SMA RANGE RADIAL PISTON MOTORS



You are at the **centre** of everything we do

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ABOUT US

Rotary Power specialises in the design, development and manufacture of hydraulic motors and pumps.

With a history dating back over 50 years, we understand the exacting and demanding requirements of today's hydraulic applications.

Operating from 18,000 sq. m. of purpose built manufacturing facilities in the UK and India, we continue to invest in the latest CNC machinery, automation and testing facilities. We have a clear focus on continuous improvement in lean cellular manufacturing. These facilities, alongside our European and US operations, offer sales, service and production support for the entire product range. A worldwide network of distribution partnerships provide additional support.

OUR BUSINESS

We recognise the importance of developing partnerships with our customers. That's why we offer flexibility in design, delivery and service to meet our customers' requirements.

Partnerships with our supply chain are key to our success and allow us to deliver superior service in order to exceed expectations.

OUR PEOPLE

People are at the centre of everything we do. As an innovative engineering and manufacturing business, we take recruitment and career development very seriously.

As part of the British Engines Group, we operate a training and development programme that maintains a strong focus on in-house manufacturing and a commitment to local employment. Our apprenticeship and graduate schemes provide the opportunity to develop and nurture engineering talent from an early stage.

OUR FUTURE

Whether in product design or internal processes and systems, our engineers are actively encouraged to develop new ideas within design and manufacturing. This ensures that we are at the forefront of our customer and sector led innovation, whilst continuously improving our business.

Our team of in-house design engineers invest time into understanding our customers' application and work with them to deliver value added solutions, customised to their application.



SMA RANGE

The SMA heavy duty motor is of radial piston, eccentric shaft configuration. The motor's efficient design includes a hardened, high tensile, steel crankshaft supported on taper roller bearings. The eccentric element of the crankshaft acts as a hydrodynamic bearing to support the cylinder block and pistons to provide low friction running. The SMA motor range offers displacements from 200 - 16,400 cc/rev.

Motors within this range can withstand both high mechanical and hydraulic shock loads, offering excellent life and continuous high power use. The speed and power ratings are significantly higher than standard high torque low speed (HTLS) motors.

The SMA motor has a range of features and options designed to suit a number of specific applications:

- High pressure
- High power
- High speed
- **Fixed displacements**
- Robust
- Free wheel capability
- Fluid versatility
- 350 bar continuous pressure



ROTATING CASE OPTION

For types E1, E1 high power and B1, the SMA motor can be built in rotating case form by incorporating a crankshaft, which is designed to be used as the motor mounting point. Hydraulic fluid is supplied directly to the internal galleries, therefore eliminating the need for a distributor.

MULTIPLE DISPLACEMENT OPTION

For C2 type motors, multiple displacement is achieved via an integrated pilot operated selector valve, mounted on/in the distributor housing.

The activation of the selector valve discretely changes the internal displacement of the motor, changing the speed and available output torque. The valve ensures that the pressurised areas of the motor remain primed with hydraulic fluid, allowing displacement to be changed whilst the motor is turning under load.

FREE-WHEEL ABILITY

Only hydraulic system pressure retains the pistons against their respective pads. Therefore, if the motor is isolated from the rest of the system, the pistons are free to retract. This allows the cylinder block to orbit without pumping fluid and consequently providing negligible resistance to rotation.

Piston retraction is achieved by pressurising the motor case. Drive is re-engaged by opening the hydraulic supply to the motor and returning the pistons to their normal working position against their respective pads. During this process the large hydrostatic bearing surface has a dampening effect which prevents harsh contact between each piston and its pad.

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ROTATING SHAFT C1 MOTOR

ROTATING SHAFT C1 HIGH POWER MOTOR Can operate up to pressures of 490 bar and may experience external loading and higher than standard running speeds.





ROTATING CASE B1 MOTOR

Can operate up to pressures of 490 bar and may experience external loading. This motor often forms an integral part of the machine structure. High running speeds with minimal out of balance forces.



ROTATING CASE E1 MOTOR

Can operate up to pressures of 490 bar and may experience very high external loading. This motor often forms an integral part of the machine structure.

ROTATING CASE E1 HIGH POWER MOTOR

Can operate up to pressures of 490 bar and may feature very high external loading. Motor often forms an integral part of the machine structure. High running speeds with minimal out of balance forces.

Fluid type	
Minimum/max	ximum viscosity
Optimum visc	osity
Minimum/max	ximum operating temperature
Optimum ope	rating temperature
Fluid cleanline	ess
Filtration	

Can operate up to pressures of 490 bar and may experience external loading.

ROTATING SHAFT C2 (DUAL DISPLACEMENT) MOTOR

Can operate up to pressures of 490 bar and may experience external loading. Used in applications which require a wide speed range from limited pump flows.

HL;HLP to DIN 51524 For alternatives please contact Rotary Power.
15 - 1000 cSt
20-200 cSt
-20° to + 90 °C [-4° to 194°F]
50 °C [122°F]
ISO code 18/13 or better/NAS 1638 class 9
B25 ratio 75 or better for simple closed loop systems

MOTOR ORDER CODE



PRODU	СТ										
01	SMA										
NOMIN	AL DISPLACEN	IENT									
02	0200										
	0350										
	0500	00									
	0750										
	1000										
	etc. (see relevant data table)										
TYPE											
03	В	Rotating case single shaft									
	С	Rotating single shaft									
	Е	Rotating case flange mount									
TYPE -	OTHER										
04	1	Single									
	2	Dual									
REFER	ENCE										
05	Sequen	tial reference number determined by Rotary Power according to motor build specification*									

*Individual motor specification including shaft type, seals, valves and other options will be established at the time of ordering when the build reference number is issued.

OPTIONS

A number of special features can be applied to the SMA motor. Please contact us for individual application requirements.

OUTPUT SHAFTS

- Male keyed and splined shafts to special, metric, imperial and SAE standards
- mounting

CASE MOUNTING

- Non-standard spigot for mounting
- Re-profiled casings for installation clearance

PERFORMANCE

- High power
- Uni-directional consistency

SEALS

- Seal material options
- High pressure shaft seal •
- Mechanical shaft seal (for type E1 motors) •
- Back to back shaft seal
- · Lip seal and dirt excluder
- Stainless steel shaft sleeve

PORT BLOCKS FOR E1 MOTORS

An integral port block is fitted for motors with displacement up to 750 cm³. For motor capabilities 750 cm³ and above, the base motor is supplied with plain ports for use with a customer supplied port block. Further options are as follows:

- Tapped ports in crankshaft face ٠
- Standard port block with SAE ports •
- High flow port block with SAE ports

OTHER

- Special porting
- Mechanical, proximity, induction and d.c. generator speed sensing ٠
- Special paint and corrosion inhibition

SERVICE

All service activities should be carried out by Rotary Power or an approved source. A full factory service is available for general overhaul including hydraulic testing to confirm motor performance. Shaft seals may wear and require periodic replacement. Seal kits are available and it is recommended that a suitable stock level is held.

Motors returned for factory overhaul should be cleaned externally and drained of fluids. Transport plugs should be fitted to all ports as soon as the machine pipe work has been removed and before the motor is dismounted. All ancillary equipment should be removed where possible and the unit should be clearly labelled, stating the sender address and details.

Female plain, keyed and splined shafts to metric, imperial and SAE standards for flange, shrink disc and through bolt

POWER ENVELOPES

The below power capabilities should be read in conjunction with the technical data charts for each motor type.

These charts are based on maximum continuous values for C1 standard and high power motors. Other types may vary.

SMA 0200 - 2,200 STANDARD C1



SMA 2,000 - 16,000 STANDARD C1



SMA 0200 - 2,200 HIGH POWER C1







CALCULATIONS

Torque (Nm) = $bar x disp. (cc) x \eta m$ 20π Flow (lpm) = rpm x disp. (cc)(1,000 x nv) Power (kW) = torque (Nm) x rpm 9,550 Torque (Nm) = power (Kw) \times 9,550 rpm

Where:

nm = Mechanical efficiency nv = Volumetric efficiency

For estimates of performance use:

nm = 0.95 ηv = 0.95

These can be assumed as typical values for 50% of maximum continuous speed and 275 bar pressure

Differential pressure = inlet pressure - outlet pressure

CONVERSIONS

 $Nm \rightarrow lbf.ft = x 0.7376$ $N \rightarrow lbf = x 0.2248$ $bar \rightarrow psi = x 14.5038$ $cc \rightarrow in^3 = x 0.061$ $lpm \rightarrow U.S.gpm = x 0.2641$ $kW \rightarrow hp = x 1.341$ $kg \rightarrow lb = x 2.2046$

Torque (in. lbs) = psi x disp. (in³) 6.28 Flow (gpm) = $rpm x disp. (in^3)$

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Fluid power (hp) = gpm x psi1.714

Torque (in. lbs) = $hp \times 63,025$ rpm

TECHNICAL DATA NOTES

The notes below correspond with the numbered data in the following datasheets.

- subject to approval.
- please consult Rotary Power.
- life of the shaft seal system. Motor drain lines should be independently returned to the tank.
- 4. SMA motors will operate successfully on a wide variety of hydraulic fluids.
- limits.
- viscosity remains within the optimum range.
- 7. Please contact Rotary Power for a more detailed assessment of specific applications.
- 8. Weights and diameters shown are an approximation and depend on final specification supplied.

1. Intermittent values up to the maximum shown may occur for up to 10% of every minute as part of a known duty cycle,

2. Whether or not the motor shaft is rotating, positive gauge pressure must be maintained at both main ports at all times whilst the motor is under load. Boost pressure should not be less than 7 bar above case pressure with a fluid viscosity of 30 cSt. When utilising higher viscosities, higher boost pressures will be required. For over-running conditions,

