

Compact Pneumatic 90° Twist Cylinders

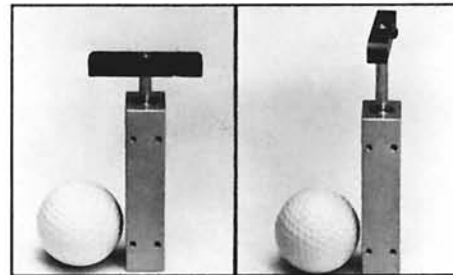
INTRODUCTION

New compact pneumatic twist cylinders are linear motion compact cylinders with an internal cam that provides 90° swing motion. Twist cylinders are ideal swing clamps for automated and semi-automated assembly and workholding found in circuit board assemblies, medical devices, robotic cells, component

assembly and other applications. Because of their compact size and versatile mounting, they also make unique conveyor stops, diverters, escapements, etc. We will be glad to quote on special stroke and increments of rotation.

PRESSURE RATINGS - BAR			PISTON AREA mm ²	
Bore	Pneumatic	▲ Hydraulic	Push	Pull
12	8 (117 PSI)	Not Available	113 (.17 in ²)	85 (.13 in ²)
25	8 (117 PSI)		490 (.76 in ²)	376 (.58 in ²)
40	8 (117 PSI)		1256 (1.9 in ²)	1055 (1.6 in ²)

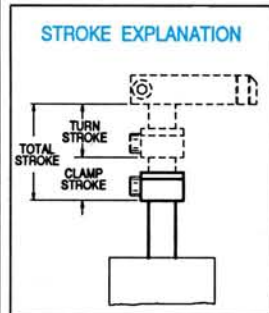
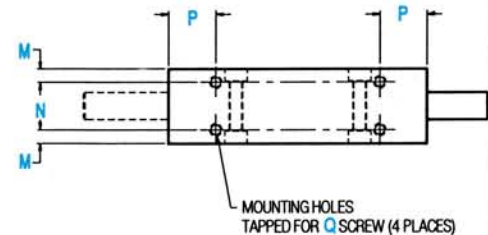
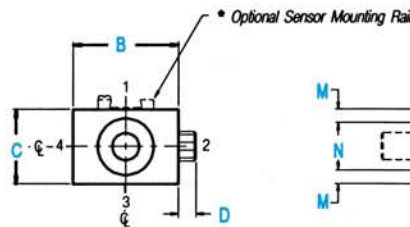
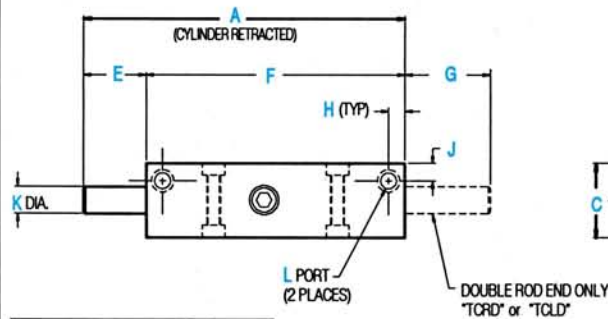
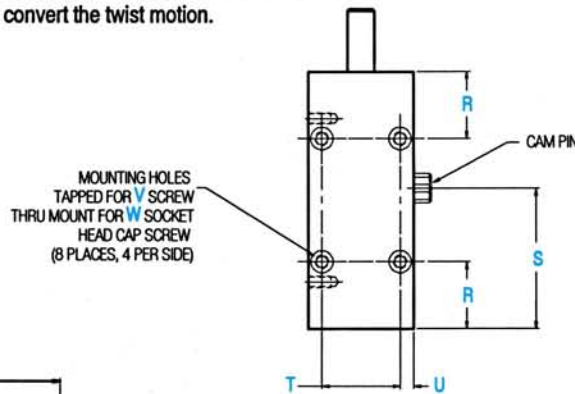
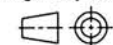
▲ Non-shock service with hydraulic seal option



UNIQUE UNIVERSAL CAM DESIGN

All units feature our unique universal cam. Specify unit to be assembled as TC(L) or (R) as explained below. Universal feature: remove the cam pin, rotate cam and reassemble to convert the twist motion.

