

Link Clamp Frequently Asked Questions

The link clamp lever arcs up and out of the way to accommodate hard-to-reach or hard-to-hit clamping points. Link clamps contain the beam mechanism often preferred by fixture builders. This self-contained beam eliminates the need to build or design a clamp mechanism as part of the fixture. Vektek's unique single piece body and pivot design provides the least side-to-side axial deflection and the most rigid product on the market today.

Do I have to use the adapters included on the pneumatic link clamp?

The included adapters are required to change the device port to NPT from SAE. It is possible to make a transition to either compression tube fittings or to flared tube and hose fittings in one connector. You should call Vektek, Inc. or visit our website at www.vektek.com. If you are using soft tubing you will need to provide your own ferrule for compression fittings as Vektek does not stock low pressure nylon, brass or bronze ferrules.

When should I use a link clamp?

A link clamp is often preferred when you must reach over, not swing over or around a height obstacle. Reaching down into a die casting, between two mounting lugs, or a direct overhead vertical load are good examples where these devices are required. Keep in mind that the vertical clearance must be greater when you are bringing a part into position, but direct drop in loading is easily accomplished by an operator or robot in either swing clamp or link clamp fixtures.

What is the vertical stroke of a link clamp?

It is the portion of the clamping stroke that must be used when contacting the part. The maximum part variation is included in the vertical stroke, when outside the specifications, the force generated by the clamp will be reduced and may result in reduced clamp life.

How do I control the speed of a swing clamp or a link clamp?

Avoid high flow rates. The link clamp positions with less mechanical resistance, but mass, acceleration, and sudden stops affect all clamps adversely. Make your decision based on your acceptance of the shortened life cycle. Pneumatic flows are normally restricted on the "out-flow" rather than the current inlet port. In some cases, both inlet and outlet may require restrictions to achieve desired speed results.

Is the link clamp more accurate than swing clamps?

In some cases it may be preferred, its link mechanism still has a limited amount of play and may not be as precise as you desire. This type of decision is application dependent and generally decided by loading direction, part clamping target, and clearance limitations.

The part thickness varies on my application. Which component will work best for my situation, the swing clamp or the link clamp?

Swing clamps have more part variation tolerance, with nominal installation height being at 1/2 of straight stroke, it can tolerate $\pm 1/2$ stroke variations. The limit on link clamps is $\pm 3^\circ$ which is more limited.

When should a link clamp not be used?

If you are clamping on a draft angle, the angle will exert undue stresses on the linkage mechanism. Please avoid stressing guidance mechanisms of either swing clamps or link clamps as these stresses will cause premature failure not covered by warranty due to mis-application.



LINK CLAMPS SHOWN WITH STANDARD LENGTH LEVERS

Levers sold separately • page C-4

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Link Clamps

Pneumatic Link Clamp Specifications

Double Acting

- Excellent alternative to swing clamps when swing space is limited.
- Available in three sizes: 1, 1-1/2, and 2-1/8 inch bore.
- Top Flange body mount.
- Left, forward, or right lever position from the same body.
- Link clamps clear large obstructions better than other types of clamps.
- Manifold mounted or standard plumbed using standard NPT fittings.
- Levers sold separately (see page C-4).

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Specifications

Lever Position	Model No.	Model No.		
		P1-6621-10	P1-6621-50	P1-6622-10
FORWARD				
RIGHT		P1-6621-11	P1-6621-51	P1-6622-11
LEFT		P1-6621-12	P1-6621-52	P1-6622-12
Bore Diameter (in.)		1.00	1.50	2.125
Vertical Clamping Stroke *		.09	.125	.125
Standard Lever Length **		1.875	2.625	3.094
Effective Piston Area (sq. in.)				
Extend		.785	1.767	3.546
Retract		.479	1.325	2.761
Air Consumption (cu. in.) ***		1.15	3.48	8.63

