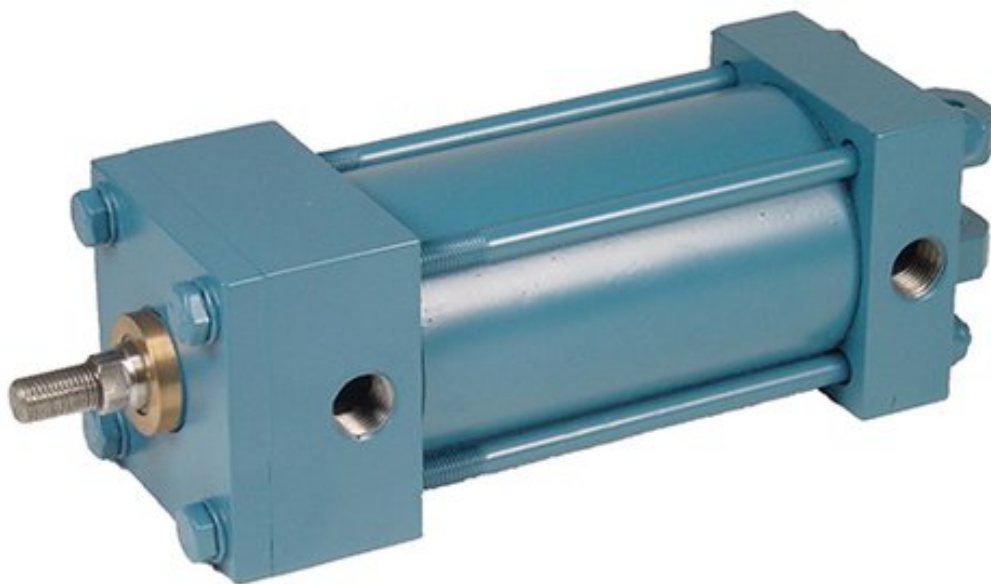


## Series PowerMaster®



AVENTICS™ Series PowerMaster®

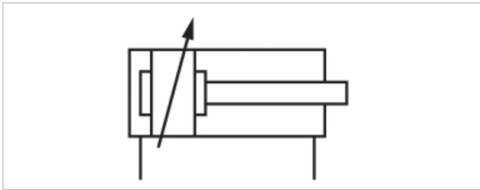


# NFPA, PowerMaster® Pneumatic (PPT)

- Steel version
- Ø 38.1-355.6 mm
- double-acting
- Cushioning pneumatically adjustable (optional)



Standards	NFPA
Compressed air connection	NPT
Working pressure min./max.	17.24 bar
Ambient temperature min./max.	-54 ... 93.33 °C
Medium temperature min./max.	-54 ... 93.33 °C
Medium	Compressed air



## Technical information

The pressure dew point must be at least 15 °C under ambient and medium temperature and may not exceed 3 °C .

The oil content of compressed air must remain constant during the life cycle.

Use only the approved oils from AVENTICS. Further information can be found in the "Technical information" document (available in the MediaCentre).

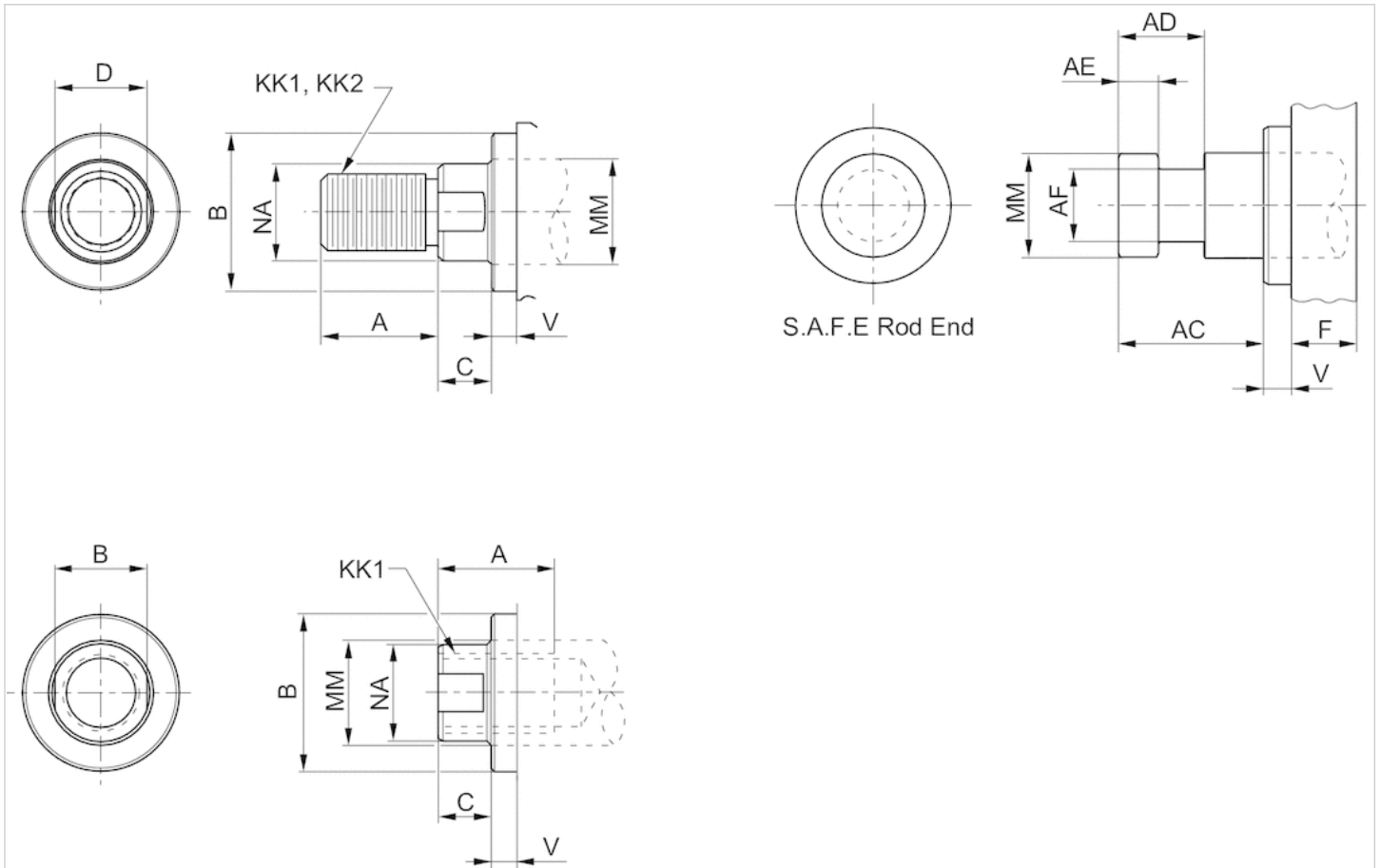
In service higher than 18 cycles per minute or with continuous flow of air through the device, an air line lubricator is recommended. Do not use line lubrication for vacuum products. However, the lubricator must be maintained since the oil will wash out the grease, and lack of lubrication will greatly shorten the life expectancy. The oils used in the lubricator must be compatible with the elastomers in the device. The elastomers are normally BUNA-N, NEOPRENE, VITON, SILICONE, and HYTREL. AVENTICS recommends the use of only petroleum-based oils without synthetic additives, and with an aniline point between 82.222 °C and 98.889 °C .

## Technical information

Material	
Cylinder tube	Steel, Honed to 12 micro-inches or better, chrome-plated I.D.
Piston rod	Carbon steel, Case hardened, chrome-plated (5/8" version not case hardened)
Piston	Ductile iron
Front cover	Steel
End cover	Steel
Seal	Buna-N
Scraper	Polyurethane
Tie-rods	Stress proof steel, high tensile

## Dimensions

### Rod end dimensions



#### Rod thread options

Standard KK1 external thread supplied unless specified otherwise.

External thread available in KK1 and KK2 thread sizes.

KK1 studded male rod end available on request.

Internal thread available in KK1 thread size only.

## Dimensions

MM 1)	0.625	1	1.375	1.75	2	2.5	3	3.5	4
A	0.75	1.125	1.625	2	2.25	3	3.5	3.5	4
B+0.000-0.003	1.024	1.499	1.999	2.374	2.624	3.124	3.749	4.249	4.749
C	0.38	0.50	0.62	0.75	0.88	1	1	1	1
D	0.50	0.88	1.12	1.50	1.69	2.06	2.62	3	3.38
AC	1.12	1.62	1.75	2	2.62	3.25	3.62	4.38	4.50
AD	0.62	0.94	1.06	1.31	1.69	1.94	2.44	2.69	2.69
AE+0.000-0.005	0.250	0.375	0.375	0.500	0.625	0.750	0.875	1	1
AF	0.375	0.688	0.875	1.125	1.380	1.750	2.250	2.500	3.000
KK1	7/16-20	3/4-16	1-14	1 1/4-12	1 1/2-12	1 7/8-12	2 1/4-12	2 1/2-12	3-12
KK2	1/2-20	7/8-14	1 1/4-12	1 1/2-12	1 3/4-12	2 1/4-12	2 3/4-12	3-12	3 1/2-12
NA+0.002-0.002	0.563	0.938	1.313	1.688	1.940	2.438	2.938	3.438	3.938

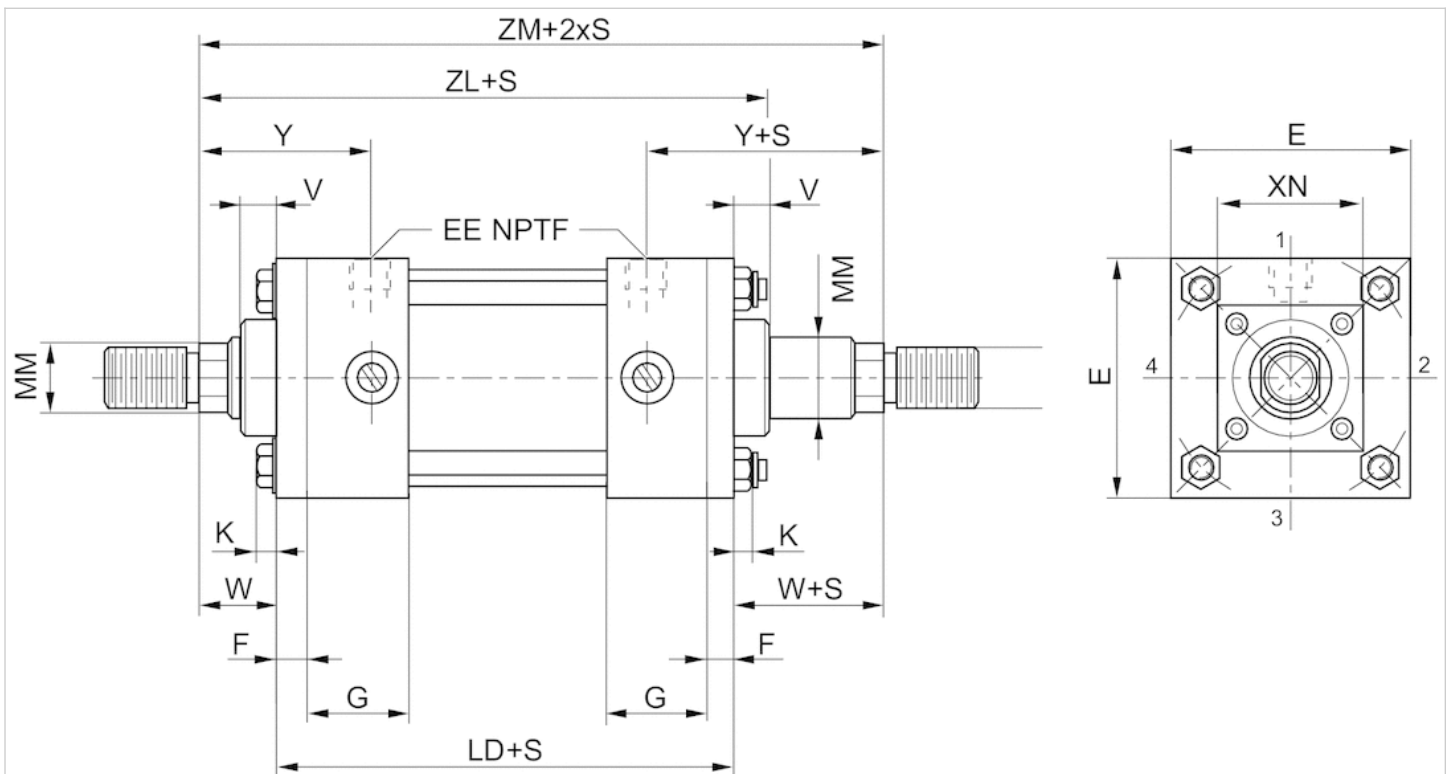
4.5	5	5.5
4.5	5	5
5.249	5.749	6.246
1	1	1
SH 1	SH 1	SH 1
5.25	5.38	6.25
3.19	3.19	3.94
1.500	1.500	1.875
3.500	3.875	4.375
3 1/4-12	3 1/2-12	4-12
4 1/4-12	4 3/4-12	5 1/4-12
4.438	4.938	5.438

