WHATS HOT AT ROPER PUMP!

PDM customers need a motor that can go deeper, run at higher temperatures and last longer in the hazardous environments they are exposed to. Roper Pump has responded with a new elastomer for our stators that fits those needs to a tee: Introducing **DragonSlayer® HP** (High Performance) elastomer. DragonSlayer is ideally suited for underbalanced (UBD) drilling and drilling with invert (oil-based) mud systems.

The DragonSlayer elastomer has been lab tested over a period of several years. Our engineering staff ran multiple 500-hour life tests with little to no wear upon inspection. In the spring of 2003, this elastomer was field tested to 425°F/218°C in a rigorous 6-month trial period, exposing the elastomer to actual field conditions in over 20 wells.

Since their commercial introduction in 2004, DragonSlayer power sections have replaced the HSN stators in more that 30 motor fleets worldwide.

THE RESULTS ARE IN, AND WE ARE HAPPY TO ANNOUNCE THAT DRAGONSLAYER® IS A "WINNER."

This compound has been developed to surpass the performance of conventional NBR compounds in five areas:

1. Heat resistance
2. Mechanical properties
3. Dynamic properties
4. Chemical resistance; resilience to N_2 and CO_2
5. Abrasion resistance; Wear, entrained solids, and chunking resistance

DragonSlayer rubber has twice the strength, flexibility, and wear resistance of standard rubber. The increased price is cost effective in typical mud motor applications when compared to standard rubber. This is based on the increased life of the stator lining and the potential cost for swapping a failed power section in the hole.

The tensile strength of DragonSlayer rubber is twice that of standard nitrile. This translates to a longer fatigue life and less tendency toward chunking of the rubber.

Greater wear resistance of DragonSlayer rubber also means longer stator life, due to reduced damage to the rubber from solids in the drilling fluids. The better chemical resistance can be important when acids or other strong chemicals are present in the well.

Differences are even greater in high temperature applications. After heat aging the DragonSlayer rubber for 50 hours at 400˚F/204˚C, it exhibits mechanical properties (see table) nearly as good as new standard nitrile. Under the same conditions, the strength and flexibility of the standard nitrile properties were reduced to the point that it would fail in service.

Condition	Standard	Dragonslayer
	Shore Hardness Number (Type A Durometer)	
as molded	77	68
25 hours at 400˚F/204˚C	92	75
50 hours at 400˚F/204˚C	95	78
	Tensile Strength (PSI)	
as molded	2,325	4,651
25 hours at 400˚F/204˚C	910	2,080
50 hours at 400˚F/204˚C	1,060	1,966
	Elongation (%)	
as molded	400%	1,600%
25 hours at 400˚F/204˚C	50%	400%
50 hours at 400˚F/204˚C	25%	350%

Table 1: Mechanical Properties of Typical Test Samples

Dragonslayer® High Performance Power Sections
Success Stories

Case History No. 1

At a well in Mexico, using water based mud, and with a bottom hole temperature of 160ºF/71ºC, a driller used stators lined with DragonSlayer rubber. They were able to greatly increase the Weight-On-Bit, achieving a Rate-Of-Penetration of 173 feet/hour. This meant that they were able to drill over 7600 feet in only 44 hours.

Case History No. 2

A coiled tubing operation in South Texas had tried stators from several manufacturers, but could not get more than two hours life out of any of them in wells with bottom hole temperatures in the 390-415ºF range (198-212ºC). Since a run of 4 to 6 hours was usually needed to mill out concrete, or remove multiple bridge plugs, several trips out of the hole were required to change motors. Using stators lined with DragonSlayer rubber, they have been able to complete two or more runs with the same stator before relining.

Case History No. 3

An operator in South Texas had not been able to perform a “one trip operation” in over 2 years resulting in high operating costs. DragonSlayer was introduced in their next well involving 411°F/211°C bottom hole temperature and Nitrogen foam. The job was milled to bottom in 3 hours.

