



CTRT inc.
"Downhole Solutions"

**METAL to METAL
MOTORS GUIDE**



**SRT METAL to METAL
DOWHOLE MOTORS
Thru-Tubing Performance
Motor**

Sizes 1-11/16" – 3-1/8"

WWW.CTRT.US.COM

SRT METAL to METAL DOWNHOLE MOTOR

Thru-Tubing Performance Motor Sizes 1-11/16" – 3-1/8"

The **SRT** Downhole Thru-Tubing **Metal to Metal Motor** incorporates our Patented Short Radius Technology that features a **Metal to Metal Rotor & Stator** with a wide range of torque, speed, and flow rates to convert hydraulic fluid energy, created by flow and pressure, into mechanical energy and improves operational performance from previous configurations. The **Metal to Metal SRT** was designed to handle extreme hot holes, corrosion resistance to acids, nitrogen, solvents and high chloride fluids. The **Metal to Metal SRT** eliminates any elastomer rubber throughout the motor preventing swelling, rubber chunking and debonding. This positive displacement motor produces optimum power output with maximum efficiency for today's extreme Thru-Tubing Drilling demands.

DESIGN ADVANTAGES & BENEFITS

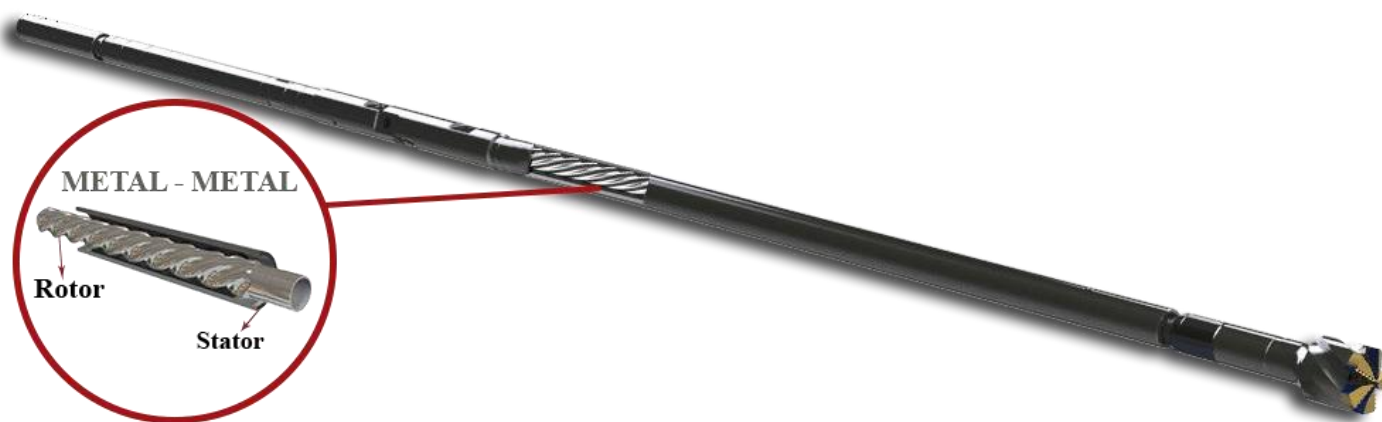
- The **SRT Metal to Metal Motor** incorporates a **metal-metal power section** that allows temperatures to **500°F**, eliminates nitrogen swelling of elastomer as there is no rubber in the motor and can be run with adverse fluids. This unique patented design that utilizes thrust bearings in an on-bottom and off-bottom operation and improves the load bearing capability.
- NO spacers or shims are needed to make-up slack in the thrust bearings during assembly as typically associated with today's angular contact bearings. Instead a compression tension system is utilized that eliminates any special spacing requirements. This greatly improves ease of assembly and maintenance turn around time.
- The new generation **SRT™-MM** improves radial stabilization at the bit box and throughout the length of the bearing assembly to significantly reduce side loading in deviated wells.
- We have designed into the **SRT™-MM** increases in internal and external cross-sectional wall thicknesses to enables the **SRT™-MM** to provide strength improvements unmatched by competing downhole motors.
- Through value added engineering, the **SRT™-MM** is truly the next generation of downhole motors. This latest generation allows a greater number of plugs to be drilled in longer laterals wells while reducing cost per job. It is simply the easiest to assemble and most reliable motor on the market today.

TRANSMISSION

The bearing assembly incorporates a single-piece flex shaft and flow diverter into one component that exceed the torque capability of the power section and is the simplest transmission for standard applications in a small-diameter motor.

