

# Janus

**Motors** – Axial Piston

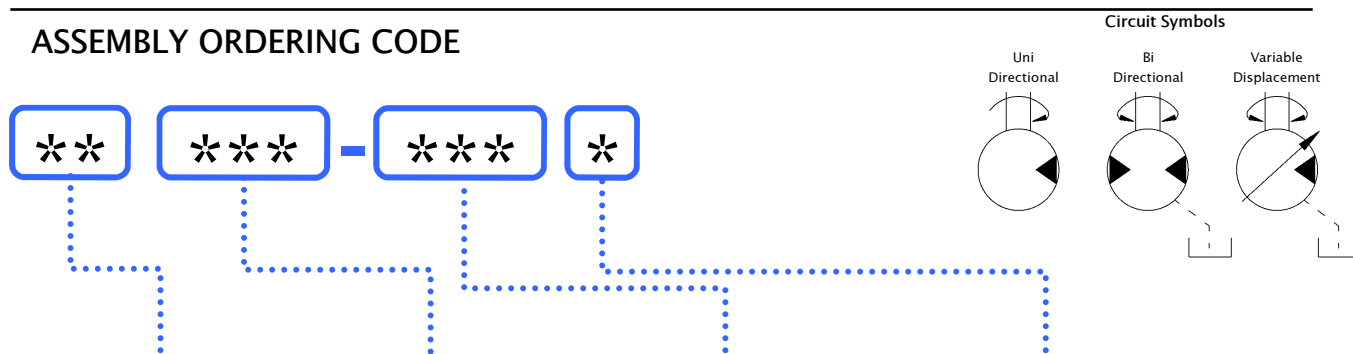


Our Janus Axial Piston Motors are totally oil free, clean and completely safe to use. As a result of employing advanced materials, high velocity and loaded sliding surfaces, the range of pumps can operate effectively with water as their only coolant/lubricant; therefore, this removes the potential for cross contamination of the system fluid or lubricating oil. Each motor employs technology that minimises vibration and ensures a low noise yet high efficiency operation. The result is an exceptionally small, light-weight product.

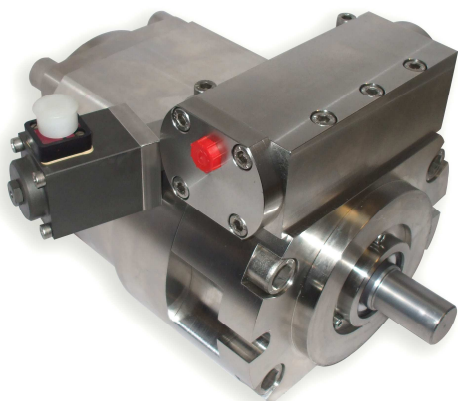
Manufactured in 316 stainless steel as standard the product offers excellent resistance to corrosive fluids. The materials utilised internally can be selected to suit the most appropriate combinations for not just tap water but also sea water and various other fluids.

Minimal pulsation is experienced with these units due to the multiple piston design and the high operational speeds. The physical size of the motor in comparison to the power generated offers one of the most compact drive solutions

## ASSEMBLY ORDERING CODE



Unit Type		Operating Pressure		Displacement		Fluid	
*		*	(Bar)	*	(cc/rev)	*	
MA	Motor Anti-Clockwise	025	25	3.0	3.0	W	Tap Water
MB	Motor Bi-Directional	Min	...	4.6	4.6	S	Sea Water
MC	Motor Clockwise	...	...	6.0	6.0	T	Technical Water
MV	Motor Variable**	160	160	15	15.0	O	Other*
	(**M60 & M180 only)	Max		19	19.0		(*Please Specify)
				30	30.0		
				35	35.0		
				63	63.0		
				70	70.0		
				180	180.0		
				225	225.0		
						M3	
						M6	
						M15	
						M30	
						M60	
						M180	



### Example

- A motor operating at 160 bar. Shaft rotation clockwise (viewed on shaft end) with a displacement of 6cc

**Ordering Code** ➞

MC160-6.0W



**NOTES:**

The Water Hydraulics Co. Ltd.

Alexandra House, English Street, Hull, East Yorkshire, HU3 2DJ, United Kingdom.

Tel: +44 (0)1482 595000, Fax: +44 (0)1482 214895, E-Mail: [sales@waterhydraulics.co.uk](mailto:sales@waterhydraulics.co.uk). Registration Number: 4302081 England

Website: [www.waterhydraulics.co.uk](http://www.waterhydraulics.co.uk)



# Janus Motors – Fixed Displacement Axial Piston

## SPECIFICATION

Pump		M3	M6	M15	M30	M60	M180
Displacement cc/rec:	Max:	3	6	18.6	34.6	70.3	225
	Min:	–	4.6	15	30	63	104
RPM:	Max:**	4000	4000	4000	4000	4000	2500
	Min:*	500	500	500	500	500	300
Max. power (kW) cont.		2.7	5.4	17.5	31	67	140
Max. Input (l/min) cont.		12	24	72	132	292	430
Max cont. pressure (Bar)		160	160	160	160	160	160
Weight (kg)		1.5	2.2	6	10	19	82
Temperature (°C):	Max:	50	50	50	50	50	50
	Min:***	2	2	2	2	2	2

\* see gearbox note \*\* Consult TWHC for higher operating speeds \*\*\* Consult TWHC for antifreeze option and lower temperature conditions.

### Geared Motor Assemblies

A standard range of epicyclic gearboxes are available for operation below the recommended minimum speed.

### 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 glycol datasheet. Operation above 50°C is possible, but the volumetric efficiency of the unit will be affected. Consult TWHC and specify the maximum operating temperature.

### Filters

All incoming water to the motors 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.

### Shaft Loading

Radial and axial loads are not permitted on the motor output shaft. Use a flexible gear coupling where possible.

### Start Torque

The smaller motors M3 and M6 require a minimum pressure of 25bar to rotate an unloaded shaft. The larger motors will all start above 12 bar.

For applications that must start under full load the motor must be sized based on their starting torque. A starting capacity 60% of the dynamic torque shown in the graphs should be used for calculations

### Operation

It is advised that the motors are operated on a monthly basis to ensure the maximum starting torque is maintained.

### Over Run

On applications that the motors shaft will continue to rotate once the control valve is closed over run check valves must be incorporated, For further information on assemblies consult TWHC.

### Fluid

Use water of drinking water quality conforming to the EEC-directive 80/778/EEC or consult TWHC if unsure of water quality.

The standard product operates happily on Technical water i.e. Distilled, RO water or Demineralised however the seal material or construction may change with environment. Please specify operating fluid on orders.

The pumps also operate on Non flammable fluids such as Glycol 95/5 mixtures. Internal clearances must be adjusted when functioning on such fluid so once again it is important to specify the exact fluid on all orders.

## PORT CONFIGURATIONS

### Ports

All connections are BSPP. Only use parallel threads with high pressure sealing washers. Do not use taper fittings.

### 2 Port Configuration

Motors are available in 2 port, uni-directional configuration. The P (pressure) inlet and T (tank return) line are clearly marked on the port end cover. Do not connect in reverse order or catastrophic failure will result.



**Uni- Directional Motor**

Maximum Pressure in the motor return line is 2.5 bar

### 3 Port Configuration

All sizes of motor can be supplied for bi-directional rotation. The 3 port design includes an additional case drain port T. By alternating the pressure inlet and return ports, the motor shaft will reverse. Both pressure ports on the 3 port design can accept full system pressure, the motors performance can be adjusted by controlling the flow and pressure of the return flow.