		Standard	(Optional) Dragonslayer High Performance
Recommended Maximum Temperature		325 ºF 163 ºC	425 ºF 218 ºC
Drilling Fluid (Mud) Types	Water based	Recommend	Recommend
	Oil Based	Acceptable	Recommend
	Synthetic (PAO) based	Not Recommended	Recommend
	Shelf Life	3 years	3 years

Table 2: Application Recommendation

This Elastomer can be injected into any of Ropers stators regardless of size or configuration.

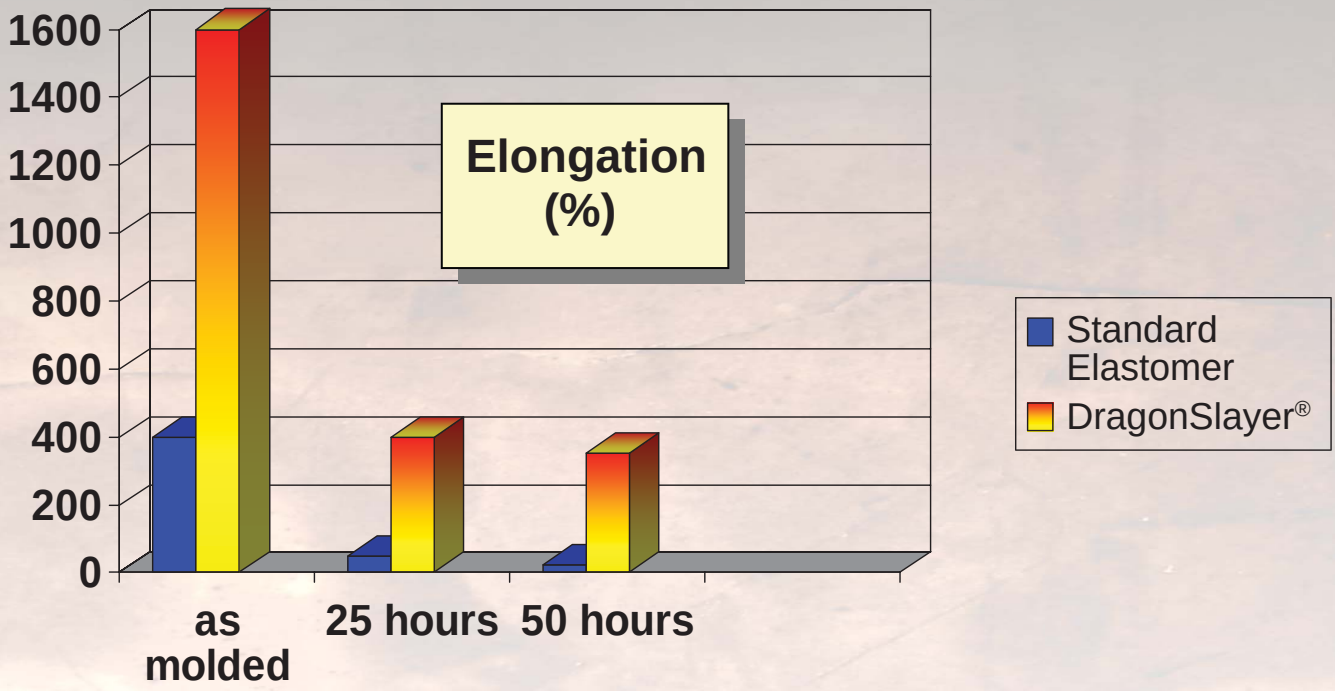
Call to discuss how Roper’s new Dragonslayer power section can allow your company to go where you need to be today.