1) For piston rod Ø

Spanner wrench holes: SH 1 = 0.56" dia., SH 2 = 0.66" dia.

## Dimensions

### Double rod cylinder, Dimensions in inches



S = stroke

### Dimensions not affected by rod diameter

Ø	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch	8 inch	10 inch	12 inch
E	2.00	2.50	3.00	3.75	4.50	5.50	6.50	8.50	10.63	12.75
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75	0.75	1.00	1.00
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75	0.75	0.75	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00	2.00	2.25	2.25
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44	0.56	0.66	0.66

∅	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch	8 inch	10 inch	12 inch
LD	4.88	4.88	5.00	6.00	6.00	6.25	7.00	5.63	6.63	7.13

14 inch										
14.75										
1.25										
0.75										
2.75										
0.78										
8.63										

Dimensions affected by rod diameter

∅	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.5	0.25	0.5	0.63	0.25	0.5	0.63
W	0.63	1	0.63	1	1.25	0.63	1	1.25
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
XN								
ZL	5.73	6.1	5.78	6.15	6.4	5.9	6.27	6.52
ZM	6.13	6.88	6.13	6.88	7.38	6.25	7	7.5

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.5	0.5	0.25	0.38	0.5	0.5	0.63
1.5	0.75	1	1.25	1.38	0.75	1	1.25	1.38	1.63
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
6.77	7.09	7.34	7.59	7.72	7.09	7.34	7.59	7.72	7.97
8	7.5	8	8.5	8.75	7.5	8	8.5	8.75	9.25

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	1.375	1.75	2	2.5	3
0.25	0.38	0.5	0.5	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5
0.75	1	1.25	1.38	1.63	1.63	1.63	0.88	1.13	1.25	1.5	1.5
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
7.44	7.69	7.94	8.07	8.32	8.32	8.32	8.32	8.57	8.69	8.94	8.94
7.75	8.25	8.75	9	9.5	9.5	9.5	8.75	9.25	9.5	10	10

6 inch	6 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch
3.5	4	1.375	1.75	2	2.5	3	3.5	4	4.5	5	5.5
0.5	0.5	0.25	0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1.5	1.5										
3.44	3.44	2.81	3.06	3.19	3.44	3.44	3.44	3.44	3.44	3.44	3.44
		4	4	4	4	5.5	5.5	5.5	6.5	6.5	7.25
8.94	8.94	7.82	8.07	8.19	8.44	8.44	8.44	8.44	8.44	8.44	8.44
10	10	8.88	9.38	9.63	10.13	10.13	10.13	10.13	10.13	10.13	10.13

10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	12 inch	12 inch
1.75	2	2.5	3	3.5	4	4.5	5	5.5	2	2.5
0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.38	0.5
3.13	3.25	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.25	3.5
4	4	4	5.5	5.5	5.5	6.5	6.5	7.25	4	4
9.17	9.29	9.54	9.54	9.54	9.54	9.54	9.54	9.54	9.79	10.04
10.38	10.63	11.13	11.13	11.13	11.13	11.13	11.13	11.13	11.13	11.63

12 inch	12 inch	12 inch	12 inch	12 inch	12 inch	14 inch	14 inch	14 inch	14 inch	14 inch
3	3.5	4	4.5	5	5.5	2.5	3	3.5	4	4.5
0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
3.5	3.5	3.5	3.5	3.5	3.5	3.81	3.81	3.81	3.81	3.81
5.5	5.5	5.5	6.5	6.5	7.25	4	5.5	5.5	5.5	6.5
10.04	10.04	10.04	10.04	10.04	10.04	11.66	11.66	11.66	11.66	11.66
11.63	11.63	11.63	11.63	11.63	11.63	13.13	13.13	13.13	13.13	13.13

14 inch	14 inch
5	5.5
0.5	0.5
3.81	3.81
6.5	7.25
11.66	11.66
13.13	13.13

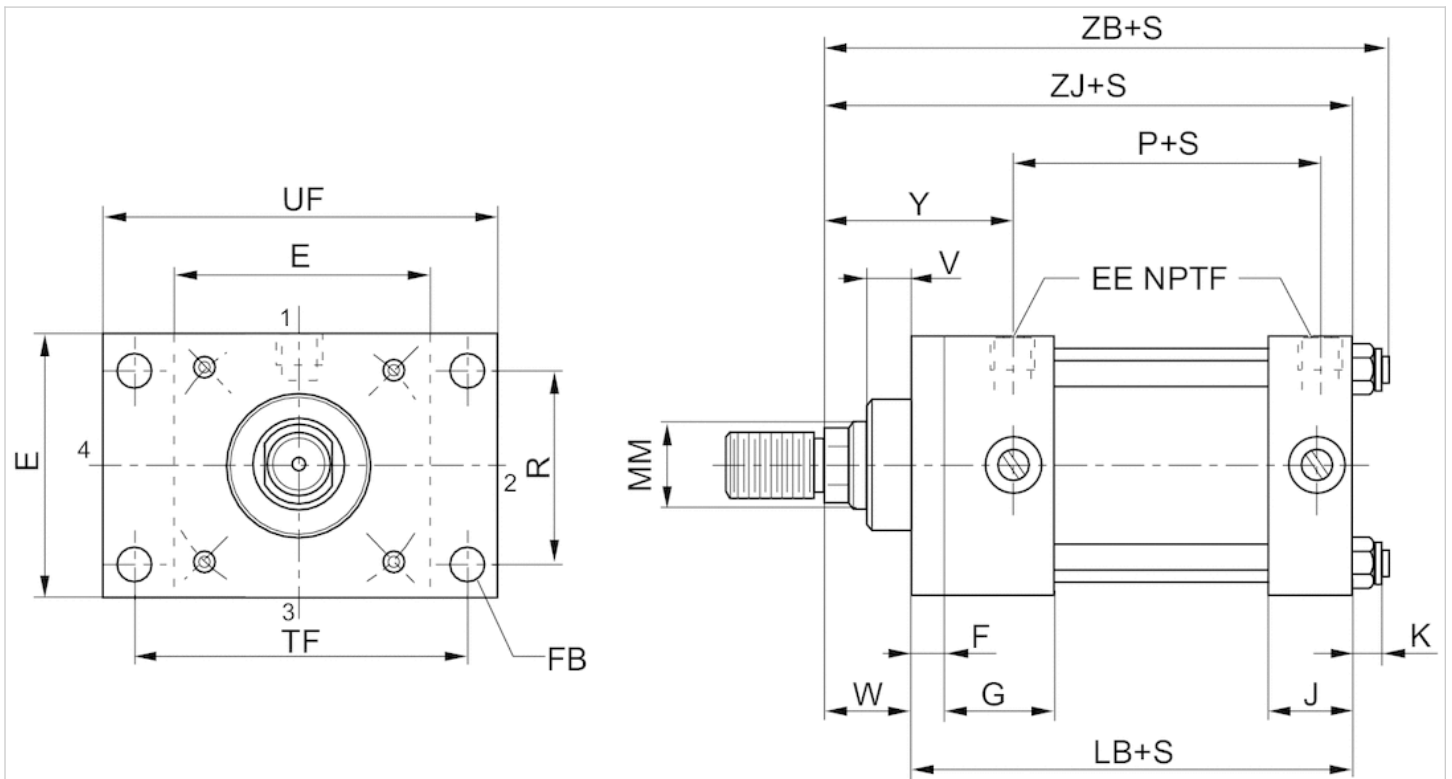
1) For piston rod Ø

2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

The bearing retainer plate is the same as the “E” dimension for bore sizes 1-1/2” – 6” and the “XN” dimension for 8” – 14” bore sizes.

## Dimensions

### Head Rectangular Flange (MF1 mount)



S = stroke

### Dimensions not affected by rod diameter

Ø	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch
E	2.00	2.50	3.00	3.75	4.50	5.50	6.50
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00
J	1.00	1.00	1.00	1.25	1.25	1.25	1.50
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44
P	2.25	2.25	2.38	2.63	2.63	2.88	3.13
R	1.43	1.84	2.19	2.76	3.32	4.10	4.88
FB	0.25	0.31	0.31	0.38	0.38	0.50	0.50
LB	4.00	4.00	4.13	4.88	4.88	5.13	5.75
TF	2.75	3.38	3.88	4.69	5.44	6.63	7.63
UF	3.38	4.13	4.63	5.50	6.25	7.63	8.63

Dimensions affected by rod diameter

Ø	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.5	0.25	0.5	0.63	0.25	0.5	0.63
W	0.63	1	0.63	1	1.25	0.63	1	1.25
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
ZB	4.85	5.22	4.90	5.27	5.52	5.02	5.40	5.65
ZJ	4.63	5.00	4.63	5.00	5.25	4.75	5.13	5.38

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.5	0.5	0.25	0.38	0.5	0.5	0.63
1.5	0.75	1	1.25	1.38	0.75	1	1.25	1.38	1.63
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
5.90	5.98	6.23	6.48	6.61	5.98	6.23	6.48	6.61	6.86
5.63	5.63	5.88	6.13	6.25	5.63	5.88	6.13	6.25	6.50

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	1.375	1.75	2	2.5	3
0.25	0.38	0.5	0.5	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5
0.75	1	1.25	1.38	1.63	1.63	1.63	0.88	1.13	1.25	1.5	1.5
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
6.32	6.57	6.82	6.94	7.19	7.19	7.19	7.07	7.32	7.44	7.69	7.69
5.88	6.13	6.25	6.50	6.75	6.75	6.75	6.63	6.88	7.00	7.25	7.25