**Bi-Directional Motor**

Pressure in the return line on a bi-directional motor must be greater than the pressure in the leakage port. The leakage port has a maximum pressure of 2.5 bar

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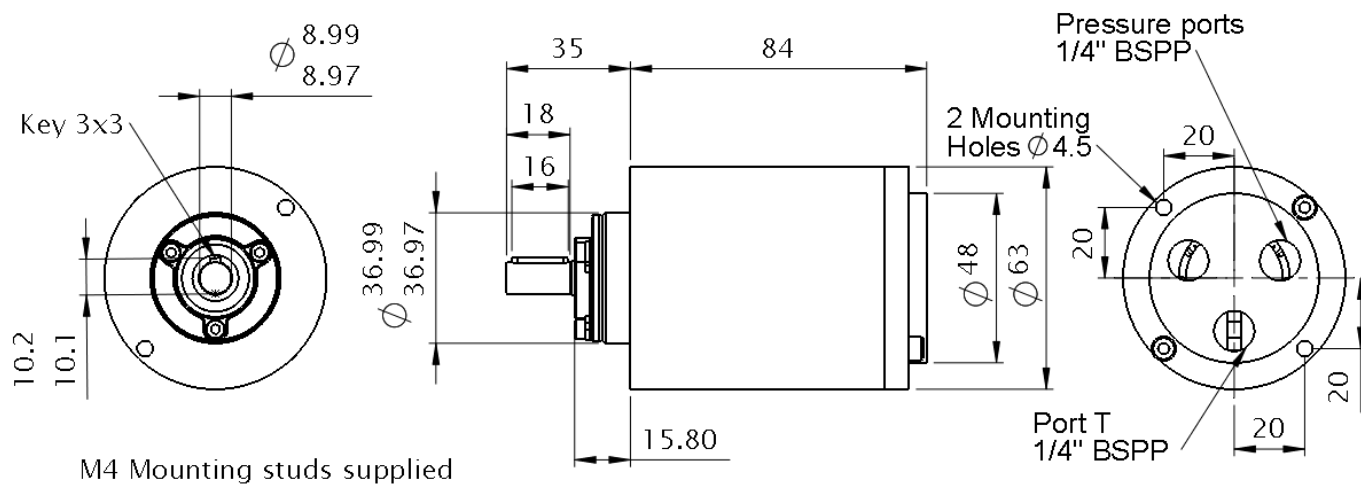
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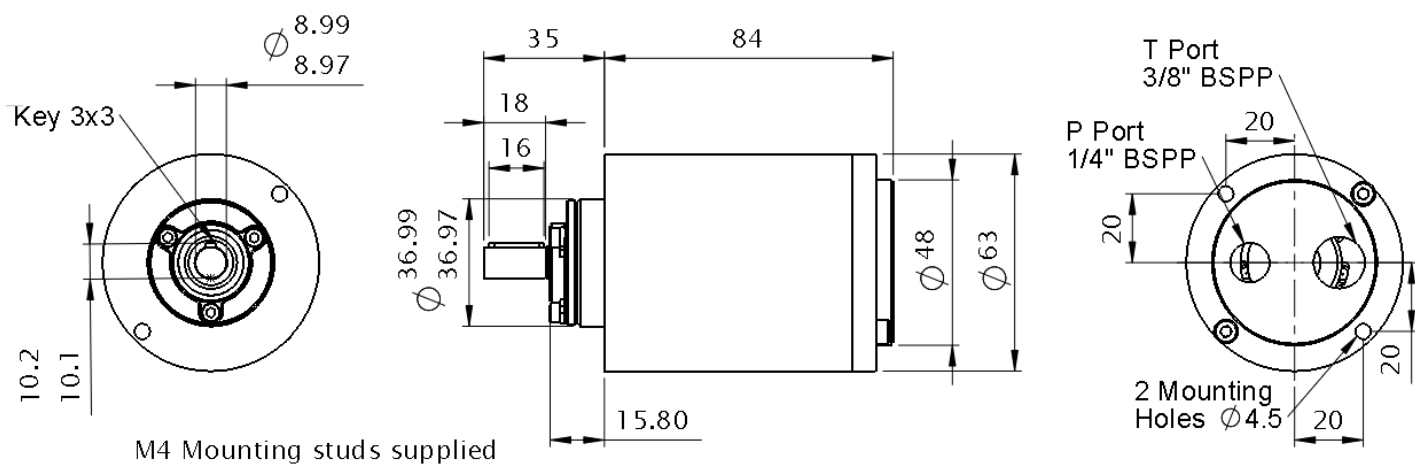
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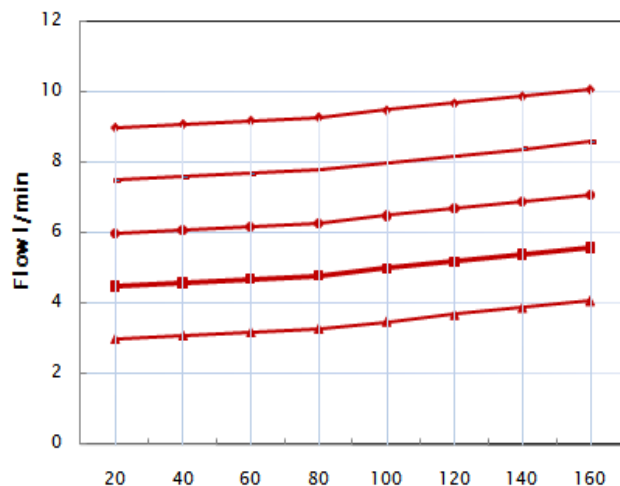
### MB160-3.0W



### MA160-3.0W & MC160-3.0W



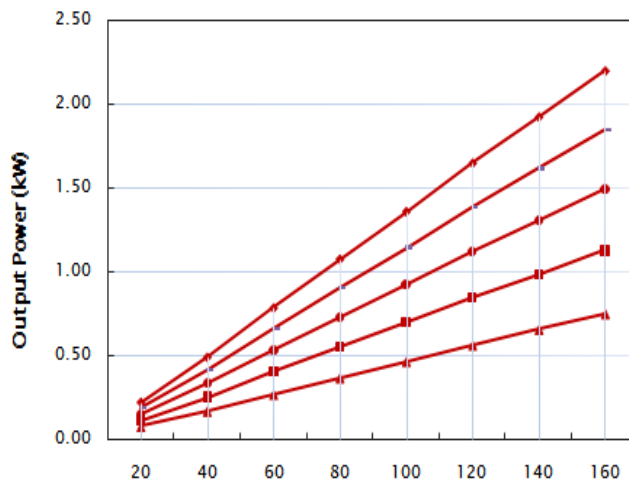
### Input Flow



Pressure (bar)

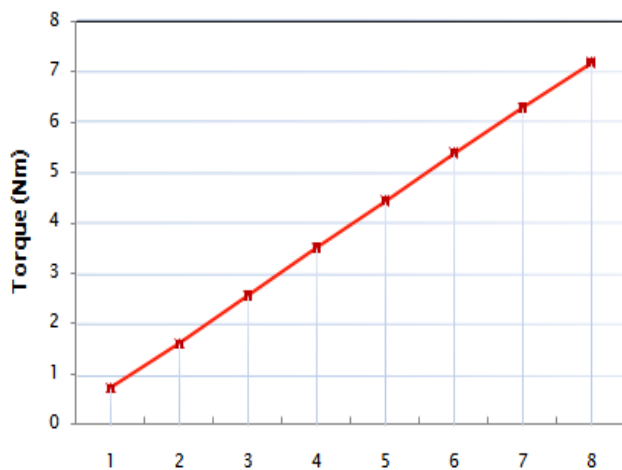
3cc 1000rpm 3cc 1500rpm 3cc 2000rpm 3cc 2500rpm 3cc 3000rpm

