

NFPA Standard Cylinders, Type DNA



DNA Standard Cylinders meet NFPA and ANSI mounting, rod, bore and thread dimension specifications for easy interchangeability.

- Piston Ø 1-1/2" to 5"
- Variable strokes up to 80"
- Double-acting
- Latest profile design
- Numerous variants and mounting styles
- NFPA interchangeable mounting dimensions
- Repairable

Product Range Overview															
Function	Type	Piston Ø [in]	Available Stroke [in]	Force [lbf]	Variants										
					P	PPV	A	S1	S2	K2	K3	K Ø	K5	K8	S6
Double-acting	DNA	1-1/2, 2, 2-1/2, 3-1/4, 4, 5	0.4 ... 80.0	170 ... 1,655	■	■	■	■	■	■	■	■	■	■	■

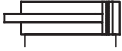
Variants															
P	Flexible cushioning rings at both ends	A	Magnet for position sensing	K3	Female piston rod thread	K5	Piston rod with special thread								
		S1	Heavy-duty piston rod	K2	Extended male piston rod thread	K8	Extended piston rod								
PPV	Adjustable air cushioning at both ends	S2	Through piston rod	K Ø	Piston rod without thread	S6	Heat resistant seals up to 302 °F								

NFPA Standards		
<p>DNA series square head cylinders meet the mounting, rod, bore and thread dimension specifications as described in the following NFPA documents:</p>	<p>ANSI/B93.8-1968[R1992]/NFPA T3.6.4-1967</p> <ul style="list-style-type: none"> • Bore and rod size combinations and rod end configurations for cataloged square head industrial fluid power cylinders. 	<p>ANSI/B93.29M-1986/NFPA T3.6.8M R1-1984</p> <ul style="list-style-type: none"> • Accessory dimensions for cataloged square head industrial types, fluid power systems, cylinders.
	<p>ANSI/[NFPA] T3.6.7R2-1996</p> <ul style="list-style-type: none"> • Mounting dimensions, fluid power systems and products, square head industrial cylinders. 	<p>NFPA T3.6.17-1971[1990]</p> <ul style="list-style-type: none"> • Port nominal pipe sizes for merged inch and metric series cataloged square head industrial pneumatic fluid power cylinders.

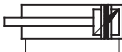
Technical Data

NFPA Standard Cylinders, Type DNA

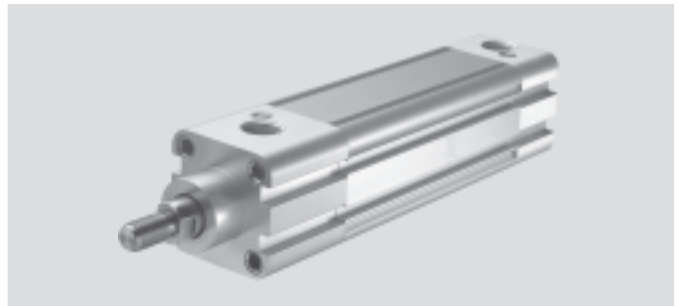
DNA-...-P-A



DNA-...-PPV-A



- Double-acting standard cylinder for non-contact end-position sensing (A) with flexible end position cushioning (P)
- Double-acting standard cylinder for non-contact end-position sensing (A) with adjustable end-position cushioning (PPV)
- Bore Sizes: 1½" ... 5"
- Stroke Lengths: ½" ... 80"



General Technical Data	
Design	Double-acting pneumatic cylinder with piston rod
Medium	Dried compressed air (lubricated or unlubricated)
Operating pressure	9 ... 180 psi
Temperature range	-4 ... 176° F
	Variant S6 -4 ... 302° F
Materials	
Bearing and end caps	Anodized Aluminum
Cylinder barrel	Anodized Aluminum
Piston rod	Stainless steel 316
Seals	Polyurethane
	Variant S6 FKM (Viton)

Bore Size [inch]	Port Connection Thread	Extended Force at 90psi* [lbf]	Return Force at 90psi* [lbf]	Head Cushioning Length Air Cushioning [inch]	Cap Cushioning Length Air Cushioning [inch]
1½	¾ - 18 NPT	170	142	0.8	0.6
1½-S1	¾ - 18 NPT	170	103	-	0.6
2	¾ - 18 NPT	265	238	0.7	0.6
2-S1	¾ - 18 NPT	265	200	1.0	0.6
2½	¾ - 18 NPT	420	394	0.7	0.6
2½-S1	¾ - 18 NPT	420	355	1.0	0.6
3¼	½ - 14 NPT	678	612	1.2	0.8
3¼-S1	½ - 14 NPT	678	570	1.0	0.8
4	½ - 14 NPT	1,059	994	1.2	0.8
4-S1	½ - 14 NPT	1,059	952	1.0	0.8
5	½ - 14 NPT	1,655	1,591	1.2	0.7
5-S1	½ - 14 NPT	1,655	1,548	1.0	0.7

* Theoretical values

Note: Values calculated with 5/8" and 1" rod sizes.

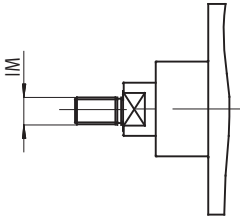
Technical Data

NFPA Standard Cylinders, Type DNA



Cylinder Variations - The DNA cylinder modular system permits the following variants; these can be combined with each other with some exceptions.

K5: Special Thread On Piston Rod



Order Code: ...-...K5-...

Example: ... = 1/2-20-UNF-2A → ...-K5-...

Bore Ø [inch]	Piston rod Ø [inch] Nominal (Actual)	Standard thread [SM]	Special thread [IM]
1 1/2"	5/8" (0.630")	7/16-20 UNF-2A	1/2-20-UNF-2A
1 1/2"-S1	1" (0.984")	3/4-16 UNF-2A	7/8-14 UNF-2A
2"	5/8" (0.630")	7/16-20 UNF-2A	1/2-20-UNF-2A
2"-S1	1" (0.984")	3/4-16 UNF-2A	7/8-14 UNF-2A
2 1/2"	5/8" (0.630")	7/16-20 UNF-2A	1/2-20-UNF-2A
2 1/2"-S1	1" (0.984")	3/4-16 UNF-2A	7/8-14 UNF-2A
3 1/4"	1" (0.984")	3/4-16 UNF-2A	7/8-14 UNF-2A
3 1/4"-S1	1 1/4" (1.260"*)	1-14 UNF-2A	1 1/4-20-UNF-2A
4"	1" (0.984")	3/4-16 UNF-2A	7/8-14 UNF-2A
4"-S1	1 1/4" (1.260"*)	1-14 UNF-2A	1 1/4-20-UNF-2A
5"	1" (0.984")	3/4-16 UNF-2A	7/8-14 UNF-2A
5"-S1	1 1/4" (1.260"*)	1-14 UNF-2A	1 1/4-20-UNF-2A

* Deviates from NFPA dimension [NFPA = 1.375"]

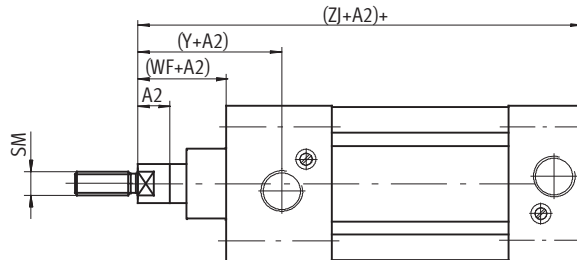
K8: Extended Piston Rod

Order Code: ...-xxK8-...

Example: xx = 6 inch → ...-6K8-...

Note:

If variant K8 is required in combination with S2, the piston rod extension will occur only on one side.



+ = plus stroke length

Bore Ø [inch]	A2		WF	Y	Z	Standard Thread [SM]
	max.	max.				
1 1/2"	0.04"	20"	1.000"	1.878"	4.625"	7/16-20 UNF-2A
1 1/2"-S1	0.04"	20"	1.375"	2.252"	5.000"	3/4-16 UNF-2A
2"	0.04"	20"	1.000"	1.882"	4.625"	7/16-20 UNF-2A
2"-S1	0.04"	20"	1.375"	2.252"	5.000"	3/4-16 UNF-2A
2 1/2"	0.04"	20"	1.000"	1.953"	4.750"	7/16-20 UNF-2A
2 1/2"-S1	0.04"	20"	1.375"	2.307"	5.125"	3/4-16 UNF-2A
3 1/4"	0.04"	20"	1.375"	2.441"	5.625"	3/4-16 UNF-2A
3 1/4"-S1	0.04"	20"	1.625"	2.697"	5.875"	1-14 UNF-2A
4"	0.04"	20"	1.375"	2.441"	5.625"	3/4-16 UNF-2A
4"-S1	0.04"	20"	1.625"	2.697"	5.875"	1-14 UNF-2A
5"	0.04"	20"	1.375"	2.441"	5.875"	3/4-16 UNF-2A
5"-S1	0.04"	20"	1.625"	2.693"	6.125"	1-14 UNF-2A

S6: Heat-Resistant Seals [302 °F]



Order Code: ...-S6-...

Material: Seals are made of FKM (Viton)

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Cylinder Variations - The DNA cylinder modular system permits the following variants; these can be combined with each other with some exceptions.

S1: Heavy-duty Piston Rod



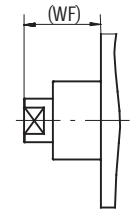
S2: Double Ended Piston Rod



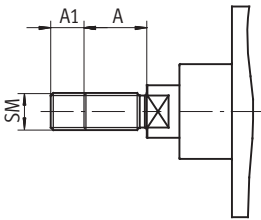
Order Code: ...-S2-...

Note: The thread design on both pistonrod ends are identical.

K0: Piston Rod Without Thread



K2: Piston Rod with Extended Male Thread

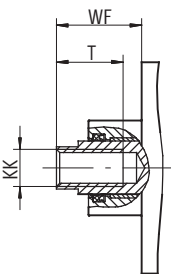


Order Code: ...-xxK2-...

Example: xx = 2 1/4 inches → ...-2.25K2-...

Bore Ø [inch]	A	A1 max.	Standard Thread [SM]
1 1/2"	0.750"	1.375"	7/16-20 UNF-2B
1 1/2"-S1	1.125"		3/4-16 UNF-2B
2"	0.750"	2.250"	7/16-20 UNF-2B
2"-S1	1.125"		3/4-16 UNF-2B
2 1/2"	0.750"		7/16-20 UNF-2B
2 1/2"-S1	1.125"		3/4-16 UNF-2B
3 1/4"	1.125"		3/4-16 UNF-2B
3 1/4"-S1	1.625"		1-14 UNF-2B
4"	1.125"		3/4-16 UNF-2B
4"-S1	1.625"		1-14 UNF-2B
5"	1.125"		3/4-16 UNF-2B
5"-S1	1.625"		1-14 UNF-2B

K3: Piston Rod with Female Thread



Order Code: ...-K3-...