3. Case pressure should be kept to the minimum possible. Continuously high case pressure will adversely affect the

5. For very high or very low speed operation, fluid viscosity should be as high as possible within the optimum viscosity

6. Higher temperatures may be possible if required through the use of alternative seal materials, providing that fluid

PERFORMANCE DATA SMA ROTATING SHAFT MOTOR TYPE C1 STANDARD

SHAFT DETAIL B

B2 B3

SHAFT DETAIL A

B2





									-	-																
Nomi	nal displacement (cc/rev) [in³]	200 [12.2]	290 [17.7]	350 [21.4]	480 [29.3]	500 [30.5]	650 [39.7]	750 [45.8]	850 [51.9]	1,000 [61]	1,230 [75]	1,340 [81.8]	1,600 [97.6]	2,000 [122]	2,200 [134.2]	2,500 [152.6]	3,200 [195.3]	3,500 [213.6]	4,350 [265.4]	7,000 [427]	7,400 [451.5]	8,700 [530.9]	8,800 [537]	10,500 [640.7]	13,000 [793.3]	16,000 [976.3]
	A1	315 [12.4]	315 [12.4]	315 [12.4]	315 [12.4]	335 [13.19]	335 [13.19]	394 [15.51]	394 [15.51]	394 [15.51]	394 [15.51]	449 [17.68]	449 [17.68]	507.5 [19.98]	449 [17.68]	507.5 [19.98]	507.5 [19.98]	602 [23.70]	602 [23.70]	761 [29.96]	601 [23.66]	761 [29.96]	601 [23.66]	601 [23.66]	708 [27.8]	708 [27.8]
	A2	ø250	ø250	ø250	ø250	ø280	ø280	ø315	ø315	ø315	ø315	ø400	ø400	ø450	ø400	ø450	ø450	ø560	ø560	ø560	ø790	ø560	ø790	ø790	ø908	ø908
		[9.84] @345	[9.84] @345	[9.84] @345	[9.84] @345	[11.02]	[11.02] @370	[12.4]	[12.4]	[12.4]	[12.4]	[15.75] @545	[15.75]	[17.72]	[15.75]	[17.72]	[17.72]	[22.05]	[22.05]	[22.05]	[31.10]	[22.05]	[31.10]	[31.10]	[35.78] @114.0	[35.78] a1140
	A3	[13.58]	[13.58]	[13.58]	[13.58]	[14.57]	[14.57]	[17.17]	[17.17]	[17.17]	[17.1]	[21.46]	[1.77]	[22.95]	[21.46]	[22.95]	[22.95]	[27.36]	[27.36]	[27.56]	[35.43]	[27.56]	[35.43]	[35.43]	[44.92	[44.92]
	A5	139 [5.47]	139 [5.47]	139 [5.47]	139 [5.47]	150 [5.91]	150 [5.91]	187.5 [7.38]	187.5 [7.38]	187.5 [7.38]	187.5 [7.38]	215 [8.46]	215 [8.46]	242.0 [9.53]	215 [8.46]	242.0 [9.53]	242.0 [9.53]	86 [3.39]	86 [3.39]	100 [3.94]	102 [4.02]	100 [3.94]	102 [4.02]	102 [4.02]	411 [16.19]	411 [16.19]
	A6	12	12	12	12	16	16	16	16	16	16	19	19	15	19	15	15	27	27	27	13	27	13	13	30	30
_	A7	236.5	236.5	236.5	236.5	259.5	259.5	308.5	308.5	308.5	263	345	345	386	345	386	386	462	462	690	474	690	474	474	530	530
E	A12	[9.31]	[9.31]	[9.31]	[9.31]	[10.22]	[10.22]	[12.15]	[12.15]	[12.15]	[10.36]	[13.58]	[13.58]	[15.2]	[13.58]	[15.2]	[15.2]	[18.19]	[18.19]	[27.17]	[18.66]	[27.17]	[18.66]	[18.66]	[20.88]	[20.88]
Ē	A12 A13	M5	M5	M5	M5	M6	M6	M12	M12	M12	M12	M16	M16	M16	M16	M16	M16	M16	M16	M146	-	M16	-	-	-	-
onsir	B1	122	122	122	122	154	154	156	156	156	155	181	181	184	181	184	184	225	225	225	305	225	305	305	-	-
ensi		[4.8]	[4.8]	[4.8]	[4.8]	[6.06]	[6.06]	[6.14]	[6.14]	[6.14]	[6.11]	[7.13]	[7:13]	[7.24]	[7.13]	[7.24]	[7.24]	[8.86]	[8.86]	[8.86]	[12.01]	[8.86]	[12.01]	[12.01]	-	-
Dim	B2	[3.23]	[3.23]	[3.23]	[3.23]	[4.13]	[4.13]	[4.13]	[4.13]	[4.13]	[4.13]	[5.12]	[5.12]	[5.91]	[5.12]	[5.91]	[5.91]	[6.5]	[6.5]	[6.5]	[8.66]	[6.5]	[8.66]	[8.66]	-	-
	B3	69	69	69	69	74	74	92	92	92	80	120	120	135	120	135	135	145	145	145	208	145	208	208	-	-
		[2.72]	[2.72]	[2.72]	[2.72]	[2.91]	[2.91]	[3.62]	[3.62]	[3.62]	[3.15]	[4.72]	[4.72]	[5.31] @95	[4.72] @80	[5.31] @95	[5.31] @95	[5.71] @110	[5.71] @110	[5.71] @110	[8.19] @160	[5.71] @110	[8.19] ø160	[8.19] @160	-	-
	B4	[1.97]	[1.97]	[1.97]	[1.97]	[2.36]	[2.36]	[2.48]	[2.48]	[2.48]	[2.48]	[3.15]	[3.15]	[3.74]	[3.15]	[3.74]	[3.74]	[4.33]	[4.33]	[4.33]	[6.30]	[4.33]	[6.30]	[6.30]	-	-
	B5	16	16	16	16	18	18	18	18	18	18	22	22	25	22	25	25	28	28	28	40	28	40	40	-	-
		122	122	122	122	154	154	156	156	156	155	181	181	184	181	184	184	225	225	223	305	223	305	305	-	-
	B6	[4.80]	[4.80]	[4.80]	[4.80]	[6.06]	[6.06]	[6.14]	[6.14]	[6.14]	[6.11]	[7.13]	[7.13]	[7.24]	[7.13]	[7.24]	[7.24]	[8.86]	[8.86]	[8.78]	[12.01]	[8.78]	[12.01]	[12.01]	-	-
	B7	63 [2.48]	63 [2.48]	63 [2.48]	63 [2.48]	85 [3.35]	85 [3.35]	80	80	80	80	105 [4.13]	105 [4.13]	100 [3.94]	105 [4.13]	100 [3.94]	100 [3.94]	140 [5.51]	140 [5.51]	130 [5.12]	180 [7.09]	130 [5.12]	180 [7.09]	180 [7.09]	-	-
	B8	19t 10/20	19t 10/20	19t 10/20	19t 10/20	18t 8/16	18t 8/16	19t 8/16	19t 8/16	19t 8/16	19t 8/16	24t 8/16	24t 8/16	28t 8/16	24t 8/16	28t 8/16	28t 8/16	25t 6/12	25t 6/12	26t 6/12	41t 6/12	26t 6/12	41t 6/12	41t 6/12	-	-
Geon	netric displacement (cc/rev) [in³]	208	289.5	339.5	480	502.5	663	756.5	856.5	996	1,233.5	1,343	1,602.5	2,003	2,227.5	2,507	3,215	3,504.5	4,349	7,008.5	7,381.5	8,698	8,811.5	10,498	13,000	16,400
		1 11 2 7 1	1 13 / / 1	1 1 2 1 2 1	1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1206	1 1/0 51	14621	1 152 31	160.81	11/531	1 181 01	1 107 81	1 1122 21	113591	11531	1196.21	1213.81	126541	142771	1 145() 41	153081	1 153771	1640.61	[793.3]	[1,000.7]
Max	speed cont (rev/min)	(12.7)	(17.7)	180	[29.2]	420	420	280	250	250	292	201	200	295	216	295	240	240	240	240	190	240	150	105	105	105
Max.s	speed cont. (rev/min) speed int. (rev/min) (1)	480	480	480	480	430	430	380	350	350	283	321	300 480	285	216	285 456	240	240	240	240	180	240	150	125	125 150	125
Max.s Max.s Max.s	speed cont. (rev/min) speed int. (rev/min) (1) speed freewheel (rev/min)	480 768 768	480 768 768	480 768 768	480 768 768	430 688 688	430 688 688	380 608 608	350 560 560	350 560 560	283 453 453	321 512 512	300 480 480	285 456 456	216 346 346	285 456 456	240 384 387	240 384 387	240 384 387	240 384 387	180 288 288	240 384 387	150 240 240	125 200 200	125 150 150	125 150 150
Max.s Max.s Max.s Max.s	speed cont. (rev/min) speed int. (rev/min) (1) speed freewheel (rev/min) speed std. motor (rev/min)	480 768 768 5-10	[17.7] 480 768 768 5-10	480 768 768 5-10	[29,2] 480 768 768 5-10	430 688 688 5-10	430 688 688 5-10	380 608 608 5-10	350 560 560 5-10	350 560 560 5-10	283 453 453 5-10	321 512 512 5-10	300 480 480 5-10	285 456 456 5-10	216 346 346 5-10	285 456 456 5-10	240 384 387 5-10	240 384 387 5-10	240 384 387 5-10	240 384 387 2-4	180 288 288 5-10	240 384 387 2-4	150 240 240 5-10	125 200 200 5-10	125 150 150 5	125 150 150 5
Max.s Max.s Max.s Min.s Max.s	speed cont. (rev/min) speed int. (rev/min) (1) speed freewheel (rev/min) speed std. motor (rev/min) torque cont. (Nm) [lbf.ft]	(12.7) 480 768 5-10 1,157 [853.3]	[17.7] 480 768 768 5-10 1,611 [1,225]	480 768 768 5-10 1,890 [1,393.9]	[29.2] 480 768 768 5-10 2,677 [1,974.3]	[30.0] 430 688 688 5-10 2,798 [2,063.5]	430 688 688 5-10 2,215 [1,633.6]	380 608 608 5-10 4,215 [3,108.6]	350 560 560 5-10 4,770 [3,517.9]	350 560 5-10 5,549 [4,092.4]	283 453 453 5-10 6,870 [5,066.6]	321 512 512 5-10 7,480 [5,516.5]	300 480 480 5-10 8,925 [6,582.2]	285 456 456 5-10 11,156 [8,227.6]	216 346 346 5-10 12,405 [9,148.7]	285 456 456 5-10 13,964 [10,298.5]	240 384 387 5-10 10,744 [7,923.7]	240 384 387 5-10 19,518 [14,394.5]	240 384 387 5-10 17,302 [12,760.2]	240 384 387 2-4 39,036 [28,789.1]	180 288 288 5-10 41,112 [30,320.1]	240 384 387 2-4 34,604 [25,520.5]	150 240 240 5-10 49,078 [36,195]	125 200 200 5-10 58,470 [43,121.6]	125 150 5 72,406 [53,399.4]	125 150 150 5 91,343 [67,365.5]
Max.s Max.s Max.s Min.s Max.s Max.s	speed cont. (rev/min) speed int. (rev/min) (1) speed freewheel (rev/min) speed std. motor (rev/min) torque cont. (Nm) [lbf.ft] torque intermittent (Nm) [lbf.ft] (1)	(12.7) 480 768 5-10 1,157 [853.3] 1,620 [1,194.8]	[17.7] 480 768 5-10 1,611 [1,225] 2,256 [1,663.8]	480 768 768 5-10 1,890 [1,393.9] 2,646 [1,951.4]	[29:2] 480 768 768 5-10 2,677 [1,974.3] 3,748 [2,764.2]	[3009] 430 688 688 5-10 2,798 [2,063.5] 3,918 [2,889.5]	430 688 5-10 2,215 [1,633.6] 3,059 [2,225.6]	380 608 608 5-10 4,215 [3,108.6] 5,900 [4,351.3]	350 560 560 5-10 4,770 [3,517.9] 6,679 [4,925.8]	350 560 560 5-10 5,549 [4,092.4] 7,768 [5,728.9]	283 453 453 5-10 6,870 [5,066.6] 9,618 [7,093.3]	321 512 512 5-10 7,480 [5,516.5] 10,471 [7,722.4]	[37.5] 300 480 5-10 8,925 [6,582.2] 12,495 [9,215.1]	285 456 5-10 11,156 [8,227.6] 15,619 [11,519]	216 346 5-10 12,405 [9,148.7] 17,368 [12,808.9]	285 456 456 5-10 13,964 [10,298.5] 19,550 [14,418.1]	240 384 387 5-10 10,744 [7,923.7] 14,837 [10,942.3]	240 384 387 5-10 19,518 [14,394.5] 27,325 [20,152.2]	240 384 387 5-10 17,302 [12,760.2] 24,223 [17,864.5]	240 384 387 2-4 39,036 [28,789.1] 54,650 [40,304.4]	180 288 288 5-10 41,112 [30,320.1] 57,557 [42,448.3]	240 384 387 2-4 34,604 [25,520.5] 48,445 [35,728.2]	150 240 240 5-10 49,078 [36,195] 68,710 [50,673,6]	125 200 200 5-10 58,470 [43,121.6] 81,858 [60,370.3]	125 150 5 72,406 [53,399,4] 101,369 [74,759.6]	125 150 150 5 91,343 [67,365.5] 127,880 [94,311.5]
Max.s Max.s Max.s Min.s Max.s Max.s Max.s	speed cont. (rev/min) speed int. (rev/min) (1) speed freewheel (rev/min) speed std. motor (rev/min) torque cont. (Nm) [lbf.ft] torque intermittent (Nm) [lbf.ft] (1) power cont. (kW) [hp]	[12:7] 480 768 5-10 1,157 [853.3] 1,620 [1,194.8] 28 [37.5]	[17,7] 480 768 5-10 1,611 [1,225] 2,256 [1,663.8] 40 [53.6]	480 768 768 5-10 1,890 [1,393.9] 2,646 [1,951.4] 48 [64.4]	[29.2] 480 768 5-10 2,677 [1,974.3] 3,748 [2,764.2] 68 [912]	[30.0] 430 688 688 5-10 2,798 [2,063.5] 3,918 [2,889.5] 61 [81.8]	430 688 688 688 5-10 2,215 [1,633.6] 3,059 [2,225.6] 80 [107.3] 1000000000000000000000000000000000000	380 608 5-10 4,215 [3,108.6] 5,900 [4,351.3] 84 [112.6]	350 560 560 5-10 4,770 [3,517.9] 6,679 [4,925.8] 95 [127.4]	350 560 560 5-10 5,549 [4,092,4] 7,768 [5,728,9] 100 [134,1]	283 453 5-10 6,870 [5,066.6] 9,618 [7,093.3] 124 [166.3]	321 512 512 5-10 7,480 [5,516.5] 10,471 [7,722.4] 125 [167.6]	[37,0] 300 480 480 5-10 8,925 [6,582.2] 12,495 [9,215.1] 140 [187,7]	285 456 5-10 11,156 [8,227.6] 15,619 [11,519] 195 [261.5]	216 346 346 5-10 12,405 [9,148.7] 17,368 [12,808.9] 165 [221.3]	285 456 456 5-10 13,964 [10,298.5] 19,550 [14,418.1] 185 [248.1]	240 384 387 5-10 10,744 [7,923.7] 14,837 [10,942.3] 237 [317.8]	240 384 387 5-10 19,518 [14,394.5] 27,325 [20,152.2] 245 [328.5]	240 384 387 5-10 17,302 [12,760.2] 24,223 [17,864.5] 304 [407.7]	240 384 387 2-4 39,036 [28,7891] 54,650 [40,304,4] 490 [6571]	180 288 288 5-10 41,112 [30,320,1] 57,557 [42,448,3] 443 [549,1]	240 384 387 2-4 34,604 [25,520.5] 48,445 [35,728.2] 608 [815.3]	150 240 240 5-10 49,078 [36,195] 68,710 [50,673.6] 528 [708]	125 200 200 5-10 58,470 [43,121.6] 81,858 [60,370.3] 630 [844.8]	125 150 5 72,406 [53,399,4] 101,369 [74,759.6] 820 [1,099,6]	125 150 150 5 91,343 [67,365.5] 127,880 [94,311.5] 900 [1,206.9]
Max.s Max.s Max.s Min.s Max.s Max.s Max.s	speed cont. (rev/min) speed int. (rev/min) (1) speed freewheel (rev/min) speed std. motor (rev/min) torque cont. (Nm) [lbf.ft] torque intermittent (Nm) [lbf.ft] (1) power cont. (kW) [hp] power int. (kW) [hp] (1)	[12:7] 480 768 768 5-10 1,157 [853.3] 1,620 [1194.8] 28 [37.5] 56 75:1	[17.7] 480 768 768 5-10 1,611 [1,225] 2,256 [1,663,8] 40 [53,6] 80 107,71	480 768 768 5-10 1,890 [1,393,9] 2,646 [1,951,4] 48 [64,4] 96 [129,7]	[292] 480 768 768 5-10 2,677 [1,974.3] 3,748 [2,764.2] 68 [91.2] 136 [192.4]	[300] 430 688 688 5-10 2,798 [2,063,5] 3,918 [2,889,5] 61 [81,8] 122 142	430 430 688 688 5-10 2215 [1633.6] 3,059 [2225.6] 80 [107.3] 160 [24.4]	380 608 608 510 4,215 [3108.6] 5,900 [4,351.3] 84 [112.6] 168 [225.9]	[350] 350 560 560 5-10 4,770 [3,517.9] 6,679 [4,925.8] 95 [127.4] 190 195.4 Pl	350 360 560 560 570 5,549 [4,092.4] 7,768 [5,728.9] 100 [134.1] 200 198.91	283 453 453 453 5-10 6,870 [5,066.6] 9,618 [7,093.3] 124 [166.3] 228	321 321 512 512 5-10 7,480 [5,516.5] 10,471 [7,722.4] 125 [167.6] 250 [225 0]	[97.5] 300 480 480 5-10 8.925 [6.582.2] 12.495 [9.215.1] 140 [187.7] 280 [275.6]	285 456 456 - 456 - 5-10 11,156 [8,227.6] 15,619 [11,519] 195 [261.5] 390 [522] 522	1246 346 346 540 12,405 [9,148,7] 17,368 [12,808,9] 165 [221,3] 330 [442,61]	285 456 456 5-10 13,964 [10,298.5] 19,550 [14,418.1] 185 [248.1] 370 (406.2)	240 384 387 5-10 10,744 [7,923.7] 14,837 [10,942.3] 237 [317.8] 474 474 474 1625 61	240 384 387 5-10 19,518 [14,394.5] 27,325 [20,152.2] 245 [328.5] 490 [65,71]	240 384 387 5-10 17,302 [12,760.2] 24,223 [17,864.5] 304 [407.7] 608 [845.3]	240 384 387 2-4 39,036 [28,789:1] 54,650 [40,304.4] 490 [657:1] 980 [104.4]	180 288 288 5-10 41,112 [30,3201] 57,557 [42,448.3] 443 [549.1] 886 [1199.1]	240 384 387 2-4 34,604 [25,520.5] 48,445 [35,728.2] 608 [815.3] 1,216 [1620.7]	150 240 240 5-10 49,078 [36,195] 68,710 [50,673.6] 528 [708] 1,056 [1,446.1]	200 200 5-10 58,470 [43,121.6] 81,858 [60,370.3] 630 [844.8] 1,260 [1690.7]	125 150 5 72,406 [53,399,4] 101,369 [74,759,6] 820 [1,099,6] 1,640 [1,400,0]	125 150 150 5 91,343 [67,365.5] 127,880 [94,311.5] 900 [1,206.9] 1,800