### Output Power kW



Pressure (bar)

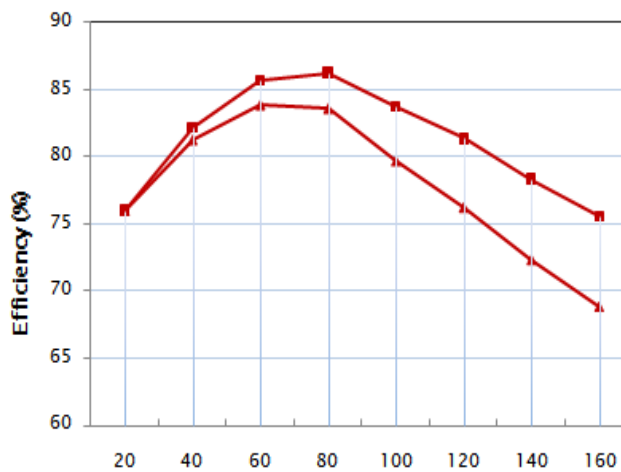
### Output Torque



Pressure (bar)

3cc 1500rpm

### Overall Efficiency



Pressure (bar)

3cc 1000rpm

3cc 1500rpm

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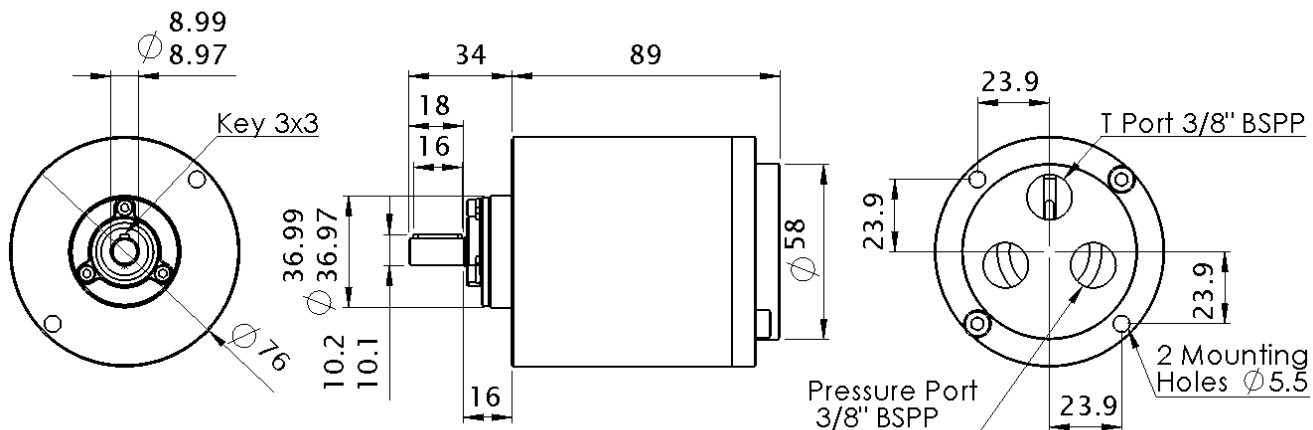
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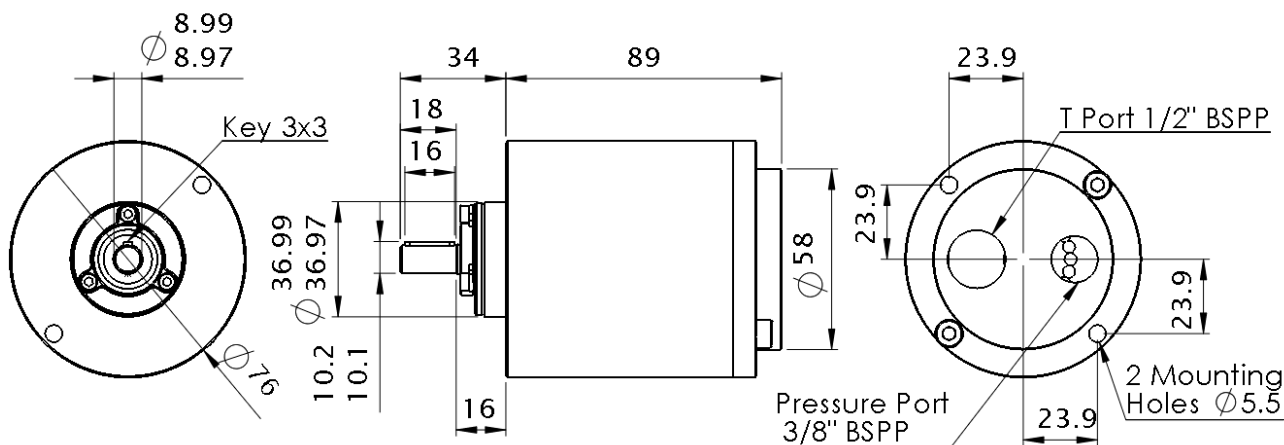
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MB160-6.0W & MB160-4.6W

