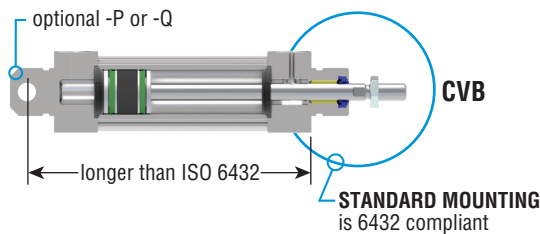
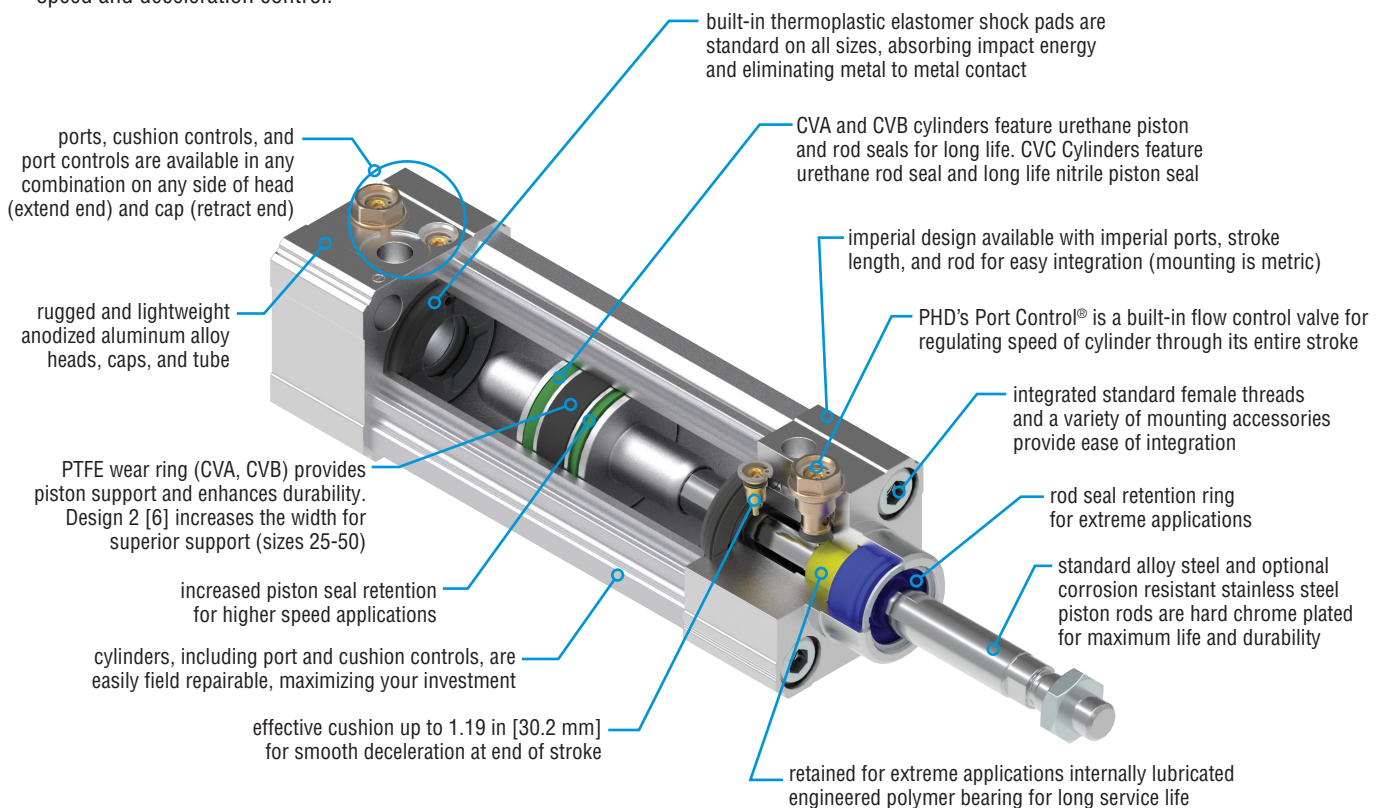


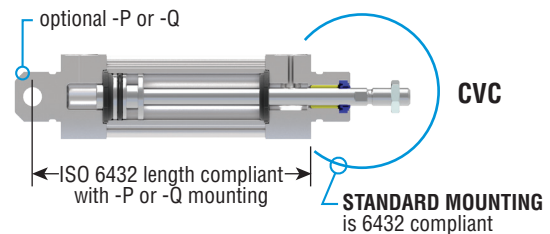
CV

Major Benefits

- ISO/VDMA interchange for easy mounting (metric unit).
- Imperial unit provides simplified integration in imperial facilities.
- PTFE wear ring and built-in shock pads for long cylinder life.
- Rodlok option for easy and dependable locking of piston rod.
- Optional built-in port controls and cushions for superior speed and deceleration control.



- Available in 20 & 25 mm bores
- Same construction as CVA
- ISO 6432 compliant rod and mountings (metric unit)
- Longer strokes and lower breakaway than CVC
- Distance between mountings is longer than ISO 6432 specifications (metric unit)

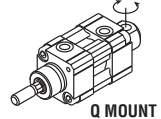
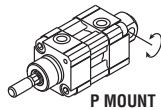


- Available in 20 & 25 mm bores
- Same construction as CVA and CVB, uses compression piston seal
- ISO 6432 compliant rod and mountings (metric unit)
- ISO 6432 compliant length between mountings (metric unit)
- Shorter length than CVB

ORDERING DATA: Series CV Cylinders

TO ORDER, SPECIFY:
Product, Series, Type,
Design No., Mounting
Style, Bore Size, Stroke,
and any Options.

**REAR PIVOT
MOUNTING STYLES
(20 and 25 mm BORES ONLY)**



THREE POSITION UNIT

Specify only if
needed. Not
available on
Series CVC.
See note 7.

MOUNTING STYLE

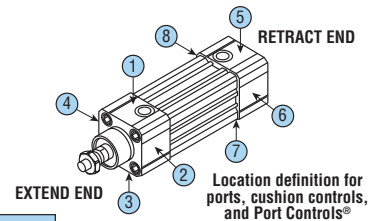
P - Rear pivot in position 5
Q - Rear pivot in position 6
V - Standard mounting
4 female threads each
end per ISO 6431/VDMA
24562 & ISO 6432*
(-P and -Q available on
20 & 25 mm bores only)

STROKE LENGTHS

(15 mm (5/8") = minimum stroke
in 1 mm (1/8") increments)

BORE mm	METRIC MAXIMUM STROKE mm	IMPERIAL MAXIMUM STROKE in
CVC20	500	20
CVC25	500	20
CVB20	750	30
CVB25	750	30
32	1000	40
40	1000	40
50	1000	40
63	1000	40
80	1000	40
100	1000	40

Contact PHD for shorter
or longer strokes.



Location definition for
ports, cushion controls,
and Port Controls®

CUSHION CONTROL

DB - Cushion Controls
Both Ends
DE - Cushion Control
Extend Only
DR - Cushion Control
Retract Only
Standard cushion
control locations are
1 & 5. See note 7.

OPTIONAL PORT LOCATION

UB00 - Ports on all sides, both ends
(Not available with Port Controls on
same end) Contact PHD For other
combinations. Standard port
locations are 1 & 5. See note 7.

C VB S E 6 P 20 x 25 x 25 - PB DB - UB00 - M-Z1

SERIES SIZES 20 & 25 mm ONLY

VB - ISO 6432
150 psi [10 bar] air
See note 8.
VC - ISO 6432
150 psi [10 bar] air
See note 9.

SERIES SIZES 32-100 mm ONLY

VA - VDMA 24562
ISO 6431
150 psi [10 bar] air

DESIGN NO.

2 - Imperial Ⓢ
(See note 5.)
6 - Metric

BORE SIZE

BORE mm	in	PISTON AREA sq mm	sq in
20	0.787	314	0.486
25	0.984	491	0.760
32	1.26	804	1.25
40	1.58	1257	1.95
50	1.97	1963	3.05
63	2.48	3117	4.83
80	3.15	5027	7.79
100	3.94	7854	12.17

PORT CONTROL®

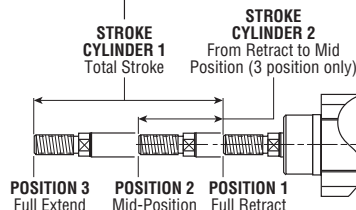
BUILT-IN METER OUT
FLOW CONTROL VALVE
PB - Port Controls Both Ends
PE - Port Control Extend Only
PR - Port Control Retract Only
Standard cushion control
locations are 1 & 5.
See note 7.

CYLINDER OPTIONS

F22 - 4 Wrench Flats on Rod
F44 - No Wrench Flats on Rod Ⓢ
H46 - Rodlok ready cylinder
(CVxS only) Ⓢ See Note 2.
H47 - Rodlok unit includes locking device Ⓢ
Adaptor and cylinder preassembled
(CVxS only). See Note 2.
K_ - Extra Rod Extension Ⓢ in 5 mm
(1/8") increments. Length code is
K5 = 5 mm (5/8"), etc.
K15 = 15 mm (1-7/8"), etc.
L7 - G Port (BSPP) on imperial units
L9 - NPT Ports Ⓢ on metric units
M - Magnetic piston for use with
PHD Miniature Reed and
Solid State Switches
T44 - Female Rod End Undersized Thread Ⓢ
T55 - Plain Rod End Ⓢ
TEE - Male Rod with Oversized Thread
(CVAx only) Ⓢ
Z1 - Corrosion Resistant, chrome-plated
Stainless Steel Rod, and appropriate
coating on ferrous parts.

NOTES:

- Z1 option may have reduced cylinder performance due to chrome-plated stainless steel rod in place of chrome-plated alloy steel.
- H46 & -H47 is not available in -Z1.
- *For mounting accessories and dimensions, see accessories section.
- Ⓢ Marked options provide additional cylinder flexibility, but do not dimensionally comply with the ISO 6431/VDMA 24562 or ISO 6432 specifications.
- Imperial unit provides imperial ports, rod ends, and stroke. Mountings are metric.
- For switch information, see switch option page and Switches section.
- On 3 position units, ports, options -DB and/or -PB are available in locations 1 and 5 only. Contact PHD for other configurations. See option pages.
- Customer interface conforms to ISO 6432, but longer length than ISO 6432.
- Customer interface and lengths conform to ISO 6432 with optional -P or -Q mounting specified on CVC only.



Options may affect unit length. See dimensional
pages and option information details.

SERIES 6250 SOLID STATE SWITCHES

PART NO.	DESCRIPTION	COLOR
62505-1-02	NPN (Sink) DC Solid State, 2 m cable	Brown
62506-1-02	PNP (Source) DC Solid State, 2 m cable	Tan
62515-1	NPN (Sink) DC Solid State, Quick Connect	Brown
62516-1	PNP (Source) DC Solid State, Quick Connect	Tan

NOTE: Switches must be ordered separately. See Switches and Sensors
section for complete switch information.

SERIES 6250 REED SWITCHES

PART NO.	DESCRIPTION	COLOR
62507-1-02	AC/DC Reed, 2 m cable	Silver
62517-1	AC/DC Reed, Quick Connect	Silver

CAD & Sizing Assistance

Use PHD's free online Product Sizing and
CAD Configurator at phdinc.com/myphd

SPECIFICATIONS	SERIES CVA, CVB	SERIES CVC
OPERATING PRESSURE SINGLE ROD DOUBLE ROD	7.5 to 150 psi [0.5 bar to 10 bar] 15 to 150 psi [1.0 bar to 10 bar]	10 to 150 psi [0.67 bar to 10 bar]
TEMPERATURE LIMITS	-20° to +180°F [-29° to +82°C]	
VELOCITY	20 in/sec [0.5 m/sec] typical min, zero load at 100 psi [7 bar]	
LIFE EXPECTANCY	130 million linear inches [3.3 million linear meters] min	100 million linear inches [2.5 million linear meters] min
LUBRICATION	Factory lubricated for rated life	
MAINTENANCE	Field repairable	

BORE mm	NOMINAL STROKE (L)		NOMINAL STROKE CYL. 1 FULL STROKE TOLERANCE*		NOMINAL STROKE 3 POSITION STROKE TOLERANCE*	
	in	mm	in	mm	in	mm
20, 25	L ≤ 4	L ≤ 100	+0.059/-0	+1.5/-0	+0.059/-0.046	+1.5/-1.2
	L > 4	L > 100	+0.079/-0	+2.0/-0	+0.079/-0.046	+2.0/-1.2
32, 40, 50	L ≤ 20	L ≤ 500	+0.079/-0	+2.0/-0	+0.079/-0.050	+2.0/-1.3
	L > 20	L > 500	+0.126/-0	+3.2/-0	+0.126/-0.050	+3.2/-1.3
63, 80, 100	L ≤ 20	L ≤ 500	+0.098/-0	+2.5/-0	+0.098/-0.070	+2.5/-1.8
	L > 20	L > 500	+0.157/-0	+4.0/-0	+0.157/-0.070	+4.0/-1.8

NOTE: *Stroke tolerances/values measured at 60 ±4 psi [4 ±0.27 bar] due to impact seal design.

CYLINDER WEIGHTS

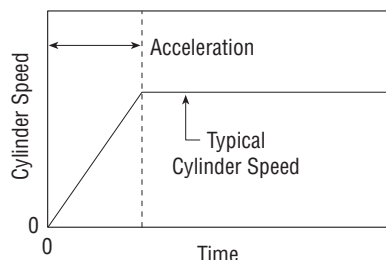
BORE DIA		BASE WEIGHT		ADDER PER	
in	mm	lb	kg	1 in	25 mm
0.787	20	0.55	0.25	0.1	0.04
0.984	25	0.69	0.31	0.12	0.05
1.260	32	1.45	0.66	0.17	0.08
1.575	40	2.08	0.94	0.23	0.10
1.969	50	3.28	1.49	0.32	0.15
2.480	63	4.87	2.21	0.36	0.16
3.150	80	7.78	3.53	0.52	0.24
3.937	100	11.03	5.00	0.6	0.27

CYLINDER SPEEDS

The cylinder speed and time required for the cylinder to extend or retract are dependent upon many application conditions including supply line pressure, valve rating, line size, attached tooling, flow controls, etc. Upon actuation, the cylinder will accelerate from rest to some final speed prior to end of stroke. This is illustrated by the

Idealized Cylinder Speed graph. Using the speed data, the total time to extend or retract can be approximated. Actual extend and retract times will vary, especially as the application conditions change from those stated below.

IDEALIZED CYLINDER SPEED



CYLINDER SPEED CALCULATIONS

	STANDARD & CUSHION UNIT		PORT CONTROL UNIT (FULL OPEN)	
	METRIC	IMPERIAL	METRIC	IMPERIAL
Approximate Extend or Retract Time (seconds)	$A + \left[\frac{\text{Stroke} - B}{1000 \times C} \right]$	$A + \left[\frac{\text{Stroke} - B}{C} \right]$	$D + \left[\frac{\text{Stroke} - E}{1000 \times F} \right]$	$D + \left[\frac{\text{Stroke} - E}{F} \right]$
EXAMPLE 50 mm bore cylinder with 200 mm stroke	$0.053 + \left[\frac{200 - 48}{1000 \times 2.03} \right] = 0.13 \text{ sec}$		$0.159 + \left[\frac{200 - 52}{1000 \times 0.53} \right] = 0.44 \text{ sec}$	

Equation not applicable for imperial values.

SPEED DATA

BORE mm	STANDARD & CUSHION UNITS					PORT CONTROL UNITS (FULL OPEN)				
	[A] ACCELERATION TIME	[B] STROKE DURING ACCELERATION		[C] TYPICAL CYLINDER SPEED		[D] ACCELERATION TIME	[E] STROKE DURING ACCELERATION		[F] TYPICAL CYLINDER SPEED	
	s	in	mm	in/sec	m/sec	s	in	mm	in/sec	m/sec
20	0.025	2.3	58	200	5.08	0.065	1.2	31	35	0.89
25	0.023	1.8	46	150	3.81	0.103	1.5	38	24	0.61
32	0.027	1.3	33	105	2.67	0.120	2.1	52	33	0.84
40	0.033	1.3	33	80	2.03	0.109	2.4	61	36	0.91
50	0.053	1.9	48	80	2.03	0.159	2.1	52	21	0.53
63	0.056	1.2	30	35	0.89	0.116	2.3	58	25	0.64
80	0.079	1.2	30	25	0.64	0.143	2.0	51	18	0.46
100	0.075	1.4	36	25	0.64	0.143	2.2	56	20	0.51

NOTES: The above speed data is based on:

- 1) No attached load with a line pressure of 80 psi [5.5 bar] with a valve rated at Cv=9.0.
- 2) 20 mm and 25 mm cylinders tested with 0.17" ID tubing.
- 3) 32 mm and 40 mm cylinders tested with 0.28" ID tubing.
- 4) 50 mm, 63 mm, and 80 mm cylinders tested with 0.38" ID tubing.
- 5) 100 mm cylinders tested with two 0.38" ID tubes to each port from the valve.