6 inch						6 inch					
3.5						4					
0.5						0.5					
1.5						1.5					
3.44						3.44					
7.69						7.69					
7.25						7.25					

1) For piston rod Ø

2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

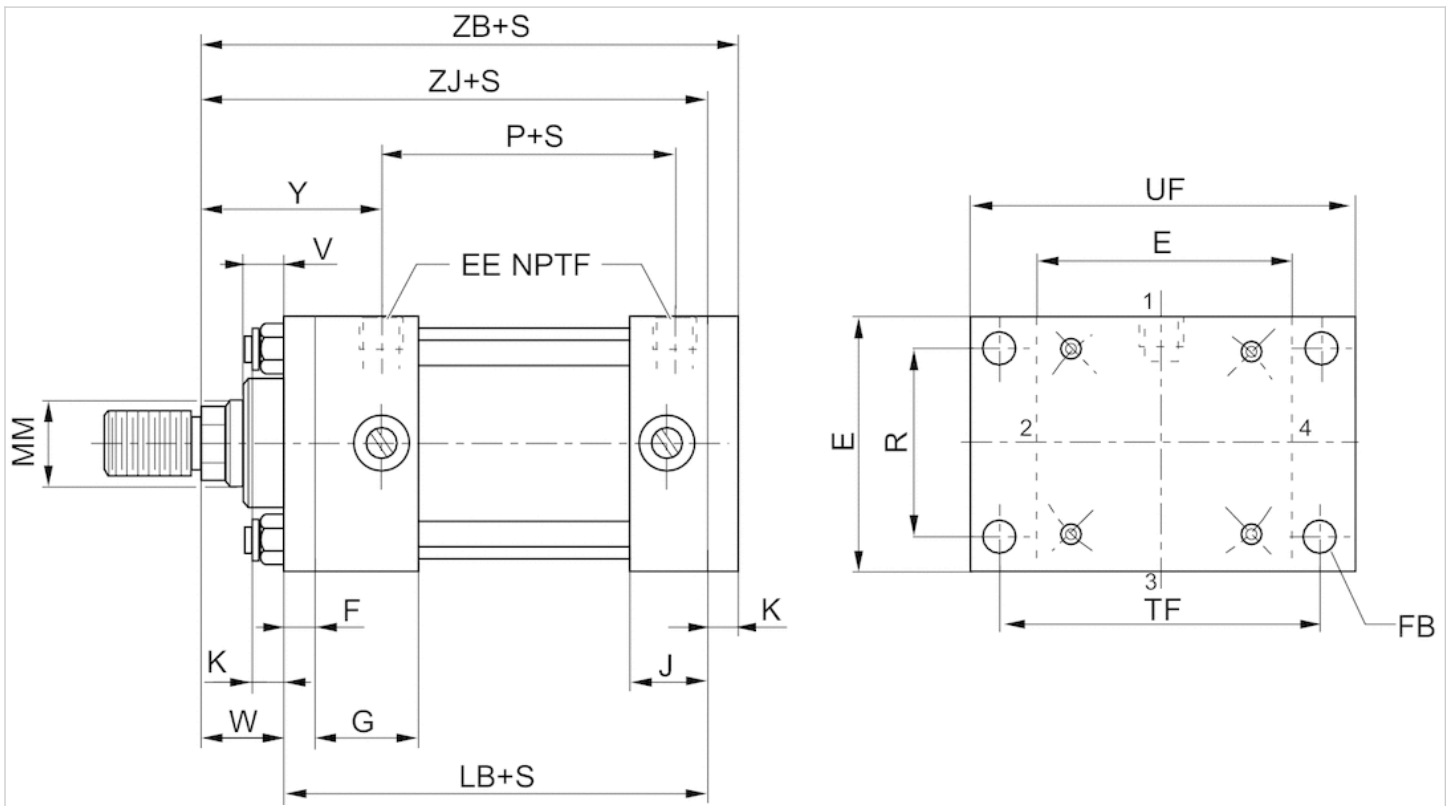
The bearing retainer plate is the same as the “E” dimension for bore sizes 1-1/2” – 6” and the “XN” dimension for 8” – 14” bore sizes.

Removable bearing retainer is not available in 1-1/2” – 6” bore cylinders. The bearing retainer plate is the same as the “E” dimension for 1-1/2” – 6” bore sizes.



## Dimensions

### Cap Rectangular Flange (MF2 mount)



S = stroke

### Dimensions not affected by rod diameter

Ø	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch
E	2.00	2.50	3.00	3.75	4.50	5.50	6.50
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00
J	1.00	1.00	1.00	1.25	1.25	1.25	1.50
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44
P	2.25	2.25	2.38	2.63	2.63	2.88	3.13
R	1.43	1.84	2.19	2.76	3.32	4.10	4.88
FB	0.25	0.31	0.31	0.38	0.38	0.50	0.50
LB	4.00	4.00	4.13	4.88	4.88	5.13	5.75
TF	2.75	3.38	3.88	4.69	5.44	6.63	7.63
UF	3.38	4.13	4.63	5.50	6.25	7.63	8.63

Dimensions affected by rod diameter

∅	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.5	0.25	0.5	0.63	0.25	0.5	0.63
W	0.63	1	0.63	1	1.25	0.63	1	1.25
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
ZB	4.85	5.22	4.90	5.27	5.52	5.02	5.40	5.65
ZF	5.00	5.38	5.00	5.38	5.62	5.13	5.50	5.75
ZJ	4.63	5.00	4.63	5.00	5.25	4.75	5.13	5.38

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.5	0.5	0.25	0.38	0.5	0.5	0.63
1.5	0.75	1	1.25	1.38	0.75	1	1.25	1.38	1.63
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
5.90	5.98	6.23	6.48	6.61	5.98	6.23	6.48	6.61	6.86
6.00	6.25	6.50	6.75	6.88	6.25	6.50	6.75	6.88	7.13
5.63	5.63	5.88	6.13	6.25	5.63	5.88	6.13	6.25	6.50

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	1.375	1.75	2	2.5	3
0.25	0.38	0.5	0.5	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5
0.75	1	1.25	1.38	1.63	1.63	1.63	0.88	1.13	1.25	1.5	1.5
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
6.32	6.57	6.82	6.94	7.19	7.19	7.19	7.07	7.32	7.44	7.69	7.69
6.50	6.75	7.00	7.13	7.38	7.38	7.38	7.38	7.63	7.75	8.00	8.00
5.88	6.13	6.25	6.50	6.75	6.75	6.75	6.63	6.88	7.00	7.25	7.25

6 inch	6 inch
3.5	4
0.5	0.5
1.5	1.5
3.44	3.44
7.69	7.69
8.00	8.00
7.25	7.25

1) For piston rod ∅

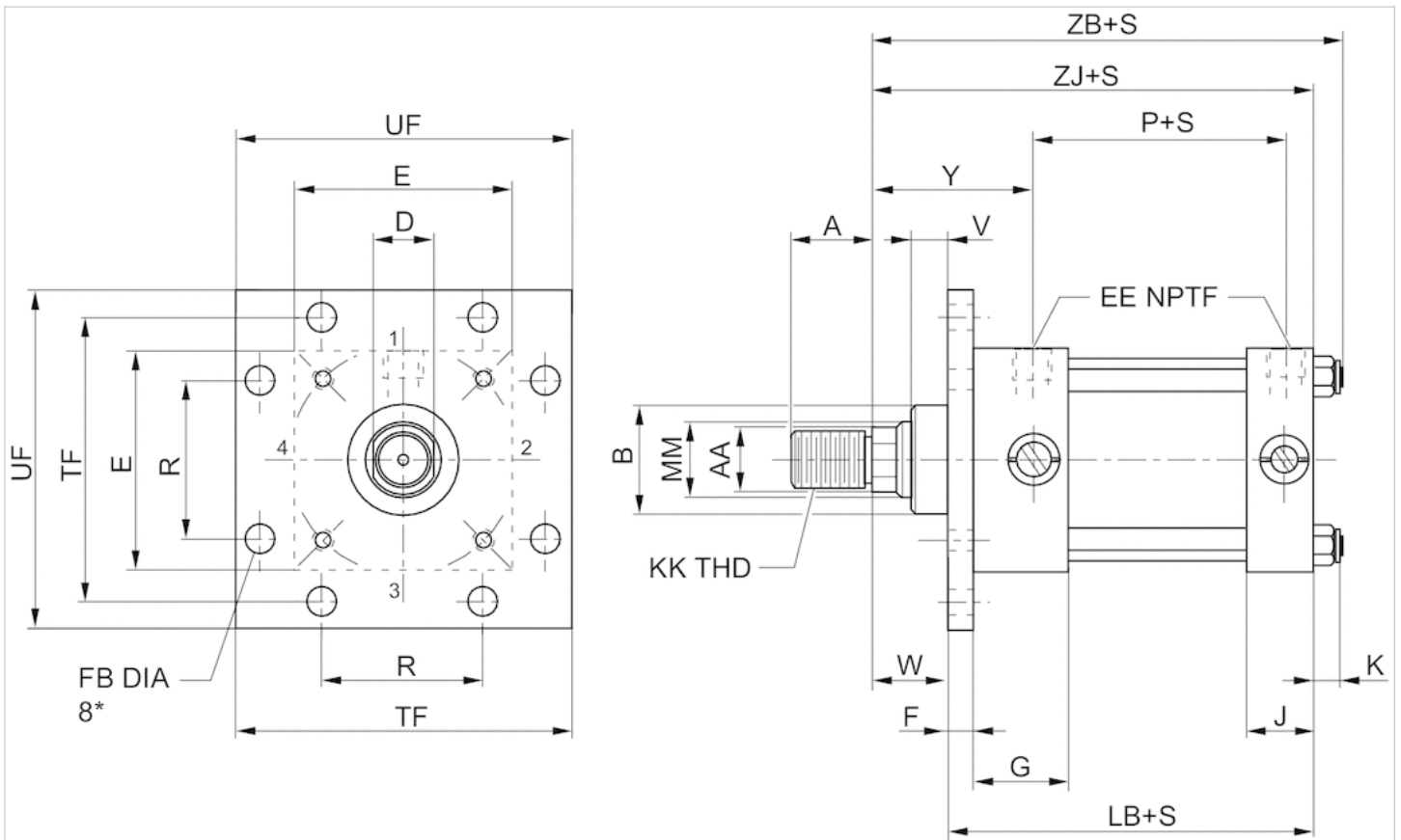
2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

The bearing retainer plate is the same as the “E” dimension for bore sizes 1-1/2” – 6” and the “XN” dimension for 8” – 14” bore sizes.

Removable bearing retainer is not available in 1-1/2” – 6” bore cylinders. The bearing retainer plate is the same as the “E” dimension for 1-1/2” – 6” bore sizes.

