston and its pad.

MULTIPLE DISPLACEMENT OPTION

Multiple displacements are achieved as follows:

'C' Configuration:

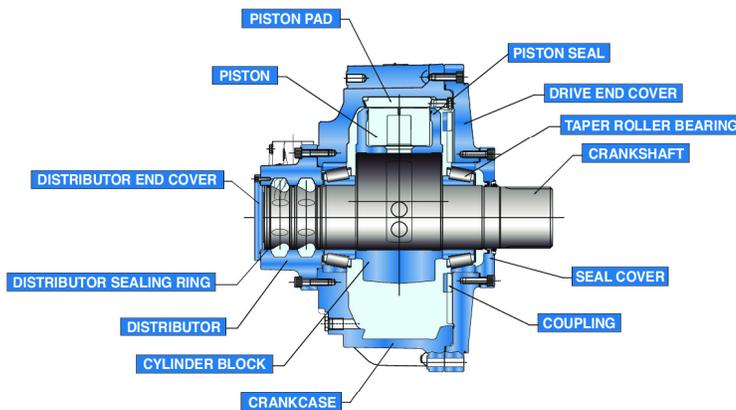
By separating the bore and wall areas of the pistons, so they can be pressurised simultaneously or independently. Pressurising the full area gives maximum torque and displacement, whilst pressurising the wall or bore areas gives intermediate and minimum displacements respectively.

'T' Configuration:

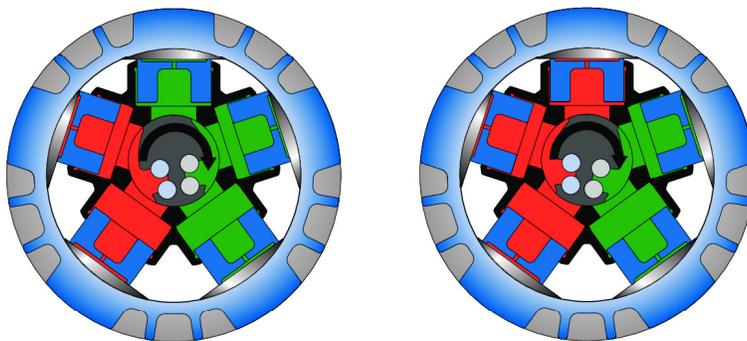
By separating each bank of this double-bank motor, so each bank can be pressurised simultaneously or independently. Pressurising both banks gives maximum torque and displacement, whilst pressurising only one bank gives minimum displacements respectively.

In each case, flow is directed to individual displacement areas through dual galleries in the crankshaft, via an integral pilot-operated selector valve, mounted on the distributor housing. This valve ensures that the non-pressurised area remains full of hydraulic fluid, thus allowing displacement to be changed while the motor is turning, under load.

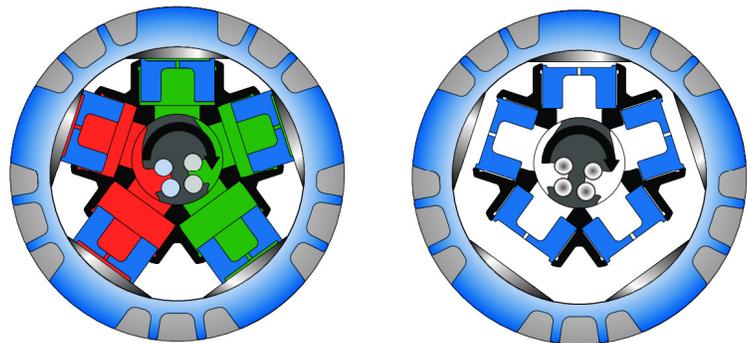
COMPONENT IDENTIFICATION



High pressure ■ Low pressure ■



MOTING



MOTING

FREEWHEEL