

THE BIMBA RANGE OF ISO 6432 CYLINDERS



BIMBA meets YOUR NEEDS

■ Reliable Service, World-Wide

- From a world-wide leader producing millions of actuators each year

■ Environmental

- Pre-lubricated for longer, maintenance free operation ①

■ Noise Reduction

- Shock absorbing bumpers ②

■ Performance And Quality Processes Throughout

- Roll formed threads ③
- High strength pistons permanently rivetted and sealed ④
- Roller burnished stainless steel rods

■ Productivity

- Advanced bearing and seal materials for higher speed applications ⑤

■ Safety

- Double rolled construction ⑥
- Permanent mechanical retention; needles cannot blow out under pressure ⑦

■ Reduced Envelope

- Space savings available resulting from smaller external dimensions

■ A Material For Any Application

- Heads available in Aluminium, Stainless Steel and Delrin®

■ Unique Customer Solutions

- Rapid design and delivery time for custom modifications

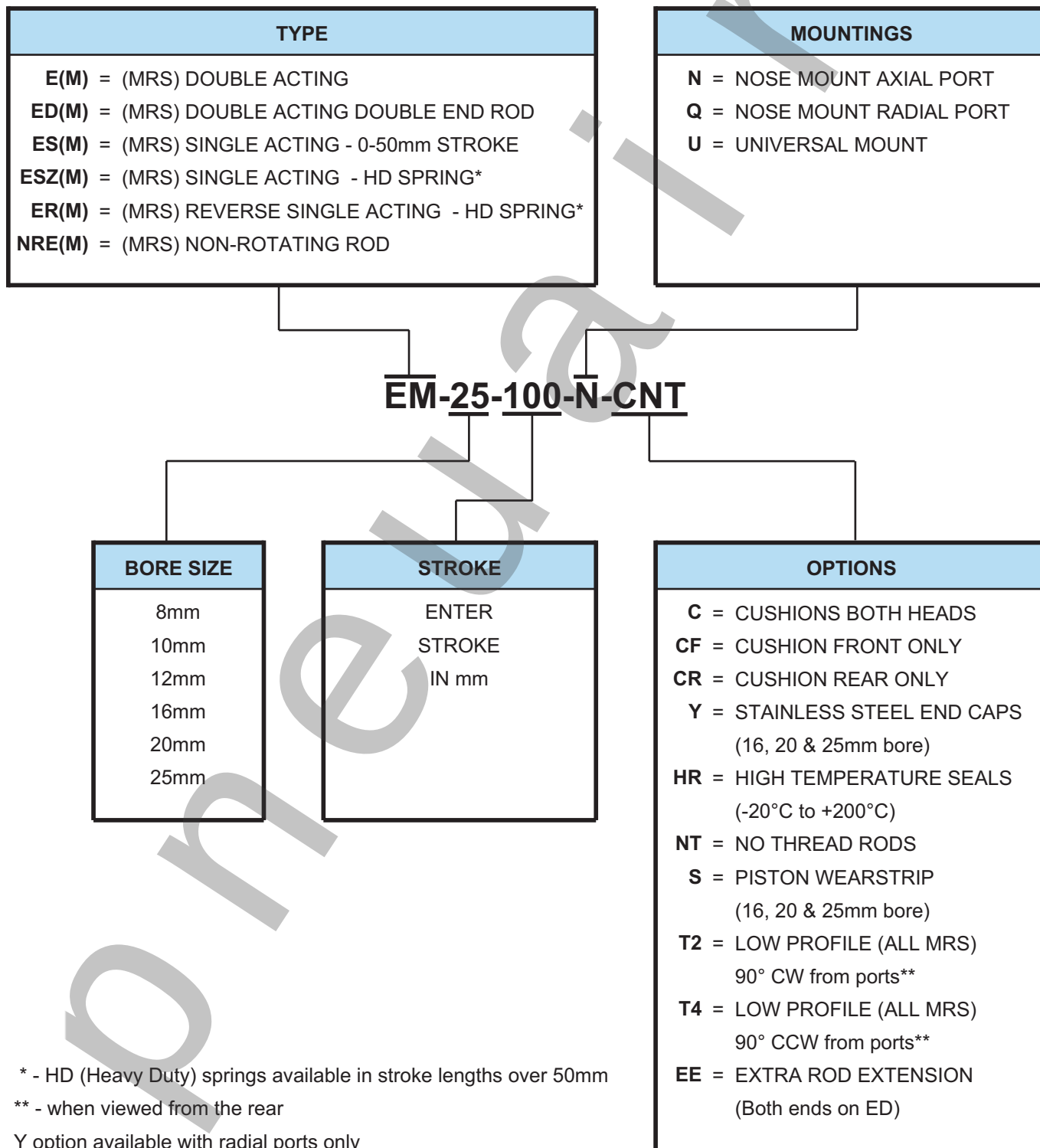
ISO 6432 AIR CYLINDER

HOW TO ORDER

The Model Number for all Bimba ISO 6432 Cylinders consists of five Alpha-Numeric clusters.
The first designates the *Type*, the second the *Bore Size*, the third the *Stroke Length*, the fourth the *Mounting* style, and the fifth the *Options*.

Please refer to the chart below for an explanation of the following model number:

EM-25-100-N-CNT: This is an ISO 6432 Type Cylinder with a magnet, with 25mm Bore Size, 100mm Stroke Size, Nose Mounted, and with Cushions in Both Heads and No Thread Rod.



* - HD (Heavy Duty) springs available in stroke lengths over 50mm

** - when viewed from the rear

Y option available with radial ports only

COMPATIBILITY CHART

Due to design or incompatibility restrictions, the following options may **NOT** be ordered in combination. For example stainless steel end cap may not be ordered with cushions.

Options NT and EE are available independently, with each other or with all viable option combinations.

BORE	OPTION		
	NRE	C	Y
8	N/A	N/A	N/A
10	N/A	N/A	N/A
12	N/A	N/A	N/A
16	C, Y	NRE, Y	NRE, C
20	C, Y	NRE, Y	NRE, C
25	C, Y	NRE, Y	NRE, C

CONVERSION TABLES

	Metric Unit Of Measure	Metric To Imperial Conversion	Imperial Unit Of Measure	Imperial To Metric Conversion
Force	Newtons (N)	x 0.2248	Pounds (Lbs)	x 4.448
Pressure	Bar (b)	x 14.5	Pounds Per Square Inch (PSI)	x 0.069
Measurement	Millimetres	x 0.03937	Inches	x 25.4
Temperature	Centigrade	$\frac{9 \times ^\circ C}{5} + 32$	Fahrenheit	$\frac{5 \times (^\circ F - 32)}{9}$

GENERAL SPECIFICATIONS

	BORE					
	8	10	12	16	20	25
Cushion Length (mm) Each End	N/A			18	21	21
Operating Pressure Range Maximum Minimum - Double Acting	10 bar 0.5 bar					
Operating Temperature Range Standard Seals High Temperature Seals	-10°C to +80°C -20°C to +200°C					
Operating Media	Filtered Compressed Air/Lubricated or Non-Lubricated					
Standard Stroke Lengths	1mm to 500mm					
Maximum Stroke Length*	1000mm					
Stroke Tolerance	+1.0mm/-0mm					
Piston Speed	5mm/s to 1000mm/s (Higher speed available on request)					
Life Expectancy	3000km					

* Varies according to bore size, please consult your local BIMBA distributor.

ISO 6432 AIR CYLINDER

WEIGHTS

	Bore					
	8	10	12	16	20	25
Option N	20	22	41	53	102	149
Option U	23	25	46	59	118	167
Type ED	28	30	61	74	152	218
adder per 10mm stroke	2	2	4	5	8	11

Weights (approximate) are for zero stroke, in grams.

ROD BUCKLING FORMULA

The maximum recommended cylinder stroke is dependent upon:

1. Mounting type
2. Rod diameter
3. Rod end connection

Using the following formula it is possible to determine the buckling load for a given stroke length of cylinder

$$BL = \frac{\pi^2 EJ}{(l \times M)^2 S}$$

BL = Permissible Buckling Load (N)
 E = Young's Modulus of Elasticity (N/mm²)
 J = Moment of Inertia (mm⁴)
 l = Buckling Length = Stroke (mm)
 M = Stroke Multiplier (see table below)
 S = Safety Factor (recommended minimum 5)

HOW TO CALCULATE ROD BUCKLING FORCES

EXAMPLE:

Q. What is the buckling load for a 25mm bore cylinder with a pivoted and guided load attached, stroke 200mm?

A. Using the formula: $BL = \frac{\pi^2 EJ}{(l \times M)^2 S}$

$$E = 190.05 \times 10^3 \text{ N/mm}^2$$

$$l = 200\text{mm (stroke)}$$

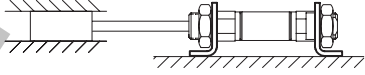
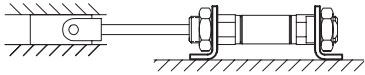
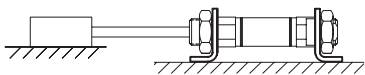
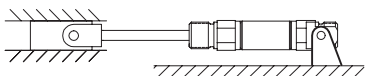
$$M = 2 \text{ (for pivoted and guided load)}$$

$$S = 5 \text{ (safety factor)}$$

$$D = 10\text{mm (piston rod diameter for cylinder)}$$

$$J = \frac{\pi D^4}{64} = \frac{\pi 10^4}{64} = 490.87\text{mm}^4$$

$$BL = \frac{\pi^2 \times 190.05 \times 10^3 \times 490.9}{(2 \times 200)^2 \times 5} = 1150.9\text{N} = 1.15\text{kN}$$

ROD END CONNECTION	CYLINDER MOUNTING	TYPE	STROKE MULTIPLIER
FIXED & GUIDED		A	0.5
PIVOTED & GUIDED		B	0.7
FIXED & SUPPORTED		C	2
PIVOTED & GUIDED		C	2

OUTPUT FORCES

Cylinder output forces can be determined in one of two ways:

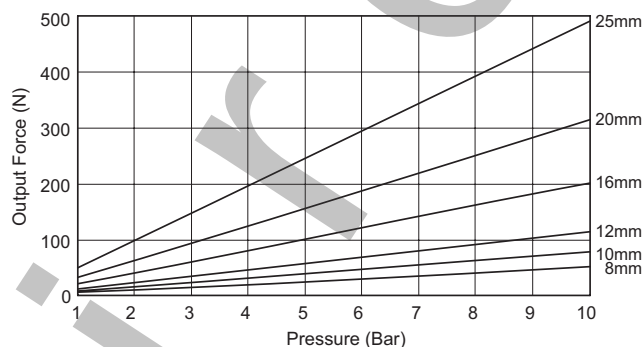
1. Calculation

$$\text{Cylinder Output Force (N)} = \text{Power Factor} \times \text{Pressure (bar)}$$

