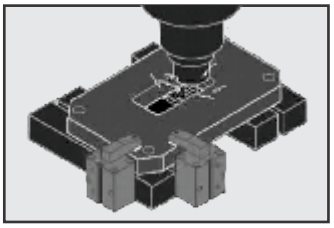
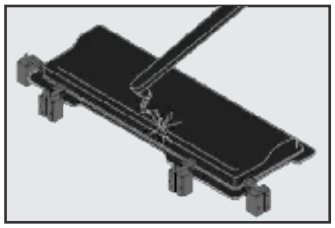
PNEUMATIC AND HYDRAULIC WORKHOLDERS

INTRODUCTION

Power clamping whether Pneumatic or Hydraulic is most widely used in the form of **swing clamps**, which allow unobstructed part fixturing and placement. The plunger rod and the attached clamping arm swings in either a clockwise or counter clockwise direction, then travels down an additional distance to clamp down the fixtured part. Upon release of clamping pressure, the clamping arm travels up to unclamp and swings back in the opposite direction to allow for part removal and new part placement.



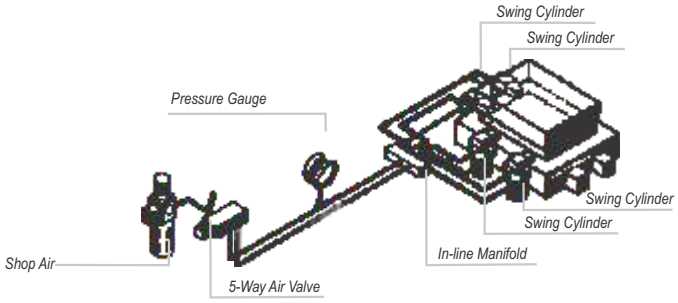


Different types of Pneumatic and Hydraulic Swing Clamps offered by us are illustrated in the following pages of this catalogue.

1. **PNEUMATIC SWING CLAMPS** are used where low clamping forces are needed such as in drilling, tapping or light machining operations of aluminum components. Also widely used in welding fixtures. These clamps are most economical to use as can be operated on in-house air line.

'TOOLFAST' Pneumatic swing clamps are double acting swing cylinders available in different models, shapes and mountings as illustrated in following pages.

Schematic Diagram of Air Line



2. **HYDRAULIC SWING CLAMPS** are used where medium to high clamping force is required such as in machining of components on conventional or CNC Machines.

Selection of type of Hydraulic Cylinder

Single Acting spring return Cylinders are chosen when there are few system restrictions and there are not many cylinders (less than 5 cylinders) retracting simultaneously. These are widely used on conventional machines where a hydraulic power unit is not available on the machine. Single Acting, Spring return cylinders can also be used with hydropneumatic Intensifier.

Double Acting Cylinders are normally used with Hydraulic power units or with Air drive hydraulic pump which gives required hydraulic pressure at its outlet by using in-house air at its input. Double acting Cylinders are used when timing sequences are critical. They are advantageous, as they are less sensitive to system back pressures resulting from long tube lengths or numerous cylinders being retracted at the same time. Unclamp cycle can also be controlled in double acting cylinders.

Selection of Cylinder in terms of Clamping force : Suitable size of Cylinder should be selected depending upon the clamping force required to clamp the work piece. For determination of clamping force required, apart from clamping force calculation, the best clue can be had from the bolt size being used in the mechanical clamp of the existing fixture.

'TOOLFAST' Hydraulic Clamps are available in single as well as double acting cylinders in different models, shapes and mountings as illustrated in following pages.

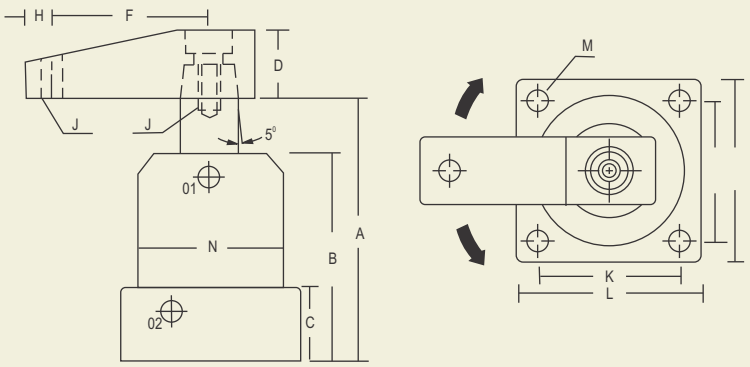
2D / 3D CAD FILES AVAILABLE ON REQUEST

PSF SERIES : PNEUMATIC LOWER FLANGE VERSION SWING CLAMP - DOUBLE ACTING, 4-7 KG/CM^2 INLET AIR PRESSURE

Widely used for low clamping forces such as in light machining of aluminium parts or in welding fixtures.
Stainless steel piston rod, black aluminium body with wear resistant anodised finish. Flange version has flanged lower face for easy mounting

Features

- ❑ **Ideal for use on fixtures for mass production on all types of conventional or CNC Machine tools.**
- ❑ **Operates on in-house air line.**
- ❑ **Arm travels vertically straight up and then swings 90 degree for easy job loading / unloading from above.**



MODEL	Unclamp Position A	B	C	D □	F	H	O1,O2 INLETS	J	K	L	MØ	NØ	Piston RodØ	Piston Ø	Stroke During Swing	Straight Clamping Stroke	Total Stroke	Clamping Force at 5kg/cm2	Air Consumption (cc.)		N. W. Kgs.
																			Extend	Retract	
PSF 25 R/L	95.5	66.5	23	16	30	8	M 5	M6x1	30	40	4.5	35	14	25	12	14	26	16kg	12.75	8.76	0.40
PSF 32 R/L	102.5	71	23	19	50	9	1/8 BSP	M8x1.25	44	54	6.5	50	16	32	12	14	26	30kg	20.90	15.67	0.70
PSF 40 R/L	106	75	26	19	50	9	1/8 BSP	M8x1.25	48	58	6.5	55	16	40	12	15	27	50kg	33.91	28.49	0.85
PSF 50 R/L	113	80	26	25	70	10	1/8 BSP	M10x1.5	55	68	8.5	60	20	50	14	15	29	85kg	56.91	47.80	1.30
PSF 63 R/L	119	86	30	25	70	10	1/8 BSP	M10x1.5	64	80	8.5	75	20	63	14	15	29	140kg	90.35	81.25	1.80

R/L Signifies right hand swing / Left hand swing. Please indicate while ordering. Standard swing angle is 90°. Other Swing angles are also available on request.

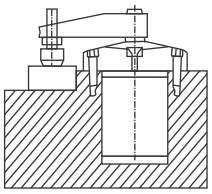
In right hand swing, when seen from above while clamping down, the arm first swings 90 degrees clockwise and then clamps down whereas in left hand swing it rotates 90 degrees counterclockwise and then clamps down.