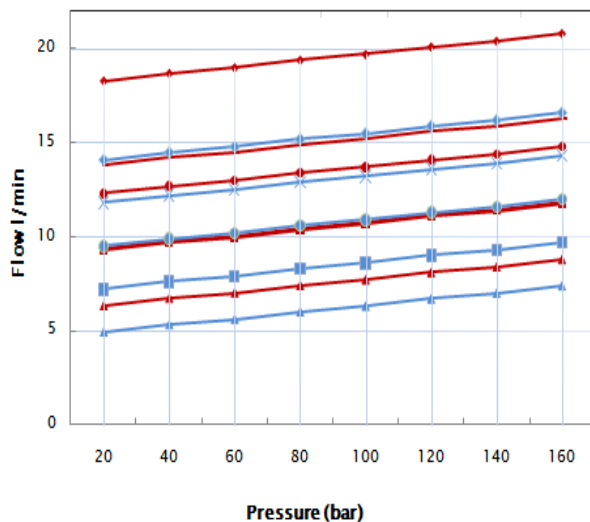


MC160-6.0W & MA160-6.0W

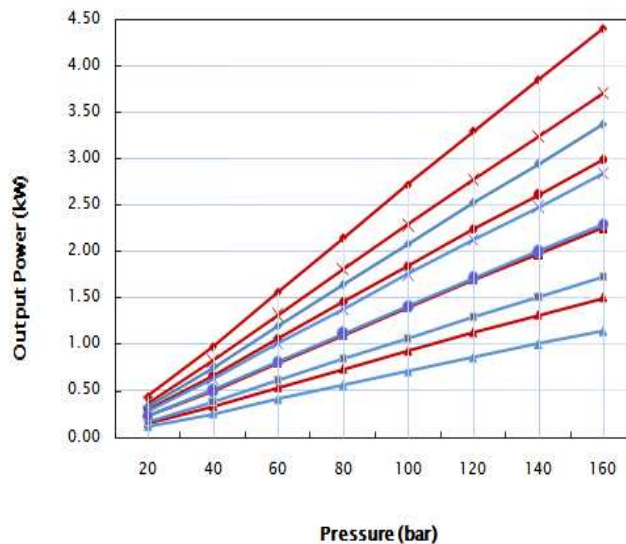
MC160-4.6W & MA160-4.6W



### Input Flow

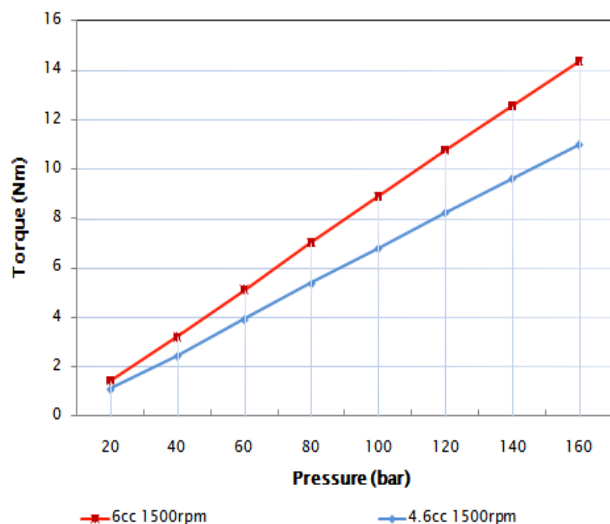


### Output Power kW

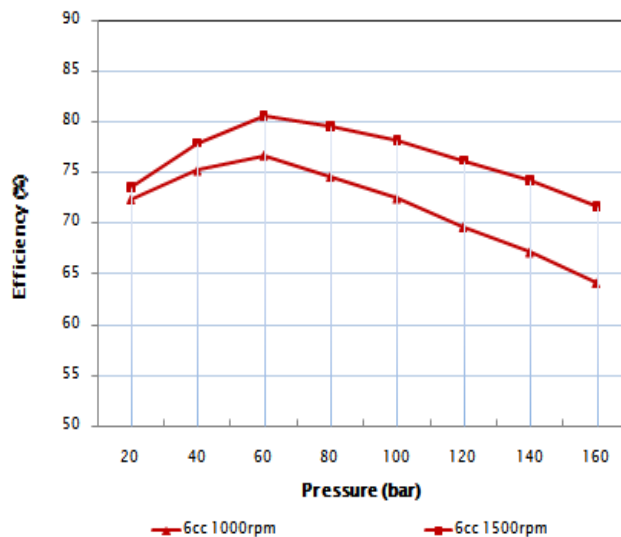


6cc 1000rpm 6cc 1500rpm 6cc 2000rpm 6cc 2500rpm 6cc 3000rpm  
 4.6cc 1000rpm 4.6cc 1500rpm 4.6cc 2000rpm 4.6cc 2500rpm 4.6cc 3000rpm