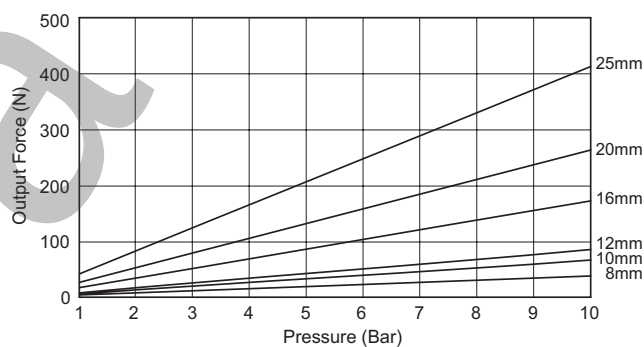
BORE	POWER FACTOR	
	EXTENSION	RETRACTION
8	5.3	4.0
10	7.9	6.6
12	11.3	8.5
16	20.1	17.3
20	31.4	26.1
25	49.1	41.2

2. Graph

Extend



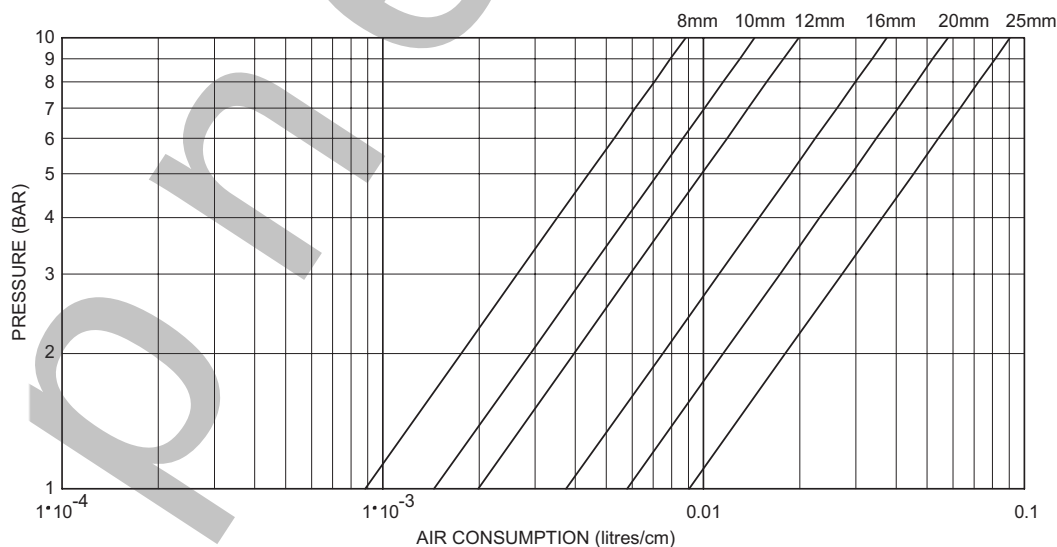
Retract



AIR CONSUMPTION CHART

The Air Consumption Chart is based on the following formula for a complete cylinder cycle (cylinder extends and retracts):

$$Q = \left[\frac{\pi D^2}{4} + \left(\frac{\pi(D^2 - d^2)}{4} \right) \right] hp 10^{-6}$$



Draw a line across for the pressure used. Where this intersects the required bore size, draw a vertical line down. This will give you the air consumption. Multiply this by the stroke in cm, and this will give the air consumption per cycle.

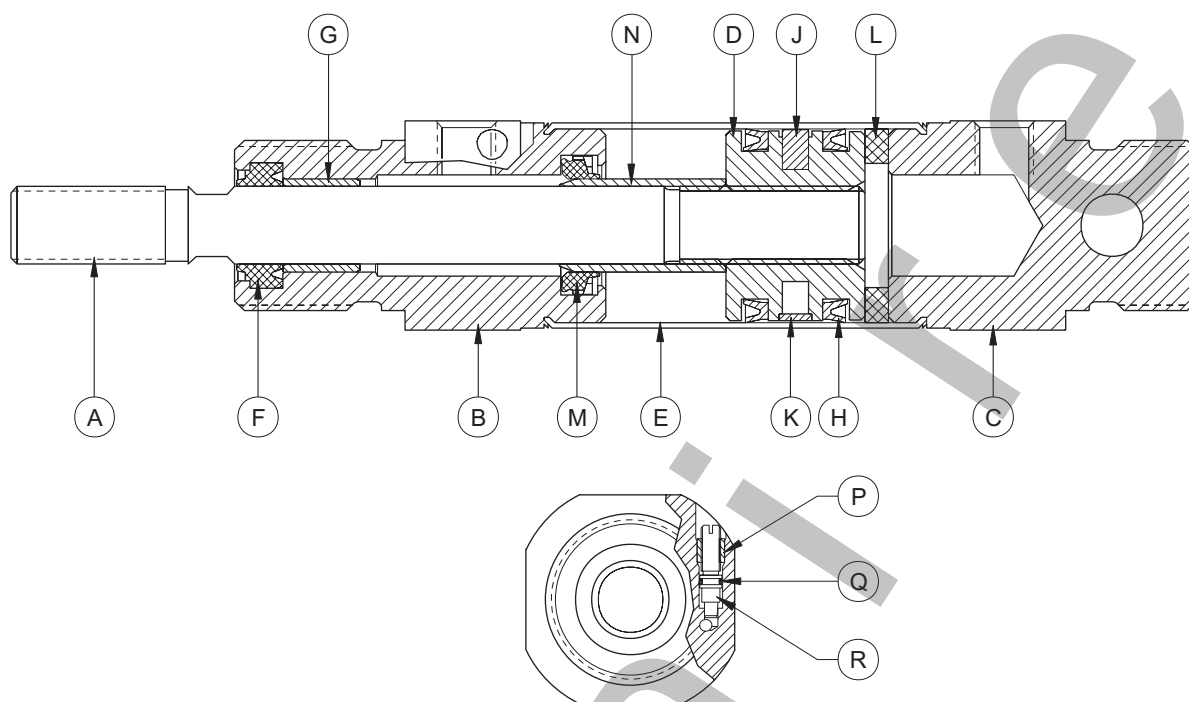
Q = Air volume per cm of stroke (L)
 D = Piston or piston rod diameter (mm)
 h = Stroke (mm)
 p = Operating pressure (bar)
 d = Piston rod diameter (mm)

EXAMPLE:

Cylinder Stroke = 2.5cm
 Cylinder Bore = ø25mm
 Operating Pressure = 7 Bar
 Air Consumption = 0.158 Litres

ISO 6432 AIR CYLINDER

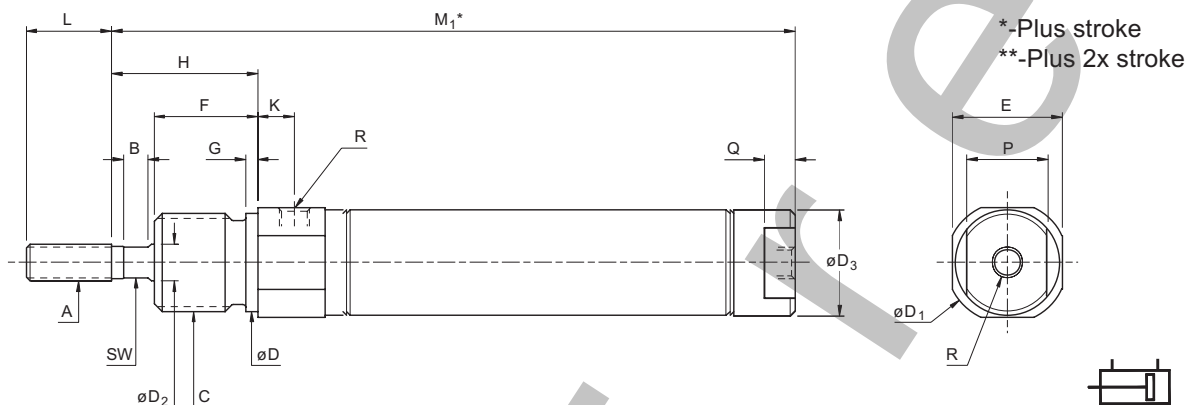
MATERIALS



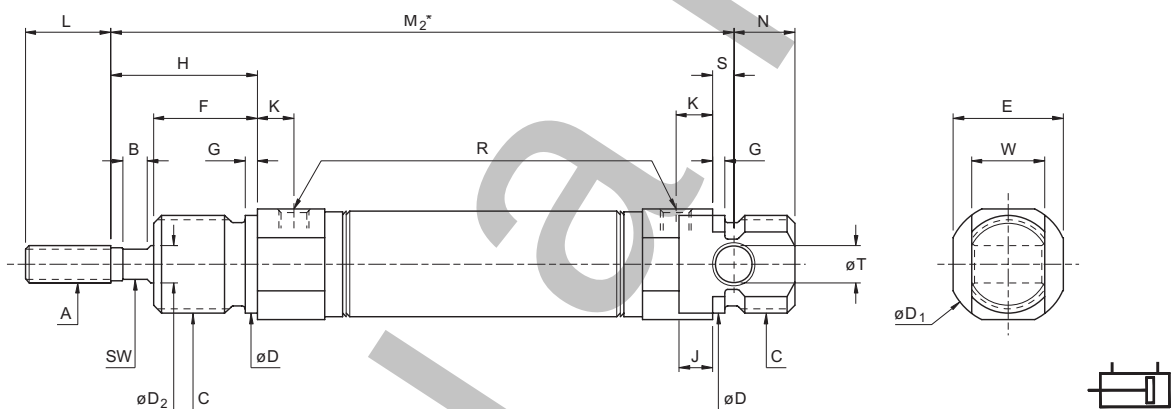
ITEM	COMPONENT	MATERIAL
A	Piston Rod	Stainless Steel (type 303 s31)
B	Rod Guide	Aluminium Alloy (anodised) Delrin® Plastic - (type PCE) Stainless Steel - (option Y)
C	Rear Head	Aluminium Alloy (anodised) Delrin® Plastic - (type PCE) Stainless Steel - (option Y)
D	Piston	Aluminium Alloy Brass - (type ED)
E	Body	Stainless Steel (type 304)
F	Rod Seal/Rod Wiper	Nitrile (NBR) or Fluoro-rubber (FPM) - (option HR)
G	Rod Bearing	Self Lubricating Thermoplastic Alloy
H	Piston Seal	Nitrile (NBR) or Fluoro-rubber (FPM) - (option HR)
J	Magnet	Neodymium Iron Boron Nitrile
K	Piston Bearing Ring	Carbon Filled PTFE
L	Bumper	Fluoro-rubber (FPM)
M	Cushion Seal	Nitrile (NBR) - Standard or Fluoro-rubber (FPM) - (option HR)
N	Cushion Sleeve	Aluminium Alloy
P	Cushion Screw Retainer	Aluminium Alloy (anodised) Stainless Steel - (type PCE)
Q	Cushion o-ring	Fluoro-rubber (FPM)
R	Cushion Screw	Stainless Steel (type 303 s31)