Max.s Max.s Max.s Max.s Max.s Max.s Max.s	speed cont. (rev/min) speed int. (rev/min) (1) speed freewheel (rev/min) speed std. motor (rev/min) torque cont. (Nm) [lbf.ft] torque intermittent (Nm) [lbf.ft] (1) power cont. (kW) [hp] power int. (kW) [hp] (1)	[12:7] 480 768 768 5-10 1,157 [853.3] 1,620 [1194.8] 28 [37.5] 56 [75.1] 350	[17.7] 480 768 5-10 1,611 [1,225] 2,256 [1,663.8] 40 [53.6] 80 [107.3] 350	480 768 768 5-10 1,890 [1,393,9] 2,646 [1,951,4] 48 [64,4] 96 [128,7] 350	[292] 480 768 5-10 2,677 [1,974.3] 3,748 [2,764.2] 68 [912] 136 [182.4] 350	[300] 430 688 688 5-10 2.798 [2.063.5] 3.918 [2.889.5] 61 [81.8] 122 [163.6] 350	430 430 688 688 5-10 2,215 11,633,6] 3,059 [2,225,6] 80 [107,3] 160 [214,6] 210	[380] 608 608 608 5-10 4,215 [3108.6] 5,900 [4,351.3] 84 [112.6] 168 [225.3] 350	[350] 350 560 560 5-10 4,770 [3,517.9] 6,679 [4,925.8] 95 [127.4] 190 [254.8] 350	350 360 560 560 5-10 5,549 [4,092.4] 7,768 [5,728.9] 100 [134.1] 200 [268.2] 350	283 453 453 5-10 6,870 [5,066.6] 9,618 [7,093.3] 124 [166.3] 248 [332.6] 350	321 512 512 512 5-10 7,480 [5,516.5] 10,471 [7,722.4] 125 [167.6] 250 [335.3] 350	[87.5] 300 480 480 5-10 8.925 [6,582.2] 12,495 [9,215.1] 140 [187.7] 280 [375.5] 350	285 456 456 - 456 - 5-10 11,156 [8,227,6] 15,619 [11,519] 195 [261,5] 390 [523] 350	1246 346 346 540 12,405 [9]48,7] 17,368 [12,808,9] 165 [221,3] 330 [442,5] 350	285 456 456 5-10 13,964 [10,298.5] 19,550 [14,418.1] 185 [248.1] 370 [496.2] 350	240 384 387 5-10 10,742 [7,923.7] 14,837 [10,942.3] 237 [317.8] 474 [635.6] 210	240 384 387 5-10 19,518 [14,394,5] 27,325 [20,152,2] 245 [328,5] 490 [657,1] 350	240 384 387 5-10 17,302 [12,760.2] 24,223 [17,864.5] 304 [407.7] 608 [815.3] 250	240 384 387 2-4 39,036 [28,789:1] 54,650 [40,304.4] 490 [657:1] 980 [1,314.2] 350	180 288 288 5-10 41,112 [30,3201] 57,557 [42,448.3] 443 [549.1] 886 [1,188.1] 350	[240 384 387 2-4 34,604 [25,520.5] 48,445 [35,728.2] 608 [815.3] 1,216 [1,630.7] 250	150 150 240 240 5-10 49,078 [36,195] 68,710 [50,673.6] 528 [708] 1,056 [1,416.1] 350	125 200 5-10 58,470 [43,1216] 81,858 [60,370.3] 630 [844.8] 1,260 [1,689.7] 350	125 150 5 72,406 [53,3994] 101,369 [74,759.6] 820 [1,099.6] 1,640 [2,199.2] 350	125 150 150 5 91,343 [67,365.5] 127,880 [94,311.5] 900 [1,206.9] 1,800 [2,413.8] 350
Max.s Max.s Max.s Max.s Max.s Max.s Max.s	speed cont. (rev/min) speed int. (rev/min) (1) speed freewheel (rev/min) speed std. motor (rev/min) torque cont. (Nm) [lbf.ft] torque intermittent (Nm) [lbf.ft] (1) power cont. (kW) [hp] power int. (kW) [hp] (1) diff. pressure cont. (bar) [psi] (2)	[12,7] 480 768 5-10 1,157 [853.3] 1,620 [1,194.8] 28 [37.5] 56 [75.1] 350 [5,075]	[17.7] 480 768 5-10 1,611 [1,225] 2,256 [1,663.8] 40 [53.6] 80 [107.3] 350 [5,075]	480 768 768 5-10 1,890 [1,393,9] 2,646 [1,951,4] 48 [64,4] 96 [128,7] 350 [5,075]	[292] 480 768 5-10 2,677 [1,974.3] 3,748 [2,764.2] 68 [912] 136 [1824] 350 [5,075]	[300] 430 688 5-10 2,798 [2,063.5] 3,918 [2,889.5] 61 [81.8] 122 [163.6] 350 [5,075]	430 430 688 688 5-10 2,215 [1,633,6] 3,059 [2,225,6] 80 [107,3] 160 [214,6] 210 [3,045]	(102) 380 608 608 510 4,215 [31086] 5,900 [4,351.3] 84 [112.6] 168 [225.3] 350 [5,075]	(52.5) 350 560 560 560 510 4,770 [3,517.9] 6,679 [4,925.8] 95 [127.4] 190 [254.8] 350 [5,075]	350 560 560 540 5,549 5,728,9] 100 [134,1] 200 [268,2] 350 [5,075]	17.503 283 453 453 5-10 6,870 [5,066,6] 9,618 [7,093,3] 124 [166,3] 248 [332,6] 350 [5,075]	321 321 512 514 515 516 517 518 519 519 512	[5:7] 300 480 480 5-10 8,925 [6,582.2] 12,495 [9,215.1] 140 [187.7] 280 [375.5] 350 [5,075]	11223 285 456 456 540 11,156 [8,227.6] 15,619 [11,519] 195 [261.5] 390 [52.3] 350 [5,075]	1246 346 346 5-10 12,405 [9]48.7] 17,368 [12,808.9] 165 [221.3] 330 [442.5] 350 [5,075]	285 456 456 5-10 13,964 [10,298.5] 19,550 [14,418.1] 185 [248.1] 370 [496.2] 350 [5,075]	240 384 387 5-10 10,744 [7,923.7] 14,837 [10,942.3] 237 [317.8] 474 [635.6] 210 [3,045]	240 384 387 5-10 19,518 [14,394,5] 27,325 [20,152,2] 245 [328,5] 490 [65,71] 350 [5,075]	240 384 387 5-10 17,302 [12,760.2] 24,223 [17,864.5] 304 [407,7] 608 [815.3] 250 [3,625]	240 384 387 2-4 39,036 [28,789] 54,650 [40,304.4] 490 [6571] 980 [1,314.2] 350 [5,075]	180 288 288 5-10 41,112 [30,3201] 57,557 [42,448.3] 443 [5491] 886 [1,188.1] 350 [5,075]	240 384 387 2-4 387 2-4 387 2-4 387 2-4 387 2-4 387 2-4 384 387 2-4 384 387 2-4 387 2-4 384 387 2-4 387 387 34,604 [25,22,5] 48,445 [35,728,2] 608 [815,3] 1,216 [1,630,7] 250 [3,625]	150 150 240 240 540 49,078 [36,195] 68,710 [50,673.6] 528 [708] 1,056 [1,416.1] 350 [5,075]	125 200 200 510 58,470 [43,1216] 81,858 [60,370.3] 630 [844.8] 1,260 [1683.7] 350 [5,075]	125 150 5 72,406 [53,399.4] 101,369 [74,759.6] 820 [1,099.6] 1,640 [2,199.2] 350 [5,075]	125 150 5 5 91,343 [67,365.5] 127,880 [94,311.5] 900 [1,206.9] 1,800 [2,413.8] 350 [5,075]
Max.s Max.s Max.s Max.s Max.s Max.s Max.s Max.s	speed cont. (rev/min) speed int. (rev/min) (1) speed freewheel (rev/min) speed std. motor (rev/min) torque cont. (Nm) [lbf.ft] torque intermittent (Nm) [lbf.ft] (1) power cont. (kW) [hp] power int. (kW) [hp] (1) diff. pressure cont. (bar) [psi] (2) diff. pressure int. (bar) [psi] (1)	[12,7] 480 768 768 5-10 1,157 [853,3] 1,620 [1194,8] 28 [37,5] 56 [75,1] 350 [5,075] 490 [7,105]	[17.7] 480 768 5-10 1,611 [1,225] 2,256 [1,663,8] 40 [53,6] 80 [107,3] 350 [5,075] 490 [7,105]	480 480 768 768 5-10 1,890 1,393,9] 2,646 [1,951,4] 48 [64,4] 96 [15,075] 490 [7,105]	[292] 480 768 768 5-10 2,677 [1,974.3] 3,748 [2,764.2] 68 [91.2] 136 [182.4] 350 [5,075] 490 [7,105]	[300] 430 688 688 5-10 2,798 [2,063.5] 3,918 [2,889.5] 61 [81.8] 122 [163.6] 350 [5,075] 490 [7,105]	430 430 688 688 5-10 2,215 [1633,6] 3,059 [2,225,6] 80 [107,3] 160 [214,6] 210 [3,045] 290 [4,205]	380 608 608 608 5-10 4,215 (3)00.6] 5,900 [4,351.3] 84 [112.6] 168 [225.3] 350 [5,075] 490 [7,105] 500	[350] 350 560 560 5-10 4,770 [3,517.9] 6,679 [4,925.8] 95 [127.4] 190 [254.8] 350 [5,075] 490 [7,105]	350 360 560 560 5-10 5,549 [4,092,4] 7,768 [5,728,9] 100 [134,1] 200 [268,2] 350 [5,075] 490 [7,105]	17.503 283 453 453 5-10 6,870 [5,066.6] 9,618 [7,093.3] 124 [166.3] 248 [332.6] 350 [5,075] 490 [7,105]	321 321 512 512 5-10 7,480 [5,516.5] 10,471 [7,722.4] 125 [167.6] 250 [335.3] 350 [5,075] 490 [7,105]	[87,0] 300 480 480 5-10 8,925 [6,582,2] 12,495 [9,215,1] 140 [187,7] 280 [375,5] 350 [5,075] 490 [7,105]	285 285 456 456 5-10 11,156 [8,227.6] 15,619 [11,519] 195 [261.5] 390 [523] 350 [5,075] 490 [7,105]	1246 346 346 5-10 12,405 [9,148,7] 17,368 [12,808,9] 165 [221,3] 330 [442,5] 350 [5,075] 490 [7,105]	285 456 456 5-10 13,964 [10,298.5] 19,550 [14,418.1] 185 [248.1] 370 [496.2] 350 [5,075] 490 [7,105]	240 384 387 5-10 10,744 [7,923.7] 14,837 [10,942.3] 237 [317.8] 474 [635.6] 210 [3,045] 290 [4,205]	240 384 387 5-10 19,518 [14,394.5] 27,325 [20,152.2] 245 [328.5] 490 [65,71] 350 [5,075] 490 [7,105]	240 384 387 5-10 17,302 [12,760.2] 24,223 [17,864.5] 304 [407.7] 608 [815.3] 250 [3,625] 350 [5,075]	240 384 387 2-4 39,036 [28,789,1] 54,650 [40,304,4] 490 [657,1] 980 [1,314,2] 350 [5,075] 490 [7,105]	480 288 288 5-10 41,112 [30,3201] 57,557 [42,448.3] 443 [549.1] 886 [1,188.1] 350 [5,075] 490 [7,105]	240 384 387 2-4 34,604 [25,520,5] 48,445 [35,728,2] 608 [815,3] 1,216 [16,30,7] 250 [3,625] 350 [5,075]	150 240 240 5-10 49,078 [36,195] 68,710 [50,673,6] 528 [708] 1,056 [1,416,1] 350 [5,075] 490 [7,105]	125 200 5-10 58,470 [43,121.6] 81,858 [60,370.3] 630 [844.8] 1,260 [169,77] 350 [5,075] 490 [7,105]	125 150 5 72,406 [53,399,4] 101,369 [74,759,6] 820 [1,099,6] 1,640 [2,199,2] 350 [5,075] 490 [7,105]	125 150 5 91,343 [67,365.5] 127,880 [94,311.5] 900 [1,206.9] 1,800 [2,413.8] 350 [5,075] [5,075] 490 [7,105]
Max.s Max.s Max.s Max.s Max.s Max.s Max.s Max.s	speed cont. (rev/min) speed int. (rev/min) (1) speed freewheel (rev/min) speed std. motor (rev/min) torque cont. (Nm) [lbf.ft] torque intermittent (Nm) [lbf.ft] (1) power cont. (kW) [hp] power int. (kW) [hp] (1) diff. pressure cont. (bar) [psi] (2) diff. pressure int. (bar) [psi] (1) fow cont. l/min	[12,7] 480 768 5-10 1,157 [853,3] 1,620 [1194,8] 28 [37,5] 56 [75,1] 350 [5,075] 490 [7,105] 100	[17.7] 480 768 768 5-10 1,611 [1,225] 2,256 [1,663,8] 40 [53,6] 80 [107.3] 350 [5,075] 490 [7,105] 139	480 480 768 768 5-10 1,890 1,393,9] 2,646 [1,951,4] 48 [64,4] 96 [15,075] 490 [7,105] 163	[292] 480 768 768 5-10 2,677 [1,974.3] 3,748 [2,764.2] 68 [91.2] 136 [182.4] 350 [5,075] 490 [7,105] 231	[300] 430 688 688 5-10 2,798 [2,063.5] 3,918 [2,889.5] 61 [81.8] 122 [163.6] 350 [5,075] 490 [7,105] 216	430 430 688 688 5-10 2,215 [1633,6] 3,059 [2,225,6] 80 [107,3] 160 [214,6] 210 [3,045] 290 [4,205] 285	380 608 608 608 5-10 4,215 (3108.6] 5,900 [4,351.3] 84 [112.6] 168 [225.3] 350 [5,075] 490 [7,105] 288	[525] 350 560 560 5-10 4,770 [3,517.9] 6,679 [4,925.8] 95 [127.4] 190 [254.8] 350 [5,075] 490 [7,105] 300	350 360 560 560 570 5,549 [4,092,4] 7,768 [5,728,9] 100 [134,1] 200 [268,2] 350 [5,075] 490 [7,105] 349	17.503 283 453 453 5-10 6,870 [5,066.6] 9,618 [7,033.3] 124 [166.3] 248 [332.6] 350 [5,075] 490 [7,105] 349	321 321 512 514 515 516 10,471 [7,722,4] 125 [167,6] 250 [335,3] 350 [5,075] 490 [7,105] 430	[87,0] 300 480 480 5-10 8,925 [6,582,2] 12,495 [9,215,1] 140 [187,7] 280 [375,5] 350 [5,075] 490 [7,105] 481	[16:2:1] 285 456 456 456 5-10 11156 [8,2276] 15,619 [11,519] 195 [261.5] 390 [523] 350 [5,075] 490 [7,105]	1246 346 346 5-10 12,405 [9,148,7] 17,368 [12,808,9] 165 [221,3] 330 [442,5] 350 [5,075] 490 [7,105] 481	285 456 456 5-10 13,964 [10,298.5] 19,550 [14,418.1] 185 [248.1] 370 [496.2] 350 [5,075] 490 [7,105] 715	240 384 387 5-10 10,744 [7,923.7] 14,837 [10,942.3] 237 [317.8] 474 [635.6] 210 [3,045] 290 [4,205] 772	240 384 387 5-10 19,518 [14,394.5] 27,325 [20,152.2] 245 [328.5] 490 [65,71] 350 [5,075] 490 [7,105] 841	240 384 387 5-10 17,302 [12,760.2] 24,223 [17,864.5] 304 [407.7] 608 [815.3] 250 [3,625] 350 [5,075] 1,044	1240 384 387 2-4 39036 [28,789:1] 54,650 [40,304.4] 490 [657:1] 980 [1,314.2] 350 [5,075] 490 [7,105] 1,682	180 288 288 5-10 41,112 [30,3201] 57,557 [42,448.3] 443 [549.1] 886 [1,188.1] 350 [5,075] 490 [7,105] 1,329	240 384 387 2-4 34,604 [25,520,5] 48,445 [35,728,2] 608 [815,3] 1,216 [16,30,7] 250 [3,625] 350 [5,075] 2,088	150 150 240 240 5-10 49,078 [36,195] 68,710 [50,673,6] 528 [708] 1,056 [1,416,1] 350 [5,075] 490 [7,105] 1,322	125 200 200 5-10 58,470 [43,121.6] 81,858 [60,370.3] 630 [844.8] 1,260 [16,9.7] 350 [5,075] 490 [7,105] 1,312	125 150 5 72,406 [53,399,4] 101,369 [74,759,6] 820 [1,099,6] 1,640 [2,199,2] 350 [5,075] 490 [7,105] 1,625	125 150 5 91,343 [67,365.5] 127,880 [94,311.5] 900 [1,206.9] 1,800 [2,413.8] 350 [5,075] 490 [7,105] 2050
Max. Max. Min s Max. Max. Max. Max. Max. Max. Max. Max.	speed cont. (rev/min) speed int. (rev/min) (1) speed freewheel (rev/min) speed std. motor (rev/min) torque cont. (Nm) [lbf.ft] torque intermittent (Nm) [lbf.ft] (1) power cont. (kW) [hp] power int. (kW) [hp] (1) diff. pressure cont. (bar) [psi] (2) diff. pressure int. (bar) [psi] (1) flow cont. l/min flow int. l/min (1)	[12:7] 480 768 768 5-10 1,157 [853.3] 1,620 [1194.8] 28 [37.5] 56 [75.1] 350 [5,075] 490 [7,105] 100 160 7	[17.7] 480 768 768 5-10 1.611 [1,225] 2,256 [1,663.8] 40 [53.6] 80 [107.3] 350 [5,075] 490 [7,105] 139 222 7	480 480 768 768 5-10 1,890 1,893,9] 2,646 [1,951,4] 48 [64,4] 96 [128,7] 350 [5,075] 490 [7,105] 163 261 7	[292] 480 768 768 5-10 2,677 [1,974.3] 3,748 [2,764.2] 68 [91.2] 136 [182.4] 350 [5,075] 490 [7,105] 231 369 7	[300] 430 688 688 5-10 2,798 [2,063.5] 3,918 [2,899.5] 61 [81.8] 122 [163.6] 350 [5,075] 490 [7,105] 216 346	[430] 430 688 688 5-10 2,215 [1633,6] 3,059 [2,225,6] 80 [107,3] 160 [214,6] 210 [3,045] 290 [4,205] 285 456 7	[102] 380 608 608 510 4,215 [3108.6] 5,900 [4,351.3] 84 [112.6] 168 [225.3] 350 [5,075] 490 [7,105] 288 460 7	1000 350 350 560 560 560 5-10 4,770 [3,517.9] 6,679 [4,925.8] 95 [127.4] 190 [254.8] 350 [5,075] 490 [7,105] 300 480 7	350 360 560 560 570 5,549 [4,092.4] 7,768 [5,728.9] 100 [134.1] 200 [268.2] 350 [5,075] 490 [7,105] 349 558 7	17.503 2883 453 453 5-10 6,870 [5,066.6] 9,618 [7,093.3] 124 [166.3] 248 [332.6] 350 [5,075] 490 [7,105] 349 558 7	321 321 512 512 514 515 516 517 518 519 512 520 530 530 530 530 530 530 530 530 530 530 530 530	[87,0] 300 480 480 5-10 8,925 [6,582,2] 12,495 [9,215,1] 140 [187,7] 280 [375,5] 350 [5,075] 490 [7,105] 481 769	[16:2:1] 285 456 456 5-10 11156 [8,2276] 15,619 [11,519] 195 [261.5] 390 [523] 350 [5,075] 490 [7,105] 571 770	1246 346 346 540 12,405 [9,148,7] 17,368 [12,808,9] 165 [221,3] 330 [442,5] 350 [5,075] 490 [7,105] 481 913 7	285 456 456 5-10 13,964 [10,298.5] 19,550 [14,418.1] 185 [248.1] 370 [496.2] 350 [5,075] 490 [7,105] 715 1,143 7	240 384 387 5-10 10,744 [7,923.7] 14,837 [10,942.3] 237 [317.8] 474 [635.6] 210 [3,045] 290 [4,205] 772 1,235 7	240 384 387 5-10 19,518 [14,394,5] 27,325 [20,152,2] 245 [328,5] 490 [657,1] 350 [5,075] 490 [7,105] 841 1,346 7	240 384 387 5-10 17,302 [12,760.2] 24,223 [17,864.5] 304 [407.7] 608 [815.3] 250 [3,625] 350 [5,075] 1,044 1,670 7	1240 384 387 2-4 39,036 [28,789:1] 54,650 [40,304.4] 490 [657:1] 980 [1,314.2] 350 [5,075] 490 [7,105] 1,682 2,691 7	180 288 288 5-10 41,112 [30,3201] 57,557 [42,448.3] 443 [549.1] 886 [1,188.1] 350 [5,075] 490 [7,105] 1,329 2,126 7	240 384 387 2-4 34604 [25,520.5] 48,445 [35,728.2] 608 [815.3] 1,216 [1630.7] 250 [3625] 350 [5,075] 2,088 3,340	150 240 240 5-10 49,078 [36,195] 68,710 [50,673,6] 528 [708] 1,056 [1,416,1] 350 [5,075] 490 [7,105] 1,322 2,115 7	125 200 200 5-10 58,470 [43,121.6] 81,858 [60,370.3] 630 [844.8] 1,260 [1,689.7] 350 [5,075] 490 [7,105] 1,312 2,100 7	125 150 5 72,406 [53,399,4] 101,369 [74,759,6] 820 [1,099,6] 1,640 [2,199,2] 350 [5,075] 490 [7,105] 1,825 1,950 7	125 150 5 91,343 [67,365.5] 127,880 [94,311.5] 900 [1,206.9] 1,800 [2,413.8] 350 [5,075] 490 [7,105] 2050 2460 7