## Dimensions

### Head Square Flange (MF5 mount)



S = stroke

### Dimensions not affected by rod diameter

Ø	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch
E	2.00	2.50	3.00	3.75	4.50	5.50	6.50
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00
J	1.00	1.00	1.00	1.25	1.25	1.25	1.50
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44
P	2.25	2.25	2.38	2.63	2.63	2.88	3.13
R	1.43	1.84	2.19	2.76	3.32	4.10	4.88
FB	0.25	0.31	0.31	0.38	0.38	0.50	0.50
LB	4.00	4.00	4.13	4.88	4.88	5.13	5.75
TF	2.75	3.38	3.88	4.69	5.44	6.63	7.63
UF	3.38	4.13	4.63	5.50	6.25	7.63	8.63

Dimensions affected by rod diameter

Ø	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.5	0.25	0.5	0.63	0.25	0.5	0.63
W	0.63	1	0.63	1	1.25	0.63	1	1.25
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
ZB	4.85	5.22	4.90	5.27	5.52	5.02	5.40	5.65
ZJ	4.63	5.00	4.63	5.00	5.25	4.75	5.13	5.38

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.5	0.5	0.25	0.38	0.5	0.5	0.63
1.5	0.75	1	1.25	1.38	0.75	1	1.25	1.38	1.63
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
5.90	5.98	6.23	6.48	6.61	5.98	6.23	6.48	6.61	6.86
5.63	5.63	5.88	6.13	6.25	5.63	5.88	6.13	6.25	6.50

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	1.375	1.75	2	2.5	3
0.25	0.38	0.5	0.5	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5
0.75	1	1.25	1.38	1.63	1.63	1.63	0.88	1.13	1.25	1.5	1.5
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
6.32	6.57	6.82	6.94	7.19	7.19	7.19	7.07	7.32	7.44	7.69	7.69
5.88	6.13	6.25	6.50	6.75	6.75	6.75	6.63	6.88	7.00	7.25	7.25

6 inch		6 inch	
3.5		4	
0.5		0.5	
1.5		1.5	
3.44		3.44	
7.69		7.69	
7.25		7.25	

1) For piston rod Ø

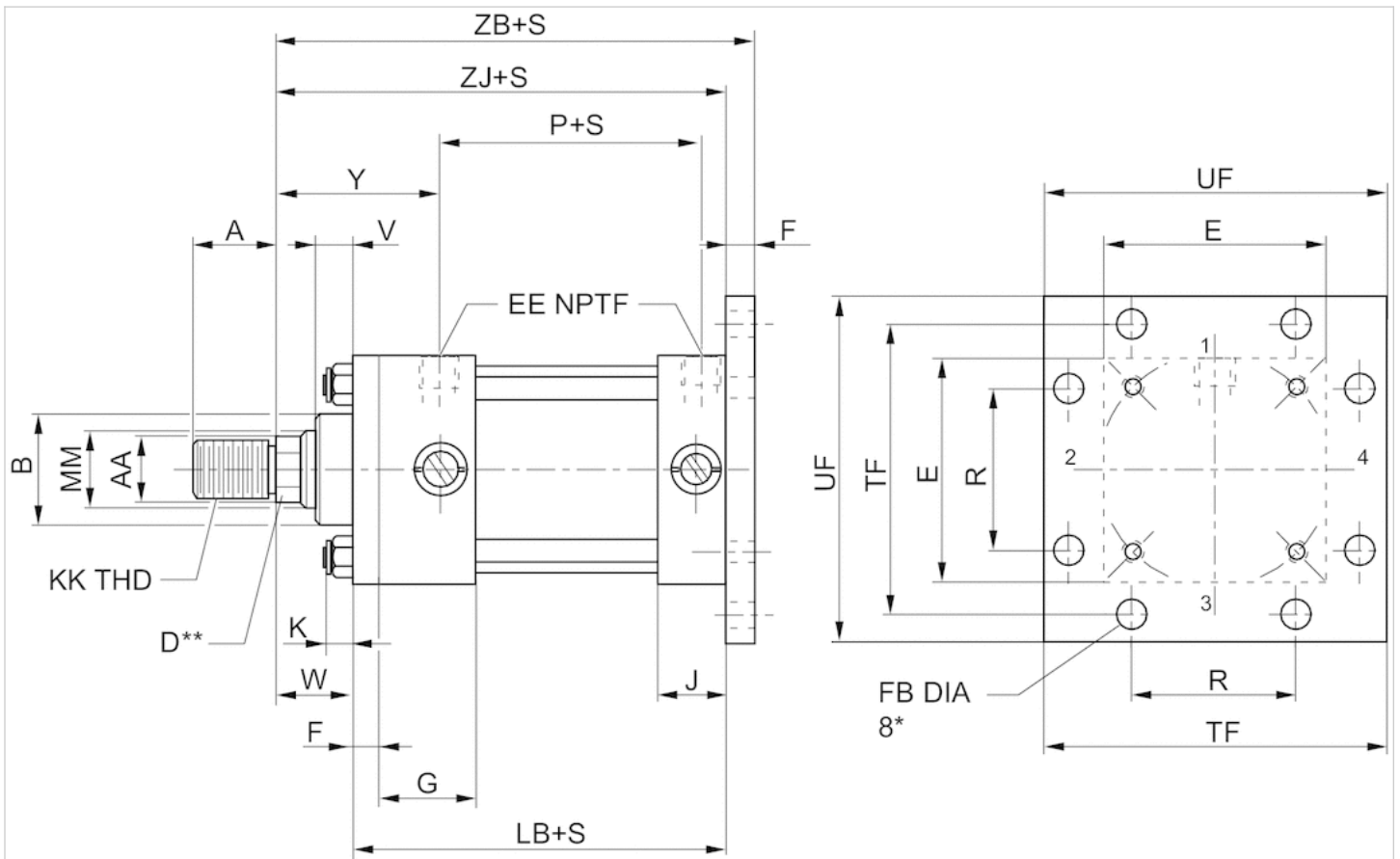
2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

The bearing retainer plate is the same as the “E” dimension for bore sizes 1-1/2” – 6” and the “XN” dimension for 8” – 14” bore sizes.

Removable bearing retainer is not available in 1-1/2” – 6” bore cylinders. The bearing retainer plate is the same as the “E” dimension for 1-1/2” – 6” bore sizes.

## Dimensions

### Cap Square Flange (MF6 mount)



S = stroke

### Dimensions not affected by rod diameter

∅	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch
E	2.00	2.50	3.00	3.75	4.50	5.50	6.50
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00
J	1.00	1.00	1.00	1.25	1.25	1.25	1.50
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44
P	2.25	2.25	2.38	2.63	2.63	2.88	3.13
R	1.43	1.84	2.19	2.76	3.32	4.10	4.88
FB	0.25	0.31	0.31	0.38	0.38	0.50	0.50
LB	4.00	4.00	4.13	4.88	4.88	5.13	5.75
TF	2.75	3.38	3.88	4.69	5.44	6.63	7.63
UF	3.38	4.13	4.63	5.50	6.25	7.63	8.63

Dimensions affected by rod diameter

Ø	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.5	0.25	0.5	0.63	0.25	0.5	0.63
W	0.63	1	0.63	1	1.25	0.63	1	1.25
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
ZB	4.85	5.22	4.90	5.27	5.52	5.02	5.40	5.65
ZJ	4.63	5.00	4.63	5.00	5.25	4.75	5.13	5.38

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.5	0.5	0.25	0.38	0.5	0.5	0.63
1.5	0.75	1	1.25	1.38	0.75	1	1.25	1.38	1.63
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
5.90	5.98	6.23	6.48	6.61	5.98	6.23	6.48	6.61	6.86
5.63	5.63	5.88	6.13	6.25	5.63	5.88	6.13	6.25	6.50

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	1.375	1.75	2	2.5	3
0.25	0.38	0.5	0.5	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5
0.75	1	1.25	1.38	1.63	1.63	1.63	0.88	1.13	1.25	1.5	1.5
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
6.32	6.57	6.82	6.94	7.19	7.19	7.19	7.07	7.32	7.44	7.69	7.69
5.88	6.13	6.25	6.50	6.75	6.75	6.75	6.63	6.88	7.00	7.25	7.25

6 inch		6 inch	
3.5		4	
0.5		0.5	
1.5		1.5	
3.44		3.44	
7.69		7.69	
7.25		7.25	

1) For piston rod Ø

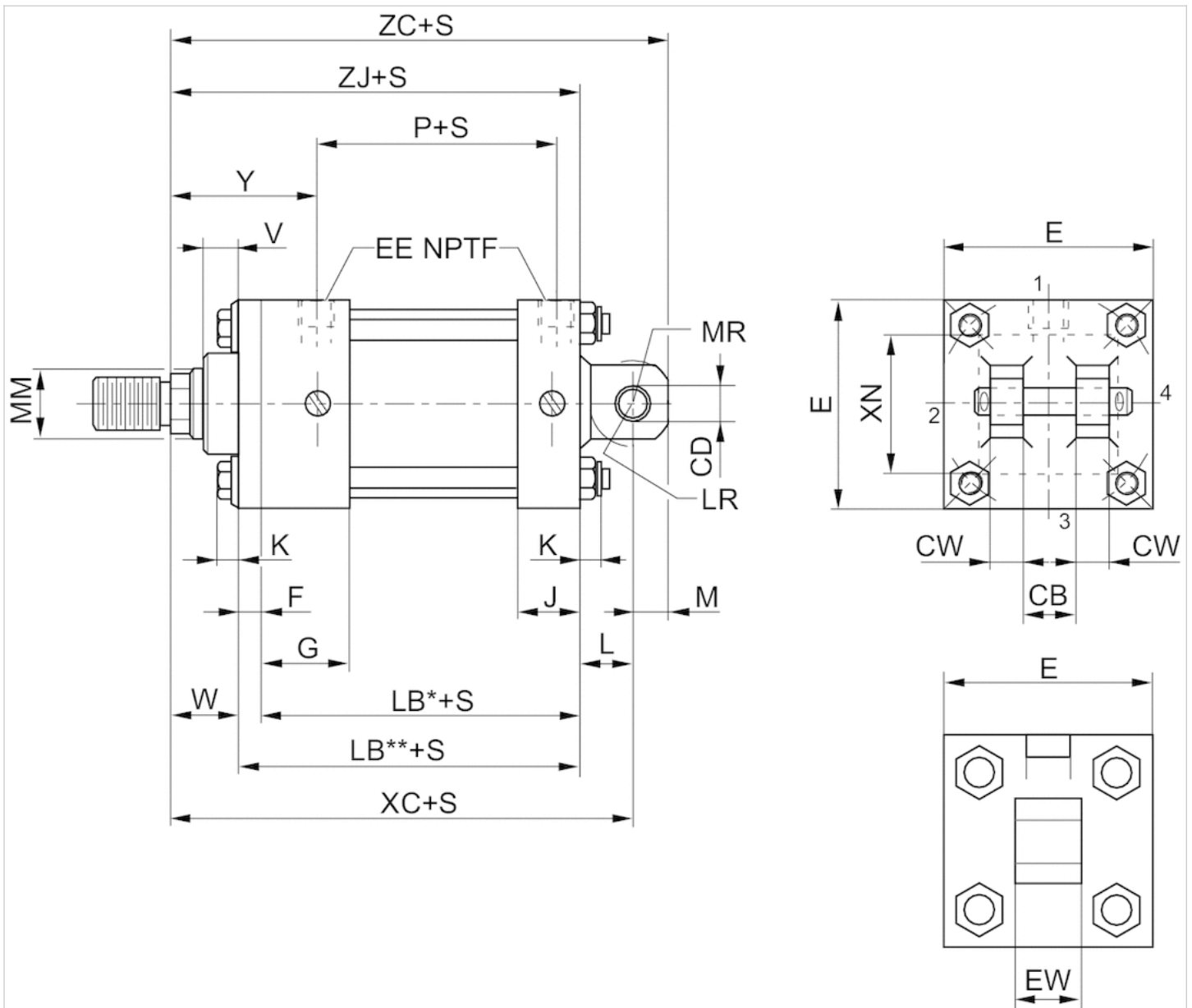
2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

The bearing retainer plate is the same as the “E” dimension for bore sizes 1-1/2” – 6” and the “XN” dimension for 8” – 14” bore sizes.