BEARING ASSEMBLY

The **SRT™-MM** Downhole Motor's jarrable bearing assembly improves weight on bit, side loading, and over pulls capabilities. It utilizes thrust bearings split internally for weight on bit in drilling mode and for off-bottom operation. It does not use a two piece (Inner/Outer) bearing assembly associated with today's current drilling motors, but rather a single unison dual bearing assembly. This bearing assembly is designed for a mud lubrication bearing system typically utilized in Thru-Tubing operations. The thrust bearings serve to efficiently operate with static and dynamic loads in drilling operations and improvements were implemented in this latest generation. The radial bearings provide perpendicular side loading strength to maintain optimal rotational support. The **SRT™-MM** also improves the internal catch system in case of drive shaft failure that keeps the lower end intact when pulling out of hole and a top sub catch system if stator connection was to fail to keep rotor & lower end together and allow for evacuation of motor assembly from hole.



SRT METAL to METAL

PN: 150SRTX-MM11126.2

1.50" 11/12 Lobe, 6.2 Stage

Revision: A 18/07/2023



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SRTX THRU TUBING DRILL MOTOR SPECIFICATION

Physical Data	Metric	Imperial
Flow range	57-151 LPM	15-40 GPM
Max operating temperature	500 °C	932 °F
Revolutions per unit volume	3,99 RPL	15,1 RPG
No load speed	226-604 RPM	
Maximum differential pressure	69 Bar	1000 PSI
Maximum torque	305 Nm	225 ft-lb
Motor Power	16 Kw	22 HP

Note: Performance data is for reference only and is subject to change.

ROTOR SPECIFICATIONS

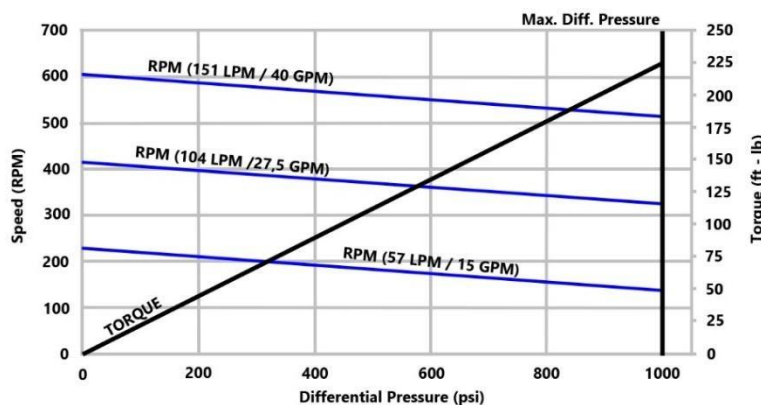
Physical Data	Metric	Imperial
Total length	1494 mm	58,8 in
Profile length	1344 mm	52,9 in
Head length	150 mm	5,9 in
Rotor eccentricity	1,2 mm	0,05 in
Major diameter	28,6 mm	1,13 in
Minor diameter	23,8 mm	0,94 in
Head diameter	27,0 mm	1,06 in
Material	34CrAlNi7-10 (1.8550)	
Weight	T.B.D	T.B.D

STATOR SPECIFICATIONS

Physical Data	Metric	Imperial
Total length	1750 mm	68,9 in
Profile length	1344 mm	52,9 in
Stator outer diameter	38,1 mm	1,50 in
Major diameter	31,0 mm	1,22 in
Minor diameter	26,2 mm	1,03 in
Material	34CrAlNi7-10 (1.8550)	
Weight	T.B.D	T.B.D