Bore Ø [inch]	T	WF	Standard Thread [KK]
1 1/2"	0.79"	1.000"	7/16-20 UNF-2B
1 1/2"-S1	1.18"	1.375"	3/4-16 UNF-2B
2"	0.79"	1.000"	7/16-20 UNF-2B
2"-S1	1.18"	1.375"	3/4-16 UNF-2B
2 1/2"	0.79"	1.000"	7/16-20 UNF-2B
2 1/2"-S1	1.18"	1.375"	3/4-16 UNF-2B
3 1/4"	1.18"	1.375"	3/4-16 UNF-2B
3 1/4"-S1	1.67"	1.675"	1-14 UNF-2B
4"	1.18"	1.375"	3/4-16 UNF-2B
4"-S1	1.67"	1.675"	1-14 UNF-2B
5"	1.18"	1.375"	3/4-16 UNF-2B
5"-S1	1.67"	1.675"	1-14 UNF-2B

Technical Data

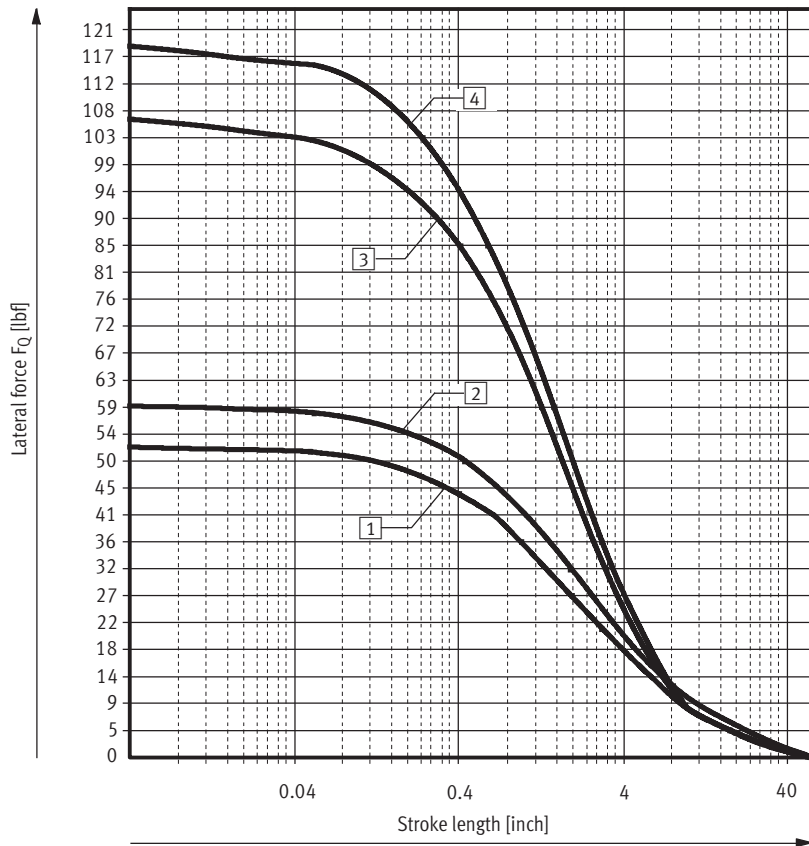
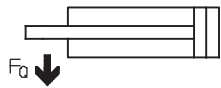
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Weights		
Type	Basic Weight [lbs]	Weight per 1 inch Stroke [lbs]
DNA-1½-...	1.575	0.218
DNA-1½-...-S1	2.067	0.347
DNA-2-...	2.392	0.300
DNA-2-...-S1	2.841	0.429
DNA-2½-...	3.330	0.373
DNA-2½-...-S1	3.816	0.502
DNA-¾-...	6.429	0.608
DNA-¾-...-S1	7.179	0.748
DNA-4-...	8.870	0.716
DNA-4-...-S1	9.602	0.858
DNA-5-...	12.821	0.949
DNA-5-...-S1	13.575	1.089

Lateral Force

Cylinder Bore Size: 1½", 2", 2½"
 Rod Size: 5/8" (Standard)

Lateral force F_Q in relation to stroke length



- 1 S6
- 2 Standard
- 3 S6-S2
- 4 S2

Technical Data

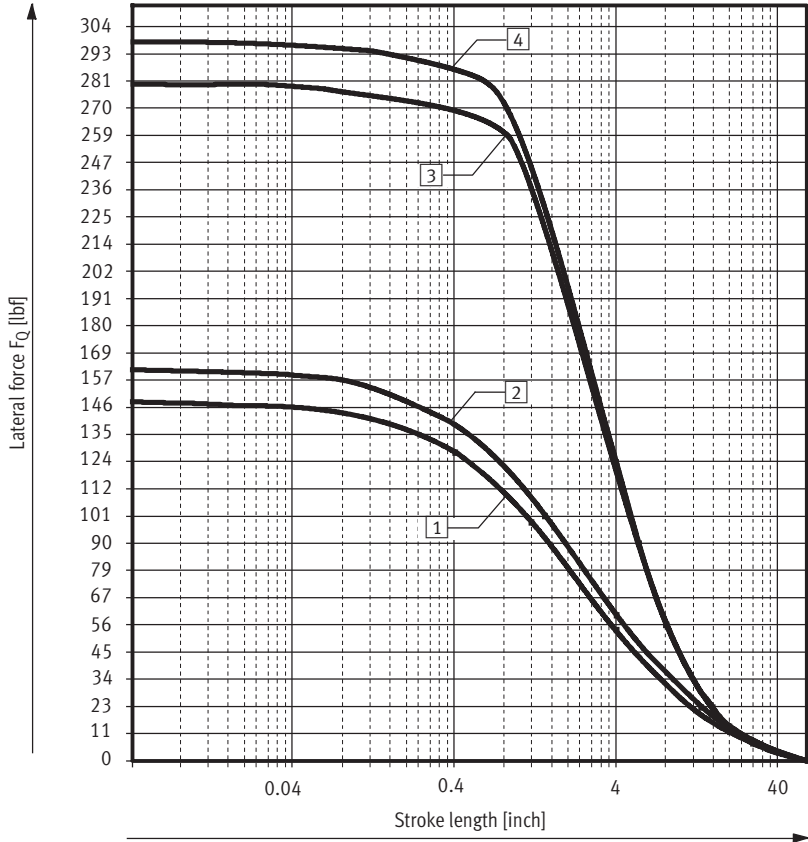
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Lateral Force

Cylinder Bore Size: 1½", 2", 2½"
 Rod Size: 1" (Heavy-duty)

Lateral force F_Q in relation to stroke length



- 1 S1-S6
- 2 S1
- 3 S1-S6-S2
- 4 S1-S2

Technical Data

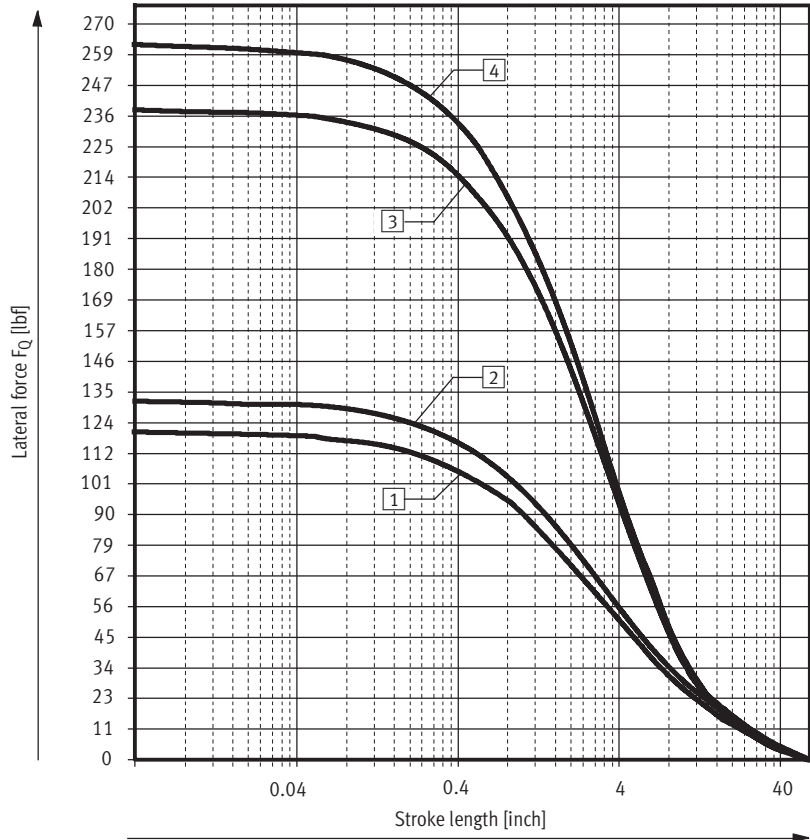
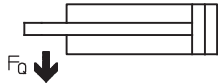
NFPA Standard Cylinders, Type DNA



Lateral Force

Cylinder Bore Size: 3¼", 4", 5"
 Rod Size: 1" (Standard)

Lateral force F_Q in relation to stroke length



- 1 S6
- 2 Standard
- 3 S6-S2
- 4 S2

Technical Data

NFPA Standard Cylinders, Type DNA

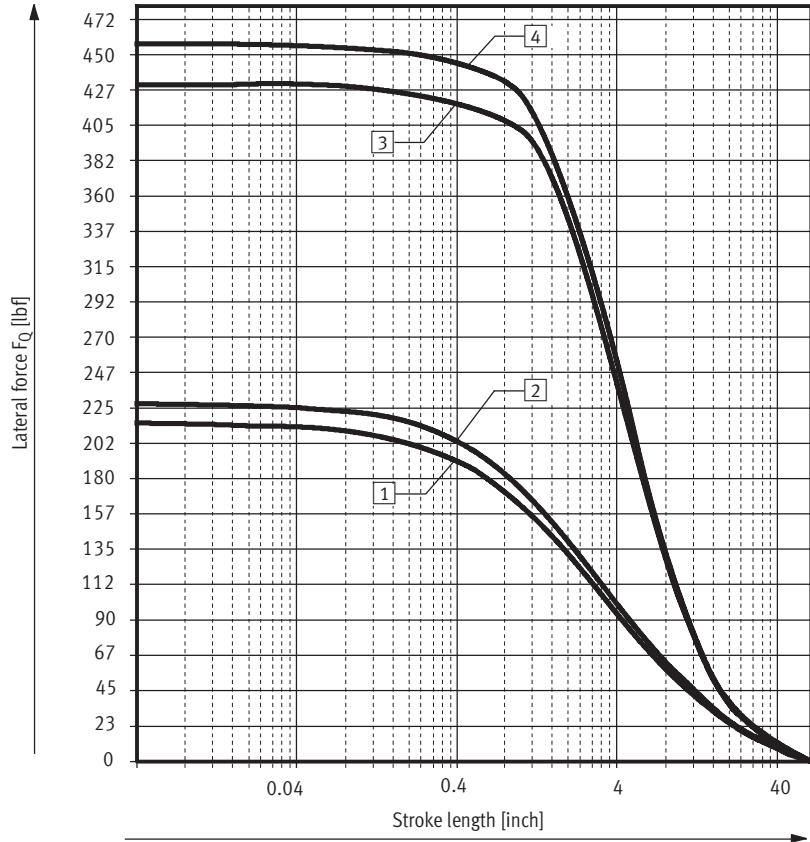
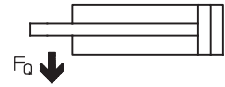


Lateral Force

Cylinder Bore Size: 3¼", 4", 5"

Rod size: 1¼" (Heavy-duty)

Lateral force F_Q in relation to stroke length



- 1 S1-S6
- 2 S1
- 3 S1-S6-S2
- 4 S1-S2

Dimensional Drawings

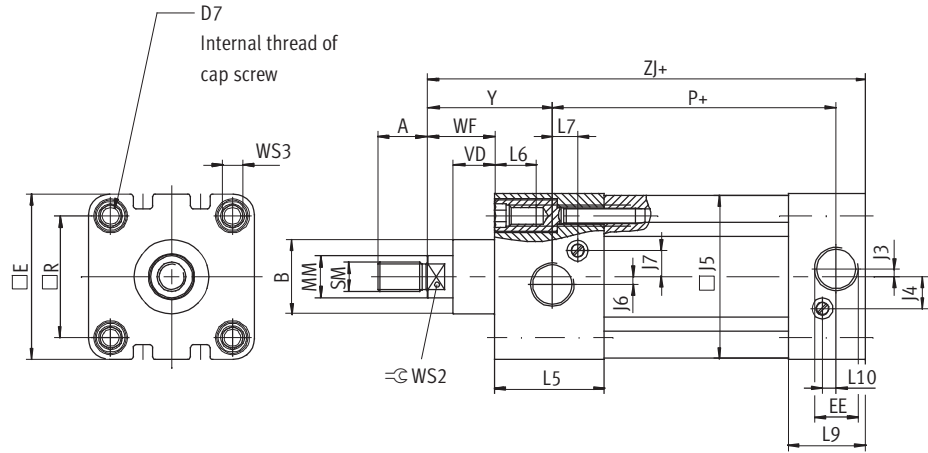
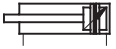
NFPA Standard Cylinders, Type DNA

