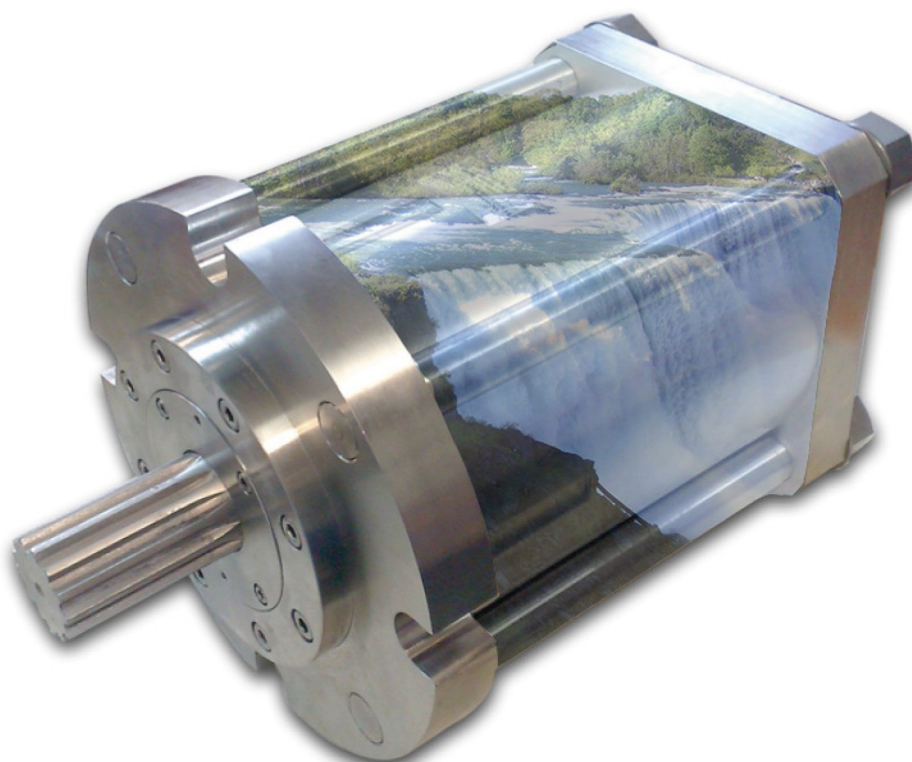


JANUS PUMPS

PUMPS AXIAL
PISTON

The
Water
Hydraulics
Co. Ltd.



JANUS PUMPS

AXIAL PISTON

Our Janus axial piston pumps are totally oil free, clean and completely safe to use. As a result of employing advanced materials, high velocity and loaded sliding surfaces, the range of pumps can operate effectively with water as their only coolant/lubricant therefore, this removes the potential for cross contamination of the system fluid or lubricating oil.

Each pump employs technology which minimises vibration and ensures a low noise yet high efficiency operation; the result is an exceptionally small, light-weight product.

ATEX approved to comply with regulations of Directive 94/9/EC for equipment or protection systems intended for use in potentially explosive atmospheres.

Product group, category, zones: II 2GD ck T6 T85°C +1°C≤TA≤+40°C.

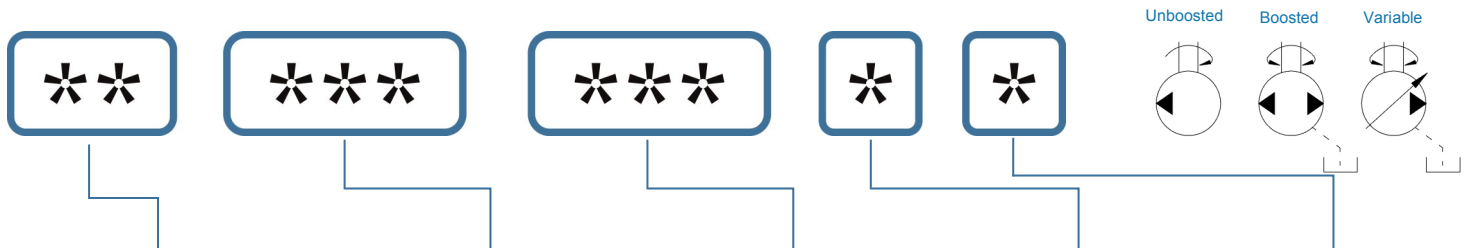
Manufactured mainly in 316 stainless steel as standard, the product offers excellent resistance to corrosive fluids. The materials utilised internally can be selected to suit the most appropriate combinations for not just tap water but also sea water and various other fluids.

Minimal pulsation is experienced with these units due to the multiple piston design and the high operational speeds. Accurate flow metering is simply achieved with the control of the output shaft speed.

PUMP ORDERING CODE

Please Note: Variable pumps are only available in sizes P60 and P180. See variable pump data sheet for control options.

Circuit Symbols

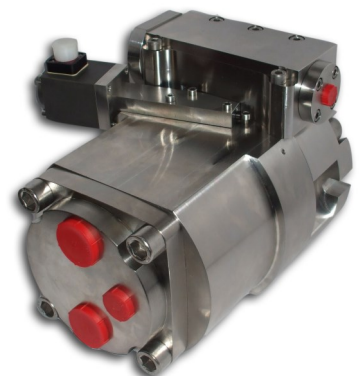


UNIT TYPE		OPERATING PRESSURE (BAR)		DISPLACEMENTS (cc/rev)			FLUID		SHAFT SEAL	
*		*		*			*		*	
PA	Pump Anti-Clockwise	010	10.0	0.8	0.8	P1	W	Tap Water	MS	Mechanical Seal
PB	Pump Boosted	Min	.....	1.2	1.2		S	Sea Water	-	Lip Seal - Standard
PC	Pump Clockwise	.....	.....	3.0	3.0	P3	T	Technical Water		
PV	Pump Variable **	160	160.0	4.6	4.6	P6	O	Other* (*Please Specify)		
PPA	Power Pack Pump Anti-Clockwise	Max		6.0	6.0					
PPC	Power Pack Pump			12	12.0	P15				
	(** P60 & P180 only)			15	15.0					
				19	19.0					
				23	23.0	P30				
				30	30.0					
				35	35.0					
				51	51.0	P60				
				63	63.0					
				70	70.0					
				134	134.0	P180				
				180	180.0					
				225	225.0					

Example

A pump operating at 160 bar on tap water fed from a reservoir with a positive head. Shaft rotation clockwise (viewed on shaft end) with a displacement of 6.0cc/rev.

Ordering code: **PC160—6.0W**



JANUS PUMPS

AXIAL PISTON

SPECIFICATION								
Pumps		P1	P3	P6	P15	P30	P60	P180
Displacement (cc/rev)	Max:	1.2	3.0	6.0	19.0	35.0	70.3	225.0
	Min:	0.8	3.0	4.6	12.0	23.0	51.0	135.0
Max. RPM	Unboosted:	2000	1800	1800	1800	1800	1800	
	Boosted: *	-	2000	2000	2000	2000	2000	2000
Max. Input Power (kW)		0.55	1.75	3.8	11	19.5	42	114
Max. Water Flow (l/min)		2.4	6.0	12	37.2	66	146	430
Max. Cont. Pressure (Bar)		160	160	160	160	160	160	160
Weight (kg)		1.5	1.9	2.2	6	10	19	82
Temperature (°C)	Max: **	90	50	50	50	50	50	50
	Min: ***	2	2	2	2	2	2	2

* Pump speeds above 2000 rpm are possible under higher boost conditions, consult TWHC for details. ** Higher temperature operation is possible, consult TWHC for details. *** Consult TWHC for antifreeze option and lower temperature conditions.

Motor Pump Assemblies

A standard range of bell housings and couplings are available for connecting the pumps to the B5 electric motor flange. See our Pick -A-Pack datasheet for further information on potential combinations. The pumps are not capable of operating with induced axial or radial loads on the output shaft; always adopt the use of a 3 part gear style coupling where possible. If the drive shaft/spigot location is within 0.05mm concentricity, direct inline drive assemblies are permissible.

Temperature

The units will generate full performance from 2°C to 50°C. For temperatures below freezing, an environmentally friendly antifreeze is available; ask for the Monopropylene Glycol datasheet. Operation above 50°C is possible however, the volumetric efficiency of the unit will be affected. Consult TWHC and specify the maximum operating temperature.

Filters

All incoming water to the pumps must be pre-filtered to a nominal rating of 10µm (25µm absolute) with a filter element rating of β10 = 75 or better. Return line filtration is advisable on closed loop systems. High pressure filtration may also be considered but as these are manufactured in stainless steel, we consider this an expensive option.

Fluid

Drinking water quality conforming to the EEC-directive 98/83/EC should be used as standard. Consult TWHC if you are unsure of the water quality. The standard product will operate happily on technical water i.e. distilled, RO water or demineralised. Changes may need to be made to the seal material or construction depending on the operating environment. The pumps also operate on non-flammable fluids such as Glycol 95/5 mixtures; internal clearances must be adjusted when functioning on such fluids. It is imperative the exact operating fluid is specified on all enquiries and orders. The standard construction will operate on sea water however, due to the increased corrosion potential of the fluid, a more noble material construction may be required for long term operation.