Operating Pressure Range: 30-250 psi

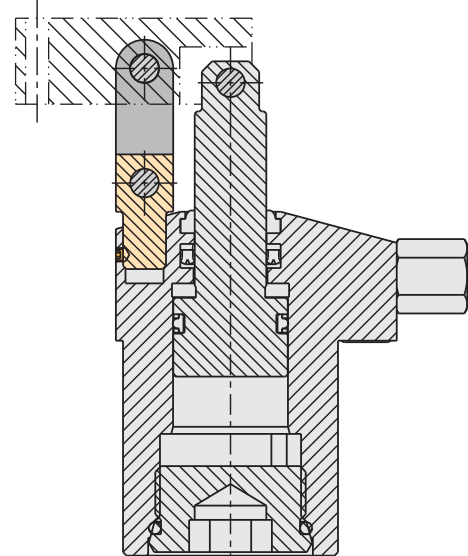
Fluid: Clean Dry Air

Lubrication: Not Required

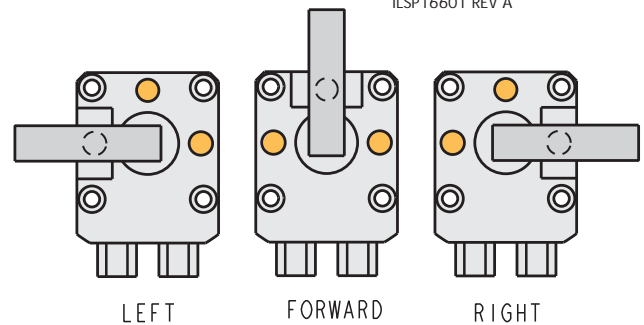
* Equal to $\pm 3^\circ$ with standard lever.

** Use of extended length arms will result in a reduction of clamp capacity. See graphs of lever output curves for clamping force of various arm lengths. The clamping force is adjustable by varying the pneumatic system pressure. To insure maximum service life and trouble-free operation, these devices should be positioned in no less than 1/2 second. These recommendations apply when using the standard arm. When using the optional long arm or your custom arm, please restrict the flow rates to position the arm in no less than 1 second.

*** Per complete cycle.



ILSP16601 REV A



Lever can be easily positioned in any one of the three directions in relation to the ports.

LINK CLAMPS SHOWN WITH EXTENDED LENGTH LEVERS

Levers sold separately (page C-4)

