

Standard Swing Clamp

Manifold/Bottom Flange Mount Specifications

Single And Double Acting

- Simply the easiest to use manifold mount design on the market today. No precision installation holes, no precisely located ports, no special mounting hardware, only our special patented design gives you all that.
- Available in three sizes 450 to 2,600 lb. capacity at 5,000 psi.
- Unique, bolt up, bolt down or standard ported "foot" design allows you the maximum flexibility in fixture design.
- Can be manifold face sealed or fittings may be used in the top and bottom ports (SAE 2).
- Clacking feature (page C-20) uses standard Vekttek arm.

Hardened V-cam tracks resist damage and give you a built in extra cam (opposite swing direction) or straight line option should you accidentally damage one. Specify left, right or straight cam, we will preset the swing when you order.

SAE porting from three directions on larger models gives you five alternatives for plumbing. You can use standard fittings in any of the three sets of ports or manifold by bolting up or down.

Easily installed using standard cap screws. The large base and one piece mounting give this clamp excellent rigidity.



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5,192,158
5,820,118

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Model No. Add -L, -R or -S to indicate desired Swing Direction	Cylinder Capacity (lb.)**	Vertical Clamping Stroke (in.)***	Total Stroke (Swing + Vertical)	Standard Arm Length **	Effective Piston Area (sq. in.) Retract	Oil Capacity (cu. in.)****		Optional Flow Control Model No.
						Extend	Retract	
Single Acting (S/A)								
Cylinders, actuated hydraulically 1 direction, spring returned.								
15-2105-01	450	0.22	0.57	1.06	0.098	N/A	0.056	70-2037-71
15-2109-01	1100	0.31	0.79	1.50	0.295	N/A	0.233	70-2037-73
15-2113-01	2600	0.50	1.16	2.00	0.626	N/A	0.726	70-2037-73
Double Acting (D/A)								
Cylinders, actuated hydraulically both directions.								
15-2205-01	450	0.22	0.57	1.06	0.098	0.142	0.056	70-2037-71
15-2209-01	1100	0.31	0.79	1.50	0.295	0.475	0.233	70-2037-73
15-2213-01	2600	0.50	1.16	2.00	0.626	1.423	0.726	70-2037-73

WARNING! Never allow swing arm to contact workpiece or fixture during arm rotation.

** Cylinder capacities are listed at 5,000 psi maximum operating pressure, with a standard length VektorFlo® arm installed. Minimum operating pressure is 750 psi for single acting, 500 psi for double acting. The clamping force is adjustable by varying the hydraulic system pressure. To determine the approximate output force for your application, divide the cylinder capacity shown above by 5,000, and multiply the Resultant Number X Your System Operating Pressure to obtain the approximate clamping force for your application. (Actual force will vary slightly due to internal cantilever loading, friction loss and/or return springs.)

*** To allow for piece part height variations, it is recommended that the vertical travel be set at about 50% of the vertical stroke.