JANUS PUMPS

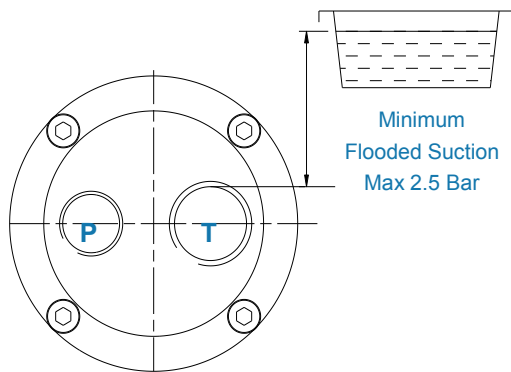
AXIAL PISTON

INLET CONDITIONS

The pumps are available in 2 designs; either 2 port un-boosted or 3 port boosted configuration.

2 Port Design

Predominantly used in power pack applications where the supply water is fed to the pump from a low pressure source i.e. local tank or water mains with very low supply pressure. This design of pump can not lift water and the inlet pressure must be positive at all times. The pipe-work must be sized to ensure that even under minimum head conditions, the water pressure is still positive at the inlet. Failure to ensure this can result in premature pump failure. A simple check is to remove the pump inlet hose and measure the flow. The inlet flow rate must be 20% over the maximum delivery flow when the tank is at it's lowest level. This ensures the inlet has positive pressures under dynamic conditions.



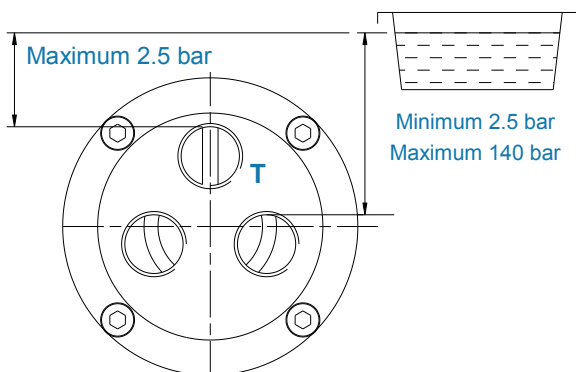
Unboosted

Do not place a filter between the tank and pump unless a pressure switch protecting against negative pressure is fitted. Filter all water upon entry to the tank. All supply pipe work to be a maximum diameter and minimum length.

The ports are clearly marked P (pressure) and T (tank) do not reverse or turn the shaft in the wrong direction or failure will result.

3 Port Design

When water is fed to the pump at a minimum of 2.5 bar by either a very high pressure water main, a head or column of water in excess of 25m in height or by an external boost pump, then the 3 port design unit should be incorporated. It separates the inlet water of the pump from the internal leakage water which must be piped away to a low pressure sump or drain if possible. Low casing pressure will prolong the shaft seals life and prevent low pressure cavitation issues. The minimum case pressure and maximum inlet pressure is desired, a minimum positive inlet pressure of 2.0 bar above T pressure is required at all times.



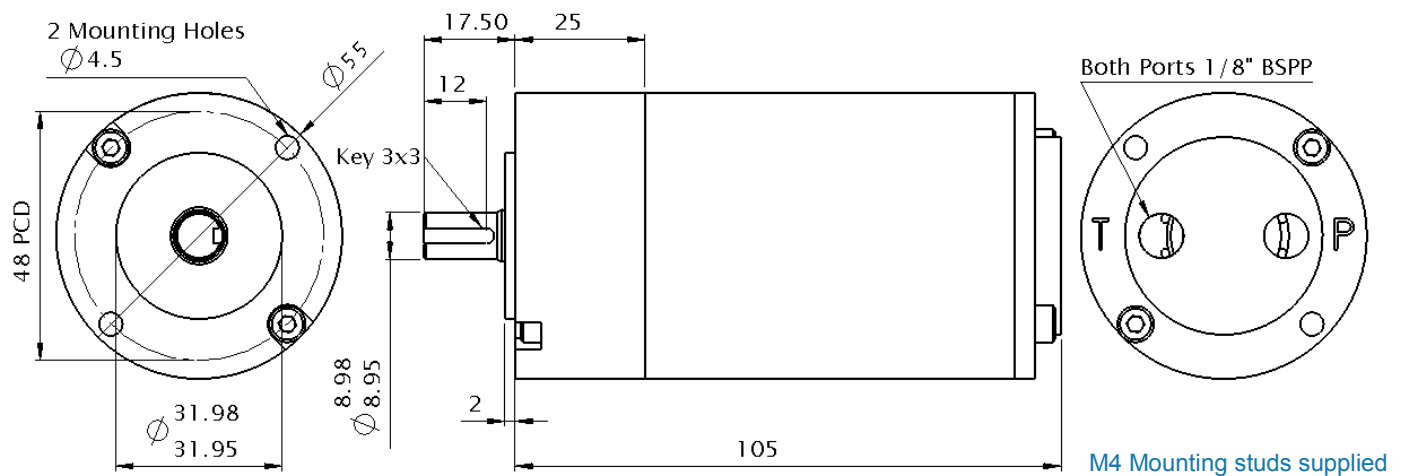
Boosted

Boosted pumps can rotate in either direction. Inlet and outlet ports change according to shaft rotation. Maximum casing pressure 2.5 bar.