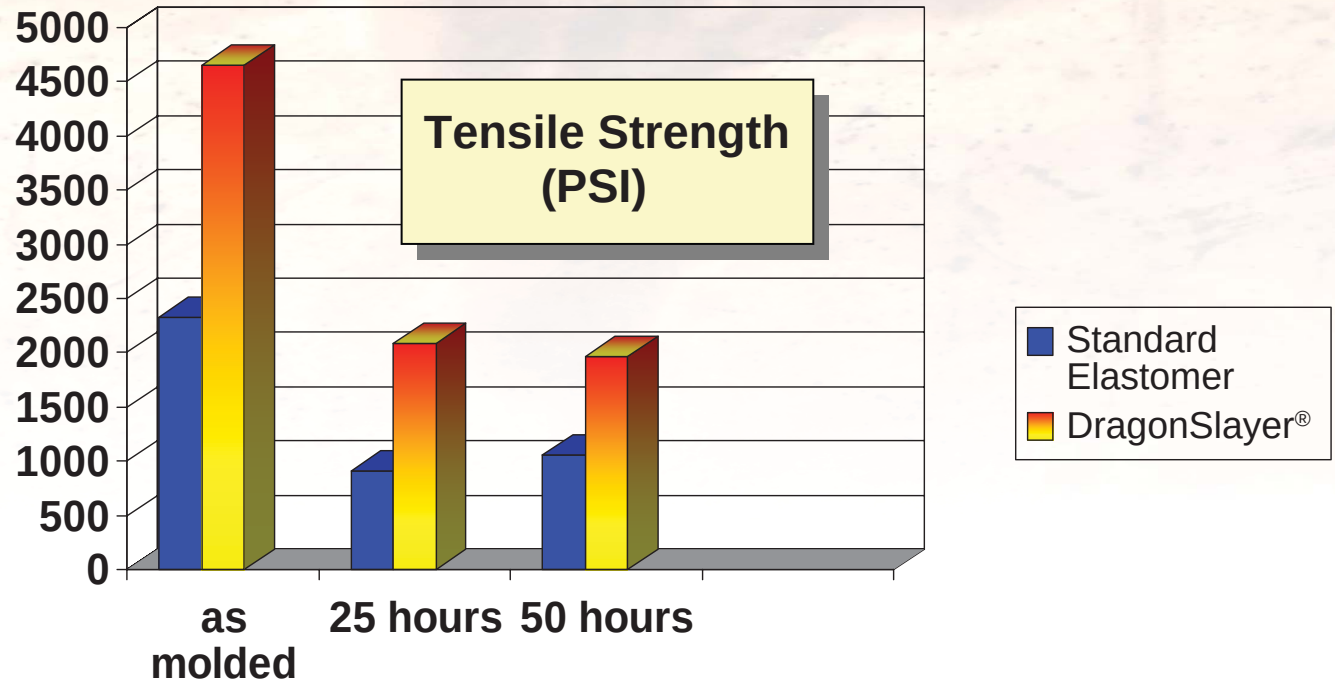
Power Section/Subsurface Oilfield Customer Service: (706) 336-3331

Power Section/Subsurface Oilfield Technical Support: (706) 336-3463

Dragonslayer® HP Elastomer

Elongation and Tensile Properties
aged at 400º F / 204º C





Roper Pump Power Sections

Model #: 169 R 56 18

- 169 — Nominal OD: 1 11/16"
- R — Classification: see side bar
- 56 — Lobe configuration: 5/6 multilobe
- 18 — # of stages: 1.8 stages

Classifications:

- R Regular
- X Extended Length
- H High Flow
- L Low Flow
- S Slow Speed
- A Air

