TuffCam™ Swing Clamp

Low Profile Rod Position Sensing

Low Profile Rod Position Sensing Swing Clamps

- Double Acting TuffCam™ clamps 5,,000 lb. and 7500 lb.
- Actuator Rod Position System can be used with a mechanical switch or air logic system to detect when clamp is in position.
- Actuator rod is concentric to plunger shaft.
- Actuator rod moves with the same rotary and linear motion as the plunger.
- All TuffCam™ features apply to these units.
- TuffCam™ Clocking feature (page C-18) uses standard length Vektek arm.
- For complete dimensions, see page C-20 or C-22 for the model you are using.
- Optional in-port flow control is a meter-in device with reverse free flow check valve.

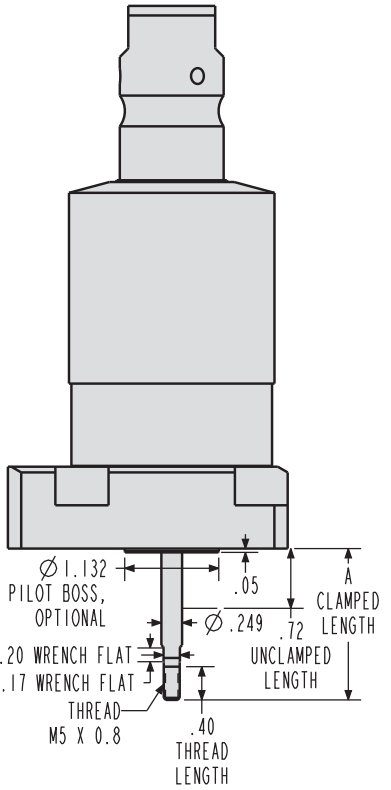
BHC™ (Black Hard Coating) on the cylinder body helps prevent scoring and scratching.

Low Profile Rod Position Sensing System

Model No.	Clamp Swing Direction	Cylinder Capacity (lb.)	A (in)	Optional Flow Control Model No.*
TuffCam™ Bottom Flange (D/A) Cylinders actuated hydraulically both directions				
14-2818-00-PR	Right	5000	1.82	70-2037-72
14-2818-01-PR	Left			
14-2818-02-PR	Straight			
14-2221-00-PR	Right	7500	1.90	70-2037-72
14-2221-01-PR	Left			
14-2221-02-PR	Straight			
TuffCam™ Top Flange (D/A) Cylinders actuated hydraulically both directions				
14-0621-00-PR	Right	7500	1.90	70-2037-72
14-0621-01-PR	Left			
14-0621-02-PR	Straight			
TuffCam™ Top Flange Long Stroke(D/A) Cylinders actuated hydraulically both directions				
14-0621-03-PR	Right	7500	2.53	70-2037-72
14-0621-04-PR	Left			
14-0621-05-PR	Straight			

* In-port flow control requires the use of manifold mount ports.

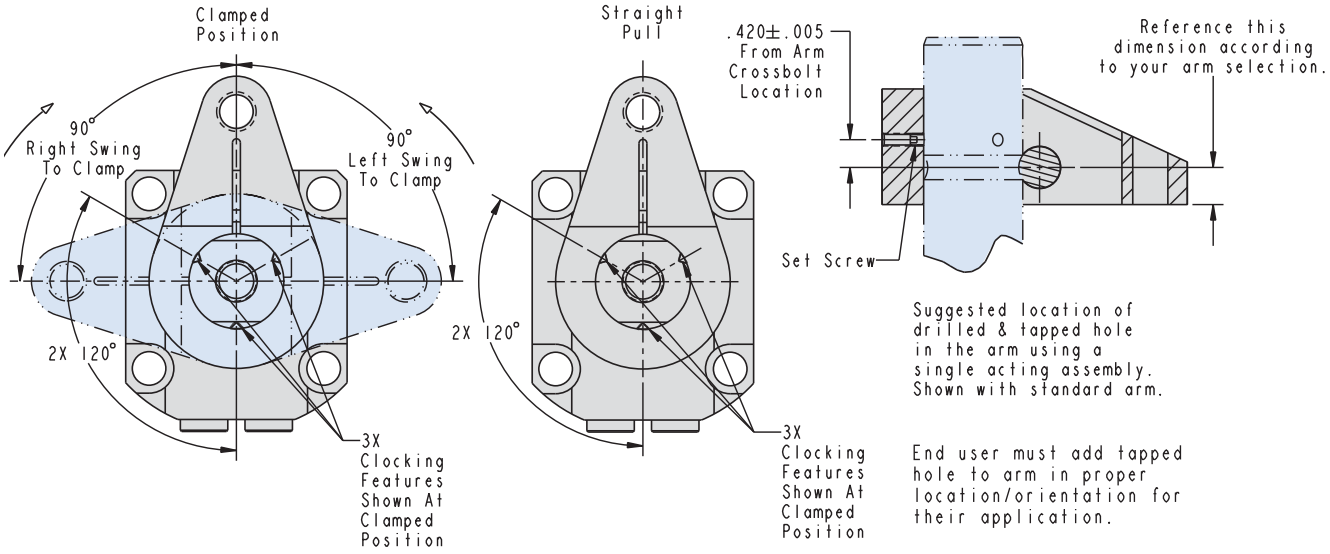
Optional in-port flow control is a meter-in device with reverse free flow check valve.