DOUBLE ACTING

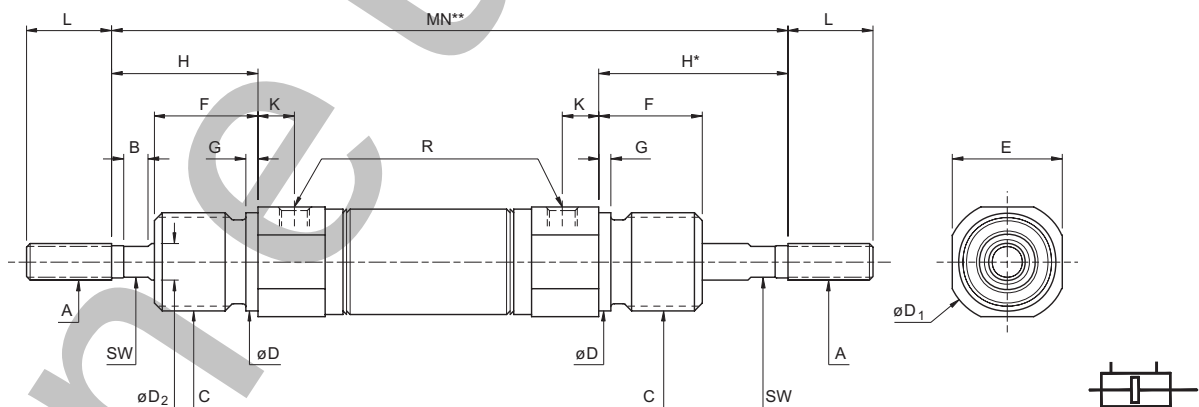
NOSE MOUNT - N option



UNIVERSAL MOUNT - U option



DOUBLE ENDED



Bore	A ^{6g}	B	C ^{6g}	D	D ₁	D ₂ ^{h8}	D ₃	E	F	G	H	J	K	L	P	Q	N	R	S	T ^{H9}	W ^{d13}	SW	M ₁	M ₂	MN
8	M4x0.7	-	M12x1.25	12	17	4	9	15	12	2	16	3	6	12	8	4	9	M5x0.8	3	4	8	-	56.5	64	77
10	M4x0.7	-	M12x1.25	12	17	4	11	15	12	2	16	3	6	12	10	5	9	M5x0.8	3	4	8	-	58	64	77
12	M6x1.0	4	M16x1.5	16	20	6	13	18	17	2	24	5.4	6	14	10	5	8	M5x0.8	3.6	6	12	5	68.7	77	97
16	M6x1.0	4	M16x1.5	16	20	6	17	18	17	2	24	5.5	6	14	13	5	10	M5x0.8	3.5	6	12	5	74	84	104
20	M8x1.25	4	M22x1.5	22	28	8	21	24	19	3	25	8	8	19	19	7	11	G1/8	4	8	16	6	84.5	96	117
25	M10x1.25	4	M22x1.5	22	30	10	26	27	22	3	30	6	8	20	22	8	11	G1/8	6	8	16	8	92	106	130

ISO 6432 AIR CYLINDER

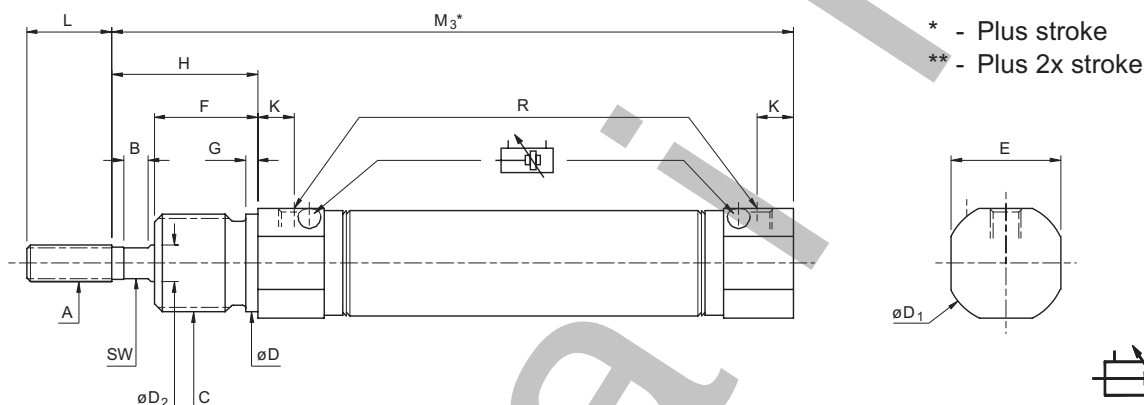
Q option

Radially ported rear head available on non-cushioned cylinders.
The M_1 dimension increases by the amount shown alongside

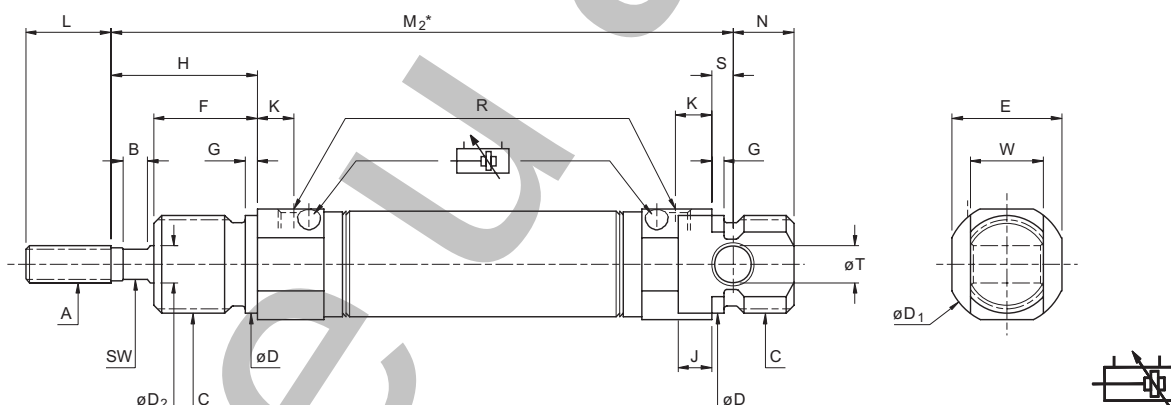
Bore	Adder	Bore	Adder
8	4.5	16	6.5
10	3	20	7.5
12	4.7	25	8