Removable bearing retainer is not available in 1-1/2” – 6” bore cylinders. The bearing retainer plate is the same as the “E” dimension for 1-1/2” – 6” bore sizes.

## Dimensions

### Fixed Clevis (MP1 mount)



S = stroke

### Dimensions not affected by rod diameter

Ø	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch	8 inch	10 inch	12 inch
E	2.00	2.50	3.00	3.75	4.50	5.50	6.50	8.50	10.63	12.75
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75	0.75	0.75	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00	2.00	2.25	2.25
J	1.00	1.00	1.00	1.25	1.25	1.25	1.50	1.50	2.00	2.00
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44	0.56	0.66	0.66
L	0.75	0.75	0.75	1.25	1.25	1.25	1.50	1.50	2.13	2.25
M	0.50	0.50	0.50	0.75	0.75	0.75	1	1	1.38	1.75
P	2.25	2.25	2.38	2.63	2.63	2.88	3.13	3.25	4.13	4.63
EW/CB	0.75	0.75	0.75	1.25	1.25	1.25	1.50	1.50	2	2.50

Ø	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch	8 inch	10 inch	12 inch
CD	0.50	0.50	0.50	0.75	0.75	0.75	1	1	1.375	1.75
CW	0.50	0.50	0.50	0.63	0.63	0.63	0.75	0.75	1	1.25
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75	0.75	1.00	1.00
LB	4.00	4.00	4.13	4.88	4.88	5.13	5.75	5.13	6.38	6.88
LR	0.59	0.59	0.59	0.88	0.88	0.88	1.19	1.19	1.63	2.06
MR	0.69	0.69	0.69	1	1	1	1.38	1.38	2	2.25

14 inch	
14.75	
0.75	
2.75	
2.25	
0.78	
2.50	
2.00	
5.50	
2.50	
2.00	
1.25	
1.25	
8.13	
2.38	
2.50	

Dimensions affected by rod diameter

Ø	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.50	0.25	0.50	0.63	0.25	0.50	0.63
W	0.63	1	0.63	1	1.25	0.63	1	1.25
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
XC	5.38	5.75	5.38	5.75	6.00	5.50	5.88	6.13
XN	-	-	-	-	-	-	-	-
ZC	5.88	6.25	5.88	6.25	6.50	6.00	6.38	6.63
ZJ	4.63	5.00	4.63	5.00	5.25	4.75	5.13	5.38

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.50	0.50	0.25	0.38	0.50	0.50	0.63
1.50	0.75	1.00	1.25	1.38	0.75	1.00	1.25	1.38	1.63
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
6.38	6.88	7.13	7.38	7.50	6.88	7.13	7.38	7.50	7.75
-	-	-	-	-	-	-	-	-	-
6.88	7.63	7.88	8.13	8.25	7.63	7.88	8.13	8.25	8.50
5.63	5.63	5.88	6.13	6.25	5.63	5.88	6.13	6.25	6.50

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	1.375	1.75	2	2.5	3
0.25	0.38	0.50	0.50	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5



5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
0.75	1.00	1.25	1.38	1.63	1.63	1.63	0.88	1.13	1.25	1.50	1.50
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
7.13	7.38	7.63	7.75	8.00	8.00	8.00	8.13	8.38	8.50	8.75	8.75
-	-	-	-	-	-	-	-	-	-	-	-
7.88	8.13	8.38	8.50	8.75	8.75	8.75	9.13	9.38	9.50	9.75	9.75
5.88	6.13	6.83	6.50	6.75	6.75	6.75	6.63	6.88	7.00	7.25	7.25

6 inch	6 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch
3.5	4	1.375	1.75	2	2.5	3	3.5	4	4.5	5	5.5
0.5	0.5	0.25	0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1.50	1.50	-	-	-	-	-	-	-	-	-	-
3.44	3.44	2.81	3.06	3.19	3.44	3.44	3.44	3.44	3.44	3.44	3.44
8.75	8.75	8.25	8.50	8.63	8.88	8.88	8.88	8.88	8.88	8.88	8.88
-	-	4	4	4	4	5.50	5.50	5.50	6.5	6.5	7.25
9.75	9.75	9.25	9.50	9.63	9.88	9.88	9.88	9.88	9.88	9.88	9.88
7.25	7.25	6.75	7.00	7.13	7.38	7.38	7.38	7.38	7.38	7.38	7.38

10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	12 inch	12 inch
1.75	2	2.5	3	3.5	4	4.5	5	5.5	5.5	2	2.5
0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.38	0.5
-	-	-	-	-	-	-	-	-	-	-	-
3.13	3.25	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.25	3.50
10.38	10.50	10.75	10.75	10.75	10.75	10.75	10.75	10.75	10.75	11.13	11.38
4	4	4	5.50	5.50	5.50	6.50	6.50	7.25	7.25	4	4
11.75	11.88	12.13	12.13	12.13	12.13	12.13	12.13	12.13	12.13	12.88	13.13
8.25	8.38	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.88	9.13

12 inch	12 inch	12 inch	12 inch	12 inch	12 inch	14 inch	14 inch	14 inch	14 inch	14 inch	14 inch
3	3.5	4	4.5	5	5.5	2.5	3	3.5	4	4.5	4.5
0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
-	-	-	-	-	-	-	-	-	-	-	-
3.50	3.50	3.50	3.50	3.50	3.50	3.81	3.81	3.81	3.81	3.81	3.81
11.38	11.38	11.38	11.38	11.38	11.38	12.88	12.88	12.88	12.88	12.88	12.88
5.50	5.50	5.50	6.50	6.50	7.25	4	5.50	5.50	5.50	5.50	5.50
13.13	13.13	13.13	13.13	13.13	13.13	14.88	14.88	14.88	14.88	14.88	14.88
9.13	9.13	9.13	9.13	9.13	9.13	10.38	10.38	10.38	10.38	10.38	10.38

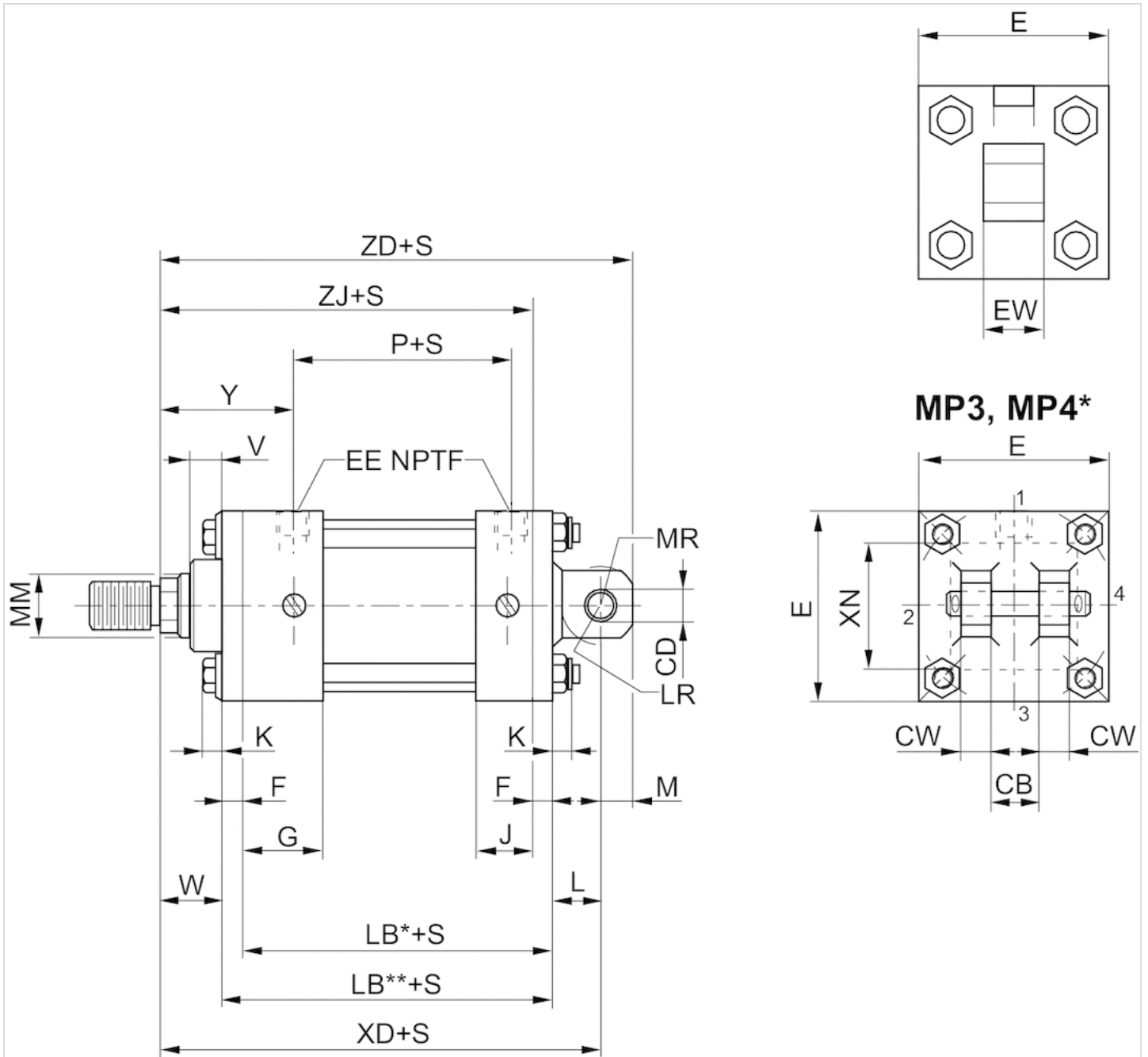
14 inch						14 inch					
5						5.5					
0.5						0.5					
-						-					
3.81						3.81					
12.88						12.88					
6.50						7.25					
14.88						14.88					
10.38						10.38					

- 1) For piston rod Ø
  - 2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.
- The bearing retainer plate is the same as the “E” dimension for bore sizes 1-1/2” – 6” and the “XN” dimension for 8” – 14” bore sizes.

MP1 and MP2 mounts include pivot pin. MP3, MP4, and MU3 mounts do not include pivot pin.