METRIC TO IMPERIAL CONVERSION

	MULTIPLY	BY	TO OBTAIN
LENGTH	mm	0.0394	in
SPEED	m/sec	39.37	in/sec

SIZING: Series CV Cylinders

	IMPERIAL TO METRIC CONVERSION			METRIC TO IMPERIAL CONVERSION		
	MULTIPLY	BY	TO OBTAIN	MULTIPLY	BY	TO OBTAIN
LENGTH	in	25.4	mm	mm	0.0394	in
FORCE	lbs	4.45	N	N	0.225	lbs
PRESSURE	psi	0.069	bar	bar	14.5	psi

HOW TO DETERMINE CORRECT CYLINDER SIZE

Step 1. Determine stroke and force required for the application.

Step 2. Determine the force produced by the cylinder using the force calculations below. The cylinder force is based on the following formulas and the data from the cylinder force table.

	Imperial	Metric
	$F = P \times A$	$F = 0.1 \times P \times A$
F = Cylinder Force	lbs	N
P = Operating Pressure	psi	bar
A = Effective Area (Extend or Retract)	in ²	mm ²

CYLINDER FORCE

BORE DIAMETER		ROD DIAMETER		ROD DIRECTION	EFFECTIVE AREA	
in	mm	in	mm		in ²	mm ²
0.787	20	0.315	8	EXTEND	0.49	314
				RETRACT	0.41	264
0.984	25	0.394	10	EXTEND	0.76	491
				RETRACT	0.64	412
1.260	32	0.472	12	EXTEND	1.25	804
				RETRACT	1.07	691
1.575	40	0.630	16	EXTEND	1.95	1257
				RETRACT	1.64	1056
1.969	50	0.787	20	EXTEND	3.04	1963
				RETRACT	2.56	1649
2.480	63	0.787	20	EXTEND	4.83	3117
				RETRACT	4.34	2803
3.150	80	0.984	25	EXTEND	7.79	5027
				RETRACT	7.03	4536
3.937	100	0.984	25	EXTEND	12.17	7854
				RETRACT	11.41	7363

NOTE: Use retract figures for calculating double rod cylinder forces in both directions.

Step 3. For the selected cylinder, verify that there is sufficient rod column strength based on the cylinder extend force and stroke length. Rod column strength curves are based on the following formula:

$$F_c = \frac{\pi^2 EI}{(LK)^2 S_f}$$

	IMPERIAL	METRIC
F _c = Maximum Column Force	lbs	N
E = Modulus of Elasticity	30 x 10 ⁶ psi	207 GPa
L = Stroke Length	in	mm
I = Moment of Inertia	in ⁴	mm ⁴
I = π (Rod Diameter) ⁴ /64		
K = Stroke Factor	(see chart)	(see chart)
S _f = Safety Factor	5	5

ROD END CONDITION	CYLINDER MOUNT	COLUMN STRENGTH CURVE	STROKE FACTOR K
Fixed & Supported	Fixed	A	2
Pivoted & Guided	Pivot at Rear	A	2
Pivoted & Guided	Fixed	See Note	0.7
Fixed & Guided	Fixed	See Note	0.5

NOTE: In these two cases, column strength is sufficient for stroke lengths less than or equal to 40 in [1000 mm] for CVA units and 30 in [750 mm] for CVB and CVC units.

Example:

Step 1. For a specific application, it has been determined that a cylinder is required to operate within the following parameters:

P = Operating Pressure = 80 psi [5.5 bar]
 F = Required Extend Force = 150 lbs [667 N]
 L = Required Stroke = 30 in [762 mm]
 V = Required Maximum Velocity = 20 in/sec [0.51 m/sec]
 M = Attached Load = 75 lbs [35 kg]

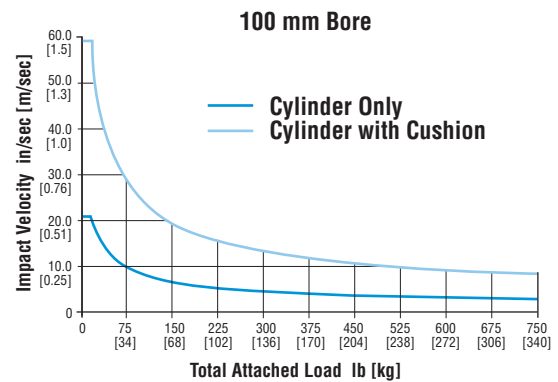
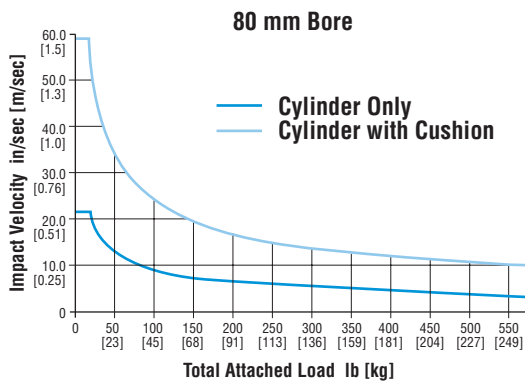
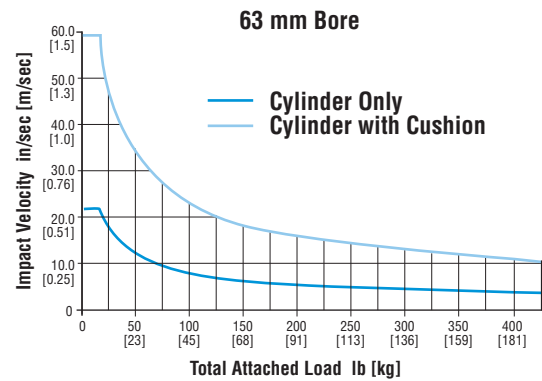
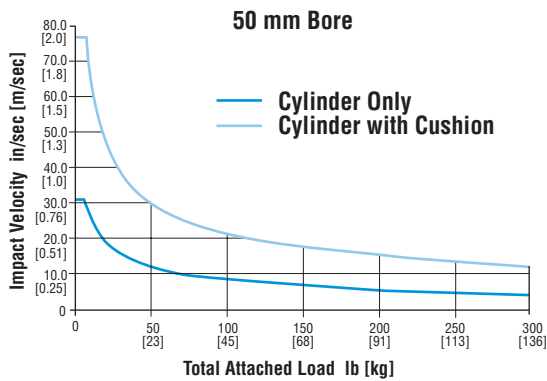
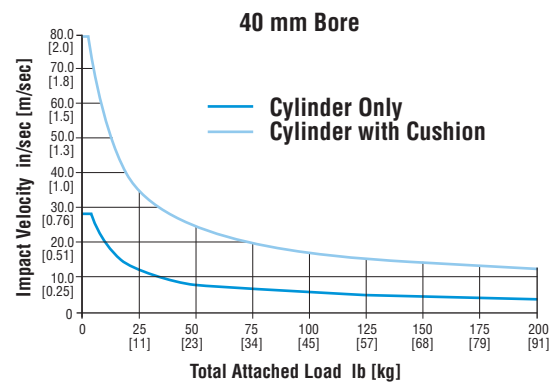
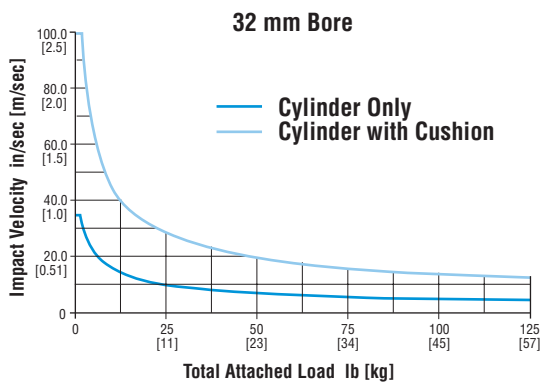
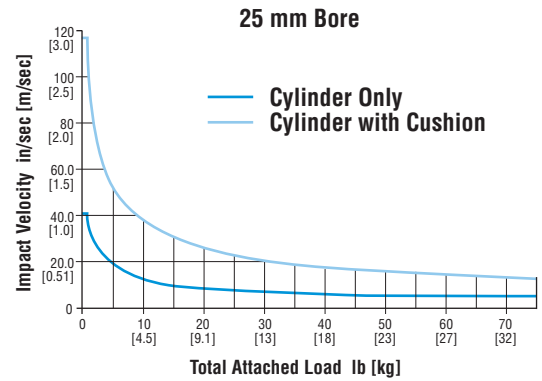
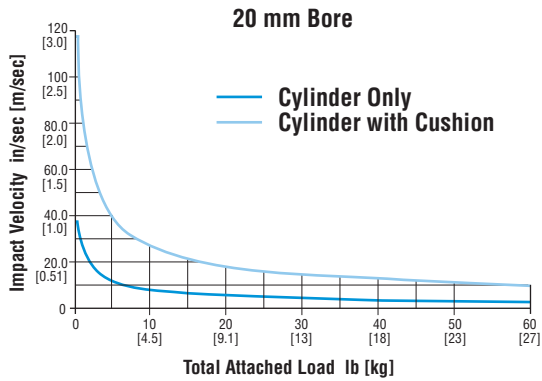
Mounting type: Rod end is pivoted and guided
 Cylinder is pivoted at rear

Step 2. Using the Cylinder Force Graphs on page 42, locate 80 psi [5.5 bar] on the horizontal axis. Follow the line vertically until it intersects the solid (extend) diagonal line on the chart. The 32 mm cylinder extend force is only 100 lbs [445 N] at 80 psi [5.5 bar] less than the required 150 lbs [667 N]. The 40 mm is capable of just over 150 lbs [667 N] extend force at this pressure. Select the 40 mm and proceed to the next step.

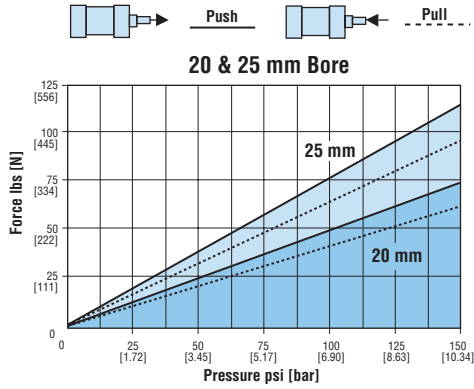
Step 3. Check column strength. Based on the mounting types, use curve A on the 40 mm Rod Column Strength Chart on page 42. At 150 lbs [667 N] extend force, the maximum allowable cylinder stroke is 27 in [686 mm]. However, the required stroke is 30 in [762 mm]. Assuming the stroke cannot be changed, it is necessary to select a cylinder with a larger rod diameter. Checking the 50 mm cylinder in the same way as was done for the 40 mm shows that the 50 mm cylinder is acceptable.

Step 4. Using the Kinetic Energy Graphs on page 41, find the point on the 50 mm chart that corresponds to the given maximum velocity and attached load. The chart shows that the cylinder must be specified with cushions to properly decelerate the load.

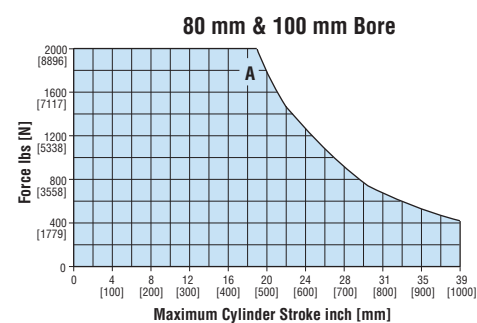
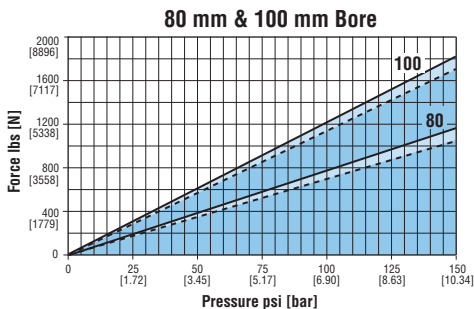
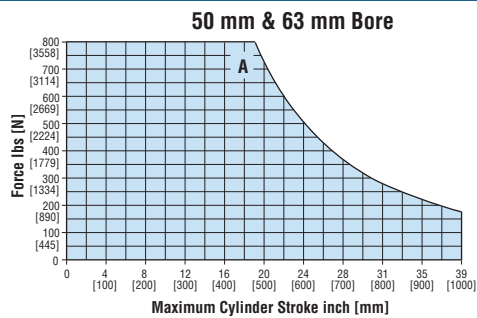
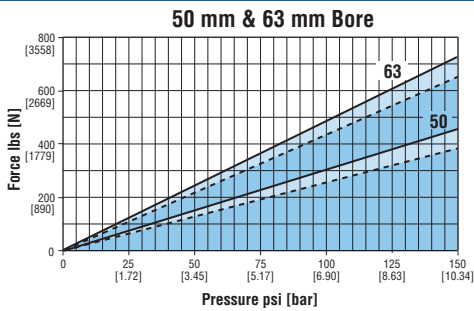
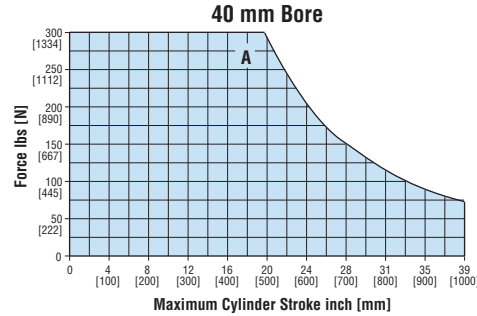
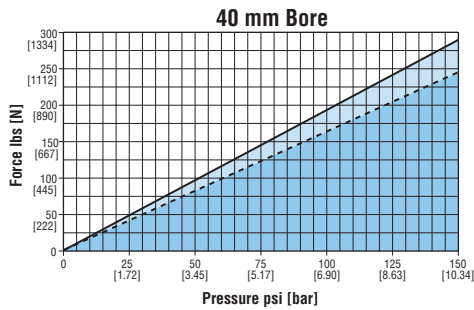
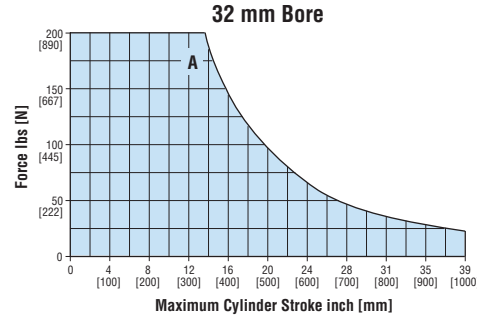
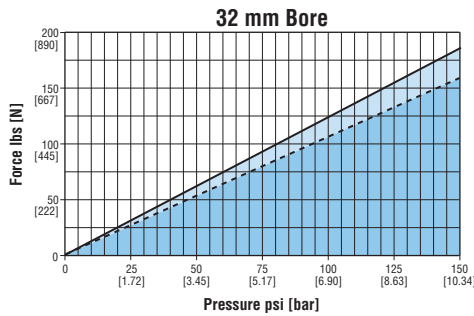
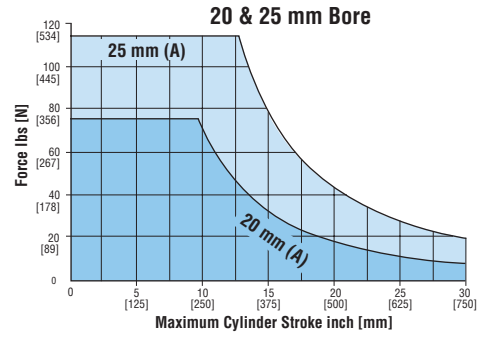
MAXIMUM ALLOWABLE KINETIC ENERGY GRAPHS