DOUBLE ACTING - with adjustable cushioning

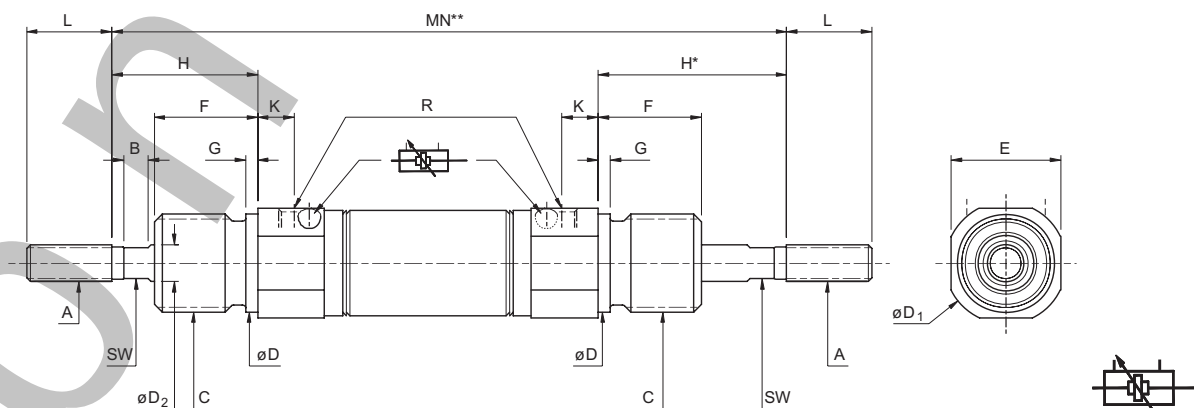
NOSE MOUNT - N option



UNIVERSAL MOUNT - U option



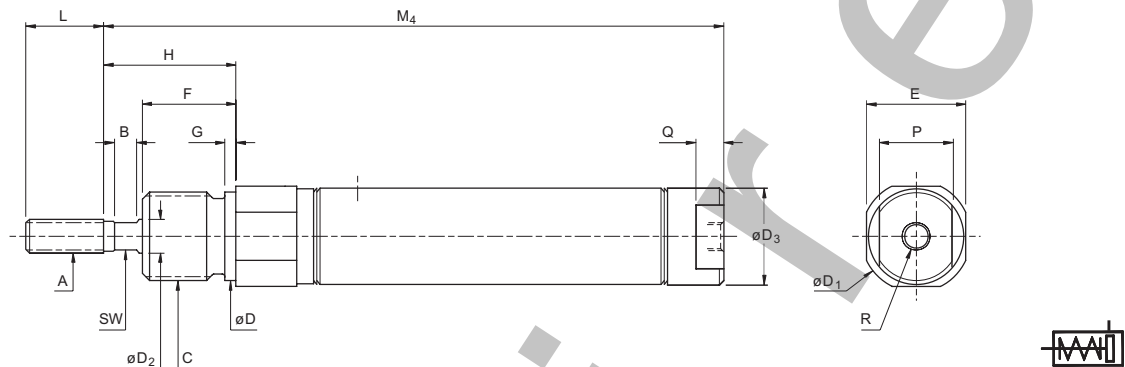
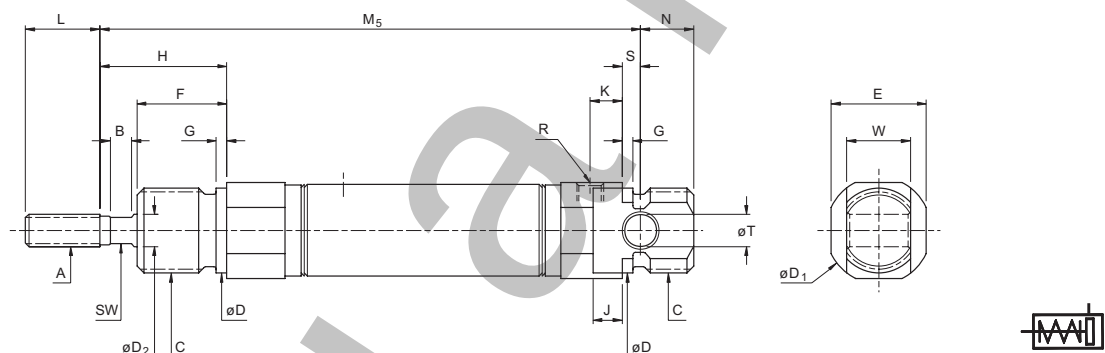
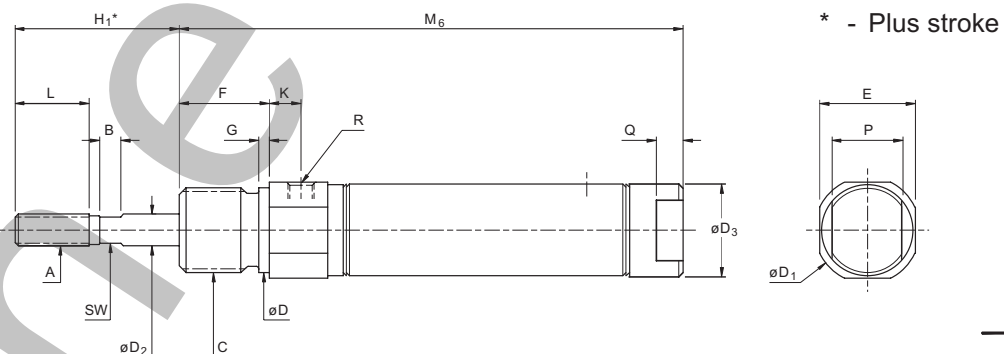
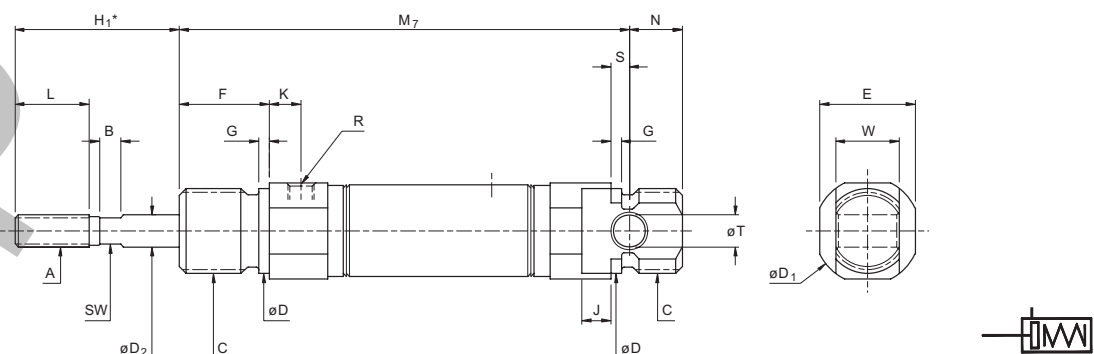
DOUBLE ENDED



Bore	A ^{6g}	B	C ^{6g}	D	D ₁	D ₂ ^{h8}	E	F	G	H	J	K	L	N	R	S	T ^{H9}	W ^{d13}	SW	M ₂	M ₃	MN
16	M6x1.0	4	M16x1.5	16	20	6	18	17	2	24	5.5	6	14	10	M5x0.8	3.5	6	12	5	84	80.5	104
20	M8x1.25	4	M22x1.5	22	28	8	24	19	3	25	8	8	19	11	G1/8	4	8	16	6	96	92	117
25	M10x1.25	4	M22x1.5	22	30	10	27	22	3	30	6	8	20	11	G1/8	6	8	16	8	106	100	130

SINGLE ACTING - spring to retract (ESZ)

The ESZ & ER series offer a heavier spring force than the ES, and the flexibility of strokes exceeding 50mm.

NOSE MOUNT - N option**UNIVERSAL MOUNT - U option****SINGLE ACTING - spring to extend (ER)****NOSE MOUNT - N option****UNIVERSAL MOUNT - U option**

See following page for dimensional tables

ISO 6432 AIR CYLINDER

Bore	A ^{6g}	B	C ^{6g}	D	D ₁	D ₂ ^{h8}	D ₃	E	F	G	H	H ₁	J	K	L	N	P	Q	R	S	T ^{H9}	W ^{d13}	SW
8	M4x0.7	-	M12x1.25	12	17	4	9	15	12	2	16	16	3	6	12	9	8	4	M5x0.8	3	4	8	-
10	M4x0.7	-	M12x1.25	12	17	4	11	15	12	2	16	16	3	6	12	9	10	5	M5x0.8	3	4	8	-
12	M6x1.0	4	M16x1.5	16	20	6	13	18	17	2	24	21	5.4	6	14	8	10	5	M5x0.8	3.6	6	12	5
16	M6x1.0	4	M16x1.5	16	20	6	17	18	17	2	24	21	5.5	6	14	10	13	5	M5x0.8	3.5	6	12	5
20	M8x1.25	4	M22x1.5	22	28	8	21	24	19	3	25	27	8	8	19	11	19	7	G1/8	4	8	16	6
25	M10x1.25	4	M22x1.5	22	30	10	26	27	22	3	30	28	6	8	20	11	22	8	G1/8	6	8	16	8

CALCULATING CYLINDER LENGTHS

In order to provide greater customer flexibility, Bimba ESZ and ER cylinders can be fitted with multiple springs. To calculate the length ("M" dimension), use the following formula based on the table below:

Example 1: ESZ-25-78-U

ESZ-25- -U Base length (M_5) = 103mm

Multiplier = Stroke ÷ Increment = 78 ÷ 25 = 3.12

Multiplier = 3 (always round down)

Multiplier x Adder = 3 x 47 = 141mm

Add Base Length = 141 + 103 = 244

Add whole stroke increment:

Stroke – (Multiplier x 25) = 78 - 75 = 3

ESZ-25-78-U = 244 + 3 = 247

Example 2: ER-12-86-N

ER-12-86-N Base length (M_6) = 60.2mm

Multiplier = Stroke ÷ Increment = 86 ÷ 12.5 = 6.88

Multiplier = 6 (always round up)

Multiplier x Adder = 6 x 29 = 174mm

Add Base Length = 174 + 60.2 = 234.2

Add whole stroke increment:

Stroke – (Multiplier x 12.5) = 86 - 75 = 11

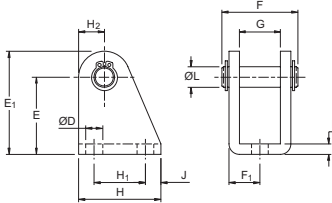
ER-12-86-N = 234.2 - 11 = 223.2

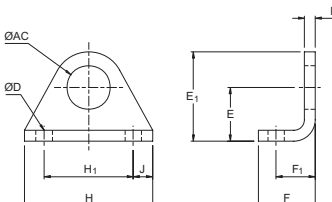
	ESZ - Single Acting, Rod To Retract				ER - Single Acting, Rod To Extend			
Bore	M ₄ (N)	M ₅ (U)	Adder	Increment	M ₆ (N)	M ₇ (U)	Adder	Increment
8	63.8	71.3	20.8	12.5	51.5	59	20.8	12.5
10	57	63	24		53	59	29	
12	67.2	75.5	26.5		60.2	68.5	29	
16	72	82	48.5	25	65	75	49	25
20	81.5	93	46.5		75.5	87	49	
25	89	103	47		81	95	41.7	

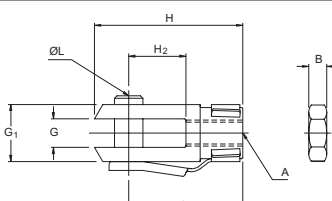
SPRING FORCES

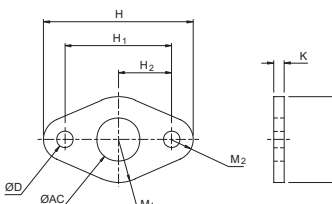
	ES (available up to 50mm stroke)				ESZ & ER	
	Preload At Strokes (N)			Final Load (N)	Preload At 10mm Stroke (N)	Final Load (N)
Bore	10mm	25mm	50mm			
8	5.1	4.2	2.6	5.7	1.8	8
10	5.1	4.2	2.6	5.7	3.1	8
12	5.8	4.4	3.1	6.2	4.9	16
16	5.8	4.4	3.1	6.2	8.9	22.7
20	20	16.5	11.1	22	12	31.7
25	28	23.1	15.6	31.1	12	39.2

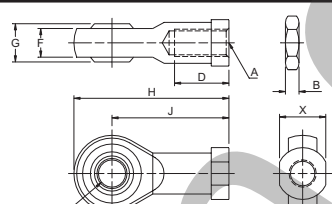
ACCESSORIES - Carbon Steel

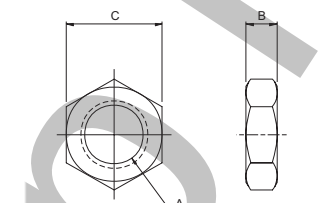
CLEVIS FOOT		Bore	Type	D	E	E ₁	F	F ₁	G	H	H ₁	H ₂	J	K	L
		8, 10	CFB-1	4.5	24	29	17	6.5	8.1	20	12.5	5	4	2.5	4
		12, 16	CFB-2	5.5	27	34	23	9	12.1	25	15	7	5	3	6
		20, 25	CFB-3	6.6	30	40	29.5	12	16.1	32	20	10	6	4	8

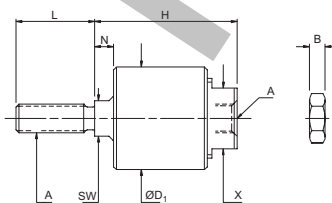
FOOT MOUNTING		Bore	Type	AC	D	E	E ₁	F	F ₁	H	H ₁	J	K
		8, 10	FB-1	12.1	4.6	15	25	16	11	36	25	5.5	3
		12, 16	FB-2	16.1	5.6	20	33	20	14	45	32	6.5	4
		20, 25	FB-3	22.1	6.6	25	40	24	17	56	40	8	4.5