**Custom lengths and materials are available upon request.

PERFORMANCE CURVE



SRT METAL to METAL

PN: 168SRTX-MM9106.2

1.68" 9/10 Lobe, 6.2 Stage

Revision: A 5/31/2022

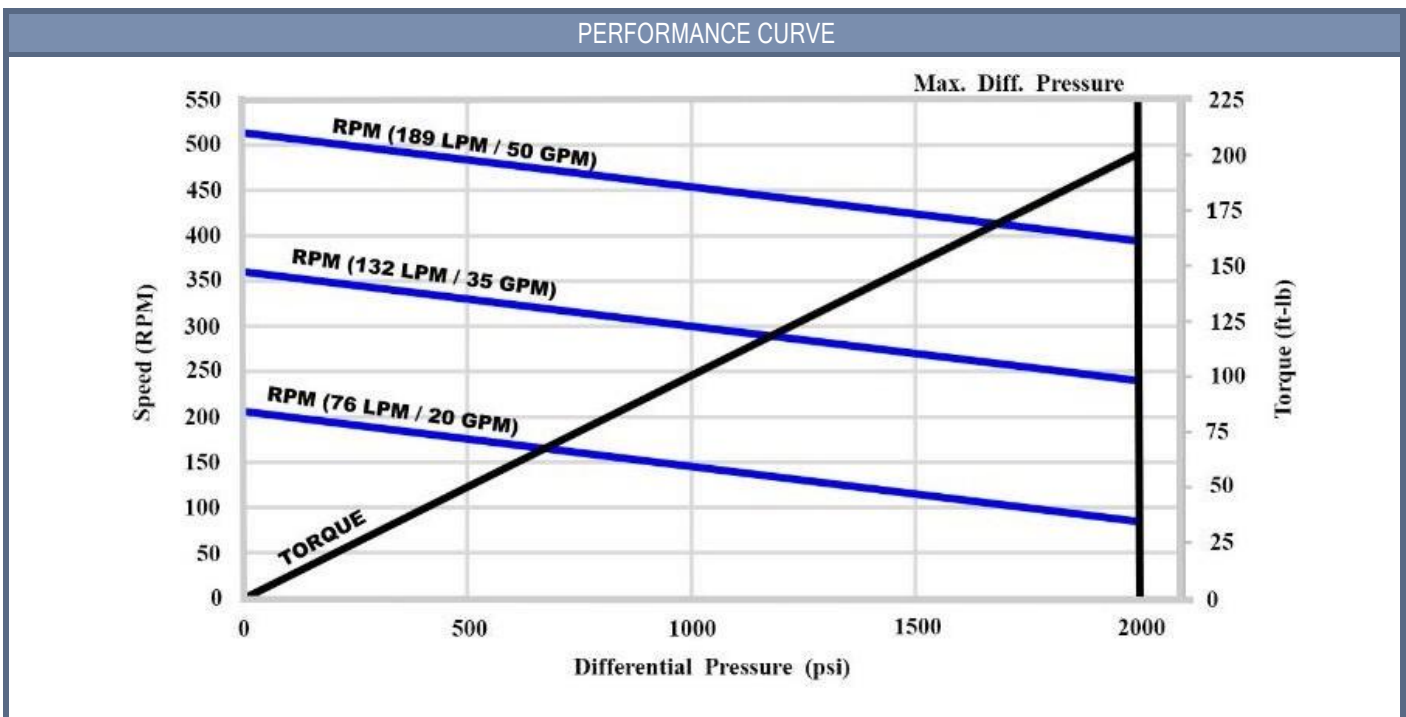


SRTX THRU TUBING DRILL MOTOR SPECIFICATION					
Physical Data	SRTX		Axial Bearing Load Ratings		
	Inches	MM		lbs	Kg
Motor Overall Length	105.75	2,686			
Motor Weight	55	25	Dynamic Compression/Tension	1,600	726
Bearing Assy MU Length	20.75	527	Static Compression/Tension	6,000	2,722
Top Connection	1.00" AMMT	1.00" AMMT	Max Overpull to Re-Run	6,000	2,722
Bit Connection	1.00" AMMT	1.00" AMMT	Max Bit Overpull (80%)	55,000	24,948
Bit Size	1-7/8-2-3/4	42.67-69.85	Max Body Overpull (80%)	60,972	27,657

Note: Load ratings can vary with different bit styles based on aggressive to no-aggressive.

POWER SECTION SPECIFICATIONS					
Rotor			Stator		
	Inches	MM		Inches	MM
Overall Length	71.6	1,819	Overall Length	79	1,994
Contour Length	68	1,727	Tube O.D.	1.6875	43
Major Diameter	1.145	29.08	Tube I.D.	0.984	25
Minor Diameter	0.916	23	Rubber Cutback-Top	3.25	83
Eccentricity	0.115	2.92	Rubber Cutback-Bottom	7.75	197
Head O.D.	1.25	32	Stages	9.1	9
Weight-lbs (kg)	16	7	Weight-lbs (kg)	25.5	12
Thread Form	T1 or T2		Thread Form	Contact CTRT	

PERFORMANCE SUMMARY					
Flow Range gpm (lpm)	20-50	76-189	Max Diff Pressure-psi (kPa)	2,000	13,790
Bit Speed Range (rpm)	205-512	205-512	Stall Diff Presssure-psi (kPa)	3,000	20,684
Torque Slope ft-lbs/psi (nm/kPa)	0.10	0.02	Max Torque ft-lbs (nm)	200	271
Rotation Rev/Gal (Rev/liter)	10.24	2.71	Stall Torque ft-lbs (nm)	300	407
Off Bottom Pressure-psi (kPa)	100	689	Max HP (kW)	58	44