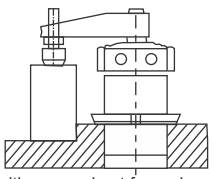
NPSU SERIES : PNEUMATIC UPPER FLANGE VERSION THREADED BODY SWING CLAMP - DOUBLE ACTING, 4-7KG/CM2 INLET AIR PRESSURE

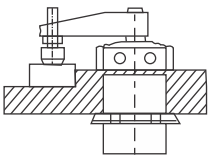
Features

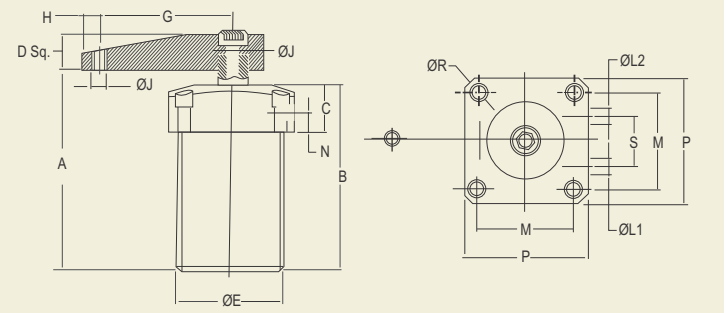
- ❑ Easiest mounting preparation in the swing clamp line.
- ❑ Material Aluminum Alloy Body
- ❑ Swivel Angle 90° ± 2°

MOUNTING EXAMPLES


with 4 cap screws from above


with grooved nut from above


with grooved nut from below



MODEL	A Unclamp Position	B	C	D □	E*	G	H	J	Inlets L1 & L2	M	N	P	R	S	Bore Dia.	Swing Stroke	Clamping Stroke	Force in Kgs at (5 kg/cm^2)	N. W. Kgs.
NPSU-25-R/L	119	87	25	16	M40 x 1.5	50	6	M6	M5	37	11.5	50	5.5	23	25	13	14	16	0.70
NPSU-32-R/L	135	98	25	19	M50 x 1.5	60	9	M8	G1/8	45	10.5	60	6.5	23	32	16	14	30	0.80
NPSU-40-R/L	135	98	25	19	M55 x 1.5	70	9	M8	G1/8	50	10.5	65	6.5	26	40	15	15	50	0.85
NPSU-50-R/L	143	105	25	25	M65 x 1.5	80	10	M12	G1/8	58	10.5	75	8.5	32	50	17	15	85	1.00
NPSU-63-R/L	144	106	25	25	M80 x 1.5	90	10	M12	G1/8	70	10.5	90	8.5	35	63	15	15	140	1.20

* GROOVED NUT SUPPLIED AS STANDARD.

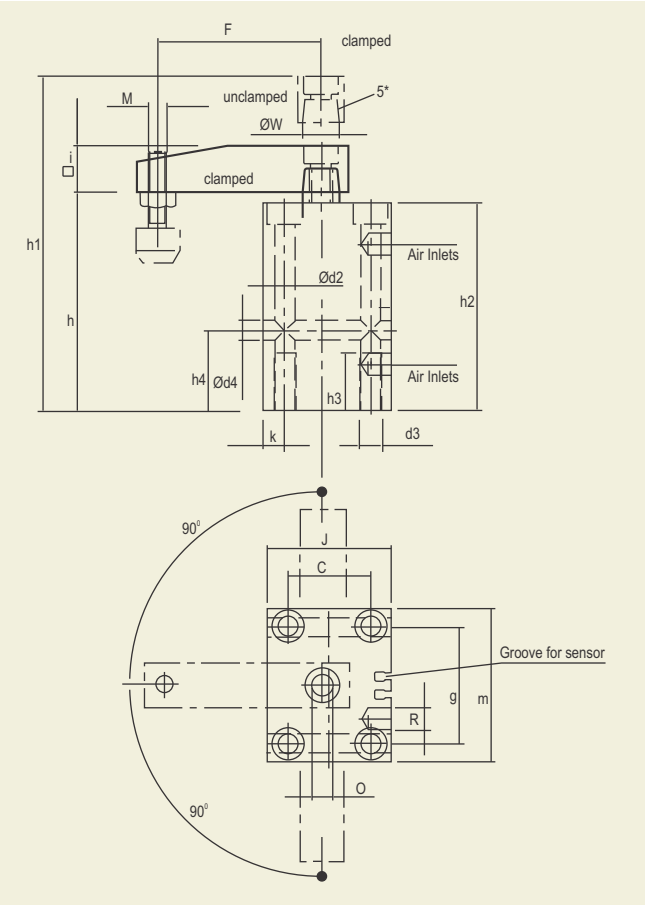
PSB SERIES : PNEUMATIC, SWING CLAMP, BLOCK VERSION - DOUBLE ACTING, 4-7 KG/CM^2 INLET AIR PRESSURE

Widely used for low clamping forces such as in light machining of aluminium parts or in welding fixtures. Cylinder body is made of light weight aluminium alloy having stainless steel piston rod.

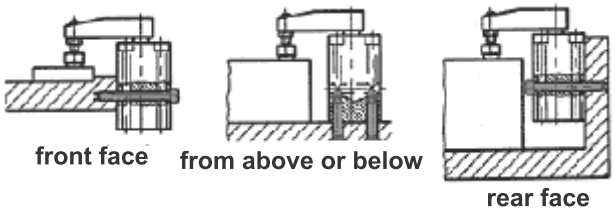
Block version can be mounted directly to side of fixture plate on front or rear faces using through holes or from above with long socket screws or from below using tapped holes in base as shown below. It has magnetic piston to signal end positions. End-position sensors are also available. Details can be given on request.

Features

- ❑ **Ideal for use on fixtures for mass production on all types of conventional or CNC Machine tools.**
- ❑ **Operates on in-house air line.**
- ❑ **Arm travels vertically straight up and then swings 90 degree for easy job loading / unloading from above.**



Examples of Mountings



Model	C	dia. d4	dia. d2	d3	F	g	Clamp Position h	h1	h2	h3	h4	i □
PSB 25 R/L	20	8.5	6.5	M 8	50	40	82	125	78	20	32	16
PSB 32 R/L	30	8.5	6.5	M 8	60	45	95	145	90	20	43	19
PSB 40 R/L	37	8.5	8.5	M 10	70	52	95	145	90	25	40	19
PSB 50 R/L	46	10.5	8.5	M 10	80	66	105	162	100	30	45	25
PSB 63 R/L	60	10.5	10.5	M 12	90	80	105	162	100	30	36	25

Model	k	J	M	m	o	Air Inlets R 2 Nos.	w dia	Piston dia	Stroke During Swing	Straight Clamping Stroke	Total Stroke	Clamping Force at 5kg/cm2	N. W. Kgs
PSB 25 R/L	7.5	35	M 6	55	M 8	M 5	14	25	13	14	27	16 kg	0.70
PSB 32 R/L	7.5	45	M 8	60	M 8	1/8 BSP	16	32	16	14	30	30 kg	0.90
PSB 40 R/L	9	55	M 8	70	M 8	1/8 BSP	16	40	15	15	30	50 kg	1.10
PSB 50 R/L	9.5	65	M12	85	M 10	1/8 BSP	20	50	17	15	32	85 kg	1.20
PSB 63 R/L	10	80	M 12	100	M 10	1/8 BSP	20	63	15	15	30	140 kg	1.40

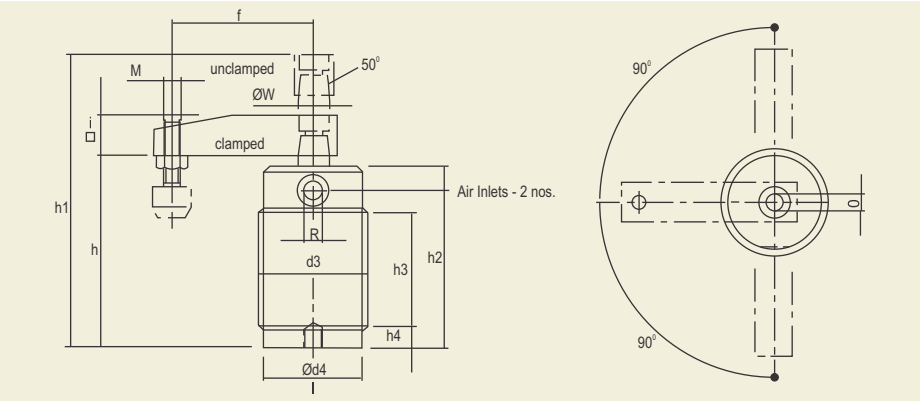
R/L signifies right hand swing / Left hand swing. Please indicate while ordering.
Standard Swing angle is 90°. Other Swing angles are also available on request.