## Dimensions

### Detachable Clevis (MP2 mount)



S = stroke

\* Cap

### Dimensions not affected by rod diameter

Ø	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch	8 inch
E	2.00	2.50	3.00	3.75	4.50	5.50	6.50	8.50
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00	2.00
J	1.00	1.00	1.00	1.25	1.25	1.25	1.50	1.50

Ø	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch	8 inch
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44	0.56
L	0.75	0.75	0.75	1.25	1.25	1.25	1.50	1.50
M	0.50	0.50	0.50	0.75	0.75	0.75	1	1
P	2.25	2.25	2.38	2.63	2.63	2.88	3.13	3.25
EW/CB	0.75	0.75	0.75	1.25	1.25	1.25	1.50	1.50
CD	0.50	0.50	0.50	0.75	0.75	0.75	1	1
CW	0.50	0.50	0.50	0.63	0.63	0.63	0.75	0.75
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75	0.75
LB	4.00	4.00	4.13	4.88	4.88	5.13	5.75	5.13
LR	0.59	0.59	0.59	0.88	0.88	0.88	1.19	1.19
MR	0.69	0.69	0.69	1	1	1	1.38	1.38

Dimensions affected by rod diameter

Ø	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.50	0.25	0.50	0.63	0.25	0.50	0.63
W	0.63	1	0.63	1	1.25	0.63	1	1.25
WF	-	-	-	-	-	-	-	-
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
XC	5.38	5.75	5.38	5.75	6.00	5.50	5.88	6.13
XD	5.75	6.13	5.75	6.13	6.38	5.88	6.25	6.50
XH	5.50	5.88	5.50	5.88	6.13	5.63	6.00	6.25
XN	-	-	-	-	-	-	-	-
ZC	5.88	6.25	5.88	6.25	6.50	6.00	6.38	6.63
ZD	6.25	6.63	6.25	6.63	6.88	6.38	6.75	7.00
ZH	6.25	6.63	6.25	6.63	6.88	6.38	6.75	7.00
ZJ	4.63	5.00	4.63	5.00	5.25	4.75	5.13	5.38

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.50	0.50	0.25	0.38	0.50	0.50	0.63
1.50	0.75	1.00	1.25	1.38	0.75	1.00	1.25	1.38	1.63
-	-	-	-	-	-	-	-	-	-
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
6.38	6.88	7.13	7.38	7.50	6.88	7.13	7.38	7.50	7.75
6.75	7.50	7.75	8.00	8.13	7.50	7.75	8.00	8.13	8.38
6.50	6.88	7.13	7.38	7.50	6.88	7.13	7.38	7.50	7.15
-	-	-	-	-	-	-	-	-	-
6.88	7.63	7.88	8.13	8.25	7.63	7.88	8.13	8.25	8.50
7.25	8.25	8.50	8.75	8.88	8.25	8.50	8.75	8.88	9.13
7.25	8.13	8.38	8.63	8.75	8.13	8.38	8.63	8.75	9.00
5.63	5.63	5.88	6.13	6.25	5.63	5.88	6.13	6.25	6.50

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	1.375	1.75	2	2.5	3
0.25	0.38	0.50	0.50	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5
0.75	1.00	1.25	1.38	1.63	1.63	1.63	0.88	1.13	1.25	1.50	1.50
-	-	-	-	-	-	-	-	-	-	-	-

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
7.13	7.38	7.63	7.75	8.00	8.00	8.00	8.13	8.38	8.50	8.75	8.75
7.75	8.00	8.25	8.38	8.63	8.63	8.63	8.88	9.13	9.25	9.50	9.50
7.13	7.38	7.63	7.75	8.00	8.00	8.00	8.25	8.50	8.63	8.88	8.88
-	-	-	-	-	-	-	-	-	-	-	-
7.88	8.13	8.38	8.50	8.75	8.75	8.75	9.13	9.38	9.50	9.75	9.75
8.50	8.75	9.00	9.13	9.38	9.38	9.38	9.88	10.13	10.25	10.50	10.50
8.38	8.63	8.88	9.00	9.25	9.25	9.25	9.75	10.00	10.13	10.38	10.38
5.88	6.13	6.83	6.50	6.75	6.75	6.75	6.63	6.88	7.00	7.25	7.25

6 inch	6 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch
3.5	4	1.375	1.75	2	2.5	3	3.5	4	4.5	5	5.5
0.5	0.5	0.25	0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1.50	1.50	-	-	-	-	-	-	-	-	-	-
-	-	1.63	1.88	2	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.44	3.44	2.81	3.06	3.19	3.44	3.44	3.44	3.44	3.44	3.44	3.44
8.75	8.75	8.25	8.50	8.63	8.88	8.88	8.88	8.88	8.88	8.88	8.88
9.50	9.50	9.25	9.50	9.63	9.88	9.88	9.88	9.88	9.88	9.88	9.88
8.88	8.88	-	-	-	-	-	-	-	-	-	-
-	-	4	4	4	4	5.50	5.50	5.50	6.5	6.5	7.25
9.75	9.75	9.25	9.50	9.63	9.88	9.88	9.88	9.88	9.88	9.88	9.88
10.50	10.50	10.25	10.50	10.63	10.88	10.88	10.88	10.88	10.88	10.88	10.88
10.38	10.38	-	-	-	-	-	-	-	-	-	-
7.25	7.25	6.75	7.00	7.13	7.38	7.38	7.38	7.38	7.38	7.38	7.38

1) For piston rod Ø

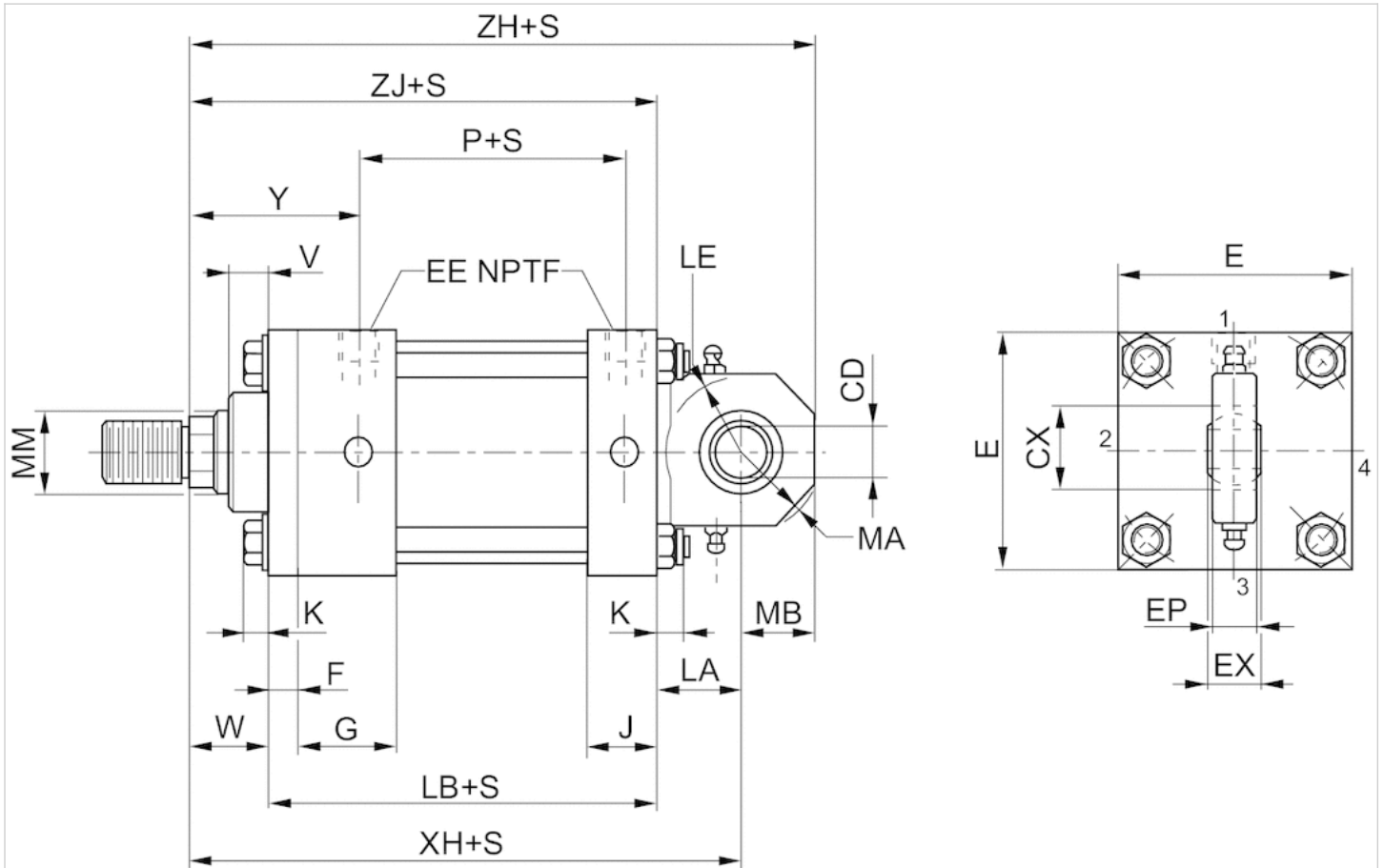
2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

The bearing retainer plate is the same as the “E” dimension for bore sizes 1-1/2” – 6” and the “XN” dimension for 8” – 14” bore sizes.

MP1 and MP2 mounts include pivot pin. MP3, MP4, and MU3 mounts do not include pivot pin.

## Dimensions

### Universal Clevis (MU3 mount)



S = stroke

### Dimensions not affected by rod diameter

∅	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch
E	2.00	2.50	3.00	3.75	4.50	5.50	6.50
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00
J	1.00	1.00	1.00	1.25	1.25	1.25	1.50
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44
P	2.25	2.25	2.38	2.63	2.63	2.88	3.13
CD	0.50	0.50	0.50	0.75	0.75	0.75	1
CX	0.87	0.87	0.87	1.25	1.25	1.25	1.63
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75
EX	0.437	0.437	0.437	0.656	0.656	0.656	0.875
EP	0.38	0.38	0.38	0.56	0.56	0.56	0.75
LA	0.88	0.88	0.88	1.25	1.25	1.25	1.63
LB	4.00	4.00	4.13	4.88	4.88	5.13	5.75
LE	0.63	0.63	0.63	0.94	0.94	0.94	1.13
MA	0.88	0.88	0.88	1.38	1.38	1.38	1.63
MB	0.75	0.75	0.75	1.25	1.25	1.25	1.50

Dimensions affected by rod diameter

Ø	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.50	0.25	0.50	0.63	0.25	0.50	0.63
W	0.63	1	0.63	1	1.25	0.63	1	1.25
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
XH	5.50	5.88	5.50	5.88	6.13	5.63	6.00	6.25
ZH	6.25	6.63	6.25	6.63	6.88	6.38	6.75	7.00
ZJ	4.63	5.00	4.63	5.00	5.25	4.75	5.13	5.38

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.50	0.50	0.25	0.38	0.50	0.50	0.63
1.50	0.75	1.00	1.25	1.38	0.75	1.00	1.25	1.38	1.63
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
6.50	6.88	7.13	7.38	7.50	6.88	7.13	7.38	7.50	7.15
7.25	8.13	8.38	8.63	8.75	8.13	8.38	8.63	8.75	9.00
5.63	5.63	5.88	6.13	6.25	5.63	5.88	6.13	6.25	6.50

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	1.375	1.75	2	2.5	3
0.25	0.38	0.50	0.50	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5
0.75	1.00	1.25	1.38	1.63	1.63	1.63	0.88	1.13	1.25	1.50	1.50
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
7.13	7.38	7.63	7.75	8.00	8.00	8.00	8.25	8.50	8.63	8.88	8.88
8.38	8.63	8.88	9.00	9.25	9.25	9.25	9.75	10.00	10.13	10.38	10.38
5.88	6.13	6.83	6.50	6.75	6.75	6.75	6.63	6.88	7.00	7.25	7.25