### Output Torque

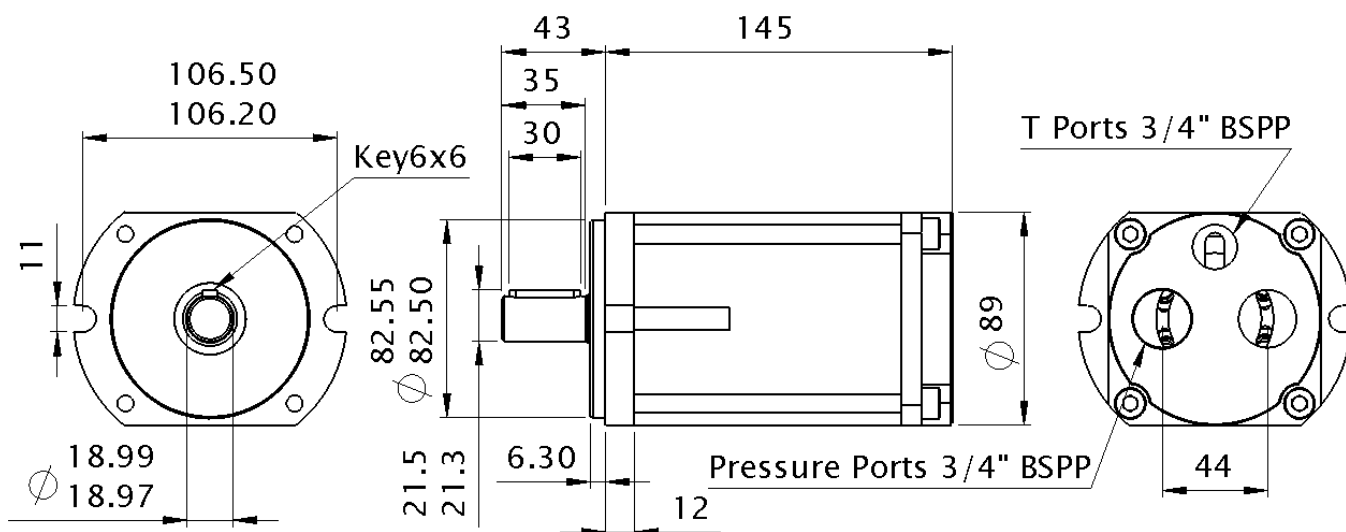


### Overall Efficiency



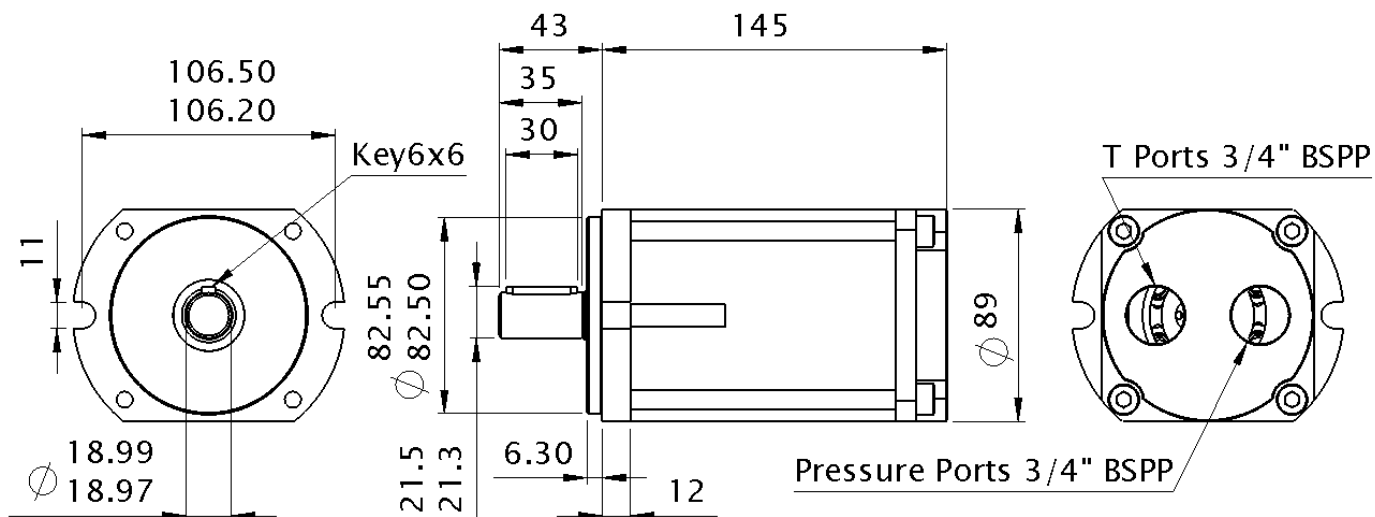


### MB160-15W & MB160-19W

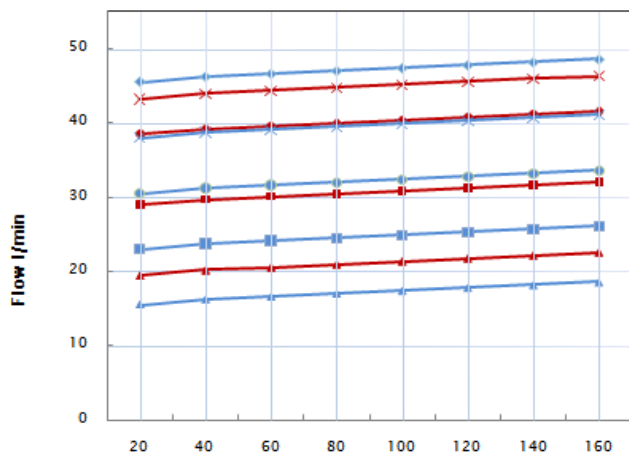


### MC160-15W & MA160-19W

### MC160-15W & MA160-19W



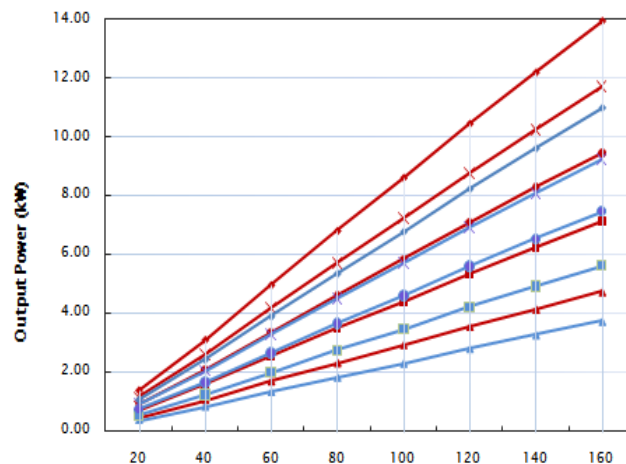
### Input Flow



Pressure (bar)

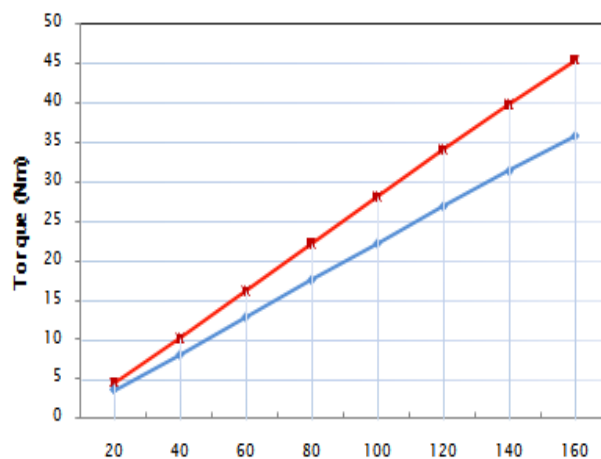
19cc 1000rpm 19cc 1500rpm 19cc 2000rpm 19cc 2500rpm 19cc 3000rpm  
 15cc 1000rpm 15cc 1500rpm 15cc 2000rpm 15cc 2500rpm 15cc 3000rpm

### Output Power kW



Pressure (bar)

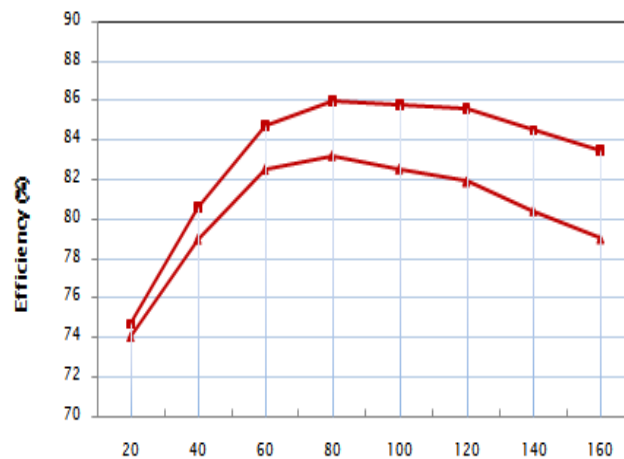
### Output Torque



Pressure (bar)

19cc 1500rpm 15cc 1500rpm

### Overall Efficiency



Pressure (bar)