SRT METAL to METAL

PN: **212SRTX-MM785.7**
2.12" 7/8 Lobe, 5.7 Stage

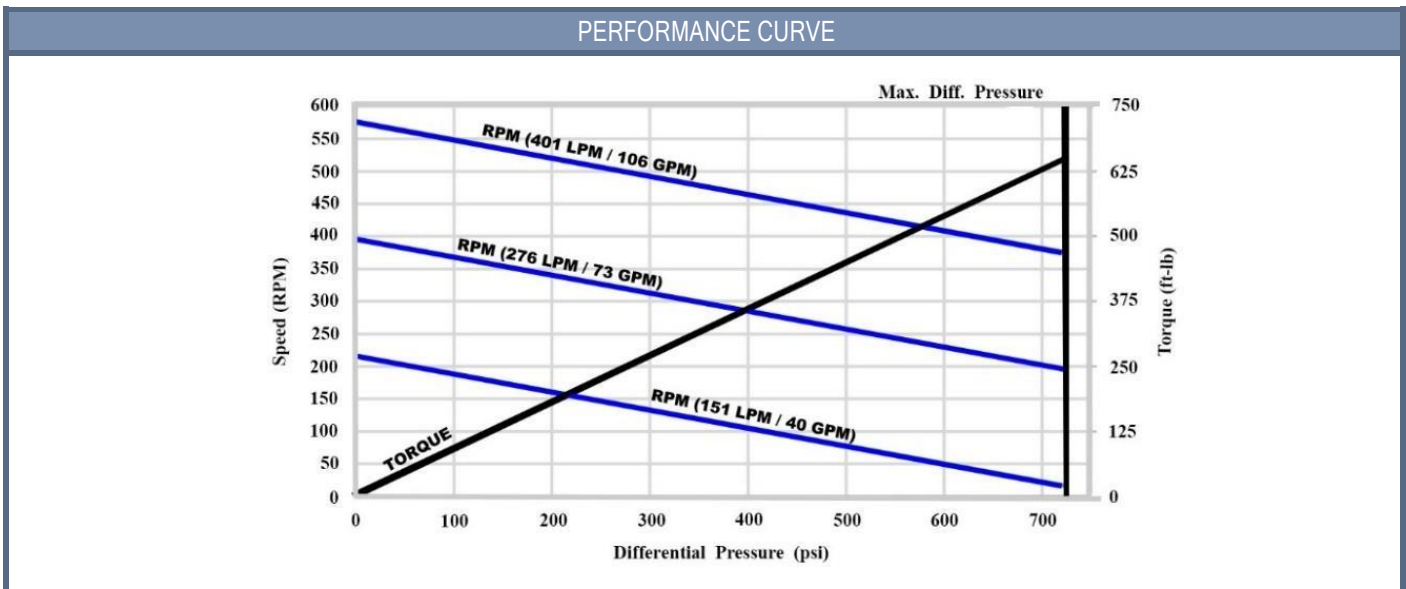
Revision: A 5/31/2022

SRTX THRU TUBING DRILL MOTOR SPECIFICATION					
Physical Data	Inches	MM	Axial Bearing Load Ratings		
Motor Overall Length	114.25	2,902		lbs	Kg
Motor Weight	90	41	Dynamic Compression/Tension	7,000	3,175
Bearing Assy MU Length	25.375	645	Static Compression/Tension	11,000	4,990
Top Connection	1.50" AMMT	1.50" AMMT	Max Overpull to Re-Run	11,000	4,990
Bit Connection	1.50" AMMT	1.50" AMMT	Max Bit Overpull (80%)	83,000	37,649
Bit Size	2.18-3.25	55.5-82.5	Max Body Overpull (80%)	83,000	37,649

Note: Load ratings can vary with different bit styles based on aggressive to no-aggressive.

POWER SECTION SPECIFICATIONS					
Rotor	Inches	MM	Stator	Inches	MM
Overall Length	73	1,854	Overall Length	82	2,070
Contour Length	69	1,753	Tube O.D.	2.12	54
Major Diameter	1.51	38.35	Tube I.D.	1.25	32
Minor Diameter	1.13	29	Rubber Cutback-Top	4.5	114
Eccentricity	0.19	4.83	Rubber Cutback-Bottom	8.75	222
Head O.D.	1.57	40	Stages	5.7	145
Weight-lbs (kg)	26	12	Weight-lbs (kg)	38.5	17
Thread Form	T1 or T2		Thread Form	Contact CTRT	

PERFORMANCE SUMMARY					
Flow Range gpm (lpm)	40-106	151-401	Max Diff Pressure-psi (kPa)	725	4,999
Bit Speed Range (rpm)	216-575	216-575	Stall Diff Pressusre-psi (kPa)	1,088	7,501
Torque Slope ft-lbs/psi (nm/kPa)	0.90	0.18	Max Torque ft-lbs (nm)	650	881
Rotation Rev/Gal (Rev/liter)	5.42	1.43	Stall Torque ft-lbs (nm)	975	1,322
Off Bottom Pressure-psi (kPa)	100	689	Max HP (kW)	45	33