6 inch	6 inch
3.5	4
0.5	0.5
1.50	1.50
3.44	3.44
8.88	8.88
10.38	10.38
7.25	7.25

1) For piston rod Ø

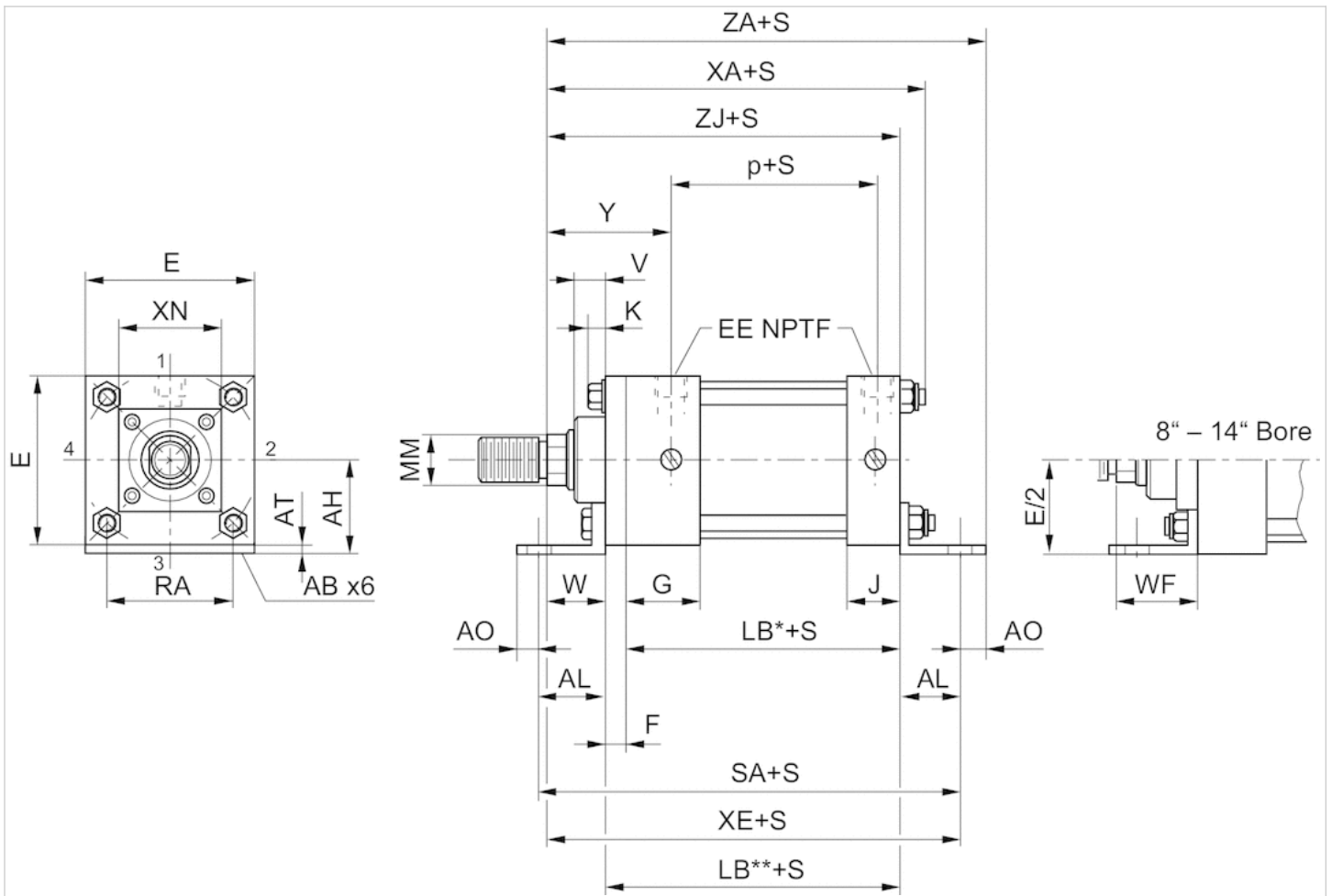
2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

The bearing retainer plate is the same as the “E” dimension for bore sizes 1-1/2” – 6” and the “XN” dimension for 8” – 14” bore sizes.

MP1 and MP2 mounts include pivot pin. MP3, MP4, and MU3 mounts do not include pivot pin.

## Dimensions

### Side End Angles (M51 mount)



S = stroke

### Dimensions not affected by rod diameter

Ø	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch	8 inch	10 inch	12 inch
E	2.00	2.50	3.00	3.75	4.50	5.50	6.50	8.50	10.63	12.75
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75	0.75	0.75	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00	2.00	2.25	2.25
J	1.00	1.00	1.00	1.25	1.25	1.25	1.50	1.50	2.00	2.00
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44	0.56	0.66	0.66
P	2.25	2.25	2.38	2.63	2.63	2.88	3.13	3.25	4.13	4.63
AB	0.38	0.38	0.38	0.50	0.50	0.63	0.75	0.75	1.00	1.00
AH	1.19	1.44	1.63	1.94	2.25	2.75	3.25	4.25	5.31	6.38
AL	1.00	1.00	1.00	1.25	1.25	1.38	1.38	1.81	2.13	2.13
AO	0.38	0.38	0.38	0.50	0.50	0.63	0.63	0.69	0.88	0.88
AT	0.13	0.13	0.13	0.13	0.13	0.19	0.19	0.25	0.25	0.38
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75	0.75	1.00	1.00
LB	4.00	4.00	4.13	4.88	4.88	5.13	5.75	5.13	6.38	6.88
RA	1.25	1.75	2.25	2.75	3.50	4.25	5.25	7.13	8.88	11.00
SA	6.00	6.00	6.13	7.38	7.38	7.88	8.50	8.75	10.63	11.13

14 inch
14.75
0.75
2.75
2.25
0.78
5.50
1.25
7.38
2.44
1.06
0.38
1.25
8.13
12.63
13.00

Dimensions affected by rod diameter

Ø	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.50	0.25	0.50	0.63	0.25	0.50	0.63
W	0.63	1	0.63	1	1.25	0.63	1	1.25
WF	-	-	-	-	-	-	-	-
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
XA	5.63	6.00	5.63	6.00	6.25	5.75	6.13	6.38
XE	5.38	5.75	5.56	5.94	6.19	5.81	6.19	6.44
XN	-	-	-	-	-	-	-	-
ZA	6.00	6.38	6.00	6.38	6.63	6.13	6.50	6.75
ZB	4.85	5.22	4.90	5.27	5.52	5.02	5.40	5.65
ZE	5.63	6.00	5.88	6.25	6.50	6.13	6.50	6.75
ZJ	4.63	5.00	4.63	5.00	5.25	4.75	5.13	5.38

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.50	0.50	0.25	0.38	0.50	0.50	0.63
1.50	0.75	1.00	1.25	1.38	0.75	1.00	1.25	1.38	1.63
-	-	-	-	-	-	-	-	-	-
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
6.63	6.88	7.13	7.38	7.50	6.88	7.13	7.38	7.50	7.75
6.69	6.50	6.75	7.00	7.13	6.63	6.88	7.13	7.25	7.50
-	-	-	-	-	-	-	-	-	-
7.00	7.38	7.63	7.88	8.00	7.38	7.63	7.88	8.00	8.25
5.90	5.98	6.23	6.48	6.61	5.98	6.23	6.48	6.61	6.86
7.00	6.88	7.13	7.38	7.50	7.00	7.25	7.50	7.63	7.88
5.63	5.63	5.88	6.13	6.25	5.63	5.88	6.13	6.25	6.50

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	1.375	1.75	2	2.5	3
0.25	0.38	0.50	0.50	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5



5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
0.75	1.00	1.25	1.38	1.63	1.63	1.63	0.88	1.13	1.25	1.50	1.50
-	-	-	-	-	-	-	-	-	-	-	-
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
7.25	7.50	7.75	7.88	8.13	8.13	8.13	8.00	8.25	8.38	8.63	8.63
6.94	7.19	7.44	7.56	7.81	7.81	7.81	7.63	7.88	8.00	8.25	8.25
-	-	-	-	-	-	-	-	-	-	-	-
7.88	8.13	8.38	8.50	8.75	8.75	8.75	8.63	8.88	9.00	9.25	9.25
6.32	6.57	6.82	6.94	7.19	7.19	7.19	7.07	7.32	7.44	7.69	7.69
7.44	7.69	7.94	8.06	8.31	8.31	8.31	8.13	8.38	8.50	8.75	8.75
5.88	6.13	6.83	6.50	6.75	6.75	6.75	6.63	6.88	7.00	7.25	7.25

6 inch	6 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch
3.5	4	1.375	1.75	2	2.5	3	3.5	4	4.5	5	5.5
0.5	0.5	0.25	0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1.50	1.50	-	-	-	-	-	-	-	-	-	-
-	-	1.63	1.88	2	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.44	3.44	2.81	3.06	3.19	3.44	3.44	3.44	3.44	3.44	3.44	3.44
8.63	8.63	8.56	8.81	8.94	9.19	9.19	9.19	9.19	9.19	9.19	9.19
8.25	8.25	7.88	8.13	8.25	9.25	9.25	9.25	9.25	9.25	9.25	9.25
-	-	4	4	4	4	5.50	5.50	5.50	6.5	6.5	7.25
9.25	9.25	9.25	9.50	9.63	9.88	9.88	9.88	9.88	9.88	9.88	9.88
7.69	7.69	7.31	7.56	7.69	7.94	7.94	7.94	7.94	7.94	7.94	7.94
8.75	8.75	8.50	8.75	8.88	9.88	9.88	9.88	9.88	9.88	9.88	9.88
7.25	7.25	6.75	7.00	7.13	7.38	7.38	7.38	7.38	7.38	7.38	7.38

10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	12 inch	12 inch
1.75	2	2.5	3	3.5	4	4.5	5	5.5	5.5	2	2.5
0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.38	0.5
-	-	-	-	-	-	-	-	-	-	-	-
1.88	2	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2	2.25
3.13	3.25	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.25	3.50
10.38	10.50	10.75	10.75	10.75	10.75	10.75	10.75	10.75	10.75	11.00	11.25
9.56	9.69	9.94	9.94	9.94	9.94	9.94	9.94	9.94	9.94	10.19	10.44
4	4	4	5.50	5.50	5.50	6.50	6.50	7.25	7.25	4	4
11.25	11.38	11.63	11.63	11.63	11.63	11.63	11.63	11.63	11.63	11.88	12.13
8.91	9.03	9.28	9.28	9.28	9.28	9.28	9.28	9.28	9.28	9.53	9.78
10.19	10.31	10.56	10.56	10.56	10.56	10.56	10.56	10.56	10.56	10.81	11.06
8.25	8.38	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.88	9.13

12 inch	12 inch	12 inch	12 inch	12 inch	12 inch	14 inch	14 inch	14 inch	14 inch	14 inch	14 inch
3	3.5	4	4.5	5	5.5	2.5	3	3.5	4	4.5	4.5
0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
-	-	-	-	-	-	-	-	-	-	-	-
2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.50	3.50	3.50	3.50	3.50	3.50	3.81	3.81	3.81	3.81	3.81	3.81
11.25	11.25	11.25	11.25	11.25	11.25	12.81	12.81	12.81	12.81	12.81	12.81
10.44	10.44	10.44	10.44	10.44	10.44	11.88	11.88	11.88	11.88	11.88	11.88
5.50	5.50	5.50	6.50	6.50	7.25	4	5.50	5.50	5.50	5.50	5.50
12.13	12.13	12.13	12.13	12.13	12.13	13.88	13.88	13.88	13.88	13.88	13.88