19cc 1000rpm 19cc 1500rpm

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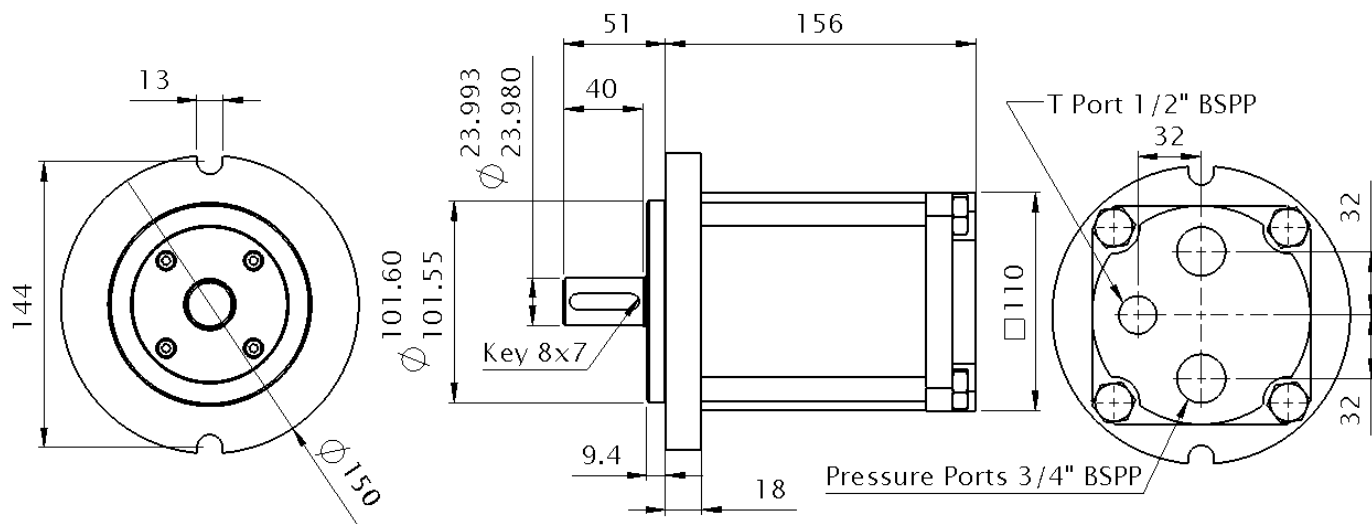
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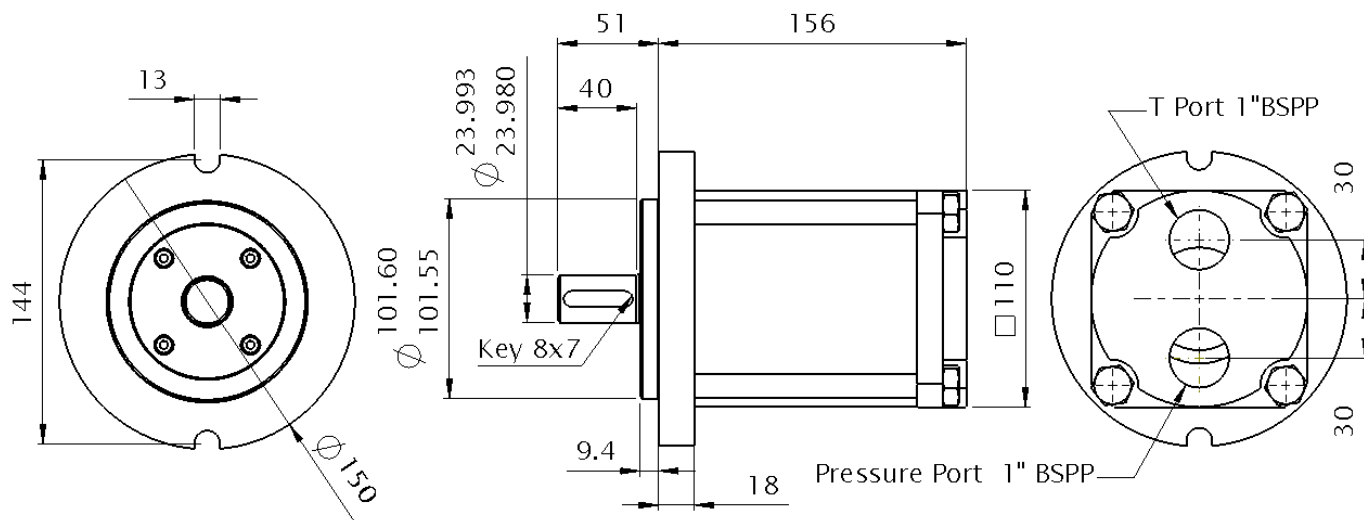
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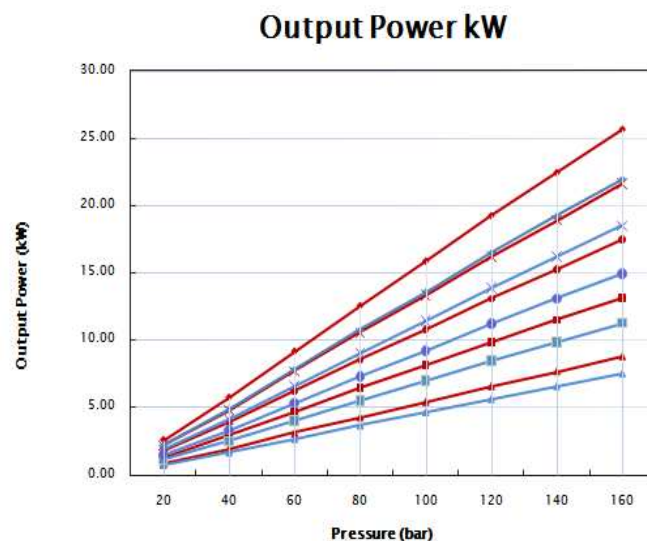
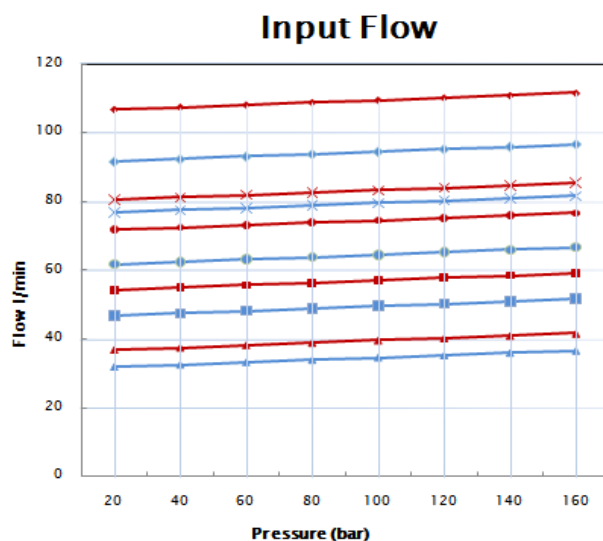
MB160-30W & MB160-35W



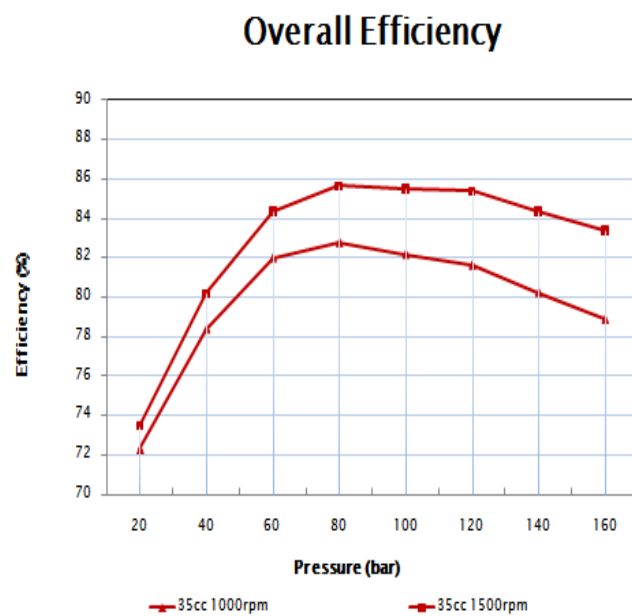
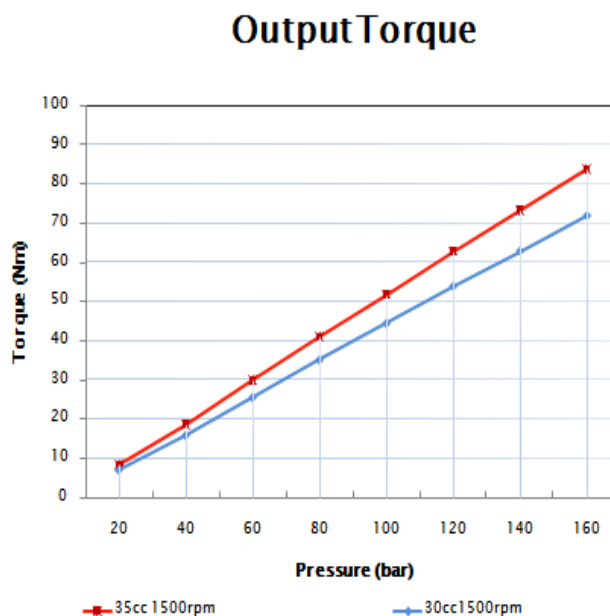
MC160-30W & MA160-35W

MC160-30W & MA160-35W





35cc 1000rpm 35cc 1500rpm 35cc 2000rpm 35cc 2500rpm 35cc 3000rpm  
 30cc 1000rpm 30cc 1500rpm 30cc 2000rpm 30cc 2500rpm 30cc 3000rpm