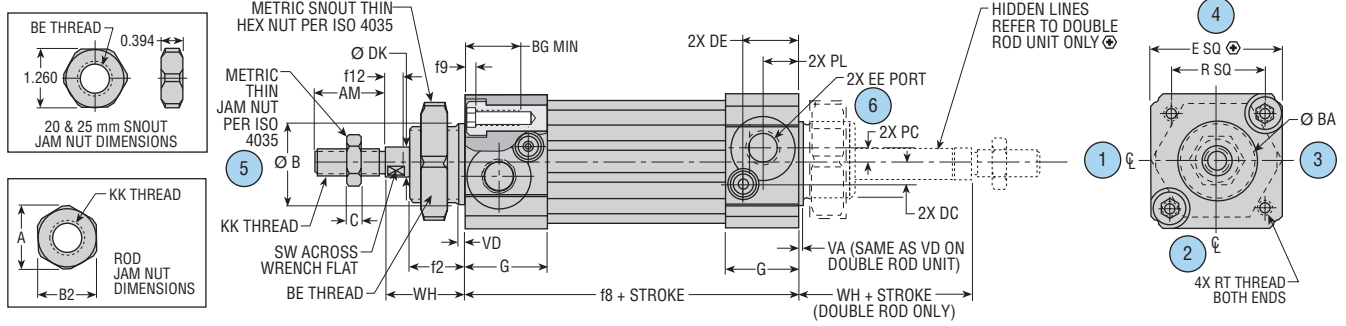
CYLINDER FORCE GRAPHS



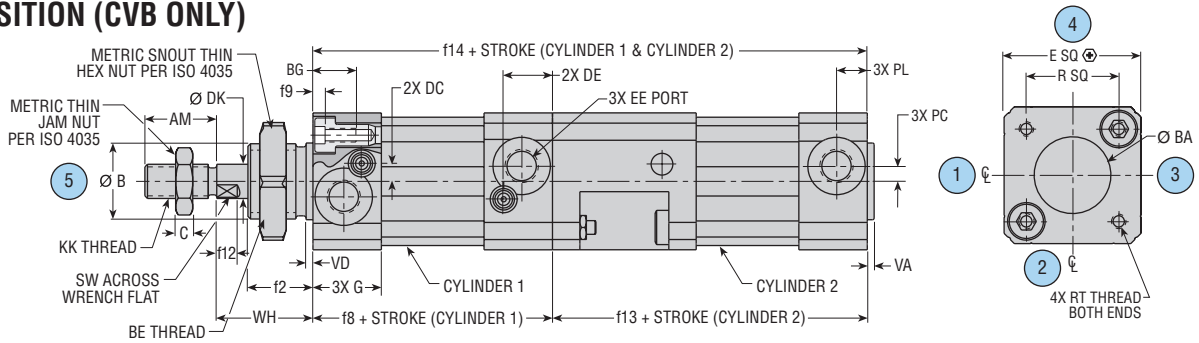
ROD COLUMN STRENGTH GRAPHS



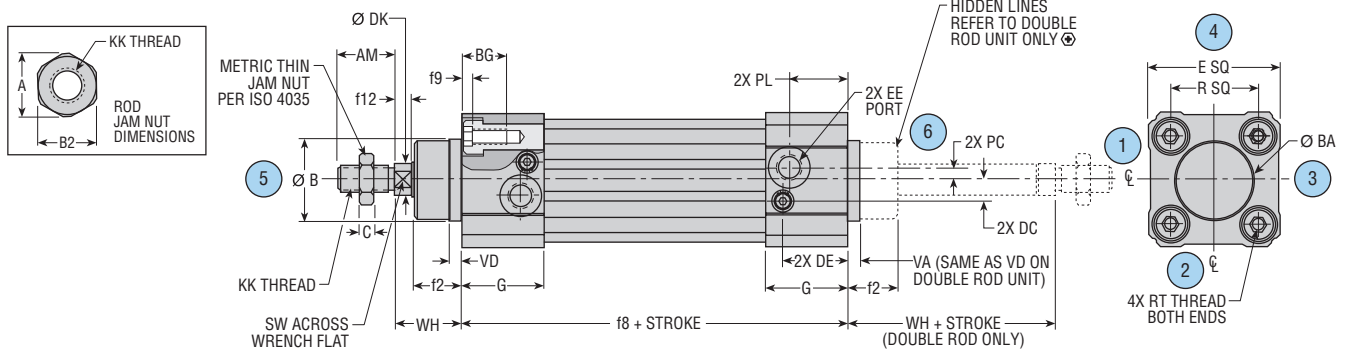
SIZES 20 & 25 mm



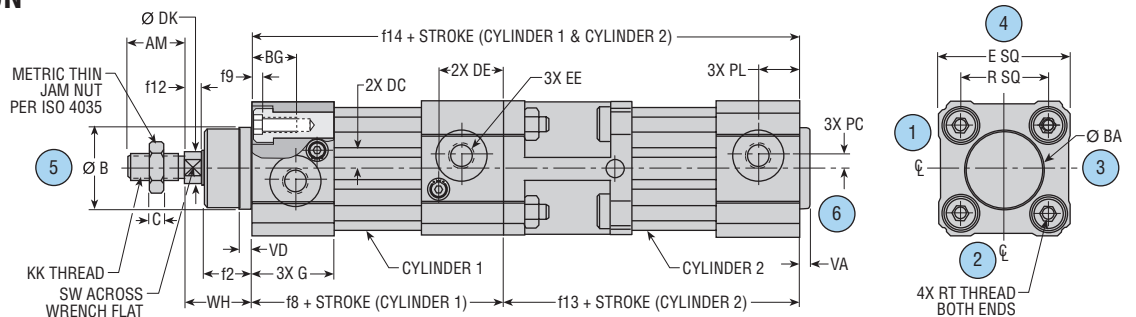
3 POSITION (CVB ONLY)



SIZES 32-100 mm



3 POSITION



Port Position: Indicated by circled numbers

LETTER DIM	BORE SIZE																	
	20 mm		25 mm		32 mm		40 mm		50 mm		63 mm		80 mm		100 mm			
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm		
A	0.577	14.7	0.650	16.5	0.650	16.5	0.819	20.8	1.083	27.5	1.083	27.5	1.299	33.0	1.299	33.0		
AM	0.748	19.0	0.827	21.0	0.827	21.0	0.906	23.0	1.220	31.0	1.220	31.0	1.535	39.0	1.535	39.0		
Ø B	0.864	22.0	0.864	22.0	1.178	30.0	1.374	34.9	1.571	39.9	1.768	44.9	1.768	44.9	2.161	54.9		
B2	0.500	12.7	0.562	14.3	0.562	14.3	0.709	18.0	0.938	23.8	0.938	23.8	1.125	28.6	1.125	28.6		
BA	0.864	22.0	0.864	22.0	1.178	30.0	1.374	34.9	1.571	39.9	1.768	44.9	1.768	44.9	2.161	54.9		
BE	M22 x 1.5		M22 x 1.5		—		—		—		—		—		—			
BG min	0.472	12.0	0.472	12.0	0.709	18.0	0.709	18.0	0.787	20.0	0.787	20.0	0.787	20.0	0.787	20.0		
C	0.188	4.8	0.219	5.6	0.219	5.6	0.323	8.2	0.375	9.5	0.385	9.5	0.422	10.7	0.442	11.2		
DC***	0.190	4.8	0.226	5.7	0.276	7.0	0.374	9.5	0.394	10.0	0.354	9.0	0.591	15.0	0.630	16.0		
DE***	0.581	14.8	0.561	14.2	0.965	24.5	1.083	27.5	1.043	26.5	1.201	30.5	1.181	30.0	1.339	34.0		
DK	0.315	8.0	0.394	10.0	0.472	12.0	0.630	16.0	0.787	20.0	0.787	20.0	0.984	25.0	0.984	25.0		
E	1.457	37.0	1.575	40.0	1.949	49.5	2.205	56.0	2.697	68.5	3.150	80.0	3.858	98.0	4.528	115.0		
EE PORT**	1/8 NPT	G 1/8	1/8 NPT	G 1/8	1/8 NPT	G 1/8	1/4 NPT	G 1/4	1/4 NPT	G 1/4	3/8 NPT	G 3/8	3/8 NPT	G 3/8	1/2 NPT	G 1/2		
EE G PORT DEPTH	—	8.0	—	8.0	—	8.0	—	9.0	—	9.0	—	12.0	—	12.0	—	14.0		
f2	0.670	17.0	0.748	19.0	0.729	18.5	0.802	20.4	1.085	27.5	1.084	27.5	1.316	33.4	1.438	36.5		
f8 CVA	—	—	—	—	3.702	94.0	4.133	105.0	4.173	106.0	4.764	121.0	5.039	128.0	5.434	138.0		
f8 CVB	2.637	67.0	2.755	70.0	—	—	—	—	—	—	—	—	—	—	—	—		
f8 CVC	2.323	59.0	2.520	64.0	—	—	—	—	—	—	—	—	—	—	—	—		
f9	0.140	3.6	0.140	3.6	0.158	4.0	0.158	4.3	0.210	5.3	0.210	5.3	0.256	6.5	0.256	6.5		
f12	0.196	5.0	0.236	6.0	0.236	6.0	0.256	6.5	0.315	8.0	0.315	8.0	0.394	10.0	0.394	10.0		
f13	3.504	89.0	3.622	92.0	4.371	111.0	4.822	122.5	5.728	145.5	6.181	157.0	6.772	172.0	7.008	178.0		
f14	6.141	156.0	6.377	162.0	8.073	205.0	8.955	227.5	9.901	251.5	10.945	278.0	11.811	300.0	12.441	316.0		
G	0.787	20.0	0.787	20.0	1.221	31.0	1.358	34.5	1.358	34.5	1.496	38.0	1.496	38.0	1.654	42.0		
KK	5/16-24	M8 x 1.25	3/8-24	M10 x 1.25	3/8-24	M10 x 1.25	1/2-20	M12 x 1.25	5/8-18	M16 x 1.5	5/8-18	M16 x 1.5	3/4-16	M20 x 1.5	3/4-16	M20 x 1.5		
PC***	0.167	4.2	0.177	4.5	0.197	5.0	0.236	6.0	0.236	6.0	0.394	10.0	0.394	10.0	0.472	12.0		
PL***	0.354	9.0	0.354	9.0	0.630	16.0	0.728	18.5	0.728	18.5	0.787	20.0	0.709	18.0	0.867	22.0		
R	1.024	26.0	1.063	27.0	1.280	32.5	1.496	38.0	1.831	46.5	2.224	56.5	2.835	72.0	3.504	89.0		
RT	M4 x 0.7		M4 x 0.7		M6 x 1		M6 x 1		M8 x 1.25		M8 x 1.25		M10 x 1.5		M10 x 1.5			
SW	0.270	6.9	0.315	8.0	0.389	9.9	0.507	12.9	0.625	15.9	0.625	15.9	0.828	21.0	0.822	20.9		
VA	0.079	2.0	0.079	2.0	0.142	3.6	0.142	3.6	0.142	3.6	0.143	3.6	0.143	3.6	0.142	3.6		
VD	0.079	2.0	0.079	2.0	0.179	4.5	0.182	4.6	0.182	4.6	0.184	4.7	0.184	4.7	0.176	4.5		
WH*	0.945	24.0	1.102	28.0	1.024	26.0	1.181	30.0	1.457	37.0	1.457	37.0	1.811	46.0	2.008	51.0		

NOTES:

- 1) Unless otherwise dimensioned, mounting hole patterns are centered on the cylinder.
- 2) Ports and cushions may appear on either side of the cylinder centerline based on option combinations.
- 3) ** All metric (Cxx6) units, except port with Port Control® on same side, comply with ISO 16030 and DIN 3852 part 2 port specifications for short stud and large sealing surface. See Port Control® option sheet for port and Port Control® dimensions on units with ports and Port Controls® on the same side.
- 4) *WH values are determined with cylinder at 60 ± 4 psi [4 ± 0.27 bar] due to impact seal design.
- 5) *** ⚠ Marked dimensions on the previous page provide additional flexibility, but do not dimensionally comply with ISO 6431/VDMA 24562 or ISO 6432 specifications.

DB

CUSHION CONTROL IN BOTH DIRECTIONS
(standard location 1 & 5, see note)

DE

CUSHION CONTROL ON EXTEND ONLY
(standard location 1, not available on 3 position units)

DR

CUSHION CONTROL ON RETRACT ONLY
(standard location 5, not available on 3 position units)

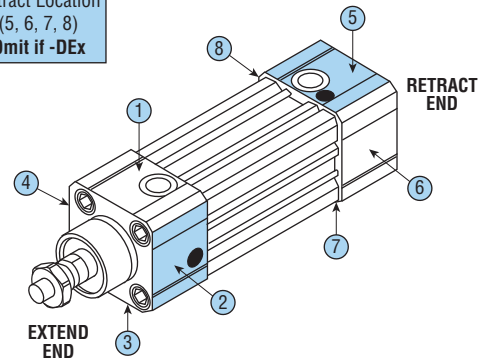
CUSHION CONTROL OPTIONS

-D x x x

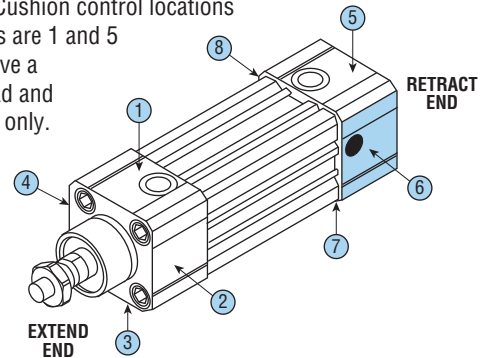
Cushion Control Locations
B - Both ends
E - Extend end only
R - Retract end only

Retract Location
(5, 6, 7, 8)
Omit if -DEx

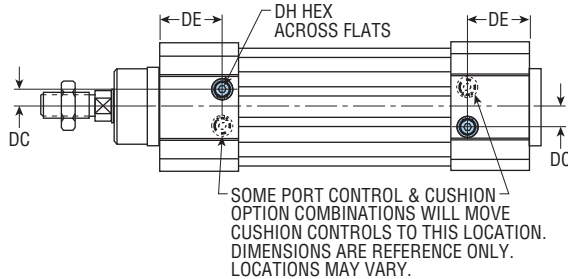
Extend Location
(1, 2, 3, 4)
Omit if -DRx



Unit shown is -DB25, cushion in location 2 on extend end and cushion in location 5 on retract end. (Ports are shown in standard locations 1 & 5.) Cushion control locations on 3 position units are 1 and 5 only and will receive a control on the head and intermediate head only.



Unit shown is -DR6, cushion in location 6 on retract end and none on extend end. (Ports are shown in standard locations 1 & 5.)

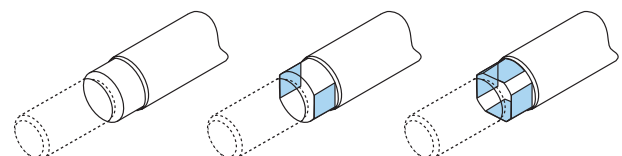


LETTER DIM	BORE SIZE															
	20 mm		25 mm		32 mm		40 mm		50 mm		63 mm		80 mm		100 mm	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
DC	0.190	4.8	0.226	5.7	0.276	7.0	0.374	9.5	0.394	10.0	0.354	9.0	0.591	15.0	0.630	16.0
DE	0.581	14.8	0.561	14.2	0.965	24.5	1.083	27.5	1.043	26.5	1.201	30.5	1.181	30.0	1.339	34.0
DH	—	2.5	0.561	2.5	—	2.5	—	2.5	—	2.5	—	2.5	—	3.0	—	3.0
EFFECTIVE CUSHION LENGTH	0.441	11.2	0.469	11.9	0.598	15.2	0.807	20.5	0.870	22.1	0.870	20.4	0.894	22.7	1.189	30.2

F44

NO WRENCH FLATS ON ROD END ⊕

This option omits rod end wrench flats. If this option is specified on double rod units, both rod ends will be supplied without wrench flats.


F44
STANDARD
F22
F22

4 WRENCH FLATS ON ROD END ⊕

With this option, the rod is supplied with four rod end flats instead of the standard two flats. If this option is specified on double rod units, both rod ends will be supplied with four wrench flats.

⊕ For metric units (CVxx6).

This option does not dimensionally comply with the ISO 6431/VDMA 24562 or ISO 6432 specifications.

H46

RODLOK READY CYLINDER

Available on single rod units only
(Rodlok sold separately) ⊕

H47

RODLOK CYLINDER & RODLOK

Available on single rod units only
(Preassembled) ⊕

PHD's Rodlok is ideal for locking the piston rod while in a static/stationary position. When the pressure is removed from the port of the Rodlok, the mechanism will grip the rod and prevent it from moving. The loads are held indefinitely without power. Rodlok performance is application and environment sensitive (cleanliness of rod or Rodlok will also affect performance). THE RODLOK IS NOT DESIGNED TO BE USED AS A PERSONAL SAFETY DEVICE.