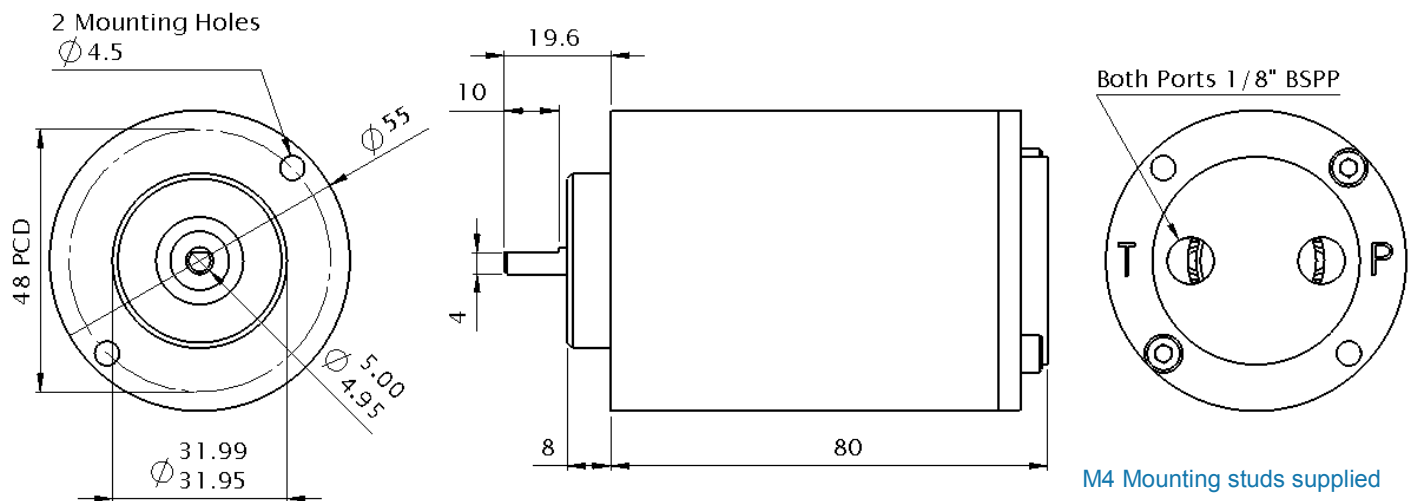
JANUS PUMPS

P1 PUMP DIMENSIONS

PC100-0.8WMS & PC100-1.2WMS



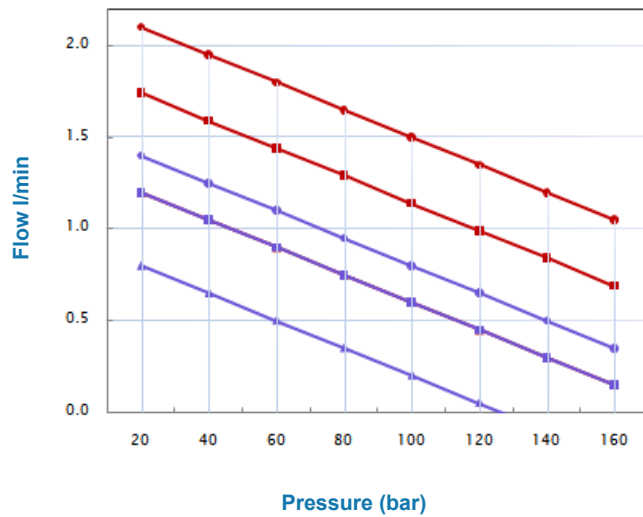
PC100-0.8W & PC100-1.2W



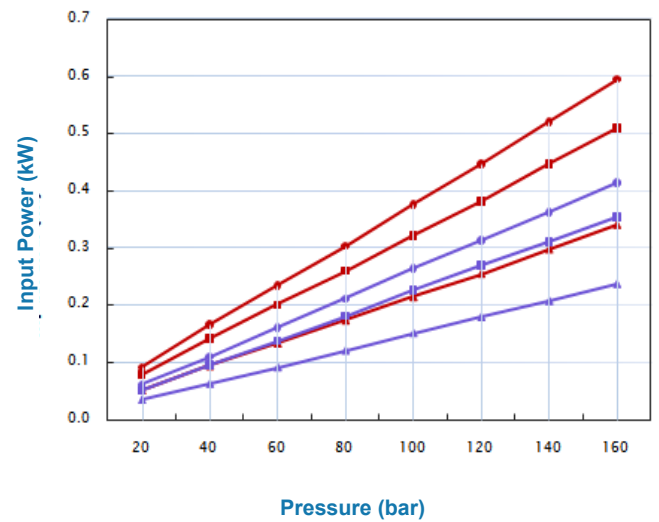
JANUS PUMPS

PI PUMP PERFORMANCE DATA

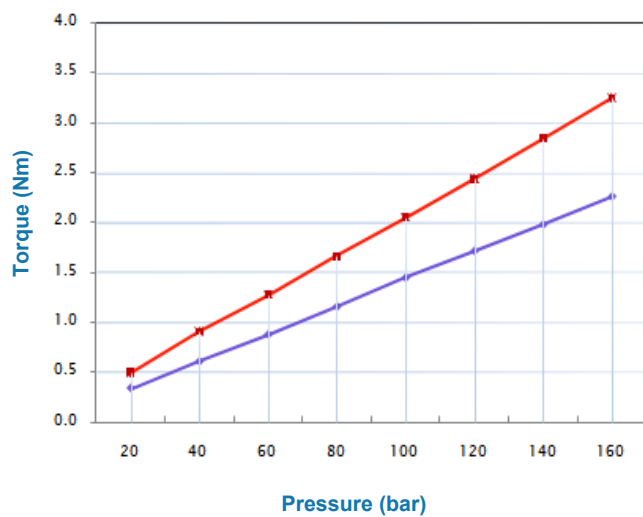
Output Flow



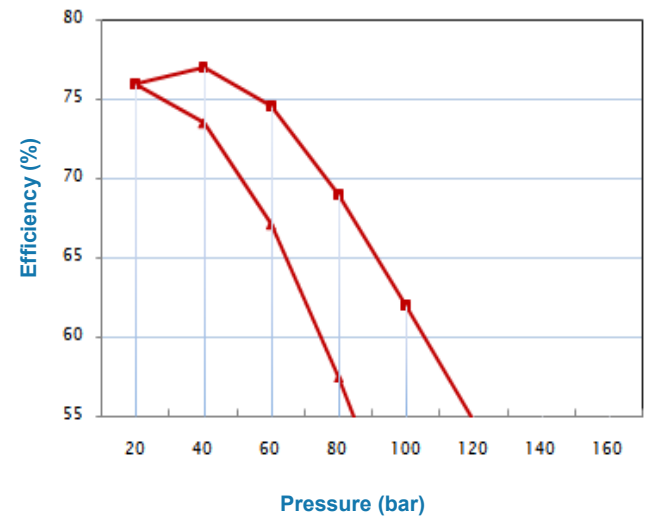
Input Power kW



Input Torque



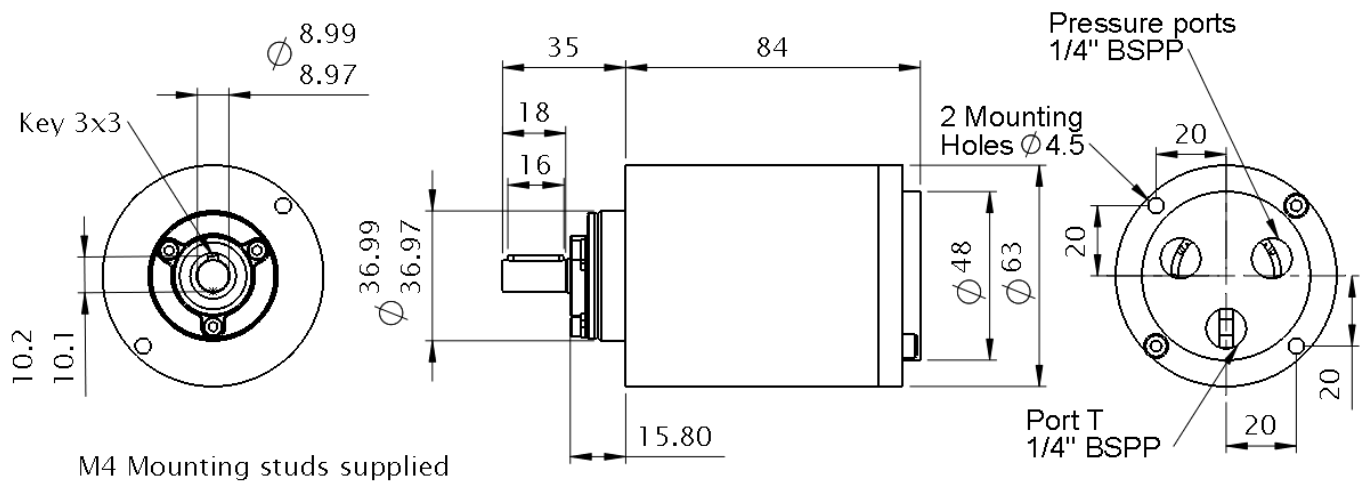
Overall Efficiency



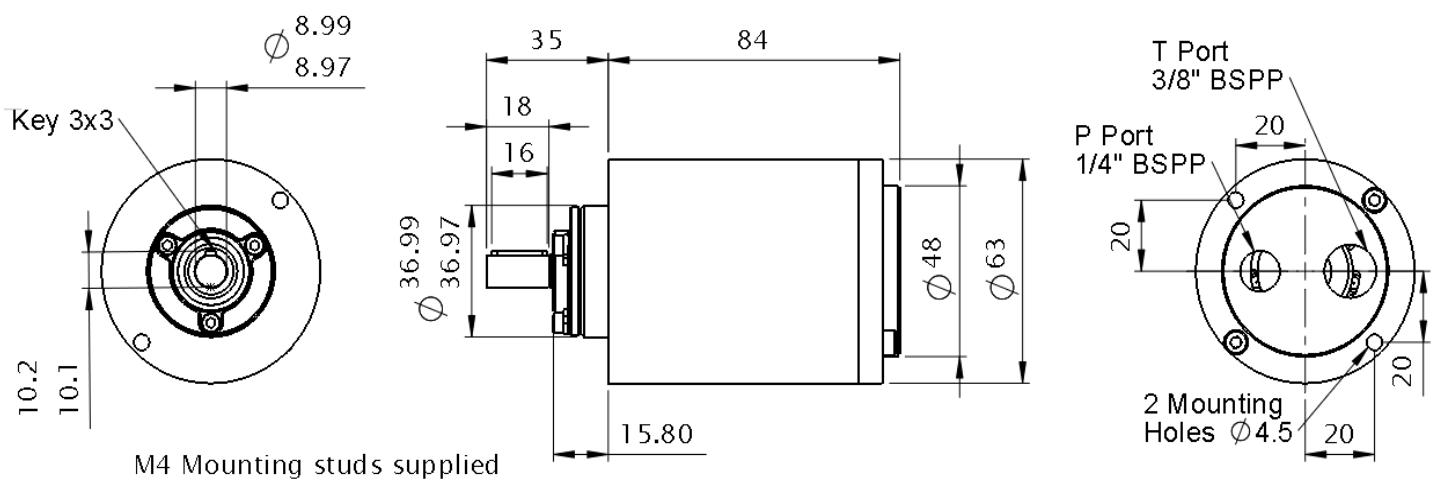
JANUS PUMPS

P3 PUMP DIMENSIONS

PB160-3.0W



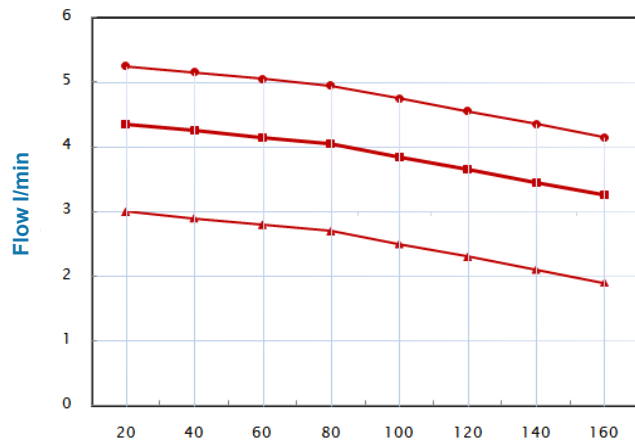
PC160-3.0W & PA160-3.0W



JANUS PUMPS

P3 PUMP PERFORMANCE DATA

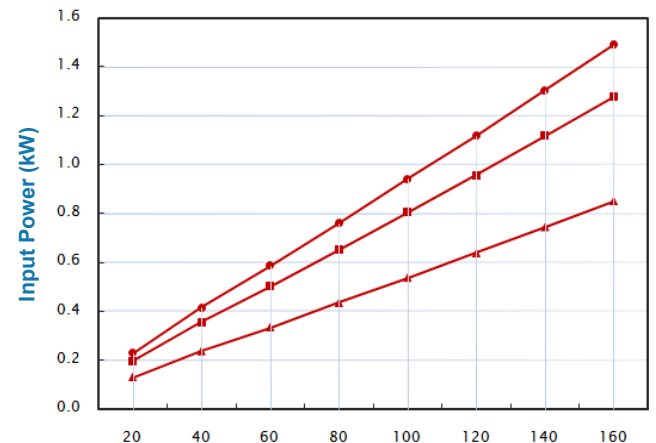
Output Flow



Pressure (bar)