Dimensions

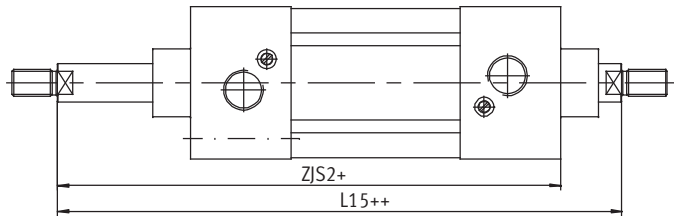
DNA-...-P-A



DNA-...-PPV-A



Variant S2



+ = plus stroke length
 ++ = plus 2 x stroke length

Dimensional Drawings

NFPA Standard Cylinders, Type DNA



Dimensions									
Type	A	∅B -0.01" -0.03"	D7	E	EE	J3	J4	J5	J6
DNA – 1½"	0.750"	1.125"	¼-28 UNF	2.00"	⅜-18 NPT	0.08"	0.35"	1.99"	–
DNA – 1½"-S1	1.125"	1.500"	¼-28 UNF	2.00"	⅜-18 NPT	0.08"	0.35"	1.99"	–
DNA – 2"	0.750"	1.125"	⅝ ₁₆ -24 UNF	2.50"	⅜-18 NPT	0.12"	0.48"	2.47"	0.12"
DNA – 2"-S1	1.125"	1.500"	⅝ ₁₆ -24 UNF	2.50"	⅜-18 NPT	0.12"	0.48"	2.47"	–
DNA – 2½"	0.750"	1.125"	⅝ ₁₆ -24 UNF	3.00"	⅜-18 NPT	0.10"	0.48"	2.96"	0.20"
DNA – 2½"-S1	1.125"	1.500"	⅝ ₁₆ -24 UNF	3.00"	⅜-18 NPT	0.10"	0.48"	2.96"	–
DNA – 3¼"	1.125"	1.500"	⅜-24 UNF	3.75"	½-14 NPT	–	0.62"	3.68"	–
DNA – 3¼"-S1	1.625"	2.000"	⅜-24 UNF	3.75"	½-14 NPT	–	0.62"	3.68"	–
DNA – 4"	1.125"	1.500"	⅜-24 UNF	4.50"	½-14 NPT	1.16"	0.62"	4.43"	0.16"
DNA – 4"-S1	1.625"	2.000"	⅜-24 UNF	4.50"	½-14 NPT	1.16"	0.62"	4.43"	–
DNA – 5"	1.125"	1.500"	½-20 UNF	5.50"	½-14 NPT	–	0.79"	5.35"	0.16"
DNA – 5"-S1	1.625"	2.000"	½-20 UNF	5.50"	½-14 NPT	–	0.79"	5.35"	–

Type	J7	L5	L6	L7	L9	L10	L15	MM Nominal (Actual)	P	R
DNA – 1½"	0.39"	1.70"	0.63"	0.37"	1.20"	0.35"	6.14"	5/8" (0.630")	2.313"	1.429"
DNA – 1½"-S1	–	1.70"	0.63"	–	1.20"	0.35"	6.88"	1" (0.984")	2.313"	1.429"
DNA – 2"	0.39"	1.66"	0.63"	0.38"	1.16"	0.21"	6.14"	5/8" (0.630")	2.313"	1.839"
DNA – 2"-S1	0.60"	1.66"	0.63"	0.27"	1.16"	0.21"	6.88"	1" (0.984")	2.313"	1.839"
DNA – 2½"	0.39"	1.66"	0.63"	0.29"	1.16"	0.34"	6.28"	5/8" (0.630")	2.375"	2.193"
DNA – 2½"-S1	0.60"	1.66"	0.63"	0.29"	1.16"	0.34"	6.99"	1" (0.984")	2.375"	2.193"
DNA – 3¼"	0.62"	1.88"	0.63"	0.37"	1.38"	0.37"	7.51"	1" (0.984")	2.625"	2.758"
DNA – 3¼"-S1	0.79"	1.88"	0.63"	0.37"	1.38"	0.37"	8.02"	1¼" (1.260"*)	2.625"	2.758"
DNA – 4"	0.62"	1.86"	0.63"	0.23"	1.36"	0.23"	7.51"	1" (0.984")	2.625"	3.323"
DNA – 4"-S1	0.79"	1.86"	0.63"	0.23"	1.36"	0.23"	8.02"	1¼" (1.260"*)	2.625"	3.323"
DNA – 5"	0.62"	1.76"	1.00"	0.28"	1.26"	0.29"	7.76"	1" (0.984")	2.875"	4.101"
DNA – 5"-S1	0.79"	1.76"	1.00"	0.28"	1.26"	0.29"	8.27"	1¼" (1.260"*)	2.875"	4.101"

Type	SM	WS2 =C	WS3	VD	WF	Y	ZJ	ZJS2
DNA – 1½"	7/16 20 UNF-2A	½"	HEX ¼"	0.625"	1.000"	1.878"	4.625"	5.125"
DNA – 1½"-S1	¾-16 UNF-2A	7/8"	HEX ¼"	0.875"	1.375"	2.252"	5.000"	5.500"
DNA – 2"	7/16 20 UNF-2A	½"	HEX ⅝ ₁₆ "	0.625"	1.000"	1.882"	4.625"	5.125"
DNA – 2"-S1	¾-16 UNF-2A	7/8"	HEX ⅝ ₁₆ "	0.875"	1.375"	2.252"	5.000"	5.500"
DNA – 2½"	7/16 20 UNF-2A	½"	HEX ⅝ ₁₆ "	0.625"	1.000"	1.953"	4.750"	5.250"
DNA – 2½"-S1	¾-16 UNF-2A	7/8"	HEX ⅝ ₁₆ "	0.875"	1.375"	2.307"	5.125"	5.625"
DNA – 3¼"	¾-16 UNF-2A	7/8"	HEX ¼"	0.875"	1.375"	2.441"	5.625"	6.125"
DNA – 3¼"-S1	1-14 UNF-2A	1½"	HEX ¼"	1.000"	1.625"	2.697"	5.875"	6.375"
DNA – 4"	¾-16 UNF-2A	7/8"	HEX ¼"	0.875"	1.375"	2.441"	5.625"	6.125"
DNA – 4"-S1	1-14 UNF-2A	1½"	HEX ¼"	1.000"	1.625"	2.697"	5.875"	6.375"
DNA – 5"	¾-16 UNF-2A	7/8"	–	0.875"	1.375"	2.441"	5.875"	6.375"
DNA – 5"-S1	1-14 UNF-2A	1½"	–	1.000"	1.625"	2.697"	6.125"	6.625"

* Deviates from NFPA dimension [NFPA = 1.375"]

Ordering Data

NFPA Standard Cylinders, Type DNA



Permissible Cylinder Variations

Desired Cylinder Variation	Bore Ø [inch]	Stroke* [inch]	P	PPV**	A	Cylinder Variation Combinations																			
						MX1	MX2	MX3	MP1	MP2	MP4	MS1	MS2	MS4	MT1	MT2	MT4	MF1	MF2	S6	K8	K5	K3	K2	K0
S1	1½" to 5"	0.5" to 80"				o		o																	
S2	1½" to 5"	0.5" to 80"					-		-	-															
K0	1½" to 5"	0.5" to 80"																							
K2	1½" to 5"	0.5" to 80"																							
K3	1½" to 5"	0.5" to 80"																							
K5	1½" to 5"	0.5" to 80"																							
K8	1½" to 5"	0.5" to 80"																							
S6	1½" to 5"	0.5" to 80"																							

* The stroke for ¾", 4" and 5" cylinders starts at 0.7"

** Not for front cap 1½" with rod diameter of 1"

- Not available
- Combination is possible
- Not available for 1½"

Order Code Table

Function		Description/Characteristics											Code	Enter	
Mandatory Data	Part No.	193383	193384	193385	193386	193387	193388								
	Type/Function	Double-acting cylinder											DNA	DNA	
	Bore Size	1½"	2"	2½"	3¼"	4"	5"								
	Stroke Length	0.5" ... 80"			0.75" ... 80"										
	Type of Cushioning/ Magnet For Position Sensing	Flexible cushioning rings in the end-positions with sensing capability using inductive sensors											-P-A		
		Adjustable end-position cushioning with sensing capability using inductive sensors											-PPV-A		
Optional Data	Type of Piston Rod	Heavy-duty piston rod											-S1		
		Double-ended piston rod											-S2		
		Piston rod without thread											-K0		
		Extended male piston rod thread 0.04" ... 1.78" 0.04" ... 2.75"											...K2		
	Standard Thread	Piston rod with small male thread (NFPA Style SM)											Standard		
	Bore size	1½"	1½"-S1	2"	2"-S1	2½"	2½"-S1	3¼"	3¼"-S1	4"	4"-S1	5"		5"-S1	
	Rod size (nominal) Thread [UNF-2A]	5/8"	1"	5/8"	1"	5/8"	1"	1"	1¼"	1"	1¼"	1"		1¼"	
	Female Thread	Piston rod with female thread (NFPA Style SF)											...K3		
	Bore size	1½"	1½"-S1	2"	2"-S1	2½"	2½"-S1	3¼"	3¼"-S1	4"	4"-S1	5"	5"-S1		
	Rod size (nominal) Thread [UNF-2B]	5/8"	1"	5/8"	1"	5/8"	1"	1"	1¼"	1"	1¼"	1"	1¼"		
	Special Thread	Piston rod with intermediate male thread (NFPA Style IM)											...K5		
	Bore size	1½"	1½"-S1	2"	2"-S1	2½"	2½"-S1	3¼"	3¼"-S1	4"	4"-S1	5"	5"-S1		
Rod size (nominal) Thread [UNF-2A]	5/8"	1"	5/8"	1"	5/8"	1"	1"	1¼"	1"	1¼"	1"	1¼"			
Thread [UNF-2A]	½-20	7/8-14	½-20	7/8-14	½-20	7/8-14	7/8-14	1¼-12	7/8-14	1¼-12	7/8-14	1¼-12			
Extended Piston Rod	0.04" ... 20"											...K8			
Temperature Resistance	Heat-resistant seals up to 302 °F (Viton)											-S6			
Mounting Style	See mounting accessories pages for descriptions and codes											...			

