

# ROL-SEAL® Hydraulic Motors OVERVIEW DOCUMENT

ENGLISH. (For Metric data, see [www.vonruden.com/hydraulic\\_motors/rolseal/rol-seal\\_oview\\_met.html](http://www.vonruden.com/hydraulic_motors/rolseal/rol-seal_oview_met.html))



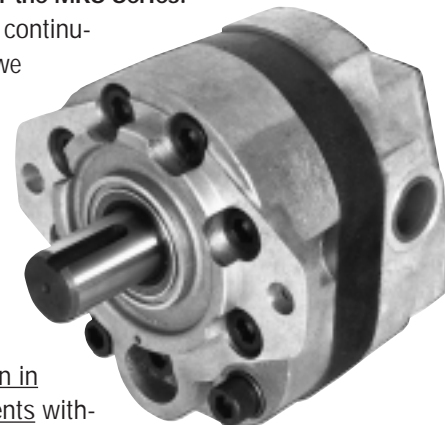
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For almost 40 years, Von Ruden's Rol-Seal® Rotary Abutment hydraulic motors have been the preferred choice for designers working on applications where normal motors produce marginal or unsatisfactory results. Essentially Rol-Seal motors deliver four advantages:

- 1. Higher Starting Torque:** Typically this is in the 92-94% range. That means overall hydraulic systems savings because designers can use smaller motors. Higher starting torque also means increased vehicle gradeability and more drawbar pull.
- 2. Higher Running Torque:** Friction loss and viscous drag at high speed on larger displacement Rol-Seal motors are lower due to the internal rolling contact seal elements. Large flow passages reduce internal pressure drop. Typical breakaway pressure at a no load condition is less than 10 psi.
- 3. More Useable Speed:** These motors run smoothly at low speed (less than 10 RPM) with minimal performance loss at high speeds. (See chart below.) Their low speed characteristics often eliminate the need for additional speed reduction.
- 4. Long Life:** Performance stays relatively constant over the motor's working life. Internal rolling seal elements are essentially frictionless and wear compensating. The rolling seal element design also tolerates a high degree of contamination so the motors perform well in free-wheeling applications.

## High Speed Modifications for the MRS Series:

For applications that require continuous speeds over 2000 rpm we have modified the basic Rol-Seal design to produce small-displacement, 6000 rpm units with surprisingly robust, 300 lb. radial load capacities. These also are available in a Double Seal configuration that provides extra protection in dirt or dust-laden environments without increasing their overall space requirements!



**Rol-Seal's Rotary Abutment Advantage:** Especially on the larger models where the positive contact provided by rolling seals between rotor and housing and between abutments and seal plates creates virtually frictionless operation – these motors are relatively insensitive to wear over their exceedingly long working life.

To simplify your design project, we also build Motor Brakes and Planetary Gear Boxes that are compatible with most models.

Complete technical data for all these is on our web site. However, we and our global network of representatives always welcome the opportunity to answer any questions you might have and make recommendations that could help simplify your task. Consider us to be always at your service.

Note: For applications where concerns for precision and repeatability are paramount, our line of Axial Vane hydraulic motors is also available.

## ROL-SEAL GENERAL PERFORMANCE SPECIFICATIONS

		DISPLACEMENT (in <sup>3</sup> /rev.)													
		Models MRSA & MRSAA							Models RSA & RSB				Model RSC		
		.22	.38	.45	.60	.70	.85	1.00	2.0	3.0	4.0	5.0	6.0	8.0	10.0
Flow (gpm)	Continuous	4.8	8.3	9.8	13.0	15.2	17.4	21.7	18	20	18	17	39	42	39
	Intermittent	6.7	11.5	13.6	18.2	21.2	25.8	30.3	31	39	44	39	52	59	61
Max. Speed <sup>1,4</sup> (rpm)	Continuous	6000	6000	6000	6000	6000	6000	6000	2000	1500	1000	750	1500	1200	900
	Intermittent	7000	7000	7000	7000	7000	7000	7000	3500	3000	2500	1800	2000	1700	1400
ΔPressure <sup>2,3,4</sup> (psi)	Continuous	3000	3000	3000	3000	2500	2500	2500	2500	2250	2000	2000	2000	2000	2000
	Intermittent	4000	4000	4000	4000	3500	3500	3500	3000	3000	3000	3000	3000	3000	3000
	Peak	5000	5000	5000	5000	4500	4500	4500	3750	3750	3500	3500	3500	3500	3500
Max. Theoretical Torque (lb. in.)	Continuous	105	182	215	287	334	406	478	796	1075	1273	1592	1910	2547	3184
	Intermittent	140	242	287	382	446	541	637	955	1433	1910	2388	2866	3821	4777
Weight (lb.)		11.5	11.6	11.7	11.8	12.3	12.4	12.6	13	14	15	16	36	39	42

Notes: 1. Intermittent conditions must be less than 10% of every minute.  
2. Inlet and return pressures are not to exceed ratings listed above.