3cc 1750rpm 3cc 1500rpm 3cc 1000rpm

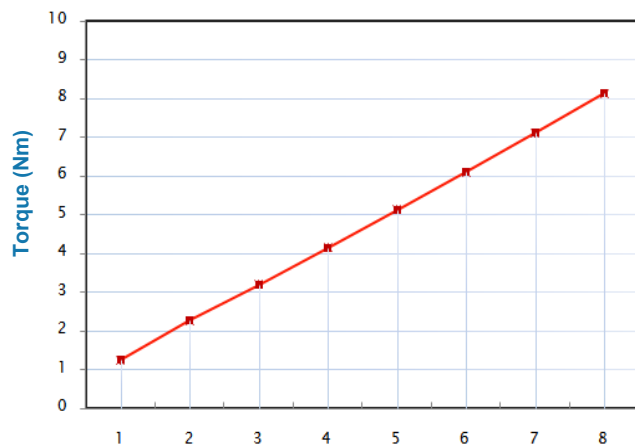
Input Power kW



Pressure (bar)

3cc 1750rpm 3cc 1500rpm 3cc 1000rpm

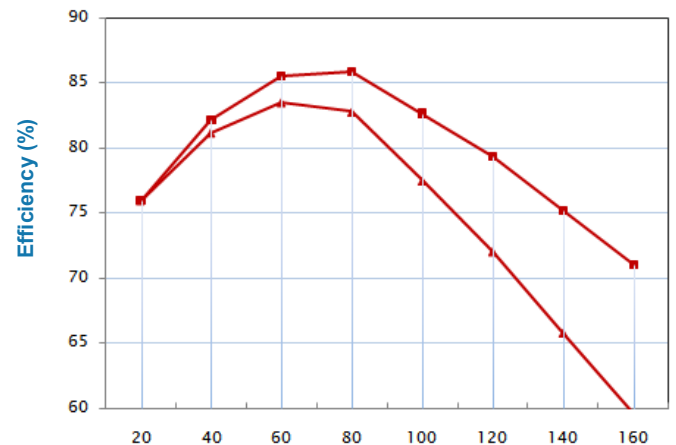
Input Torque



Pressure (bar)

3cc 1500rpm

Overall Efficiency



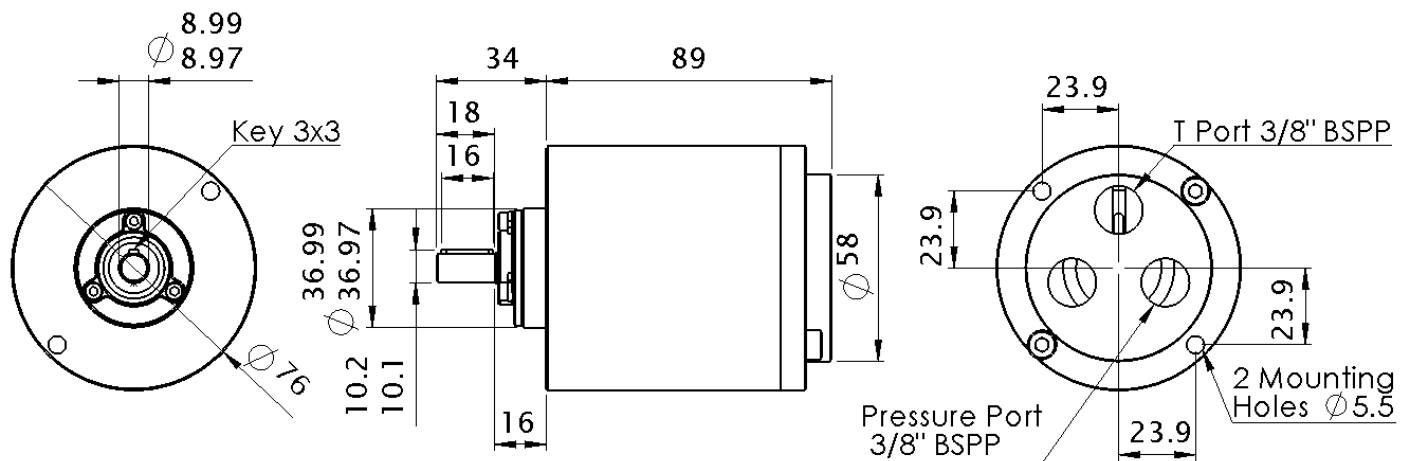
Pressure (bar)