MODEL	OD	Lobes	Stages	Fits	FLOW GPM	FULL LOAD SPEED RPM	GAL PER REV	REV PER GAL.	FULL LOAD TORQUE FT-LBF	STALL
120R3425	1-1/4”	3/4	2.5	S	15-30	85-620	0.03	35.70	25	40
120A4540	1-1/4”	4/5	4.0	S	10-20	10-300	0.03	31.00	50	60
150R1230	1-1/2”	1/2	3.0	S	20-40	780-1840	0.02	52.63	23	50
150R1240	1-1/2”	1/2	4.0	X	5-20	300-1320	0.02	50.75	30	70
150R5630	1-1/2”	5/6	3.0	S, X	15-40	10-600	0.06	15.90	75	106
169R1230	1-11/16”	1/2	3	S	20-40	760-1795	0.02	52.63	23	50
169R5618	1-11/16”	5/6	1.8	S, X, 2X	25-45	35-280	0.08	12.50	75	105
169A5620	1-11/16”	5/6	2.0	S	30-60	35-325	0.10	9.71	80	115
169A5630	1-11/16”	5/6	3.0	S, 1/2X, X	30-60	45-340	0.10	9.71	122	175
169R5630	1-11/16”	5/6	3.0	S, X, 2X	25-45	115-435	0.06	15.87	75	110
169R5644	1-11/16”	5/6	4.4	S, 1/2X, X, 2X	25-45	70-290	0.09	11.11	145	225
169R5648	1-11/16”	5/6	4.8	S, X, 2X	25-45	125-445	0.06	15.87	125	185
175R1230	1-3/4”	1/2	3.0	S, X	20-40	760-1795	0.02	52.63	23	50
175R1240	1-3/4”	1/2	4.0	S	20-40	695-1730	0.02	52.63	31	65
175R3430	1-3/4”	3/4	3.0	S	20-40	385-1115	0.03	37.04	32	60
175R5610	1-3/4”	5/6	1.0	S, X, 2X	20-40	68-455	0.05	19.61	20	30
175R5640	1-3/4”	5/6	4.0	S, X, 2X	20-40	145-535	0.05	19.61	81	130
206R2360	2-1/16”	2/3	6.0	S	20-60	160-585	0.07	14.10	170	300
206R4510	2-1/16”	4/5	1.0	S	20-50	10-200	0.16	6.41	50	75
206A4520	2-1/16”	4/5	2.0	S	50-80	165-355	0.16	6.41	124	205
206A4530	2-1/16”	4/5	3.0	S, X	50-80	175-365	0.16	6.41	186	310
206R4530	2-1/16”	4/5	3.0	S, X	20-50	70-445	0.08	12.66	95	160
206R4570	2-1/16”	4/5	7.0	S, X	20-50	200-350	0.06	18.00	155	310
206R5630	2-1/16”	5/6	3.0	S, X, 2X	20-50	5-240	0.13	8.00	149	220
212R5625	2-1/8”	5/6	2.5	S, 1/2X, X	30-60	1-181	0.15	6.71	182	230
212R5660	2-1/8”	5/6	6.0	S, X, 2X	20-50	80-465	0.08	12.82	187	320
238R4560	2-3/8”	4/5	6.0	S	20-50	235-840	0.05	20.41	117	240
238R5640	2-3/8”	5/6	4.0	S	40-80	150-445	0.14	7.41	214	385
238R7840	2-3/8”	7/8	4.0	S	40-80	75-290	0.19	5.41	294	470
288R1250	2-7/8”	1/2	5.0	S	25-100	175-1010	0.09	11.11	179	475
288R2370	2-7/8”	2/3	7.0	S	30-60	185-560	0.08	12.5	225	435
288R3450	2-7/8”	3/4	5.0	X, 2X	25-100	130-760	0.12	8.47	235	610
288R4530	2-7/8”	4/5	3.0	S	25-100	35-430	0.19	5.29	225	455
288L4550	2-7/8”	4/5	5.0	S	65-105	100-300	0.13	7.50	225	388
288R5620	2-7/8”	5/6	2.0	S	50-100	90-265	0.28	3.55	225	400
288R5630	2-7/8”	5/6	3.0	S, X, 2X	25-100	13-330	0.24	4.24	281	530
288R5640	2-7/8”	5/6	4.0	S, X, 2X	25-100	15-335	0.24	4.24	375	715