Max. Max. Max. Max. Max. Max. Max. Max.	speed cont. (rev/min) speed int. (rev/min) (1) speed freewheel (rev/min) speed std. motor (rev/min) torque cont. (Nm) [lbf.ft] torque intermittent (Nm) [lbf.ft] (1) power cont. (kW) [hp] power int. (kW) [hp] (1) diff. pressure cont. (bar) [psi] (2) diff. pressure int. (bar) [psi] (1) flow cont. l/min flow int. l/min (1) m pressure min. (bar) [psi] (2)	[12.7] 480 768 768 5-10 1,157 [853.3] 1,620 [1194.8] 28 [37.5] 56 [75.1] 350 [5,075] 490 [7,105] 100 160 7 [101.5]	[17.7] 480 768 5-10 1.611 [1,225] 2,256 [1,663.8] 40 [53.6] 80 [107.3] 350 [5,075] 490 [7,105] 139 222 7 [101.5]	480 480 768 768 5-10 1,890 [1,393,9] 2,646 [1951,4] 48 [64,4] 96 [128,7] 350 [5,075] 490 [7 [101,5]	[252] 480 768 768 5-10 2,677 [1,974.3] 3,748 [2,764.2] 68 [91.2] 136 [182.4] 350 [5,075] 490 [7 [101.5]	[300] 430 688 688 5-10 2,798 [2,063.5] 3,918 [2,889.5] 61 [81.8] 122 [163.6] 350 [5,075] 490 [7105] 216 346 7 [101.5]	430 430 688 688 5-10 2,215 [1,633,6] 3,059 [2,225,6] 80 [107,3] 160 [214,6] 210 [3,045] 290 [4,205] 285 456 7 [101,5]	[1012] 380 608 608 608 510 4,215 [3108.6] 5,900 [4,351.3] 84 [112.6] 168 [225.3] 350 [5,075] 490 [7105] 288 460 7 [101.5]	[350] 350 350 560 560 560 510 (3,517.9) (3,517.9) (6,679 [4,925.8] 95 [127.4] 190 [254.8] 350 [5,075] 490 [7,105] 300 480 7 [101.5] (101.5)	350 360 560 560 540 540 540 5549 [4,092.4] 7768 [5,728.9] 100 [134.1] 200 [268.2] 350 [5,075] 490 [7105] 349 558 7 [101.5]	17.503 283 453 453 5-10 6,870 [5,066.6] 9,618 [7,093.3] 124 [166.3] 248 [332.6] 350 [5,075] 490 [7,005] 349 5558 7 [101.5]	321 321 512 512 514 515 516 517 518 519 512 520 533 500 500 500 500 500 500 500 500 500 500 500 500 500	[87,0] 300 480 480 5-10 8,925 [6,582,2] 12,495 [9,215,1] 140 [187,7] 280 [375,5] 350 [5,075] 490 [7,105] 481 769 7 [101,5]	1285 456 456 5-10 11,156 [8,227,6] 15,619 [11,519] 195 [261,5] 390 [523] 350 [5,075] 490 [7,105] 571 770 7 [101,5]	[1000] 216 346 346 5-10 12,405 [9]48,7] 17,368 [12,808,9] 165 [221,3] 330 [442,5] 350 [5,075] 490 [7,105] 481 913 7 [101,5] 101,5]	285 456 456 5-10 13,964 [10,298.5] 19,550 [14,418.1] 185 [248.1] 370 [4.96.2] 350 [5,075] 490 [7,105] 715 11,143 7 [101.5]	240 384 387 5-10 10,744 [7,923.7] 14,837 [10,942.3] 237 [317.8] 474 [635.6] 210 [3,045] 290 [4,205] 772 1,235 7 [101.5]	240 384 387 5-10 19,518 [14,394,5] 27,325 [20,152,2] 245 [328,5] 490 [65,71] 350 [5,075] 490 [7,105] 841 1,346 7 [101,5]	240 384 387 5-10 17,302 [12,760.2] 24,223 [17,864.5] 304 [407.7] 608 [815.3] 250 [3,625] 360 [5,075] 1,044 1,670 7 [101.5]	1240 384 387 2-4 39,036 [28,789:1] 54,650 [40,304.4] 490 [657:1] 980 [1,314.2] 350 [5,075] 490 [7] [101.5]	180 288 288 5-10 41,112 [30,3201] 57,557 [42,448.3] 443 [549:1] 886 [11,188:1] 350 [5,075] 490 [7,105] 1,329 2,126 7 [101.5]	240 384 387 2-4 34,604 [25,520.5] 48,445 [35,728.2] 608 [815.3] 1,216 [1630.7] 250 [3,625] 350 [5,075] 2,088 3,340 7 [101.5]	150 150 240 240 5-10 49,078 [36,195] 68,710 [50,673,6] 528 [708] 1,056 [1,416,1] 350 [5,075] 490 [7,05] 1,322 2,115 7 [101,5]	125 200 200 5-10 58,470 [43,121.6] 81,858 [60,370.3] 630 [844.8] 1,260 [1689.7] 350 [5,075] 490 [7,105] 1,312 2,100 7 [101.5]	125 150 5 72,406 [53,399,4] 101,369 [74,759,6] 820 [1,099,6] 1,640 [2,199,2] 350 [5,075] 490 [7,105] 1,625 1,950 7 [101,5]	125 150 150 5 91,343 [67,365.5] 127,880 [94,311.5] 900 [1,206.9] 1,800 [2,413.8] 350 [5,075] 490 [7,05] 2460 7 [101.5]
Max. 1 Max. 1 Retur	speed cont. (rev/min) speed int. (rev/min) (1) speed freewheel (rev/min) speed std. motor (rev/min) torque cont. (Nm) [lbf.ft] torque intermittent (Nm) [lbf.ft] (1) power cont. (kW) [hp] power int. (kW) [hp] (1) diff. pressure cont. (bar) [psi] (2) diff. pressure int. (bar) [psi] (1) flow cont. l/min flow int. l/min (1) rn pressure min. (bar) [psi] (2) m pressure max. (bar) [psi] (2)	[12,7] 480 768 5-10 1,157 [853,3] 1,620 [1194,8] 28 [37,5] 56 [75,1] 350 [5,075] 490 [7,105] 100 160 7 [10,15] 350 [5,075]	[17.7] 480 768 768 5-10 1,611 [1,225] 2,256 [1,663,8] 40 [53,6] 80 [107.3] 350 [5,075] 490 [7,105] 139 222 7 [101.5] 350 [5,075]	480 480 768 768 5-10 1,890 1,893,9] 2,646 [1,951,4] 48 [64,4] 96 [15,075] 490 [7,105] 163 261 7 [101,5] 350 [5,075]	[292] 480 768 5-10 2,677 [1,974.3] 3,748 [2,764.2] 68 [91.2] 136 [182.4] 350 [5,075] 490 [7,105] 231 369 7 [101.5] 350 [5,075]	[300] 430 688 688 5-10 2,798 [2,063.5] 3,918 [2,889.5] 61 [81.8] 122 [163.6] 350 [5,075] 490 [7,105] 216 346 7 [101.5] 350 [5,075]	[1003] 430 430 688 688 5-10 2,215 [1633,6] 3,059 [2,225,6] 80 [107,3] 160 [214,6] 210 [3,045] 290 [4,205] 285 456 7 [101,5] 210 [3,045]	1000 380 380 608 608 608 5-10 4,215 (3108.6] 5,900 [4,351.3] 84 [112.6] 168 [225.3] 350 [5,075] 490 [7,105] 288 460 7 7 [101.5] 350 [5,075]	350 350 560 560 5-10 4,770 [3,517.9] 6,679 [4,925.8] 95 [127.4] 190 [254.8] 350 [5,075] 490 [7] [10.5] 350 [5,075]	350 360 560 560 570 5,549 [4,092,4] 7,768 [5,728,9] 100 [134,1] 200 [268,2] 350 [5,075] 490 [7,105] 349 558 7 [101,5] 350 [5,075]	17.503 283 453 453 453 5-10 6,870 [5.066.6] 9,618 [7,093.3] 124 [166.3] 248 [332.6] 350 [5,075] 490 [7,105] 349 558 7 [101.5] 350 [5,075]	321 321 512 512 514 515 516 517 518 519 512 513 514	[87,0] 300 480 480 5-10 8,925 [6,582,2] 12,495 [9,215,1] 140 [187,7] 280 [375,5] 350 [5,075] 481 76 [101,5] 350 [5,075]	285 285 456 456 456 5-10 11156 [8,2276] 15,619 [11,15] 195 [261.5] 390 [523] 350 [5,075] 490 [7,105] 571 770 7 [101.5] 350 [5,075]	1216 346 346 540 12,405 [9,148,7] 17,368 [12,808,9] 165 [221,3] 330 [442,5] 350 [5,075] 481 913 7 [10,15] 350 [5,075]	285 456 456 5-10 13,964 [10,298.5] 19,550 [14,418.1] 185 [248.1] 370 [496.2] 350 [5,075] 490 [7,105] 715 1143 7 [101.5] 350 [5,075]	240 384 387 5-10 10,744 [7,923.7] 14,837 [10,942.3] 237 [317.8] 474 [635.6] 210 [3,045] 290 [4,205] 772 1,235 7 [101.5] 210 [3,045]	240 384 387 5-10 19,518 [14,394,5] 27,325 [20,152,2] 245 [328,5] 490 [657,1] 350 [5,075] 490 [7,105] 841 1,346 7 [101,5] 350 [5,075]	240 384 387 5-10 17,302 [12,760.2] 24,223 [17,864.5] 304 [407.7] 608 [815.3] 250 [3,625] 350 [5,075] 1,044 1,670 7 [101.5] 250 [3,625] 250 [3,625]	1240 384 387 2-4 39,036 [28,789,1] 54,650 [40,304,4] 490 [657,1] 980 [1,314,2] 350 [5,075] 490 [7] [101,5] 350 [5,075]	180 288 288 5-10 41,112 [30,3201] 57,557 [42,448.3] 443 [549.1] 886 [1,188.1] 350 [5,075] 490 [7,105] 1,329 2,126 7 [101.5] 350 [5,075]	240 384 387 2-4 34604 [25,520.5] 48,445 [35,728.2] 608 [815.3] 1,216 [1630.7] 250 [3625] 350 [5,075] 2,088 3,340 7 [101.5] 250 [3,625]	150 150 240 240 5-10 49,078 [36,195] 68,710 [50,673,6] 528 [708] 1,056 [1,416,1] 350 [5,075] 490 [7,105] 1,322 2115 7 [101,5] 350 [5,075]	125 200 200 5-10 58,470 [43,121.6] 81,858 [60,370.3] 630 [844.8] 1,260 [1,689.7] 350 [5,075] 490 [7] [101.5] 350 [5,075]	125 150 5 72,406 [53,399,4] 101,369 [74,759,6] 820 [1,099,6] 1,640 [2,199,2] 350 [5,075] 490 [7,105] 1,625 1,950 7 [101,5] 350	125 150 150 5 91,343 [67,365.5] 127,880 [94,311.5] 900 [1,206.9] 1,800 [2,413.8] 350 [5,075] 490 [7,105] 2050 2460 7 [101.5] 350
Max. s Max. s Ma	speed cont. (rev/min) speed int. (rev/min) (1) speed freewheel (rev/min) speed std. motor (rev/min) torque cont. (Nm) [lbf.ft] torque intermittent (Nm) [lbf.ft] (1) power cont. (kW) [hp] power cont. (kW) [hp] (1) diff. pressure cont. (bar) [psi] (2) diff. pressure int. (bar) [psi] (1) flow cont. l/min flow int. l/min (1) m pressure min. (bar) [psi] (2) m pressure max. (bar) [psi] (2) pressure max. (bar) [psi] (3)	[12:7] 480 768 768 5-10 1,157 [853.3] 1,620 [1194.8] 28 [37.5] 56 [751] 350 [5,075] 490 [7,105] 100 160 7 [101.5] 350 [5,075] 8 [116]	[17.7] 480 768 768 5-10 1,611 [1,225] 2,256 [1,663,8] 40 [53,6] 80 [107,3] 350 [5,075] 490 [7 [101,5] 350 [5,075] 8 [116]	1267] 480 768 768 5-10 1,890 [1,393,9] 2,646 [1951,4] 48 [64,4] 96 [128,7] 350 [5,075] 490 [7 [101,5] 350 [5,075] 8 [16]	[292] 480 768 768 5-10 2,677 [1,974.3] 3,748 [2,764.2] 68 [912] 136 [182.4] 350 [5,075] 490 [7 [101.5] 350 [5,075] 8 [116]	[300] 430 688 688 5-10 2.798 [2,063.5] 3.918 [2,889.5] 61 [81.8] 122 [163.6] 350 [5,075] 490 [7 [101.5] 350 [5,075] 8 [116]	[1003] 430 688 688 5-10 2,215 [1,633,6] 3,059 [2,225,6] 80 [107,3] 160 [214,6] 210 [3,045] 285 456 7 [101,5] 210 [3,045]	[1012] 380 608 608 608 510 4,215 [3108.6] 5,900 [4,351.3] 84 [112.6] 168 [225.3] 350 [5,075] 490 [7,105] 288 460 7 [101.5] 350 [5,075] 8 [116]	[350] 350 350 560 560 560 570 570 [3,517.9] 6,679 [4,925.8] 95 [127.4] 190 [254.8] 350 [5,075] 490 [7 101.5] 350 [5,075] 8 1161	350 360 560 560 560 570 580 540 540 540 540 5549 100 [5728.9] 100 [134.1] 200 [268.2] 350 [5,075] 490 [7,105] 349 558 7 [101.5] 350 [5,075] 8 [116]	17.00 283 453 453 453 5-10 6,870 [5,066.6] 9,618 [7,093.3] 124 [166.3] 248 [332.6] 350 [5,075] 490 [7/105] 349 5558 7 [101.5] 350 [5,075] 8 [116]	321 321 512 512 514 515 516 517 518 519 512 512 512 512 512 512 512 512 512 512 512 512 512 512 512 512 512 512 500	[87,0] 300 480 480 480 5-10 8,925 [6,582,2] 12,495 [9,215,1] 140 [187,7] 280 [375,5] 350 [5,075] 490 [7,105] 481 769 7 [101,5] 350 [5,075] 8[116]	112:23 285 456 456 456 5-10 11;156 [8,227,6] 15,619 [11,519] 195 [261,5] 390 [523] 350 [5,075] 490 [7/105] 571 770 7 [101.5] 350 [5,075] 8 [116]	1246 346 346 540 12,405 [9]48,7] 17,368 [12,808,9] 165 [221,3] 330 [442,5] 350 [5,075] 490 [7,105] 481 913 7 [101,5] 350 [5,075] 8 [116]	285 456 456 5-10 13,964 [10,298.5] 19,550 [14,418.1] 185 [248.1] 370 [496.2] 350 [5,075] 490 [7,105] 715 11,143 7 [101.5] 350 [5,075] 8 [116]	240 384 387 5-10 10,744 [7,923.7] 14,837 [10,942.3] 237 [37.8] 474 [635.6] 210 [3,045] 290 [4,205] 777 1,235 7 [101.5] 210 [3,045] 8 [116] 8	240 384 387 5-10 19,518 [14,394,5] 27,325 [20,152,2] 245 [328,5] 490 [65,71] 350 [5,075] 490 [7,105] 841 1,346 7 [101,5] 350 [5,075] 8 [101,5] 350 [5,075] 8 [11,346 7 [101,5] 350 [5,075] 8 [11,346 [11,346 [11,346] 7 [101,5] 8 [11,346 [11,346] [11,346] 1,346 [11,36]	240 384 387 5-10 17,302 [12,760.2] 24,223 [17,864.5] 304 [407.7] 608 [815.3] 250 [3,625] 350 [5,075] 1044 1,670 7 [101.5] 250 [3,625] 8 [116]	1240 384 387 2-4 39,036 [28,789:1] 54,650 [40,304.4] 490 [657:1] 980 [1,314.2] 350 [5,075] 490 [7 [101.5] 350 [5,075] 8 [116]	180 288 288 5-10 41,112 [30,3201] 57,557 [42,448.3] 443 [549.1] 886 [1,188.1] 350 [5,075] 490 [7,105] 1,329 2,126 7 [101.5] 350 [5,075] 8 [116]	240 384 387 2-4 34,604 [25,520,5] 48,445 [35,728,2] 608 [815,3] 1,216 [1,630,7] 250 [3,625] 350 [5,075] 2,088 3,340 7 [101,5] 250 [3,625] 8 [116]	150 150 240 240 5-10 49,078 [36,195] 68,710 [50,673,6] 528 [708] 1,056 [1,416,1] 350 [5,075] 490 [7,105] 1,322 2,115 7 [101,5] 350 [5,075] 8 [116]	125 200 200 5-10 58,470 [43,1216] 81,858 [60,370,3] 630 [844.8] 1,260 [1,689,7] 350 [5,075] 490 [7,105] 1,312 2,100 7 [101.5] 350 [5,075] 8 [16]	125 150 5 72,406 [53,399,4] 101,369 [74,759,6] 820 [1,099,6] 1,640 [2,199,2] 350 [5,075] 490 [7,105] 1,625 1,950 7 [101,5] 350 8 8 [116]	125 150 150 5 91,343 167,365,5] 127,880 194,311,5] 900 [1,206,9] 1,800 [2,413,8] 350 [5,075] 490 [7,105] 2050 2460 7 [101,5] 350 8 [116]
Max. t Max. s Max. s Ma	speed cont. (rev/min) speed int. (rev/min) (1) speed int. (rev/min) (1) speed std. motor (rev/min) torque cont. (Nm) [lbf.ft] torque intermittent (Nm) [lbf.ft] (1) power cont. (kW) [hp] power cont. (kW) [hp] (1) diff. pressure cont. (bar) [psi] (2) diff. pressure int. (bar) [psi] (1) flow cont. l/min flow int. l/min (1) rn pressure min. (bar) [psi] (2) rn pressure max. (bar) [psi] (2) m pressure max. (bar) [psi] (3) Min. @ max. cont. pressure	[12,7] 480 768 768 5-10 1,157 [853.3] 1,620 [1194.8] 28 [37.5] 56 [761] 350 [5,075] 490 [7105] 100 160 7 [101.5] 350 [5,075] 8 [116] 1,053	[17.7] 480 768 768 5-10 1,611 [1,225] 2,256 [1,663.8] 40 [53.6] 80 [107.3] 350 [5,075] 490 [7,105] 139 222 7 [101.5] 350 [5,075] 8 [116] 1,465	12607 480 768 768 5-10 1,890 [1,393,9] 2,646 [1,951,4] 48 [64,4] 96 [128,7] 350 [5,075] 490 [7105] 163 261 7 [101.5] 350 [5,075] 8 [116] 1,720	[232] 480 768 768 5-10 2,677 [1,974.3] 3,748 [2,764.2] 68 [91.2] 136 [182.4] 350 [5,075] 490 [7,105] 231 369 7 [101.5] 350 [5,075] 8 [116] 2,437	[300] [430] 430 688 688 5-10 2.798 [2,063.5] 3.918 [2,889.5] 61 [81.8] 122 [163.6] 350 [5,075] 490 [7,105] 216 346 7 [101.5] 350 [5,075] 8 [116] 2,547	[1003] 430 688 688 540 2,215 [1,633,6] 3,059 [2,225,6] 80 [107,3] 160 [214,6] 210 [3,045] 285 4456 7 [101,5] 210 [3,045] 8 [116] 2,016	(101) 380 608 608 608 510 4,215 [3,108.6] 5,900 [4,351.3] 84 [112.6] 168 [225.3] 350 [5,075] 490 [7,105] 288 460 7 [101.5] 350 [5,075] 8 [116] 3,836 [16]	[350] 350 350 560 560 560 560 560 570 [3,5179] (3,5179] 6,679 [4,925,8] 95 [127,4] 190 [254,8] 350 [5,075] 490 [7,105] 300 480 7 [101,5] 350 [5,075] 8 [116] 4,342	350 360 560 560 560 540 5,549 [4,0924] 7,768 [5,728.9] 100 [134.1] 200 [268.2] 350 [5,075] 490 [7,105] 349 558 7 [101.5] 350 [5,075] 8 [116] 5,050	17.303 283 453 453 453 5-10 6,870 [5,066.6] 9,618 [7,093.3] 124 [166.3] 248 [332.6] 350 [5,075] 490 [7,105] 349 558 7 [101.5] 350 [5,075] 8 [116] 6,252	321 321 512 5250 [335.3] 350 [5,075] 8 [116] 6,807	[87,0] 300 480 480 5-10 8,925 [6,582.2] 12,495 [9,215.1] 140 [187.7] 280 [375.5] 350 [5,075] 481 769 7 [101.5] 350 [5,075] 8 [116] 8,123	1285 456 456 456 540 11,156 [8,227,6] 15,619 [11,519] 195 [261,5] 390 [523] 350 [5,075] 490 7710 7 [101,5] 350 [5,075] 8 [116] 10,153	216 346 346 5-10 12,405 [9]48,7] 17,368 [12,808,9] 165 [221,3] 330 [442,5] 350 [5,075] 490 [7,105] 481 913 7 [101,5] 350 [5,075] 8 [116] 11,290	285 456 456 5-10 13,964 [10,298.5] 19,550 [14,418.1] 185 [248.1] 370 [496.2] 360 [5,075] 490 [7,105] 715 1,143 7 [101.5] 350 [5,075] 8 [116] 12,709	240 384 387 5-10 10,744 [7,923,7] 14,837 [10,942,3] 237 [31,78] 474 [635,6] 210 [3,045] 290 [4,205] 772 1,235 7 [101,5] 210 [3,045] 8 [116] 9,778	240 384 387 5-10 19,518 [14,394,5] 27,325 [20,152,2] 245 [328,5] 490 [5,075] 841 1,346 7 [101,5] 350 [5,075] 841 1,346 1,346 1,346 1,346 1,7,764	240 384 387 5-10 17,302 [12,760.2] 24,223 [17,864.5] 304 [407.7] 608 [815.3] 250 [3,625] 350 [5,075] 1,044 1,670 7 [101.5] 250 [3,625] 8 [116] 15,747	1240 384 387 2-4 39,036 [28,789:1] 54,650 [40,304.4] 490 [6571] 980 [1,314.2] 350 [5,075] 490 [7] [101.5] 350 [5,075] 8 [116] 35,527	180 180 288 288 5-10 41,112 [30,3201] 57,557 [42,448.3] 443 [5491] 886 [1,188.1] 350 [5,075] 490 [7,105] 1.329 22,126 7 [101.5] 350 [5,075] 8 [116] 37,417	240 384 387 2-4 34604 [25,520,5] 48,445 [35,728,2] 608 [815,3] 1,216 [1,630,7] 250 [3,625] 350 [5,075] 2,088 3,340 7 [101,5] 250 [3,625] 8 [116] 31,493	150 150 240 240 5-10 49,078 [36,195] 68,710 [50,673,6] 528 [708] 1,056 [1,416,1] 350 [5,075] 490 [7,105] 1,322 2,115 7 [101,5] 350 [5,075] 8 [116] 44,667	125 200 200 5-10 58,470 [43,1216] 81,858 [60,370.3] 630 [844.8] 1,260 [1,689.7] 350 [5,075] 490 [7,105] 1,312 2,100 7 [101.5] 350 [5,075] 8 [116] 53,214	125 150 150 5 72,406 [53,399,4] 101,369 [74,759,6] 820 [1,099,6] 1,640 [2,199,2] 350 [5,075] 490 [7,105] 1,625 1,950 7 [101,5] 350 8 [116] 65,809	125 150 150 5 91,343 [67,365.5] 127,880 [94,311.5] 900 [1,206.9] 1,800 [2,413.8] 350 [5,075] 490 [7,105] 2050 2460 7 [101.5] 350 8 [116] 83,122