Option -H46 provides a Rodlok ready cylinder with appropriate rod extension and materials for use with PHD's Rodlok.

Option -H47 provides a cylinder and Rodlok pre-assembled. The port for the Rodlok will be assembled in the same position as the port on the extend end of the cylinder.

The Rodlok locking device and adaptor can be purchased separately as kits. See chart at right. The locking device and adaptor are not available with the -Z1 corrosion resistant finish.

Dimensions continued on next page.

BORE mm	STATIC LOCKING FORCE*	
	lb	N
20	79	350
25	90	400
32	135	600
40	225	1000
50	337	1500
63	495	2200
80	674	3000
100	1124	5000

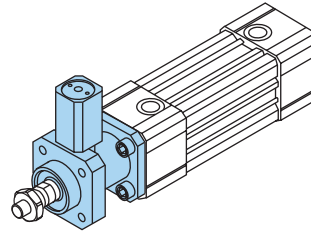
NOTE: *Locking force indicated above is the actual locking force with a dry, clean rod and does not include any safety factor.

OPERATING PRESSURE

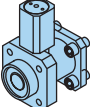
The operating pressure for the locking device is different than the operating pressure for the cylinder with the Rodlok attached. The locking device of the Rodlok is designed with an operating pressure range of 60 psi minimum to 150 psi maximum [4 to 10 bar]. The Series CV Cylinder with a Rodlok attached has an operating pressure range of 22 psi minimum to 150 psi maximum [1.5 to 10 bar].

⊕ For metric units (CVxx6).

This option does not dimensionally comply with the ISO 6431/VDMA 24562 or ISO 6432 specifications.



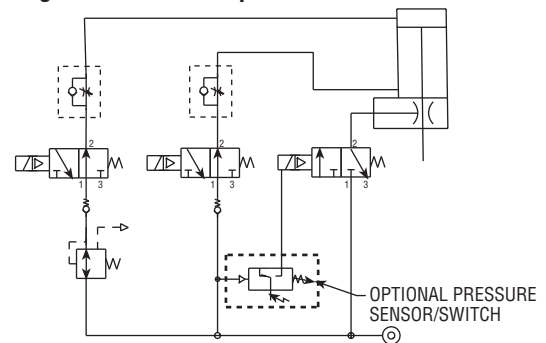
RODLOK KITS

				
BORE mm	LOCKING DEVICE KIT	ADAPTOR KIT*	COMPLETE RODLOK*	IMPERIAL PORT ADAPTOR**
20	63459-07-1	63460-07-1	63461-07-1	—
25	63459-08-1	63460-08-1	63461-08-1	—
32	63459-01-1	63460-01-1	63461-01-1	63465-1
40	63459-02-1	63460-02-1	63461-02-1	63465-1
50	63459-03-1	63460-03-1	63461-03-1	63465-1
63	63459-04-1	63460-04-1	63461-04-1	63465-1
80	63459-05-1	63460-05-1	63461-05-1	63465-1
100	63459-06-1	63460-06-1	63461-06-1	63465-1

NOTES:

- *Kits ship with cylinder mounting hardware.
- Rodlok is intended for use only on -H46 cylinder.
- Imperial port adaptor converts port from G1/8 to 1/8" NPT for use with -L9 cylinders or imperial units.
- **Adaptor must be ordered separately. Required to convert to imperial port.

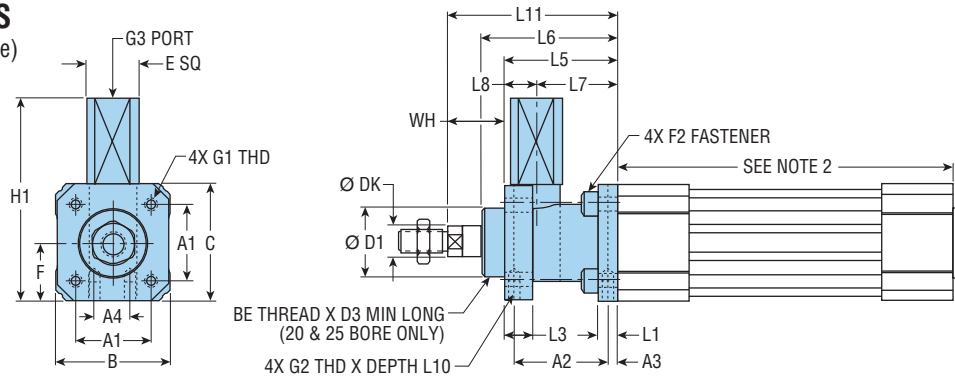
Plumbing Schematic Example:



The pneumatic schematic above shows typical valving for cylinder and Rodlok for both horizontal and vertical operation. The schematic shows three 3/2 way valves, one for each port on the cylinder and one for the Rodlok port. The use of two valves on the cylinder allows for both ports to be pressurized when valves are de-energized. The use of an in-line regulator allows the cylinder ports to be pressurized at different pressures. This allows the cylinder to balance out the opposing pressure and force of the attached load. Once piston rod motion has stopped, the Rodlok can be engaged by de-energizing its valve and releasing its pressure. The use of check valves and built in PHD Port Controls® is recommended. Pressure switch shown is optional and application specific.

RODLOK DIMENSIONS

(continued from previous page)



LETTER DIM	BORE SIZE													
	20 mm		25 mm		32 mm		40 mm		50 mm		63 mm		80 mm	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
A1	1.024	26.0	1.063	27.0	1.280	32.5	1.496	38.0	1.831	46.5	2.224	56.5	2.835	72.0
A2	—	—	—	—	1.575	40.0	1.811	46.0	2.126	54.0	2.165	55.0	2.756	70.0
A3	—	—	—	—	0.165	4.2	0.177	4.5	0.453	11.5	0.295	7.5	0.394	10.0
A4	—	—	—	—	0.630	16.0	0.827	21.0	0.945	24.0	1.260	32.0	1.732	44.0
B	1.457	37.0	1.575	40.0	1.890	48.0	2.205	56.0	2.677	68.0	3.228	82.0	3.937	100.0
BE	M22 x 1.5		M22 x 1.5		—		—		—		—		—	
C	1.457	37.0	1.575	40.0	1.969	50.0	2.283	58.0	2.756	70.0	3.346	85.0	4.134	105.0
D1	0.866	22.0	0.866	22.0	1.181	30.0	1.378	35.0	1.575	40.0	1.772	45.0	1.772	45.0
D3	0.590	15.0	0.669	17.0	—	—	—	—	—	—	—	—	—	—
DK	0.315	8.0	0.394	10.0	0.472	12.0	0.630	16.0	0.787	20.0	0.787	20.0	0.984	25.0
E	0.807	20.5	0.807	20.5	0.984	25.0	1.083	27.5	1.280	32.5	1.614	41.0	1.929	49.0
F	0.728	18.5	0.787	20.0	0.984	25.0	1.142	29.0	1.378	35.0	1.673	42.5	2.067	52.5
F2	M4 x 0.7 x 20		M4 x 0.7 x 20		M6 x 1 x 20		M6 x 1 x 20		M8 x 1.25 x 30		M8 x 1.25 x 30		M10 x 1.5 x 30	
G1	M4 x 0.7		M4 x 0.7		M6 x 1		M6 x 1		M8 x 1.25		M8 x 1.25		M10 x 1.5	
G2	—		—		M5		M5		M6		M8		M8	
G3	M5 x 0.8		M5 x 0.8		G 1/8*		G 1/8*		G 1/8*		G 1/8*		G 1/8*	
H1	2.775	70.5	2.854	72.5	3.524	89.5	3.856	97.9	4.645	118.0	5.256	133.5	6.732	171.0
L1	0.354	9.0	0.315	8.0	0.315	8.0	0.394	10.0	0.591	15.0	0.591	15.0	0.630	16.0
L3	0.354	9.0	0.315	8.0	0.473	12.0	0.472	12.0	0.630	16.0	0.590	15.0	0.630	16.0
L5	1.575	40.0	1.732	44.0	1.890	48.0	2.165	55.0	2.756	70.0	2.756	70.0	3.543	90.0
L6	2.244	57.0	2.480	63.0	2.283	58.0	2.559	65.0	3.228	82.0	3.228	82.0	4.331	110.0
L7	1.142	29.0	1.220	31.0	1.260	32.0	1.398	35.5	1.929	49.0	1.929	49.0	2.441	62.0
L8	0.433	11.0	0.512	13.0	0.630	16.0	0.768	19.5	0.827	21.0	0.827	21.0	1.102	28.0
L10	—	—	—	—	0.315	8.0	0.394	10.0	0.472	12.0	0.472	12.0	0.630	16.0
L11	2.520	64.0	2.835	72.0	2.913	74.0	3.346	85.0	4.213	107.0	4.213	107.0	5.354	136.0
WH	0.945	24.0	1.102	28.0	1.024	26.0	1.181	30.0	1.457	37.0	1.457	37.0	1.811	46.0

NOTES:

- 1) -H47 units have Rodlok port aligned with cylinder port on extend.
- 2) All dimensions not noted are standard. See pages 43 and 44 for complete cylinder dimensions.
- 3) * = Port supplied on Rodlok device, requires port adaptor from previous page to convert to 1/8 NPT.

L9

NPT PORTS (Metric Units) ⊕

This option provides NPT ports instead of the standard G (BSPP) ports. The NPT ports are located in the same location as the G (BSPP) ports.

L7

BSPP PORTS (Imperial Units)

This option provides G (BSPP) ports instead of the standard NPT ports. The G (BSPP) ports are located in the same location as the NPT ports.

BORE (mm)	IMPERIAL NPT PORT	METRIC BSPP PORT
20	1/8*	G 1/8*
25	1/8*	G 1/8*
32	1/8	G 1/8
40	1/4	G 1/4
50	1/4	G 1/4
63	3/8	G 3/8
80	3/8	G 3/8
100	1/2	G 1/2

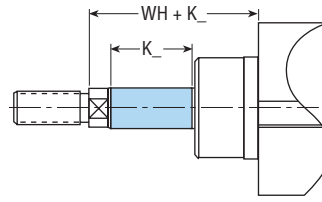
⊕ This option does not dimensionally comply with the ISO 6431/VDMA 24562 or ISO 6432 specifications.

*When Port Controls® (-PB, -PR, -PE) are specified on the same face as port, the ports change to M5 on metric and 10-32 on imperial.

K

EXTRA ROD EXTENSION ⊕

Extra rod extension can be achieved by specifying the option -K followed by the length code. Rod extension is available in 1/8" or 5 mm increments. If this option is specified on double rod units, both rod ends will be supplied with the same extra rod extension. Contact PHD for other combinations.



⊕ For metric units (CVxx6).

This option does not dimensionally comply with the ISO 6431/VDMA 24562 or ISO 6432 specifications.

BORE		WH	
mm	in	mm	
20	0.945	24.0	
25	1.102	28.0	
32	1.024	26.0	
40	1.181	30.0	
50	1.457	37.0	
63	1.457	37.0	
80	1.811	46.0	
100	2.008	51.0	

Imperial

K5 = 5/8" extra rod extension
K15 = 1-7/8" extra rod extension

Length Code

Metric

K5 = 5 mm extra rod extension
K15 = 15 mm extra rod extension

Z1

CORROSION RESISTANT

By specifying this option, a stainless steel rod with hard chrome plating is supplied in place of the standard hard chrome plated steel material. Appropriate coating is supplied on ferrous parts.

M

MAGNETIC PISTON FOR PHD MINIATURE REED AND SOLID STATE SWITCHES

This option equips the cylinder with a magnetic band on the piston for use with PHD Miniature Reed and Solid State Switches listed below. These switches mount easily to the cylinder using "T" slots in the body. Three position units will receive a magnet on both cylinder 1 and cylinder 2 when specified with -M option.

SERIES 6250 SOLID STATE SWITCHES

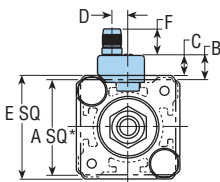
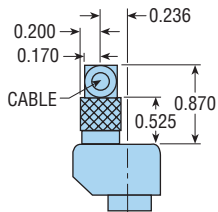
PART NO.	DESCRIPTION	COLOR
62505-1-02	NPN (Sink) DC Solid State, 2 m cable	Brown
62506-1-02	PNP (Source) DC Solid State, 2 m cable	Tan
62515-1	NPN (Sink) DC Solid State, Quick Connect	Brown
62516-1	PNP (Source) DC Solid State, Quick Connect	Tan

NOTE: Switches must be ordered separately. See Switches and Sensors section for complete switch information.

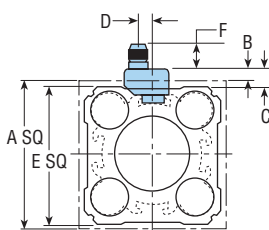
SERIES 6250 REED SWITCHES

PART NO.	DESCRIPTION	COLOR
62507-1-02	AC/DC Reed, 2 m cable	Silver
62517-1	AC/DC Reed, Quick Connect	Silver

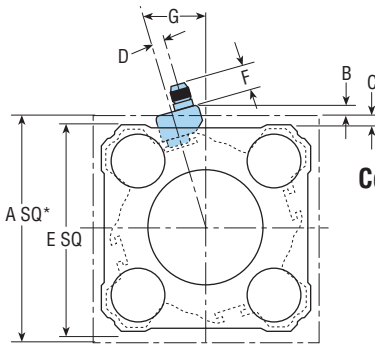
Connector Detail



20 & 25 mm units

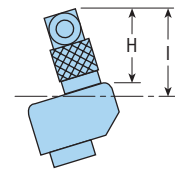


32, 40, & 50 mm units



63, 80, & 100 mm units

Connector Detail



LETTER DIM	BORE SIZE															
	20 mm		25 mm		32 mm		40 mm		50 mm		63 mm		80 mm		100 mm	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
A*	1.339	34.0	1.339	34.0	1.969	50.0	2.283	58.0	2.756	70.0	3.346	85.0	4.134	105.0	5.118	130.0
B	0.343	8.7	0.441	11.2	0.276	7.0	0.197	5.0	0.236	6.0	0.236	6.0	0.157	4.0	0.020	0.5
C	0.283	7.2	0.323	8.2	0.295	7.5	0.256	6.5	0.276	7.0	0.335	8.5	0.295	7.5	0.315	8.0
D	0.236	6.0	0.236	6.0	0.236	6.0	0.236	6.0	0.236	6.0	0.236	6.0	0.236	6.0	0.236	6.0
E	1.457	37.0	1.575	40.0	1.949	49.5	2.205	56.0	2.697	68.5	3.150	80.0	3.858	98.0	4.528	115.0
F	0.374	9.5	0.374	9.5	0.374	9.5	0.374	9.5	0.374	9.5	0.374	9.5	0.374	9.5	0.374	9.5
G	—	—	—	—	—	—	—	—	—	—	17°	17°	20°	20°	24°	24°
H	0.870	22.1	0.870	22.1	0.870	22.1	0.870	22.1	0.870	22.1	0.831	21.1	0.819	20.8	0.795	20.2
I	1.213	30.8	1.311	33.3	1.146	29.1	1.087	27.6	1.106	28.1	1.059	26.9	0.965	24.5	0.811	20.6

NOTE: *ISO/VDMA max square size

PB

PORT CONTROLS® ON BOTH ENDS
(standard location 1 & 5, see note) ⊕

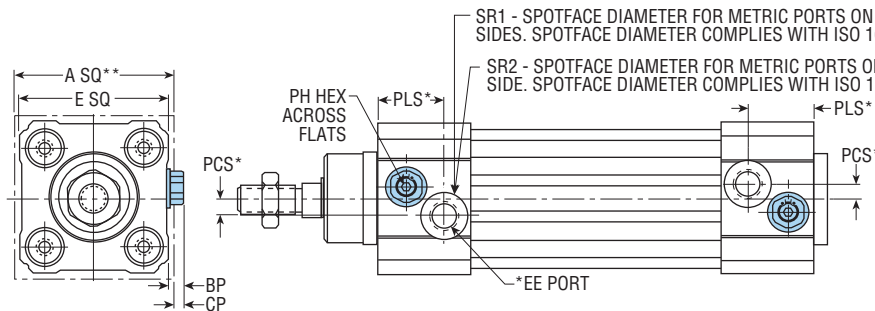
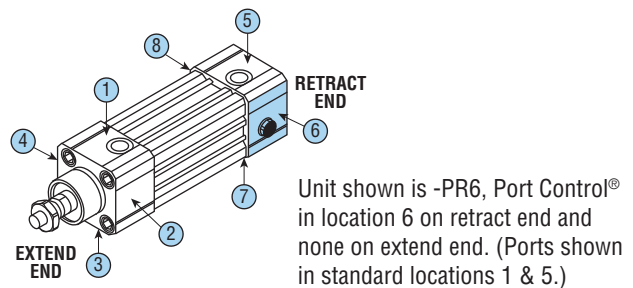
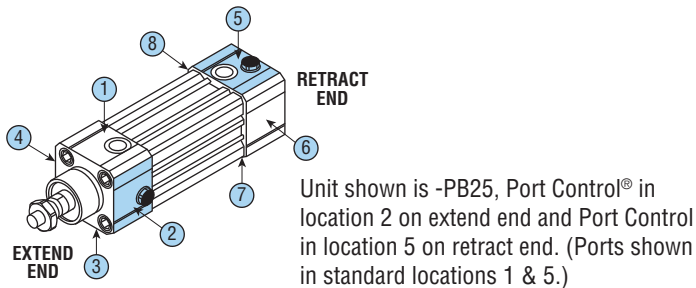
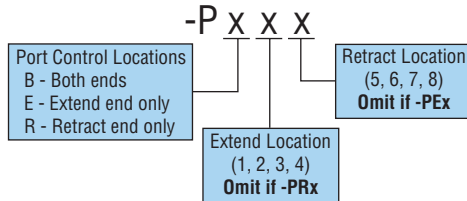
PE

PORT CONTROLS® ON EXTEND ONLY
(standard location 1, not available on 3 position units) ⊕

PR

PORT CONTROLS® ON RETRACT ONLY
(standard location 5, not available on 3 position units) ⊕

PORT CONTROL OPTIONS



⊕ For metric units (CVxx6).