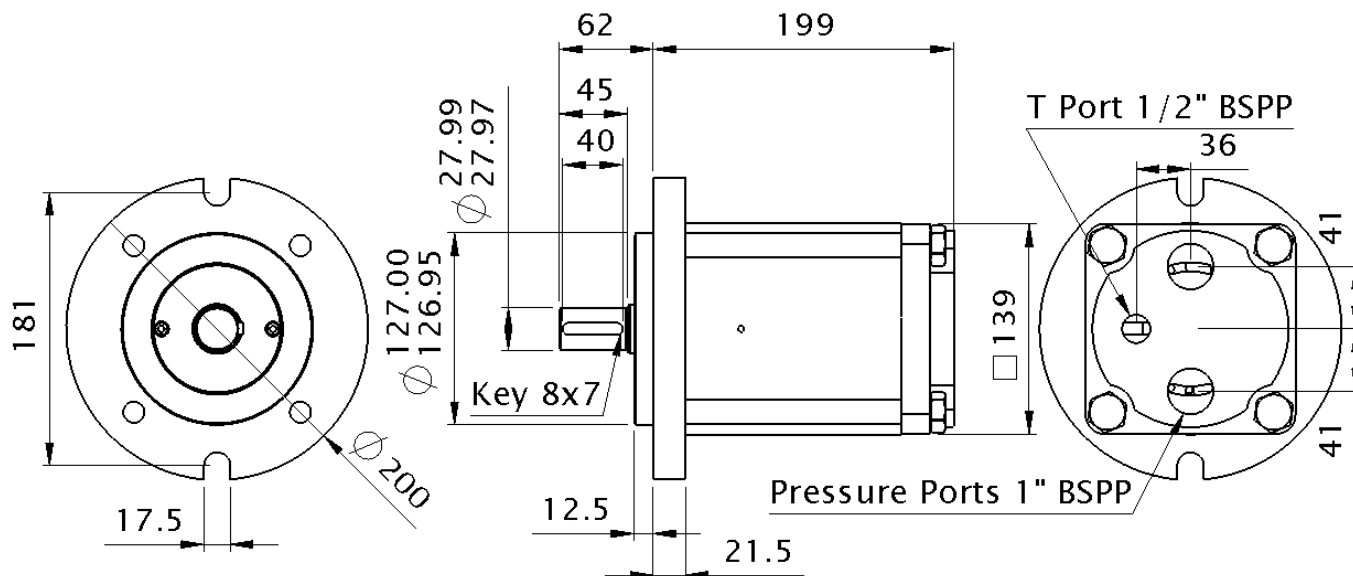
35cc 1500rpm

30cc 1500rpm

35cc 1000rpm

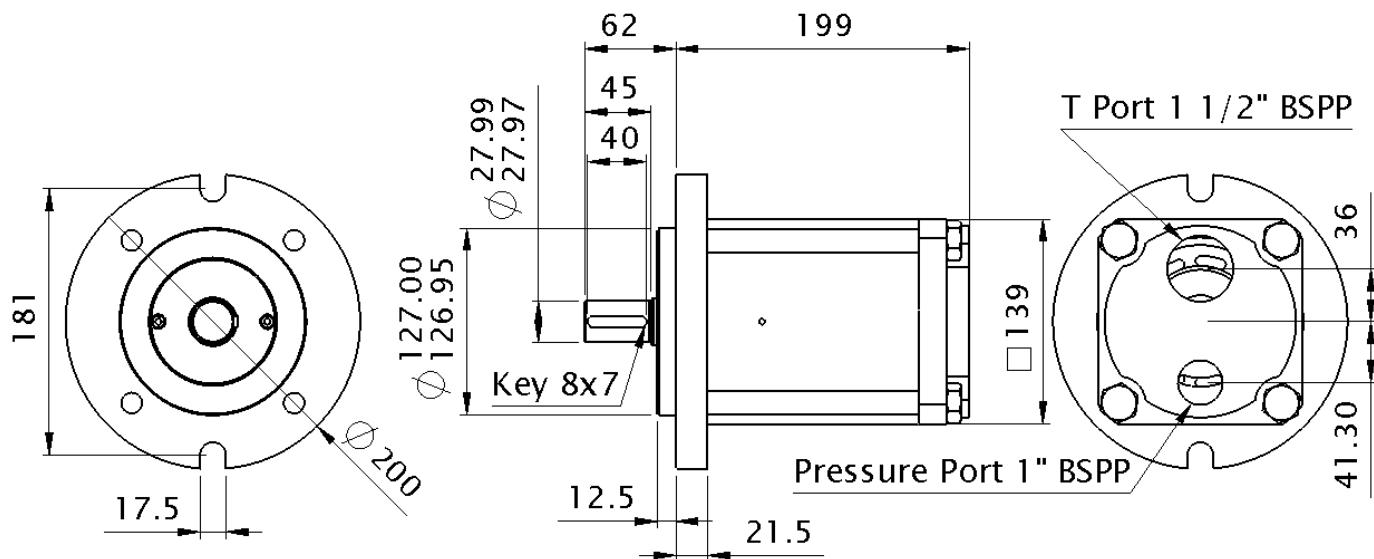
35cc 1500rpm

MB160-63W & MB160-70W

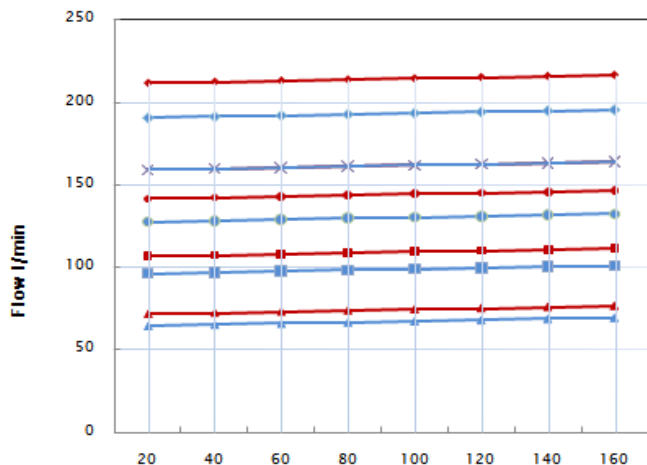


MC160-63W & MA160-70W

MC160-63W & MA160-70W



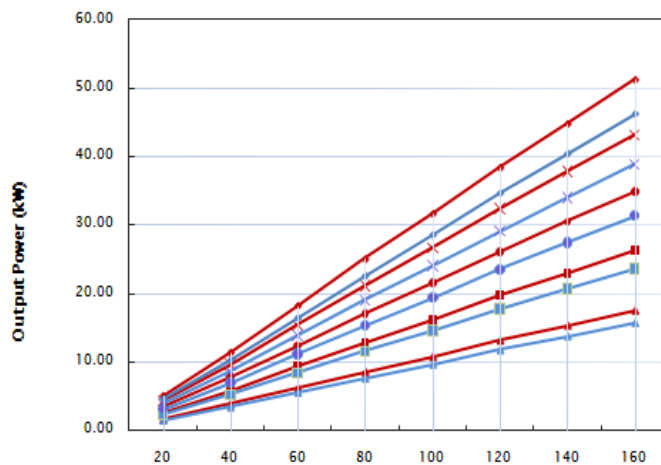
### Input Flow



Pressure (bar)

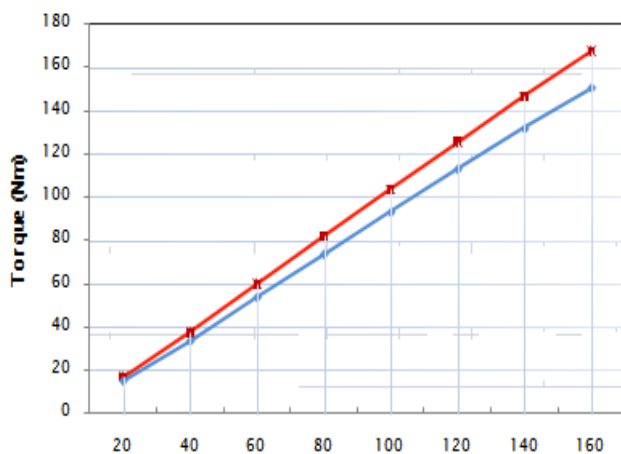
70cc 1000rpm    70cc 1500rpm    70cc 2000rpm    70cc 2500rpm    70cc 3000rpm  
 63cc 1000rpm    63cc 1500rpm    63cc 2000rpm    63cc 2500rpm    63cc 3000rpm

### Output Power kW



Pressure (bar)