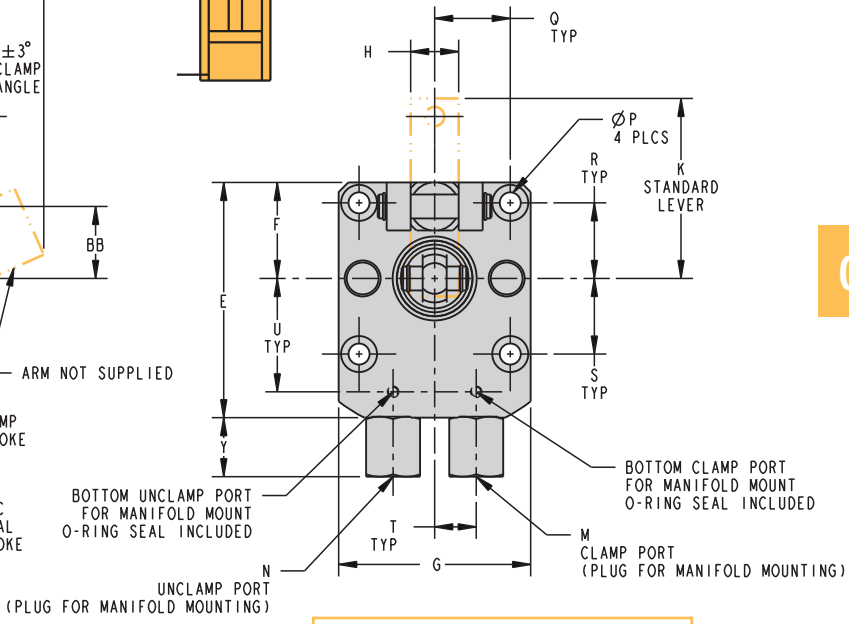
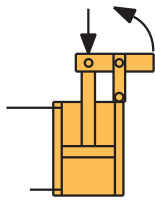
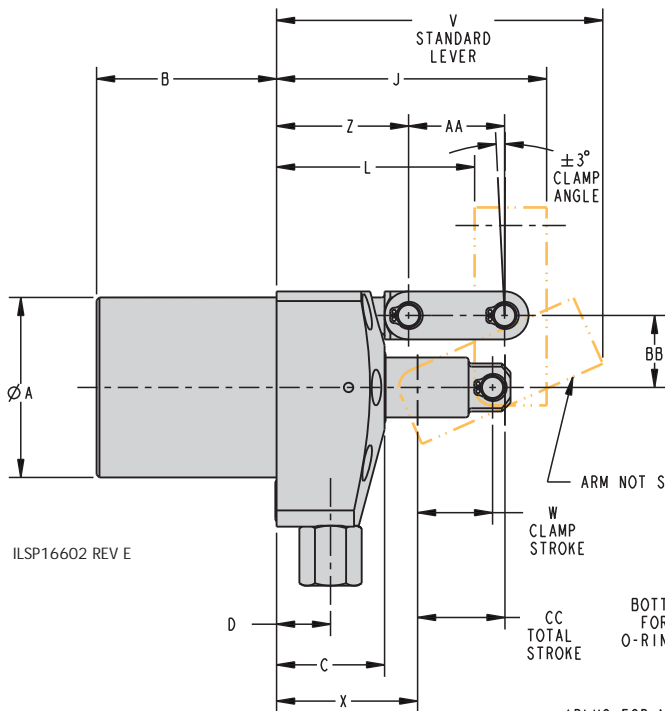


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Link Clamps

Link Clamp Dimensions



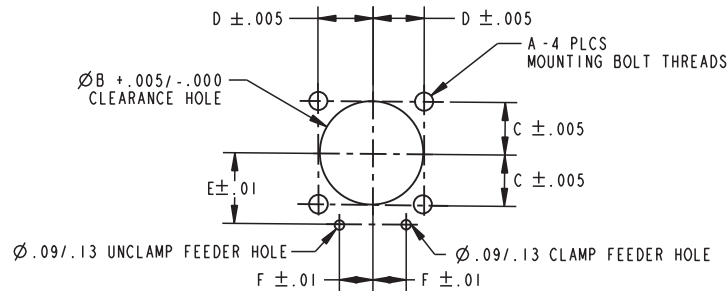
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Operating temperature limits are 32-150° F

Dimensions

Model Number	P1-6621-1X	P1-6621-5X	P1-6622-1X
A	1.88	2.53	2.94
B	1.88	2.50	2.75
C	1.13	1.19	1.44
D	.56	.59	.63
E	2.45	3.19	3.72
F	1.00	1.38	1.67
G	2.00	2.75	3.34
H	.50	.75	.88
J	2.81	3.44	4.13
K	1.88	2.63	3.09
L	2.06	2.44	2.88
M	1/8 NPT	1/8 NPT	1/8 NPT
N	1/8 NPT	1/8 NPT	1/8 NPT
P	.219	.281	.344
Q	.788	1.083	1.240
R	.788	1.083	1.240
S	.788	1.083	1.240
T	.433	.591	.630
U	1.181	1.555	1.772
V	3.36	4.42	5.23
W	.781	1.000	1.188
X	1.47	1.75	2.06
Y	.625	.625	.625
Z	1.38	1.56	1.88
AA	1.00	1.50	1.75
BB	.75	1.00	1.19
CC	.91	1.13	1.32