This option does not dimensionally comply with the ISO 6431/VDMA 24562 or ISO 6432 specifications.

LETTER DIM	BORE SIZE															
	20 mm		25 mm		32 mm		40 mm		50 mm		63 mm		80 mm		100 mm	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
A**	1.339	34.0	1.339	34.0	1.969	50.0	2.283	58.0	2.756	70.0	3.346	85.0	4.134	105.0	5.118	130.0
BP	0.125	3.2	0.153	3.9	0.177	4.5	0.240	6.1	0.110	2.8	0.201	5.1	0.134	3.4	0.20	55.2
CP	0.184	4.7	0.271	6.9	0.169	4.3	0.201	5.1	0.083	2.1	0.102	2.6	-0.004	-0.1	-0.091	-2.3
E	1.457	37.0	1.575	40.0	1.949	49.5	2.205	56.0	2.697	68.5	3.150	80.0	3.858	98.0	4.528	115.0
EE*	10-32	M5	10-32	M5	1/8 NPT	G1/8	1/4 NPT	G1/4	1/4 NPT	G1/4	3/8 NPT	G3/8	3/8 NPT	G3/8	1/2 NPT	G1/2
PCS*	0.276	7.0	0.276	7.0	0.197	5.0	0.236	6.0	0.236	6.0	0.449	11.4	0.512	13.0	0.906	23.0
PH	—	2.5	—	2.5	—	2.5	—	2.5	—	2.5	—	3.0	—	3.0	—	6.0
PLS*	0.571	14.5	0.571	14.5	0.866	22.0	0.925	23.5	0.906	23.0	0.984	25.0	1.024	26.0	1.142	29.0
SR1	—	16.5	—	16.5	—	19.0	—	25.0	—	25.0	—	28.0	—	28.0	—	34.0
SR2	0.354	9.0	0.354	9.0	—	16.5	—	19.0	—	19.0	—	23.0	—	23.0	—	27.0

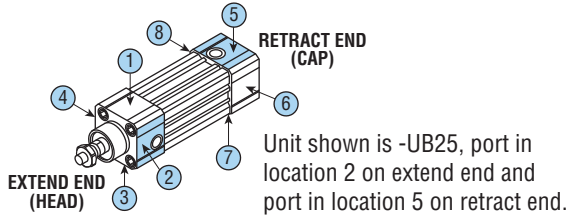
NOTES:

- *Port dimensions shown are for units with port and Port Control® in the same location. For units with other port and Port Control® combinations, standard port size and location dimensions apply. Ports may be located on either side of the cylinder centerline depending on Port Control® and cushion option combinations.
in = Table information for imperial ports mm = Table information for metric ports
- **VDMA max square size

UB

ALTERNATE PORT LOCATION (not available on 3 position units)

With this option, alternate port locations can be specified, providing increased flexibility and customer convenience. See option code below to specify port locations. Three position units available with ports in standard locations 1 and 5 only.

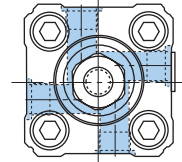


PORT LOCATION OPTIONS

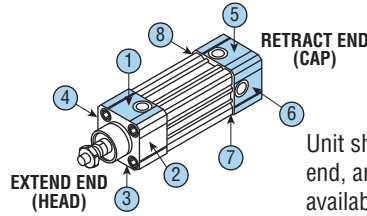
-UB x x

Extend Location
(Head)
(0, 1, 2, 3, 4)
0 = All four sides

Retract Location
(Cap)
(0, 5, 6, 7, 8)
0 = All four sides



PORTS ON ALL 4 SIDES
(0 IN PORT OPTION CODE)
NOT AVAILABLE WITH
PHD PORT CONTROLS
ON SAME END



Unit shown is -UB10, port in location 1 on extend end, and ports on all 4 sides on retract end. (Not available with PHD port controls on retract.)

T44

FEMALE ROD END

This option provides a female rod end in place of the standard male rod end. See catalog dimensional pages for standard rod ends. This rod end deviates from ISO 6431/VDMA 24562 or ISO 6432 on metric units (CVxx6).

Double rod units will receive the same rod end on both rods unless otherwise specified as shown in the double rod option description.

DOUBLE ROD END OPTIONS

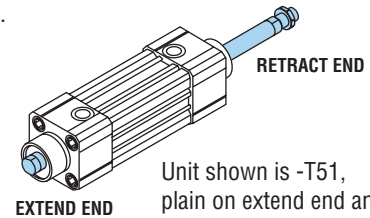
-T x x

Extend End
1 = Male thread
VDMA 24562 (Standard)
4 = Female undersized thread
5 = Plain
E = Male oversized thread

Retract End
1 = Male thread
VDMA 24562 (Standard)
4 = Female undersized thread
5 = Plain
E = Male oversized thread

⊕ For metric units (CVxx6).

This option does not dimensionally comply with the ISO 6431/VDMA 24562 or ISO 6432 specifications.



Unit shown is -T51, plain on extend end and male thread per VDMA 24562 on retract end.

T55

PLAIN ROD END

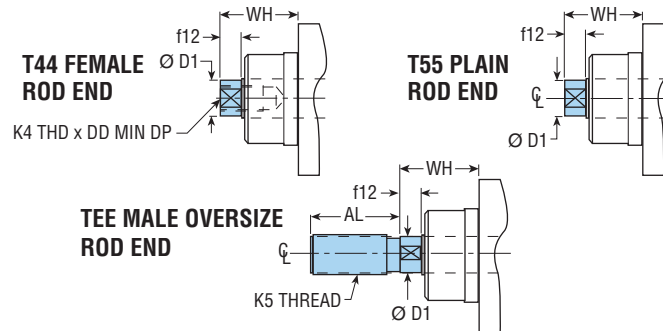
This option provides a plain rod end with wrench flats. Standard PHD Series CV Cylinders are supplied with a male rod end. This rod end deviates from ISO 6431/VDMA 24562 or ISO 6432 on metric units (CVxx6).

Double rod units will receive the same rod end on both rods unless otherwise specified as shown in the double rod option description.

TEE

MALE OVERSIZE ROD END ⊕ (N/A on 20 & 25 mm bores)

This option provides a male oversize thread rod end in place of the standard male rod end. See catalog dimensional pages for standard rod ends. Double rod units will receive the same rod end on both rods unless otherwise specified as shown in the double rod option description.



LETTER DIM	BORE SIZE															
	20 mm		25 mm		32 mm		40 mm		50 mm		63 mm		80 mm		100 mm	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
AL	—	—	—	—	0.827	21.0	0.906	23.0	1.220	31.0	1.220	31.0	1.535	39.0	1.535	39.0
D1	0.315	8.00	0.375*	9.53*	0.447	11.35	0.599	15.22	0.757	19.23	0.757	19.23	0.954	24.23	0.954	24.23
f12	0.196	5.0	0.236	6.0	0.236	6.0	0.256	6.5	0.315	8.0	0.315	8.0	0.394	10.0	0.394	10.0
K4	#10-32	M5 x 0.8	1/4-28	M6 x 1.0	5/16-24	M8 x 1.25	7/16-20	M10 x 1.5	1/2-20	M12 x 1.75	1/2-20	M12 x 1.75	5/8-11	M16 x 2.0	5/8-11	M16 x 2.0
K5	—	—	—	—	7/16-20	M12 x 1.25	5/8-18	M16 x 1.5	3/4-16	M20 x 1.5	3/4-16	M20 x 1.5	1-12	M24 x 3	1-12	M24 x 3
DD min	0.413	10.5	0.492	12.5	0.551	14.0	0.669	17.0	0.748	19.0	0.748	19.0	0.827	21.0	0.827	21.0
WH	0.945	24.0	1.102	28.0	1.024	26.0	1.181	30.0	1.457	37.0	1.457	37.0	1.811	46.0	2.008	51.0

*Dimension shown is for -T44 rod end only. -T55 option dimension is 0.394 in [10.0 mm].

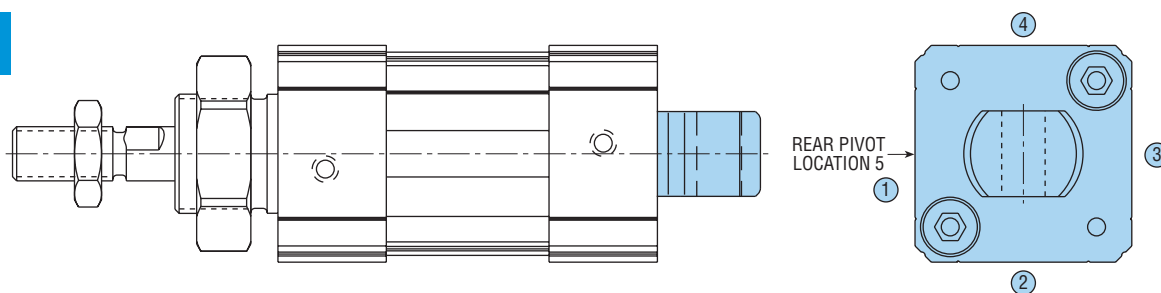
MOUNTING STYLES: Series CV Cylinders

P&Q PIVOT MOUNT ON SIZES 20 & 25 ONLY

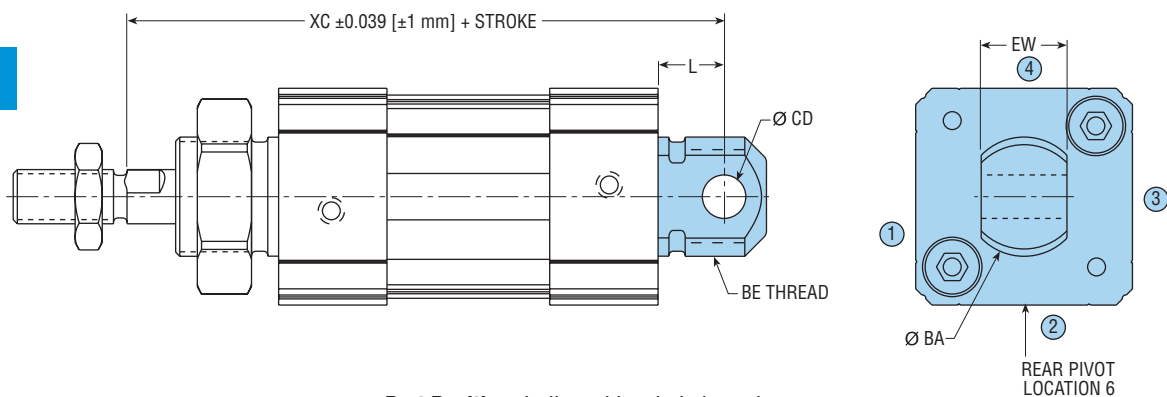
This style specifies a pivot mount cap. This style conforms to ISO 6432 customer interface and overall unit length on metric units (CVxx6) when specified with optional -P or -Q mounting. Pivot pins and base mounting brackets are available, see mounting accessories.

LETTER DIM/ TOLERANCE	BORE SIZE			
	20 mm		25 mm	
	in	mm	in	mm
BA	0.866	22.0	0.866	22.0
B	M22 x 1.5		M22 x 1.5	
CD/H9	0.315	8.0	0.315	8.0
EW/d13	0.630	16.0	0.630	16.0
L MIN	0.472	12.0	0.472	12.0
XC CVB	4.055	103.0	4.330	110.0
XC CVC	3.740	95.0	4.094	104.0

P



Q

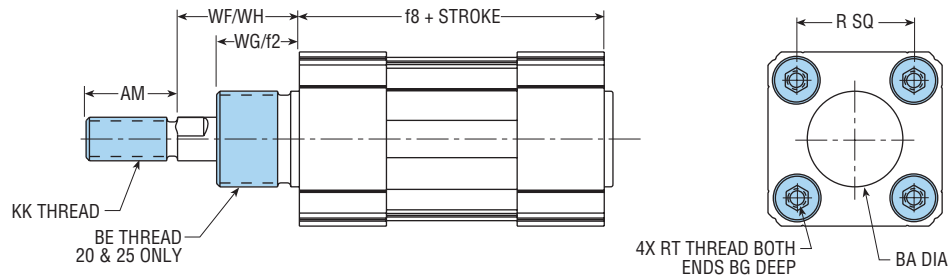
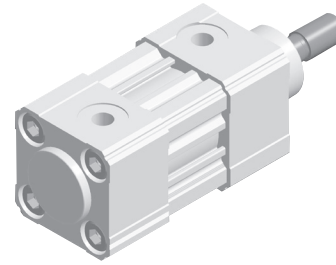


Port Position: Indicated by circled numbers

V

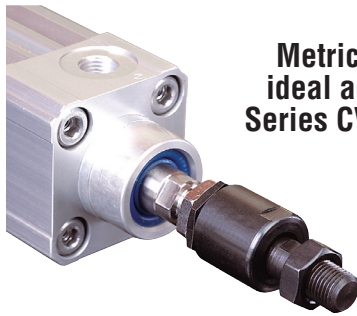
STANDARD MOUNTING

(ISO 6431/VDMA 24562 & ISO 6432
for metric units CVxx6)



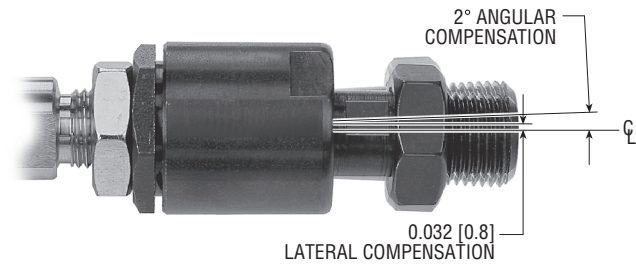
LETTER DIM/ TOLERANCE	BORE SIZE															
	20 mm		25 mm		32 mm		40 mm		50 mm		63 mm		80 mm		100 mm	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
AM	0.748	19.0	0.827	21.0	0.827	21.0	0.906	23.0	1.220	31.0	1.220	31.0	1.535	39.0	1.535	39.0
BA	0.864	21.9	0.864	21.9	1.178	29.9	1.374	34.9	1.571	40.0	1.768	44.9	1.768	44.9	2.161	55.0
BE	M22 x 1.5		M22 x 1.5		—		—		—		—		—		—	
BG min	0.472	12.0	0.472	12.0	0.709	18.0	0.709	18.0	0.787	20.0	0.787	20.0	0.787	20.0	0.787	20.0
f8 CVA	—	—	—	—	3.702	94.0	4.133	105.0	4.173	106.0	4.764	121.0	5.039	128.0	5.434	138.0
f8 CVB	2.637	67.0	2.755	70.0	—	—	—	—	—	—	—	—	—	—	—	—
f8 CVC	2.323	59.0	2.520	64.0	—	—	—	—	—	—	—	—	—	—	—	—
KK	5/16-24	M8 x 1.25	3/8-24	M10 x 1.25	3/8-24	M10 x 1.25	1/2-20	M12 x 1.25	5/8-18	M16 x 1.5	5/8-18	M16 x 1.5	3/4-16	M20 x 1.5	3/4-16	M20 x 1.5
R	1.024	26.0	1.063	27.0	1.280	32.5	1.496	38.0	1.831	46.5	2.224	56.5	2.835	72.0	3.504	89.0
RT	M4 x 0.7		M4 x 0.7		M6 x 1		M6 x 1		M8 x 1.25		M8 x 1.25		M10 x 1.5		M10 x 1.5	
WF	0.945	24.0	1.102	28.0	—		—		—		—		—		—	
WH	—		—		1.024	26.0	1.181	30.0	1.457	37.0	1.457	37.0	1.811	46.0	2.008	51.0
WG	0.669	17.0	0.748	19.0	—		—		—		—		—		—	
f2	—		—		0.729	18.5	0.802	20.4	1.084	27.5	1.084	27.5	1.316	33.4	1.438	36.5

SELF-ALIGNING PISTON ROD COUPLERS - METRIC



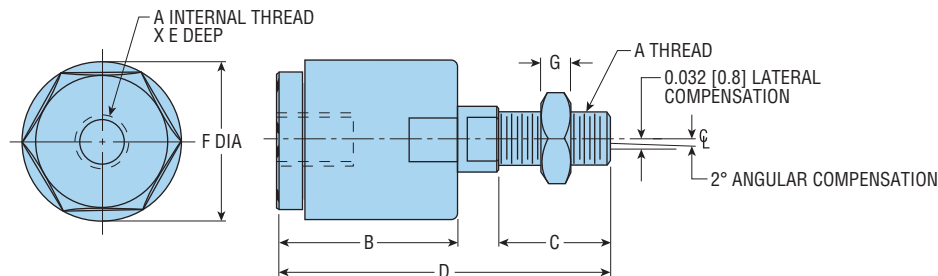
Metric rod couplers are an ideal accessory for use with Series CV ISO/VDMA cylinders.