* Deviates from NFPA dimension [NFPA = 1.375"]

Transfer Order Code

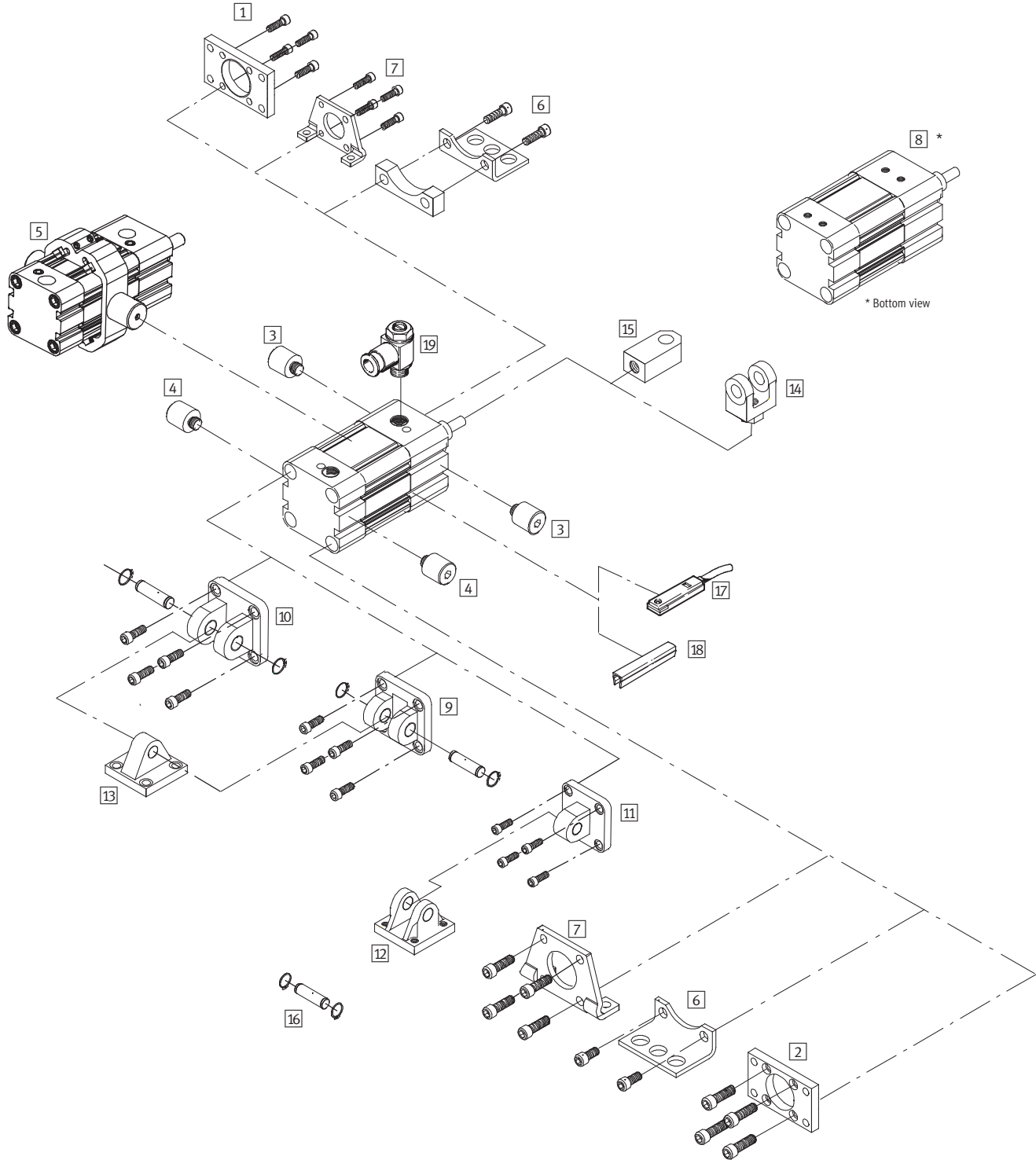
Part No. = - - - - - - - - -

Accessories Overview

NFPA Standard Cylinders, Type DNA



Mounting Attachments and Accessories

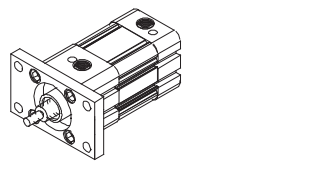
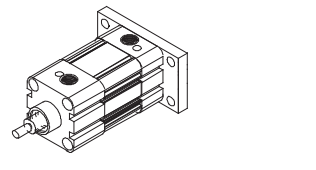
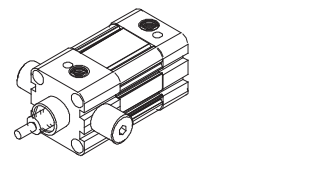
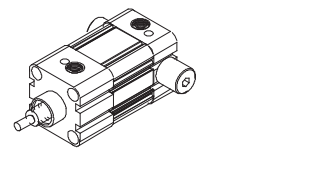
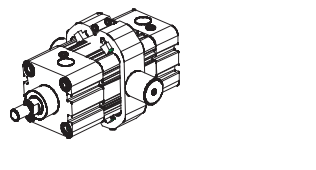
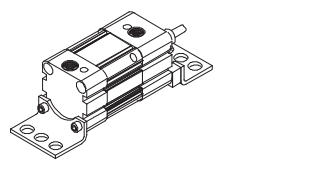
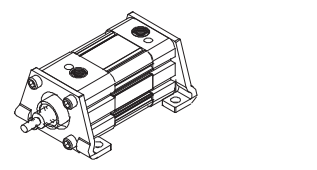
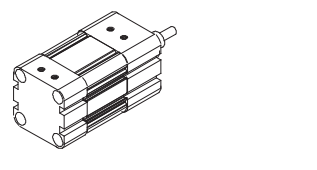
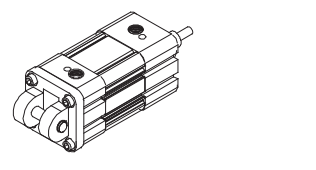
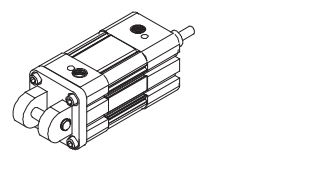
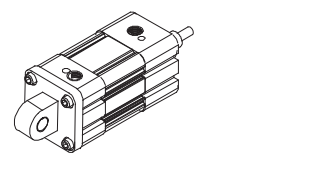
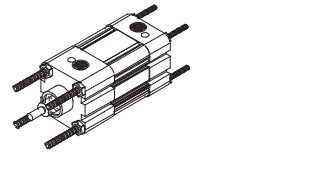
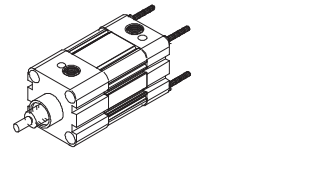
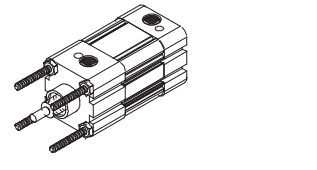
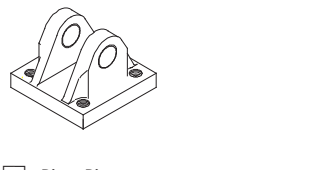
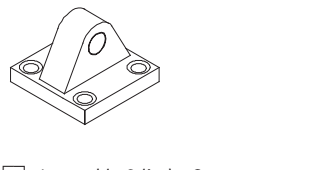

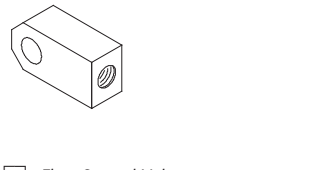






Accessories Overview

NFPA Standard Cylinders, Type DNA



Mounting Attachments and Accessories

- | | | | |
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| <p>1 Head Rectangular Flange,
MF1-... →Page 14</p> | <p>2 Cap Rectangular Flange,
MF2-... →Page 14</p> | <p>3 Head Trunnion Mounting,
MT1-... →Page 15</p> | <p>4 Cap Trunnion Mounting,
MT2-... →Page 15</p> |
|  |  |  |  |
| <p>5 Mid Trunnion Mounting,
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| <p>9 Cap Fixed Clevis,
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GRLA-... →Page 28</p> |
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Accessories

Rectangular Flanges MF...



Dimensions

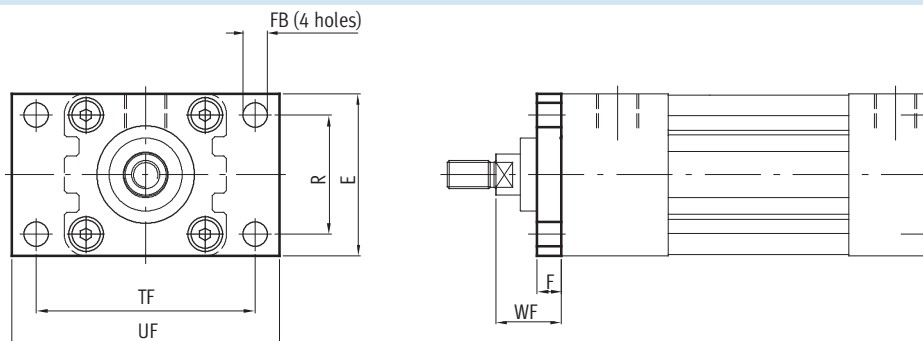
1 Head Rectangular Flange, MF1-...

Scope of delivery:

- 1 Flange
- 4 Screws

Material:

C1117 Steel, black oxide coated



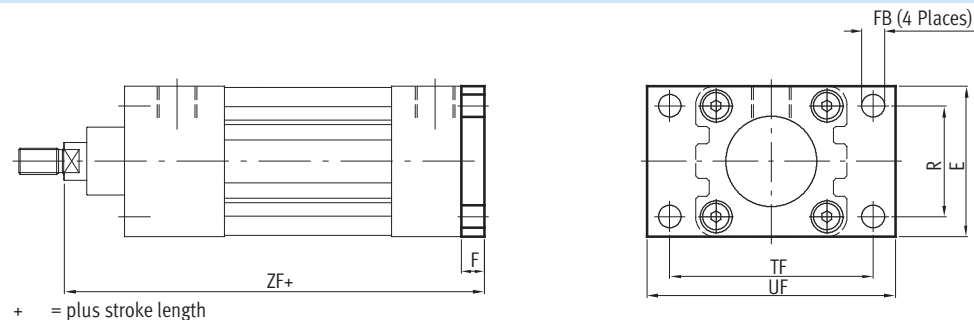
2 Cap Rectangular Flange, MF2-...

Scope of delivery:

- 1 Flange
- 4 Screws

Material:

C1117 Steel



Bore size	Rod size [MM] Nominal (Actual)	E	F	FB	R	TF	UF	WF	ZF
1½"	5/8" (0.630")	2.00"	0.375"	0.313"	1.43"	2.750"	3.375"	1.000"	5.000"
1½"-S1	1" (0.984")	2.00"	0.375"	0.313"	1.43"	2.750"	3.375"	1.375"	5.375"
2"	5/8" (0.630")	2.50"	0.375"	0.375"	1.84"	3.375"	4.125"	1.000"	5.000"
2"-S1	1" (0.984")	2.50"	0.375"	0.375"	1.84"	3.375"	4.125"	1.375"	5.375"
2½"	5/8" (0.630")	3.00"	0.375"	0.375"	2.19"	3.875"	4.625"	1.000"	5.125"
2½"-S1	1" (0.984")	3.00"	0.375"	0.375"	2.19"	3.875"	4.625"	1.375"	5.500"
3¼"	1" (0.984")	3.75"	0.625"	0.438"	2.76"	4.688"	5.500"	1.375"	6.250"
3¼"-S1	1¼" (1.260")*	3.75"	0.625"	0.438"	2.76"	4.688"	5.500"	1.625"	6.500"
4"	1" (0.984")	4.50"	0.625"	0.438"	3.32"	5.438"	6.250"	1.375"	6.250"
4"-S1	1¼" (1.260")*	4.50"	0.625"	0.438"	3.32"	5.438"	6.250"	1.625"	6.500"
5"	1" (0.984")	5.50"	0.625"	0.563"	4.10"	6.625"	7.625"	1.375"	6.500"
5"-S1	1¼" (1.260")*	5.50"	0.625"	0.563"	4.10"	6.625"	7.625"	1.625"	6.750"

* Deviates from NFPA dimension [NFPA = 1.375"]

Bore size	Weight [lbs]	Part No.	Type	Part No.	Type
1½"	0.50	195898	MF1-1½"	195898	MF2-1½"
2"	0.86	195899	MF1-2"	195899	MF2-2"
2½"	1.24	195900	MF1-2½"	195900	MF2-2½"
3¼"	2.96	195901	MF1-3¼"	195901	MF2-3¼"
4"	4.30	195902	MF1-4"	195902	MF2-4"
5"	6.64	195903	MF1-5"	195903	MF2-5"

Accessories

Trunnion Mountings MT...