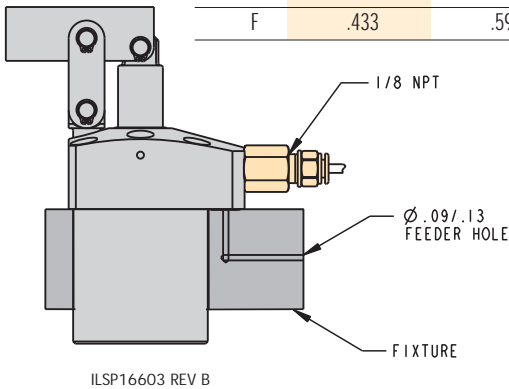
Levers are to be adjusted to within $\pm 3^\circ$ of nominal clamp angle to prevent premature failure.



FOR MANIFOLD MOUNTING, MATING SURFACE SHOULD BE FLAT WITHIN .003 WITH A MAXIMUM SURFACE ROUGHNESS OF RA 63

Manifold Port/Mounting Dimensions

Model Number	P1-6621-1X	P1-6621-5X	P1-6622-1X
A	10-32 UNF	1/4-20 UNC	5/16-18 UNC
B	1.890	2.560	2.950
C	.788	1.083	1.240
D	.788	1.083	1.240
E	1.181	1.555	1.772
F	.433	.591	.630