To order, specify the model number.



BENEFITS

- Rod Couplers eliminate expensive precision machining for mounting fixed or rigid cylinder on guide or slide applications.
- Cylinder efficiency is increased by eliminating friction caused by misalignment. Couplers compensate for 2° angular error and 1/32" [0.8 mm] lateral misalignment on push and pull stroke.
- Couplers provide greater reliability and reduce cylinder and component wear, simplifying alignment problems in the field.
- Rod Couplers are manufactured from high tensile and hardened steel components.

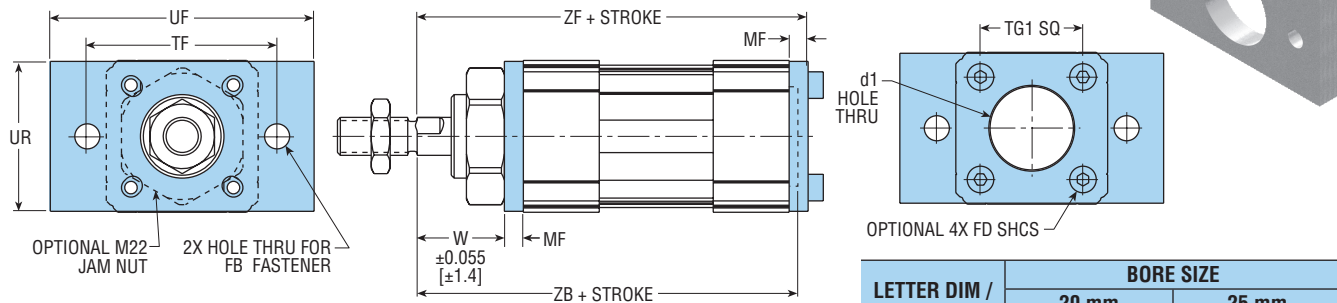


MODEL NO.		LETTER DIMENSION								CV CYLINDER BORE*	
IMPERIAL	METRIC	A	B MIN	C MIN	D MIN	E	F	G		IMPERIAL	METRIC
312	M8	5/16-24 [M8 x 1.25]	1.00 [25.4]	0.625 [15.9]	1.875 [47.6]	0.50 [12.7]	0.875 [22.2]	0.187	0.197 [5.0]	20	20
375	M10	3/8-24 [M10 x 1.25]	1.00 [25.4]	0.625 [15.9]	1.875 [47.6]	0.50 [12.7]	0.875 [22.2]	0.219	0.197 [5.0]	25, 32	25, 32
437	—	7/16-20	1.13	0.650	2.187	0.50	1.0	0.250	—	—	—
500	M12	1/2-20 [M12 x 1.25]	1.13 [28.6]	0.650 [16.5]	2.187 [55.5]	0.50 [12.7]	1.0 [25.4]	0.312	0.236 [6.0]	40	40
625	M16	5/8-18 [M16 x 1.5]	1.75 [44.5]	1.125 [28.5]	3.312 [84.1]	0.812 [20.6]	1.562 [39.7]	0.375	0.314 [8.0]	50, 63	50, 63
750	M20	3/4-16 [M20 x 1.5]	1.75 [44.5]	1.125 [28.5]	3.312 [84.1]	0.812 [20.6]	1.562 [39.7]	0.421	0.394 [10.0]	80, 100	80, 100

NOTES:

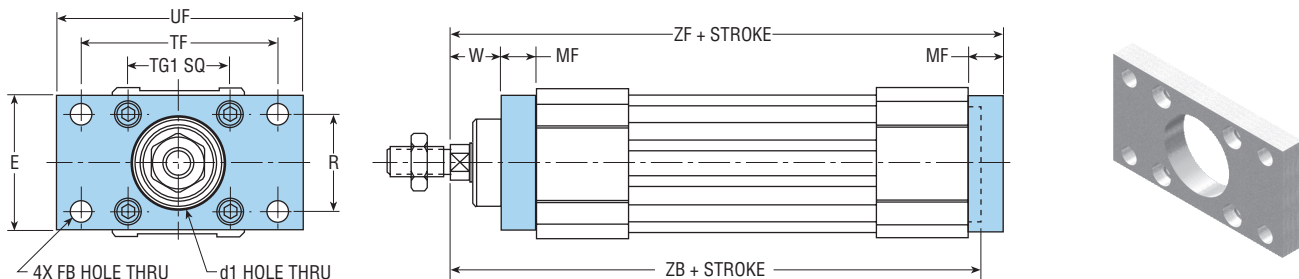
- 1) NUMBERS IN [] ARE mm. IMPERIAL EQUIVALENTS ARE PROVIDED FOR CONVENIENCE.
- 2) *UNITS SHOWN ARE WITH STANDARD ROD ENDS. OPTIONAL ROD ENDS MAY USE OTHER MODEL NUMBERS.

RECTANGULAR FLANGE MOUNTING KIT SIZES 20 & 25 mm (MF8 PER ISO 6432)



LETTER DIM / TOLERANCE	BORE SIZE			
	20 mm		25 mm	
d1/H11	0.890	22.6	0.890	22.6
FB/H13	M6 x 1.0		M6 x 1.0	
FD	M4 x 0.7 x 18		M4 x 0.7 x 18	
TG1	1.024	26.0	1.063	27.0
MF	0.197	5.0	0.197	5.0
TF/JS14	1.969	50.0	1.969	50.0
UF max	2.756	70.0	2.756	70.0
UR max	1.575	40.0	1.575	40.0
W	0.748	19.0	0.906	23.0
ZB max (CVB)	3.504	89.0	3.858	98.0
ZF (CVB)	3.701	94.0	4.055	103.0
ZB max (CVC)	3.189	81.0	3.622	92.0
ZF (CVC)	3.386	86.0	3.819	97.0
Kit No.	52484-07-1		52484-07-1	
-Z1 Kit No.	52484-07-3		52484-07-3	

SIZES 32 - 100 mm (MF1/MF2 PER VDMA 24562)



LETTER DIM / TOLERANCE	BORE SIZE											
	32 mm		40 mm		50 mm		63 mm		80 mm		100 mm	
d1/H11	1.184	30.1	1.381	35.0	1.578	40.1	1.775	46.1	1.775	45.1	2.169	55.0
FB/H13	0.265	7.0	0.346	8.8	0.346	8.8	0.346	8.8	0.448	11.4	0.527	14.0
TG1	1.280	32.5	1.496	38.0	1.831	46.5	2.224	56.5	2.835	72.0	3.504	89.0
E max	1.968	50.0	2.284	58.0	2.756	70.0	3.347	85.0	4.134	105.0	5.118	130.0
R/JS14	1.260	32.0	1.417	36.0	1.772	45.0	1.969	50.0	2.480	63.0	2.953	75.0
MF	0.394	10.0	0.394	10.0	0.472	12.0	0.472	12.0	0.630	16.0	0.630	16.0
TF/JS14	2.520	64.0	2.835	72.0	3.543	90.0	3.937	100.0	4.961	126.0	5.906	150.0
UF max	3.386	86.0	3.780	96.0	4.528	115.0	5.118	130.0	6.496	165.0	7.362	187.0
Fastener	M6 x 1 x 20		M6 x 1 x 20		M8 x 1.25 x 20		M8 x 1.25 x 20		M10 x 1.25 x 25		M10 x 1.25 x 25	
W	0.630	16.0	0.787	20.0	0.984	25.0	0.984	25.0	1.181	30.0	1.378	35.0
ZB max	4.882	124.0	5.591	142.0	5.866	149.0	6.496	165.0	7.165	182.0	7.795	198.0
ZF	5.118	130.0	5.709	145.0	6.102	155.0	6.693	170.0	7.480	190.0	8.071	205.0
Kit No.	52484-01-1		52484-02-1		52484-03-1		52484-04-1		52484-05-1		52484-06-1	
-Z1 Kit No.	52484-01-3		52484-02-3		52484-03-3		52484-04-3		52484-05-3		52484-06-3	

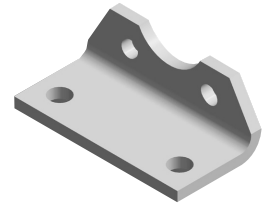
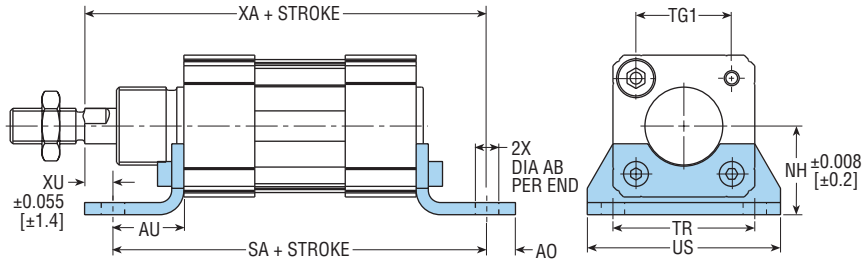
NOTE: Kits include flange and cylinder mounting hardware for one end only

BASE MOUNTING KIT

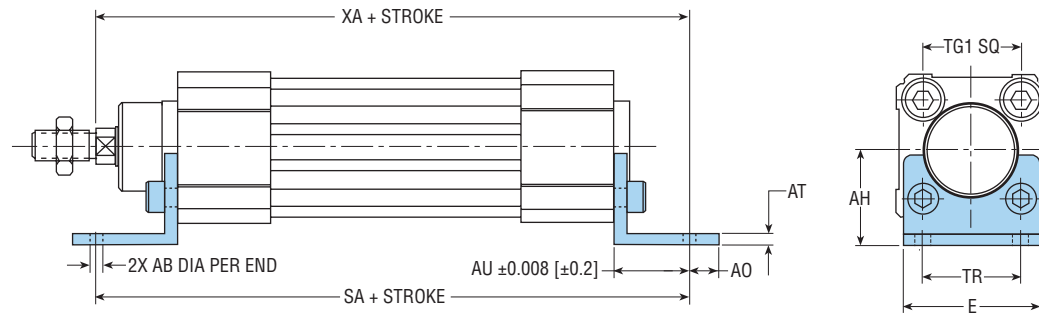
SIZES 20 & 25 mm (MS3 PER ISO 6432)

LETTER DIM / TOLERANCE	BORE SIZE			
	20 mm		25 mm	
	in	mm	in	mm
AB/H13	0.260	6.6	0.260	6.6
AO max	0.315	8.0	0.315	8.0
AU max	0.787	20.0	0.787	20.0
NH	0.984	25.0	0.984	25.0
SA (CVB)	4.211	107.0	4.329	110.0
SA (CVC)	3.897	99.0	4.094	104.0
TG1	1.024	26.0	1.063	27.0
TR/JS14	1.575	40.0	1.575	40.0
US max	2.146	54.5	2.146	54.5
XA (CVB)	4.370	111.0	4.645	118.0
XA (CVC)	4.055	103.0	4.409	112.0
XU	0.157	4.0	0.315	8.0
Kit No.	52487-07-1		52487-07-1	
-Z1 Kit No.	52487-07-3		52487-07-3	

NOTE: Kits include bracket and cylinder mounting hardware for one end only.



SIZES 32 - 100 mm (MS1 PER VDMA 24562)



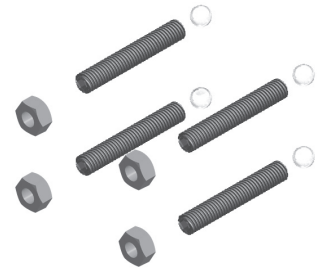
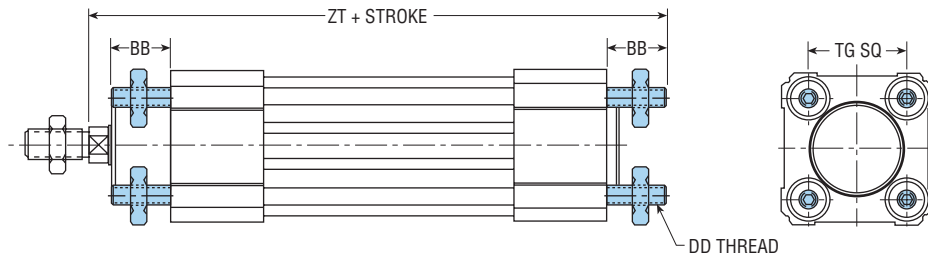
LETTER DIM / TOLERANCE	BORE SIZE											
	32 mm		40 mm		50 mm		63 mm		80 mm		100 mm	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
AB	0.270	6.9	0.369	9.37	0.369	9.37	0.369	9.37	0.449	11.41	0.538	13.66
TG1	1.280	32.5	1.496	38.0	1.831	46.5	2.224	56.5	2.835	72.0	3.504	89.0
E max	1.969	50.0	2.284	58.0	2.756	70.0	3.347	85.0	4.134	105.0	5.118	130.0
TR	1.260	32.0	1.417	36.0	1.772	45.0	1.969	50.0	2.480	63.0	2.953	75.0
AO max	0.433	11.0	0.591	15.0	0.591	15.0	0.591	15.0	0.787	20.0	0.984	25.0
AU	0.945	24.0	1.102	28.0	1.260	32.0	1.260	32.0	1.614	41.0	1.614	41.0
AH	1.260	32.0	1.417	36.0	1.772	45.0	1.969	50.0	2.480	63.0	2.795	71.0
AT	0.177	4.5	0.177	4.5	0.217	5.5	0.217	5.5	0.256	6.5	0.256	6.5
SA	5.592	142.0	6.337	161.0	6.693	170.0	7.284	185.0	8.267	210.0	8.662	220.0
XA	5.669	144.0	6.417	163.0	6.890	175.0	7.480	190.0	8.465	215.0	9.055	230.0
Fastener	M6 x 1 x 20		M6 x 1 x 20		M8 x 1.25 x 25		M8 x 1.25 x 25		M10 x 1.5 x 25		M10 x 1.5 x 25	
Kit No.	52487-01-1		52487-02-1		52487-03-1		52487-04-1		52487-05-1		52487-06-1	
-Z1 Kit No.	52487-01-3		52487-02-3		52487-03-3		52487-04-3		52487-05-3		52487-06-3	

NOTE: Kits include bracket and cylinder mounting hardware for one end only

FASTENER MOUNTING KIT

SIZES 20 & 25 mm (MX1)

SIZES 32 - 100 mm (MX1 PER ISO 6431)

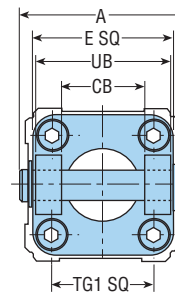
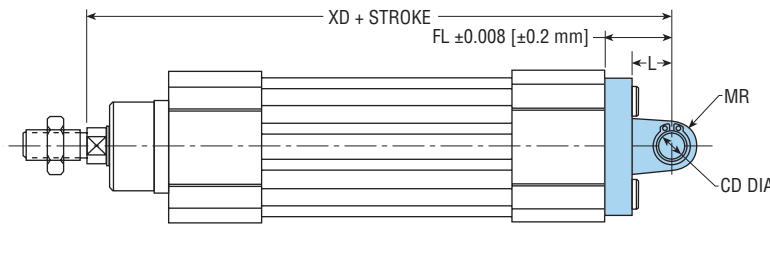


LETTER DIM	BORE SIZE															
	20 mm		25 mm		32 mm		40 mm		50 mm		63 mm		80 mm		100 mm	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
BB min	0.512	13.0	0.512	13.0	0.669	17.0	0.669	17.0	0.906	23.0	0.906	23.0	1.102	28.0	1.102	28.0
DD	M4 x 0.7		M4 x 0.7		M6 x 1.0		M6 x 1.0		M8 x 1.25		M8 x 1.25		M10 x 1.5		M10 x 1.5	
ZT (CVA)	—	—	—	—	5.394	137.0	5.984	152.0	6.535	166.0	7.126	181.0	7.953	202.0	8.543	217.0
ZT (CVB)	4.095	104.0	4.370	111.0	—	—	—	—	—	—	—	—	—	—	—	—
ZT (CVC)	3.780	96.0	4.134	105.0	—	—	—	—	—	—	—	—	—	—	—	—
TG	1.024	26.0	1.063	27.0	1.280	32.5	1.496	38.0	1.831	46.5	2.224	56.5	2.835	72.0	3.504	89.0
Kit No.	63480-04-1		63480-04-1		63480-01-1		63480-01-1		63480-02-1		63480-02-1		63480-03-1		63480-03-1	
-Z1 Kit No.	63480-04-3		63480-04-3		63480-01-3		63480-01-3		63480-02-3		63480-02-3		63480-03-3		63480-03-3	

NOTE: Kit includes cylinder mounting hardware for one end only.