3. Peak conditions are to be less than 1% of every minute.  
4. Intermittent speed and peak pressure must not occur simultaneously.

Von Ruden Manufacturing • Buffalo, MN • Fax 763.682.3954 • Phone 763.682.3122 • Web: [www.vonruden.com](http://www.vonruden.com)

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## ROTATIONAL MOMENT OF INERTIA (WK<sup>2</sup>)

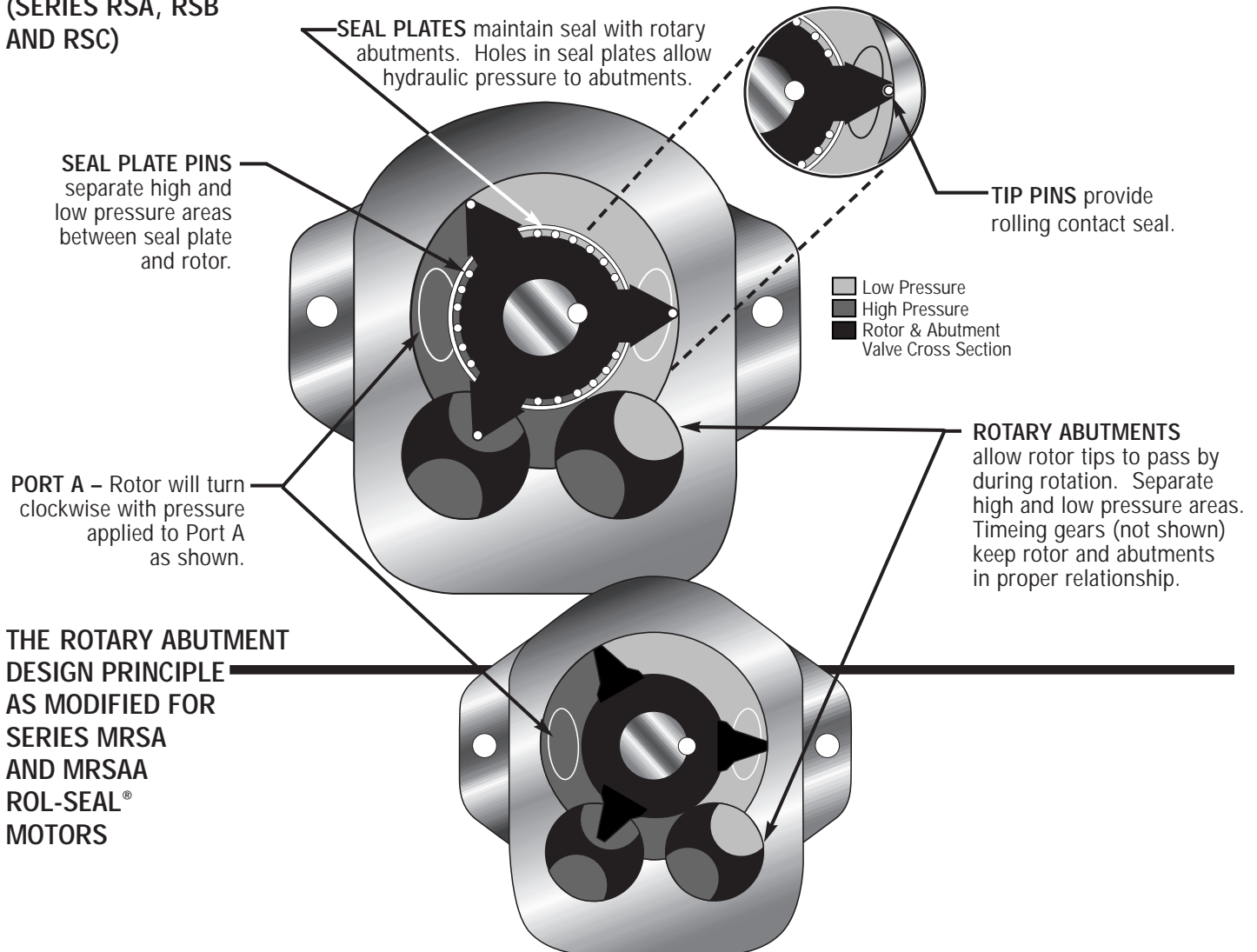
Model	Displacement (in <sup>3</sup> /rev)	lb-in <sup>2</sup>
MRSA/MRSAA	.22 – 1.00	Contact Factory
RSA/RSB	2.0	1.23
RSA/RSB	3.0	1.42
RSA/RSB	4.0	1.61
RSA/RSB	5.0	1.80
RSC	6.0	7.25
RSC	8.0	8.15
RSC	10.0	9.04