Roper Pump Power Sections

MODEL	OD	Lobes	Stages	Fits	FLOW GPM	FULL LOAD SPEED RPM	GAL PER REV	REV PER GAL.	FULL LOAD TORQUE FT-LBF	STALL
288H5642	2-7/8”	5/6	4.2	S, 2X						
288H5647	2-7/8”	5/6	4.7	S, 2X	50-125	115-390	0.27	3.73	498	1065
288L5650	2-7/8”	5/6	5.0	S	20-50	9-154	0.21	4.85	410	625
288R6715	2-7/8”	6/7	1.5	S	25-100	21-430	0.18	5.43	110	210
288R6730	2-7/8”	6/7	3.0	S	25-100	33-440	0.18	5.43	220	440
288A7820	2-7/8”	7/8	2.0	S	75-125	55-160	0.46	2.16	369	545
288R7830	2-7/8”	7/8	3.0	S	50-100	42-178	0.37	2.71	440	690
288H7845	2-7/8”	7/8	4.5	S	50-125	45-262	0.35	2.89	621	1070
338R4548	3-3/8”	4/5	4.8	S	30-120	25-298	0.33	3.04	629	1280
350X3490	3-1/2”	3/4	9.0	X	75-150	363-790	0.18	5.68	629	1830
350R4540	3-1/2”	4/5	4.0	S, X, 2X	75-150	127-315	0.40	2.52	633	1340
350R5623	3-1/2”	5/6	2.3	S	75-150	142-332	0.39	2.54	488	1120
350R5630	3-1/2”	5/6	3.0	S	75-150	126-315	0.40	2.51	475	1000
350R7810	3-1/2”	7/8	1.0	S	90-150	25-100	0.46	2.17	115	178
350A7820	3-1/2”	7/8	2.0	S	100-175	83-203	0.63	1.60	498	850
350R7830	3-1/2”	7/8	3.0	S	75-150	105-285	0.42	2.40	498	960
350R7838	3-1/2”	7/8	3.8	S, X	75-150	52-176	0.60	1.66	915	1540
350X7870	3-1/2”	7/8	7.0	S	75-150	109-284	0.43	2.34	1190	2380
375R1250	3-3/4”	1/2	5.0	S	25-75	125-425	0.16	6.13	337	735
375R4535	3-3/4”	4/5	3.5	S, X	80-170	70-211	0.64	1.57	885	1690
375RD4535	3-3/4”	4/5	3.5	S, X	80-170	218-542	0.28	3.60	387	950
375L4553	3-3/4”	4/5	5.3	S	50-125	30-220	0.39	2.57	760	1430
375S7823	3-3/4”	7/8	2.3	S	80-170	1-72	1.23	0.81	1108	1500
375S7834	3-3/4”	7/8	3.4	S	80-170	1-73	1.23	0.81	1667	2300
375R8914	3-3/4”	8/9	1.4	S	80-170	108-312	0.44	2.26	246	490
375R9034	3-3/4”	9/10	3.4	S	80-170	159-436	0.33	3.07	441	930
475R1230	4-3/4”	1/2	3.0	S	100-250	165-488	0.46	2.16	554	1400
475X1270	4-3/4”	1/2	7.0	S	100-250	284-780	0.30	3.30	844	2700
475R3450	4-3/4”	3/4	5.0	S	100-250	123-359	0.64	1.57	1266	3400
475X3499	4-3/4”	3/4	9.9	S, X	100-250	195-541	0.43	2.30	1714	5300
475R4535	4-3/4”	4/5	3.5	U, S, X	100-250	69-224	0.97	1.03	1545	3600
475X4560	4-3/4”	4/5	6.0	S, X, 2X	100-250	70-222	0.98	1.02	2344	5500
475R5630	4-3/4”	5/6	3.0	S, X	100-250	52-182	1.15	0.87	1370	2900
475X5660	4-3/4”	5/6	6.0	S, X	100-250	53-184	1.15	0.87	2741	5900
475A7820	4-3/4”	7/8	2.0	S	150-300	32-101	2.18	0.46	1736	3000
475R7822	4-3/4”	7/8	2.2	S	100-250	15-96	1.85	0.54	1622	2700
475RD7822	4-3/4”	7/8	2.2	S	125-425	45-145	1.96	0.51	1500	2700
475R7830	4-3/4”	7/8	3.0	S, X	100-250	27-124	1.54	0.65	1839	3300
475X7838	4-3/4”	7/8	3.8	S	100-250	27-110	1.82	0.55	2967	4600