REAR FORK MOUNTING KIT

SIZES 32 - 100 mm (MP2 PER VDMA 24562)



LETTER DIM / TOLERANCE	BORE SIZE											
	32 mm		40 mm		50 mm		63 mm		80 mm		100 mm	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
A max	2.559	65.0	2.839	72.1	3.149	80.0	3.739	95.0	4.529	115.0	5.319	135.1
E max	1.968	50.0	2.284	58.0	2.756	70.0	3.346	85.0	4.134	105.0	5.118	130.0
UB/h14	1.759	44.7	2.033	51.6	2.348	59.6	2.741	69.6	3.526	89.6	4.314	109.6
CB/H14	1.034	26.3	1.113	28.3	1.272	32.3	1.587	40.3	1.981	50.3	2.377	60.4
TG1	1.280	32.5	1.496	38.0	1.831	46.5	2.224	56.5	2.835	72.0	3.504	89.0
FL	0.866	22.0	0.984	25.0	1.063	27.0	1.260	32.0	1.417	36.0	1.614	41.0
L min	0.482	12.2	0.601	15.3	0.601	15.3	0.797	20.2	0.797	20.2	0.994	25.2
CS/H9	0.394	10.0	0.473	12.0	0.473	12.0	0.631	16.0	0.631	16.0	0.789	20.0
MR max	0.433	11.0	0.512	13.0	0.512	13.0	0.669	17.0	0.669	17.0	0.827	21.0
XD	5.591	142.0	6.299	160.0	6.693	170.0	7.480	190.0	8.268	210.0	9.055	230.0
Fastener	M6 x 1 x 20		M6 x 1 x 20		M8 x 1.25 x 20		M8 x 1.25 x 20		M10 x 1.5 x 25		M10 x 1.5 x 25	
Kit No.	52485-01-1		52485-02-1		52485-03-1		52485-04-1		52485-05-1		52485-06-1	
-Z1 Kit No.	52485-01-3		52485-02-3		52485-03-3		52485-04-3		52485-05-3		52485-06-3	

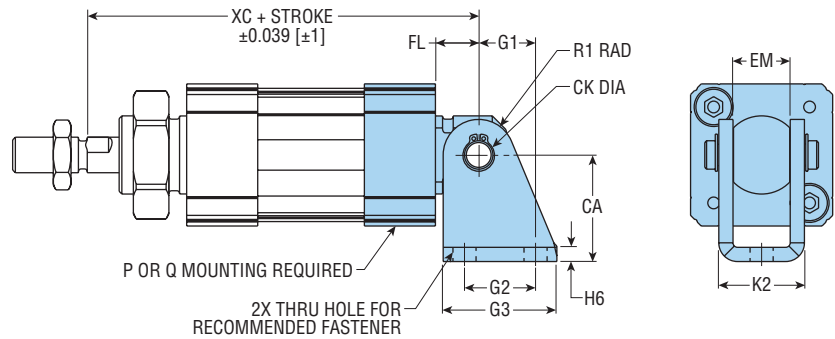
NOTES:

- 1) Kit includes rear fork, cylinder mounting fasteners, pivot pin, and pivot pin retainer clips.
- 2) Mounting is compatible with MP4 male hinge and BMP4 pillow block.

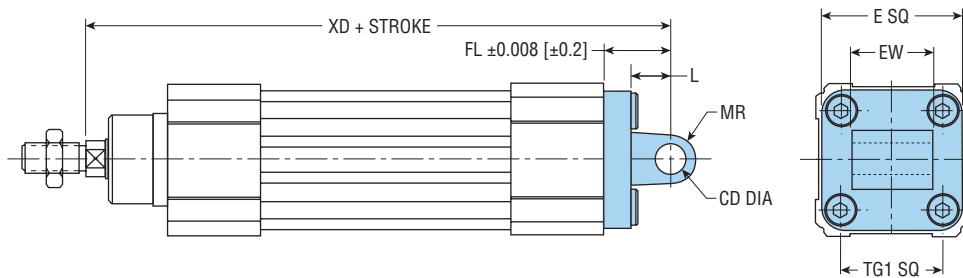
REAR MALE HINGE MOUNTING KIT SIZES 20 & 25 mm

LETTER DIM / TOLERANCE	BORE SIZE			
	20 mm		25 mm	
	in	mm	in	mm
CA	1.181	30.0	1.181	30.0
CK	0.315	8.0	0.315	8.0
EM	0.634	16.1	0.634	16.1
FL min	0.472	12.0	0.472	12.0
G1	0.630	16.0	0.630	16.0
G2	0.787	20.0	0.787	20.0
G3	1.260	32.0	1.260	32.0
H6	0.157	4.0	0.157	4.0
K2	0.949	24.1	0.949	24.1
R1	0.394	10.0	0.394	10.0
XC (CVB)	4.055	103.0	4.330	110.0
XC (CVC)	3.740	95.0	4.094	104.0
Fastener	M6		M6	
Kit No.	65778-01-1		65778-01-1	
-Z1 Kit No.	65778-01-3		65778-01-3	

NOTE: Kits include hinge bracket, retaining rings, pivot pins, and cylinder mounting fasteners when required.



SIZES 32 - 100 mm (MP4 PER VDMA 24562)

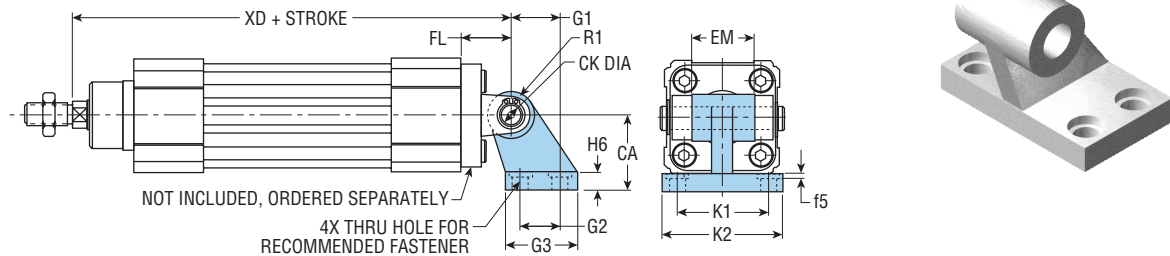


LETTER DIM / TOLERANCE	BORE SIZE											
	32 mm		40 mm		50 mm		63 mm		80 mm		100 mm	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
E max	1.968	50.0	2.284	58.0	2.756	70.0	3.346	85.0	4.134	105.0	5.118	130.0
EW max	1.008	25.6	1.103	28.0	1.260	32.0	1.575	40.0	1.969	50.0	2.362	60.0
TG1	1.280	32.5	1.496	38.0	1.831	46.5	2.224	56.5	2.835	72.0	3.504	89.0
FL	0.866	22.0	0.984	25.0	1.063	27.0	1.260	32.0	1.417	36.0	1.614	41.0
L min	0.482	12.2	0.601	15.3	0.601	15.3	0.797	20.2	0.797	20.2	0.994	25.2
CD/H9	0.394	10.0	0.472	12.0	0.472	12.0	0.630	16.0	0.630	16.0	0.787	20.0
MR max	0.433	11.0	0.512	13.0	0.512	13.0	0.669	17.0	0.669	17.0	0.827	21.0
XD	5.591	142.0	6.299	160.0	6.693	170.0	7.480	190.0	8.268	210.0	9.055	230.0
Fastener	M6 x 1 x 20		M6 x 1 x 20		M8 x 1.25 x 20		M8 x 1.25 x 20		M10 x 1.5 x 25		M10 x 1.5 x 25	
Kit No.	52486-01-1		52486-02-1		52486-03-1		52486-04-1		52486-05-1		52486-06-1	
-Z1 Kit No.	52486-01-3		52486-02-3		52486-03-3		52486-04-3		52486-05-3		52486-06-3	

NOTES:

- 1) Rear male hinge is compatible with MP2 mounting.
- 2) Kit includes hinge and cylinder mounting fasteners.

PILLOW BLOCK MOUNTING WITH RIGID BEARINGS KIT (BMP4, CETOP RP 107P)

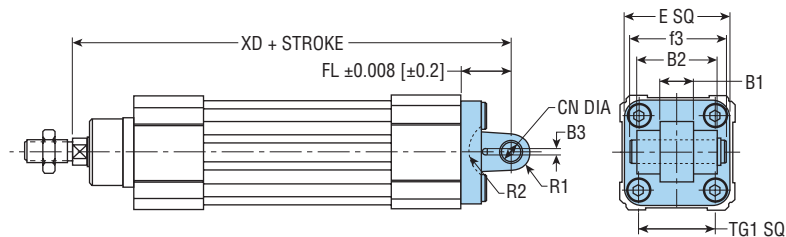


LETTER DIM / TOLERANCE	BORE SIZE											
	32 mm		40 mm		50 mm		63 mm		80 mm		100 mm	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
CK/H9	0.394	10.0	0.473	12.0	0.473	12.0	0.631	16.0	0.631	16.0	0.788	20.0
K1/JS14	1.496	38.0	1.614	41.0	1.969	50.0	2.047	52.0	2.598	66.0	2.992	76.0
K2 max	2.008	51.0	2.126	54.0	2.559	65.0	2.638	67.0	3.386	86.0	3.780	96.0
G1/JS14	0.827	21.0	0.945	24.0	1.299	33.0	1.457	37.0	1.850	47.0	2.165	55.0
f5 max	0.063	1.6	0.063	1.6	0.063	1.6	0.063	1.6	0.098	2.5	0.098	2.5
G2	0.709	18.0	0.866	22.0	1.181	30.0	1.378	35.0	1.575	40.0	1.969	50.0
EM max	1.016	25.8	1.094	27.8	1.252	31.8	1.567	39.8	1.961	49.8	2.354	59.8
G3 max	1.220	31.0	1.378	35.0	1.772	45.0	1.969	50.0	2.362	60.0	2.756	70.0
CA/JS15	1.260	32.0	1.417	36.0	1.772	45.0	1.969	50.0	2.480	63.0	2.795	71.0
H6	0.315	8.0	0.394	10.0	0.472	12.0	0.472	12.0	0.551	14.0	0.591	15.0
R1 max	0.394	10.0	0.433	11.0	0.482	12.25	0.591	15.0	0.591	15.0	0.748	19.0
FL	0.866	22.0	0.984	25.0	1.063	27.0	1.260	32.0	1.417	36.0	1.614	41.0
XD	5.591	142.0	6.299	160.0	6.693	170.0	7.480	190.0	8.268	210.0	9.055	230.0
Fastener	M6	M6	M6	M6	M8	M8	M8	M8	M10	M10	M10	M10
Kit No.	62818-001-00		62818-002-00		62818-003-00		62818-004-00		62818-005-00		62818-006-00	

NOTES:

- 1) Kit includes pillow block only (no pin or fasteners).
- 2) Pillow block is compatible with MP2 rear fork.

REAR FORK MOUNTING FOR SPHERICAL BEARING KIT (PHD MSB2 PER VDMA 24562)

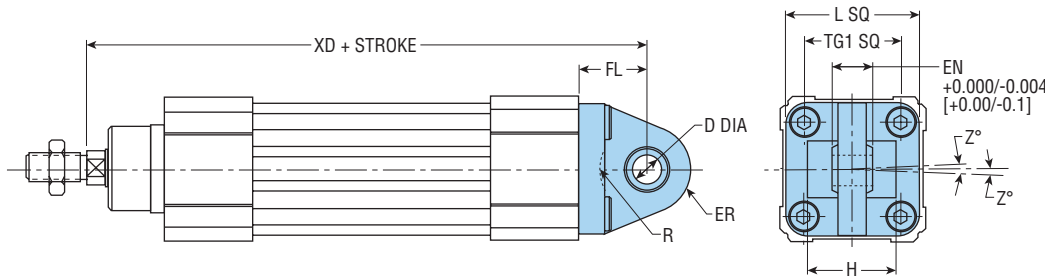


LETTER DIM / TOLERANCE	BORE SIZE											
	32 mm		40 mm		50 mm		63 mm		80 mm		100 mm	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
E max	2.086	53.0	2.285	58.0	2.756	70.0	3.346	85.0	4.134	105.0	5.118	130.0
B2/d12	1.331	33.8	1.567	39.8	1.764	44.8	1.998	50.7	2.549	64.7	2.943	74.8
B1/H14	0.560	14.2	0.638	16.2	0.837	21.3	0.837	21.3	0.995	25.3	0.995	25.3
TG1	1.280	32.5	1.496	38.0	1.831	46.5	2.224	56.5	2.835	72.0	3.504	89.0
B3/*	0.130	3.3	0.169	4.3	0.169	4.3	0.169	4.3	0.169	4.3	0.248	6.3
R2 min	0.650	16.5	0.769	19.5	0.846	21.5	0.965	24.5	1.161	29.5	1.161	29.5
f3	1.811	46.0	2.087	53.0	2.283	58.0	2.598	66.0	3.150	80.0	3.543	90.0
FL	0.866	22.0	0.984	25.0	1.063	27.0	1.260	32.0	1.417	36.0	1.614	41.0
CN/F7	0.394	10.0	0.473	12.0	0.631	16.0	0.631	16.0	0.789	20.0	0.789	20.0
R1 max	0.433	11.0	0.512	13.0	0.709	18.0	0.709	18.0	0.866	22.0	0.866	22.0
XD	5.591	142.0	6.299	160.0	6.693	170.0	7.480	190.0	8.268	210.0	9.055	230.0
Fastener	M6 x 1 x 20		M6 x 1 x 20		M8 x 1.25 x 20		M8 x 1.25 x 20		M10 x 1.5 x 25		M10 x 1.5 x 25	
Kit No.	52489-01-1		52489-02-1		52489-03-1		52489-04-1		52489-05-1		52489-06-1	
-Z1 Kit No.	52489-01-3		52489-02-3		52489-03-3		52489-04-3		52489-05-3		52489-06-3	

NOTES:

- 1) Kit includes rear fork, cylinder mounting fasteners, pivot pin, and pivot pin retainer clips.
- 2) Mounting is compatible with MP4 male hinge and BMP4 pillow block.