**** To ensure maximum service life and trouble-free operation, restrict fluid flow per table on page C-14.

Dimensions

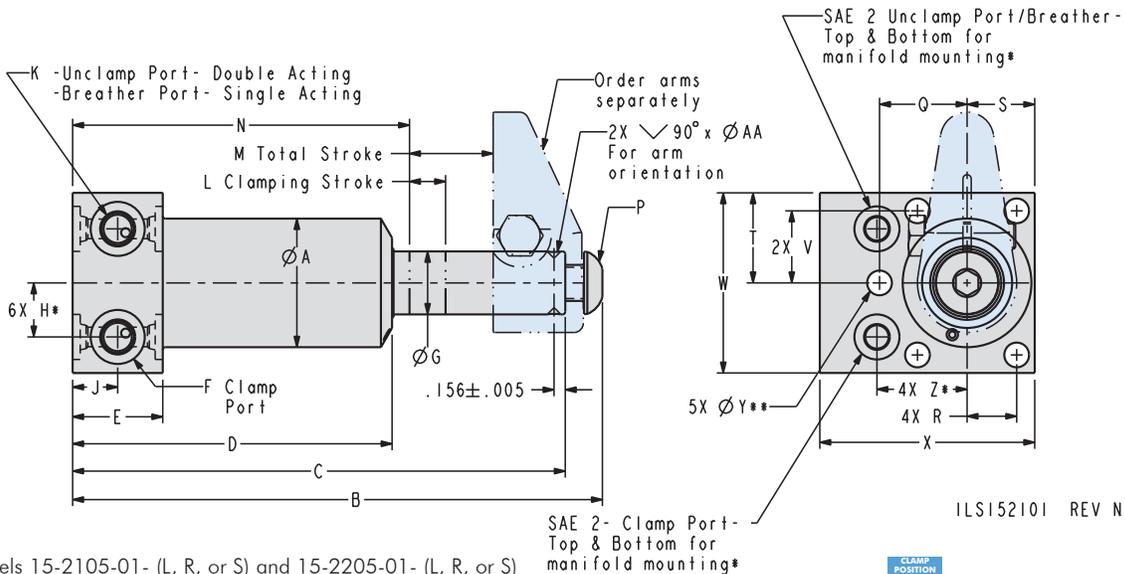
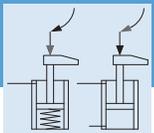
Model No. Left Swing	Model No. Right Swing	Capacity	A	B	C	D	E	F	G	H	J	K	L
Single Acting (S/A)													
15-2105-01-L*	15-2105-01-R*	450	1.05	4.32	4.06	2.80	1.00	SAE 4	0.438	0.38	0.66	SAE 4	0.22
15-2109-01-L	15-2109-01-R	1100	1.49	5.70	5.33	3.65	1.25	SAE 4	0.625	0.56	0.63	SAE 4	0.31
15-2113-01-L	15-2113-01-R	2600	1.79	7.35	6.83	4.43	1.25	SAE 4	0.875	0.75	0.63	SAE 4	0.50
Double Acting (D/A)													
15-2205-01-L*	15-2205-01-R*	450	1.05	4.32	4.06	2.80	1.00	SAE 4	0.438	0.38	0.66	SAE 4	0.22
15-2209-01-L	15-2209-01-R	1100	1.49	5.70	5.33	3.65	1.25	SAE 4	0.625	0.56	0.63	SAE 4	0.31
15-2213-01-L	15-2213-01-R	2600	1.79	7.35	6.83	4.43	1.25	SAE 4	0.875	0.75	0.63	SAE 4	0.50

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1-800-992-0236

Order arms separately

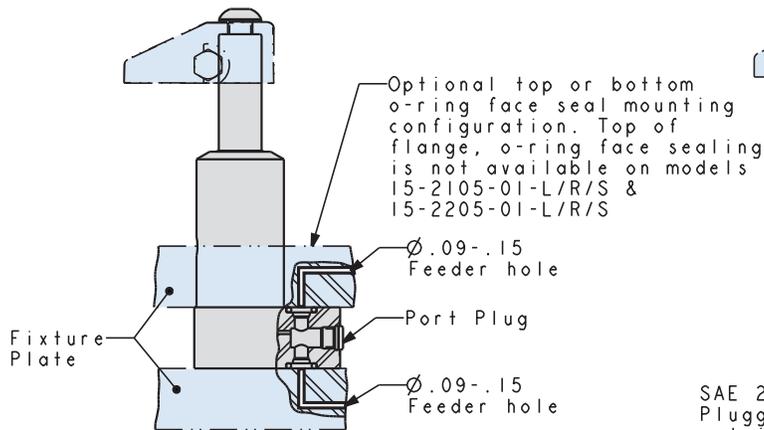
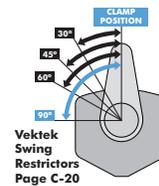
Standard Swing Clamp

Manifold/Bottom Flange Mount

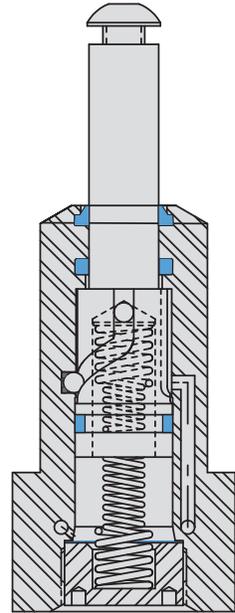
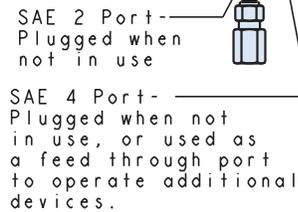


* Models 15-2105-01- (L, R, or S) and 15-2205-01- (L, R, or S) do not include the option for manifold mounting on the top surface, all other models are shipped with the plugs and o-rings necessary for manifold mounting.

** All five mounting screws must be used when manifold mounting to assure a leak free o-ring seal.



For Proper sealing, mating surface should be flat within 0.003 in. with a maximum 63 μin R_a surface finish.