In right hand swing, when seen from above while clamping down, the arm first swings 90 degrees clockwise and then clamps down whereas in left hand swing it rotates 90 degrees counterclockwise and then clamps down.

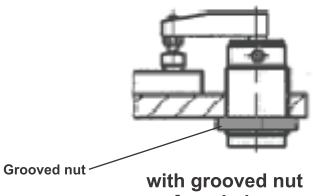
PST SERIES : PNEUMATIC, THREADED VERSION, SWING CLAMP, DOUBLE ACTING, 4-7 KG/CM^2 INLET AIR PRESSURE

Widely used for low clamping forces such as in light machining of aluminum parts or in welding fixtures.

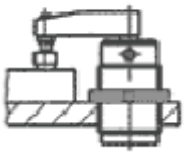
Screw-in version can be mounted inside a hole provided in the fixture plate by locking the cylinder at desired height with the help of grooved nuts supplied as standard accessory, as shown below. These cylinders are also light weight aluminium cylinders having stainless steel piston rod.



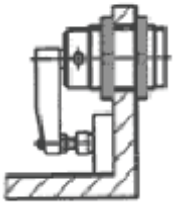
Examples of Mountings



with grooved nut from below



with grooved nut from above



with two grooved nuts

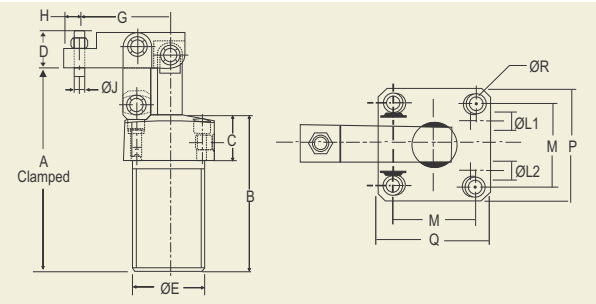
MODEL	d3	dia. d4	f	Clamp Position h	h1	h2	h3	h4	i □	M	O	Air Inlets R 2 nos.	dia. w	Piston dia	Stroke During Swing	Straight Clamping Stroke	Total Stroke	Clamping Force at 5kg/cm2	N. W. Kgs
PST 25 R/L	M40x1.5	38	30	74	118	70	35	10	16	M6	M8	M5	14	25	14	14	28	16 kg	0.80
PST 32 R/L	M50x1.5	48	50	83	132	79	40	15	19	M8	M8	1/8 BSP	16	32	16	14	30	30 kg	1.10
PST 40 R/L	M55x1.5	53	50	87	135	83	45	15	19	M8	M8	1/8 BSP	16	40	15	14	29	50 kg	1.25
PST 50 R/L	M65x1.5	62	70	92	145	87	50	15	25	M12	M10	1/8 BSP	20	50	14	14	28	85 kg	1.70
PST 63 R/L	M80x1.5	77	70	97	152	92	56	15	25	M12	M10	1/8 BSP	20	63	15	15	30	140 kg	2.20

R/L signifies right hand swing / Left hand swing. Please indicate while ordering.
Standard Swing angle is 90°. Other Swing angles are also available on request.
2 nos. Grooved nuts are supplied as standard accessory with above clamps

In right hand swing, when seen from above while clamping down, the arm first swings 90 degrees clockwise and then clamps down whereas in left hand swing it rotates 90 degrees counterclockwise and then clamps down.

PLCU SERIES: PNEUMATIC, UPPER FLANGED VERSION, THREADED BODY LEVER CLAMPS, DOUBLE ACTING, 4-7KG/CM^2 INLET AIR PRESSURE

❑ Unlike swing clamps, in link clamps Arm swings straight up to declamp and down to clamp.

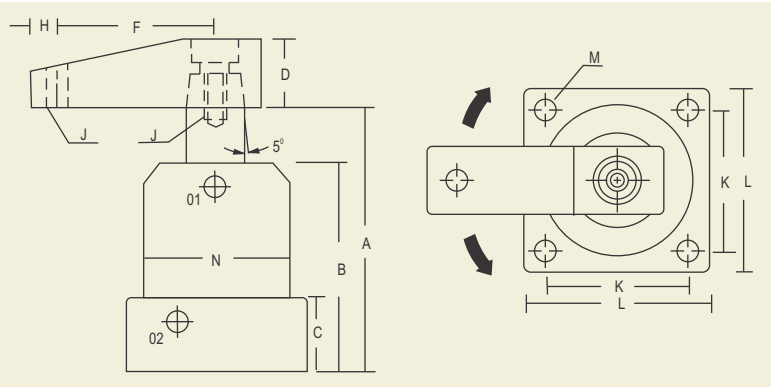


MODEL	A clamped Position	B	C	D □	E*	G	H	J	INLETS L1 & L2	M	P	Q	R	Bore Dia.	Stroke	Force in Kgs. at (7 kg/cm^2)	N. W. Kgs.
PLCU-25	111.5	86.5	25	17	M40 x 1.5	41	7	M6x1.0	M5	37	50	60	5.5	25	22	34	0.60
PLCU-32	129.5	97.5	25	20	M50 x 1.5	52	8	M8x1.25	G1/8	45	60	70	6.5	32	28	56	1.00
PLCU-40	132.5	97.5	25	25	M55 x 1.5	56	10	M8x1.25	G1/8	50	65	75	6.5	40	30	88	1.20
PLCU-50	144	104	25	30	M65 x 1.5	63.5	14	M12x1.75	G1/8	58	75	88	8.5	50	30	137	2.00
PLCU-63	149	105	25	30	M80 x 1.5	74	14	M12x1.75	G1/8	70	90	108	8.5	63	30	218	2.70

*** GROOVED NUT SUPPLIED AS STANDARD.**

HSF SERIES : LOW OIL PRESSURE, HYDRAULIC, FLANGE VERSION SWING CLAMP - DOUBLE ACTING, 20-70 kg/cm^2 INLET OIL PRESSURE.

These are light duty hydraulic swing clamps for medium clamping force having flanged lower face for easy mounting.



Model	Unclamp Position A	B	C	D	F	H	O1, O2	J	K	L	MØ	NØ	Piston Rod Ø	Piston Ø	Stroke During Swing	Straight Clamping Stroke	Total Stroke	Clamping Force at 25kg/cm2	Max. Oil Flow Rate (cm2/s)	N. W. Kgs.
HSF 25 R/L	100.5	70	23	25	50	10	M5	M10 x 1.5	40	50	6.5	45	18	25	12	14	26	59 kg	4.7	0.80
HSF 32 R/L	111.0	76	25	25	55	10	1/8 BSP	M10 x 1.5	44	55	6.5	50	20	32	14	15	29	125 kg	11.8	1.00
HSF 40 R/L	113.6	80	27	25	55	10	1/8 BSP	M10 x 1.5	48	62	8.5	54	20	40	14	15	29	200 kg	22.6	1.10
HSF 50 R/L	114.5	80	27	25	55	10	1/8 BSP	M10 x 1.5	57	74	8.5	65	20	50	14	15	29	400 kg	39.6	1.40
HSF 63 R/L	118.0	85	32	32	75	12	1/8 BSP	M12 x 1.75	70	88	10.5	80	25	63	14	15	29	600 kg	63.0	2.30