Max. a Max. a Ma	speed cont. (rev/min) speed int. (rev/min) (1) speed int. (rev/min) (1) speed std. motor (rev/min) torque cont. (Nm) [lbf.ft] torque intermittent (Nm) [lbf.ft] (1) power cont. (kW) [hp] power cont. (kW) [hp] (1) diff. pressure cont. (bar) [psi] (2) diff. pressure int. (bar) [psi] (1) flow cont. l/min flow int. l/min (1) rn pressure min. (bar) [psi] (2) pressure max. (bar) [psi] (2) m pressure max. (bar) [psi] (3) Min. @ max. cont. pressure	[12:7] 480 768 768 5-10 11:57 [853.3] 1620 [1194.8] 28 [37.5] 56 [75.1] 350 [5,075] 490 [7,105] 100 160 7 [101.5] 350 [5,075] 8 [116] 1,053 [776.7] 1,077	[17,7] 480 768 768 5-10 1.611 [1,225] 2,256 [1,663,8] 40 [53,6] 80 [107,3] 350 [5,075] 490 [7,105] 139 222 7 [101,5] 350 [5,075] 8 [116] 1,465 [1,080,6] 1490	1260/j 480 768 768 5-10 1,890 [1,393,9] 2,646 [1,951,4] 48 [64,4] 96 [128,7] 350 [5,075] 490 [7,105] 163 261 7 [101.5] 350 [5,075] 8 [116] 1,720 1,728	[292] 480 768 768 5-10 2,677 [1,974.3] 3,748 [2,764.2] 68 [91.2] 136 [182.4] 350 [5,075] 490 [7,105] 231 369 7 [10,5] 350 [5,075] 8 [116] 2,437 [1,797.5] 2,490	[300] [430] 430 688 688 5-10 2,798 [2,063.5] 3,918 [2,889.5] 61 [81.8] 122 [163.6] 350 [5,075] 490 [7,105] 216 346 7 [101.5] 350 [5,075] 8 [116] 2,547 [1,678.7] 2,692 2,692	[1003] 430 688 688 540 2,215 [1,633,6] 3,059 [2,225,6] 80 [107,3] 160 [214,6] 210 [3,045] 290 [4,205] 285 456 7 [101,5] 210 [3,045] 8 [116] 2,016 [1,487,0] 2,060	[1012] 380 608 608 608 510 4,215 [3108.6] 5,900 [4,351.3] 84 [112.6] 168 [225.3] 350 [5,075] 490 [7,105] 288 460 7 [101.5] 350 [5,075] 8 [116] 3,836 [2,829.4] 3,820	[350] 350 350 560 560 560 560 510 4,770 [3,517.9] (3,517.9] 6,679 [4,925.8] 95 [127.4] 190 [254.8] 350 [5,075] 490 [7,105] 300 480 7 [101.5] 350 [5,075] 8 [116] 4,342 [3,202.7] 4437	350 350 560 560 540 540 5,549 [4,0924] 7,768 [5,728.9] 100 [134.1] 200 [268.2] 350 [5,075] 490 [7,105] 349 558 7 [101.5] 350 [5,075] 8 [116] 5,050 [3,724.9] 5.161	17.303 283 453 453 5-10 6,870 [5,066.6] 9,618 [7,093.3] 124 [166.3] 248 [332.6] 350 [5,075] 490 [7,105] 349 558 7 [101.5] 350 [5,075] 8 [116] 6,252 [4,611.5]	101.39 321 512 500	[87,9] 300 480 480 5-10 8,925 [6,582.2] 12,495 [9,215.1] 140 [187.7] 280 [5,075] 350 [5,075] 481 769 7 [101.5] 350 [5,075] 8 [116] 8;23 [5,991.5]	11223 285 456 456 456 540 11,156 [8,227.6] 15,619 [11,519] 195 [261.5] 390 [523] 350 [5,075] 490 [7,105] 571 770 7 [101.5] 350 [5,075] 8 [116] 10,327	1246 346 346 346 540 12,405 [9,148,7] 17,368 [12,808,9] 165 [22,13] 330 [442,5] 350 [5,075] 490 [7,105] 481 913 7 [101,5] 350 [5,075] 8 [116] 11,290 [8,327,5] 11538	285 456 456 5-10 13,964 [10,298.5] 19,550 [14,418.1] 185 [248.1] 370 [496.2] 350 [5,075] 490 [7,105] 715 1,143 7 [101.5] 350 [5,075] 8 [101.5] 7 5 5 1,143 7 [101.5] 350 [5,075] 8 [116] 12,709 [9,374.2] 12,980	240 384 387 5-10 10,744 (7,923.7] 14,837 [10,942.3] 237 [317.8] 474 [635.6] 210 [3,045] 290 [4,205] 772 1,235 7 [101.5] 210 [3,045] 8 [116] 9,778 [7,212.3] 9,093	240 384 387 5-10 19,518 27,325 [20,152.2] 245 [328,5] 490 [65,71] 350 [5,075] 490 [7,105] 841 1,346 7 [101,5] 350 [5,075] 8 841 1,346 7 [101,5] 350 [5,075] 8 8 [116] 17,764 [13,102,7] 18354	240 384 387 5-10 17,302 [12,760.2] 24,223 [17,864.5] 304 [407.7] 608 [815.3] 250 [3,625] 350 [5,075] 1,044 1,670 7 [101.5] 250 [3,625] 8 [116] 15,747 [116]50] 16,092	1240 384 387 2-4 39,036 [28,7891] 54,650 [40,304.4] 490 [6571] 980 [1,314.2] 350 [5,075] 490 [7,105] 1.682 2,691 7 [101.5] 350 [5,075] 8 [116] 35,527 [26,204.7] 78,309	180 180 288 540 41,112 [30,3201] 57,557 [42,448.3] 443 [5491] 886 [1,188.1] 350 [5,075] 4490 [7,105] 1,329 2,126 7 [101.5] 350 [5,075] 8 [116] 37,417 [27,598.8] 38,20 186	240 384 387 2-4 34,604 [25,520,5] 48,445 [35,728,2] 608 [815,3] 1,216 [1,630,7] 250 [3,625] 350 [5,075] 2,088 3,340 7 [101,5] 250 [3,625] 8 [116] 31,493 [23,299,2] 32186	150 150 240 240 5-10 49,078 136,195] 68,710 [50,673,6] 528 [708] 1,056 [1,416,1] 350 [5,075] 490 [7,105] 1,322 2,115 7 [101,5] 350 [5,075] 8 [116] 44,667 [32,946,4] 45640	125 200 200 58,470 [43,1216] 81,858 [60,370.3] 630 [844.8] 1,260 [1,683.7] 350 [5,075] 490 [7,105] 1,312 2,100 7 [101.5] 350 [5,075] 8 [116] 53,214 [39,250,6] 54,384	125 150 5 72,406 [53,399,4] 101,369 [74,759,6] 820 [1,099,6] 1,640 [2,199,2] 350 [5,075] 490 [5,075] 1,625 1,950 7 [101,5] 1,625 1,950 7 [101,5] 350 8 [116] 68,809 [48,540,7] 67,327	125 150 150 150 5 91,343 [67,365.5] 127,880 [94,311.5] 900 [1,206.9] 1,800 [2,413.8] 350 [5,075] 490 [7,105] 2050 2460 7 [101.5] 350 8 [116] 83,122 [61,310.8] A9.47
Max. st Max. s	speed cont. (rev/min) speed int. (rev/min) (1) speed freewheel (rev/min) speed std. motor (rev/min) torque cont. (Nm) [lbf.ft] torque intermittent (Nm) [lbf.ft] (1) power cont. (kW) [hp] power int. (kW) [hp] (1) diff. pressure cont. (bar) [psi] (2) diff. pressure int. (bar) [psi] (1) flow cont. l/min flow int. l/min (1) rn pressure min. (bar) [psi] (2) rn pressure max. (bar) [psi] (2) pressure max. (bar) [psi] (3) Min. @ max. cont. pressure Average @ max. cont. pressure	[12,7] 480 768 5-10 1,157 [853,3] 1,620 [1194,8] 28 [37,5] 56 [75,1] 350 [5,075] 490 [7,105] 100 160 7 [10,75] 350 [5,075] 8 [116] 1,053 [776,7] 1,077 [794,4]	[17.7] 480 768 768 5-10 1,611 [1,225] 2,256 [1,663,8] 40 [53,6] 80 [107.3] 350 [5,075] 490 [7,105] 139 222 7 [101.5] 350 [5,075] 8 [116] 1,465 [1,080.6] 1,499 [1,105.7]	126/1 480 768 768 5-10 1,890 1,393,9] 2,646 [1,951,4] 48 [64,4] 96 [128,7] 350 [5,075] 490 [7,105] 163 261 7 [101.5] 350 [5,075] 8 [168] 1,720 [1,268.7] 1,758 [1,296.7]	[292] 480 768 768 5-10 2,677 [1,974.3] 3,748 [2,764.2] 68 [91.2] 136 [182.4] 350 [5,075] 490 [7,105] 231 369 7 [101.5] 350 [5,075] 8 [116] 2,437 [1,797.5] 2,490 [1,836.6]	[300] 430 688 688 5-10 2,798 [2,063.5] 3,918 [2,889.5] 61 [81.8] 122 [163.6] 350 [5,075] 490 [7,105] 216 346 7 [101.5] 350 [5,075] 8 [116] 2,547 [1,878.7] 2,603 [1,920]	430 430 688 688 5-10 2,215 [1633,6] 3,059 [2,225,6] 80 [107,3] 160 [214,6] 200 [4,205] 285 456 7 [101,5] 210 [3,045] 200 [4,205] 285 456 7 [101,5] 210 [3,045] 200 [1,487,0] 2,060 [1,519,5]	1380 380 608 608 510 4,215 [3108.6] 5,900 [4,351.3] 84 [112.6] 168 [225.3] 350 [5,075] 490 [7,105] 288 460 7 [101.5] 350 [5,075] 8 [16] 3,836 [2,829.4] 3,920 [2,891.4]	350 350 560 560 5-10 4,770 [3,517.9] 6,679 [4,925.8] 95 [127.4] 190 [254.8] 350 [5,075] 490 [7,105] 300 480 7 [101.5] 350 [5,075] 8 [116] 4,342 [3,202.7] 4,437 [3,272.7]	350 3560 560 560 560 570 5,549 [4,092,4] 7,768 [5,728,9] 100 [134,1] 200 [268,2] 350 [5,075] 490 [7,105] 349 558 7 [101,5] 350 [5,075] 8 [116] 5,050 [3,724,9] 5,161 [3,806,8]	17.503 2883 453 453 453 5-10 6,870 [5.066.6] 9,618 [7,093.3] 124 [166.3] 248 [332.6] 350 [5,075] 490 [7,105] 349 558 7 [101.5] 350 [5,075] 8 [116] 6,252 [4,611.5] 6,390 [4,713.3]	321 321 512 512 514 515 516 10,471 [7,722,4] 125 [167,6] 250 [335,3] 350 [5,075] 490 [7,105] 430 688 7 [101,5] 350 [5,075] 8 [116] 6,807 [5,020,8] 6,957 [5,131,5]	[87,0] 300 480 480 540 8,925 [6,582,2] 12,495 [9,215,1] 140 [187,7] 280 [375,5] 350 [5,075] 490 [7,105] 481 769 7 [101,5] 350 [5,075] 8 [116] 8,123 [5,991,5] 8,301 [6,122,8]	112:23 285 456 456 456 5-10 111:56 [8,2276] 15,619 [11,15] 195 [261.5] 390 [523] 350 [5,075] 490 [7,105] 571 770 7 [101:5] 350 [5,075] 8 [116] 10,153 [7,488.9] 10,377 [7,654.1]	1216 346 346 540 12,405 [9,148,7] 17,368 [12,808,9] 165 [221,3] 330 [442,5] 350 [5,075] 490 [7,105] 481 913 7 [101,5] 350 [5,075] 8 [11,290 [8,327,5] 11,538 [8,510,4]	285 456 456 5-10 13,964 [10,298.5] 19,550 [14,418.1] 185 [248.1] 370 [496.2] 350 [5,075] 490 [7,105] 715 11,43 7 [101.5] 350 [5,075] 8 [116] 12,709 [9,374.2] 12,989 [9,580.7]	240 384 387 5-10 10,744 (7,923.7] 14,837 [10,942.3] 237 [317.8] 474 [635.6] 210 [3.045] 290 [3.045] 210 [3.045] 210 [3.045] 210 [3.045] 8 [116] 9,778 [7,212.3] 9,993 [7,370.8]	240 384 387 5-10 19,518 [14,394,5] 27,325 [20,152,2] 245 [328,5] 490 [657,1] 350 [5,075] 490 [7,105] 841 1,346 7 [101,5] 350 [5,075] 8 [16] 17,764 [13,390,4]	240 384 387 5-10 17,302 [12,760.2] 24,223 [17,864.5] 304 [407.7] 608 [815.3] 250 [3,625] 350 [5,075] 1,044 1,670 7 [101.5] 250 [3,625] 8 [116] 15,747 [11,615.0] 16,093 [11,870.2]	1240 384 387 2-4 39,036 [28,789,1] 54,650 [40,304,4] 490 [657,1] 980 [1,314,2] 350 [5,075] 490 [7,105] 1682 2,691 7 [101,15] 350 [5,075] 8 [116] 35,075] 8 [16] 35,075] 8 [16] 35,527 [26,204.7] 36,308 [26,780.8]	180 288 288 5-10 41,112 [30,3201] 57,557 [42,448.3] 443 [549.1] 886 [1,188.1] 350 [5,075] 490 [7,105] 1,329 2,126 7 [101.5] 350 [5,075] 8 [16] 37,417 [27,598.8] 38,239 [28,205.1]	240 384 387 2-4 34604 [25,520.5] 48,445 [35,728.2] 608 [815.3] 1,216 [1630.7] 250 [3625] 350 [5,075] 2,088 3,340 7 [101.5] 250 [3,625] 8 [16] 31,493 [23,229.2] 32,186 [23,740.4]	150.13 150 240 240 5-10 49.078 136.195] 68,710 [50,673.6] 528 [708] 1,056 [1,416.1] 350 [5,075] 490 [7,105] 1,322 2115 7 [101.5] 350 [5,075] 8 [116] 44,667 [32,946.4] 45,649 [33,670.7]	125 200 200 5-10 58,470 [43,121.6] 81,858 [60,370.3] 630 [844.8] 1,260 [1,689.7] 350 [5,075] 490 [7,105] 1,312 2,100 7 [101.5] 350 [5,075] 8 [16] 53,214 [39,250.6] 54,384 [40,113.6]	125 150 5 72,406 [53,399,4] 101,369 [74,759,6] 820 [1,099,6] 1,640 [2,199,2] 350 [5,075] 490 [7,705] 1,625 1,950 7 [101,5] 350 8 [116] 65,809 [48,540,7] 67,337 [49,667,8]	125 150 150 5 91,343 [67,365.5] 127,880 [94,311.5] 900 [1,206.9] 1,800 [2,413.8] 350 [5,075] 490 [7,705] 2050 2460 7 [101.5] 350 8 [116] 83,122 [61,310.8] 84,947 [62,656.9]
Max. st Max. s	speed cont. (rev/min) speed int. (rev/min) (1) speed int. (rev/min) (1) speed std. motor (rev/min) torque cont. (Nm) [lbf.ft] torque intermittent (Nm) [lbf.ft] (1) power cont. (kW) [hp] power int. (kW) [hp] (1) diff. pressure cont. (bar) [psi] (2) diff. pressure int. (bar) [psi] (1) flow cont. l/min flow int. l/min (1) rn pressure min. (bar) [psi] (2) rn pressure max. (bar) [psi] (2) pressure max. (bar) [psi] (3) Min. @ max. cont. pressure Average @ max. cont. pressure Min. @ max. int. pressure	[12,7] 480 768 768 5-10 1,157 [853,3] 1,620 [1194,8] 28 [37,5] 56 [75,1] 350 [5,075] 490 [7,105] 100 160 7 [10,15] 350 [5,075] 8 [116] 1,053 [776,7] 1,077 [794,4] 1,475	[17.7] 480 768 768 5-10 1,611 [1,225] 2,256 [1,663,8] 40 [53,6] 80 [107.3] 350 [5,075] 490 [7,105] 139 222 7 [101.5] 350 [5,075] 8 [116] 1,465 1,499 [1,105.7] 2,053	1260/j 480 768 768 5-10 1,890 1,893,9] 2,646 [1,951,4] 48 [64,4] 96 [15,075] 490 [7,105] 163 261 7 [101.5] 350 [5,075] 8 [1163 1,720 [1,268.7] 1,758 [1,296.7] 2,408 1,720	[292] 480 768 5-10 2,677 [1,974.3] 3,748 [2,764.2] 68 [91.2] 136 [182.4] 350 [5,075] 490 [7,105] 231 369 7 [101.5] 350 [5,075] 8 [116] 2,437 [1,797.5] 2,490 [1,836.6] 3,411	[300] 430 688 688 5-10 2,798 [2,063.5] 3,918 [2,889.5] 61 [81.8] 122 [163.6] 350 [5,075] 490 [7,105] 216 346 7 [101.5] 350 [5,075] 8 [116] 2,547 [1,878.7] 2,603 [1,920]	[103] 430 688 688 5-10 2,215 [1633,6] 3,059 [2,225,6] 80 [107,3] 160 [214,6] 290 [4,205] 285 456 7 [101,5] 210 [3,045] 201 [4,205] 285 456 7 [101,5] 210 [3,045] 2,010 [1,487,0] 2,060 [1,519,5] 2,784	1000 380 380 608 608 608 5-10 4,215 (3108.6) 5,900 [4,351.3] 84 [112.6] 168 [225.3] 350 [5,075] 490 [7,105] 288 460 7 7 [101.5] 350 [5,075] 8 [116] 3,836 [2,829.4] 3,920 [2,891.4] 5,370 5370	1000 350 350 560 560 560 570 570 4,770 [3,517.9] 6,679 [4,925.8] 95 [127.4] 190 [254.8] 350 [5,075] 490 [7,105] 300 480 7 [101.5] 350 [5,075] 8 [116] (3,202.7] 4,437 (3,272.7] 6,078 6,078 [100.78	1000 350 350 560 560 560 570 5,549 [4,092,4] 7,768 [5,728,9] 100 [134,1] 200 [268,2] 350 [5,075] 490 [7,105] 349 558 7 [101,15] 350 [5,075] 8 [116] 5,050 [3,724,9] 5,161 [3,806,8] 7,070	17.303 2883 453 453 453 5-10 6,870 [5.066.6] 9,618 [7,093.3] 124 [166.3] 248 [332.6] 350 [5,075] 490 [7,105] 349 558 7 [101.5] 350 [5,075] 8 [116] 6,252 [4,611.5] 6,390 [4,713.3] 8,753	321 321 512 512 514 515 516 517 518 10,471 17,722,4] 125 [167,6] 250 [335,3] 350 [5,075] 490 [7,105] 430 688 7 [101,5] 350 [5,075] 8 [116] 6,807 [5,020,8] 6,957 [5,131,5] 9,530	[87,0] 300 480 480 480 5-10 8,925 [6,582,2] 12,495 [9,215,1] 140 [187,7] 280 [375,5] 350 [5,075] 481 76 [101,5] 350 [5,075] 8 [116] 8,123 [5,991,5] 8,301 [6,122,8] 11,372	112:23 285 456 456 456 5-10 11;156 [8,2276] 15,619 [11,15] 195 [261.5] 390 [523] 350 [5,075] 490 [7,105] 571 770 7 [101:5] 350 [5,075] 8 [116] 10,377 [7,488.9] 10,377 [7,654.1] 14,215	1246 346 346 346 540 12,405 [9,148,7] 17,368 [12,808,9] 