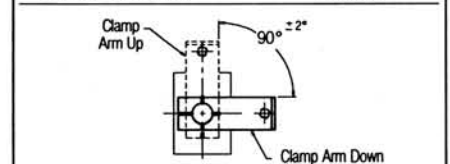
Shown in First Angle Projection



IMPORTANT: Never attempt to clamp a part during the "turn stroke" of the cycle. This will result in damage to the mechanism.

* Optional sensor rail with magnetic piston (Prefix "A") does not add any additional length. Comtronic™ sensors available #WSK #WSK-3 #WSC #WSC-3 (see #Metric catalog)

"TCR" - (shown) Clockwise Rotation
"TCL" - Counterclockwise Rotation



◆ Determine TC (L) or (R) and specify in table below
Shown with optional single clamp arm for clarity

Dimensions Shown In Parentheses () = Inch Conversions

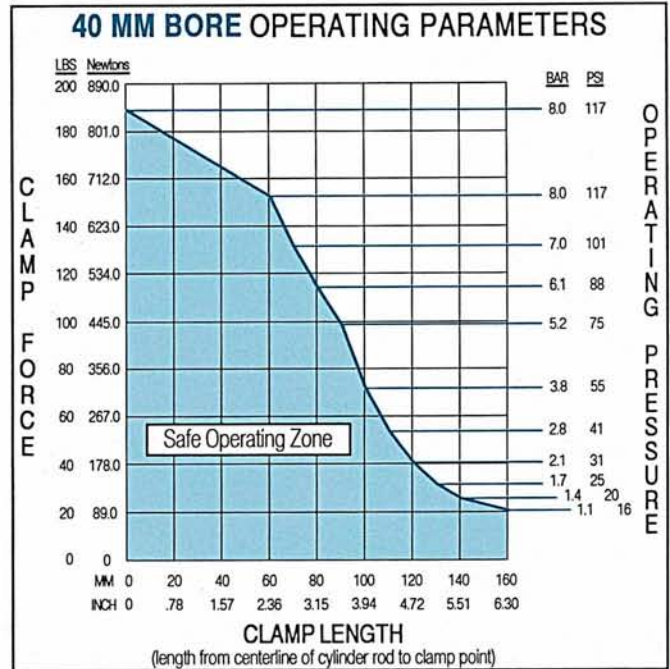
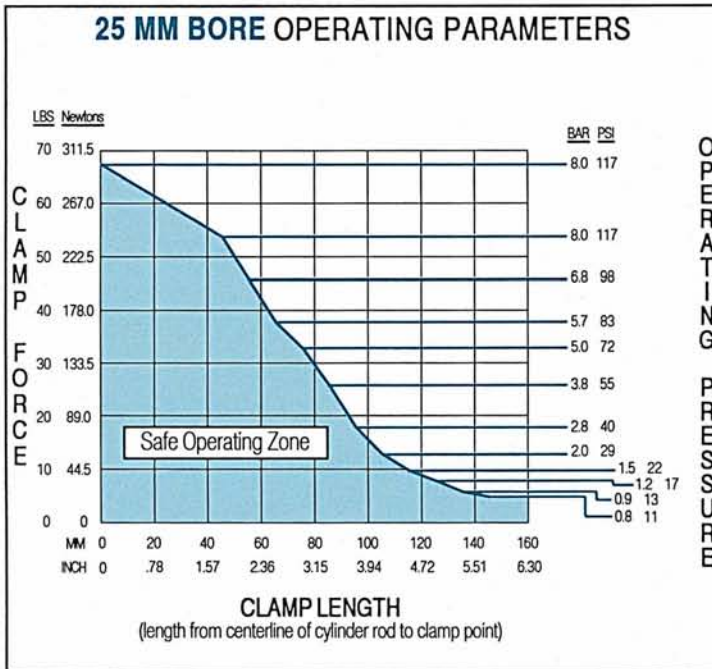
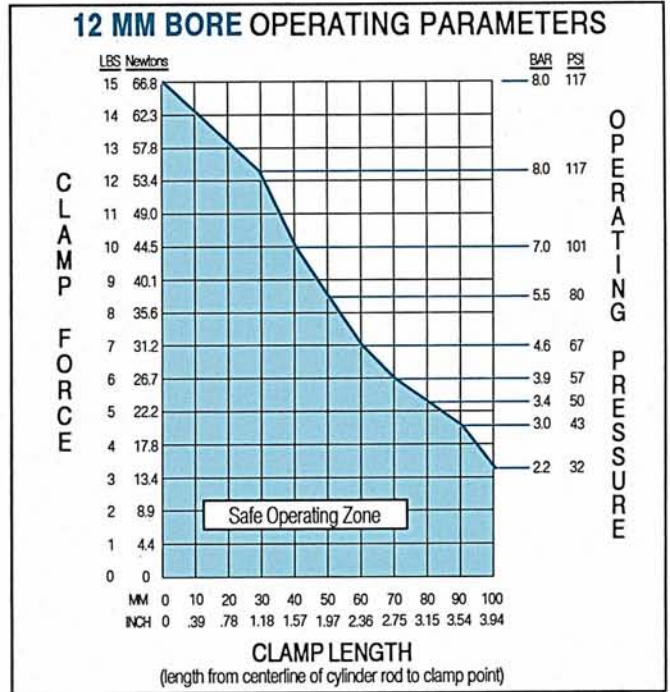
BORE	♦ PART NUMBER	STROKE			A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W
		TOTAL	TURN	CLAMP																					
12mm	TC_12x20	20	11	9	109	25,5	19	5	23	86	32,5	5,2	5	6	M5x0,8	3,5	12	15	M3x0,5 x 5,5	21	49,6	18	3,7	M4x0,7	M3x0,5