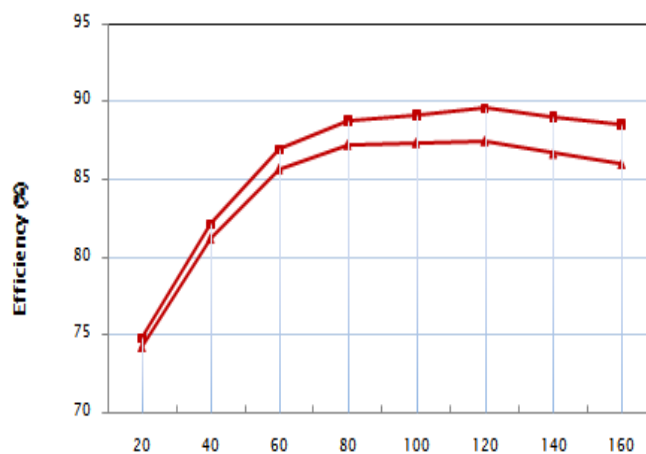
### Output Torque



Pressure (bar)

70cc 1500rpm    63cc 1500rpm

### Overall Efficiency



Pressure (bar)

70cc 1000rpm    70cc 1500rpm

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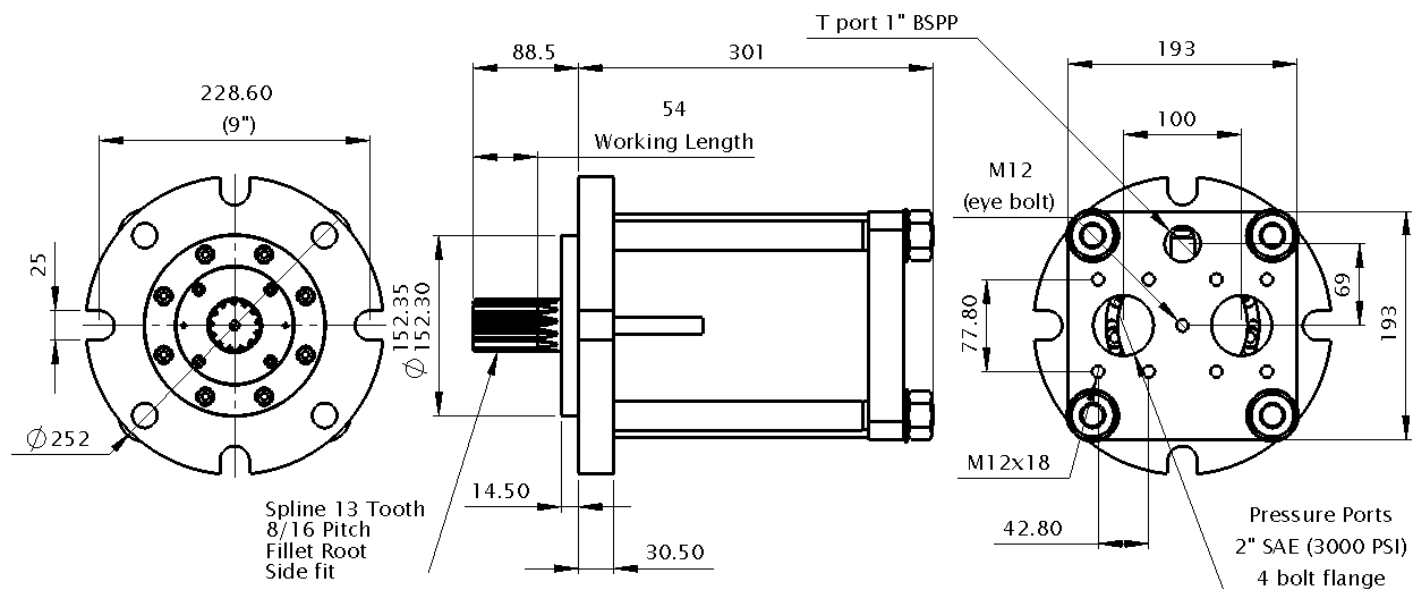
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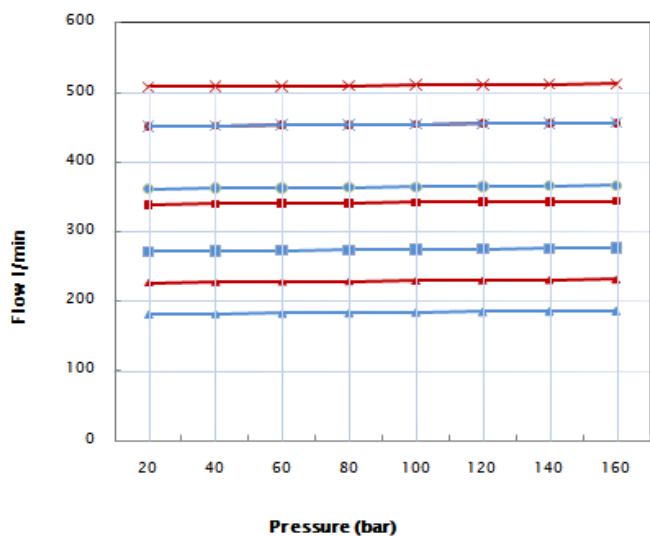
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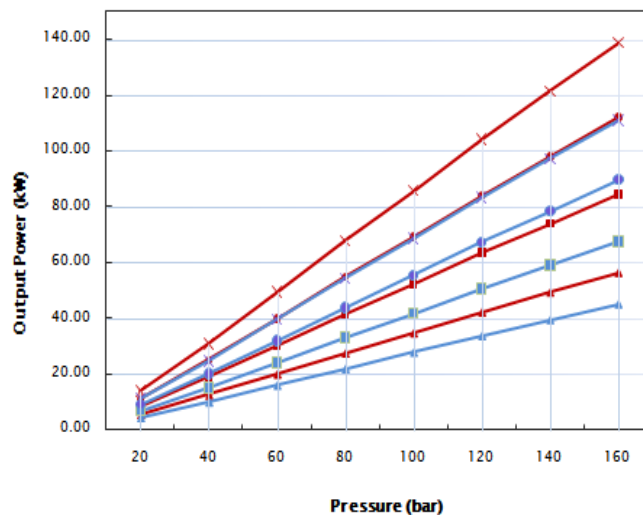
MB160-180W & MB160-225W



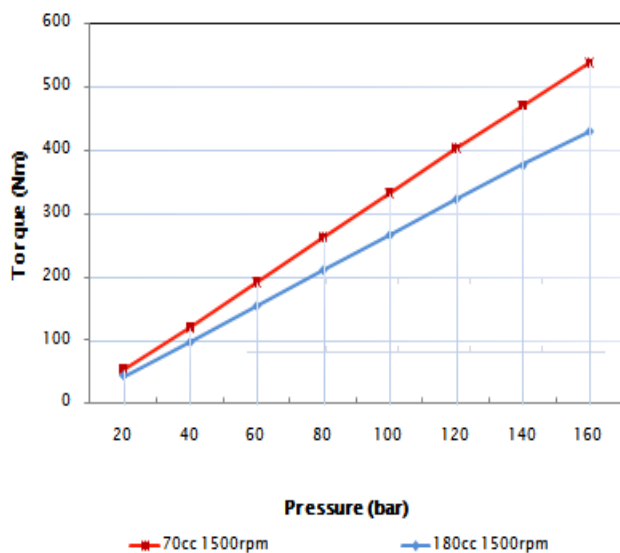
### Input Flow



### Output Power kW



### Output Torque



### Overall Efficiency