ROD CLEVIS		Bore	Type	A	B	G	G ₁	H	H ₂	J	L
		8, 10	RC-M4x0.7	M4x0.7	3.2	4	8	21	8	16	84
		12, 16	RC-M6x1.0	M6x1.0	5	6	12	31	12	24	6
		20	RC-M8x1.25	M8x1.25	4	8	16	42	16	32	8
		25	RC-M10x1.25	M10x1.25	5	10	20	52	24	40	10

FLANGE MOUNTING		Bore	Type	AC	D	E	H	H ₁	H ₂	K	M ₁	M ₂
		8, 10	MF-1	12.1	4.6	24	42	30	15	3	12	6
		12, 16	MF-2	16.1	5.6	28	54	40	20	4	14	7
		20, 25	MF-3	22.1	6.6	38	66	50	25	4.5	19	8

SPHERICAL ROD EYE		Bore	Type	A	AC	B	D	F	G	H	J	X
		8, 10	SRE-M4x0.7	M4x0.7	5	3.2	10	6	8	36	27	9
		12, 16	SRE-M6x1.0	M6x1.0	6	5	12	6.75	9	40	30	11
		20	SRE-M8x1.25	M8x1.25	8	4	16	9	12	48	36	14
		25	SRE-M10x1.25	M10x1.25	10	5	20	10.5	14	57	43	17

ROD/MOUNTING NUT		Bore	Type	A	B	C	Type	A	B	C
		8, 10	RN-1	M4x0.7	3.2	7	MN-1	M12x1.25	7	19
		12, 16	RN-2	M6x1.0	5	10	MN-2	M16x1.5	8	24
		20	RN-3	M8x1.25	4	13	MN-3	M22x1.5	10	32
		25	RN-4	M10x1.25	5	17				

ROD COUPLER		Bore	Type	A	B	D ₁	H	L	N	SW	X
		8, 10	AC-M4x0.7	M4x0.7	3.2	14	24	14	6.5	-	11.3
		12, 16	AC-M6x1.0	M6x1.0	5	17	24	16	5	5	10
		20	AC-M8x1.25	M8x1.25	4	29	40	22	5.3	10	17
		25	AC-M10x1.25	M10x1.25	5	29	40	24	5.3	10	17

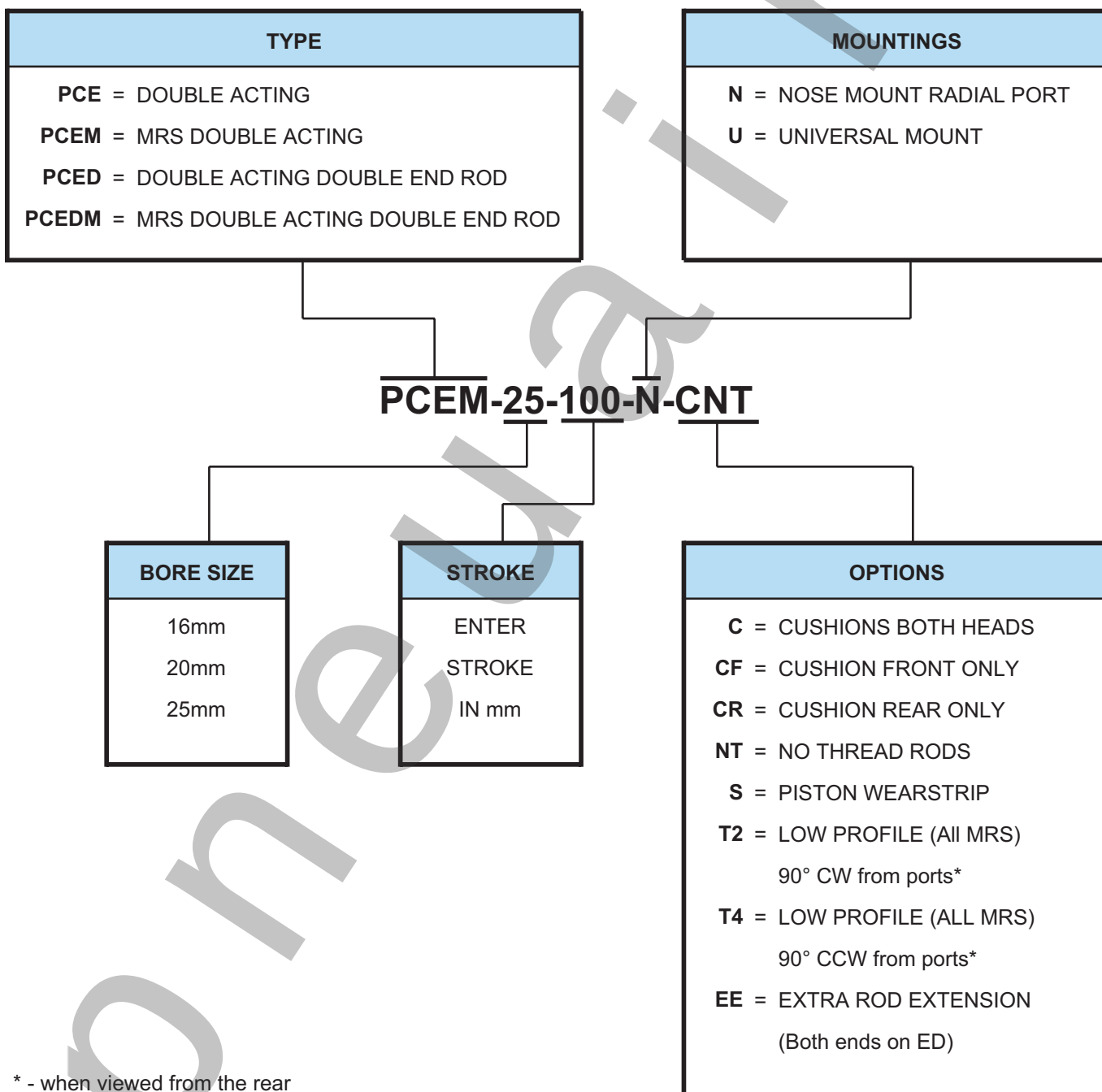
PCE AIR CYLINDER

HOW TO ORDER

The Model Number for all Bimba PCE Cylinders consists of five Alpha-Numeric clusters. The first designates the *Type*, the second the *Bore Size*, the third the *Stroke Length*, the fourth the *Mounting style*, and the fifth the *Options*

Please refer to the charts below for an explanation of the following model number:

PCEM-25-100-N-CNT: This is a PCE Type Cylinder with a magnet, with 25mm Bore Size, 100mm Stroke Size, Nose Mounted, and with Cushions in Both Heads and no Rod Threads.



* - when viewed from the rear

GENERAL SPECIFICATIONS



The Bimba PCE cylinder has stainless steel body, stainless steel rod and Delrin[®] end caps. It is ideal for applications or operating environments that require exposure to moisture, lubricants and specific solvents.

	BORE		
	16	20	25
Cushion Length (mm) Each End	18	21	21
Head Material	Delrin [®] Plastic type 150SA		
Operating Pressure Max. Min.	7 bar 0.5 bar		
Operating Temperature Range	-10°C to +80°C		
Operating Media	Filtered Compressed Air/Lubricated or Non-Lubricated		
Standard Stroke Lengths	1mm to 500mm		
Maximum Stroke Length*	1000mm		
Stroke Tolerance	+1.0mm/-0mm		
Piston Speed	5mm/s to 1000mm/s		
Life Expectancy	3000km		

* Varies according to bore size, please consult your local Bimba distributor.

WEIGHTS

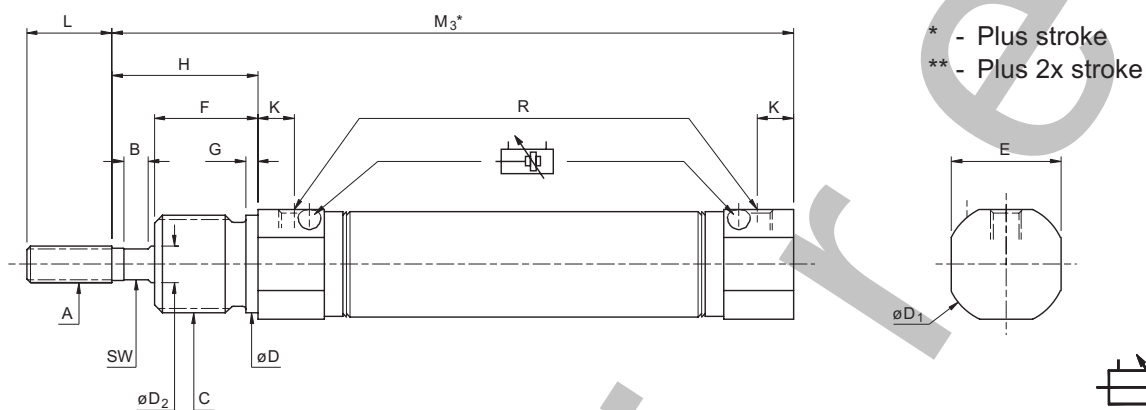
	Bore		
	16	20	25
Option N	40	77	117
Option U	43	85	126
Type ED	57	116	176
adder per 10mm stroke	5	8	11

Weights (approximate) are for zero stroke, in grams.