165 [221,3] 330 [442,5] 350 [5,075] 490 [7,105] 481 913 7 [101,5] 350 [5,075] 8 [116] 11,290 [8,327,5] 11,538 [8,510,4] 15,806	285 456 456 5-10 13,964 [10,298.5] 19,550 [14,418.1] 185 [248.1] 370 [496.2] 350 [5,075] 490 [7,105] 715 11,43 7 [101.5] 350 [5,075] 8 [116] 12,709 [9,374.2] 12,989 [9,350.7] 17,793	240 384 387 5-10 10,744 (7,923.7] 14,837 [10,942.3] 237 [317.8] 474 [635.6] 210 [3.045] 290 [3.045] 210 [3.045] 772 1,235 7 [1015] 210 [3.045] 8 [116] 9,778 [7,272.3] 9,993 [7,370.8] 13,503 (7,370.8] 13,503 (7,370.8] 13,503 (7,370.8] 13,503 (7,370.8] 13,503 (7,370.8] 13,503 (7,370.8] 13,503 (7,370.8] 13,503 (7,370.8] 13,503 (7,370.8] (240 384 387 5-10 19,518 [14,394,5] 27,325 [20,152,2] 245 [328,5] 490 [657,1] 350 [5,075] 490 [7,105] 841 1,346 7 [101,5] 350 [5,075] 8 [116] 17,764 [13,390,4] 24,889 (13,390,4] 24,889 (13,390,4] 24,889 (13,390,4] 24,889 (13,390,4] 24,889 (13,390,4] 24,889 (14,390,4] 24,889 (14,390,4] (14,3	240 384 387 5-10 17,302 [12,760.2] 24,223 [17,864.5] 304 [407.7] 608 [815.3] 250 [3,625] 350 [5,075] 1,044 1,670 7 [101.5] 250 [3,625] 8 [116] 15,747 [11,615.0] 16,093 [11,870.2] 22,045 12,745 1,870.2] 22,045 12,745 1,870.2] 22,045 12,745 1,870.2] 22,045 12,745 1,870.2] 22,045 12,745 1,870.2] 22,045 12,745 1,870.2] 22,045 12,745 1,870.2] 22,045 12,745 1,870.2] 22,045 12,745 14,745	1240 384 387 2-4 39,036 [28,789,1] 54,650 [40,304,4] 490 [657,1] 980 [1,314,2] 350 [5,075] 490 [7,105] 1682 2,691 7 [101,5] 350 [5,075] 8 [116] 35,527 [26,204,7] 36,308 [26,780,8] 49,738	180 288 288 5-10 41,112 [30,3201] 57,557 [42,448.3] 443 [549.1] 886 [1,188.1] 350 [5,075] 490 [7,105] 1,329 2126 7 [101.5] 350 [5,075] 8 [116] 37,417 [27,598.8] 38,239 [28,205.1] 52,983	240 384 387 2-4 34604 [25,520,5] 48,445 [35,728,2] 608 [815,3] 1,216 [16,07] 250 [3,625] 350 [5,075] 2,088 3,340 7 [101,5] 250 [3,625] 8 [116] 31,493 [23,229,2] 32,186 [23,740,4] 44,091	100,731 150 240 240 5-10 49,078 136,195] 68,710 [50,673,6] 528 [708] 1,056 [1,416,1] 350 [5,075] 490 [7,105] 1,322 2115 7 [101,5] 350 [5,075] 8 [116] 44,667 [32,946,4] 45,649 [33,670,7] 62,534	125 200 200 5-10 58,470 [43,121.6] 81,858 [60,370.3] 630 [844.8] 1,260 [1,689.7] 350 [5,075] 490 [7,105] 1,312 2,100 7 [101.5] 350 [5,075] 8 [116] 53,214 [39,250.6] 54,384 [40,113.6] 74,500	125 150 5 72,406 [53,399,4] 101,369 [74,759,6] 820 [1,099,6] 1,640 [2,199,2] 350 [5,075] 490 [7,705] 1,625 1,950 7 [101,5] 350 8 [116] 65,809 [48,540,7] 67,337 [49,667,8] 92,245	125 150 150 5 91,343 [67,365.5] 127,880 [94,311.5] 900 [1,206.9] 1,800 [2,413.8] 350 [5,075] 490 [7,705] 2050 2460 7 [101.5] 350 8 8 [116] 83,122 [61,310.8] 84,947 [62,656.9]
Max. st Max. s	speed cont. (rev/min) speed int. (rev/min) (1) speed int. (rev/min) (1) speed std. motor (rev/min) torque cont. (Nm) [lbf.ft] torque intermittent (Nm) [lbf.ft] (1) power cont. (kW) [hp] power int. (kW) [hp] (1) diff. pressure cont. (bar) [psi] (2) diff. pressure int. (bar) [psi] (1) flow cont. l/min flow int. l/min (1) rn pressure min. (bar) [psi] (2) pressure max. (bar) [psi] (2) pressure max. (bar) [psi] (3) Min. @ max. cont. pressure Average @ max. cont. pressure Min. @ max. int. pressure	[12:7] 480 768 768 5-10 1,157 [853.3] 1,620 [1194.8] 28 [37.5] 56 [75.1] 350 [5,075] 490 [7,105] 100 160 7 [101,5] 350 [5,075] 8 [116] 1,053 [776.7] 1,077 [794.4] 1,475 [1,088]	[17.7] 480 768 768 5-10 1,611 [1,225] 2,256 [1,663,8] 40 [53,6] 80 [107.3] 350 [5,075] 490 [7,105] 139 222 7 [101.5] 350 [5,075] 8 [116] 1,465 [1,080.6] 1,499 [1,05.7] 2,053 [1,514.3]	260/1 480 768 768 5-10 1,890 1,393,9] 2,646 [1,9514] 48 [64,4] 96 [128,7] 350 [5,075] 490 [7,105] 163 261 7 [101.5] 350 [5,075] 8 [116] 1,720 [1,268,7] 1,758 [1,296,7] 2,408 [1,7761] 2,404	[292] 480 768 5-10 2,677 [1,974.3] 3,748 [2,764.2] 68 [91.2] 136 [182.4] 350 [5,075] 490 [7,105] 231 369 7 [101.5] 350 [5,075] 8 [116] 2,437 [1,797.5] 2,490 [1,836.6] 3,411 [2,516] 3,486	[300] 430 430 688 688 5-10 2,798 [2,063,5] 3,918 [2,899,5] 61 [81,8] 122 [163,6] 350 [5,075] 490 [7,105] 216 346 7 [101,5] 350 [5,075] 8 [116] 2,503 [1,920] 3,565 [2,693,5] 3,605 [2,629,5]	[1003] 430 688 688 5-10 2,215 [1633,6] 3,059 [2,225,6] 80 [107,3] 160 [214,6] 210 [3,045] 290 [4,205] 285 456 7 [101,5] 210 [3,045] 8 [116] 2,016 [1,487.0] 2,060 [1,519.5] 2,784 [2,053.5] 2,845	(102) 380 608 608 608 510 4,215 (31086) 5,900 [4,351.3] 84 [112.6] 168 [225.3] 350 [5,075] 490 [7,105] 288 460 7 [101.5] 350 [5,075] 8 [116] 3,836 [2,829.4] 3,920 [2,891.4] 5,370 [3,960.9] 5,488	1000 350 350 560 560 560 570 570 4,770 [3,517.9] 6,679 [4,925.8] 95 [127.4] 190 [254.8] 350 [5,075] 490 [7,105] 300 480 7 [101.5] 350 [5,075] 8 [116] 4,342 [3,202.7] 4,437 [3,272.7] 6,078 [4,483.1]	350 350 560 560 560 549 [4,092.4] 7,768 [5,728.9] 100 [134.1] 200 [268.2] 350 [5,075] 490 [7,105] 349 558 7 [101.5] 350 [5,075] 8 [116] 5,050 [3,724.9] 5,161 [3,806.8] 7,070 [5,214.8]	17.303 2883 453 453 453 5-10 6,870 [5,066,6] 9,618 [7,093,3] 124 [166,3] 248 [332,6] 350 [5,075] 490 [7,105] 349 558 7 [101,5] 350 [5,075] 8 [16] 6,252 [4,611,5] 6,390 [4,713,3] 8,753 [6,456,2]	321 321 321 512 512 514 515 512 512 514 515 512 51 52 530 50 50 50 50 50 50 50 50 50 50 50 50 50 50 50 50 50 50	[87,0] 300 480 480 5-10 8,925 [6,582,2] 12,495 [9,215,1] 140 [187,7] 280 [375,5] 350 [5,075] 481 76 [101,5] 350 [5,075] 8[116] 8,123 [5,991,5] 8,301 [6,122,8] 11,372 [8,388] 11622	11223 285 456 456 456 5-10 11,156 [8,2276] 15,619 [11,15] 195 [261.5] 390 [523] 350 [5,075] 490 [7,105] 571 770 7 [101,5] 350 [5,075] 8 [116] 10,153 [7,488.9] 10,377 [7,654.1] 14,215 [10,485]	[1005] 216 346 346 540 [9]48.7] 17,368 [12,405 [9]48.7] 17,368 [12,808.9] 165 [221.3] 330 [442.5] 350 [5,075] 490 [7,105] 481 913 7 [101.5] 350 [5,075] 8 [116] 11,290 [8,327.5] 11,538 [8,510.4] 15,806 [16,85.5] 165.85.5	285 456 456 456 5-10 13,964 [10,298.5] 19,550 [14,418.1] 185 [248.1] 370 [496.2] 360 [5,075] 490 [7105] 715 11,433 7 [101.5] 350 [5,075] 8 [116] 12,709 [9,374.2] 12,989 [9,580.7] 17,793 [13,124.1]	240 384 387 5-10 10,744 [7,923.7] 14,837 [10,942.3] 237 [317.8] 474 [635.6] 210 [3,045] 290 [4,205] 772 1,235 7 7 [101.5] 210 [3,045] 8 [116] 9,778 [7,212.3] 9,993 [7,370.8] 13,503 [9,959.8] 13,500	240 384 387 5-10 19,518 [14,394,5] 27,325 [20,152,2] 245 [328,5] 490 [657,1] 350 [5,075] 490 [7,105] 841 1,346 7 [101,5] 350 [5,075] 8 [116] 17,764 [13,390,4] 24,869 [18,343,4] 25,416	240 384 387 5-10 17,302 [12,760.2] 24,223 [17,864.5] 304 [407.7] 608 [815.3] 250 [3,625] 350 [5,075] 1,044 1,670 7 [116] 15,747 [11,65.0] 16,093 [11,870.2] 22,045 [16,60.4] 22,045 [16,260.4]	1240 384 387 2-4 39,036 [28,789,1] 54,650 [40,304,4] 490 [657,1] 980 [1,314,2] 350 [5,075] 490 [7,105] 1,682 2,691 7 [116] 35,075] 8 [116] 35,527 [26,204,7] 36,308 [26,780,8] 49,738 [36,686,7] 50,834	180 288 288 5-10 41,112 [30,3201] 57,557 [42,448.3] 443 [549.1] 886 [1,188.1] 350 [5,075] 490 [7,105] 1,329 2,126 7 [101.5] 350 [5,075] 8 [116] 37,417 [27,598.8] 38,239 [28,205.1] 52,383 [38,637.7]	240 384 387 2-4 34604 [25,520.5] 48,445 [35,728.2] 608 [815.3] 1216 [1630.7] 250 [3,625] 350 [5,075] 2,088 3,340 7 [101.5] 250 [3,625] 8 [116] 31,493 [23,229.2] 32,186 [23,740.4] 44,091 [32,521.5]	100,731 150 240 240 5-10 49,078 136,195] 68,710 [50,673,6] 528 [708] 1,056 [1,416,1] 350 [5,075] 490 [7,105] 1,322 2115 7 [101,5] 350 [5,075] 8 [116] 44,667 [32,946,4] 45,649 [33,670,7] 62,534 [46,125,1] 63,900	125 200 200 5-10 58,470 [43,121.6] 81,858 [60,370.3] 630 [844.8] 1,260 [1,689.7] 350 [5,075] 490 [7,105] 1,312 2,100 7 [101.5] 350 [5,075] 8 [116] 53,214 [39,250.6] 54,384 [40,113.6] 74,500 [54,951.2]	125 150 150 5 72,406 [53,399,4] 101,369 [74,759,6] 820 [1,099,6] 1,640 [2,199,2] 350 [5,075] 490 [7,705] 1,625 1,950 7 [101,5] 350 8 [116] 65,809 [48,540,7] 67,337 [49,667,8] 92,245 [68,039,9] 94,972	125 150 150 5 91,343 [67,365.5] 127,880 [94,311.5] 900 [1,206.9] 1,800 [2,413.8] 350 [5,075] 490 [7,705] 2050 2460 7 [101.5] 350 8 8(116] 83,122 [61,310.8] 84,947 [62,656.9] 116,371 [85,835.2] 118,929
Max. 1 Max. 1 Ma	speed cont. (rev/min) speed int. (rev/min) (1) speed int. (rev/min) (1) speed std. motor (rev/min) torque cont. (Nm) [lbf.ft] torque intermittent (Nm) [lbf.ft] (1) power cont. (kW) [hp] power cont. (kW) [hp] (1) diff. pressure cont. (bar) [psi] (2) diff. pressure int. (bar) [psi] (1) flow cont. l/min flow int. l/min (1) rn pressure min. (bar) [psi] (2) pressure max. (bar) [psi] (2) pressure max. (bar) [psi] (2) m pressure max. (bar) [psi] (2) m pressure max. (bar) [psi] (3) Min. @ max. cont. pressure Average @ max. int. pressure (1)	[12,7] 480 768 768 5-10 1,157 [853,3] 1,620 [1194,8] 28 [37,5] 56 [75,1] 350 [5,075] 490 [7,105] 100 160 7 [101,5] 350 [5,075] 8 [116] 1,053 [776,7] 1,077 [794,4] 1,507 [1,11,6]	[17.7] 480 768 768 5-10 1,611 [1,225] 2,256 [1,663,8] 40 [53,6] 80 [107.3] 350 [5,075] 490 [7,105] 139 222 7 [101.5] 350 [5,075] 8 [116] 1,465 [1,080.6] 1,499 [1,105.7] 2,053 [1,547.5]	12:07] 480 768 768 5:10 1,890 1,393,9] 2,646 [1,951,4] 48 [64,4] 96 [128,7] 350 [5,075] 490 [7,105] 163 261 7 [101.5] 350 [5,075] 8 [116] 1,720 [1,268,7] 1,758 [1,296,7] 2,461 [1,815.2]	[252] 480 768 768 5-10 2,677 [1,974.3] 3,748 [2,764.2] 68 [91.2] 136 [182.4] 350 [5,075] 490 [7,105] 231 369 7 [101.5] 350 [5,075] 8 [116] 2,437 [1,836.6] 3,411 [2,571.3]	[300] 430 688 688 5-10 2,798 [2,063,5] 3,918 [2,889,5] 61 [81,8] 122 [163,6] 350 [5,075] 490 [7,105] 216 346 7 [101,5] 350 [5,075] 8 [116] 2,547 [1,878,7] 2,603 [1,920] 3,664 [2,687,8]	[1003] 430 688 688 5-10 2,215 [1633,6] 3,059 [2,225,6] 80 [107,3] 160 [214,6] 210 [3,045] 280 [4,205] 285 456 7 [101,5] 210 [3,045] 8 [116] 2,016 [1,487.0] 2,060 [1,519.5] 2,784 [2,098.5]	[1012] 380 608 608 510 4,215 [3108.6] 5,900 [4,351.3] 84 [112.6] 168 [225.3] 350 [5,075] 490 [7,105] 288 460 7 [101.5] 350 [5,075] 8 [116] 3,836 [2,894.4] 5,370 [3,960.9] 5,488 [4,047.9]	[350] 350 567 [4,925.8] 95 [127.4] 190 [254.8] 350 [5.075] 8 [116] 4,342 [3.202.7] 4,437 [3.272.7] 6,078 [4,483.1] 6,212 [4,582]	350 350 560 560 570 580 540 540 540 540 540 540 540 5549 100 [134.1] 200 [268.2] 350 [5,075] 490 [7,105] 349 558 7 [101.5] 350 [5,075] 8 [116] 5,050 [3,204.8] 7,070 [5,214.8] 7,225 [5,329.2]	17.303 2883 453 453 453 5-10 6,870 [5,066,6] 9,618 [7,093,3] 124 [166,3] 248 [332,6] 350 [5,075] 490 [7105] 349 558 7 [101,5] 350 [5,075] 8 [116] 6,252 [4,611,5] 6,390 [4,713,3] 8,753 [6,456,2] 8,945 [6,597,8]	321 321 512 512 514 515 516 517 518 10,471 17,722,4] 125 [167,6] 250 [335,3] 350 [5,075] 490 [7105] 430 688 7 [101,5] 350 [5,075] 8 [116] 6,807 [5,020,8] 6,957 [5,31,5] 9,530 [7,029,3] 9,740 [7,84,2]	[87,0] 300 480 480 5-10 8,925 [6,582,2] 12,495 [9,215,1] 140 [187,7] 280 [375,5] 350 [5,075] 490 [7,105] 481 769 7 [101,5] 350 [5,075] 8 [116] 8,123 [5,991,5] 8,301 [6,122,8] 11,372 [8,388] 11,622 [8,572,4]	11223 285 456 456 456 5-10 11,156 [8,227,6] 15,619 [11,519] 195 [261,5] 390 [523] 350 [5,075] 490 [7,105] 571 770 7 [101,5] 350 [5,075] 8 [116] 10,153 [7,488.9] 10,377 [7,654.1] 14,215 [10,751]	1216 346 346 346 540 12,405 [9]48,7] 17,368 [12,808,9] 165 [221,3] 330 [442,5] 350 [5,075] 481 913 7 [101,5] 350 [5,075] 8 [116] 11,290 [8,327,5] 11,538 [8,510,4] 15,806 [11,658,5] 16,154 [11,915,2]	285 456 456 5-10 13,964 [10,298.5] 19,550 [14,418.1] 185 [248.1] 370 [496.2] 350 [5,075] 490 [7,105] 715 11,143 7 [101.5] 350 [5,075] 8 [116] 12,709 [9,374.2] 12,989 [9,580.7] 17,793 [13,124.1] 18,184 [13,412.5]	240 384 387 5-10 10,744 [7,923.7] 14,837 [10,942.3] 237 [317.8] 474 [635.6] 210 [3,045] 290 [4,205] 772 1,235 7 [101.5] 210 [3,045] 8 [116] 9,778 [7,212.3] 9,993 [7,370.8] 13,800 [10,78.9]	240 384 387 5-10 19,518 [14,394,5] 27,325 [20,152,2] 245 [328,5] 490 [65,71] 350 [5,075] 490 [7,105] 841 1,346 7 [101,5] 350 [5,075] 8 [116] 1,354 [13,390,4] 24,869 [18,343,4] 25,416 [18,746,8]	240 384 387 5-10 17,302 [12,760.2] 24,223 [17,864.5] 304 [407.7] 608 [815.3] 250 [3,625] 350 [5,075] 1,044 1,670 7 [101.5] 250 [3,625] 8 [116] 15,747 [11,65.0] 16,093 [11,870.2] 22,530 [16,260.4] 22,530	1240 384 387 2-4 39,036 [28,789:1] 54,650 [40,304.4] 490 [657:1] 980 [1,314.2] 350 [5,075] 490 [7705] 1682 2,691 7 [101.5] 350 [5,075] 8 [116] 35,527 [26,780.8] [26,780.8] [36,6308 [26,780.8] [37,492.9]	180 288 288 5-10 41,112 [30,3201] 57,557 [42,448.3] 443 [549.1] 886 [1,188.1] 350 [5,075] 490 [7105] 1329 2,126 7 [101.5] 350 [5,075] 8 [116] 37,417 [27,598.8] 38,239 [28,205.1] 52,383 [38,637.7] 53,535 [39,487.4]	240 384 387 2-4 34,604 [25,520.5] 48,445 [35,728.2] 608 [815.3] 1,216 [1,630.7] 250 [3,625] 350 [5,075] 2,088 3,340 7 [101.5] 250 [3,625] 8 [116] 31,493 [23,229.2] 32,186 [23,740.4] 44,091 [32,251.5]	100.731 150 240 240 5-10 49.078 136.195] 68.710 [50,673.6] 528 [708] 1,056 [1,416.1] 350 [5,075] 490 [7,105] 1,322 2,115 7 [101.5] 350 [5,075] 8 [116] 44,667 [32,946.4] 45,649 [33,670.7] 62,534 [46,125.1] 63,908 [47,138.5]	125 200 200 5-10 58,470 [43,1216] 81,858 [60,370,3] 630 [844,8] 1,260 [1,689,7] 350 [5,075] 490 [7,105] 1,312 2,100 7 [101,5] 350 [5,075] 8 [116] 53,214 [39,250,6] 54,384 [40,113,6] 74,500 [54,951,2] 76,137 [56,158,7]	125 150 5 72,406 [53,399,4] 101,369 [74,759,6] 820 [1,099,6] 1,640 [2,199,2] 350 [5,075] 490 [7,105] 1,625 1,950 7 [101,5] 350 8 8 [116] 65,809 [48,540,7] 67,337 [49,667,8] 92,245 [68,039,9] 94,273	125 150 150 5 91,343 [67,365,5] 127,880 [94,311,5] 900 [1,206,9] 1,800 [2,413,8] 350 [5,075] 490 [7,105] 2050 2460 7 [101,5] 350 8 [116] 83,122 [61,310,8] 84,947 [62,656,9] 116,371 [85,835,2] 118,928 [87,721,3]