SRT METAL to METAL

PN: **238SRTX-MM785.7**
2.38" 7/8 Lobe, 5.7 Stage

Revision: A 1/31/2023

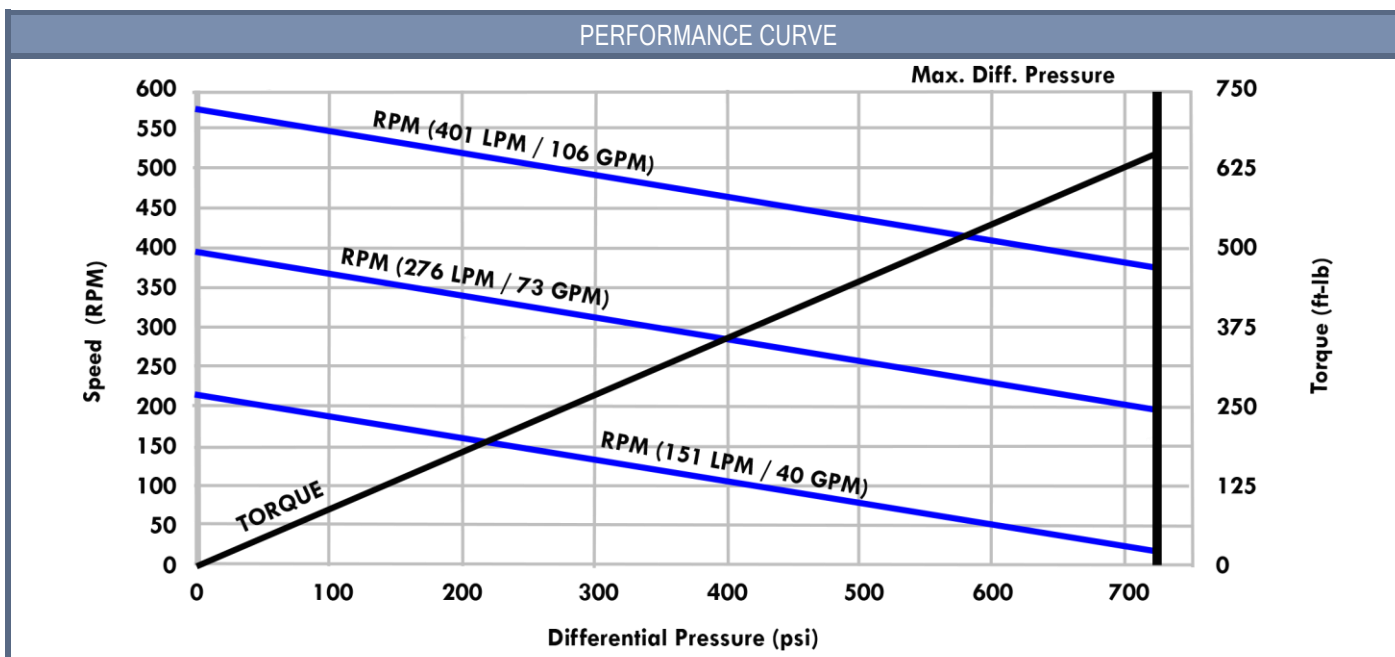


SRTX METAL/METAL THRU TUBING DRILL MOTOR SPECIFICATION					
Physical Data	Inches	MM	Axial Bearing Load Ratings		
Motor Overall Length	129.75	3,296		lbs	Kg
Motor Weight	105	48	Dynamic Compression/Tension	7,500	3,402
Bearing Assy MU Length	48.25	1,226	Static Compression/Tension	11,500	5,216
Top Connection	1.50" AMMT	1.50" AMMT	Max Overpull to Re-Run	11,500	5,216
Bit Connection	1.50" AMMT	1.50" AMMT	Max Bit Overpull (80%)	90,000	40,824
Bit Size	2.50-4.25	55.5-82.5	Max Body Overpull (80%)	90,000	40,824

Note: Load ratings can vary with different bit styles based on aggressive to non-aggressive

POWER SECTION SPECIFICATIONS					
Rotor	Inches	MM	Stator	Inches	MM
Overall Length	73	1,854	Overall Length	82	2,070
Contour Length	69	1,753	Tube O.D.	2.38	60
Major Diameter	1.51	38.35	Tube I.D.	1.25	32
Minor Diameter	1.13	29	Rubber Cutback-Top	4.5	114
Eccentricity	0.19	4.83	Rubber Cutback-Bottom	8.75	222
Head O.D.	1.57	40	Stages	5.7	145
Weight-lbs (kg)	26	12	Weight-lbs (kg)	38.5	17
Thread Form	T1 or T2		Thread Form	Contact CTRT	

PERFORMANCE SUMMARY					
Flow Range gpm (lpm)	40-106	151-401	Max Diff Pressure-psi (kPa)	725	4,999
Bit Speed Range (rpm)	216-575	216-575	Stall Diff Pressusre-psi (kPa)	1,088	7,501
Torque Slope ft-lbs/psi (nm/kPa)	0.90	0.18	Max Torque ft-lbs (nm)	650	881
Rotation Rev/Gal (Rev/liter)	5.42	1.43	Stall Torque ft-lbs (nm)	975	1,322
Off Bottom Pressure-psi (kPa)	100	689	Max HP (kW)	45	33





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SRT METAL to METAL

PN: 287SRTX-MM9106.8

2.87" 9/10 Lobe, 6.8 Stage

Revision: A 4/1/2022

SRTX THRU TUBING DRILL MOTOR SPECIFICATION

Physical Data	SRTX THRU TUBING DRILL MOTOR SPECIFICATION		Axial Bearing Load Ratings		
	Inches	MM		lbs	Kg
Motor Overall Length	143.50	3,645			
Motor Weight	160	73	Dynamic Compression/Tension	10,000	4,536
Bearing Assy MU Length	61	1,549	Static Compression/Tension	14,000	6,350
Top Connection	2-3/8" PAC	2-3/8" PAC	Max Overpull to Re-Run	14,000	6,350
Bit Connection	2-3/8" PAC	2-3/8" PAC	Max Bit Overpull (80%)	156,000	70,762
Bit Size	3.25-4.50	82.55-114.30	Max Body Overpull (80%)	158,824	72,043