					(4,29)	(1,00)	(.75)	(.20)	(.91)	(3,39)	(1,28)	(.20)	(.20)	(.24)	(.14)	(.47)	(.59)	(.83)	(1,95)	(.71)	(.15)	M4x0,7	M3x0,5		
25mm	TC_25x30	30	22	8	143	47	33	6	38	105	46	7,3	8	12	G 1/8	6	21	21	M5x0,8 x 10	30	57,6	35	6	M6x1,0	M5x0,8
					(5,63)	(1,85)	(1,30)	(.24)	(1,50)	(4,13)	(1,81)	(.29)	(.31)	(.47)	(.24)	(.83)	(.83)	(1,18)	(2,27)	(1,38)	(.24)	M6x1,0	M5x0,8		
25mm	TC_25x35	35	22	13	153	47	33	6	38	115	51	7,3	8	12	G 1/8	6	21	21	M5x0,8 x 10	30	62,6	35	6	M6x1,0	M5x0,8
					(6,02)	(1,85)	(1,30)	(.24)	(1,50)	(4,53)	(2,01)	(.29)	(.31)	(.47)	(.24)	(.83)	(.83)	(1,18)	(2,46)	(1,38)	(.24)	M6x1,0	M5x0,8		
40mm	TC_40x30	30	22	8	149	65	49	6	38	111	54	10	24,5	16	G 1/8	6	37	25	M6x1,0 x 14	35	61	52	6,5	M6x1,0	M5x0,8
					(5,87)	(2,56)	(1,93)	(.24)	(1,50)	(4,37)	(2,13)	(.39)	(1,00)	(.63)	(.24)	(1,46)	(.98)	(2,05)	(2,05)	(2,05)	(.26)	M6x1,0	M5x0,8		
40mm	TC_40x35	35	22	13	159	65	49	6	38	121	59	10	24,5	16	G 1/8	6	37	25	M6x1,0 x 14	35	66	52	6,5	M6x1,0	M5x0,8
					(6,26)	(2,56)	(1,93)	(.24)	(1,50)	(4,76)	(2,32)	(.39)	(1,00)	(.63)	(.24)	(1,46)	(.98)	(2,60)	(2,05)	(.26)	M6x1,0	M5x0,8			