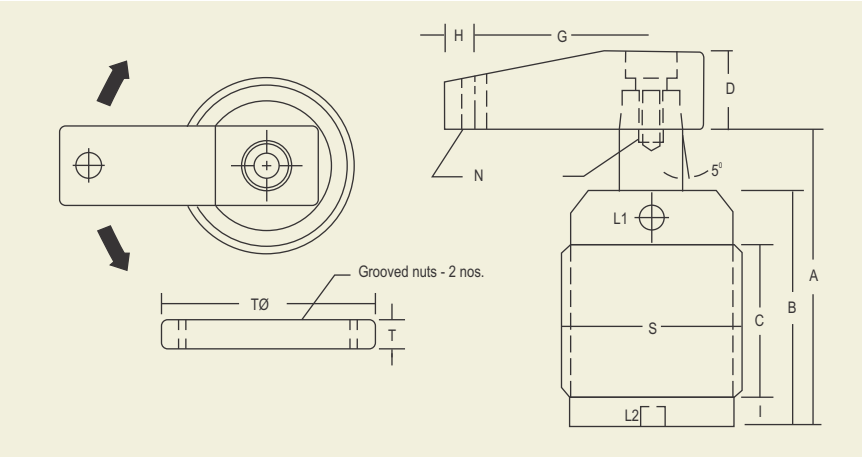
R/L Signifies right hand swing / Left hand swing. Please indicate while ordering. Standard swing angle is 90°. Other Swing angles are also available on request.

In right hand swing, when seen from above while clamping down, the arm first swings 90 degrees clockwise and then clamps down whereas in left hand swing it rotates 90 degrees counterclockwise and then clamps down.

Also available in manifold type mounting.

HST SERIES : LOW OIL PRESSURE, HYDRAULIC, THREADED VERSION SWING CLAMP - DOUBLE ACTING, 20-70 kg/cm^2 INLET OIL PRESSURE.

These are light duty Hydraulic Swing Clamps for medium clamping force having threading on outside of cylinder as in PST Series.

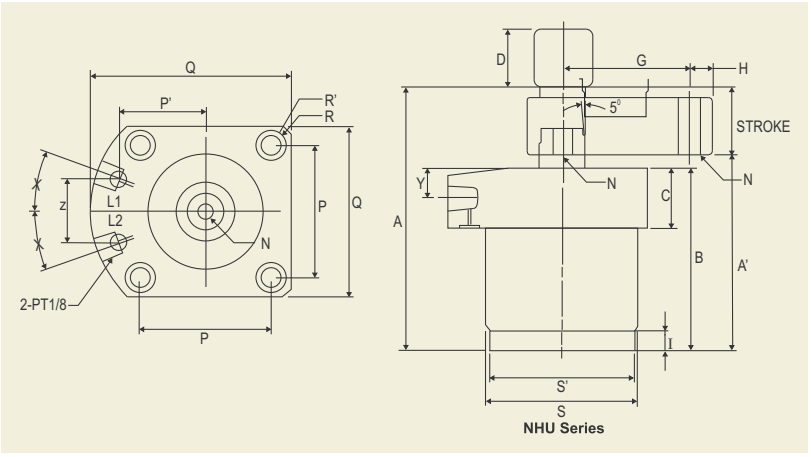


Model	Unclamp Position A	B	C	D	G	H	L1, L2	N	S	T (x 2 pieces)	TØ	Piston Rod Ø	Piston Ø	Stroke During Swing	Straight Clamping Stroke	Total Stroke	Clamping Force at 25kg/cm2	Max. Oil Flow Rate (cm2/s)	N. W. Kgs.
HST 25 R/L	100.5	70	35	25	50	10	M5	M10 x 1.5	M45 x 1.5	10	65	18	25	12	14	26	59 kg	4.7	0.80
HST 32 R/L	111.0	76	45	25	55	10	1/8 BSP	M10 x 1.5	M50 x 1.5	11	70	20	32	14	15	29	125 kg	11.8	1.00
HST 40 R/L	113.6	80	45	25	55	10	1/8 BSP	M10 x 1.5	M55 x 1.5	11	75	20	40	14	15	29	200 kg	22.6	1.25
HST 50 R/L	114.5	80	45	25	55	10	1/8 BSP	M10 x 1.5	M65 x 1.5	12	85	20	50	14	15	29	400 kg	39.6	1.70

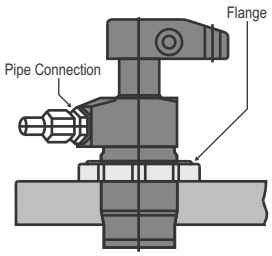
R/L Signifies right hand swing / Left hand swing. Please indicate while ordering. Standard swing angle is 90°. Other Swing angles are also available on request.
2 nos. grooved nuts supplied as standard accessory.

In right hand swing, when seen from above while clamping down, the arm first swings 90 degrees clockwise and then clamps down whereas in left hand swing it rotates 90 degrees counterclockwise and then clamps down.

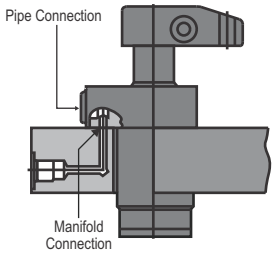
NHU SERIES : LOW OIL PRESSURE, HYDRAULIC, UPPER FLANGE PIPE MOUNTING / MANIFOLD MOUNTING SWING CLAMP - DOUBLE ACTING, 20-70 Kg/cm^2 INLET OIL PRESSURE



NHU Series



Threaded



Manifold Mount

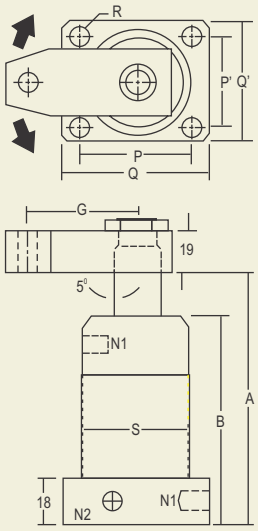
	NHU-32 R/L	NHU-40 R/L	NHU-50 R/L	NHU-63 R/L
Normal Pressure	20-45 kg/cm^2			
Swivel Stroke	14	14	14	14
Clamping Stoke (mm)	15	15	15	15
Bore Diameter Ø (mm)	32	40	50	63
Piston Rod Ø (mm)	20	20	20	25
Clamp Force (25 kg/cm^2)	125kg	200kg	400kg	600kg
A (mm) *unclamp	111	114	114.5	118
A' (mm) *clamp	82	85	85.5	89
B (mm)	76	80	80	85
C (mm)	25	27	27	32
D (mm)	☐25.4	☐25.4	☐25.4	☐32
G (mm)	55	55	55	75
H (mm)	10	10	10	11
I (mm)	9	9	9	9
L1 (clamp)/ L2 (unclamp)	1/8 PT	1/8 PT	1/8 PT	1/8 PT
Manifold Mounting O-ring	P7	P7	P7	P7
N (mm)	M10 x 1.5	M10 x 1.5	M10 x 1.5	M12 x 1.75
P/P' (mm)	44 / 30	48 / 31.4	57 / 37.6	70 / 46
Q/Q' (mm)	55 / 68.5	62 / 71.5	74 / 87	88 / 105.5
R/R' (mm)	Ø6.5 /Ø11	Ø6.5 /Ø11	Ø8.5 /Ø14	Ø8.5 /Ø14
S (mm)	M50 x 1.5	M55 x 1.5	M65 x 1.5	M80 x 1.5
S' (mm)	49	53	63	77
X	22.5°	22.5°	20°	22.5°
Y (mm)	12.5	14	14	19
Z (mm)	24.9	26	27.4	38
Net Weight Kgs	1.00	1.10	1.30	2.30

R/L Signifies right hand swing / Left hand swing. Please indicate while ordering. Standard swing angle is 90°. Other Swing angles are also available on request.