3cc 1000rpm 3cc 1500rpm

JANUS PUMPS

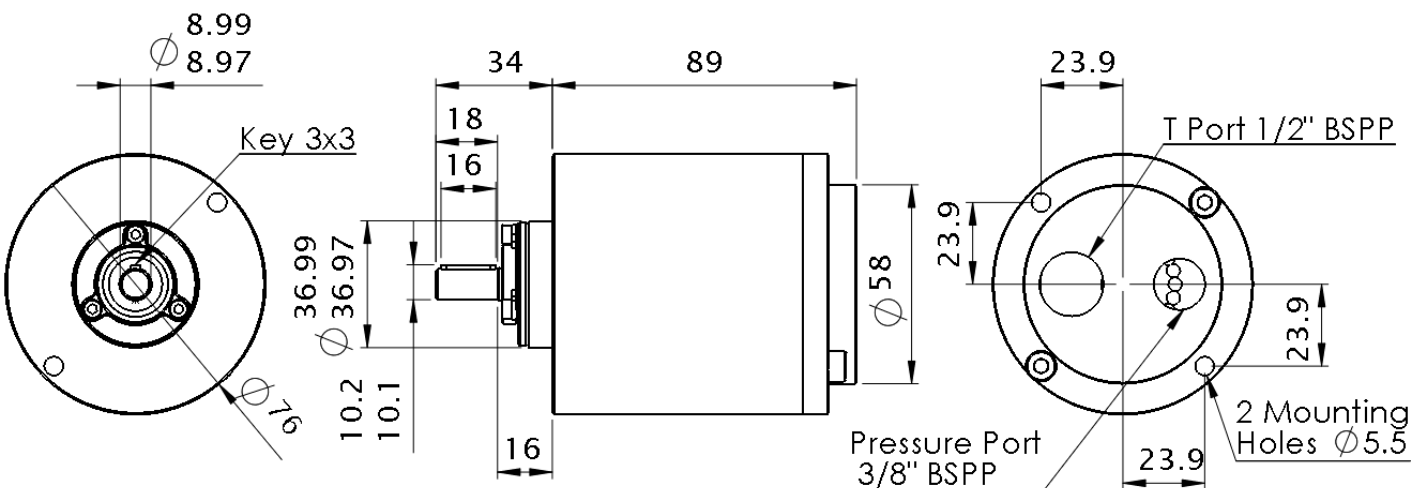
P6 PUMP DIMENSIONS

PB160-6.0W & PB160-4.6W



PC160-6.0W & PA160-6.0W

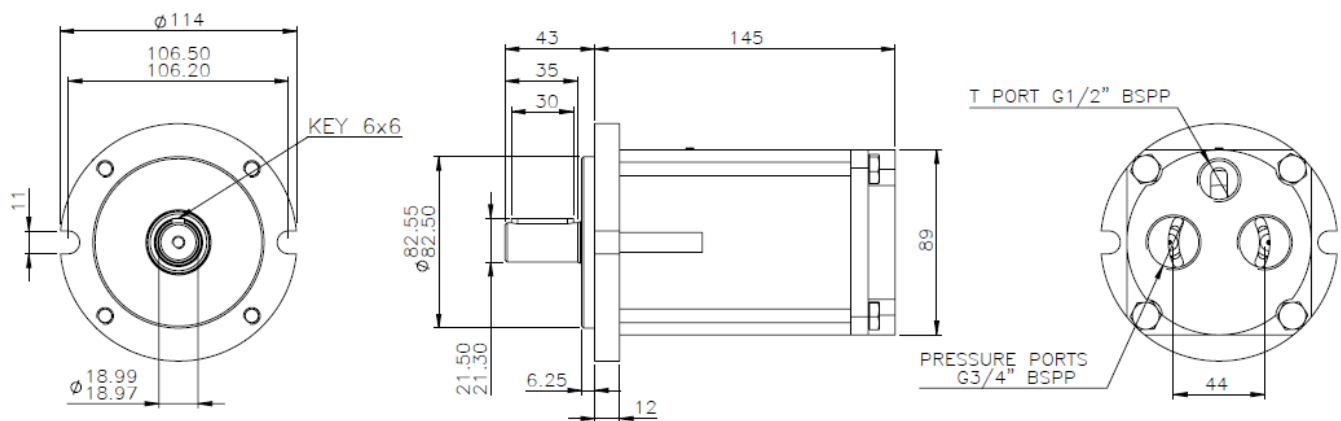
PC160-4.6W & PA160-4.6W



JANUS PUMPS

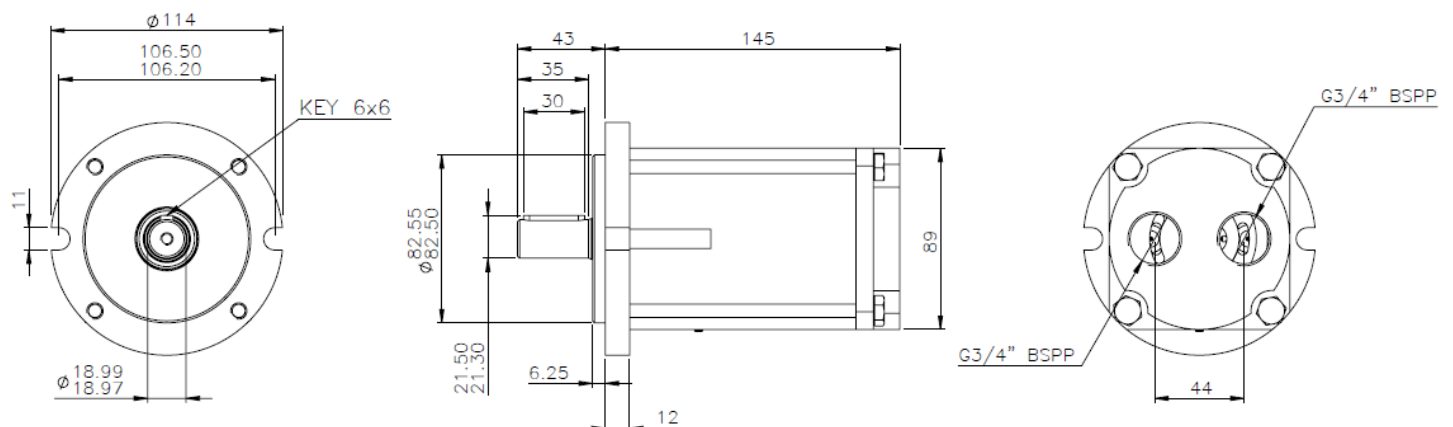
P15 PUMP DIMENSIONS

PB160-12W, PB160-15W & PB160-19W



PC160-12W, PC160-15W & PC160-19W

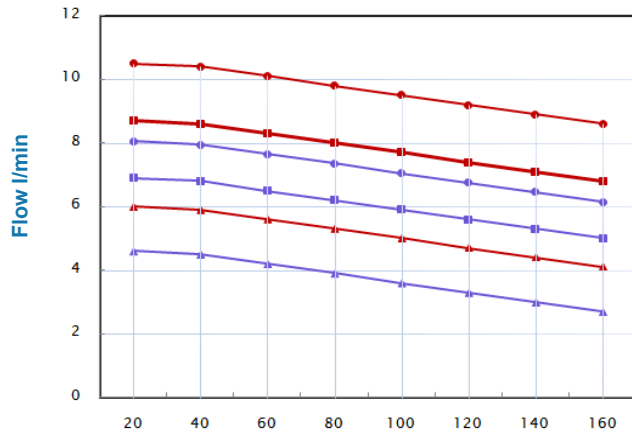
PA160-12W, PA160-15W & PA160-19W



JANUS PUMPS

P6 PUMP PERFORMANCE DATA

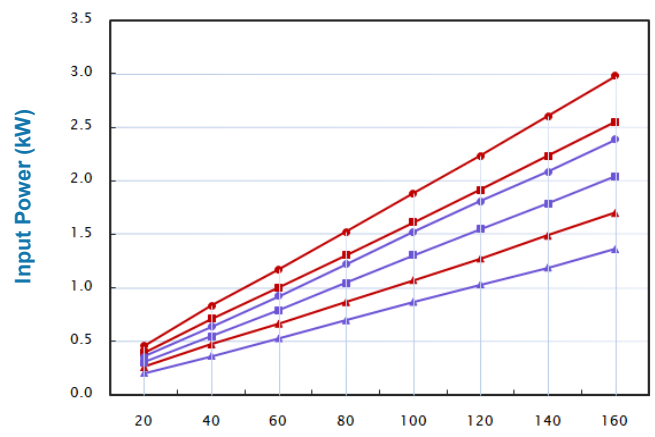
Output Flow



Pressure (bar)

6cc 1750rpm 6cc 1500rpm 6cc 1000rpm
4.6cc 1750rpm 4.6cc 1500rpm 4.6cc 1000rpm

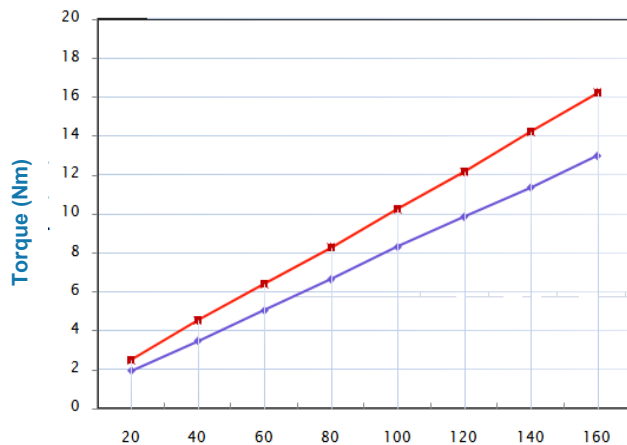
Input Power kW



Pressure (bar)

6cc 1750rpm 6cc 1500rpm 6cc 1000rpm
4.6cc 1750rpm 4.6cc 1500rpm 4.6cc 1000rpm

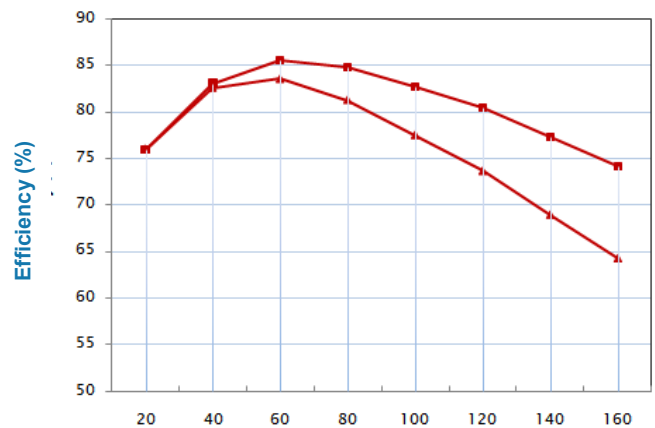
Input Torque



Pressure (bar)

6cc 1500rpm 4.6cc 1500rpm

Overall Efficiency



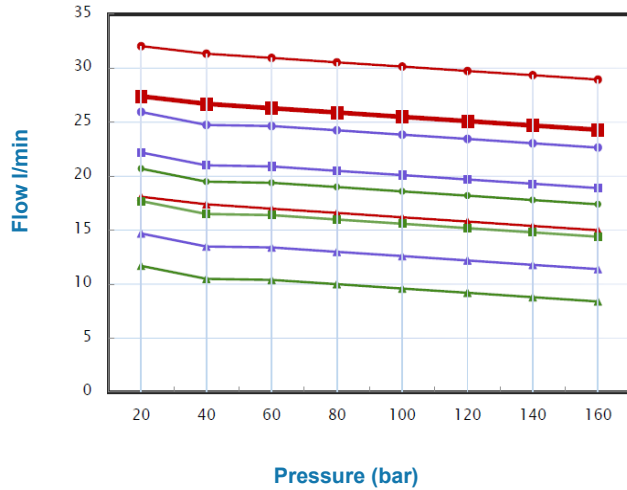
Pressure (bar)

6cc 1000rpm 6cc 1500rpm

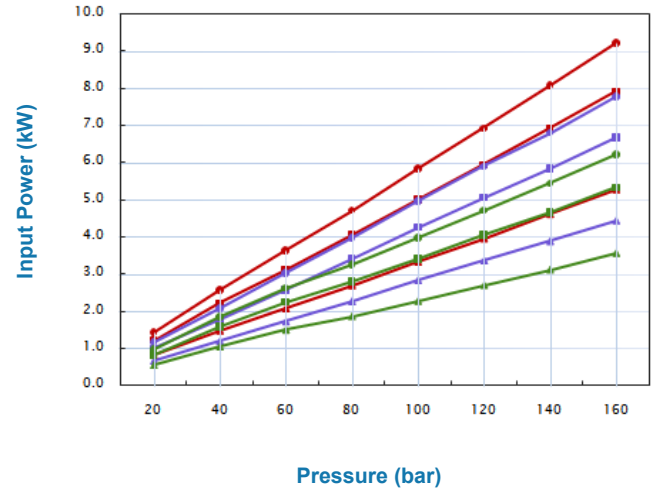
JANUS PUMPS

P15 PUMP PERFORMANCE DATA

Output Flow



Input Power kW



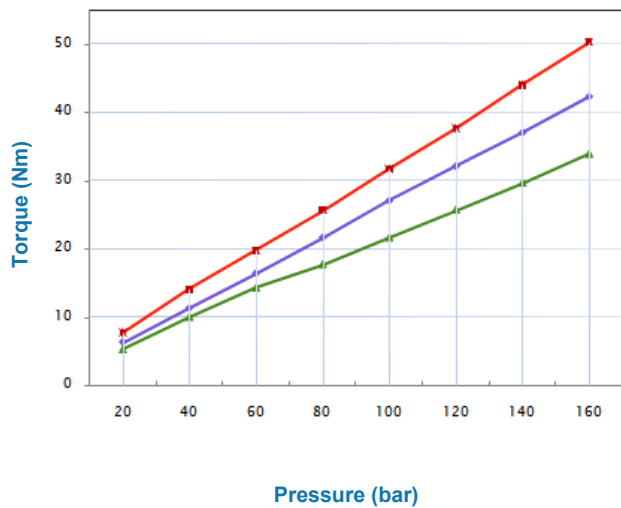
Pressure (bar)

Pressure (bar)