Optional Imperial U.S. Thread Conversions:

MOUNTING HOLES: M3x0,5 = #6-32 M4x0,7 = #8-32 M5x0,8 = #10-24 M6x1 = 1/4-20
PORTS: M5x0,8 = #10-32 G 1/8 = 1/8-27 NPTF

ENGINEERING DATA

1. THEORETICAL CLAMP FORCE:
(with no clamp arm) = Pull Piston Area X Pressure
2. Use these charts to determine maximum operating pressures for clamp arm lengths. Operating pressures and arm lengths on or below the curves are safe operating zones.
3. As a result of friction and cantilevered clamping action, output force is not a straight line. Use these charts to determine safe operating zones for required clamp force.
4. If using a clamp arm more than 1.5 times dimension "A" of our standard "CA" option, flow controls must be used to reduce inertia during the turn stroke.
5. Double clamp arm, option "CAD", can be used to clamp two parts with one cylinder. However, clamp force is half of a single clamp arm. If using a double clamp arm longer than dimension "A" of our standard "CAD", flow controls must be used to reduce inertia during the turn stroke.



HOW TO ORDER - Example: ATCL25 x 30-CAD-TBE

A MAGNETIC PISTON	◆ TCL STYLE	25 BORE	x	30 STROKE	CAD OPTION	US OPTION																																																																								
Omit if not desired. See #METRIC catalog for details on Comtronic™ sensor option.	<table border="1"> <thead> <tr><th colspan="2">STYLE</th></tr> <tr><th>CODE</th><th>DESCRIPTION</th></tr> </thead> <tbody> <tr><td>TCL</td><td>Twist Cylinder Left Single rod end</td></tr> <tr><td>TCLD</td><td>Twist Cylinder Left Double rod end</td></tr> <tr><td>TCR</td><td>Twist Cylinder Right Single rod end</td></tr> <tr><td>TCRD</td><td>Twist Cylinder Right Double rod end</td></tr> </tbody> </table>	STYLE		CODE	DESCRIPTION	TCL	Twist Cylinder Left Single rod end	TCLD	Twist Cylinder Left Double rod end	TCR	Twist Cylinder Right Single rod end	TCRD	Twist Cylinder Right Double rod end	<table border="1"> <thead> <tr><th colspan="2">BORE</th></tr> <tr><th>CODE</th><th>DESCRIPTION</th></tr> </thead> <tbody> <tr><td>12</td><td>12 millimeter</td></tr> <tr><td>25</td><td>25 millimeter</td></tr> <tr><td>40</td><td>40 millimeter</td></tr> </tbody> </table>	BORE		CODE	DESCRIPTION	12	12 millimeter	25	25 millimeter	40	40 millimeter		<table border="1"> <thead> <tr><th colspan="2">TOTAL STROKE</th></tr> <tr><th>BORE</th><th>STROKE</th></tr> </thead> <tbody> <tr><td>12mm</td><td>20mm</td></tr> <tr><td>25mm</td><td>30mm and 35mm</td></tr> <tr><td>40mm</td><td>30mm and 35mm</td></tr> </tbody> </table> <p>Specials Welcome</p>	TOTAL STROKE		BORE	STROKE	12mm	20mm	25mm	30mm and 35mm	40mm	30mm and 35mm	<table border="1"> <thead> <tr><th colspan="2">SEALS</th></tr> <tr><td colspan="2">Standard -Buna-N 0° to 120°C (0° to 250°F)</td></tr> </thead> <tbody> <tr><th colspan="2">OPTIONAL SEALS</th></tr> <tr><td colspan="2">Omit code if not desired</td></tr> <tr><th>DESCRIPTION</th><th>CODE</th></tr> <tr><td>Hi-Temp. Viton -10° to 200°C (0° to 400°F)</td><td>HTV</td></tr> <tr><td>Hydraulic -10° to 120°C (0° to 250°F)</td><td>HYD</td></tr> <tr><td>Hi-Temp. Viton Hyd. -10° to 200°C (0° to 400°F)</td><td>VHYD</td></tr> </tbody> </table> <p>HYD and VHYD not available on 12mm bore</p>	SEALS		Standard -Buna-N 0° to 120°C (0° to 250°F)		OPTIONAL SEALS		Omit code if not desired		DESCRIPTION	CODE	Hi-Temp. Viton -10° to 200°C (0° to 400°F)	HTV	Hydraulic -10° to 120°C (0° to 250°F)	HYD	Hi-Temp. Viton Hyd. -10° to 200°C (0° to 400°F)	VHYD	<table border="1"> <thead> <tr><th colspan="2">OPTION</th></tr> <tr><td colspan="2">Omit code if not desired</td></tr> </thead> <tbody> <tr><th>CODE</th><th>DESCRIPTION</th></tr> <tr><td>CA</td><td>Clamp Arm (Single)</td></tr> <tr><td>CAD</td><td>Clamp Arm (Double)</td></tr> <tr><td>FF</td><td>Front Flange</td></tr> <tr><td>RF</td><td>Rear Flange</td></tr> <tr><td>SB</td><td>Side Base</td></tr> <tr><td>TBE</td><td>Threads Both Ends</td></tr> <tr><td>TF</td><td>Threads Front</td></tr> <tr><td>TR</td><td>Threads Rear</td></tr> <tr><td>* US</td><td>Imperial Thread Option</td></tr> </tbody> </table>	OPTION		Omit code if not desired		CODE	DESCRIPTION	CA	Clamp Arm (Single)	CAD	Clamp Arm (Double)	FF	Front Flange	RF	Rear Flange	SB	Side Base	TBE	Threads Both Ends	TF	Threads Front	TR	Threads Rear	* US	Imperial Thread Option