Dimensions

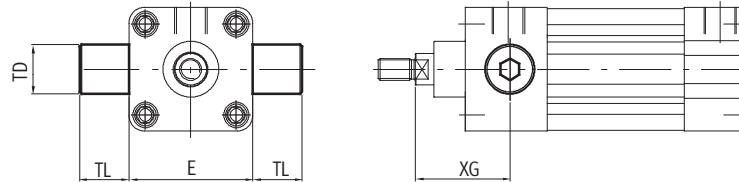
3 Head Trunnion Mounting, MT1-...

Scope of delivery:

1 Trunnion mount
(Order 2 per cylinder)

Material:

C1018 Steel, hardened



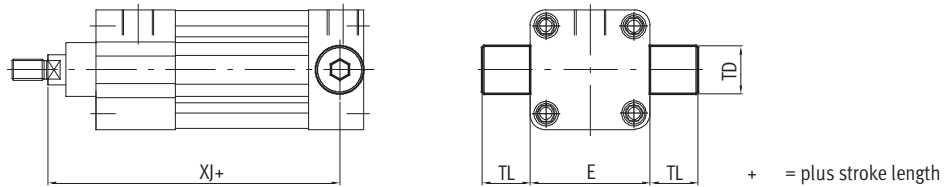
4 Cap Trunnion Mounting, MT2-...

Scope of delivery:

1 Trunnion mount
(Order 2 per cylinder)

Material:

C1018 Steel, hardened



5 Mid Trunnion Mounting, MT4-... (patent pending)

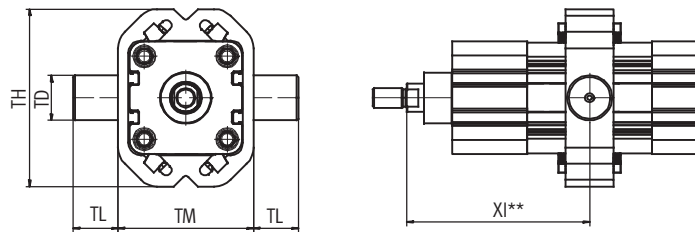
Scope of delivery:

1 Trunnion mount
(Order 1 per cylinder)

Note: MT4 trunnions are delivered assembled with cylinder

Material:

C1018 Steel, Zinc coated



Bore size	Rod size [MM] Nominal (Actual)	E	TD -0.0008" 0.0016"	TH	TL	TM	XG	XJ **	Min. stroke length for MT4 option
1½"	5/8" (0.630")	2.00"	1.000"	3.31"	1.00"	2.50"	1.75"	4.125"	1"
1½"-S1	1" (0.984")	-	1.000" ^{o)}				-	-	
2"	5/8" (0.630")	2.50"	1.000"	3.94"		3.00"	1.75"	4.125"	1"
2"-S1	1" (0.984")	2.50"	1.000"				2.13"	4.500"	
2½"	5/8" (0.630")	3.00"	1.000"	4.45"		3.50"	1.75"	4.250"	1"
2½"-S1	1" (0.984")	3.00"	1.000"				2.13"	4.625"	
3¼"	1" (0.984")	3.75"	1.000"	6.10"		4.50"	2.25"	5.000"	1.3"
3¼"-S1	1¼" (1.260"*)	3.75"	1.000"				2.50"	5.250"	
4"	1" (0.984")	4.50"	1.000"	6.89"		5.25"	2.25"	5.000"	1.3"
4"-S1	1¼" (1.260"*)	4.50"	1.000"				2.50"	5.250"	
5"	1" (0.984")	5.50"	1.000"	7.91"	6.25"	2.25"	5.250"	1.3"	
5"-S1	1¼" (1.260"*)	5.50"	1.000"			2.50"	5.500"		

* Deviates from NFPA dimension [NFPA = 1.375"]

** XI to be specified by customer (if not specified, then it will be located in the center of the cylinder profile).

o) Not for MT1, MT2

Bore size	Weight [lbs]	Part No.	Type	Weight [lbs]	Part No.	Type
1½"	0.21	396276	MT1/MT2-1½"-...-2½" *	-	193383	MT4-1½"
2"	0.21	396276	MT1/MT2-1½"-...-2½" *	-	193384	MT4-2"
2½"	0.21	396276	MT1/MT2-1½"-...-2½" *	-	193385	MT4-2½"
3¼"	0.22	652475	MT1/MT2-3¼"-...-5" *	-	193386	MT4-3¼"
4"	0.22	652475	MT1/MT2-3¼"-...-5" *	-	193387	MT4-4"
5"	0.22	652475	MT1/MT2-3¼"-...-5" *	-	193388	MT4-5"

* You need to order MT1 and MT2 with Loctite 648, part no. 654803.

Accessories

Side End Angle Mount MS1



Dimensions

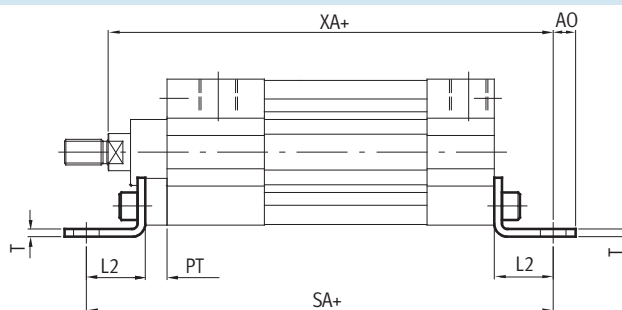
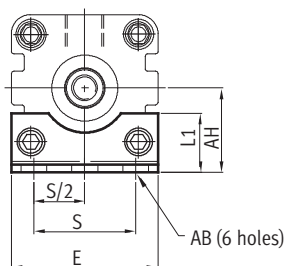
6 Side End Angle Mount, MS1-...

Scope of delivery:

- 2 Angle brackets
- 4 Screws

Material:

C1018 Steel, black oxide coated



+ = plus stroke length

Bore size	Rod size [MM] Nominal (Actual)	AB	AH	AO	E	L1	L2	PT	S	SA	T	XA
1½"	5/8" (0.630")	0.438"	1.188"	0.38"	2.00"	0.75"	1.000"	0.375"	1.25"	6.000"	0.125"	5.625"
1½"-S1	1" (0.984")	0.438"	1.188"	0.38"	2.00"	0.75"	1.000"	0.375"	1.25"	6.000"	0.125"	6.000"
2"	5/8" (0.630")	0.438"	1.438"	0.38"	2.50"	1.00"	1.000"	0.375"	1.75"	6.000"	0.125"	5.625"
2"-S1	1" (0.984")	0.438"	1.438"	0.38"	2.50"	1.00"	1.000"	0.375"	1.75"	6.000"	0.125"	6.000"
2½"	5/8" (0.630")	0.438"	1.625"	0.38"	3.00"	1.25"	1.000"	0.375"	2.25"	6.125"	0.125"	5.750"
2½"-S1	1" (0.984")	0.438"	1.625"	0.38"	3.00"	1.25"	1.000"	0.375"	2.25"	6.125"	0.125"	6.125"
3¼"	1" (0.984")	0.560"	1.938"	0.50"	3.75"	1.25"	1.250"	0.625"	2.75"	7.375"	0.125"	6.875"
3¼"-S1	1¼" (1.260"*)	0.560"	1.938"	0.50"	3.75"	1.25"	1.250"	0.625"	2.75"	7.375"	0.125"	7.125"
4"	1" (0.984")	0.560"	2.250"	0.50"	4.50"	1.75"	1.250"	0.625"	3.50"	7.375"	0.125"	6.875"
4"-S1	1¼" (1.260"*)	0.560"	2.250"	0.50"	4.50"	1.75"	1.250"	0.625"	3.50"	7.375"	0.125"	7.125"
5"	1" (0.984")	0.690"	2.750"	0.625"	5.50"	2.50"	1.375"	0.625"	4.25"	7.875"	0.188"	7.250"
5"-S1	1¼" (1.260"*)	0.690"	2.750"	0.625"	5.50"	2.50"	1.375"	0.625"	4.25"	7.875"	0.188"	7.500"

* Deviates from NFPA dimension [NFPA = 1.375"]

Bore size	Weight [lbs]	Part No.	Type
1½"	0.34	195904	MS1-1½"
2"	0.58	195905	MS1-2"
2½"	0.84	195906	MS1-2½"
3¼"	1.50	195907	MS1-3¼"
4"	2.34	195908	MS1-4"
5"	4.70	195909	MS1-5"

Accessories

Side Lug Mount MS2



Dimensions

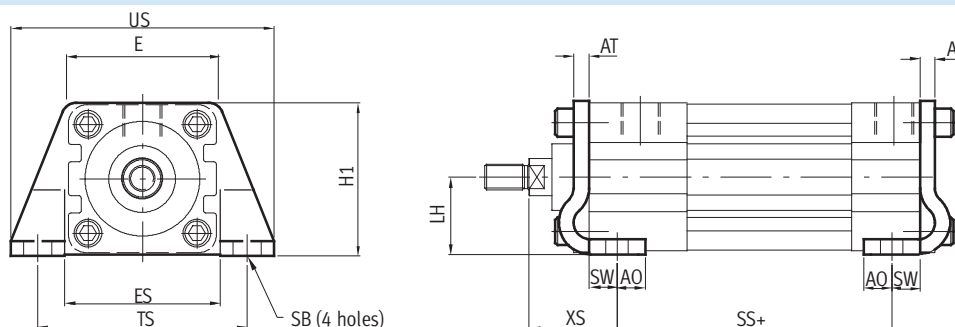
7 Side Lug Mount, MS2-...

Scope of delivery:

- 2 Lug brackets
- 8 Screws

Material:

C1018 Steel



+ = plus stroke length

Bore size	Rod size [MM] Nominal (Actual)	AO	AT	E	ES	H1	LH	SB	SS	SW	TS	US	XS
1½"	5/8" (0.630")	0.45"	0.20"	2.00"	2.04"	2.02"	1.016"	0.375"	2.875"	0.375"	2.750"	3.457"	1.375"
1½"-S1	1" (0.984")	0.45"	0.20"	2.00"	2.04"	2.02"	1.016"	0.375"	2.875"	0.375"	2.750"	3.457"	1.750"
2"	5/8" (0.630")	0.45"	0.24"	2.50"	2.54"	2.52"	1.264"	0.375"	2.875"	0.375"	3.250"	3.957"	1.375"
2"-S1	1" (0.984")	0.45"	0.24"	2.50"	2.54"	2.52"	1.264"	0.375"	2.875"	0.375"	3.250"	3.957"	1.750"
2½"	5/8" (0.630")	0.45"	0.24"	3.00"	3.04"	3.01"	1.516"	0.375"	3.000"	0.375"	3.750"	4.457"	1.375"
2½"-S1	1" (0.984")	0.45"	0.24"	3.00"	3.04"	3.01"	1.516"	0.375"	3.000"	0.375"	3.750"	4.457"	1.750"
3¼"	1" (0.984")	0.57"	0.24"	3.75"	3.80"	3.76"	1.894"	0.500"	3.250"	0.500"	0.500"	5.693"	1.875"
3¼"-S1	1¼" (1.260")*	0.57"	0.24"	3.75"	3.80"	3.76"	1.894"	0.500"	3.250"	0.500"	0.500"	5.693"	2.125"
4"	1" (0.984")	0.57"	0.24"	4.50"	4.56"	4.51"	2.268"	0.500"	3.250"	0.500"	5.500"	6.445"	1.875"
4"-S1	1¼" (1.260")*	0.57"	0.24"	4.50"	4.56"	4.51"	2.268"	0.500"	3.250"	0.500"	5.500"	6.445"	2.125"
5"	1" (0.984")	0.76"	0.31"	5.50"	5.57"	5.52"	2.776"	0.750"	3.125"	0.688"	6.875"	8.213"	2.063"
5"-S1	1¼" (1.260")*	0.76"	0.31"	5.50"	5.57"	5.52"	2.776"	0.750"	3.125"	0.688"	6.875"	8.213"	2.313"