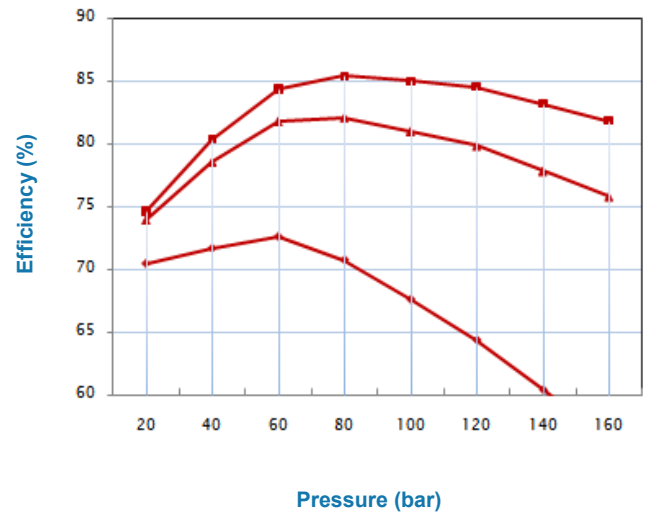
19cc 1750rpm 19cc 1500rpm 19cc 1000rpm
15cc 1750rpm 15cc 1500rpm 15cc 1000rpm
12cc 1750rpm 12cc 1500rpm 12cc 1000rpm

19cc 1750rpm 19cc 1500rpm 19cc 1000rpm
15cc 1750rpm 15cc 1500rpm 15cc 1000rpm
12cc 1750rpm 12cc 1500rpm 12cc 1000rpm

Input Torque



Overall Efficiency



Pressure (bar)

Pressure (bar)

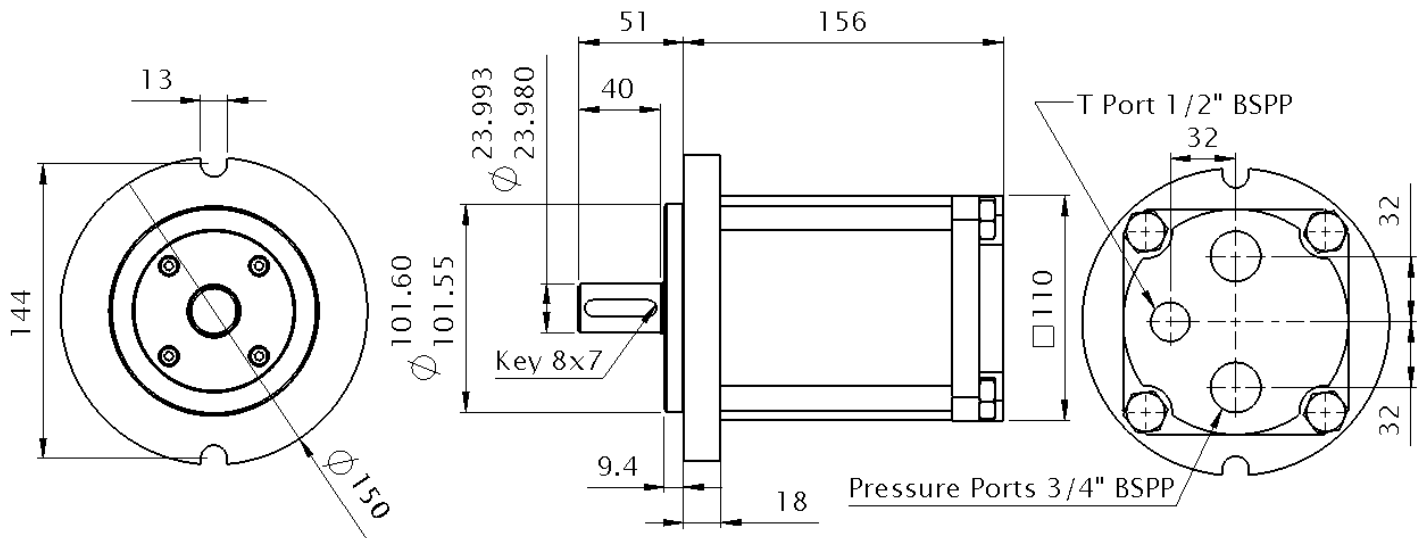
19cc 1500rpm 15cc 1500rpm 12cc 1500rpm

19cc 500 rpm 19cc 1000rpm 19cc 1500rpm

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P30 PUMP DIMENSIONS

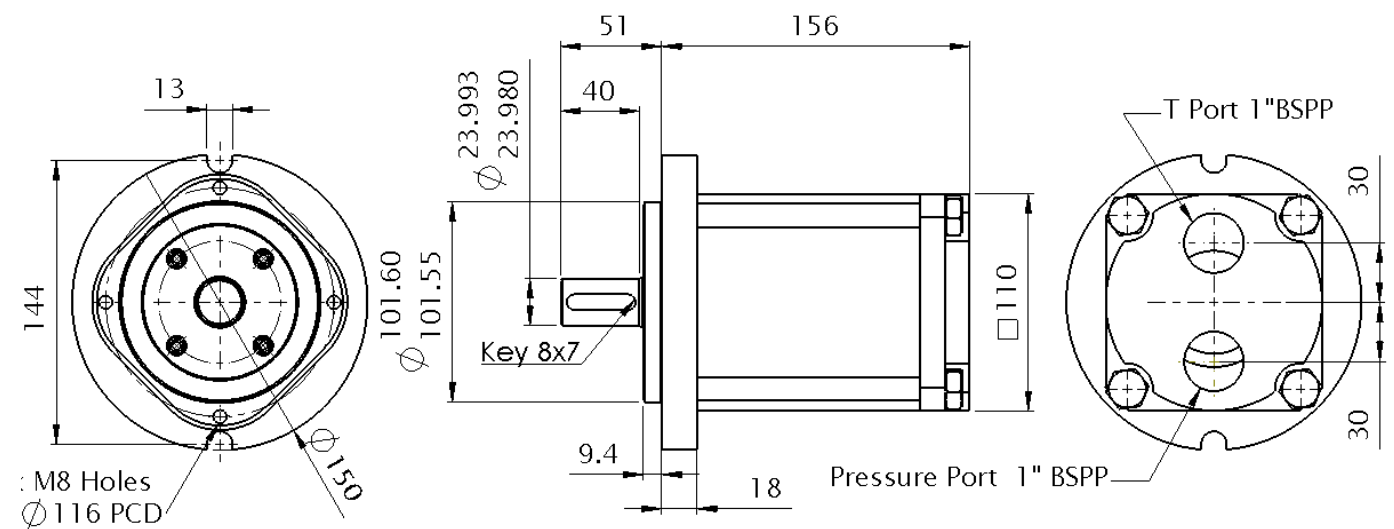
PB160-23W, PB160-30W & PB160-35W



PC160-23W, PC160-30W & PC160-35W

PA160-23W, PA160-30W & PA160-35W

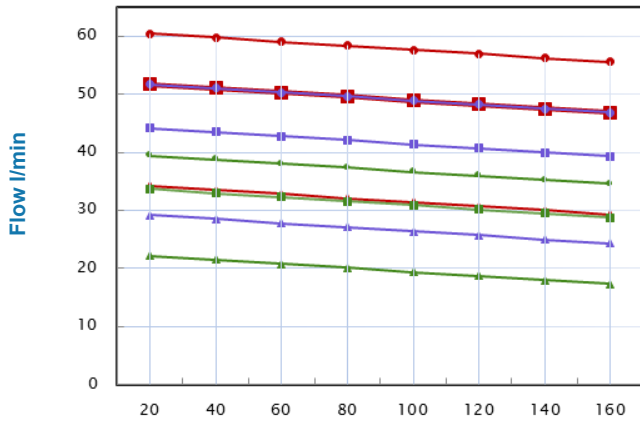
PPC160-23W, PPC160-30W & PPC160-35W (O ring face seal and M8 holes only added on PP Option)



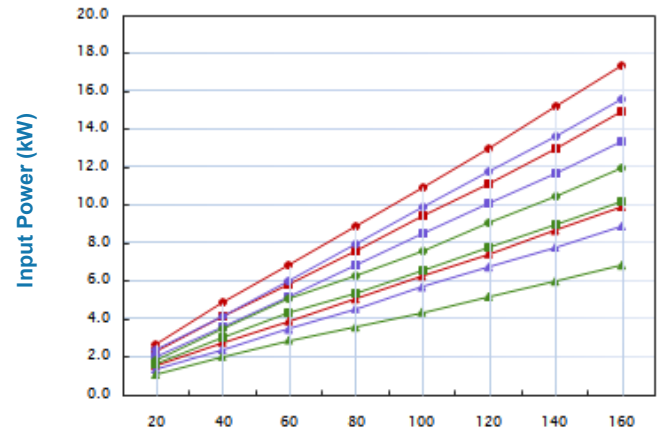
JANUS PUMPS

P30 PUMP PERFORMANCE DATA

Output Flow



Input Power kW



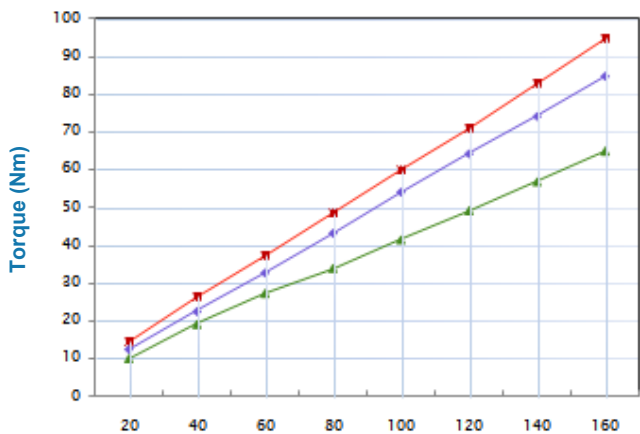
Pressure (bar)