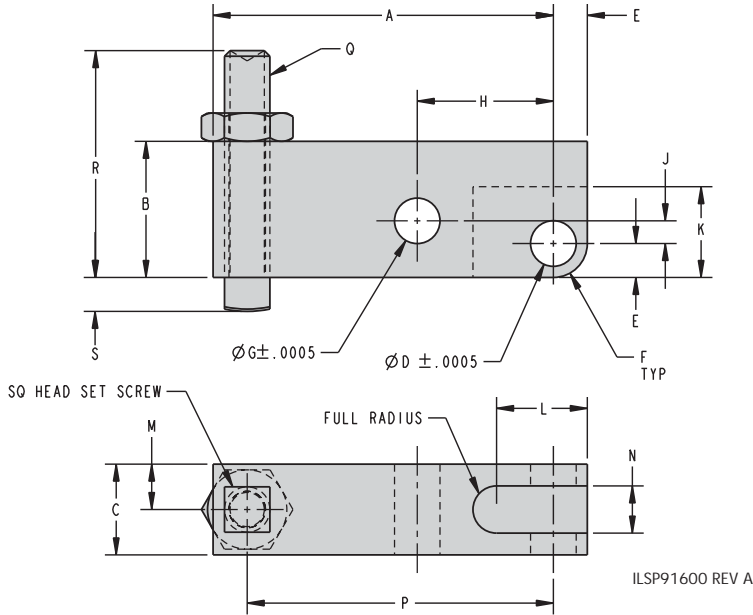


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Link Clamp Levers

Link Clamp Lever Dimensions



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Standard Length Lever

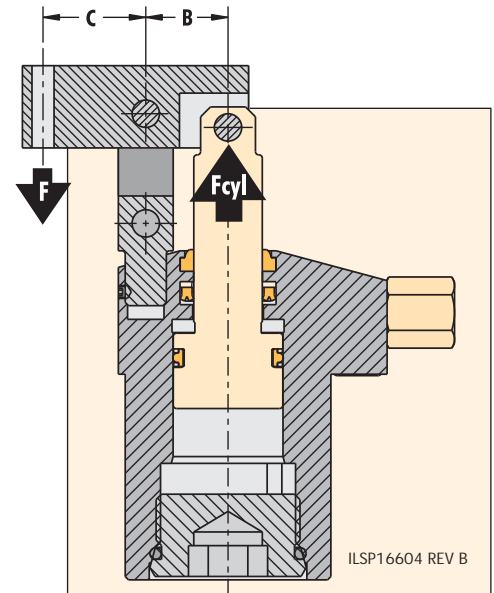
Dimensions

Model Number	91-6011-03	91-6015-03	91-6021-03
Cyl Bore Dia.	1.00	1.50	2.125
A	1.88	2.63	3.09
B	.75	1.00	1.25
C	.50	.75	.88
D	.2515	.3765	.5015
E	.19	.31	.38
F	.19	.31	.38
G	.2505	.3755	.5005
H	.75	1.00	1.19
J	.13	.31	.38
K	.50	.75	.94
L	.50	.69	.88
M	.25	.38	.44
N	.26	.39	.45
P	1.69	2.25	2.69
Q	1/4-20 UNC	3/8-16 UNC	1/2-13 UNC
R	1.25	2.25	3.00
S	.19	.28	.38

Extended Length Lever WITHOUT Tapped Hole

Dimensions

Model Number	91-6011-02	91-6015-02	91-6021-02
Cyl Bore Dia.	1.00	1.50	2.125
A	3.00	3.50	4.00
B	.75	1.00	1.25
C	.50	.75	.88
D	.2515	.3765	.5015
E	.19	.31	.38
F	.19	.31	.38
G	.2505	.3755	.5005
H	.75	1.00	1.19
J	.13	.31	.38
K	.50	.75	.94
L	.50	.69	.88
N	.26	.39	.45



The clamping force varies according to the clamp arm length. The clamping force F can be calculated using the following formula.

Clamping force calculation formula:

$$F = F_{cyl} \times (B \div C) \times E$$

F = Clamping force (lb)

F_{cyl} = Cylinder force (lb)

$$F_{cyl} = P \times A$$

P = Operating Pressure (psi)

A = Cylinder Area (sq in) (See table below)

B, C = Clamp Lever Length (in) (See Table below)

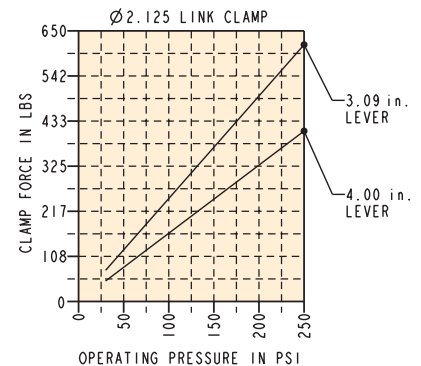
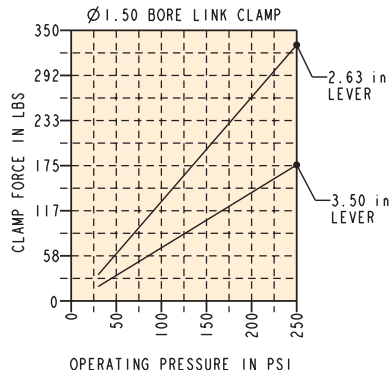
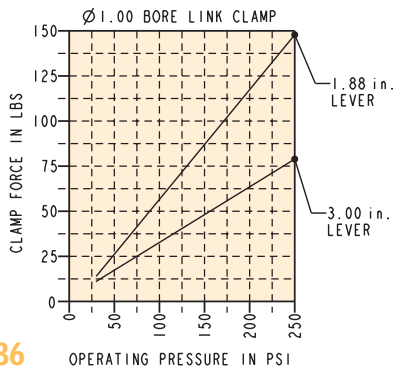
E = Output Efficiency (Approx. 0.9 for standard length and 1.5 for extended length lever)

Dimensions

Model Number	P1-6621-1X	P1-6621-5X	P1-6622-XX
Bore Dia. (in.)	1.000	1.500	2.125
A - Area (sq. in.)	0.785	1.767	3.547
B (in.)	0.750	1.000	1.187
Standard Length Lever -			
C (in.)	0.937	1.250	1.500
Extended Length Lever (Maximum)			
C (in.)	3.000	3.500	4.000

Double Acting Pneumatic Link Clamp Lever Output Curves

Modifications to levers that result in clamp ratios below that of the standard lever are not in the safe operating zone for the corresponding link clamp and could result in premature failure.



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