Roper Pump Power Sections

MODEL	OD	Lobes	Stages	Fits	FLOW GPM	FULL LOAD SPEED RPM	GAL PER REV	REV PER GAL.	FULL LOAD TORQUE FT-LBF	STALL
475X7850	4-3/4”	7/8	5.0	S, X	100-250	28-125	1.54	0.65	3065	5700
475R9025	4-3/4”	9/10	2.5	S	100-250	12-85	2.02	0.50	1914	3100
500R6750	5”	6/7	5.0	S	150-300	110-254	1.04	0.96	2065	4900
550R7830	5-1/2”	7/8	3.0	S	200-350	58-121	2.33	0.43	2789	5500
625R1240	6-1/4”	1/2	4.0	S	150-400	125-382	0.97	1.03	1547	4500
625R4540	6-1/4”	4/5	4.0	S	150-400	78-242	1.51	0.66	2413	6700
625R5650	6-1/4”	5/6	5.0	S	150-400	81-251	1.46	0.68	2908	8100
625X6750	6-1/4”	6/7	5.0	S	150-400	34-121	2.84	0.35	5665	13000
625A7820	6-1/4”	7/8	2.0	S	200-500	31-113	3.61	0.28	2877	5800
625S7820	6-1/4”	7/8	2.0	S	150-400	8-59	4.88	0.21	3887	6600
625R7830	6-1/4”	7/8	3.0	S	150-400	32-123	2.71	0.37	3236	6800
625S7830	6-1/4”	7/8	3.0	S	150-400	9-60	4.88	0.21	5830	10100
625X7848	6-1/4”	7/8	4.8	S	150-400	28-111	2.99	0.33	5717	12000
625R8940	6-1/4”	8/9	4.0	S	150-400	34-130	2.59	0.39	4134	8900
650R1230	6-1/2”	1/2	3.0	S	200-500	180-494	0.95	1.05	1137	3600
650R1240	6-1/2”	1/2	4.0	S	200-500	174-478	0.99	1.02	1570	5000
650R8930	6-1/2”	8/9	3.0	S, X	200-500	37-128	3.27	0.31	3903	8300
650RD8930	6-1/2”	8/9D	3.0	U, S, X	200-500	38-127	3.35	0.30	5030	8800
650R8940	6-1/2”	8/9	4.0	S	200-500	38-127	3.35	0.30	5338	11800
675R1240	6-3/4”	1/2	4.0	S	200-500	157-429	1.10	0.91	1751	5600
675R4550	6-3/4”	4/5	5.0	U, S, X	300-600	133-283	1.99	0.50	3956	12400
675X4570	6-3/4”	4/5	7.0	S	300-600	131-278	2.03	0.49	5649	17800
675R5650	6-3/4”	5/6	5.0	S, X, 2X	300-600	116-249	2.24	0.45	4458	13300
675X5650	6-3/4”	5/6	5.0	X	300-600	70-175	2.81	0.36	5400	12450
675X6750	6-3/4”	6/7	5.0	S, X	300-600	75-165	3.29	0.30	6554	17300
675R7830	6-3/4”	7/8	3.0	S	300-600	66-150	3.52	0.28	4203	10200
675S7830	6-3/4”	7/8	3.0	S	300-600	30-77	6.28	0.16	7508	14900
675X7850	6-3/4”	7/8	5.0	S	300-600	66-150	3.58	0.28	7119	17800
675R7860	6-3/4”	7/8	6.0	S	300-600	109-237	2.33	0.43	5570	15800
675R8920	6-3/4”	8/9	2.0	S	300-600	58-134	3.89	0.26	3100	7300
675R8930	6-3/4”	8/9	3.0	S, X	300-600	59-135	3.89	0.26	4651	11200
675X9040	6-3/4”	9/0	4.0	S	200-500	10-95	3.52	0.28	5250	11990
775R4540	7-3/4”	4/5	4.0	S	400-700	82-153	4.17	0.24	6652	18300
775R6730	7-3/4”	6/7	3.0	U, S	400-700	93-173	3.69	0.27	4411	12200
775R6740	7-3/4”	6/7	4.0	S, X	400-700	93-174	3.69	0.27	5882	16500
775RD7830	7-3/4”	7/8	3.0	S, X, 2X	400-700	64-123	5.07	0.20	6063	15200
775X7844	7-3/4”	7/8	4.4	S	400-700	59-112	5.50	0.18	9646	23800
775R9030	7-3/4”	9/10	3.0	S, X	400-700	76-145	4.26	0.23	5096	12500