STYLE																																																																														
CODE	DESCRIPTION																																																																													
TCL	Twist Cylinder Left Single rod end																																																																													
TCLD	Twist Cylinder Left Double rod end																																																																													
TCR	Twist Cylinder Right Single rod end																																																																													
TCRD	Twist Cylinder Right Double rod end																																																																													
BORE																																																																														
CODE	DESCRIPTION																																																																													
12	12 millimeter																																																																													
25	25 millimeter																																																																													
40	40 millimeter																																																																													
TOTAL STROKE																																																																														
BORE	STROKE																																																																													
12mm	20mm																																																																													
25mm	30mm and 35mm																																																																													
40mm	30mm and 35mm																																																																													
SEALS																																																																														
Standard -Buna-N 0° to 120°C (0° to 250°F)																																																																														
OPTIONAL SEALS																																																																														
Omit code if not desired																																																																														
DESCRIPTION	CODE																																																																													
Hi-Temp. Viton -10° to 200°C (0° to 400°F)	HTV																																																																													
Hydraulic -10° to 120°C (0° to 250°F)	HYD																																																																													
Hi-Temp. Viton Hyd. -10° to 200°C (0° to 400°F)	VHYD																																																																													
OPTION																																																																														
Omit code if not desired																																																																														
CODE	DESCRIPTION																																																																													
CA	Clamp Arm (Single)																																																																													
CAD	Clamp Arm (Double)																																																																													
FF	Front Flange																																																																													
RF	Rear Flange																																																																													
SB	Side Base																																																																													
TBE	Threads Both Ends																																																																													
TF	Threads Front																																																																													
TR	Threads Rear																																																																													
* US	Imperial Thread Option																																																																													

◆ Must specify rotation for initial assembly. Cam is universal and may be converted after received.

CONVERSION FORMULAS
 BAR to PSI: 1 PSI = .069 BAR Example: 25 PSI x .069 = 1.7 BAR or 10 BAR x .069 = 145 PSI
 Fractional Inch to Millimeters: 1 inch = 25.4mm and 1mm + 25.4 = 0.03937" Example: 12mm + 25.4 = .47" or .75" x 25.4 = 19.05mm

* All tapped holes and ports converted to inches. See conversions on page 2