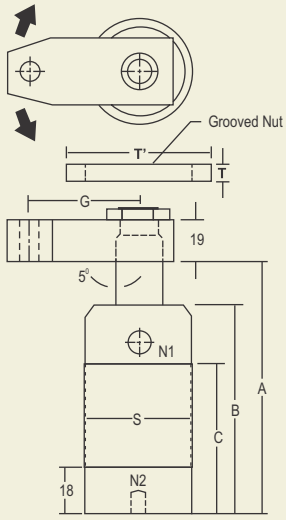
NFS, NFT SERIES : HIGH OIL PRESSURE, HYDRAULIC SWING CLAMPS, INLET OIL PRESSURE 50-350kg/cm²

These are heavy duty Hydraulic Swing Clamps having cylinder made of medium Carbon steel and are used where high clamping force is required.

Available in different types as given below:
NFS Series : Flange Type
NFT Series : Threaded Version



NFS



NFT

FLANGE TYPE	NFS-25A	NFS-32A	NFS-40A	NFS-25B	NFS-32B	NFS-40B
THREADED TYPE	NFT-25A	NFT-32A	NFT-40A	NFT-25B	NFT-32B	NFT-40B
MAX. OPERATING RESSURE	350kg/cm²					
NORMAL OPERATING PRESSURE	50-210kg/cm²					
CYLINDER OPERATION	SINGLE - ACTING			DOUBLE-ACTING		
STROKE DURING SWING (mm)	12			15		
STRAIGHT CLAMPING STROKE (mm)	11			18		
SWIVEL ANGLE	90°(60°45°0°)±2°					
PISTON-Ø (mm)	25	32	40	25	32	40
PISTON ROD-Ø (mm)	18	22	25	18	22	25
THEORETICAL CLAMPING FORCE at 210kg/cm²	495kg	890kg	1600kg	495kg	890kg	1600kg
A (UNCLAMP POSITION) (mm)	127	127	127	134	134	134
B (mm)	98	97	98	98	97	98
C (mm)	66	70	72	66	70	72
G (mm)	45	50	50	45	50	50
K (mm)	9	10	12	9	10	12
N1 (clamp) (mm)	1/8 BSP	1/8 BSP	1/8 BSP	1/8 BSP	1/8 BSP	1/8 BSP
N2 (unclamp) (mm)				1/8 BSP	1/8 BSP	1/8 BSP
P (mm)	50	54	66	50	54	66
P' (mm)	30	34	40	30	34	40
Q (mm)	64	68	84	64	68	84
Q' (mm)	46	54	64	46	54	64
R (mm)	6.5Ø	8.5Ø	8.5Ø	6.5Ø	8.5Ø	8.5Ø
S (mm)	45x1.5	50x1.5	60x1.5	45x1.5	50x1.5	60x1.5
T (x2 pcs) (mm)	10	11	11	10	11	11
T' (mm)	65Ø	70Ø	80Ø	65Ø	70Ø	80Ø
N.W. Kgs NFS	1.60	1.80	2.80.	1.40	1.70	2.70
NFT	1.80	2.10	3.20	1.80	2.10	3.20

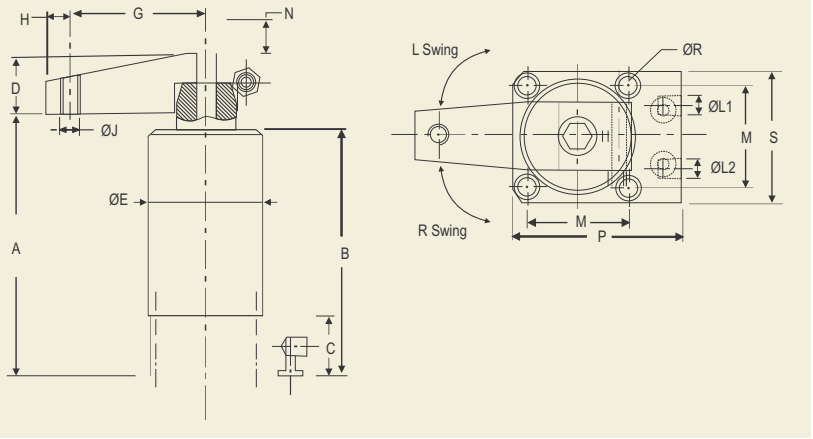
Please indicate while ordering whether required Right Hand Swing or Left Hand Swing (R/L). Standard swing angle is 90°. Other swing angles (60°, 45°, 0°) are also available on request. 2 nos. grooved nuts are supplied as standard accessory with NFT series.

In right hand swing, when seen from above while clamping down, the arm first swings 90 degrees clockwise and then clamps down whereas in left hand swing it rotates 90 degrees counterclockwise and then clamps down.

030 SERIES: HIGH OIL PRESSURE HYDRAULIC, BOTTOM FLANGE VERSION SWING CLAMP, DOUBLE ACTING, INLET OIL PRESSURE 35-350 kg/cm^2

Features

- ❑ Flexible design allows for manifold or threaded port connection in one cylinder body.
- ❑ Material Medium Carbon steel Body
- ❑ Swivel Angle 90° ± 2°



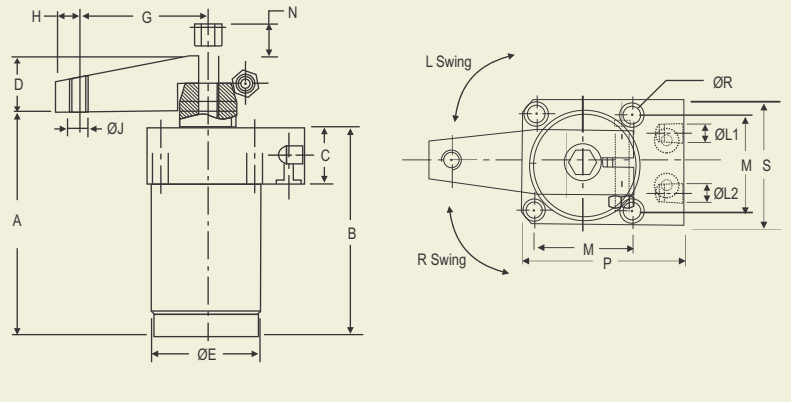
MODEL	A Unclamp Position	B	C	D □	E	G	H	J	INLETS L1 & L2	M	N	P	R	S	Bore Dia.	Swing Stroke	Clamping Stroke	Clamping Force in Kgs (210 kg/cm^2)	N. W. Kgs.
030 - 92 - R/L	126	102	25	25	47.8	45	11	M10	G1/4	42	14.5	70.1	6.9	54	32	10	12	550	2.2
030 - 202 - R/L	143	110	25	30	63.8	55	15	M12	G1/4	55	16	85.1	8.5	70	44	14	14	1100	4.0
030 - 352 - R/L	155	115	25	40	80	68	15	M16	G1/4	70	24	100.1	10.8	89	55	14	16	2100	5.95

ABOVE CLAMPS ALSO AVAILABLE IN SINGLE ACTING CYLINDERS

050 SERIES: HYDRAULIC HIGH OIL PRESSURE, UPPER FLANGE VERSION SWING CLAMP, DOUBLE ACTING, INLET OIL PRESSURE 35-350 kg/cm^2