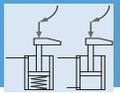
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5,820,118

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M	N	P BHCS	Q	R	S	T	V	W	X	Y	Z	$\varnothing AA$	Model No. Straight Swing
Cylinders, actuated hydraulically 1 direction, spring returned.													
0.57	2.99	1/4-28 X 3/8	1.06	0.38	0.53	0.75	0.59	1.50	1.75	0.22	0.78	0.13	15-2105-01-S *
0.79	3.83	3/8-24 X 5/8	0.99	0.56	0.75	1.00	0.81	2.00	2.50	0.28	1.13	0.19	15-2109-01-S
1.16	4.67	1/2-20 X 3/4	1.21	0.69	0.94	1.25	1.00	2.50	3.00	0.34	1.25	0.19	15-2113-01-S
Cylinders, actuated hydraulically both directions.													
0.57	2.99	1/4-28 X 3/8	1.06	0.38	0.53	0.75	0.59	1.50	1.75	0.22	0.78	0.13	15-2205-01-S *
0.79	3.83	3/8-24 X 5/8	0.99	0.56	0.75	1.00	0.81	2.00	2.50	0.28	1.13	0.19	15-2209-01-S
1.16	4.67	1/2-20 X 3/4	1.21	0.69	0.94	1.25	1.00	2.50	3.00	0.34	1.25	0.19	15-2213-01-S

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Standard Swing Clamps



Features, Patented Design and Air Ordering

Standard Features

- Large ball and cam rotational mechanism assures the swing action.
- Standard models swing 90°, swing angles of less than 90° readily available for a small additional charge, swings of more than 90° are special order products.
- The original “duck billed,” cross bolt locking, top cap screw arm design, as originated by Vekttek, is highly recommended due to its low mass, versatility, and ease of modification, see Page O-2.
- Special wipers and swept-line cylinder top helps keep chips from packing and coolant contaminants from entering the operation.
- Vent port with bronze filter gives the cylinder a place to “breathe” and helps keep chips and

coolants from sucking past wipers (Unclamp port on double-acting models).

- Exclusive BHC™ (Black Hard Coating) on the cylinder bodies and rod bearing surface helps prevent leaks caused by scoring and scratching especially in the event of high side or “kick” loads which promote excessive scoring in many other brands. BHC™ gives a Rockwell 60C skin hardness.
- Hardened Chrome alloy steel plungers run longer with less wear and drag than other brands.
- Proprietary seal designs reduce leakage and increase seal life for longer lasting, more dependable operations.

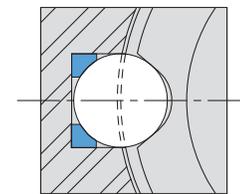
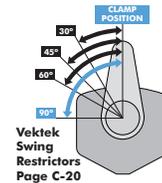


C-14

Patented V-groove Cam Design

- V shaped design provides a tougher mechanism. The ball runs deep in the track eliminating cam to ball edge loading.
- Resists flow related damage better (Please follow recommended flow rates for longest swing clamp life.)
- Lasts longer and will withstand operator induced “crashes” from improperly loaded parts with less damage.
- Provides planar rather than edge contact with the cam follower.
- Will withstand swing interference better than other cam designs.
- External cam swing clamp models (pages C-15 to C-26) have hardened V-cam tracks that resist damage and give you a built in extra cam (opposite swing direction) or straight line option should you accidentally damage one.
- Internal cam swing clamps (pages C-27 to C-32) have double V-cams providing extra strength, but must be ordered in the required swing direction. Low profile 5,000 and 7,500 lb. swing clamps do not have built in multiple direction cams.
- Vekttek changes the “state of the art” in ball and cam swing clamps making them work better at reasonable prices.

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6,886,820



Clamp Time and Fluid Flow Rates for Standard Swing Clamps

Swing Clamp Capacity (lb)	Standard Arm		Extended Arm	
	Fastest Allowable Clamp Time (sec.)	Maximum Permissible Flow Rate (cm ³ /min)	Fastest Allowable Clamp Time (sec.)	Maximum Permissible Flow Rate (cm ³ /min)
450	0.4	8	0.9	4
1100	0.6	25	1.2	11
2600	0.6	70	1.4	32
5000	0.7	180	1.4	81
7500	0.7	180	1.6	81

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- For outreach and double arms, use extended arm flows and times.
- When using custom arms the extended arm flows and times are to be considered the limiting factor.
- The actual time to position the clamp will vary by custom arm configuration and may require customer testing in specific application to establish limits.

NOTE: Arm Length and Pressure Limitation Graphs on page O-3

Air Ordering Information

Vekttek offers the VektorAir™ line of pneumatic clamping devices and accessories, rated to run up to 250 psi. The product line includes an intensifier to boost standard shop air up to 250 psi. Call for a catalog. If you currently use our hydraulic models adapted for air, you may continue to do so, contact our sales office for air ordering information.