## SHAFT RADIAL AND THRUST LOAD CAPACITY

Model	Radial	Thrust
MRSA/MRSAA	300 lbs <sup>1</sup>	250 lbs.
RSA/RSB	600 lbs. <sup>2</sup>	600 lbs.
RSC	1000 lbs. <sup>3</sup>	1000 lbs.

Notes: 1. Based on load located .5" from mounting flange.  
2. Based on load located 1" from mounting flange.  
3. Based on load located 1.5" from mounting flange.

## THE ROTARY ABUTMENT DESIGN PRINCIPLE AND THE FEATURES BUILT INTO THE ROL-SEAL® MOTOR (SERIES RSA, RSB AND RSC)



## THE ROTARY ABUTMENT DESIGN PRINCIPLE AS MODIFIED FOR SERIES MRSA AND MRSAA ROL-SEAL® MOTORS

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## COMPLETE, OFF-THE-SHELF OR CUSTOM ENGINEERED DRIVE PACKAGES

For customers whose applications require a subassembly of pre-engineered hydraulic drive components, Von Ruden Manufacturing offers a full line of compatible products. By combining a Rol-Seal motor with either (or both) the brake and gear box components referenced earlier on these pages, we can deliver a single unit that simplifies your inventory and lowers your assembly costs.

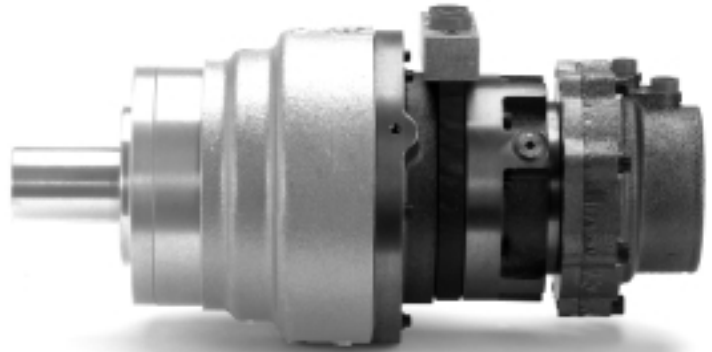
If the Rol-Seal motors described here do not meet the requirements of your application, we suggest you also review the specifications of our Axial Vane motors. Often, these are the ideal solution when highly accurate and repeatable positioning is paramount. They too can be mated to our brakes and gear boxes when subassemblies are preferred.

We also have a complete line of Overhung Load Adaptors for applications that include high radial and thrust loads on the motor. In many situations they also provide a maintenance advantage by simplifying motor removal and protecting the motor shaft seal from contamination.

When required, you'll also find that our extensive line of right angle and speed reduction gearboxes meet the same high performance and quality standards as all of Von Ruden Manufacturing's products.

Finally, if yours is an application that requires a custom built component of the type we manufacture, our engineers always welcome the opportunity to discuss those needs. Von Ruden's new manufacturing facilities are fully equipped to handle a wide variety of that type work.

Complete engineering data on all our products is available on our web site, through your local Von Ruden representative, or by contacting our factory directly at the number below.



## ROL-SEAL GENERAL MAINTENANCE ISSUES

### Fluids:

We recommend a premium quality, anti-wear type mineral based hydraulic fluid with a minimum oil viscosity of 70 ssu. Maximum operating temperature is 180 degrees F.

### Filtration:

A fluid cleanliness level of ISO 17/14 should be maintained at all times. Nominal filtration must be 25 micron or better.

### Case Drain:

These motors are provided with a case drain port that must be connected to the reservoir with no more than 250 psi surge pressure. Internal cross port check valves (option-24) can be provided when motors are not subject to instantaneous shock pressures (such as with dynamic braking).

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