Features

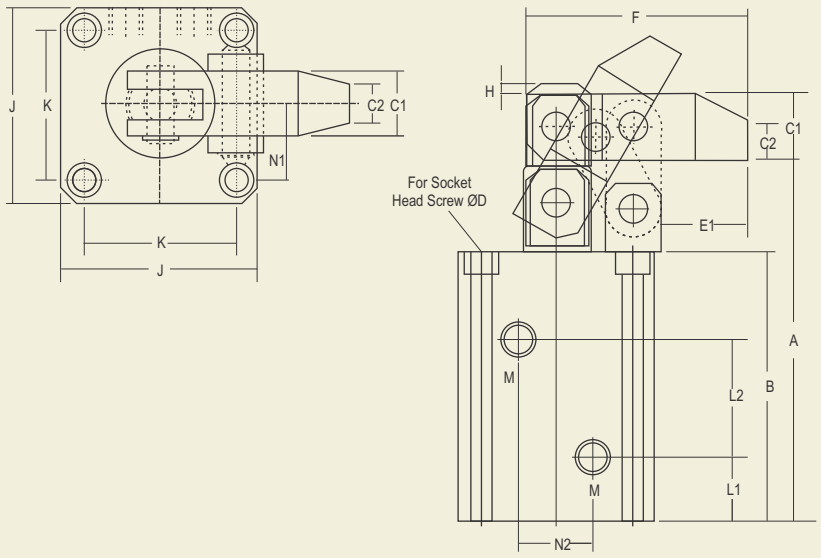
- ❑ Flexible design allows for manifold or threaded port connection in one cylinder body.
- ❑ Material : Medium Carbon steel Body
- ❑ Swivel Angle : 90° ± 2°



MODEL	A Unclamp Position	B	C	D	E	G	H	J	INLETS L1 & L2	M	N	P	R	S	Bore Dia.	Swing Stroke	Clamping Stroke	Clamping Force in Kgs at(210 kg/cm^2)	N. W. Kgs.
050 - 92 - R/L	118	93.5	25.4	25	47.8	45	11	M10	G1/4	42	14.5	70.1	6.9	54	32	10	12	550	2.2
050 - 202-R/L	135	104.4	25.4	30	63.0	55	15	M12	G1/4	55	16	85.1	8.5	70	44	14	14	1100	4.0
050 - 352-R/L	147	113.8	25.4	40	77.0	68	15	M16	G1/4	70	24	100.1	10.8	89	55	14	16	2100	5.95

ABOVE CLAMPS ALSO AVAILABLE IN SINGLE ACTING CYLINDERS

HLC SERIES : DOUBLE ACTING, 5 - 50 kg/cm² INLET OIL PRESSURE HYDRAULIC LEVER CLAMP



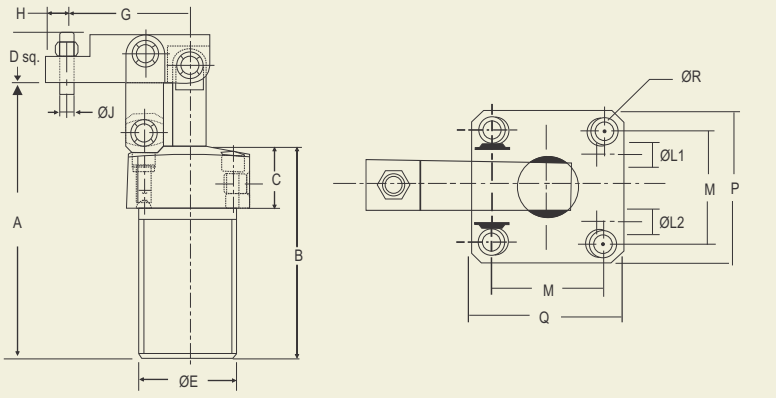
Model	Bore mm	Total Stroke mm	Max. Pressure	Operating Range of Pressure	Clamping Force at 25kg./cm²	A	B	C1	C2	E1	F	H	J	K	L1	L2	M	N1	N2	DØ	N. W. Kgs.
HLC-25	25	25	70kg./cm²	5~50kg./cm²	123Kg.	103	76	19	11	25	64	3	55	42	17	33	1/8PT	20	18	M-6	1.84
HLC-32	32	25			200Kg.	112	85	19	11	25	64	3	57	44	19	38	1/8PT	22	22	M-6	2.11
HLC-40	40	30			315Kg.	122	90	22.2	13	30	77	4	69	52	19	40	1/4PT	26	26	M-8	3.30
HLC-50	50	35			490Kg.	137	100	25.4	15	35.5	90	5	75	58	21.5	45	1/4PT	30	32	M-8	4.33

HLC SERIES ALSO AVAILABLE IN MANIFOLD TYPE MOUNTING

LHC01D SERIES: HYDRAULIC - UPPER FLANGE VERSION, THREADED BODY, DOUBLE ACTING LEVER CLAMP, 20-70 kg/cm² INLET OIL PRESSURE

Features

- ❑ Arm swings straight up to declamp and down to clamp.
- ❑ Material : S45C Body



MODEL	A clamp Position	B	C	D □	E*	G	H	J	Inlets L1 & L2	M	P	Q	R	Bore Dia.	Stroke	Force in Kgs at(25 kg/cm²)	N. W. Kgs.
LHC01D-25	111.5	86.5	25	17	M40 x 1.5	41	7	M6x1.0	1/8 PT	37	50	60	5.5	25	22	123	1.20
LHC01D-32	129	97	25	20	M50 x 1.5	52	8	M8x1.25	1/8 PT	45	60	70	6.5	32	28	200	1.80
LHC01D-40	132	97	25	25	M55 x 1.5	56	10	M8x1.25	1/8 PT	50	65	75	6.5	40	30	315	2.50
LHC01D-50	144	104	25	30	M65 x 1.5	63.5	14	M12x1.75	1/8 PT	58	75	88	8.5	50	30	490	4.00
LHC01D-63	149	105	25	30	M80 x 1.5	74	14	M12x1.75	1/8 PT	70	90	108	8.5	63	30	780	6.50

*** GROOVED NUT SUPPLIED AS STANDARD.**
ALSO AVAILABLE IN SINGLE ACTING CYLINDERS

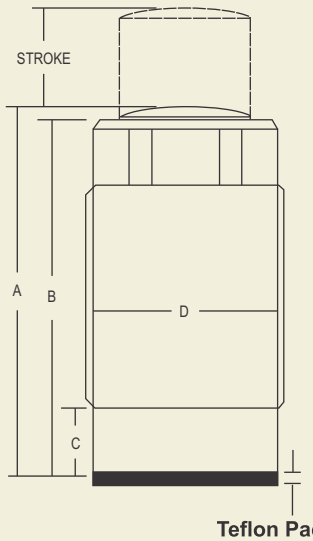
TC SERIES : THREADED BODY CYLINDER, HYDRAULIC, SINGLE ACTING, SPRING RETURN 20 - 350 kg/cm^2 INLET OIL PRESSURE

This is a most simple hydraulic cylinder whose force can be directly used within its stroke for clamping as a push clamp or as a hydraulic support at the rear of a strap clamp. The mounting method of this cylinder is shown in the mounting diagram below illustrating suggested dimensions of the cavity to be made in the fixture. Teflon packing is provided for mounting to avoid oil leakage.