PERFORMANCE DATA SMA ROTATING SHAFT MOTOR TYPE C1 HIGH POWER











Nom	nal displacement (cc/rev) [in3]	200	290 [17.7]	350 [21,4]	480 [29.3]	500 [30.5]	650 [39.7]	750 [45.8]	850 [51,9]	1,000 [61]	1,230 [75,1]	1,340 [81.8]	1,600 [97.6]	2,000 [122]	2,200 [134,2]	2,500 [152.6]	3,200 [195.3]	3,500 [213.6]	4,350 [265.4]
	A1	315	315	315	315	335	335	394	394	394	394	449	449	507.5	449	507.5	507.5	602	602
		[12.4] a250	[12.4] a250	[12.4] a250	[12.4] a250	[13.19] a280	[13.19]	[15.51] @315	[15.51] a315	[15.51] a315	[15.51] @315	[17.68]	[17.68]	[19.98]	[17.68]	[19.98]	[19.98]	[23.70] @560	[23.70]
	A2	[9.84]	[9.84]	[9.84]	[9.84]	[11.02]	[11.02]	[12.4]	[12.4]	[12.4]	[12.4]	[15.75]	[15.75]	[17.72]	[15.75]	[17.72]	[17.72]	[22.05]	[22.05]
	A3	ø345	ø345	ø345	ø345	ø370	ø370	ø436	ø436	ø436	ø434	ø545	ø545	ø583	ø545	ø583	ø583	ø695	ø695
		139	139	139	[13.58]	150	150	187.5	187.5	187.5	187.5	215	215	242	215	242	242	[27.36] 86	86
	A5	[5.47]	[5.47]	[5.47]	[5.47]	[5.91]	[5.91]	[7.38]	[7.38]	[7.38]	[7.38]	[8.46]	[8.46]	[9.53]	[8.46]	[9.53]	[9.53]	[3.39]	[3.39]
	A6	12	12	12	12	16	16	16	16	16	16	19	19	15	19	15	15	27	27
	47	236.5	236.5	236.5	236.5	259.5	259.5	308.5	308.5	308.5	263	345	345	386	345	386	386	462	462
Ξ	Ar	[9.31]	[9.31]	[9.31]	[9.31]	[10.22]	[10.22]	[12.15]	[12.15]	[12.15]	[10.36]	[13.58]	[13.58]	[15.20]	[13.58]	[15.2]	[15.2]	[18.19]	[18.19]
E	A12	Ø24 M5	Ø24 M5	Ø24 M5	Ø24 M5	Ø22 M6	Ø22 M6	Ø24 M12	Ø24 M12	Ø24 M12	Ø24 M12	Ø22 M16	Ø22 M16	Ø22 M16	Ø24 M16	Ø24 M16	Ø24 M16	Ø26 M16	Ø26 M16
ns in	PI	122	122	122	122	154	154	156	156	156	155	181	181	184	181	184	184	225	225
insio	BI	[4.8]	[4.8]	[4.8]	[4.8]	[6.06]	[6.06]	[6.14]	[6.14]	[6.14]	[6.11]	[7.13]	[7.13]	[7.24]	[7.13]	[7.24]	[7.24]	[8.86]	[8.86]
Dime	B2	[3.23]	[3.23]	[3.23]	82 [3.23]	105 [4.13]	105 [4,13]	105 [4.13]	[4.13]	[4,13]	[4,13]	130	130	150 [5.91]	130	[150 [5.91]	[5.91]	165 [6.5]	165
_	P2	69	69	69	69	74	74	92	92	92	80	120	120	135	120	135	135	145	145
		[2.72]	[2.72]	[2.72]	[2.72]	[2.91]	[2.91]	[3.62]	[3.62]	[3.62]	[3.15]	[4.72]	[4.72]	[5.31]	[4.72]	[5.31]	[5.31]	[5.71]	[5.71]
	B4	[1.97]	[1.97]	[1.97]	ø50 [1.97]	Ø60 [2.36]	[2.36]	Ø63 [2.48]	[2.48]	[2.48]	Ø63 [2.48]	[3.15]	[3.15]	Ø95 [3.74]	[3.15]	[3.74]	[3.74]	[4.33]	[4.33]
	B5	16	16	16	16	18	18	18	18	18	18	22	22	25	22	25	25	28	28
		[0.63]	[0.63]	[0.63]	[0.63]	[0.71]	[0.71]	[0.71]	[0.71]	[0.71]	[0.71]	[0.87]	[0.87]	[0.98]	[0.87]	[0.98]	[0.98]	[1.10]	[1.10]
	B6	[4.8]	[4.8]	[4.8]	[4.8]	[6.06]	[6.06]	[6.14]	[6.14]	[6.14]	[6.11]	[7.13]	[7.13]	[7.24]	[7:13]	[7.24]	[7.24]	[8.86]	[8.86]
	B7	63	63	63	63	85	85	80	80	80	80	105	105	100	105	100	100	140	140
	B8	[2.48]	[2.48] 19t 10/20	[2.48] 19t10/20	[2.48] 19t 10/20	[3.35] 18t 8/16	[3.35] 18t 8/16	[3.15] 19t 8/16	[3.15] 19t 8/16	[3.15] 19t 8/16	[3.15] 19t 8/16	[4.13] 24t 8/16	[4.13] 24t 8/16	[3.94] 28t 8/16	[4.13] 24t 8/16	[3.94] 28t 8/16	[3.94] 28t 8/16	[5.51] 25t 6/12	[5.51] 25t 6/12
Goor	potric displacement (cc/row) [in ³]	208	289.5	339.5	480.5	502.5	663	756.5	856.5	996	1,233.5	1,343	1,602.4	2,003	2,227.5	2,807	3,215	3,504.5	4,349
Main		[12.7]	[17.7]	[20.7]	[29.3]	[30.7]	[40.5]	[46.2]	[52.3]	[60.8]	[75.3]	[81.9]	[97.8]	[122.2]	[135.9]	[171.3]	[196.2]	[213.8]	[265.4]
Max.	speed cont. (rev/min) speed int. (rev/min) (1)	1250	1250	1250	890	880	880	780	780	750	776	700	700	475	560	475	475	438	348
Max.	speed freewheel (rev/min)	1250	1250	1250	890	880	880	780	780	750	776	700	700	475	650	475	475	438	384
Min.s	speed std. motor (rev/min)	20	20	20	20	20	20	20	20	20	5-10	20	20	20	5-10	20	20	20	20
Max.	torque cont. (Nm) [lbf.ft]	[853.3]	[1,225]	[1,393.9]	[1,974.3]	[2,063.5]	[1,633.6]	4,215 [3,108.6]	4,770 [3,517.9]	5,549 [4,092.4]	[5,066.6]	7,480 [5,516.5]	8,925 [6,582.2]	[8,227.6]	12,405 [9,148.7]	13,964 [10,298.5]	10,744 [7,923.7]	19,518 [14,394.5]	[12,760.2
Max.	torque intermittent (Nm) [lbf.ft] (1)	1,620 [1,194.8]	2,256 [1,663.8]	2,646 [1,951.4]	3,748 [2,764.2]	3,918 [2,889.5]	3,101 [2,287]	5,900 [4,351.3]	6,679 [4,925.8]	7,768 [5,728.9]	9,618 [7,093.3]	10,471 [7,722.4]	12,495 [9,215.1]	15,619 [12,256.5]	17,368 [12,808.9]	19,550 [14,418.1]	14,837 [10,942.3]	27,325 [20,152.2]	24,223 [32,844.]
Max.	power cont. (kW) [hp]	54	76	89	126	101	135	172	245	187	232	224	271	222	377	277	355	390	304
		108	152	178	252	202	270	344	490	374	464	448	542	444	754	554	710	780	608
Max.	power Int. (kw) [hp] (1)	[144.8]	[203.8]	[238.7]	[337.9]	[270.9]	[362.1]	[461.3]	[657.1]	[501.5]	[622.2]	[600.8]	[726.8]	[595.4]	[1011.1]	[742.9]	[952.1]	[1046]	[815.3]
Max.	diff. pressure cont. (bar) [psi] (2)	350	350	350	350	350	210	350	350	350	350	350	350	350	350	350	210	350	250
Max	diff processing (bar) [poil (1)	490	490	490	490	490	294	490	350	490	490	490	490	490	490	490	294	490	350
Wax.		[7,105]	[7,105]	[7,105]	[7,105]	[7,105]	[4,263]	[7,105]	[5,075]	[7,105]	[7,105]	[7,105]	[7,105]	[7,105]	[7,105]	[7,105]	[4,263]	[7,105]	5,075
Max. Max.	flow cont. I/min flow int. I/min (1)	208	362	424	428	442	464 583	469 590	668	747	957	940	905	761 951	1.447	953	1,222	1,227	1,044
Retu	n pressure min. (bar) [psi] (2)	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
		[101.5]	[101.5]	[101.5]	[101.5]	[101.5]	[101.5]	[101.5]	[101.5]	[101.5]	[101.5]	[101.5]	[101.5]	[101.5]	[101.5]	[101.5]	[101.5]	[101.5]	[101.5]
Retu	n pressure max. (bar) [psi] (2)	[5,075]	[5,075]	[5,075]	[5,075]	[5,075]	[3,045]	[5,075]	[3,625]	[5,075]	[5,075]	[5,075]	[5,075]	[5,075]	[5,075]	[5,075]	[3,045]	[5,075]	[3,625]
Case	pressure max. (bar) [psi] (3)	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
		[116]	[116]	[116]	[116]	2547	2016	[116]	[116]	[116]	[116]	[116]	[116] 8123	[116]	[116]	[116]	0.778	[116]	[116]
a _	Min. @ max. cont. pressure	[776.7]	[1,080.6]	[1,268.7]	[1,797.5]	[1,878.7]	[1,487.0]	[2,829.4]	[3,202.7]	[3,724.9]	[4,611.5]	[5,020.8]	[5,991.5]	[8,327.5]	[7,488.9]	[9,374.2]	[7,212.3]	[13,102.7]	[11,615.0]
ft](7	Average @ max. cont. pressure	1,077	1,499	1,758	2,490	2,603	2,060	3,920	4,437	5,161	6,390	6,957	8,301	11,538	10,377	12,989	9,993	18,154	16,093
ing t([/94.4]	2.053	2.408	3.411	3.565	2.784	[2,891.4] 5.370	6.078	[3,806.8]	[4,/13.3] 8.753	9.530	[6,122.8]	[8,510.4] 15.806	14.215	[9,580.7]	13.503	24.869	22.045
Starti Nm)	Min. @ max. int. pressure	[1,088]	[1,514.3]	[1,776.1]	[2,516]	[2,629.5]	[2,053.5]	[3,960.9]	[4,483.1]	[5,214.8]	[6,456.2]	[7,029.3]	[8,388]	[11,658.5]	[10,485]	[13,124.1]	[9,959.8]	[18,343.4]	[16,260.4
0.2	Average @ max. int. pressure (1)	1,507	2,098	2,461	3,486	3,644	2,845	5,488	6,212	7,225	8,945	9,740	11,622	16,154	14,527	18,184	13,800	25,416	22,530
-		[1,111.6] 83	[1,547.5] 83	[1,815.2] 83	[2,5/1.3] 88	[2,687.8]	[2,098.5]	[4,047.9] 170	170	[5,329.2]	[6,597.8] 180	290	[8,572.4] 290	[11,915.2] 440	322	440	440	[18,746.8] 790	790
Appr	ox. weight (kg) [lbs] (7)	[183]	[183]	[183]	[194]	[242.6]	[242.6]	[374.9]	[374.9]	[374.9]	[396.9]	[639.5]	[639.5]	[970.2]	[710]	[970.2]	[970.2]	[1.742]	[1,742]





PERFORMANCE DATA SMA ROTATING CASE MOTOR TYPE E1 STANDARD





No	minal displacement (cc/rev) [in³]	200	290 [17.7]	350 [21.4]	480 [29.3]	750 [45.8]	1,000 [61]	1,230 [75.1]	1,340 [81.8]	1,600 [97.6]	2,000 [122]	2,200 [134.2]	2,500 [152.6]	3,200 [195.3]
	A2	ø250 [9.84]	ø250 [9.84]	ø250 [9.84]	ø250 [9.84]	ø315 [12.4]	ø315 [12.4]	ø315 [12.4]	ø400 [15.75]	ø400 [15.75]	ø450 [17.72]	ø400 [15.75]	ø450 [17.72]	ø450 [17.72]
	A3	ø345 [13.58]	ø345 [13.58]	ø345 [13.58]	ø345 [13.58]	ø436 [17.17]	ø436 [17,17]	ø434 [17.1]	ø545 [21.46]	ø545 [21.46]	ø583 [22.95]	ø545 [21.46]	ø583 [22.95]	ø583 [22.95]
nm [in]	A5	139 [5.47]	139 [5.47]	139 [5.47]	139 [5.47]	187.5 [7.38]	187.5 [7.38]	187.5 [7.38]	215 [8.46]	215 [8.46]	242 [9.53]	215 [8.46]	242 [9.53]	242 [9.53]
onsinr	A6	12	12 [0.47]	12 [0.47]	12 [0.47]	16 [0.63]	16 [0.63]	16 [0.63]	19 [0.75]	19 [0.75]	15 [0.59]	19 [0.75]	15 [0.59]	15 [0.59]
mensio	A10	296	296 [11.65]	296 [11.65]	296	474	474	478.5	534 [21.02]	534 [21.02]	575	534 [21.02]	575	575
ā	A11	256 [10.08]	256 [10.08]	256 [10.08]	256 [10.08]	418 [16.46]	418 [16.46]	422.5	478	478	490 [19.29]	478 [18.82]	490 [19.29]	490 [19.29]
	A12	M30	M30	M30	M30	M20	ø22	M20	ø22	M24	ø26	M24	ø26	ø26
	A13	9/16 unf	9/16 unf	9/16 unf	3/4-16 unf	3/4-16 unf	3/4-16 unf	3/4-16 unf	3/4-16 unf	3/4-16 unf	7/8-14 unf	3/4-16 unf	7/8-14 unf	7/8-14 unf
		200	289.5	339.5	480.5	756.5	996	1233.5	1.343	16025	2003	22275	2.507	3.215
Ge	cometric displacement (cc/rev) [in ³]	[12.2]	[17.7]	[20.7]	[29.3]	[46.2]	[60.8]	[75.3]	[81.9]	[97.8]	[122.2]	[135.9]	[153.0]	[196.2]
IVIa	ix. speed cont. (rev/min)	460	460	460	460	360	350	263	320	300	260	210	260	240
Ma	ix. speed int. (rev/min) (1)	768	768	768	768	608	560	453	512	480	456	346	456	384
Ma	ix. speed freewneel (rev/min)	768	768	768	768	608	560	453	512	480	456	346	456	384
Mir	n. speed std. motor (rev/min)	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10
Ma	ix. torque cont. (Nm) [lbf.ft]	1,114 [821.7]	1,611 [1,188.1]	1,890 [1,393.9]	2,677 [1,974.3]	4,215 [3,108.6]	5,549 [4,092.4]	6,870 [5,066.6]	7,480 [5,516.5]	8,925 [6,582.2]	11,156 [8,227.6]	12,405 [9,148.7]	13,964 [10,298.5]	10,744 [7,923.7]
Ma	x. torque intermittent (Nm) [lbf.ft] (1)	1,560 [1,150.7]	2,256 [1,663.8]	2,646 [1,951.4]	3,748 [2,764.2]	5,900 [4,351.3]	7,768 [5,728.9]	9,618 [7,093.3]	10,471 [7,722.4]	12,495 [9,215.1]	15,619 [11,519]	17,368 [12,808.9]	19,550 [14,418.1]	14,837 [10,942.3]
Ma	x. power cont. (kW) [hp]	28 [37.5]	40 [53.6]	48 [64.4]	68 [91.2]	84 [112.6]	100 [134.1]	124 [166.3]	125 [167.6]	140 [187.7]	165 [221.3]	195 [261.5]	185 [248.1]	237 [317.8]
Ma	x. power int. (kW) [hp] (1)	55 [73.8]	80 [107.3]	96 [128.7]	136 [182.4]	168 [225.3]	200 [268.2]	248 [332.6]	250 [335.3]	280 [375.5]	330 [442.5]	390 [523]	370 [496.2]	474 [635.6]
Ма	ıx. diff. pressure cont. (bar) [psi] (2)	350 [5,075]	350 [5,075]	350 [5,075]	350 [5,075]	350 [5,075]	210 [3,045]							
Ма	x. diff. pressure int. (bar) [psi] (1)	490 [7:105]	490 [7.105]	490 [7:105]	490 [7:105]	490 [7.105]	490 [7.105]	490 [7.105]	490 [7:105]	490 [7:105]	490 [7:105]	490 [7.105]	490 [7:105]	290 [4.205]
Ma	IX. flow cont. I/min	96	139	163	231	288	349	349	430	481	571	481	715	772
Ma	x, flow int, I/min (1)	153.6	222	261	369	460	558	558	688	769	913	770	1143	1235
Re	turn pressure min. (bar) [psi] (2)	7	7	7	7	7	7	7	7	7	7	7	7	7
Re	turn pressure max. (bar) [psi] (2)	350	350	350	350	350	350	350	350	350	210	350	350	350
Са	se pressure max. (bar) [psi] (3)	8	8	8	8	8	8	8	8	8	8	8	8	8
	Min. @ max. cont. pressure	1,014	1,466	1,720	2,437	3,836	5,050	6,252	6,807	8,123	10,153	11,290	12,709	16,297
orque	C Average @ max. cont. pressure	1,039	1,499	1,758	2,490	3,920	5,161	6,390	6,957	8,301	10,377	11,538	12,989	16,655
arting t	E Min. @ max. int. pressure	1,420	2,053	2,408	3,411	5,370	7,070	8,653	9,530	11,372	14,215	15,806	17,793	22,816
Sta	Ž	[1,047]	[1,514]	[],///6]	[2,516]	[3,960]	[5,214]	[6,382]	[7,028]	[8,387]	[10,484]	[11,657]	[13,122]	[16,827]
	Average @ max. int. pressure (1)	1,451 [1,070]	2,098 [1,547]	2,461 [1,815]	3,486 [2,571]	5,488 [4,047]	7,225 [5,328]	8,945 [6,597]	9,740 [7,183]	11,622 [8,571]	14,527 [10,714]	16,154 [11,914]	18,184 [13,411]	23,317 [17,196]
Ap	prox. weight (kg) [lbs] (7)	80 [176.4]	80 [176.4]	80 [176.4]	85 [187.4]	189 [416.7]	189 [416.7]	176 [388.1]	320 [705.6]	320 [705.6]	490 [1,080.5]	305 [672.5]	490 [1,080.5]	490 [1,080.5]



PERFORMANCE DATA SMA ROTATING CASE MOTOR TYPE E1 HIGH POWER





Nom	inal displacement (cc/rev) [in³]	200 [12.2]	290 [17.7]	350 [21.4]	480 [29.3]	750 [45.8]	1,000 [61]	1,230 [75.1]	1,340 [81.8]	1,600 [97.6]	2,000 [122]	2,200 [134.2]	2,500 [152.6]	3,200 [195.3]
	A2	ø250 [9.84]	ø250 [9.84]	ø250 [9.84]	ø250 [9.84]	ø315 [12.4]	ø315 [12.4]	ø315 [12.4]	ø400 [15.75]	ø400 [15.75]	ø450 [17.72]	ø400 [15.75]	ø450 [17.72]	ø450 [17.72]
	A3	ø345 [13.58]	ø345 [13.58]	ø345 [13.58]	ø345 [13.58]	ø436 [17,17]	ø436 [17,17]	ø434 [17,1]	ø545 [21.46]	ø545 [21.46]	ø583 [22.95]	ø545 [21.46]	ø583 [22.95]	ø583 [22.95]
]mn [in]	A5	139 [5.47]	139 [5.47]	139 [5.47]	139 [5.47]	187.5 [7.38]	187.5 [7.38]	187.5 [7.38]	215 [8.46]	215 [846]	242	215 [8.46]	242	242 [9.53]
nsinn	A6	12	12	12	12	16	16	16	19	19	15	19	15	15
nensio	A10	296	296	296	296	474	474	478.5	534	534	575	534	575	575
Din	A11	256	256	256	256	418	418	422.5	478	478	490	478	490	490
A12		[10.08] M30	[10.08] M30	[10.08] M30	[10.08] M30	[16.46] M20	[16.46] ø22	[16.65] M20	[18.82] ø22	[18.82] M24	[19.29] ø26	[18.82] M24	[19.29] ø26	[19.29] ø26
i f	A13	9/16 unf	9/16 unf	9/16 unf	3/4-16 unf	3/4-16 unf	3/4-16 unf	3/4-16 unf	3/4-16 unf	3/4-16 unf	7/8-14 unf	3/4-16 unf	7/8-14 unf	7/8-14 unf
Geor	netric displacement (cc/rev) [in³]	207 [12.6]	289.3 [17.7]	339.3 [20.7]	480.7 [29.3]	756.7 [46.2]	996.2 [60.8]	1,233.4 [75.3]	1,342.9 [81.9]	1,602.4 [97.8]	2,003.0 [122.2]	2,227.3 [135.9]	2,507.2 [153.0]	3,215.0 [196.2]
Max.	speed cont. (rev/min)	1000	1000	1000	710	620	600	485	565	565	380	406	380	380
Max.	speed int. (rev/min) (1)	1250	1250	1250	890	780	750	776	700	700	475	650	475	475
Max.	speed freewheel (rev/min)	1250	1250	1250	890	780	750	776	700	700	475	650	475	475
Min.	speed std. motor (rev/min)	20	20	20	20	20	20	20	20	20	20	20	20	20
Мах.	torque cont. (Nm) [lbf.ft]	1153 [850]	1,611 [1,188]	1,890 [1,394]	2,677 [1,974]	4,215 [3,109]	5,549 [4,092]	6,870 [5,067]	7,480 [5,517]	8,925 [6,582]	11,156 [8,228]	12,405 [9,149]	13,964 [10,298]	10,744 [7,924]
Max.	torque intermittent (Nm) [lbf.ft] (1)	1614 [1,190]	2,256 [1,664]	2,646 [1,951]	3,748 [2,764]	5,900 [4,351]	7,768 [5,729]	9,618 [7,093]	10,471 [7,722]	12,495 [9,215]	15,619 [11,519]	17,368 [12,809]	19,550 [14,418]	14,837 [10,942]
Max.	power cont. (kW) [hp]	54 [72.4]	76 [101.9]	89 [119.3]	126 [169]	172 [230.7]	187 [250.8]	232 [311.1]	224 [300.4]	271 [363.4]	222 [297.7]	377 [505.6]	277 [371.5]	355 [476.1]
Max.	power int. (kW) [hp] (1)	108 [144.8]	152 [203.8]	178 [238.7]	252 [337.9]	344 [461.3]	374 [501.5]	464 [622.2]	448 [600.8]	542 [726.8]	444 [595.4]	754	554 [742.9]	710 [952.1]
Max.	diff. pressure cont. (bar) [psi] (2)	350 [5,075]	350 [5,075]	350 [5,075]	350 [5,075]	350 [5,075]	350 [5,075]	210 [3,045]						
Max.	diff. pressure int. (bar) [psi] (1)	490 [7.105]	490 [7.105]	490 [7.105]	490 [7.105]	490 [7.105]	490 [7.105]	290 [4.205]						
Max.	flow cont. I/min	207	289	339	341	469	598	598	759	905	761	904	953	1,222
Max.	flow int. l/min (1)	259	262	424	428	590	747	957	940	1,122	951	1,447	1,191	1,527
Retu	rn pressure min. (bar) [psi] (2)	7 [101.5]	7 [101.5]	7 [101.5]	7 [101.5]	7 [101.5]	7 [101.5]	7 [101.5]						
Retu	rn pressure max. (bar) [psi] (2)	350 [5.075]	350 [5.075]	350 [5.075]	350 [5.075]	350 [5.075]	350 [5.075]	350 [5.075]						
Case	pressure max. (bar) [psi] (3)	8	8 [116]	8	8 [116]	8 [116]	8	8	8	8	8	8	8	8 [116]
	Min. @ max. cont. pressure	1,014	1,466	1,720	2,437	3,836	5,050	6,252 [4,611]	6,807 [5,021]	8,123 [5,992]	10,153	11,290	12,709	16,297
orque ft] (7)	Average @ max. cont. pressure	1,039	1,499	1,758	2,490	3,920	5,161	6,390	6,957	8,301	10,377	11,538	12,989	16,655
arting 1 m) [lbf.	Min. @ max. int. pressure	1,420	2,053	2,408	3,411	5,370	7,070	8,653	9,530	11,372	14,215	15,806	17,793	22,816
Ľ št		[1,047]	[1,514]	[1,//6]	[2,516]	[3,960]	[5,214]	[0,382]	[7,028]	[8,387]	[10,484]	[11,657]	[13,122]	[10,827]
	Average @ max. int. pressure (1)	1,451 [1,070]	2,098 [1,547]	2,461 [1,815]	3,486 [2,571]	5,488 [4,047]	7,225 [5,328]	8,945 [6,597]	9,740 [7,183]	11,622 [8,571]	14,527 [10,714]	16,154 [11,914]	18,184 [13,411]	23,317 [17,196]
Appr	rox. weight (kg.) [lbs] (7)	80 [176.4]	80 [176.4]	80 [176.4]	85 [187.4]	189 [416.7]	189 [416.7]	176 [388.1]	320 [705.6]	320 [705.6]	490 [1,080.5]	305 [672.5]	490 [1,080.5]	490 [1,080.5]