35cc 1750rpm 35cc 1500rpm 35cc 1000rpm
30cc 1750rpm 30cc 1500rpm 30cc 1000rpm
23cc 1750rpm 23cc 1500rpm 23cc 1000rpm

Pressure (bar)

35cc 1750rpm 35cc 1500rpm 35cc 1000rpm
30cc 1750rpm 30cc 1500rpm 30cc 1000rpm
23cc 1750rpm 23cc 1500rpm 23cc 1000rpm

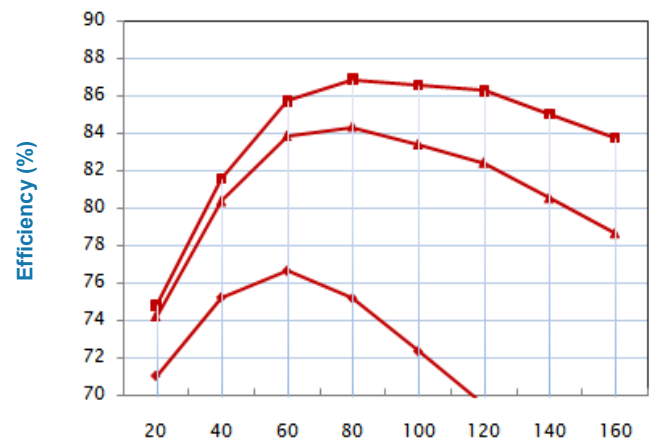
Input Torque



Pressure (bar)

35cc 1500rpm 30cc 1500rpm 23cc 1500rpm

Overall Efficiency

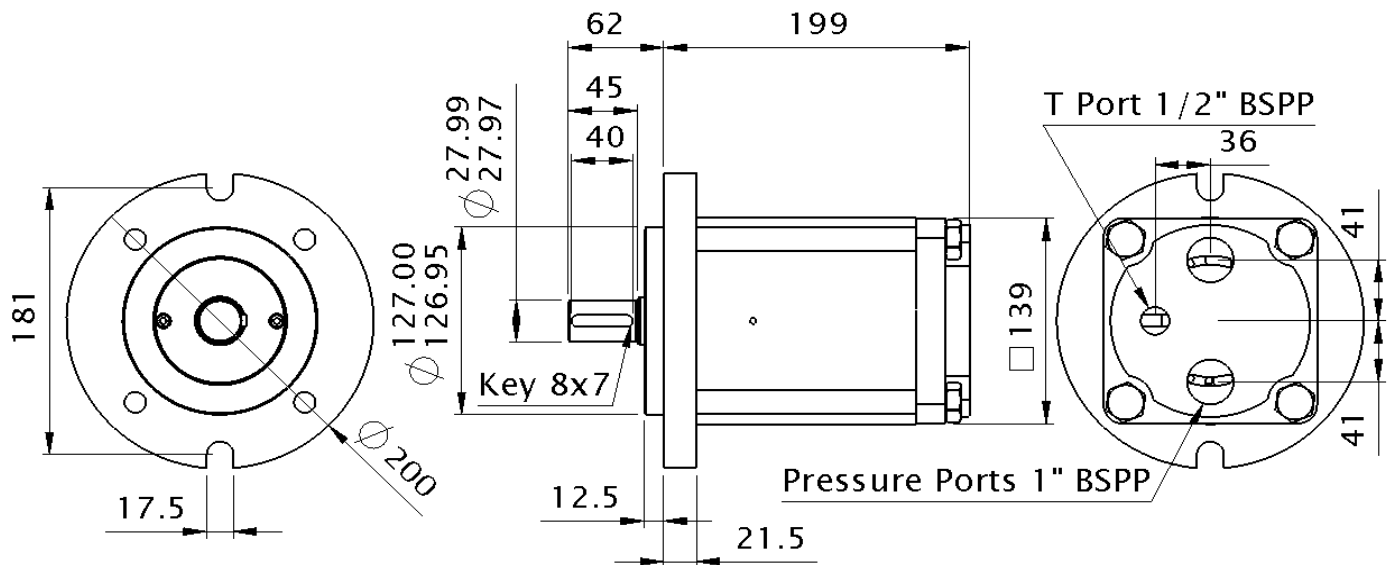


Pressure (bar)

35cc 500 rpm 35cc 1000rpm 35cc 1500rpm

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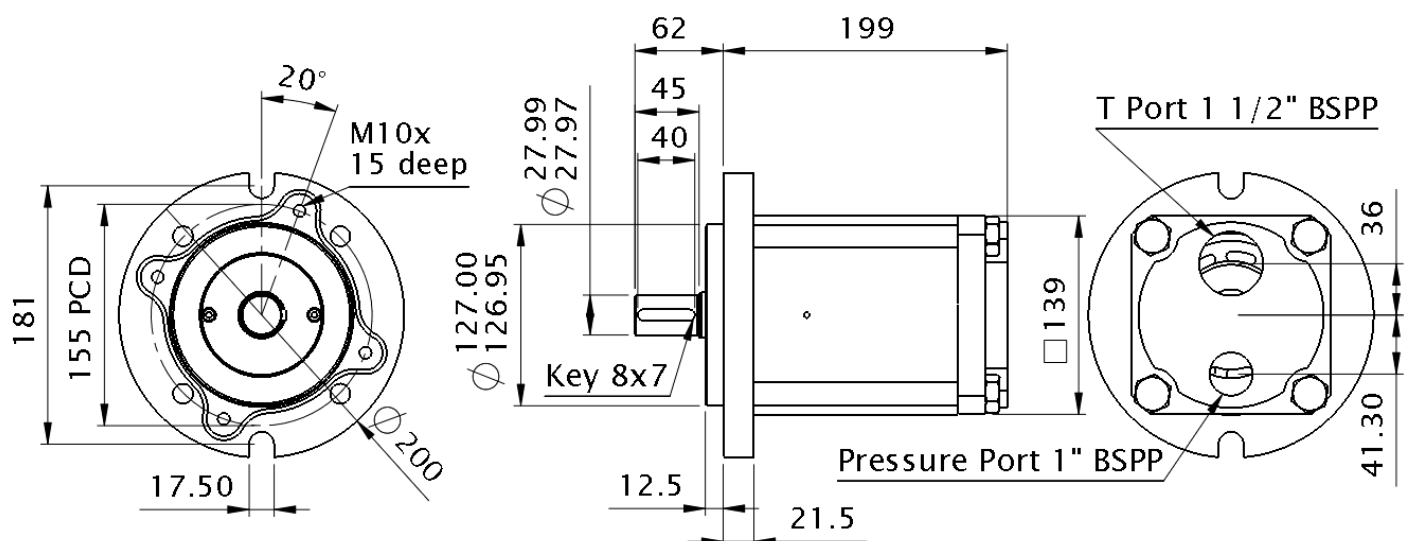
PB160-51W, PB160-63W & PB160-70W



PC160-51W, PC160-63W & PC160-70W

PA160-51W, PA160-63W & PA160-70W

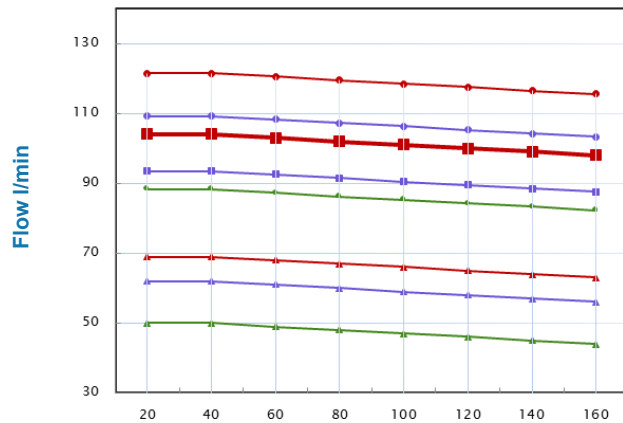
PPC160-51W, PPC160-63W & PPC160-70W (O ring face seal and M10 holes only added on PP Option)



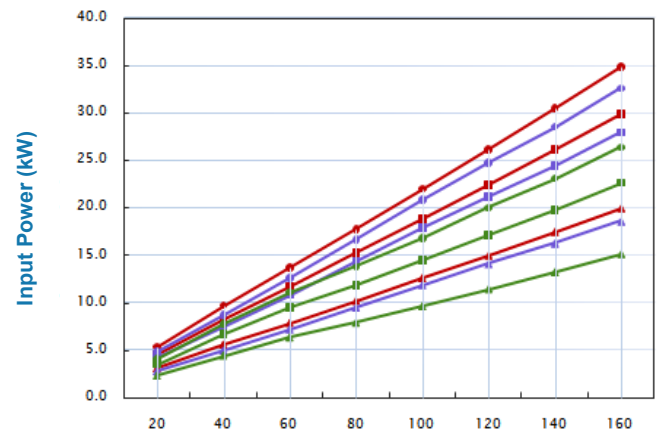
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P60 PUMP PERFORMANCE DATA