Solid Plunger
A Series

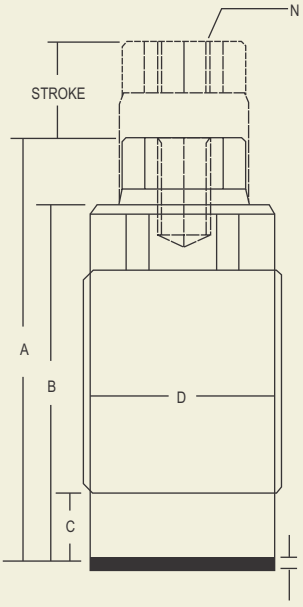
Tapped Plunger
B Series

Solid Plunger

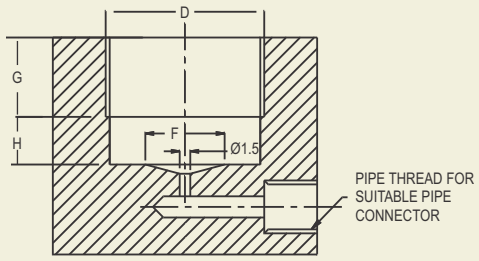


Teflon Packing
1.25 mm thick

Tapped Plunger



Teflon Packing
1.25 mm thick



Suggested Diagram of cavity to be made in the fixture for mounting of threaded body cylinders

MODEL	A	B	C	D	F	G (min)	H (max)	N	Piston dia	Stroke	Force at 200 kg/cm2	N. W. Kgs
TC 12A	38	36	7	M22x1.5	12	12	6	-	12	10	200kg	0.07
TC 16A	46.5	44.5	8	M26x1.5	16	16	7	-	16	12	400kg	0.14
TC 20A	56	54	8	M30x1.5	20	20	7	-	20	15	620kg	0.22
TC 25A	58	55	11	M38x1.5	25	20	10	-	25	16	980kg	0.37
TC 12B	45	36	7	M22x1.5	12	12	6	M6x1.0	12	10	200kg	0.08
TC 16B	52	44.5	8	M26x1.5	16	16	7	M6x1.0	16	12	400kg	0.15
TC 20B	64.5	54	8	M30x1.5	20	20	7	M8x1.25	20	15	620kg	0.24
TC 25B	67	55	11	M38x1.5	25	20	10	M8x1.25	25	16	980kg	0.40

HYDRAULIC WORK SUPPORT

Hydraulic work support is a hydraulic version of a mechanical screw Jack used as a work support element for positively supporting the workpiece to avoid deformation and minimize distortion and vibration of work piece due to cutting and clamping forces.

The Hydraulic work support automatically adjusts to the contour of the workpiece, and then locks in position. This support then adds rigidity to the fixtured component to avoid machining vibrations. They provide either unrested location points to the clamps or support to larger or thin section area of workpiece.

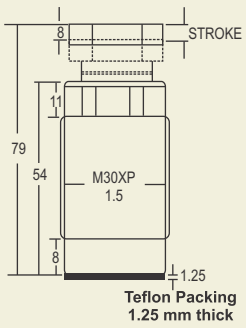
A Type : Spring advance : The spring is used to control a contact force when the knocking out rod (piston rod) extends to a highest knocking-out position and contacts the workpiece.

B Type : Hydraulic advance : When the knocking out rod is at a lowest position, it is operated by means of oil pressure and is knocked out when being filled with oil and uses a spring to control the contact force with the workpiece.

Mounting method of the threaded type Hydraulic Work supports is shown in the mounting diagram below illustrating suggested dimensions of the cavity to be made in the fixture. Teflon packing is provided for mounting to avoid oil leakage.

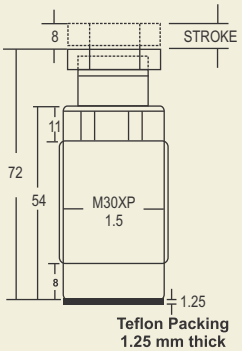
SP SERIES : Hydraulic Work Support - high inlet oil pressure 100- 350 Kg/cm^2

Spring Advance Threaded Body Type SP-16A

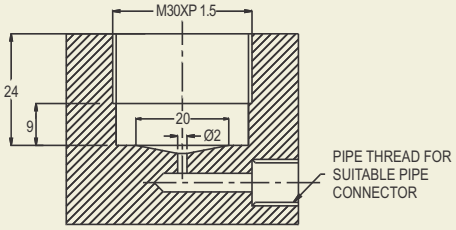


Teflon Packing
1.25 mm thick

Hydraulic Advance Threaded Body Type SP-16B



Teflon Packing
1.25 mm thick

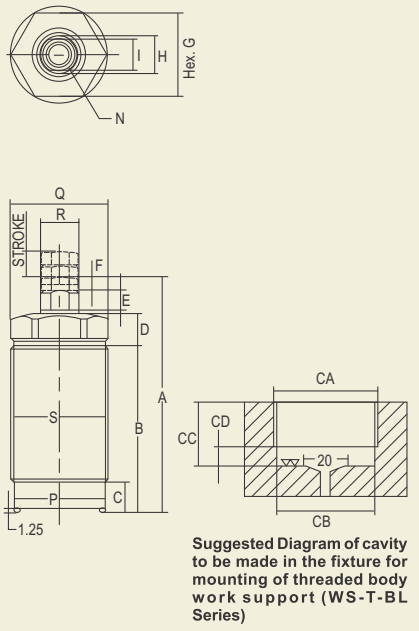


Suggested Diagram of cavity to be made in the fixture for mounting of threaded body work support

MODEL	SP-16A / SP-16B
Normal Operating Pressure	100-350kg/cm^2
Cylinder Operation	Single Acting
Piston Diameter (mm)	16
Stroke (mm)	8
Supporting Force at 200 kg/cm^2	210kg
Net Weight Kgs	0.30

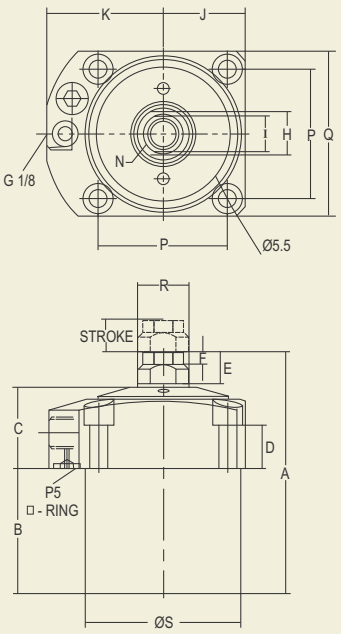
WS-BL SERIES : HYDRAULIC WORK SUPPORT - LOW OIL WORKING PRESSURE - 25-70 Kg/cm^2

Smaller three sizes are manifold mounting type threaded body and larger sizes are piping type upper flange mounting. All below models are **hydraulic advance.**



Suggested Diagram of cavity to be made in the fixture for mounting of threaded body work support (WS-T-BL Series)

WS-T-BL SERIES



WS-U-BL SERIES

Manifold Type
WS-T-BL

Upper Flange Type
WS-U-BL

Model	WS-T30BL	WS-T36BL	WS-U40BL	WS-U48BL	WS-U55BL
Supporting Force (70kg/cm2) kg	300	400	550	720	1100
Stroke	8	8	8	10	12
Max Pressure	105 kg/cm				
Normal Pressure	25-70 kg/cm				
A	73	69	67	75	85
B	51.8	50	31	39	45
C	9.5	8.4	25	25	25
D	10.2	8	14.5	13.5	11.5
E	7	7	10	10	14
F	4	4	4	4	6
G	27	32	-	-	-
H	8	11	11	12	15
I	10.5	10.5	11	11	14
J	-	-	22.5	25.5	30
K	-	-	31.5	31.5	39
N	M6X12D	M8X11D	M10X11D	M10X11D	M12X13D
P	Ø 28.2	Ø 34.2	34	40	47
Q	Ø 30	Ø 36	45	51	60
Ø R	10	13	13	14	18
S	M30X1.5	M36X1.5	Ø 40	Ø 48	Ø 55
CA	M30X1.5	M36X1.5	-	-	-
CB	28.5	34.5	-	-	-
CC	20-50	20-48	-	-	-
CD	9	8	-	-	-
N. W. Kgs.	0.25	0.35	0.6	0.8	1.4