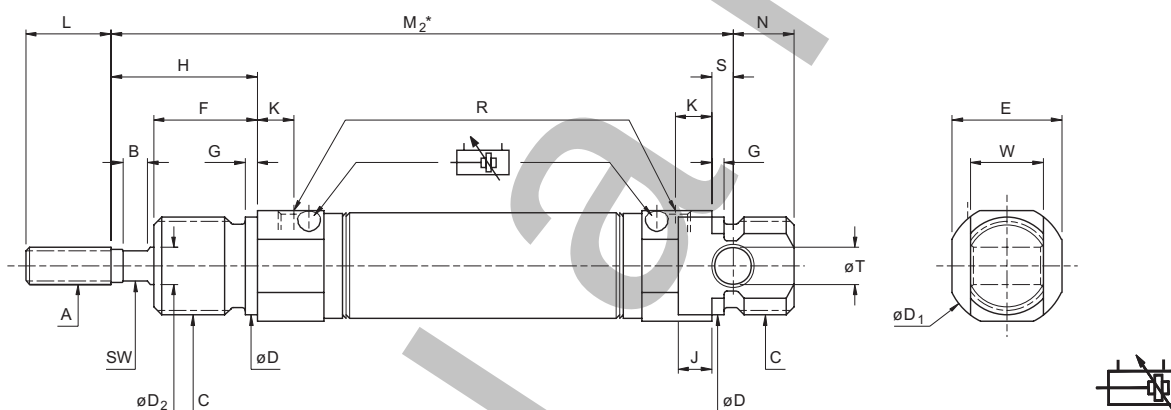
PCE AIR CYLINDER

DOUBLE ACTING - with adjustable cushioning

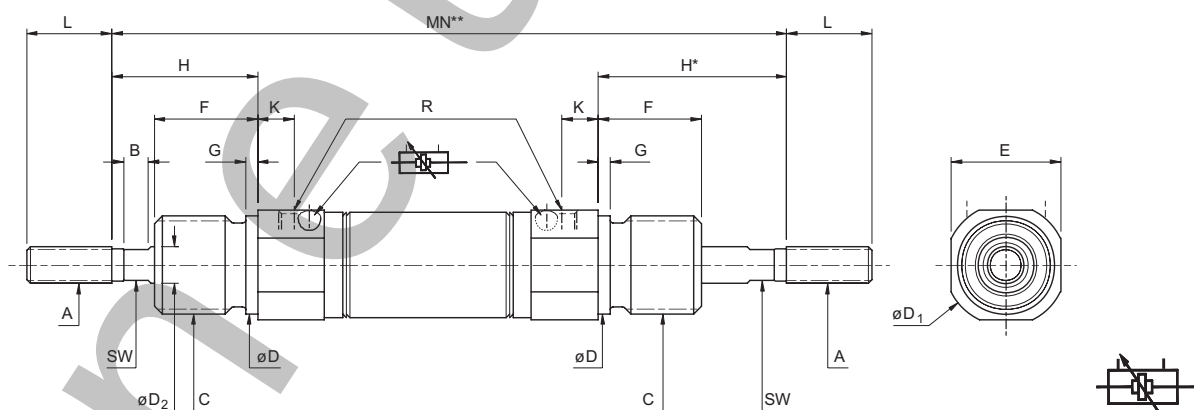
NOSE MOUNT - N option



UNIVERSAL MOUNT - U option



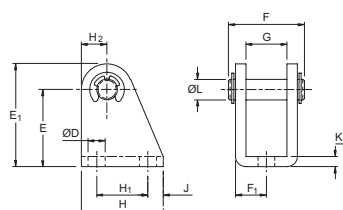
DOUBLE ENDED



Bore	A ^{6g}	B	C ^{6g}	D	D ₁	D ₂ ^{h8}	E	F	G	H	J	K	L	N	R	S	T ^{H9}	W ^{d13}	SW	M ₂	M ₃	MN
16	M6x1.0	4	M16x1.5	16	20	6	18	17	2	24	5.5	6	14	10	M5x0.8	3.5	6	12	5	84	80.5	104
20	M8x1.25	4	M22x1.5	22	28	8	24	19	3	25	8	8	19	11	G1/8	4	8	16	6	96	92	117
25	M10x1.25	4	M22x1.5	22	30	10	27	22	3	30	6	8	20	11	G1/8	6	8	16	8	106	100	130

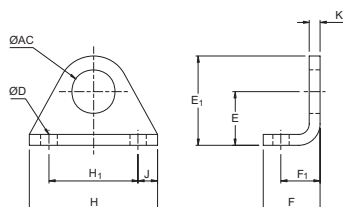
ACCESSORIES - Stainless Steel

PIVOT BRACKET



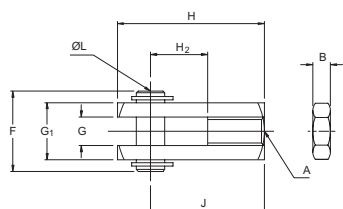
Bore	Type	D	E	E ₁	F	F ₁	G	H	H ₁	H ₂	J	K	L
16	CFB-2-SS	5.6	27	34	24	9	12.5	25	15	7	5	3	6
20, 25	CFB-3-SS	6.6	30	40	30.5	12	16.5	32	20	10	6	4	8

FOOT MOUNTING BRACKET



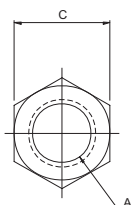
Bore	Type	AC	D	E	E ₁	F	F ₁	H	H ₁	J	K
16	FB-2-SS	16.1	5.6	20	33	20	14	42	32	5	4
20, 25	FB-3-SS	22.1	6.6	25	40	25	17	54	40	7	5

ROD CLEVIS BRACKET



Bore	Type	A	B	F	G	G ₁	H	H ₂	J	L
16	RC-2-SS	M6x1.0	5	16	6	12	31	12	24	6
20	RC-3-SS	M8x1.25	4	20	8	16	42	16	32	8
25	RC-4-SS	M10x1.25	5	26	10	20	52	24	40	10

ROD NUT



Bore	Type	A	B	C
16	RN-2-SS	M6 x 1.0	5	10
20	RN-3-SS	M8 x 1.25	4	13
25	RN-4-SS	M10 x 1.25	5	17

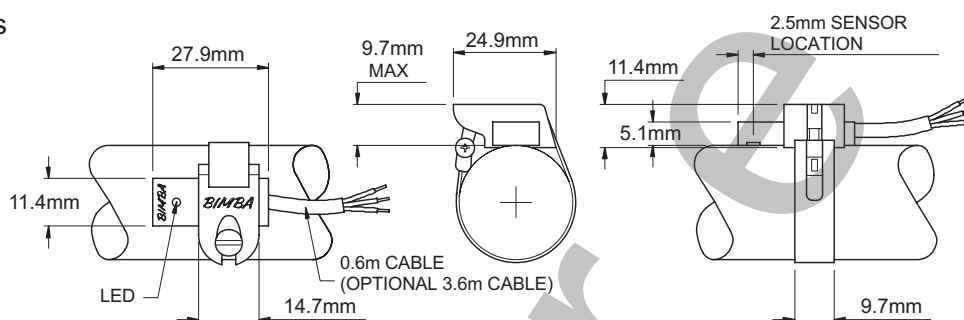
MOUNTING NUT

Bore	Type	A	B	C
16	MN-2-SS	M16 x 1.5	8	24
20, 25	MN-3-SS	M22 x 1.5	10	32

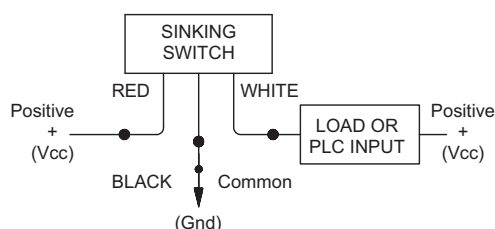
HALL EFFECT SWITCH

OVERVIEW

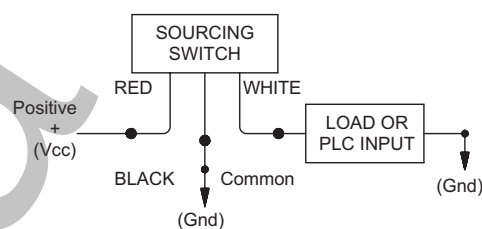
The BIMBA Hall Effect switches are band-mounted to the actuator. They use advanced surface mount technology to provide extremely compact, reliable position sensing. It is available in both current sinking and current sourcing outputs, with an LED indicator standard on both models. The solid state circuitry features reverse polarity, transient voltage and false pulse protection. The BIMBA Hall Effect Switch is fitted with a clamp housing and pre-sized band for easy mounting anywhere along the length and circumference of the cylinder. The extremely flexible wire is available in 0.6 and 3.6 metre lengths.



WIRING DIAGRAMS

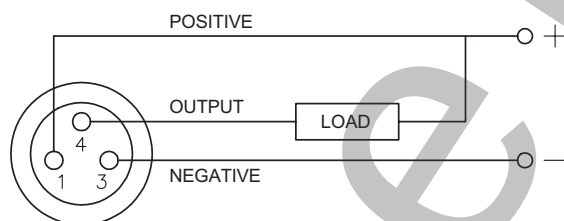


Typical Hall Effect Sinking Configuration (NPN)

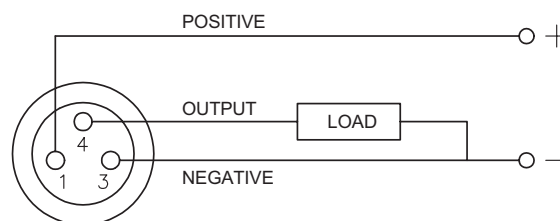


Typical Hall Effect Sourcing Configuration (PNP)