TuffCam™ Clocking Features

Three clocking features have been added to Vektek's Low Profile Swing Clamp line. Customers have requested the clocking features to help improve and speed-up arm changes.

A drill point on each clamp standardizes arm location at a particular position. An additional 2 (two) orientation drill points reside 120° out from that position and each other. 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.



TuffCam™ Low Profile Swing Clamp Arm Clocking Feature

Views shown apply to double and single acting TuffCam™ Top Flange and Bottom Flange models.
Three counter sunk Ø .19 x 90° clocking feature drill points are shown in the clamped position.
The three (3) Clocking features are equally spaced 120°.

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Clamp Time and Fluid Flow Rates for TuffCam™

Swing Clamp Capacity (lb.)	Standard Arm		Extended Arm	
	Fastest Allowable Clamp Time (sec.)	Maximum Permissible Flow Rate (cu. in./min.)	Fastest Allowable Clamp Time (sec.)	Maximum Permissible Flow Rate (cu. in./min.)
5000	0.5	155	1.0	78
7500	0.5	251	1.0	126

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

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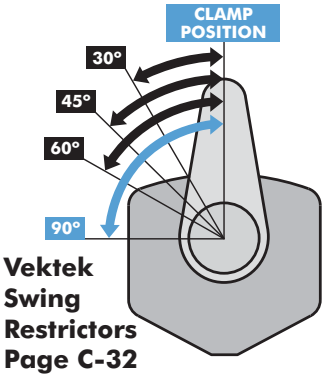


Vektek Swing Restrictors Page C-32

The above flows are maximum recommendations and clamp times are minimum recommendations.

- For upreach 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.

TuffCam™ Swing Clamps

Low Profile Features

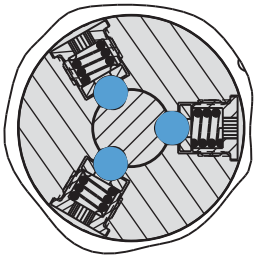
* Tougher Cams
* Stronger Single Acting Springs
* Precise Swing Angle
* Clocking Feature

TuffCam™ Low Profile Swing Clamps

Vektek's TuffCam™ Low Profile Swing Clamps meet your demand for speed, precise positioning, heavy arm applications and/or clamping capacity up to 7500 lbs. These Low Profile tri-cam design clamps, with their exclusive Cam Follower Seat, can position and clamp in one second or less and handle large arms with ease. Each clamp includes the Clocking feature that dramatically reduces the time it takes to change arms for maintenance, replacement or fixture setup.

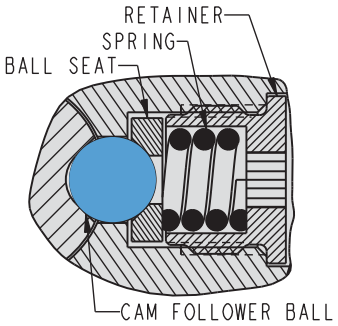
One of the keys to this TuffCam™ innovation is the Cam Follower Ball Seat that was developed to improve strength and wear. Using the Vektek patented V-Groove technology, tungsten carbide ball material for strength and wear, and a stainless steel spring, these clamps have reduced static friction for improved clamp breakaway and extended life.

- Available in these body styles:
  - Top Flange
  - Top Flange Long Stroke (Double Acting Only)
  - Bottom Flange
  - Rod Position Sensing
  - Magnetic Position Sensing
- Single and double acting models available. The Single Acting models have increased spring forces for positive return in higher backpressure applications.
- BHC™ (Black Hard Coating) on the cylinder bodies helps prevent scoring and scratching.
- Standard fluorocarbon wipers for improved coolant compatibility.
- Arm clocking feature uses standard Vektek arms.



TuffCam™ Low Profile Swing Clamp Cam Follower Design

- Three cams for more accurate arm positioning, smoother rotation, and lower per cam surface contact pressure.
- Patented stainless steel ball seat for improved rotary function, cam follower contact, and reduced dynamic and static friction.
- Increased cam groove contact force provided by stainless steel spring.
- Ball material of Tungsten carbide, one of the world's hardest materials.



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