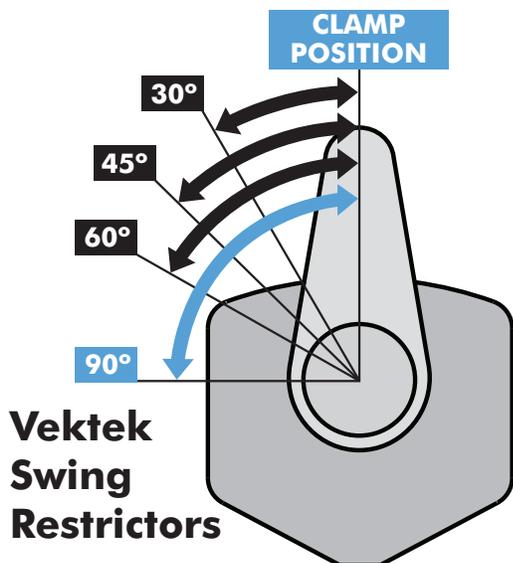


Standard Swing Clamp

Swing Restrictors and Clocking

Swing Clamp Restrictors

Swing Restrictors add just one more element of flexibility when using Vekttek Swing Clamps. Normally shipped with the swing angle set to 90°, you can have swing restrictors added to your clamps to limit the the arm swing to 30°, 45° or 60° of rotation. Restrictors that are factory installed on new clamps will have the clamp specially marked to avoid intermingling clamps with varying swing angles in your shop. Contact your Vekttek Customer Service specialist should you need swing angles greater than 90°.



Swing Clamp Swing Restrictors

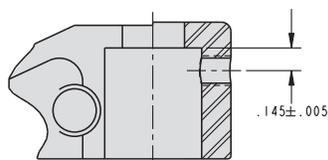
Model No	Clamp Capacity	Swing Restriction
81-5505-30	450/2kN	30°
81-5505-45	450/2kN	45°
81-5505-60	450/2kN	60°
81-5509-30	1100/4.9kN	30°
81-5509-45	1100/4.9kN	45°
81-5509-60	1100/4.9kN	60°
81-5513-30	2600/11.6kN	30°
81-5513-45	2600/11.6kN	45°
81-5513-60	2600/11.6kN	60°
81-5518-30	5000/22kN	30°
81-5518-31	LP SC 5000/22kN	30°
81-5518-45	5000/22kN	45°
81-5518-46	LP SC, 5000/22kN	45°
81-5518-60	5000/22kN	60°
81-5518-61	LP SC, 5000/22kN	60°
81-5521-30	LP SC 7500/33kN	30°
81-5521-45	LP SC 7500/33kN	45°
81-5521-60	LP SC 7500/33kN	60°

C-20

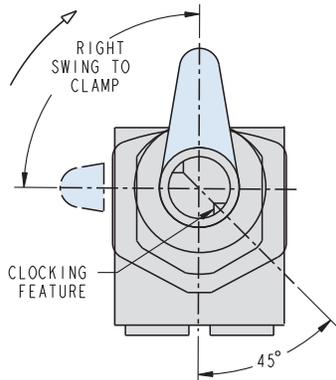
Clocking

Machined on most Vekttek swing clamps, the Arm Clocking feature will dramatically reduce the time it takes to change arms for maintenance, replacement or design set up. This innovation eliminates the need for expensive special swing clamps and moves cost effective user modifications to the clamp arms.

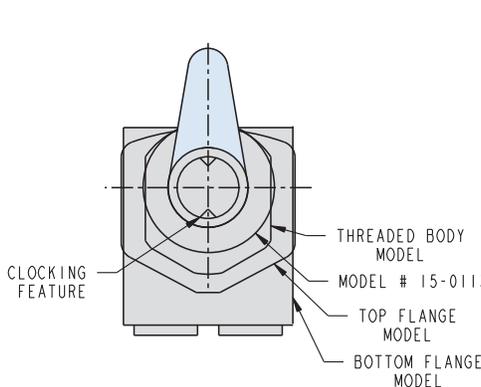
A drill point on each clamp standardizes arm location at a particular position. A second orientation drill point resides 180° out from that position. Access to the positioning feature is through the back or side of the arm, making modification a snap for users. Each arm position can have its own specification.



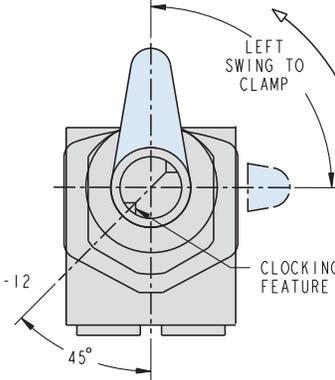
CLAMPED POSITION



STRAIGHT PULL



CLAMPED POSITION



Swing Clamp Arm Clocking Feature

Drill points shown in the clamped position.
Second Clocking feature 180 from the first clocking feature.

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