Output Flow



Input Power kW



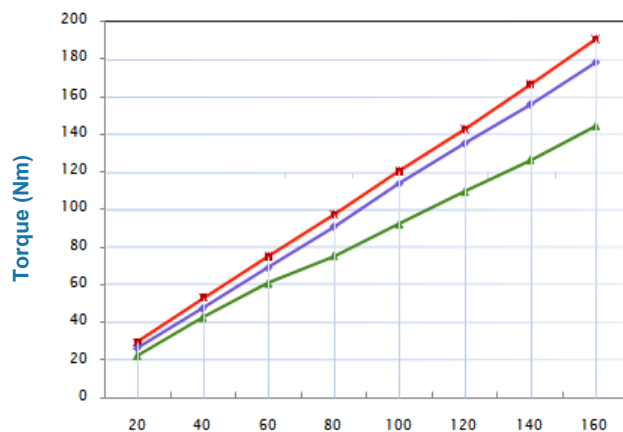
Pressure (bar)

70cc 1750rpm 70cc 1500rpm 70cc 1000rpm
 63cc 1750rpm 63cc 1500rpm 63cc 1000rpm
 51cc 1750rpm 51cc 1500rpm 51cc 1000rpm

Pressure (bar)

70cc 1750rpm 70cc 1500rpm 70cc 1000rpm
 63cc 1750rpm 63cc 1500rpm 63cc 1000rpm
 51cc 1750rpm 51cc 1500rpm 51cc 1000rpm

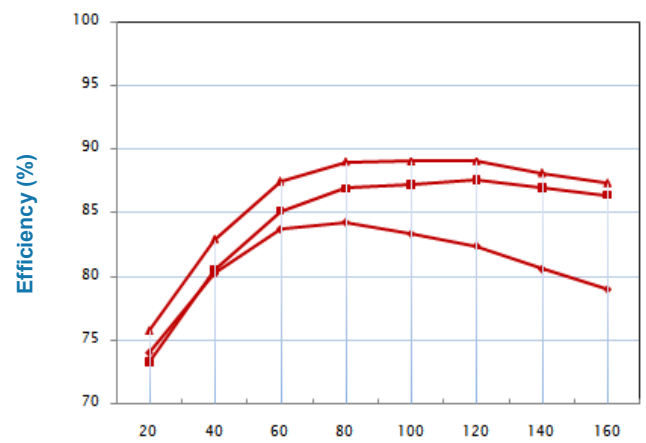
Input Torque



Pressure (bar)

70cc 1500rpm 63cc 1500rpm 51cc 1500rpm

Overall Efficiency



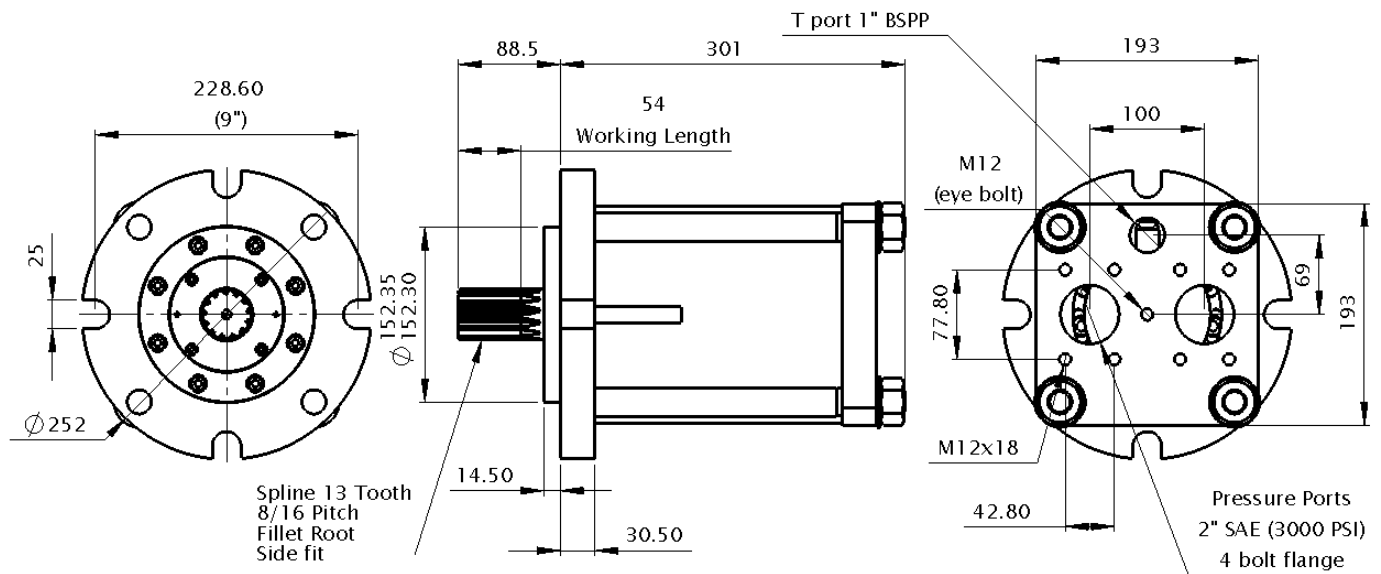
Pressure (bar)

70cc 500 rpm 70cc 1000rpm 70cc 1500rpm

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P180 PUMP DIMENSIONS

PB160-135W, PB160-180W & PB160-225W

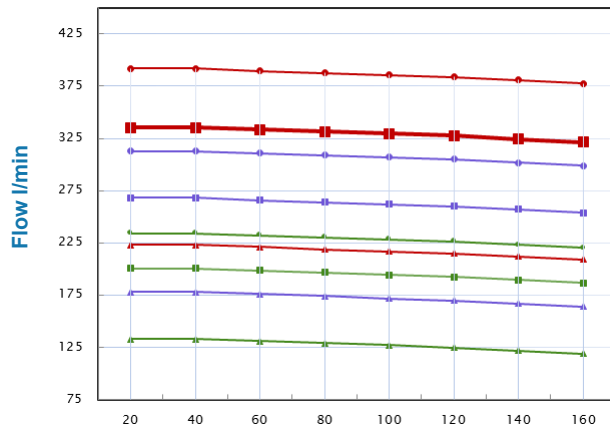


Note:- The P180 pump is only supplied in the 3 port Boosted configuration with mechanical seal.

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P180 PUMP PERFORMANCE DATA

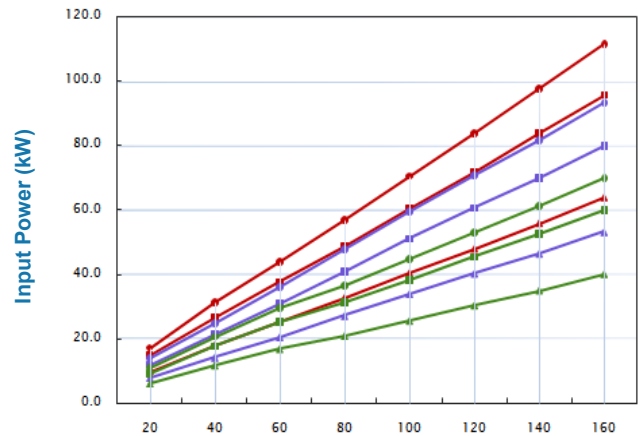
Output Flow



Pressure (bar)

— 225cc 1750rpm — 225cc 1500rpm — 225cc 1000rpm
 — 180cc 1750rpm — 180cc 1500rpm — 180cc 1000rpm
 — 135cc 1750rpm — 135cc 1500rpm — 135cc 1000rpm

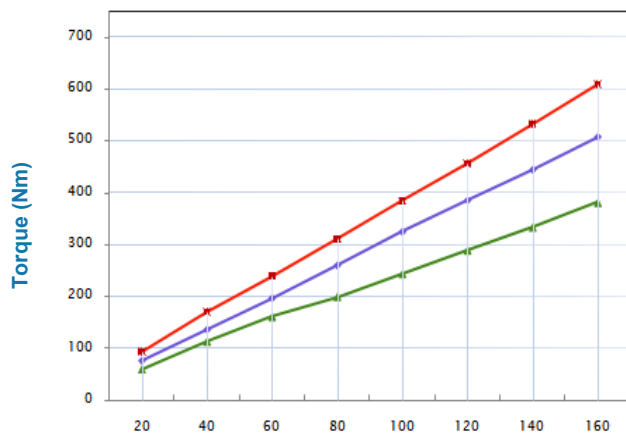
Input Power kW



Pressure (bar)

— 225cc 1750rpm — 225cc 1500rpm — 225cc 1000rpm
 — 180cc 1750rpm — 180cc 1500rpm — 180cc 1000rpm
 — 135cc 1750rpm — 135cc 1500rpm — 135cc 1000rpm

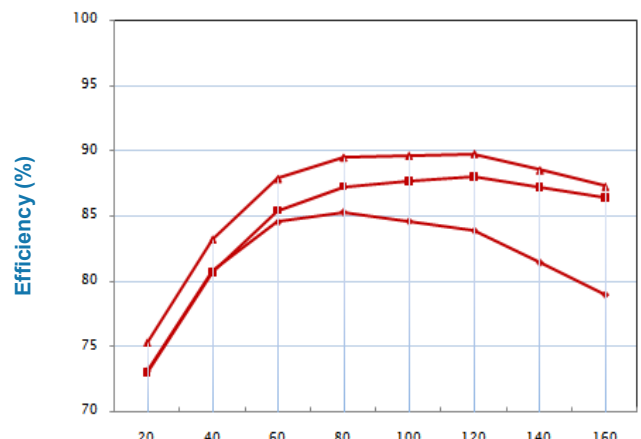
Input Torque



Pressure (bar)

— 225cc 1500rpm — 180cc 1500rpm — 135cc 1500rpm

Overall Efficiency



Pressure (bar)

— 225cc 500 rpm — 225cc 1000rpm — 225cc 1500rpm