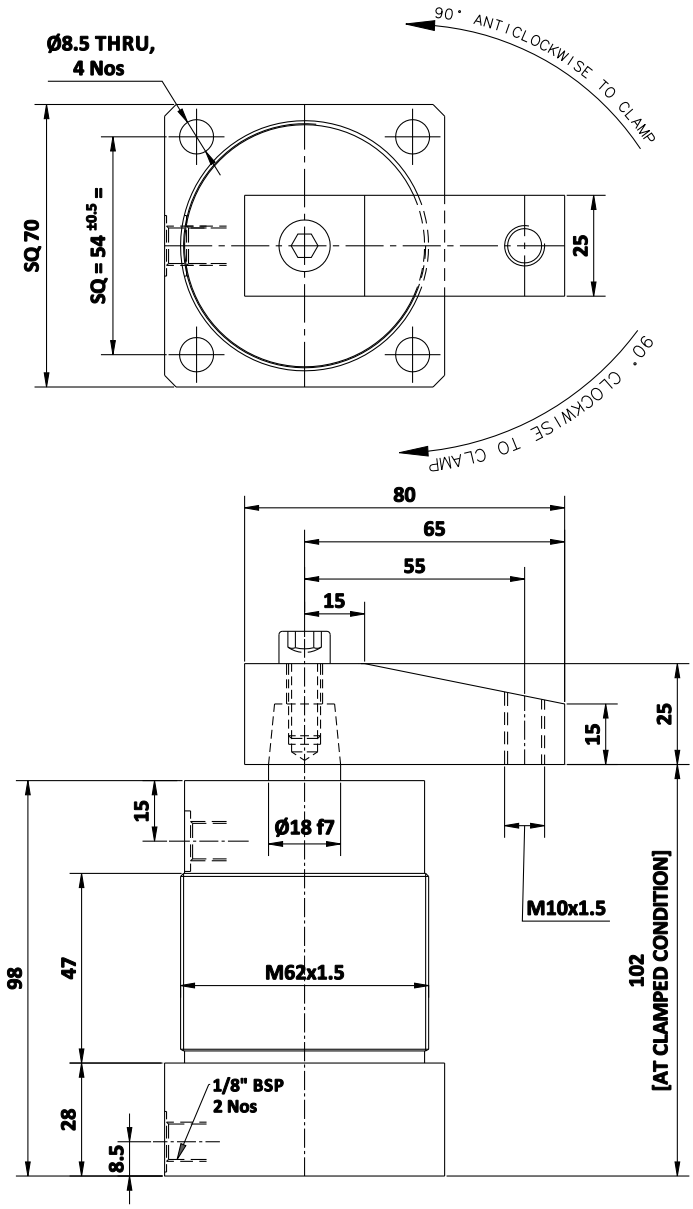
Pneumatic Swing Cylinder

Double Acting

Preac
FLUID POWER



Description

- These cylinders are "Pull-Type" cylinders where the piston rotates by 90° (in CW or CCW direction) during the swing stroke and then travels in a straight line during the clamping stroke. A solid, one piece construction ensures perfect alignment of internal components and maximum clamping rigidity.

Features

- Type : Double Acting
- Min. working pressure : 5 kg/cm²
- Max. working pressure : 15 kg/cm²

Application

- Pneumatic swing cylinders are used for light clamping when it is necessary to keep the clamping area clear for unrestricted loading and unloading of work pieces.

Important Notes

- To avoid the damage of swing mechanism hold the clamping strap in a vice while tightening and loosening the clamping strap nut.
- Clamp the job in the straight clamp stroke only.
- Do not exceed standard strap length.
- To prevent damage to the swing mechanism due to impact, use flow control valves at both ports.
- For seal kits, add prefix SK to part no.

- **All dimensions are in mm**
- **Overall dimensional tolerance ±0.5**

SPECIFICATIONS							
SIZE	BORE (mm)	ROD (mm)	CLAMP STROKE (mm)	TOTAL STROKE (mm)	CLAMP FORCE at 5 kg/cm² (kgf)	STANDARD PART No's (Without Clamping Strap)	
						COUNTER CLOCK WISE	CLOCK WISE
5	50	18	14	14	85	4180-526	4180-529

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Data Sheet For Calculation

(For Clamping Devices)

Preac FLUID POWER

CYLINDER FORCE/ THRUST FORCE/ PULL FORCE/ CLAMPING FORCE
Oil Pressure (bar) x Plunger Effective Area (cm^2) = Force (kgf)

CYLINDER OIL CAPACITY
Effective Area (cm^2) x Stroke (cm) = Cylinder oil capacity (cm^3)

DESIGN FOR CALCULATING CLAMPING FORCE

$$\text{Rated Clamping Force (kgf)} = \frac{\text{Spindle H.P x Machine Efficiency x Factor of Safety x 75 x 60}}{\text{Cutting Speed (m/min)}}$$

Where: Machine Efficiency = 0.7 to 0.95
Factor of Safety = 1.5 to 2

Materials	Coefficient of Friction	
	Dry	Lubricated
CI on CI	0.3	0.2
CI on Steel	0.2	0.1
Steel on Steel	0.15	0.12

OR

$$\text{Rated Clamping Force (kgf)} = \frac{\text{Spindle Power (kW) x Machine Efficiency x Factor of Safety x 60}}{\text{Cutting Speed (m/min) x 9.81 x 1000}}$$

The minimum clamping force of all clamps should be equal to the rated clamping force of machine.

DESIGN FOR CALCULATING CLAMPING FORCE
Stud bolt size used in the existing fixtures with manual clamping is the best clue for selecting the clamping force. Material strength & grade of bolts is assumed to be class 8.8

Std size	M6	M8	M10	M12	M16	M20
Clamping Force in Kgf	402	732	1160	1686	3140	4900

HINT FOR SELECTION
- Selected cylinder capacity should exceed the force required to do job by 20% to 25%. This ensures longer cycle life without overloading & accommodates the friction loss.

GENERAL POINTS
- Check to see that working fluids are compatible to the cylinder/ element seals
- When ordering Seal Kits for any of the elements in this catalogue, add Prefix 'SK' to the respective model code of the element.

NOTE
- Any Special requirement of cylinder & clamping devices to suit customer's requirement will also be met. Technical specifications mentioned may be subjected to alteration due to continual improvements & development.

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