ELECTRICAL CIRCUIT DIAGRAMS - Male Connector



8mm Male Connector
Sinking Hall Effect Switch

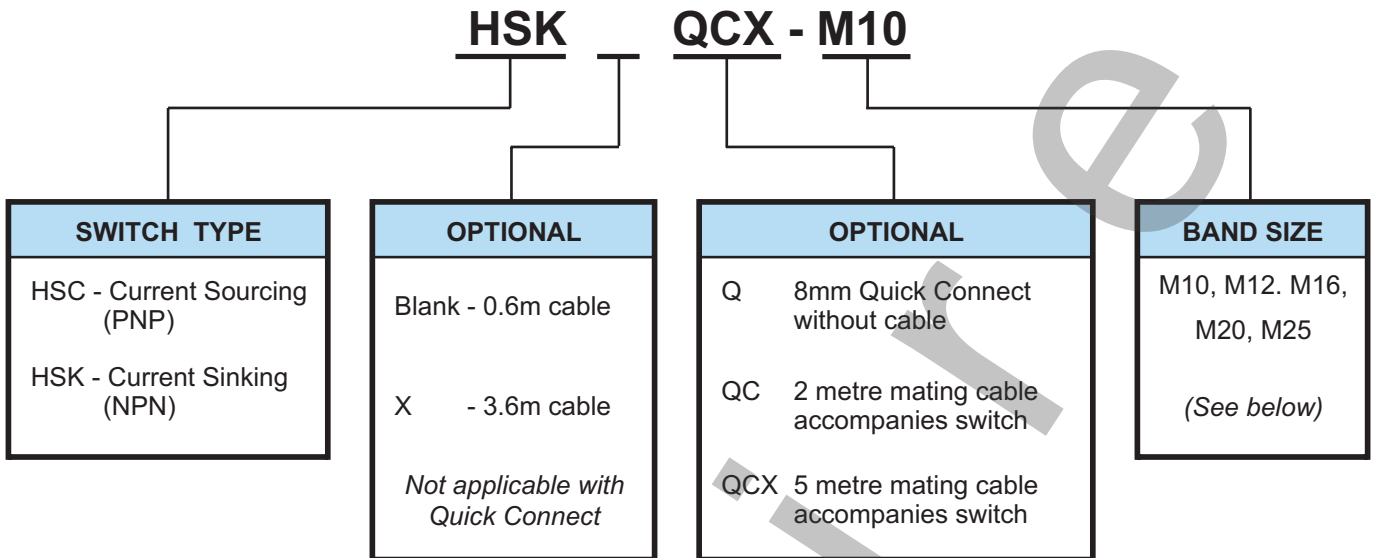


8mm Male Connector
Sourcing Hall Effect Switch

ELECTRICAL SPECIFICATIONS

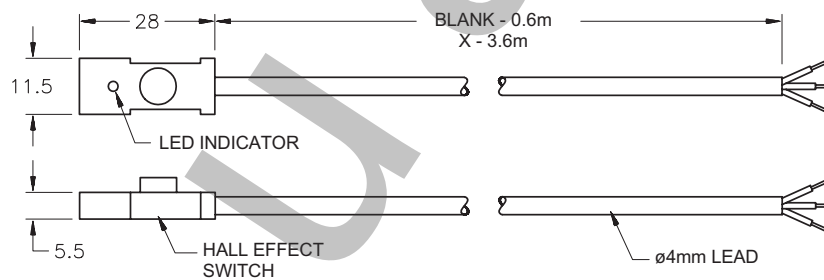
Output Type:	Current sinking or sourcing
Input Voltage:	5 to 30VDC
Input Current:	25mA maximum
"ON" Voltage Drop:	
Sinking:	0.4 volts maximum
Sourcing:	1.5 volts maximum
Output Current:	300mA maximum
Power Dissipation:	300mW maximum
Temperature Range:	-25°C to +70°C
Turn On Time:	2μs. (microsec.)
Turn Off Time:	1μs. (microsec.)
Off-State Leakage:	20 x 10 ⁻⁹ A (20 nanoamps)
Signal Repeatability:	±0.38mm
Reverse Polarity Protected	
Over Voltage Protected	

HOW TO ORDER

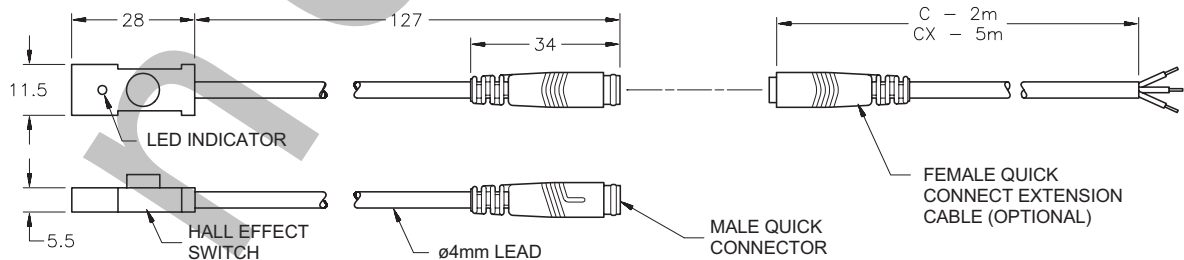


For all band-style switches a presized band is ordered by adding a bore size designation as the last three digits of the switch model number. ie M16 = metric 16mm bore.

BASIC CABLE TYPE

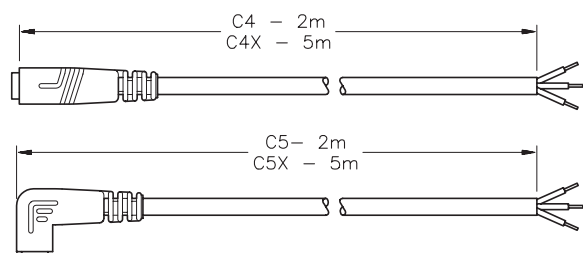


QUICK CONNECT CABLE TYPE



CABLE CONNECTORS (Sold Separately)

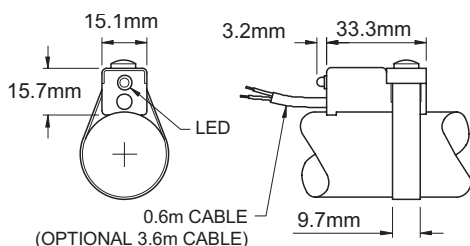
MODEL	DESCRIPTION
C4	2m Straight
C4X	5m Straight
C5	2m Right Angle
C5X	5m Right Angle



Straight and right angle cable connectors

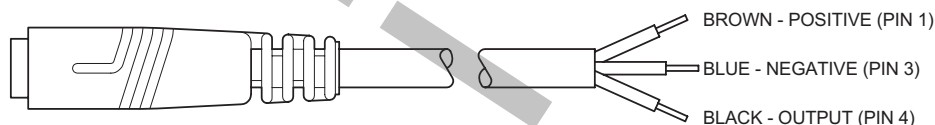
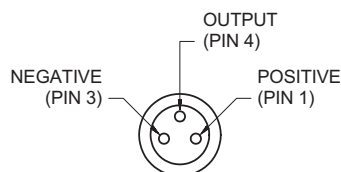
MAGNETIC REED SWITCH

OVERVIEW



The BIMBA Magnetic Reed Switch is available in two basic models to meet various electrical loads. All switches are encased in a chrome-plated zinc die cast housing, and shipped with a pre-sized band for easy mounting along the length and circumference of the ISO 6432 cylinder. Lead wire is available in 0.6 and 3.6 metre lengths.

PIN AND WIRE ASSIGNMENTS FOR QUICK CONNECT - Female Connector



8mm Female Connector

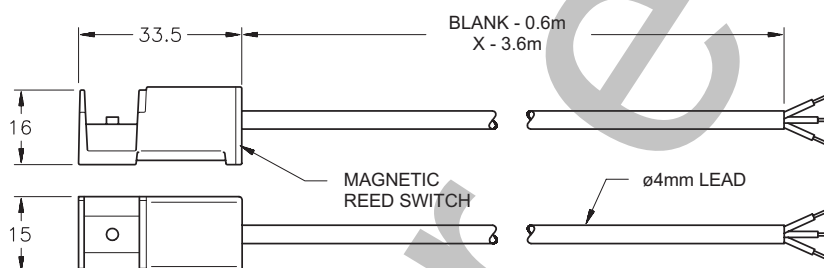
ELECTRICAL SPECIFICATIONS

CIRCUIT DIAGRAMS	LOAD CURRENT DERATING CURVES (Shaded area indicates operating range)	ELECTRICAL SPECIFICATIONS
MRS-.027-B 		Contacts SPST Form A (Normally Open) Contact Rating 3 Watts Max. Switching Voltage 28 Volts Max. AC or DC Max. Current 250mA-Max. (Resistive) Actuating Time Average 1.0 Millisecond
MRS-.027-BL 		Contacts SPST Form A (Normally Open) Contact Rating 2.8 Watts Max. Switching Voltage 6-24 Volts AC or DC Max. Current 250mA-Max. (Resistive) Actuating Time Average 1.0 Millisecond
MRS-1.5-B 		Contacts SPST Form A (Normally Open) Voltage Rating 12V-230V (AC Only) Min. Current 0.1 Amps. Max. Current 1.5 Amps (See Derating Curve) Actuating Time Average 2.0 Milliseconds

HOW TO ORDER

BASIC CABLE TYPE

SWITCH TYPE
MRS-.027-B
MRS-.027-XB
MRS-.027-BL
MRS-.027-XBL
MRS-1.5-B
MRS-1.5-XB



LED INDICATOR - An 'L' in the model number signifies the presence of an LED indicator.

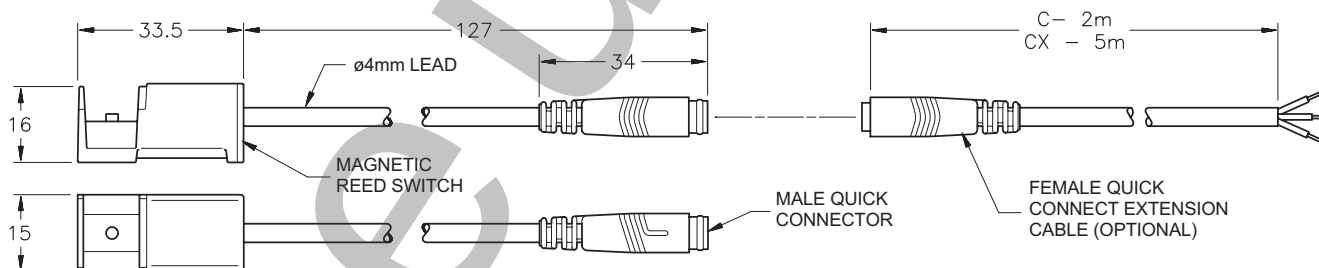
CABLE LENGTH - The standard cable length is 0.6m. Switches with an 'X' in the model number indicate a cable length of 3.6m.

QUICK CONNECT CABLE TYPE

MRS-.027-BQ CX

SWITCH TYPE
MRS-.027-BQ
MRS-.027-BLQ

OPTION: FEMALE EXTENSION CABLE
Blank - No additional female cable included
C - 2m straight female cable
CX - 5m straight female cable

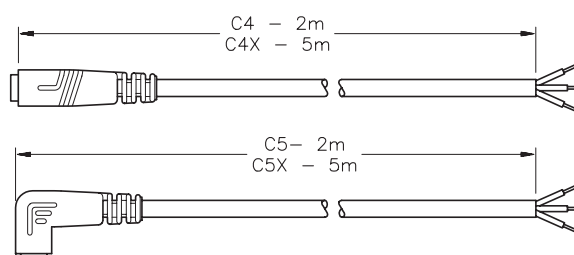


The Bimba Magnetic Reed switches are band mounted to the actuator. For all band-style switches, a pre-sized band is ordered by adding a bore size designation as the last three digits of the basic switch model number.