Note: Load ratings can vary with different bit styles based on aggressive to non-aggressive

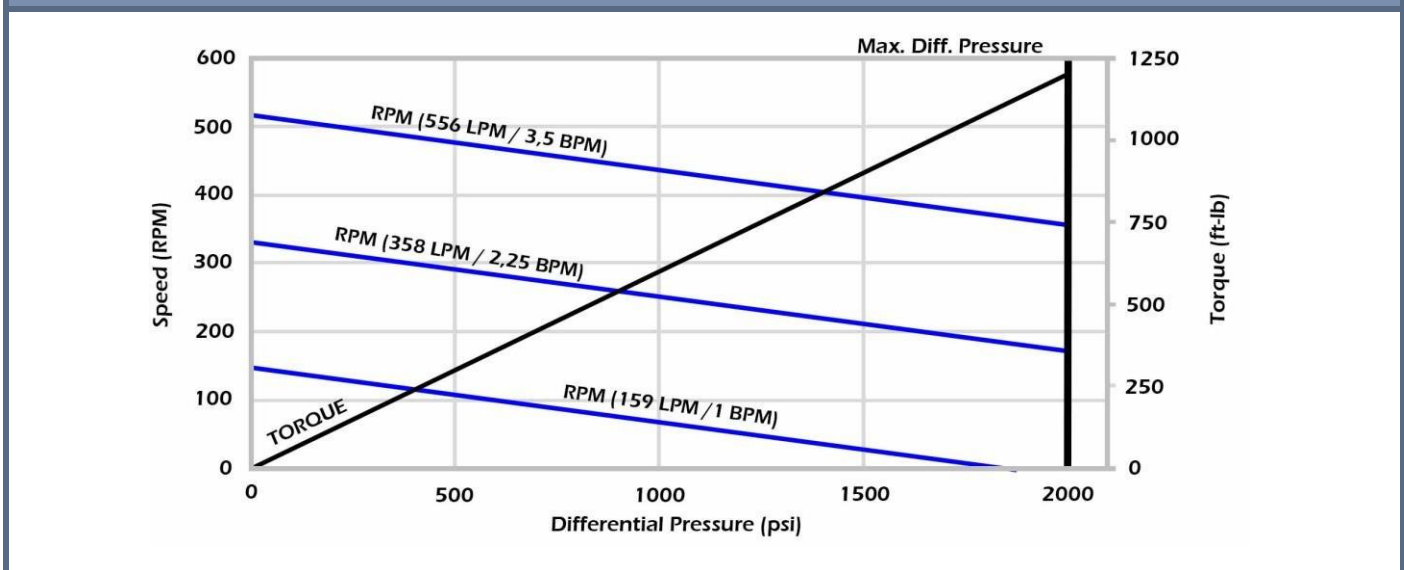
POWER SECTION SPECIFICATIONS

Rotor			Stator		
	Inches	MM		Inches	MM
Overall Length	78.75	2,000	Overall Length	83	2,096
Contour Length	72.5	1,842	Tube O.D.	2.87	73
Major Diameter	2.1	53.34	Tube I.D.	2.31	59
Minor Diameter	1.68	43	Rubber Cutback-Top	4.38	111
Eccentricity	0.212	5.38	Rubber Cutback-Bottom	8.25	210
Head O.D.	2.13	54	Stages	6.8	173
Weight-lbs (kg)	60	27	Weight-lbs (kg)	75	34
Thread Form	T1 or T2		Thread Form	Contact CTRT	

PERFORMANCE SUMMARY

Flow Range gpm (lpm)	42-147	159-556	Max Diff Pressure-psi (kPa)	1,333	9,191
Bit Speed Range (rpm)	147-516	147-516	Stall Diff Pressusre-psi (kPa)	2,000	13,790
Torque Slope ft-lbs/psi (nm/kPa)	0.90	0.18	Max Torque ft-lbs (nm)	1,200	1,627
Rotation Rev/Gal (Rev/liter)	3.51	0.93	Stall Torque ft-lbs (nm)	1,800	2,440
Off Bottom Pressure-psi (kPa)	100	689	Max HP (kW)	114	85

PERFORMANCE CURVE





SRT METAL to METAL

PN: 287SRTX-MM9104.0
2.87" 9/10 Lobe, 4.0 Stage

Revision: A

SRTX THRU TUBING DRILL MOTOR SPECIFICATION

Physical Data	Metric	Imperial
Flow range	190-567 LPM	50-150 GPM
Max operating temperature	500 °C	932 °F
Revolutions per unit volume	0,59 RPL	2,22 RPG
No load speed	111-333 RPM	
Maximum differential pressure	172 Bar	2500 PSI
Maximum torque	2440 Nm	1800 ft-lb
Motor Power	54 Kw	73 HP

Note: Performance data is for reference only and is subject to change.