Roper Pump Power Sections

MODEL	OD	Lobes	Stages	Fits	FLOW GPM	FULL LOAD SPEED RPM	GAL PER REV	REV PER GAL.	FULL LOAD TORQUE FT-LBF	STALL
800X3450	8”	3/4	5.0	2X	500-700	50-175	3.26	0.31	6490	11865
800R4550	8”	4/5	5.0	S	300-900	79-263	3.43	0.29	6470	22000
800X6760	8”	6/7	6.0	S, X	300-900	67-228	3.69	0.27	8823	27600
800R7830	8”	7/8	3.0	S, X	300-900	38-144	5.63	0.18	6728	17600
800X7840	8”	7/8	4.0	S	300-900	34-129	6.30	0.16	10793	27800
800R8940	8”	8/9	4.0	S, X	300-900	50-177	4.66	0.21	7419	21000
800X8960	8”	8/9	6.0	S	300-900	52-185	4.50	0.22	10750	31000
962R3440	9-5/8”	3/4	4.0	S	600-1200	122-254	4.52	0.22	7199	26200
962X3450	9-5/8”	3/4	5.0	X	300-900	40-165	4.79	0.21	9540	25500
962R4540	9-5/8”	4/5	4.0	S	600-1200	103-215	5.31	0.19	8466	29400
962HTC4550	9-5/8”	4/5	5.0	S	300-900	50-200	3.95	0.25	7865	22500
962R5630	9-5/8”	5/6	3.0	S	600-1200	57-123	8.94	0.11	10685	30400
962S9040	9-5/8”	9/10	4.0	S	800-1100	65-93	10.54	0.09	16793	42500
1125R6730	11-1/4”	6/7	3.0	S	900-1500	79-137	10.31	0.10	12320	39600
1275S9030	12-3/4”	9/10	3.0	S	1000-1600	53-88	16.62	0.06	19866	56400

Detailed, Individual spec sheets are available for each model.
Consult your Roper Power Section Field Representative
or the factory for specifics.

*Stall torques shown are approximate and at maximum flow shown.
Specifications subject ot change without notice.

ROPER PUMP COMPANY

The Leading Force Behind Liquids™

Roper Pump Company is a global supplier of high quality positive displacement pumps, designed to handle a broad range of industrial applications. In addition to helical gear pumps, progressing cavity pumps and triple screw pumps, we design and develop numerous custom pumps for customers with unique and demanding applications.

From a small pump company founded in 1857, Roper Pump has grown into a technological leader. With a large installed base, we have both the knowledge and experience to help you solve your most challenging pumping problems...and our strong global distribution network ensures that your needs are met on time, every time.

OUR MARKETS

INDUSTRIAL

Highlighted by the industry leading 3600 series, our ever expanding product line of helical gear pumps, progressing cavity pumps, and custom designed positive displacement pumps provide versatile pumping solutions for even the most challenging industrial applications.

Mag drives, stainless steel, and special seal options are available on select models.

TRANSPORT

We have a century of experience in liquid cargo transfer. From biodiesel to molasses, Roper Pump has a pump for your application: Mixing, blending, recirculating, and transferring a broad range of viscosities in either a fixed or mobile transfer application.

Our 9722 stainless steel pump handles a variety of corrosive liquids, and our 5600 series features rubber gears for applications with high solids and heavy liquids.

POWER GENERATION

Roper Pump Company designs and manufactures fuel pumps and liquid fuel flow dividers for heavy industrial gas turbines.

DuraFlow™ Corrosion-Resistant Flow Dividers resist fuel-borne particulate contamination and corrosion, for reliable liquid fuel system startup.

We also manufacture seal oil pumps and lube oil pumps for rotating equipment, including generators.

OIL & GAS

Whether it's highly corrosive drilling fluids, or thick and abrasive slurries and sludges, Roper Pump has pumping solutions from the well to the refinery.

DragonSlayer® High Performance Power Sections allow mud motors to drill deeper, run at higher temperatures, and last longer in hazardous and punishing conditions.

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