Bore	10	12	16	20	25
Bore Model Number	M10	M12	M16	M20	M25

CABLE CONNECTORS (Sold Separately)

MODEL	DESCRIPTION
C4	2m Straight
C4X	5m Straight
C5	2m Right Angle
C5X	5m Right Angle

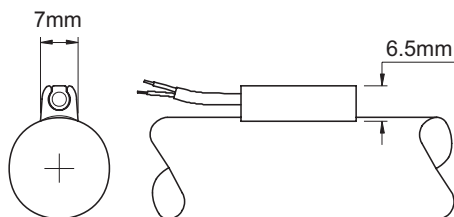


Straight and right angle cable connectors

GMR SWITCH

OVERVIEW

Bimba's new low profile switch offers the latest giant magneto resistive technology. It has more features and functionality in the smallest package of any actuator position sensing switch. The switch fits in a track located on the cylinder's body that allows for an extremely low profile. It has fast response, symmetrical hysteresis, and infinite life.



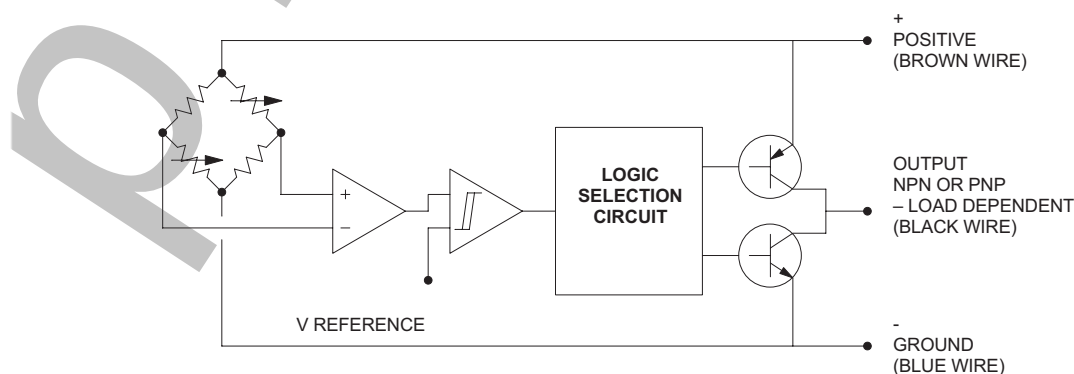
A key feature is our patent pending circuitry, which determines whether the switch has been connected to a current sinking or current sourcing load, then automatically configures itself to be compatible with that load. This takes the guesswork out of your set-up, and allows you to buy just one switch that will work for all your electronic operations.

FEATURES/ADVANTAGES

- Extremely small – the Bimba GMR Switches are the lowest profile switch currently available.
- The Auto-Configure GMR Switch automatically determines whether the switch has been connected to a current sinking or sourcing load.
- Solid state reliability – no moving parts means longer life, no contact bounce.
- Fast response rate – 1 microsecond maximum.
- Low, symmetrical hysteresis eases set-up and provides more accurate sensing.
- Built-in fault protection including reverse polarity, overvoltage and transient protection.
- LED verifies switching and eases set-up.
- Several switches can be mounted none actuator.
- Pigtail leads in two lengths, with Quick Connect option for easy set-up.

HOW IT WORKS

The Bimba GMR Switch is based on giant magnet resistive (GMR) technology, which was first developed in 1988. It includes 4 GMR resistors (2 active, 2 shielded), each of which has many thin layers of magnet resistive material. In each layer, the electrons are oriented opposite the adjacent layer, providing a great deal of resistance to electrical flow. The presence of a magnetic field overcomes the magnetic coupling between the adjacent layers, causing parallel alignment of magnetic moments between layers, and resistance drops significantly. By connecting the 4 resistors in a classic Wheatstone bridge configuration, the voltage across a single resistor is doubled, providing a linear output. This voltage is then amplified, and sent to a comparator that switches the sensor output when it detects that a minimum magnetic field strength is present. High voltage transistors provide TTL-compatible output rated at 25 milliamps. The switch includes reverse polarity, overvoltage and transient protection.



SWITCH APPLICATION GUIDE

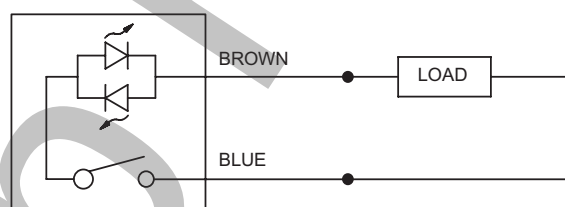
Switch	Programmable Controllers	Solid State Relays Only	Solenoid	Bulb	LED	Motors	Time Counters
Magnetic Reed	Yes	<5VA*	<5VA*	<5VA*	Yes	<5VA*	<5VA*
GMR Auto-configure Switch	Yes	Yes	No	No	Yes	No	Yes
GMR Source or Sink Output	Yes	<50mA	No	<50mA	Yes	No	<50mA

* Use resistor-capacitor protection

ELECTRICAL SPECIFICATIONS

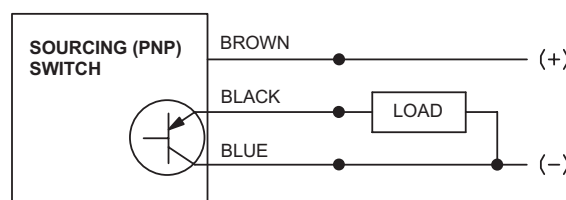
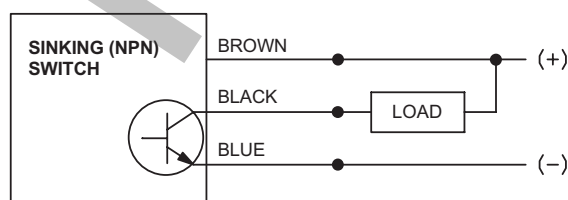
	REED SWITCH (MR, MRX, MRQ)	GMR SWITCH (MSC, MSCX, MSCQ)	GMR SWITCH (MSK, MSKX, MSKQ)
Circuit	2 Wire, Normally Open, Sinking (NPN) or Sourcing (PNP)	3 Wire, Normally Open, Sourcing (PNP)	3 Wire, Normally Open, Sinking (NPN)
Input Voltage	3 to 120 VAC / 3 to 24 VDC	5 to 24 VDC	
Current rating	25mA Max	50mA Max.	
Contact Rating	3 Watts	-	
Voltage Drop	2.3 V	1.5 V	0.5 V
Off State Leakage	-	10µA max.	
Quiescent Current		5mA max.	
Shock	10-2000 Hz, 10g	-	
Vibration	11m/s, ½ Sine Wave, 150g		
Turn ON/OFF Time	1.0 millisecond	0.10 millisecond	
Operating Temperature	-25° to 85°C (-13° to 185°F)	20° to 85°C (-4° to 185°F)	
Enclosure	IEC IP 67		
Flammability	94VO		
LED Indicator	Red	Yellow	Red
		Over Voltage, Reverse Polarity and Transient Protected	

ELECTRICAL CIRCUIT DIAGRAMS



Reed Switch (MR, MRX, MRQ)

Note: On Quick connect reed switch models, connect only the Blue and Brown wires on the mating cable and cut back the black wire. Do Not connect switch to a mating cable that has been previously wired for a 3 wire solid state switch, as it will short the MRQ switch.



GMR SWITCH

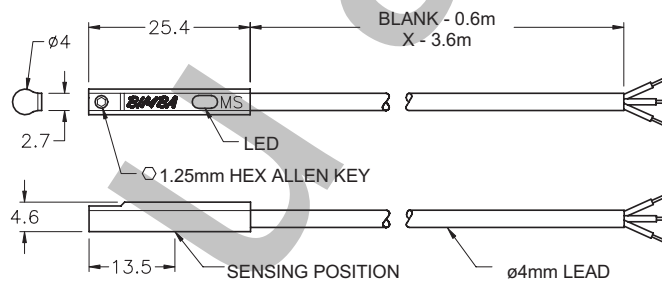
HOW TO ORDER

The Model Number for all extruded track mount switches consists of three alphanumeric clusters. These designate switch type and lead length. Please refer to the chart below for an example of Model Number MSC - _ - QCX. This is a solid state Switch with PNP output and a 5 metre mating cable.

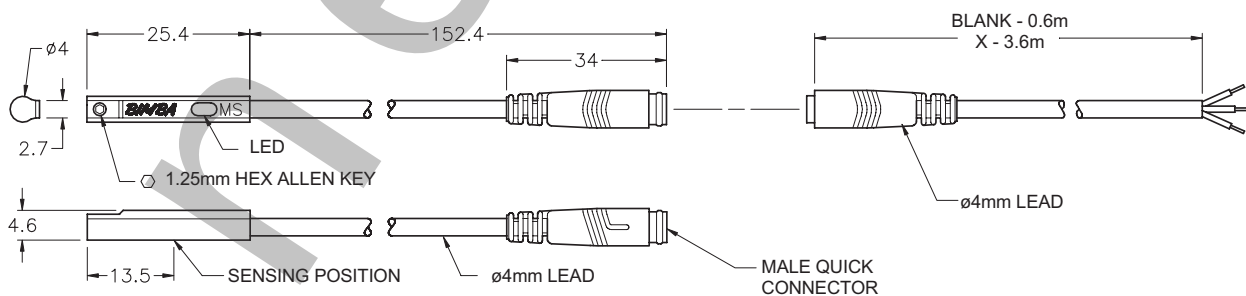
MSC - _ - QCX

SWITCH TYPE	OPTION - Basic	OPTION - Quick Connect
MR - Magnetic Reed	Blank - 0.6m cable	Q - 8mm Quick Connect without cable
MSC - GMR Source (PNP) output	X - 3.6m cable	QC - 2 metre mating cable accompanies switch
MSK - GMR Sink (NPN) output	<i>Not applicable with Quick Connect</i>	QCX - 5 metre mating cable accompanies switch
MS - GMR Auto-configure		

BASIC CABLE TYPE

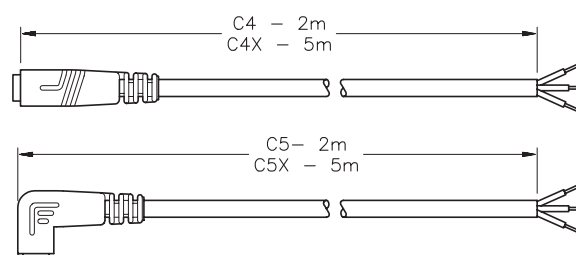


QUICK CONNECT CABLE TYPE



CABLE CONNECTORS (Sold Separately)

MODEL	DESCRIPTION
C4	2m Straight
C4X	5m Straight
C5	2m Right Angle
C5X	5m Right Angle



Straight and right angle cable connectors