ROTOR SPECIFICATIONS

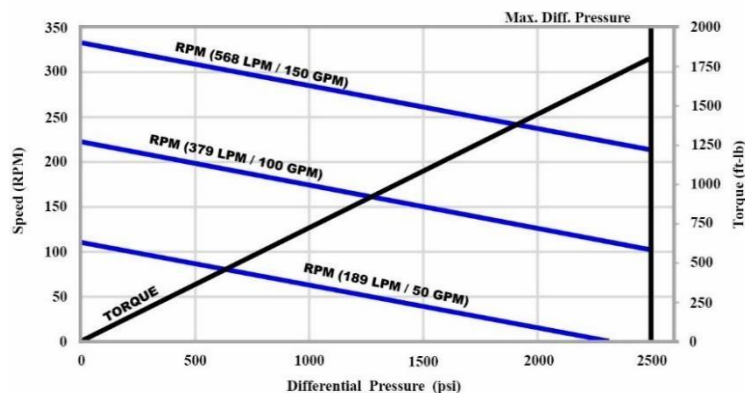
Physical Data	Metric	Imperial
Total length	1922 mm	75,6 in
Profile length	1810 mm	71,3 in
Head length	100 mm	3,9 in
Rotor eccentricity	5,3 mm	0,21 in
Major diameter	53,3 mm	2,10 in
Minor diameter	42,7 mm	1,68 in
Head diameter	53,3 mm	2,10 in
Material	34CrAlNi7-10 (1.8550)	
Weight	26,4 Kg	58,3 lbs

STATOR SPECIFICATIONS

Physical Data	Metric	Imperial
Total length	2100 mm	82,7 in
Profile length	1810 mm	73,7 in
Stator outer diameter	73,6 mm	2,90 in
Major diameter	58,7 mm	2,31 in
Minor diameter	48,0 mm	1,89 in
Material	34CrAlNi7-10 (1.8550)	
Weight	35,7 Kg	78,6 lbs

**Custom lengths and materials are available upon request.

PERFORMANCE CURVE





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SRT METAL to METAL

PN: 287SRTX-MM10111.1

2.87” 10/11 Lobe, 1.1 Stage

Revision: A 5/25/2024

SRT-G3 METAL/METAL THRU TUBING DRILL MOTOR SPECIFICATION

Physical Data	Inches	MM	Axial Bearing Load Ratings		
Motor Overall Length	102.00	2,591		lbs	Kg
Motor Weight	146	66	Dynamic Compression/Tension	10,000	4,536
Bearing Assy MU Length	53	1,346	Static Compression/Tension	14,000	6,350
Top Connection	2-3/8” PAC	2-3/8” PAC	Max Overpull to Re-Run	14,000	6,350
Bit Connection	2-3/8” PAC	2-3/8” PAC	Max Bit Overpull (80%)	156,000	70,762
Bit Size	3.25-4.50	82.55-114.3	Max Body Overpull (80%)	158,824	72,043

Note: Load ratings can vary with different bit styles based on aggressive to no-aggressive.