* Deviates from NFPA dimension [NFPA = 1.375"]

Bore size	Weight [lbs]	Part No.	Type
1½"	0.48	195910	MS2-1½"
2"	0.92	195911	MS2-2"
2½"	1.35	195912	MS2-2½"
3¼"	2.10	195913	MS2-3¼"
4"	3.03	195914	MS2-4"
5"	6.57	195915	MS2-5"

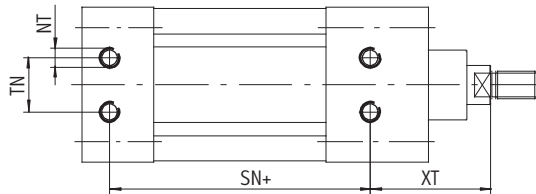
Accessories

Side Tap Mount MS4



Dimensions

8 Side Tap Mount, MS4-...



+ = plus stroke length

Bore size	Rod size [MM] Nominal (Actual)	NT		SN	TN	XT
		Thread	Depth			
1½"	5/8" (0.630")	¼-20 UNC	0.37"	2.250"	0.625"	1.938"
1½"-S1	1" (0.984")	¼-20 UNC	0.37"	2.250"	0.625"	2.313"
2"	5/8" (0.630")	⅜-18 UNC	0.43"	2.250"	0.875"	1.938"
2"-S1	1" (0.984")	⅜-18 UNC	0.43"	2.250"	0.875"	2.313"
2½"	5/8" (0.630")	⅜-16 UNC	0.63"	2.375"	1.250"	1.938"
2½"-S1	1" (0.984")	⅜-16 UNC	0.63"	2.375"	1.250"	2.313"
3¼"	1" (0.984")	½-13 UNC	0.75"	2.625"	1.500"	2.438"
3¼"-S1	1¼" (1.260"*)	½-13 UNC	0.75"	2.625"	1.500"	2.688"
4"	1" (0.984")	½-13 UNC	0.75"	2.625"	2.063"	2.438"
4"-S1	1¼" (1.260"*)	½-13 UNC	0.75"	2.625"	2.063"	2.688"
5"	1" (0.984")	⅝-11 UNC	0.94"	2.875"	2.688"	2.438"
5"-S1	1¼" (1.260"*)	⅝-11 UNC	0.94"	2.875"	2.688"	2.688"

* Deviates from NFPA dimension [NFPA = 1.375"]

Bore size	Weight [lbs]	Part No.	Type
1½"	1.575	193383	MS4-1½ *
1½"-S1	2.067	193383	MS4-1½ *
2"	2.392	193384	MS4-2 *
2"-S1	2.841	193384	MS4-2 *
2½"	3.330	193385	MS4-2½ *
2½"-S1	3.816	193385	MS4-2½ *
3¼"	6.429	193386	MS4-3¼ *
3¼"-S1	7.179	193386	MS4-3¼ *
4"	8.870	193387	MS4-4 *
4"-S1	9.602	193387	MS4-4 *
5"	12.821	193388	MS4-4 *
5"-S1	13.575	193388	MS4-5 *

* Complete cylinder with MS4 option.

Accessories

Cap Fixed Clevis MP1



Dimensions

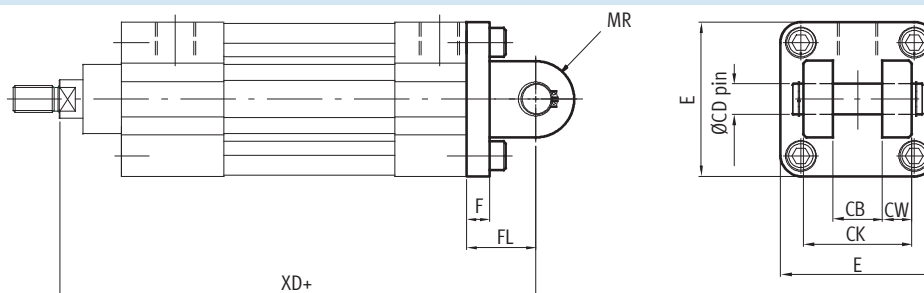
9 Cap Fixed Clevis, MP1-...

Scope of delivery:

- 1 Clevis
- 4 Screws
- 1 Pivot pin
- 2 Retaining rings

Material:

Cast Iron



+ = plus stroke length

Bore size	Rod size [MM] Nominal (Actual)	CB	∅ CD pin +0.000" -0.003"	CK	CW	E	F	FL	MR	XD
1½"	5/8" (0.630")	0.765"	0.50"	1.765"	0.500"	2.00"	0.38"	0.75"	0.62"	5.375"
1½"-S1	1" (0.984")	0.765"	0.50"	1.765"	0.500"	2.00"	0.38"	0.75"	0.62"	5.750"
2"	5/8" (0.630")	0.765"	0.50"	1.765"	0.500"	2.50"	0.38"	0.75"	0.62"	5.375"
2"-S1	1" (0.984")	0.765"	0.50"	1.765"	0.500"	2.50"	0.38"	0.75"	0.62"	5.750"
2½"	5/8" (0.630")	0.765"	0.50"	1.765"	0.500"	3.00"	0.38"	0.75"	0.62"	5.500"
2½"-S1	1" (0.984")	0.765"	0.50"	1.765"	0.500"	3.00"	0.38"	0.75"	0.62"	5.875"
3¼"	1" (0.984")	1.265"	0.75"	2.515"	0.625"	3.75"	0.63"	1.25"	0.87"	6.875"
3¼"-S1	1¼" (1.260"*)	1.265"	0.75"	2.515"	0.625"	3.75"	0.63"	1.25"	0.87"	7.125"
4"	1" (0.984")	1.265"	0.75"	2.515"	0.625"	4.50"	0.63"	1.25"	0.87"	6.875"
4"-S1	1¼" (1.260"*)	1.265"	0.75"	2.515"	0.625"	4.50"	0.63"	1.25"	0.87"	7.125"
5"	1" (0.984")	1.265"	0.75"	2.515"	0.625"	5.50"	0.63"	1.25"	0.87"	7.125"
5"-S1	1¼" (1.260"*)	1.265"	0.75"	2.515"	0.625"	5.50"	0.63"	1.25"	0.87"	7.375"

* Deviates from NFPA dimension [NFPA = 1.375"]

Bore size	Weight [lbs]	Part No.	Type
1½"	0.64	195916	MP1-1½"
2"	0.96	195917	MP1-2"
2½"	1.20	195918	MP1-2½"
3¼"	3.14	195919	MP1-3¼"
4"	4.18	195920	MP1-4"
5"	5.96	195921	MP1-5"

Accessories

Cap Detachable Clevis MP2



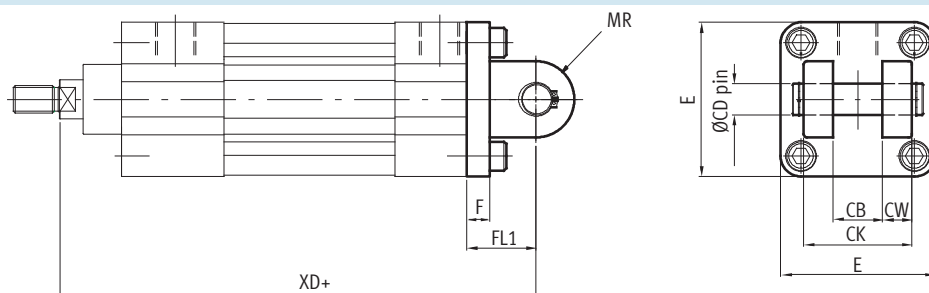
Dimensions

10 Cap Detachable Clevis, MP2-...

Scope of delivery:

- 1 Clevis
- 4 Screws
- 1 Pivot pin
- 2 Retaining rings

Material: Cast iron



+ = plus stroke length

Bore size	Rod size [MM] Nominal (Actual)	CB	∅ CD pin +0.000" -0.003"	CK	CW	E	F	FL1	MR	XD
1½"	5/8" (0.630")	0.765"	0.50"	1.765"	0.500"	2.00"	0.38"	1.125"	0.62"	5.750"
1½"-S1	1" (0.984")	0.765"	0.50"	1.765"	0.500"	2.00"	0.38"	1.125"	0.62"	6.125"
2"	5/8" (0.630")	0.765"	0.50"	1.765"	0.500"	2.50"	0.38"	1.125"	0.62"	5.750"
2"-S1	1" (0.984")	0.765"	0.50"	1.765"	0.500"	2.50"	0.38"	1.125"	0.62"	6.125"
2½"	5/8" (0.630")	0.765"	0.50"	1.765"	0.500"	3.00"	0.38"	1.125"	0.62"	5.875"
2½"-S1	1" (0.984")	0.765"	0.50"	1.765"	0.500"	3.00"	0.38"	1.125"	0.62"	6.250"
3¼"	1" (0.984")	1.265"	0.75"	2.515"	0.625"	3.75"	0.63"	1.875"	0.87"	7.500"
3¼"-S1	1¼" (1.260"*)	1.265"	0.75"	2.515"	0.625"	3.75"	0.63"	1.875"	0.87"	7.750"
4"	1" (0.984")	1.265"	0.75"	2.515"	0.625"	4.50"	0.63"	1.875"	0.87"	7.500"
4"-S1	1¼" (1.260"*)	1.265"	0.75"	2.515"	0.625"	4.50"	0.63"	1.875"	0.87"	7.750"
5"	1" (0.984")	1.265"	0.75"	2.515"	0.625"	5.50"	0.63"	1.875"	0.87"	7.750"
5"-S1	1¼" (1.260"*)	1.265"	0.75"	2.515"	0.625"	5.50"	0.63"	1.875"	0.87"	8.000"

* Deviates from NFPA dimension [NFPA = 1.375"]

Bore size	Weight [lbs]	Part No.	Type
1½"	0.80	195922	MP2-1½
2"	1.14	195923	MP2-2
2½"	1.40	195924	MP2-2½
3¼"	3.62	195925	MP2-3¼
4"	4.62	195926	MP2-4
5"	6.46	195927	MP2-5

Accessories

Cap Detachable Eye MP4



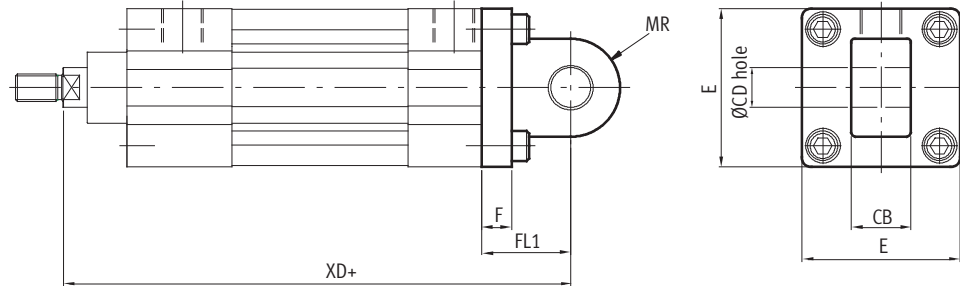
Dimensions

11 Cap Detachable Eye, MP4-...

Scope of delivery:

- 1 Eye bracket
- 4 Screws

Material: Cast iron



+ = plus stroke length

Bore size	Rod size [MM] Nominal (Actual)	CB	Ø CD hole +0.002" -0.000"	E	F	FL1	MR	XD
1½"	5/8" (0.630")	0.75"	0.502"	2.00"	0.38"	1.125"	0.62"	5.750"
1½"-S1	1" (0.984")	0.75"	0.502"	2.00"	0.38"	1.125"	0.62"	6.125"
2"	5/8" (0.630")	0.75"	0.502"	2.50"	0.38"	1.125"	0.62"	5.750"
2"-S1	1" (0.984")	0.75"	0.502"	2.50"	0.38"	1.125"	0.62"	6.125"
2½"	5/8" (0.630")	0.75"	0.502"	3.00"	0.38"	1.125"	0.62"	5.875"
2½"-S1	1" (0.984")	0.75"	0.502"	3.00"	0.38"	1.125"	0.62"	6.250"
3¼"	1" (0.984")	1.25"	0.752"	3.75"	0.63"	1.875"	0.87"	7.500"
3¼"-S1	1¼" (1.260"*)	1.25"	0.752"	3.75"	0.63"	1.875"	0.87"	7.750"
4"	1" (0.984")	1.25"	0.752"	4.50"	0.63"	1.875"	0.87"	7.500"
4"-S1	1¼" (1.260"*)	1.25"	0.752"	4.50"	0.63"	1.875"	0.87"	7.750"
5"	Not Available							
5"-S1	Not Available							

* Deviates from NFPA dimension [NFPA = 1.375"]

Bore size	Weight [lbs]	Part No.	Type
1½"	0.70	195928	MP4-1½"
2"	0.92	195929	MP4-2"
2½"	1.18	195930	MP4-2½"
3¼"	3.30	195931	MP4-3¼"
4"	4.30	195932	MP4-4"
5"	Not Available		

Accessories

Tie Rods Extended Mountings MX



Dimensions

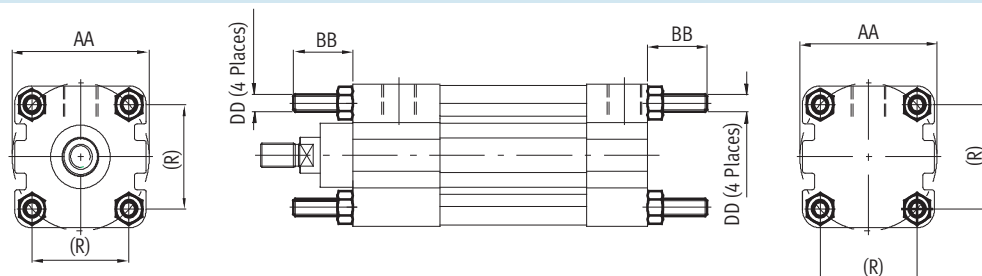
Both Ends Tie Rods Extended Mounting, MX1-...

Scope of delivery:

- 8 Tie rods
- 8 Nuts
- 2x Loctite 243

Material:

Steel, zinc coated



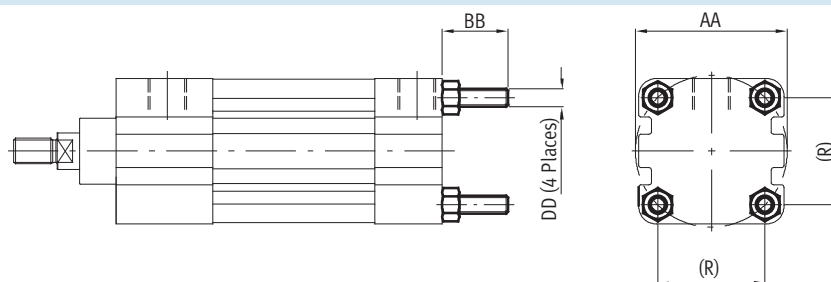
Cap Tie Rods Extended Mounting, MX2-...

Scope of delivery:

- 4 Tie rods
- 4 Nuts
- 1x Loctite 243

Material:

Steel, zinc coated



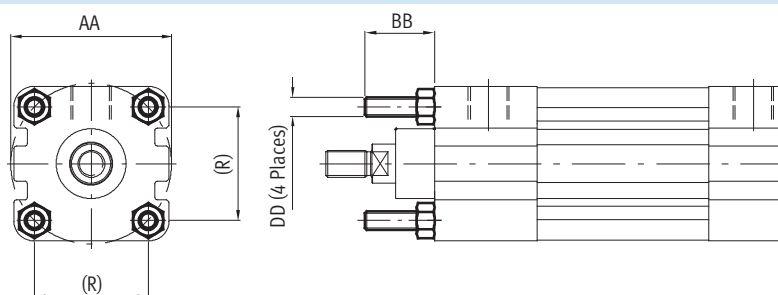
Head Tie Rods Extended Mounting, MX3-...

Scope of delivery:

- 4 Tie rods
- 4 Nuts
- 1x Loctite 243

Material:

Steel, zinc coated



Bore size	∅AA	BB	DD	(R)
1½"	2.02"	1.000"	¼-28 UNF	1.429"
2"	2.60"	1.125"	⅕-24 UNF	1.839"
2½"	3.10"	1.125"	⅕-24 UNF	2.193"
3¼"	3.90"	1.375"	⅜-24 UNF	2.758"
4"	4.70"	1.375"	⅜-24 UNF	3.323"
5"	5.80"	1.813"	½-20 UNF	4.101"

Bore size	Weight [lbs]	Part No.	Type	Weight [lbs]	Part No.	Type	Weight [lbs]	Part No.	Type
1½"	0.20	195940	MX1-1½	0.10	195946	MX2-1½	0.10	195946	MX3-1½
2"	0.36	195941	MX1-2	0.18	195947	MX2-2	0.18	195947	MX3-2
2½"	0.36	195942	MX1-2½	0.18	195948	MX2-2½	0.18	195948	MX3-2½
3¼"	0.64	195943	MX1-3¼	0.32	195949	MX2-3¼	0.32	195949	MX3-3¼
4"	0.64	195944	MX1-4	0.32	195950	MX2-4	0.32	195950	MX3-4
5"	1.56	195945	MX1-5	0.78	195951	MX2-5	0.78	195951	MX3-5

Accessories

Brackets LNA, LNB



Dimensions

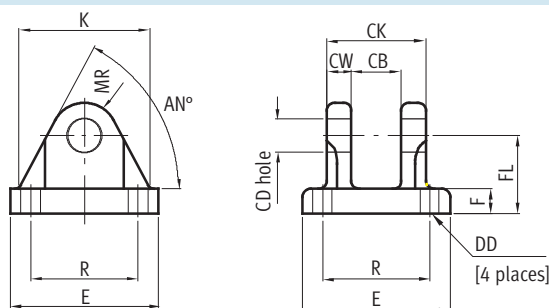
12 Clevis Bracket, LNA-...

Scope of delivery:

1 Bracket

Material:

C1144 Steel



CD hole +0.002" -0.000"	AN	CB	CK	CW	DD Thread	E	F	FL	K	MR	R	Weight [lbs]	Part No.	Type
0.502"	60.4"	0.765"	1.765"	0.500"	3/8-24 UNF-2B	2.50"	0.375"	1.125"	2.0"	0.50"	1.625"	0.88	195960	LNA-500
0.752"	62.4"	1.265"	2.515"	0.625"	1/2-20 UNF-2B	3.50"	0.625"	1.875"	3.0"	0.75"	2.562"	3.10	195961	LNA-750
1.002"	61.9"	1.515"	3.015"	0.750"	5/8-18 UNF-2B	4.50"	0.750"	2.250"	4.0"	1.00"	3.250"	6.14	195962	LNA-1000
1.377"	69.7"	2.032"	4.032"	1.000"	5/8-18 UNF-2B	5.00"	0.875"	3.000"	4.5"	1.38"	3.812"	9.80	195963	LNA-1375*

* Material: Ductile Iron 65-42-12

Note: Pivot pin type BO-... is optional. See page 25 for technical data.

Dimensions

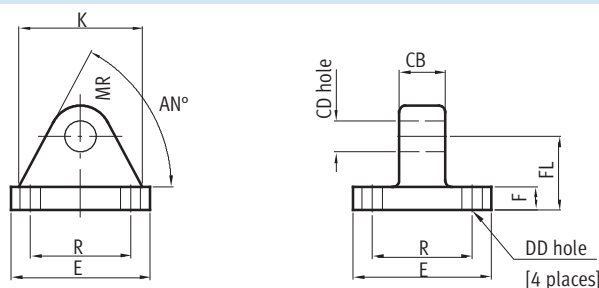
13 Eye bracket, LNB-...

Scope of delivery:

1 Bracket

Material:

C1144 Steel



CD hole +0.002" -0.000"	AN	CB	DD hole	E	F	FL	K	MR	R	Weight [lbs]	Part No.	Type
0.502"	60.4"	0.750"	0.406"	2.50"	0.375"	1.125"	2.0"	0.50"	1.625"	0.90	195956	LNB-500
0.752"	62.4"	1.250"	0.531"	3.50"	0.625"	1.875"	3.0"	0.75"	2.562"	3.20	195957	LNB-750
1.002"	61.9"	1.500"	0.656"	4.50"	0.750"	2.250"	4.0"	1.00"	3.250"	6.32	195958	LNB-1000
1.377"	69.7"	2.000"	0.656"	5.00"	0.875"	3.000"	4.5"	1.38"	3.812"	10.02	195959	LNB-1375*

* Material: Ductile Iron 65-42-12

Accessories

Clevis/Eye SSA, SSB



Dimensions

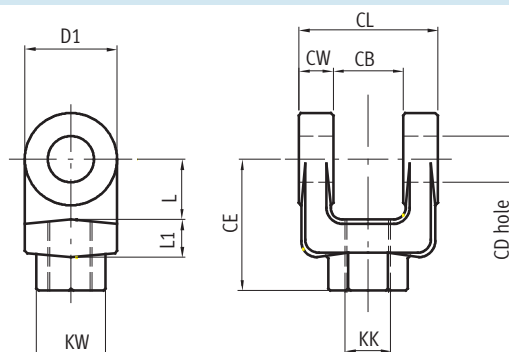
14 Female Clevis, SSA-...

Scope of delivery:

1 Clevis

Material:

C1144 Steel



KK	CB	CD +0.002" -0.000"	CE	CL	CW	D1	KW Key width	L	L1	Weight [lbs]	Part No.	Type
7/16-20 UNF-2B	0.765"	0.502"	1.50"	1.765"	0.500"	1.00"	1.000"	0.75"	0.38"	0.44	195967	SSA-7/16-20
1/2-20 UNF-2B	0.765"	0.502"	1.50"	1.765"	0.500"	1.00"	1.000"	0.75"	0.38"	0.44	195964	SSA-1/2-20
3/4-16 UNF-2B	1.265"	0.752"	2.13"	2.515"	0.625"	1.50"	1.375"	1.02"	0.56"	1.22	195968	SSA-3/4-16
7/8-14 UNF-2B	1.515"	1.002"	2.94"	3.015"	0.750"	2.00"	1.500"	1.33"	0.81"	2.70	195965	SSA-7/8-14
1-14 UNF-2B	1.515"	1.002"	2.94"	3.015"	0.750"	2.00"	1.500"	1.33"	0.81"	2.63	195969	SSA-1-14
1 1/4-12 UNF-2B	2.032"	1.377"	3.77"	4.032"	1.000"	2.75"	2.000"	1.86"	1.00"	5.96	195966	SSA-1 1/4-12*

* Material: Ductile Iron 65-42-12

Dimensions

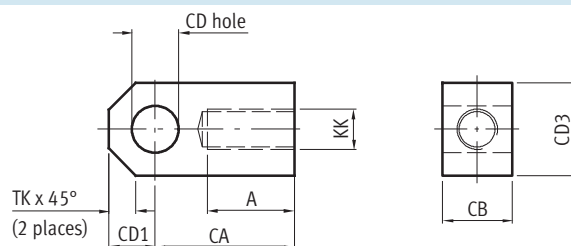
15 Female Eye, SSB-...