REAR MALE HINGE MOUNTING WITH SPHERICAL BEARING KIT (PHD MSB1)

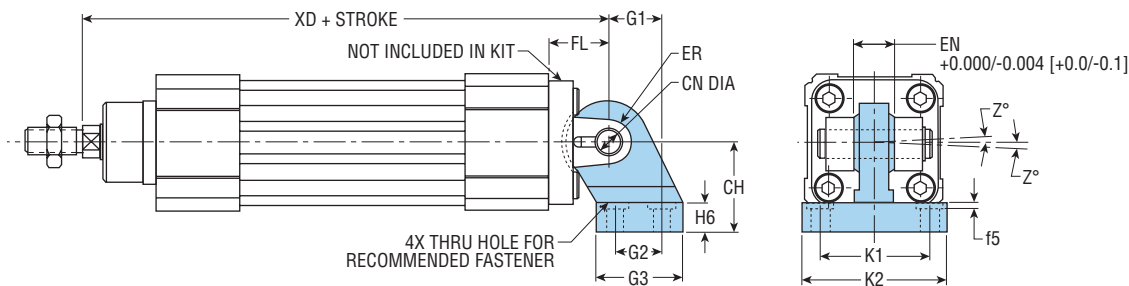


LETTER DIM / TOLERANCE	BORE SIZE											
	32 mm		40 mm		50 mm		63 mm		80 mm		100 mm	
TG1	1.280	32.5	1.496	38.0	1.831	46.5	2.224	56.5	2.835	72.0	3.504	89.0
FL/JS15	0.866	22.0	0.984	25.0	1.063	27.0	1.260	32.0	1.417	36.0	1.614	41.0
D/H7	0.394	10.0	0.472	12.0	0.630	16.0	0.630	16.0	0.787	20.0	0.787	20.0
EN	0.549	14.0	0.628	16.0	0.825	21.0	0.825	21.0	0.982	25.0	0.982	25.0
ER max	0.630	16.0	0.748	19.0	0.827	21.0	0.945	24.0	1.102	28.0	1.181	30.0
L max	1.968	50.0	2.285	58.0	2.756	70.0	3.346	85.0	4.134	105.0	5.118	130.0
Z°	4°	4°	4°	4°	4°	4°	4°	4°	4°	4°	4°	4°
H	—	—	—	—	2.008	51.0	—	—	—	—	—	—
R	—	—	—	—	0.748	19.0	—	—	—	—	—	—
XD	5.591	142.0	6.299	160.0	6.693	170.0	7.480	190.0	8.268	210.0	9.055	230.0
Fastener	M6 x 1 x 20		M6 x 1 x 20		M8 x 1.25 x 20		M8 x 1.25 x 20		M10 x 1.5 x 25		M10 x 1.5 x 25	
Kit No.	52488-01-1		52488-02-1		52488-03-1		52488-04-1		52488-05-1		52488-06-1	
-Z1 Kit No.	52488-01-3		52488-02-3		52488-03-3		52488-04-3		52488-05-3		52488-06-3	

NOTES:

- 1) Kit includes hinge and cylinder mounting fasteners.
- 2) Rear male hinge is compatible with MSB2 rear fork for spherical bearing.

PILLOW BLOCK MOUNTING WITH SPHERICAL BEARING KIT (PHD BSB1 PER VDMA 24562)

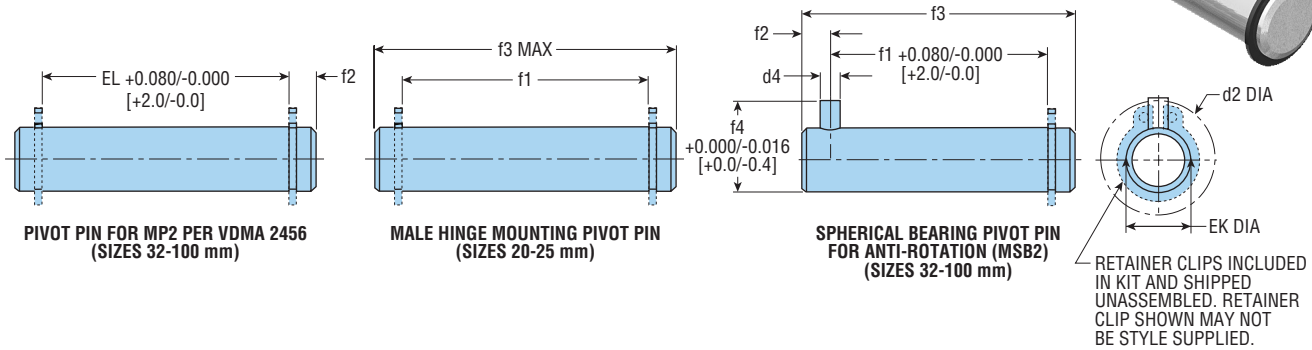


LETTER DIM / TOLERANCE	BORE SIZE											
	32 mm		40 mm		50 mm		63 mm		80 mm		100 mm	
CN/H7	0.394	10.0	0.472	12.0	0.630	16.0	0.630	16.0	0.787	20.0	0.787	20.0
K1/JS14	1.496	38.0	1.614	41.0	1.969	50.0	2.047	52.0	2.598	66.0	2.992	76.0
K2 max	2.008	51.0	2.126	54.0	2.559	65.0	2.638	67.0	3.386	86.0	3.780	96.0
G1/JS14	0.827	21.0	0.945	24.0	1.299	33.0	1.457	37.0	1.850	47.0	2.165	55.0
f5 max	0.063	1.6	0.063	1.6	0.063	1.6	0.063	1.6	0.098	2.5	0.098	2.5
G2/JS14	0.709	18.0	0.866	22.0	1.181	30.0	1.378	35.0	1.575	40.0	1.969	50.0
EN	0.549	14.0	0.628	16.0	0.825	21.0	0.825	21.0	0.982	25.0	0.982	25.0
G3 max	1.220	31.0	1.378	35.0	1.772	45.0	1.969	50.0	2.362	60.0	2.756	70.0
CH/JS15	1.260	32.0	1.417	36.0	1.772	45.0	1.969	50.0	2.480	63.0	2.795	71.0
H6	0.394	10.0	0.394	10.0	0.472	12.0	0.472	12.0	0.551	14.0	0.591	15.0
ER max	0.630	16.0	0.709	18.0	0.827	21.0	0.906	23.0	1.102	28.0	1.181	30.0
FL	0.866	22.0	0.984	25.0	1.063	27.0	1.260	32.0	1.417	36.0	1.614	41.0
XD	5.591	142.0	6.299	160.0	6.693	170.0	7.480	190.0	8.268	210.0	9.055	230.0
Z°	4°	4°	4°	4°	4°	4°	4°	4°	4°	4°	4°	4°
Fastener	M6		M6		M8		M8		M10		M10	
Kit No.	62822-001-00		62822-002-00		62822-003-00		62822-004-00		62822-005-00		62822-006-00	

NOTES:

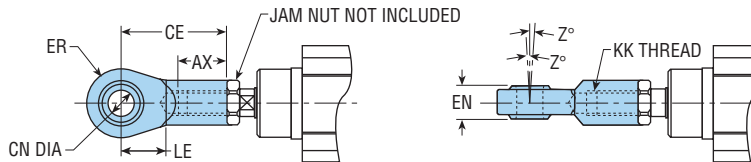
- 1) Kit includes pillow block only. No mounting fasteners.
- 2) Pillow block is compatible with MSB2 rear fork for spherical bearing.
- 3) Not available in -Z1.

PIVOT PIN KIT



LETTER DIM / TOLERANCE	BORE SIZE															
	20 mm		25 mm		32 mm		40 mm		50 mm		63 mm		80 mm		100 mm	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
	MP2 PIVOT PIN															
d2 max	—	—	—	—	0.906	23.0	0.984	25.0	0.984	25.0	1.260	32.0	1.260	32.0	1.575	40.0
EK/e8	—	—	—	—	0.392	10.0	0.471	12.0	0.471	12.0	0.628	16.0	0.628	16.0	0.785	20.0
EL	—	—	—	—	1.850	47.0	2.126	54.0	2.441	62.0	2.835	72.0	3.622	92.0	4.409	112.0
f2 max	—	—	—	—	0.335	8.5	0.335	8.5	0.335	8.5	0.433	11.0	0.433	11.0	0.433	11.0
Kit No.	—		—		52490-01-1		52490-02-1		52490-03-1		52490-04-1		52490-05-1		52490-06-1	
-Z1 Kit No.	—		—		52490-01-3		52490-02-3		52490-03-3		52490-04-3		52490-05-3		52490-06-3	
	MALE HINGE PINS				MSB2 PIVOT PIN											
d2 max	—	—	—	—	0.906	23.0	0.984	25.0	0.984	25.0	1.260	32.0	1.260	32.0	1.575	40.0
d4/H12	—	—	—	—	0.120	3.0	0.160	4.0	0.160	4.0	0.160	4.0	0.160	4.0	0.160	4.0
EK/h9	0.315	8.0	0.315	8.0	0.392	10.0	0.472	12.0	0.629	16.0	0.629	16.0	0.786	20.0	0.788	20.0
f1	0.945	24.0	0.945	24.0	1.280	32.5	1.500	38.1	1.697	43.1	1.933	49.1	2.484	63.1	2.878	73.1
f2 max	—	—	—	—	0.177	4.5	0.236	6.0	0.236	6.0	0.236	6.0	0.236	6.0	0.236	6.0
f3 max	1.260	32.0	1.260	32.0	1.811	46.0	2.087	53.0	2.283	58.0	2.598	66.0	3.150	80.0	3.543	90.0
f4	—	—	—	—	0.543	13.8	0.622	15.8	0.780	19.8	0.780	19.8	0.937	23.8	0.937	23.8
Kit No.	52491-07-1		52491-07-1		52491-01-1		52491-02-1		52491-03-1		52491-04-1		52491-05-1		52491-06-1	
-Z1 Kit No.	52491-07-3		52491-07-3		52491-01-3		52491-02-3		52491-03-3		52491-04-3		52491-05-3		52491-06-3	

ROD EYE MOUNTING WITH SPHERICAL BEARING KIT FOR METRIC ROD ENDS (CONTACT PHD FOR IMPERIAL STYLE) SIZES 20 - 100 mm (DIN 8139)

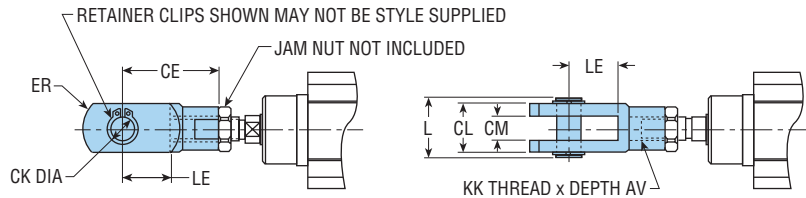


LETTER DIM / TOLERANCE	BORE SIZE															
	20 mm		25 mm		32 mm		40 mm		50 mm		63 mm		80 mm		100 mm	
	in*	mm	in*	mm	in*	mm	in*	mm	in*	mm	in*	mm	in*	mm	in*	mm
AX min	0.630	16.0	0.787	20.0	0.787	20.0	0.866	22.0	1.102	28.0	1.102	28.0	1.299	33.0	1.299	33.0
CE	1.417	36.0	1.693	43.0	1.693	43.0	1.969	50.0	2.520	64.0	2.520	64.0	3.031	77.0	3.031	77.0
CN/H9	0.315	8.0	0.394	10.0	0.394	10.0	0.473	12.0	0.631	16.0	0.631	16.0	0.788	20.0	0.788	20.0
EN/h12	0.470	12.0	0.547	13.9	0.547	13.9	0.626	15.9	0.823	20.9	0.823	20.9	0.980	24.9	0.980	24.9
ER max	0.482	12.2	0.541	13.7	0.541	13.7	0.620	15.7	0.817	20.8	0.817	20.8	0.974	24.7	0.974	24.7
KK	—	M8 x 1.25	—	M10 x 1.25	—	M10 x 1.25	—	M12 x 1.25	—	M16 x 1.5	—	M16 x 1.5	—	M20 x 1.5	—	M20 x 1.5
LE min	0.512	13.0	0.591	15.0	0.591	15.0	0.669	17.0	0.906	23.0	0.906	23.0	1.063	27.0	1.063	27.0
Z°	4°		4°		4°		4°		4°		4°		4°		4°	
Metric Kit No.*	52493-05-1		52493-01-1		52493-01-1		52493-02-1		52493-03-1		52493-03-1		52493-04-1		52493-04-1	

NOTES:

- 1) 32-100 mm sizes compatible with MSB2 rear fork for spherical bearing.
- 2) Not available in -Z1 or with imperial threads.
- 3) * Consult PHD for imperial rod eye mounting components and availability. Inch dimensions are given for metric conversion convenience only.

ROD CLEVIS MOUNTING KIT FOR METRIC ROD ENDS (CONTACT PHD FOR IMPERIAL STYLE) SIZES 20 - 100 mm (ISO 8140)

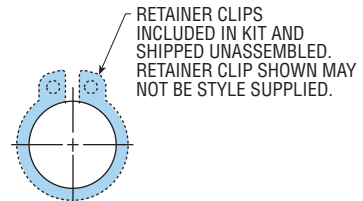
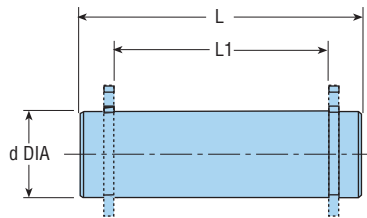
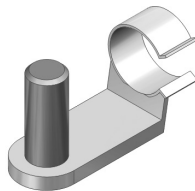
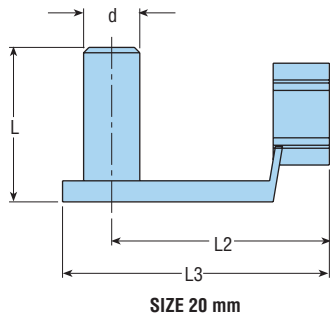


LETTER DIM / TOLERANCE	BORE SIZE															
	20 mm		25 mm		32 mm		40 mm		50 mm		63 mm		80 mm		100 mm	
	in*	mm	in*	mm	in*	mm	in*	mm	in*	mm	in*	mm	in*	mm	in*	mm
AV min	0.630	16.0	0.787	20.0	0.787	20.0	0.866	22.0	1.102	28.0	1.102	28.0	1.299	33.0	1.299	33.00
CE	1.260	32.0	1.575	40.0	1.575	40.0	1.890	48.0	2.520	64.0	2.520	64.0	3.150	80.0	3.150	80.0
CK/H9	0.316	8.03	0.394	10.00	0.394	10.0	0.473	12.0	0.631	16.0	0.631	16.0	0.780	20.0	0.787	20.0
CL max	0.630	16.0	0.787	20.0	0.787	20.0	0.945	24.0	1.260	32.0	1.260	32.0	1.575	40.0	1.575	40.0
CM min	0.315	8.0	0.394	10.0	0.394	10.0	0.472	12.0	0.630	16.0	0.630	16.0	0.787	20.0	0.787	20.0
ER max	0.512	13.0	0.630	16.0	0.630	16.0	0.748	19.0	0.984	25.0	0.984	25.0	1.260	32.0	1.260	32.0
KK	— M8 x 1.25		— M10 x 1.25		— M10 x 1.25		— M12 x 1.25		— M16 x 1.5		— M16 x 1.5		— M20 x 1.5		— M20 x 1.5	
L	0.827	21.0	0.984	25.0	0.984	25.0	1.181	30.0	1.535	39.0	1.535	39.0	1.890	48.0	1.890	48.0
LE min	0.650	16.5	0.807	20.5	0.807	20.5	0.965	24.5	1.279	32.5	1.279	32.5	1.594	40.5	1.594	40.5
Metric Kit No.*	52492-05-1		52492-01-1		52492-01-1		52492-02-1		52492-03-1		52492-03-1		52492-04-1		52492-04-1	
Metric -Z1 Kit No.*	52492-05-3		52492-01-3		52492-01-3		52492-02-3		52492-03-3		52492-03-3		52492-04-3		52492-04-3	

NOTES:

- 1) Kit includes clevis, pivot pin, and retainer rings. Jam nut not included.
- 2) *Consult PHD for imperial rod eye mounting components and availability. Imperial dimensions are given for metric conversion convenience only.

ROD CLEVIS PIVOT PIN KIT SIZES 20 - 100 mm



LETTER DIM	BORE SIZE															
	20 mm		25 mm		32 mm		40 mm		50 mm		63 mm		80 mm		100 mm	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
d	0.315	8.0	0.394	10.0	0.394	10.0	0.472	12.0	0.630	16.0	0.630	16.0	0.787	20.0	0.787	20.0
L	0.827	21.0	0.984	25.0	0.984	25.0	1.181	30.0	1.535	39.0	1.535	39.0	1.890	48.0	1.890	48.0
L1	—	—	0.791	20.1	0.791	20.1	0.949	24.1	1.264	32.1	1.264	32.1	1.579	40.1	1.579	40.1
L2	1.220	31.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
L3	1.457	37.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Kit No.	63463-05-1		63463-01-1		63463-01-1		63463-02-1		63463-03-1		63463-03-1		63463-04-1		63463-04-1	
-Z1 Kit No.	63463-05-3		63463-01-3		63463-01-3		63463-02-3		63463-03-3		63463-03-3		63463-04-3		63463-04-3	