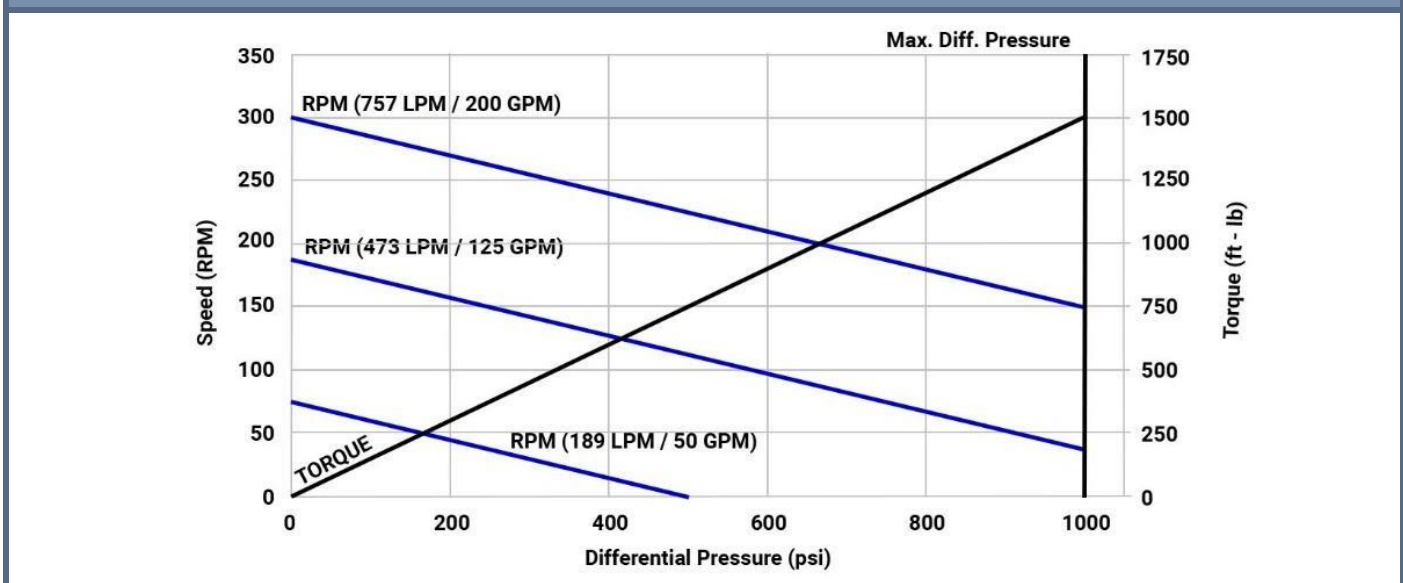
POWER SECTION SPECIFICATIONS

Rotor	Inches	MM	Stator	Inches	MM
Overall Length	33	838	Overall Length	41	1,041
Contour Length	29	737	Tube O.D.	2.9	74
Major Diameter	2.07	52.58	Tube I.D.	0	0
Minor Diameter	1.7	43	Rubber Cutback-Top	0	0
Eccentricity	0.19	4.83	Rubber Cutback-Bottom	0	0
Head O.D.	1.7	43	Stages	1.1	28
Weight-lbs (kg)	26	12	Weight-lbs (kg)	35	16
Thread Form	T1 or T2		Thread Form	Contact CTRT	

PERFORMANCE SUMMARY

Flow Range gpm (lpm)	50-200	189-757	Max Diff Pressure-psi (kPa)	1,000	6,895
Bit Speed Range (rpm)	75-300	75-300	Stall Diff Presssure-psi (kPa)	1,500	10,342
Torque Slope ft-lbs/psi (nm/kPa)	1.50	0.29	Max Torque ft-lbs (nm)	1,500	2,034
Rotation Rev/Gal (Rev/liter)	1.50	0.40	Stall Torque ft-lbs (nm)	2,250	3,051
Off Bottom Pressure-psi (kPa)	100	689	Max HP (kW)	117	87

PERFORMANCE CURVE



SRT METAL to METAL

PN: 312SRTX-MM9105.2
3.12" 9/10 Lobe, 5.2 Stage

Revision: A



SRTX THRU TUBING DRILL MOTOR SPECIFICATION

Physical Data	Metric	Imperial
Flow range	190-795 LPM	50-210 GPM
Max operating temperature	500 °C	932 °F
Revolutions per unit volume	0,58 RPL	2,2 RPG
No load speed	110-462 RPM	
Maximum differential pressure	172 Bar	2500 PSI
Maximum torque	2847 Nm	2100 ft-lb
Motor Power	102 Kw	137 HP

Note: Performance data is for reference only and is subject to change.

ROTOR SPECIFICATIONS

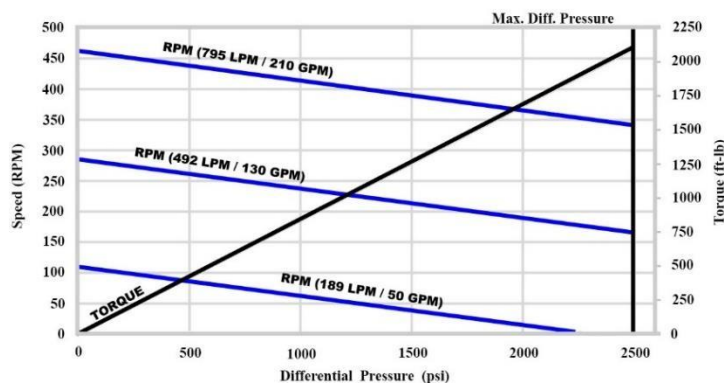
Physical Data	Metric	Imperial
Total length	1936 mm	76,2 in
Profile length	1795 mm	70,7 in
Head length	125 mm	4,9 in
Rotor eccentricity	5,8 mm	0,23 in
Major diameter	58,3 mm	2,29 in
Minor diameter	46,6 mm	1,84 in
Head diameter	59,0 mm	2,32 in
Material	34CrAlNi7-10 (1.8550)	
Weight	31,9 Kg	70,4 lbs

STATOR SPECIFICATIONS

Physical Data	Metric	Imperial
Total length	2100 mm	82,7 in
Profile length	1794 mm	70,6 in
Stator outer diameter	79,4 mm	3,13 in
Major diameter	64,1 mm	2,52 in
Minor diameter	52,5 mm	2,06 in
Material	42CrMo4 (1.7225)	
Weight	40,8 Kg	90,0 lbs

**Custom lengths and materials are available upon request.

PERFORMANCE CURVE



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