Scope of delivery:

1 Rod Eye

Material:

C1117 Steel



KK	A	CA	CB	CD Hole +0.002" -0.000"	CD1	CD3	TK	Weight [lbs]	Part No.	Type
7/16-20 UNF-2B	0.94"	1.50"	0.75"	0.502"	0.500"	1.00"	0.3"	0.32	195973	SSB-7/16-20
1/2-20 UNF-2B	0.94"	1.50"	0.75"	0.502"	0.500"	1.00"	0.3"	0.32	195970	SSB-1/2-20
3/4-16 UNF-2B	1.13"	2.06"	1.25"	0.752"	0.750"	1.50"	0.5"	0.94	195974	SSB-3/4-16
7/8-14 UNF-2B	1.13"	2.38"	1.50"	1.002"	1.000"	2.00"	0.6"	2.12	195971	SSB-7/8-14
1-14 UNF-2B	1.63"	2.81"	1.50"	1.002"	1.000"	2.00"	0.6"	2.34	195975	SSB-1-14
1 1/4-12 UNF-2B	2.00"	3.44"	2.00"	1.377"	1.375"	2.75"	0.8"	5.48	195972	SSB-1 1/4-12

Accessories

Pivot Pin BO, Hex Nut B

Dimensions

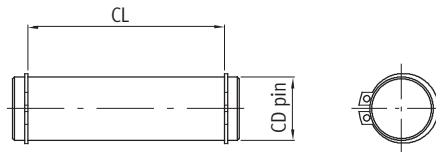
16 Pivot Pin, BO...

Scope of delivery:

- 1 Pivot pin
- 2 Retaining rings

Material:

Steel

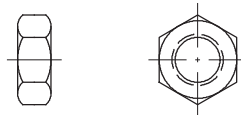


CL	CD pin +0.000" -0.003"	Weight [lbs]	Part No.	Type
1.875"	0.500"	0.12	195976	BO-0.5-1.875-A2
2.625"	0.750"	0.36	195977	BO-0.75-2.625-A2
3.125"	1.000"	0.76	195978	BO-1-3.125-A2
4.125"	1.375"	1.86	195979	BO-1.375-4.125-A2

Hex Jam Nut, B...

Material:

Steel, Zinc



Size	Dimensions according to	Part No.	Type
7/16-20	ANSI B 18.2.2-1987	13014940	B-7/16-20
1/2-20	ANSI B 18.2.2-1987	13000268	B-1/2-20
3/4-16	ANSI B 18.2.2-1987	13000270	B-3/4-16
7/8-14	ANSI B 18.2.2-1987	13014941	B-7/8-14
1-14	ANSI B 18.2.2-1987	13014942	B-1-14
1 1/4-12	ANSI B 18.2.2-1987	13014943	B-1 1/4-12

Accessories

Cylinder Sensors SME, SMT



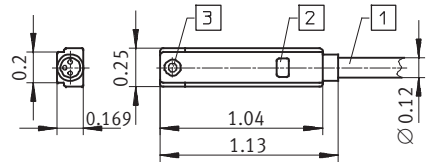
Dimensions (shown in inches)

17 Cylinder Sensor, SME... (with reed contact)

Material:

Body: PET
Plate: Stainless steel
Cable: PUR

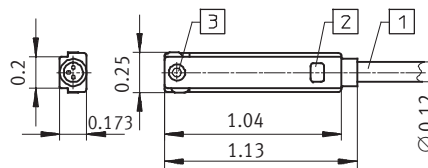
SME-8-K-LED-24
SME-8-K5-LED-24
SME-8-K-24-S6



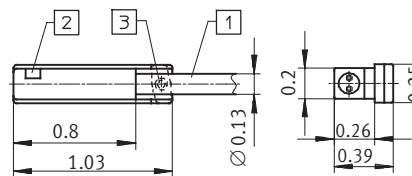
Material ...-S6:

Body: PET
Plate: Stainless steel
Cable: TPE-S

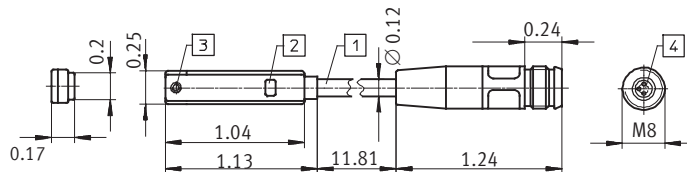
SME-8-O-K-LED-24
(Normally closed)



SME-8-K-LED-230



SME-8-K-LED-230
SME-8-S-LED-24



- 1 SME-8-K-LED-24,
3-wire cable, 8.2 ft
- SME-8-O-K-LED,
3-wire cable, 24.6 ft
- SME-8-S-LED-24,
3-wire cable, 0.98 ft
- SME-8-K-24-S6,
2-wire cable, 8.2 ft
- SME-8-K-LED-230,
2-wire cable, 8.2 ft

- 2 Yellow LED
- 3 Max. tightening torque 0.148 lbf
- 4 Suitable for plug-socket NEBU-M8

Weight [lb]	Part No.	Type
0.11	150855	SME-8-K-LED-24
0.18	175404	SME-8-K5-LED-24
0.11	161756	SME-8-K-24-S6*
0.19	160251	SME-8-O-K-LED-24
0.13	152820	SME-8-K-LED-230
0.02	150857	SME-8-S-LED-24

* Without LED; Heat-resistant

Accessories

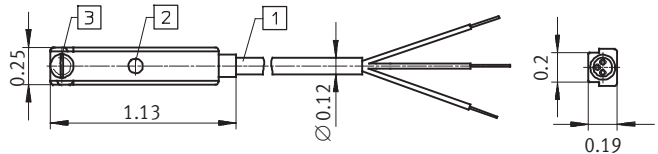
NFPA Standard Cylinders, Type DNA



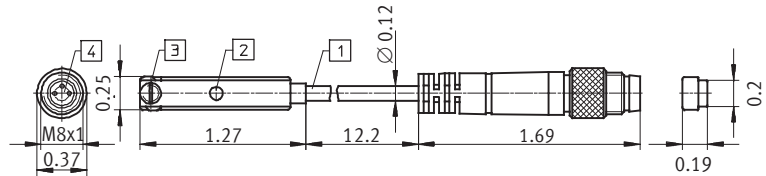
Dimensions (shown in inches)

17 Cylinder Sensor, SMT-... (with electronic output)

Material: SMT-8-PS-K-LED-24-B
 Body: PET SMT-8-PS-K5-LED-24-B
 Plate: Stainless steel SMT-8-NS-K-LED-24-B
 Cable: PUR



SMT-8-PS-S-LED-24-B
 SMT-8-NS-S-LED-24-B



- 1 SMT-8-...-K-LED-24-B
3-wire cable, 8.2 ft
SMT-8-...-S-LED-24-B
3-wire cable, 11.81 inches
- 2 Yellow LED
- 3 Max. tightening torque 0.148 lbf
- 4 Suitable for plug-socket NEBU-M8

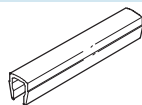
Weight [lbs]	Part No.	Type
0.18	175436	SMT-8-PS-K-LED-24-B
0.09	175434	SMT-8-PS-K5-LED-24-B
0.18	171180	SMT-8-NS-K-LED-24-B
0.04	175484	SMT-8-PS-S-LED-24-B
0.04	171181	SMT-8-NS-S-LED-24-B

Ordering data – Connecting cables				Technical data → www.festo.com/catalog/nebu	
	Electrical connection, left	Electrical connection, right	Cable length [m]	Part No.	Type
	Straight socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	541333	NEBU-M8G3-K-2.5-LE3
			5.0	541334	NEBU-M8G3-K-5-LE3
	Angled socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	541338	NEBU-M8W3-K-2.5-LE3
			5.0	541341	NEBU-M8W3-K-5-LE3

18 Slot Cover, ABP-...

For Sensor Groove

Material: Plastic



Part No. Type
 151680 ABP-5-S

Accessories

Flow Control Valves GRLA



19 Exhaust Air Flow Control Valves – Inch Series

GRLA



- Adjustable
- Swivel Connector Rotates 360°
- Knurled Adjustment Screw

Materials:

- Swivel Connector: Die-cast zinc
- Seals: NBR

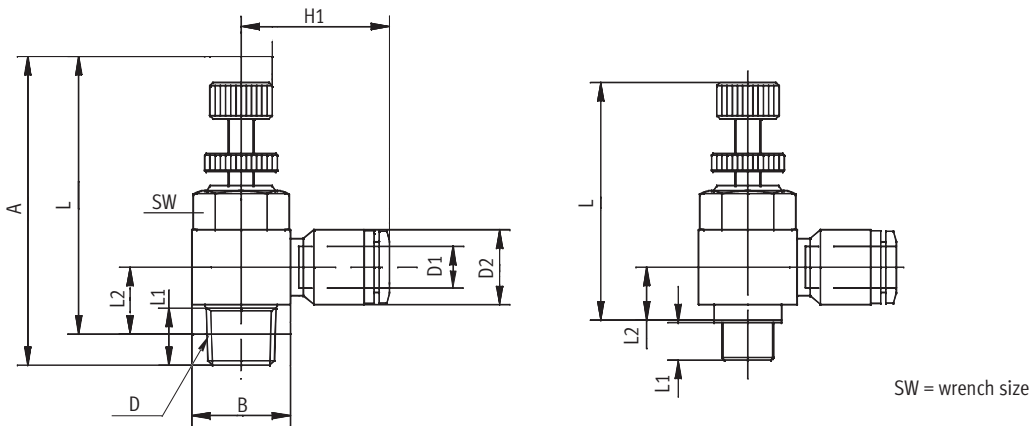


Connection Thread	Tubing O.D.	Weight [oz]	Part No.	Type
3/8 NPT	1/4"	2.27	165012	GRLA-3/8NPT-QS-1/4-U
3/8 NPT	5/16"	2.29	165015	GRLA-3/8NPT-QS-5/16-U
3/8 NPT	3/8"	2.40	190950	GRLA-3/8NPT-QS-3/8-U
3/8 NPT	1/2"	2.50	190951	GRLA-3/8NPT-QS-1/2-U
1/2 NPT	3/8"	3.70	190952	GRLA-1/2NPT-QS-3/8-U
1/2 NPT	1/2"	3.81	190953	GRLA-1/2NPT-QS-1/2-U

Note: GRLA...-QS... flow controls have an integral "Quick Star" (QS) push-pull fitting which requires a tubing O.D. tolerance of ± 1 mm. Festo PUN/PAN tubing should be used with these flow controls.

Dimensions

GRLA...



A		B	D	D1	D2	H1	L		L1	L2	SW	Part No.	Type
min.	max.		Ø	Ø	Ø		min.	max.					
2.12"	1.85"	0.87"	3/8 NPT	1/4	0.56"	1.15"	1.85"	1.57"	0.51"	0.61"	HEX3/4	165012	GRLA-3/8NPT-QS-1/4-U
2.10"	2.06"	0.87"	3/8 NPT	5/16	0.56"	1.14"	1.85"	1.57"	0.52"	0.61"	HEX3/4	165015	GRLA-3/8NPT-QS-5/16-U
2.11"	1.83"	0.87"	3/8 NPT	3/8	0.70"	1.22"	1.87"	1.59"	0.47"	0.64"	HEX3/4	190950	GRLA-3/8NPT-QS-3/8-U
2.11"	1.83"	0.87"	3/8 NPT	1/2	0.84"	1.45"	1.87"	1.59"	0.47"	0.70"	HEX3/4	190951	GRLA-3/8NPT-QS-1/2-U
2.31"	2.03"	1.10"	1/2 NPT	3/8	0.70"	1.32"	1.99"	1.71"	0.59"	0.70"	HEX1	190952	GRLA-1/2NPT-QS-3/8-U
2.31"	2.03"	1.10"	1/2 NPT	1/2	0.84"	1.43"	1.99"	1.71"	0.59"	0.76"	HEX1	190953	GRLA-1/2NPT-QS-1/2-U

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