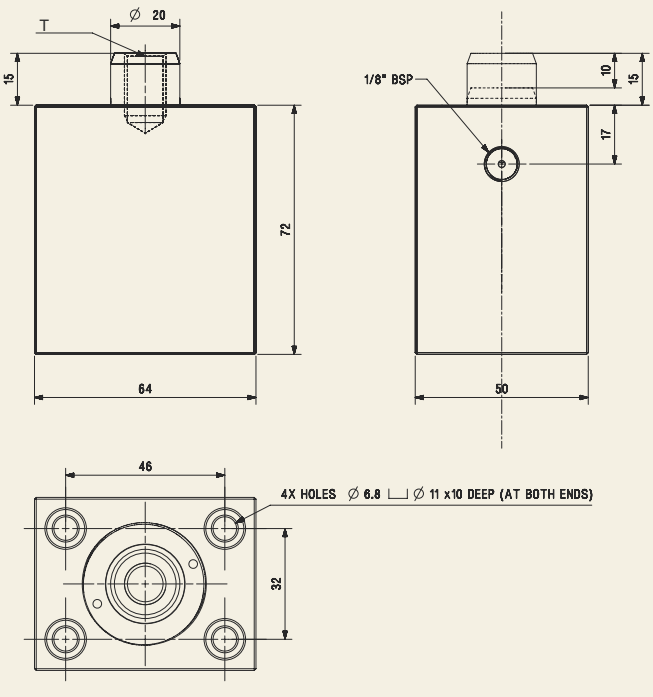
2D / 3D CAD FILES AVAILABLE ON REQUEST FOR ALL MODELS

HPNR SERIES: HYDRAULIC PULL CYLINDER, SHORT STROKE WITH NON-ROTATING PISTON ROD, INLET OIL PRESSURE 50-350 Kg/cm^2, SINGLE ACTING

NOW !! AUTOMATE YOUR WEDGE CLAMPS AND OTHER BOLT-DOWN CLAMPS ON NEW OR EXISTING FIXTURES !

- These pull cylinders can be mounted under the fixture plate to pull down clamping screws of fixture clamps instead of tightening by spanner.
- Unique feature of this cylinder is that the piston rod does not rotate while fixing or removing the clamping screw or during operation which makes it very convenient to adopt.
- Available in M-8, M-10 and M-12 threaded piston rods to suit the most popular sizes of TOOLFAST Wedge clamps and MITEEBITE Pitbull, Uniforce and ID Xpansion clamps.

AUTOMATE THESE MANUAL CLAMPS ON YOUR FIXTURES

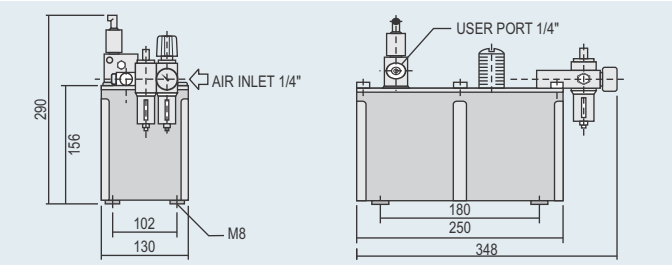


MODEL	THREAD T	PULLING FORCE AT 200Kg/cm^2 INLET OIL PRESSURE	MAX. STROKE mm	PISTON DIA mm	N. W. kgs.
HPNR-1032-8	M - 8	900 Kgs	10	32	1.55
HPNR-1032-10	M - 10	900 Kgs	10	32	1.55
HPNR-1032-12	M - 12	900 Kgs	10	32	1.55

2D & 3D CAD FILES AVAILABLE ON REQUEST

HYDROPNEUMATIC POWER UNIT

GERARDI Hydropneumatic Power Unit for hydraulic clamping devices and its bi-products is designed to meet all needs regarding the powering of hydraulic cylinders where low flow rates and high pressures are required. It is driven by air at its inlet to produce hydraulic pressure at its outlet. The special design shape of the power unit is such that a high performance system can be implemented taking up very little space. Thanks to the special design principles, the pump section adopted allows the hydropneumatic power unit to be installed in very hostile environments, such as the work area of machine tools, etc. The unique modular hydraulic flow control system allows controlling up to 6 separate users from just one power unit.



SPECIFICATION	
MAX. PERMISSIBLE INLET AIR PRESSURE:	7 bar
RECOMMENDED INLET AIR PRESSURE:	5,5 bar
OIL DELIVERIES: 1.2-1.4-2.2-2.7-4.3	Liters/min
MAX. OIL OUTLET PRESSURE AT 5 BAR AIR INLET PRESSURE:	400 bar
MAX. NO. OF USERS RECOMMENDED:	6

Outlet pressure can be regulated and set to desired pressure.

Art. 393 - Power unit with Manual control, Art. 394 - Power unit with Pneumatic control, Art. 395 - Power unit with Electrical control

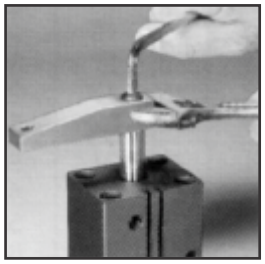
The pump in its basic version is supplied complete with teflon tank, fill plug, silencer, quick acting air connector fitting and hydraulic control box.
Very suitable for operating Single Acting Swing Clamps.

POINTS TO REMEMBER

- If user wants to change the length of the single arm of a clamping cylinder, it should be noted that the length must be less than 1.2 times the standard length in order to avoid serious slanting of the piston rod. If the length in design needs to be larger than the aforesaid limit value, it is better to use double arms in order to extend the life of the cylinder. Double arms are arms extended equally on the other side of piston rod with a support of same height as the workpiece.
- Workpiece should not be clamped within the swing stroke during the downward movement of the clamping arm, and should be clamped within the vertical stroke only.
- During the loading and unloading of a workpiece, it is necessary to use an air gun to clean the cylinder for removing the iron slag or foreign objects attached thereon in order to prevent the foreign objects from entering the seal to cause oil / air leakage.
- It is necessary to use device having F.R.L. (Filters / Regulators / Lubricators) function in the pneumatic line in order to effectively remove the moisture, lubricate the cylinder and avoid the damage of the swing mechanism due to inertia impact of the clamping arm.
- If the direction of the single arm needs to be changed due to the problem of piping, it should be done with a wrench by holding the clamping arm first, and then unscrewing the screw and knocking the clamping arm upward to change its direction as shown in figure below. One should not apply lateral force to the clamping arm or laterally impact the clamping arm to change its direction in assembled position. This can cause damage of the swing mechanism due to improper force applied on it.

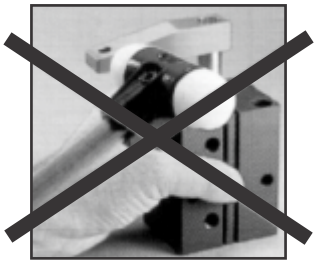
Fitting and removing clamping arm:

Hold clamping arm with spanner. Tighten/loosen screw.



Knock out clamping arm from piston rod.

Caution! Do not strike sides of clamping arm.



- R/L signifies right hand swing / Left hand swing. Please indicate while ordering. **In right hand swing, when seen from above while clamping down, the arm first swings 90 degrees* clockwise and then clamps down whereas in left hand swing it rotates 90 degrees counterclockwise and then clamps down.**
- *Clamps with swing angle other than 90 degrees are also available. Other swing angles available are 60° and 45°.
- The power source should not exceed the rated maximum pressure and the highest flow value.