PERFORMANCE DATA SMA ROTATING CASE MOTOR TYPE B1 STANDARD







PERFORMANCE DATA SMA DUAL DISPLACEMENT ROTATING SHAFT MOTOR TYPE C2





Nomi	nal displacement (cc/rev) [in ³]	750 [44]	1,000 [61]			
	40	ø315	ø315			
	AZ	[12.40]	[12.40]			
Ī	40	ø436	ø436			
	A3	[17.17]	[17.17]			
_	45	187.5	187.5			
E	A5	[7.38]	[7.38]			
E I		16	16			
Ľ	A6	[0.63]	[0.63]			
suc		362	362			
nsi	A9	[14.25]	[14.25]			
a l	A12	ø24	ø24			
ā	A13	3/4-16 unf	3/4-16 unf			
ŀ		76	76			
	B9	[299]	[2 99]			
ŀ	· · · · · · · · · · · · · · · · · · ·	108	108			
	B10	[4 25]	[4 25]			
		756	006			
Geon	netric displacement (cc/rev) [in³]	100	160.91			
Max	enced cont (very/min)	[40.1]	[00.0]			
Max.	speed cont. (rev/min)	380	350			
Max.	speed Int. (rev/min) (1)	608 560				
Max.	speed freewneel (rev/min)	608 560				
Min.s	speed std. motor (rev/min)	5-10	5-10			
Max.	torque cont. (Nm) [lbf.ft]	4,211	5,549			
-		[3,105]	[4,092]			
Max.	torque intermittent (Nm) [lbf.ft] (1)	5,895	7,768			
		[4,347]	[5,729]			
Max	nower.cont (kW)[hn]	84	100			
Max.	power conta (kwy [np]	[112.6]	[134.1]			
Max	nowerint (kW)[hn](1)	168	200			
	power int. (kw) [hb] (i)	[225.3]	[268.2]			
Max	diff proceure cont (bar) [pei] (2)	350	350			
iviax.	uni: pressure cont. (bai) [psi] (2)	[5,075]	[5,075]			
Max	diff process int (bor) [poi] (1)	490	490			
wax.	uni. pressure inc. (bar) [psi] (1)	[7,105]	[7,105]			
Max.	flow cont. I/min	287	349			
Max.	flow int. l/min (1)	460	558			
. .	· //) [·] (0)	7	7			
Retui	n pressure min. (bar) [psi] (2)	[101.5]	[101.5]			
	(1) 5 (3 (2)	350	350			
Retu	n pressure max. (bar) [psi] (2)	[5,075]	[5,075]			
~	A	8	8			
Case	pressure max. (bar) [psi] (3)	[116]	[116]			
		3,832	5,050			
	Min. @ max. cont. pressure	[2,826]	[3,724]			
anb		3.916	5.161			
Ē	Average @ max. cont. pressure	[2.888]	[3.806]			
ng []		5.364	7070			
arti m)	Min. @ max. int. pressure	[3.956]	[5 214]			
βS		9482	7225			
	Average @ max. int. pressure (1)	[6,993] [5,328				
		160	160			
Appr	ox. weight (kg) [lbs] (7)	100	160			
		[332.6]	[002.0]			





Nomi	nal displacement (cc/rev) [in³]		750 [45.8]	1,000 [61]
	A2	1	ø315	ø315
	AZ		[12.4]	[12.4]
	٨٦		ø436	ø436
-	A3		[17.17]	[17.17]
Ē	A4		464	464
ξ	~~		[18.27] [18	[18.27]
sin'	A5		187.5	187.5
ioi			[7.38]	[7.38]
ens	A6		16	16
Ë			[0.63]	[0.63]
-	A8		306	306
-			[12.05]	[12.05]
-	A12		ø22	ø24
	A13		M12	M12
Geon	netric displacement (cc/rev) [in³]		756	966
		, s	[46.1]	[58.9]
Max.	speed cont. (rev/min)	ğ	360	350
Max.	speed int. (rev/min) (1)	Ĕ	610	560
Max.	speed freewheel (rev/min)	ert	610	560
Min.s	peed std. motor (rev/min)	E E	5-10	5-10
Max.	orque cont. (N.m) [lbf.ft]	lac	4,209	5,541
_		or dual displ	[3,104]	[4,086]
Max.	orque intermittent (N.m) [lbf.ft] (1)		5,901	7,769
			[4,352]	[5,730]
Max.	oower cont. (k.W) [hp]	if fo	84	102
		uer	[112.6]	[136.8]
Max.	oower int. (k.W) [hp] (1)	Cel	167 [2,421.5]	203
	-	- lg		[2,943.5]
Max.	diff. pressure cont. (bar) [psi] (2)	≝	350	350
		١Ę	[5,075]	[5,075]
Max.	diff. pressure int. (bar) [psi] (1)	ži	490	490
Max	low cont I (min	ž	000	240
Max.	low cont. L/min	{	200	549
Wax.	iow inc. E/min (i)	-	7	7
Retur	n pressure min. (bar) [psi] (2)		[1015]	[101 5]
		1	250	250
Retur	n pressure max. (bar) [psi] (2)		[5.075]	[5.075]
		1	8	8
Case	pressure max. (bar) [psi] (3)		[116]	[116]
		1	3.836	5.050
	Min. @ max. cont. pressure		[2 829]	[3724]
ent(∠	<u> </u>	1	3.962	5216
Ē	Average @ max. cont. pressure		[2.922]	[3.847]
[] []	<u> </u>	1	5.370	7.070
art Im)	Min. @ max int. pressure		[3.960]	[5.214]
ΰZ	\$ Z		5.547	7.303
	Average @max. int. pressure(1)		[4.091]	[5,386]
		1	180	180
Appro	ox. weight (kg) (8)		[396.9]	[396.9]

Please contact Rotary Power for second speed data.



	1,340 [81.8]	1,600 [97.6]	3,500 [213.6]	7,000 [427.14]	8,700 [530.9]
1	ø400	ø400	ø560	ø560	ø560
	[15.75]	[15.75]	[22.05]	[22.05]	[22.05]
	ø545	ø545	ø695	ø700	ø700
	[21.46]	[21.46]	[27.36]	[27.56]	[27.56]
	557	557	715	807	807
	[21.93]	[21.93]	[28.15]	[31.77]	[31.77]
1	215	215	86	100	100
	[8.46]	[8.46]	[3.39]	[3.94]	[3.94]
1	19	19	27	27	27
	[0.75]	[0.75]	[1.06]	[1.06]	[1.06]
1	345	345	513	650	650
	[13.58]	[13.58]	[20.20]	[25.59]	[25.59]
	ø22	ø22	ø26	ø22	ø22
	M16	M16	M16	M165/8unf	M16 5/8 unf
	1,343	1,602.5	3,506.5	7,013	8,689.5
	[81.9]	[97.8]	[214]	[427.9]	[420.4]
	320	300	240	240	240
	510	480	380	380	307
	510	480	380	380	307
	5-10	5-10	5-10	2-4	2-4
	7,470	8,914	19,505	39,011	48,336
	[5,509]	[6,574]	[14,385]	[28,771]	[35,648]
	10,473	12,496	27,346	54,691	67,765
	[7,724]	[9,216]	[20,168]	[40,335]	[49,977]
	125	140	245	490	607
	[167.6]	[187.7]	[328.5]	[657.1]	[814]
	140	170	490	980	1,215
	[2,030]	[2,465]	[7,105]	[14,210]	[17,617.5]
	350	350	350	350	250
	[5,075]	[5,075]	[5,075]	[5,075]	[3,625]
	490	490	490	490	350
	[7,105]	[7,105]	[7,105]	[7,105]	[5,075]
	430	481	842	1,683	2,085
	685	769	1,332	2,665	2,668
	7	7	7	7	7
	[101.5]	[101.5]	[101.5]	[101.5]	[101.5]
	350	350	350	350	250
	[5,075]	[5,075]	[5,075]	[5,075]	[3,625]
	8	8	8	8	8
	[116]	[116]	[116]	[116]	[116]
	6,807	8,123	17,775	35,940	31,808
	[5,020]	[5,991]	[13,109]	[26,506]	[23,458]
	7,032	8,390	18,361	37,503	33,191
	[5,186]	[6,188]	[13,541]	[27,658]	[24,478]
	5,930	11,372	24,885	50,316	44,531
	[4,3/3]	[8,387]	[18,353]	[37,108]	[32,842]
	9,844	11,/4/	25,705	51,410	64,467
	[7,260]	[8,663]	[18,957]	[37,915]	[47,544]
	305 [070 F]	305 [070 F]	/60	1,100	1,100
	10/25	10/25	116/58	1242551	12 425 51

INSTALLATION DRAWING DATA









C1

	SHAFT DETAIL B
ļ	В 1

ROTATING CASE B1 MOTORS



ROTATING CASE E1 & E1 HIGH POWER MOTORS



		Motor capacity (cc/rev)								
		200 [12.2] 290 [17.7] 350 [21.4] 480 [29.3]	500 [30.5] 650 [39.7]	750 [45.8] 850 [51.9] 1,000 [61] 1,230 [75.1]	1,340 [81.8] 1,600 [97.6] 2,200 [134.2]	2,000 [122] 2,500 [152.6] 2,800 [170.9] 3,200 [195.3]	3,500 [213.6] 4,350 [265.4]	7,000 [427.4] 8,700 [530.9]	7,400 [451.5] 8,800 [537] 10,500 [640.7]	13,000 [793.3] 16,000 [976.3]
	A1	315 [12:40]	335	394	449 [1768]	507.5 [19.98]	602 [237]	761 [29.96]	601	708 [279]
		ø250	ø280	ø 315	ø400	ø 450	ø560	ø560	ø790	ø908
	A2	[9.84]	[11.02]	[12.4]	[15.75]	[17.72]	[22.05]	[22.05]	[31.1]	[35.78]
	A3	ø345	ø370	ø436	ø545	ø583	ø695	ø700	ø900	ø1140
		[13.58]	[14.57]	[17.17]	[21.46]	[22.95]	[27.36]	[27.56]	[35.43]	[44.92]
	A4	-	-	464 [18.27]	[21,93]	-	[28.15]	807 [31,77]	-	-
	A5	139	150	187.5	215	242.0	86	100	102	411
		[5.47]	[5.91]	[7.38]	[8.46]	[9.53]	[3.39]	[3.94]	[4.02]	[16.19]
	A6	12	16	16	19	15	2/	2/	13	30
		[0.47]	[0.03]	209.5	245	[0.59]	[1.00]	[1.00]	[0.51]	[1.10]
	A7	[9.31]	[10.22]	[1215]	[13 58]	[15.2]	[1819]	[2717]	[18.66]	[20.88]
		[0.01]	[10.22]	306	345	[10.2]	513	560	[10.00]	[20.00]
	A8	-	-	[12.05]	[13.58]	-	[20.2]	[22.05]	-	-
	A9	-	-	362	-	-	-	814	-	-
		206		[14.25]	524	575		[32.05]		
	A10	[11.65]	-	[18.66]	[21.02]	[22.64]	-	-	-	-
Ē	A11	256	-	418	478	490	-	-	-	-
E		[10.06]	154	156	10.02]	19.29	225	225	205	
Ē	B1	[4.8]	[6.06]	[614]	[713]	[724]	[8 86]	[8 86]	[12 01]	-
l su		82	105	105	130	150	165	165	220	
nsid	B2	[3.23]	[4.13]	[4.13]	[5.12]	[5.91]	[6.5]	[6.5]	[8.66]	-
me	B3	69	74	92	120	135	145	145	208	-
		[2.72]	[2.91]	[3.62]	[4./2]	[5.31]	[5./1]	[5./1]	[8.19]	
	B4	Ø5U [107]	000	003	080	095	0110	0110	0010	-
		16	18	18	22	25	28	28	40	
	B5	[063]	[071]	[071]	[0.87]	[0.98]	[11]	[11]	[157]	-
		122	154	156	181	184	225	223	305	
	BO	[4.8]	[6.06]	[6.14]	[7.13]	[7.24]	[8.86]	[8.78]	[12.01]	-
	P7	63	85	80	105	100	140	130	180	
	ы	[2.48]	[3.35]	[3.15]	[4.13]	[3.94]	[5.51]	[5.12]	[7.09]	-
	B8	19t 10/20	18t 8/16	19t 8/16	24t 8/16	28t 8/16	25t 8/12	26t 6/12	41t 6/12	-
	B9	-	-	76	-	-	-	120	-	-
	B10	-	-	108	-	-	-	132	-	-
	С1	0	0	0	0	54 [213]	0	54 [213]	0	-
	C2	84 [3.31]	84 [3.31]	114 [4.49]	140 [5.51]	170	140 [5.51]	170 [6.69]	180 [7.09]	-
		4"	4"	4.474	44/0"	0"	0"	0"	0"	0"
	63	1	1	1-1/4″	1-1/2″	2	2	2	2	2

The dimensions shown above are approximate and subject to change without notice. Before finalising your installation, please ask for a copy of the latest issue drawing.

Rotarv	Power	SMA	122175
		0.000	

MOTOR INSTALLATION AND APPLICATION

GENERAL

The following information is for general guidance only. Contact Rotary Power to discuss individual applications.

- Always examine the motor externally to check that damage has not occurred during transit
- Ensure the areas around the protective plugs are clean and remove all protective coatings
- Do not remove protective plugs from the main ports or drain connections until the system flushing is complete. Once plugs are removed, immediate connection to the circuit should be made

CASE MOUNTING

Provision is made for locating the motor by means of a spigot diameter on the motor crankcase. The unit should be mounted on a flat machined face. The mounting surface pilot diameter should be machined to the nominal spigot diameter +0.0 to +0.05 mm. Clearance should be made for the fillet radius between the motor spigot and mounting face.

Depending on the size of the motor, fixing will be achieved by a number of mounting bolts. All fixing holes should be utilised and match the clearance holes in the mounting bracket. If heavy or frequent torque reversals are anticipated, one or more of the attachment holes should be reamed in conjunction with the mounting bracket and fitted bolts.

SHAFT DETAILS

C1/C1 HIGH POWER/C2 MODELS

Two standard forms of output shaft are offered on the SMA range. A cylindrical shaft with a parallel key and an involute side fit splined shaft. Motor drives should be designed to eliminate unnecessary axial and radial loads to prolong bearing life. A keyed shaft is recommended for a flexible coupling output connection and a splined shaft is recommended where the driven shaft is rigidly connected to the motor. Alignment of the two shafts should be maintained within 0.05 mm TIR.

Splined shaft motors should be assembled using molybdenum grease, or preferably in an oil bath. On keyed shaft motors operating in applications where the pressures are high, where the motor is subject to reverse loadings or shock loads; the adapter, gear pinion etc. should be shrunk onto the shaft to provide an interference fit.

B1MODEL

This motor type is supplied with a cylindrical shaft and parallel key. The connection should be either an interference shrink fit or clamped into position. In applications where the driven load is constrained by any means other than a single drive motor, please consult Rotary Power.

E1/E1 HIGH POWER MODELS

The spigot diameter on the motor shaft or port block (if fitted) should be used to accurately position the motor. The unit should be mounted onto a flat, machined face. The mounting surface pilot diameter should be machined to the nominal spigot diameter +0.0 to +0.05 mm as case mounting. Clearance should be made for the fillet radius between the motor spigot and the mounting face.

Fixing is achieved by a number of mounting bolts. All fixing holes should be utilised and match the clearance holes in the mounting bracket. Fixing bolts should be tightened to the recommended torque settings shown in the relevant installation information. If heavy or frequent torque reversals are anticipated, one or more of the attachment holes should be reamed in conjunction with the mounting bracket and corresponding fitted bolts used. For special models or applications where the driven load is constrained by any other means, please contact Rotary Power.

Please note: hammering or pressing components onto the shaft will damage the crankshaft bearings.

CASE DRAINS

Rotating shaft motors are provided with two or more main drain ports located in the main crankcase. Rotating case motors are supplied with either one or two drain ports. The drain port should be installed in the highest possible position. The bore size of the drain line should be big enough to minimise case pressure and under all conditions within the maximum value given in the relevant technical data section. Leakage rate values can be obtained from Rotary Power and must be considered together with any other requirements dictated by the application. High crankcase pressures will affect the shaft seal life and minimum boost pressure requirements for the correct motor operation.

A top vent port must be used for shaft up applications and a distributor end vent port must be used, together with the main drain ports, for shaft down applications. The main drain port must be looped up to the level of the top or distributor end vent to prevent siphoning.

RADIAL LOADS

The SMA motor accepts high radial and external loads. For individual motor information contact Rotary Power.

FLUSHING FLOW

A case warming flow may be required if temperature differentials of 30 °C are envisaged between motor temperature and bulk supply oil temperature. The flow rate required depends upon the temperature differential, motor size and motor running speeds under application conditions.



FREE WHEELING

True freewheel running is achieved by isolating the motor main ports from the pressure supply and connecting them directly to the tank. Additionally, case pressure should be developed by adding flow to the motor case and creating a back pressure (nominally 2 bar above any remaining port pressure) in the drain line. This retracts and holds the pistons in their respective bores and provides internal lubrication to the hydrostatic bearings. It is possible to engage and disengage freewheel whilst an SMA motor is rotating. However, due to the high flow rates, the high risk of pump cavitation damage and excessive motor case pressures, it is recommended to engage and disengage freewheel whilst SMA motors are stationary.

Recirculating freewheel is also possible by connecting the main ports together and applying a boost pressure. If this condition is to occur for long periods, it is recommended that a purge system is also incorporated.

FLUIDS

The SMA motor will run on a wide variety of hydraulic fluids. Derating factors are set out as below:

Fluid type	% of maximum catalogue speed rate	% of maximum catalo pressure rating	
HF-A high water base	66	50	
HF-B water in oil	75	60	
HF-C water glycol	50	50	
HF-D phosphate ester*	100	100	
HF-E synthetic	100	100	

*Viton seals must be specified. Please contact Rotary Power if high speed running is to be part of the duty cycle or if any other special fluid will be used

OUT OF BALANCE FORCES

The orbiting motion of the cylinder block in a rotating shaft motor creates out of balance forces. This rarely has a detectable effect, but for applications where the speed is high or the mass is low, it may be beneficial to install a calculated amount of counter balance.

SEALING

All standard motors are fitted with nitrile sealing systems compatible with mineral hydraulic oils and capable of operating up to 8 bar case pressure. Please refer to the options section for further details.



MOTOR INSTALLATION

- 1. During system assembly thoroughly descale, clean and flush the pipework, fittings and the reservoir. Fill the systems with new filtered fluid ensuring that it meets the required viscosity specifications at envisaged operating temperature, type and cleanliness for all components. The motor case must be filled through the motor case drain port on a rotating shaft motor, or through one of the case vent ports located in the crankcase on a rotating case motor. Ensure that the case drain line is filled and all connections are tightened.
- 2. Check the rotation flow information provided on the installation drawings.
- 3. Start up the pump drive slowly. For engines, turn on the starter motor for a few seconds at a time. For electric motors, start up by a series of rapid on/off cycles. This is to ensure that the pump internal components are filled with oil. Run the system at high flow and low pressure and actuate all systems in modes until the air in the system has been released as this could cause pulsation. The motor should run smoothly after approximately ten minutes of operation.
- 4. After the motor rotation has been proved under no-load conditions, it may be operated up to maximum pressure.
- 5. Top up fluid levels if necessary.
- 6. Check the motor case pressure in all operating modes to ensure that the maximum allowable value for a specific motor model is not exceeded.
- 7. Adjust all settings in compliance with system requirement instructions.
- 8. The steady state operating temperature should be in accordance with the system and component requirements.
- 9. Check for and repair any leaks.
- 10. After the first few running hours, clean or renew all filters as appropriate.
- 11. After 100 hours of operation, check the security of all mounting bolts and socket head screws used in the assembly of the motor. Check the security of the drive coupling and pipe connections and clean or replace filter elements.

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UK

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