12 inch	12 inch	12 inch	12 inch	12 inch	12 inch	14 inch	14 inch	14 inch	14 inch	14 inch
9.78	9.78	9.78	9.78	9.78	9.78	11.16	11.16	11.16	11.16	11.16
11.06	11.06	11.06	11.06	11.06	11.06	12.63	12.63	12.63	12.63	12.63
9.13	9.13	9.13	9.13	9.13	9.13	10.38	10.38	10.38	10.38	10.38

14 inch	14 inch
5	5.5
0.5	0.5
-	-
2.25	2.25
3.81	3.81
12.81	12.81
11.88	11.88
6.50	7.25
13.88	13.88
11.16	11.16
12.63	12.63
10.38	10.38

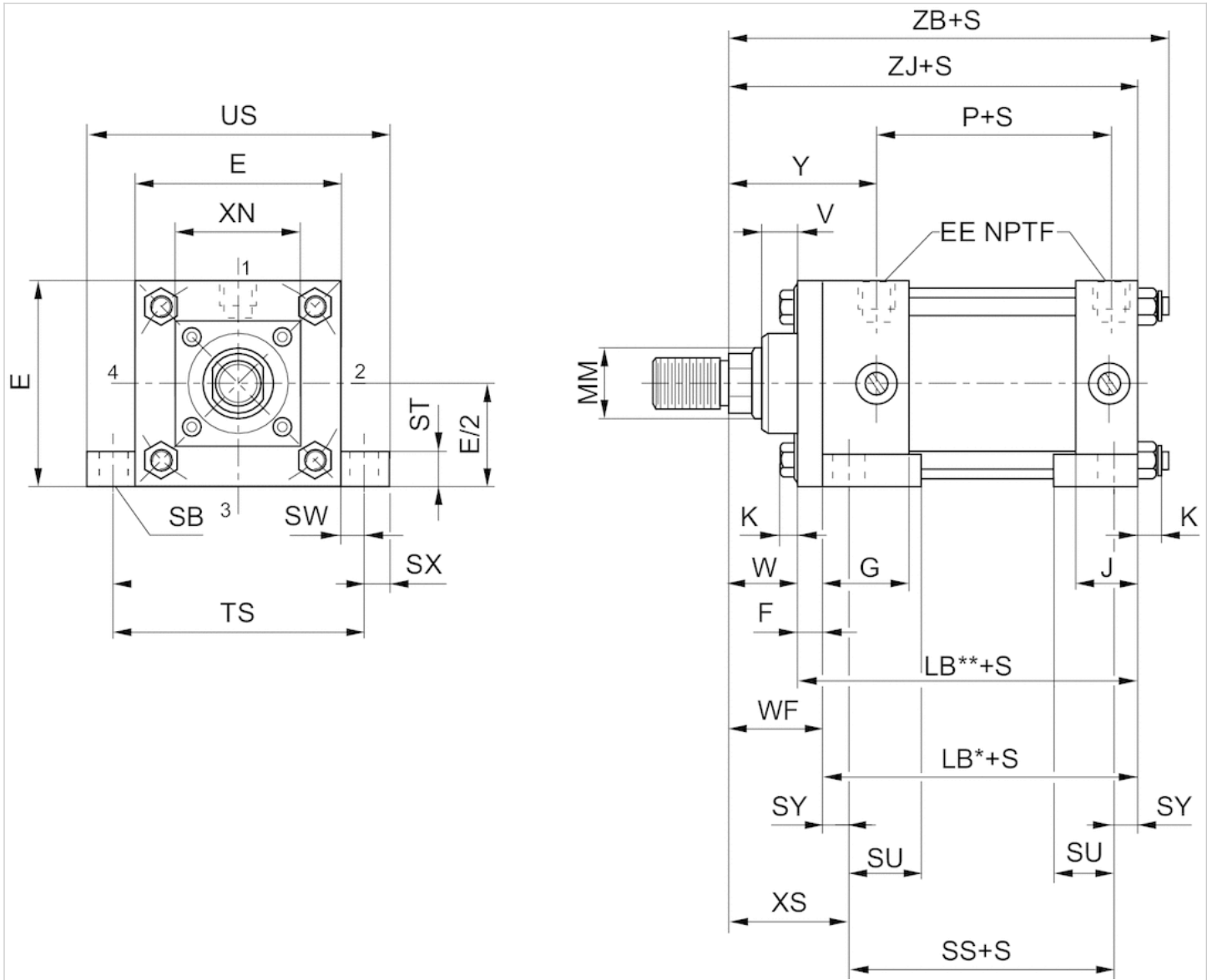
1) For piston rod Ø

2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

The bearing retainer plate is the same as the “E” dimension for bore sizes 1-1/2” – 6” and the “XN” dimension for 8” – 14” bore sizes.

## Dimensions

### Side Lugs (MS2 mount)



S = stroke

### Dimensions not affected by rod diameter

Ø	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch	8 inch	10 inch	12 inch
E	2.00	2.50	3.00	3.75	4.50	5.50	6.50	8.50	10.63	12.75
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75	0.75	0.75	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00	2.00	2.25	2.25
J	1.00	1.00	1.00	1.25	1.25	1.25	1.50	1.50	2.00	2.00
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44	0.56	0.66	0.66
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75	0.75	1.00	1.00
LB	4.00	4.00	4.13	4.88	4.88	5.13	5.75	5.13	6.38	6.88
SB	0.38	0.38	0.38	0.50	0.50	0.75	0.75	0.75	1.00	1.00
SS	2.88	2.88	3.00	3.25	3.25	3.13	3.63	3.75	4.63	5.13
ST	0.50	0.50	0.50	0.75	0.75	1.00	1.00	1.00	1.25	1.25

Ø	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch	8 inch	10 inch	12 inch
SU	0.94	0.94	0.94	1.25	1.25	1.56	1.56	1.56	2.00	2.00
SW	0.38	0.38	0.38	0.50	0.50	0.69	0.69	0.69	0.88	0.88
SX	0.38	0.38	0.38	0.50	0.50	0.69	0.69	0.69	0.88	0.88
SY	0.38	0.38	0.38	0.50	0.50	0.69	0.69	0.69	0.88	0.88
TS	2.75	3.25	3.75	4.75	5.50	6.88	7.88	9.88	12.38	14.50
US	3.50	4.00	4.50	5.75	6.50	8.25	9.25	11.25	14.13	16.25

14 inch	
14.75	
0.75	
2.75	
2.25	
0.78	
1.25	
8.13	
1.25	
5.88	
1.50	
2.50	
1.13	
1.13	
1.13	
17.00	
19.25	

Dimensions affected by rod diameter

Ø	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.50	0.25	0.50	0.63	0.25	0.50	0.63
W	0.63	1	0.63	1	1.25	0.63	1	1.25
WF	-	-	-	-	-	-	-	-
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
XN	-	-	-	-	-	-	-	-
XS	1.38	1.75	1.38	1.75	2.00	1.38	1.75	2.00
XT	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
ZB	4.85	5.22	4.90	5.27	5.52	5.02	5.40	5.65
ZJ	4.63	5.00	4.63	5.00	5.25	4.75	5.13	5.38

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.50	0.50	0.25	0.38	0.50	0.50	0.63
1.50	0.75	1.00	1.25	1.38	0.75	1.00	1.25	1.38	1.63
-	-	-	-	-	-	-	-	-	-
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
-	-	-	-	-	-	-	-	-	-
2.25	1.88	2.13	2.38	2.50	1.88	2.13	2.38	2.50	2.75
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
5.90	5.98	6.23	6.48	6.61	5.98	6.23	6.48	6.61	6.86

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
5.63	5.63	5.88	6.13	6.25	5.63	5.88	6.13	6.25	6.50

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	1.375	1.75	2	2.5	3
0.25	0.38	0.50	0.50	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5
0.75	1.00	1.25	1.38	1.63	1.63	1.63	0.88	1.13	1.25	1.50	1.50
-	-	-	-	-	-	-	-	-	-	-	-
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
-	-	-	-	-	-	-	-	-	-	-	-
2.06	2.31	2.56	2.69	2.94	2.94	2.94	2.31	2.56	2.69	2.94	2.94
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
6.32	6.57	6.82	6.94	7.19	7.19	7.19	7.07	7.32	7.44	7.69	7.69
5.88	6.13	6.83	6.50	6.75	6.75	6.75	6.63	6.88	7.00	7.25	7.25

6 inch	6 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch
3.5	4	1.375	1.75	2	2.5	3	3.5	4	4.5	5	5.5
0.5	0.5	0.25	0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1.50	1.50	-	-	-	-	-	-	-	-	-	-
-	-	1.63	1.88	2	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.44	3.44	2.81	3.06	3.19	3.44	3.44	3.44	3.44	3.44	3.44	3.44
-	-	4	4	4	4	5.50	5.50	5.50	6.5	6.5	7.25
2.94	2.94	2.31	2.56	2.69	2.94	2.94	2.94	2.94	2.94	2.94	2.94
3.44	3.44	2.81	3.06	3.19	3.44	3.44	3.44	3.44	3.44	3.44	3.44
7.69	7.69	7.31	7.56	7.69	7.94	7.94	7.94	7.94	7.94	7.94	7.94
7.25	7.25	6.75	7.00	7.13	7.38	7.38	7.38	7.38	7.38	7.38	7.38

10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	12 inch	12 inch
1.75	2	2.5	3	3.5	4	4.5	5	5.5	5.5	2	2.5
0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.38	0.5
-	-	-	-	-	-	-	-	-	-	-	-
1.88	2	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2	2.25
3.13	3.25	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.25	3.50
4	4	4	5.50	5.50	5.50	6.50	6.50	7.25	7.25	4	4
2.75	2.88	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13	2.88	3.13
3.13	3.25	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.25	3.50
8.91	9.03	9.28	9.28	9.28	9.28	9.28	9.28	9.28	9.28	9.53	9.78
8.25	8.38	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.88	9.13

12 inch	12 inch	12 inch	12 inch	12 inch	12 inch	14 inch	14 inch	14 inch	14 inch	14 inch	14 inch
3	3.5	4	4.5	5	5.5	2.5	3	3.5	4	4.5	4.5
0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
-	-	-	-	-	-	-	-	-	-	-	-
2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.50	3.50	3.50	3.50	3.50	3.50	3.81	3.81	3.81	3.81	3.81	3.81
5.50	5.50	5.50	6.50	6.50	7.25	4	5.50	5.50	5.50	5.50	5.50
3.13	3.13	3.13	3.13	3.13	3.13	3.38	3.38	3.38	3.38	3.38	3.38
3.50	3.50	3.50	3.50	3.50	3.50	3.81	3.81	3.81	3.81	3.81	3.81
9.78	9.78	9.78	9.78	9.78	9.78	11.16	11.16	11.16	11.16	11.16	11.16
9.13	9.13	9.13	9.13	9.13	9.13	10.38	10.38	10.38	10.38	10.38	10.38

14 inch	14 inch
5	5.5
0.5	0.5
-	-
2.25	2.25
3.81	3.81
6.50	7.25
3.38	3.38
3.81	3.81
11.16	11.16
10.38	10.38

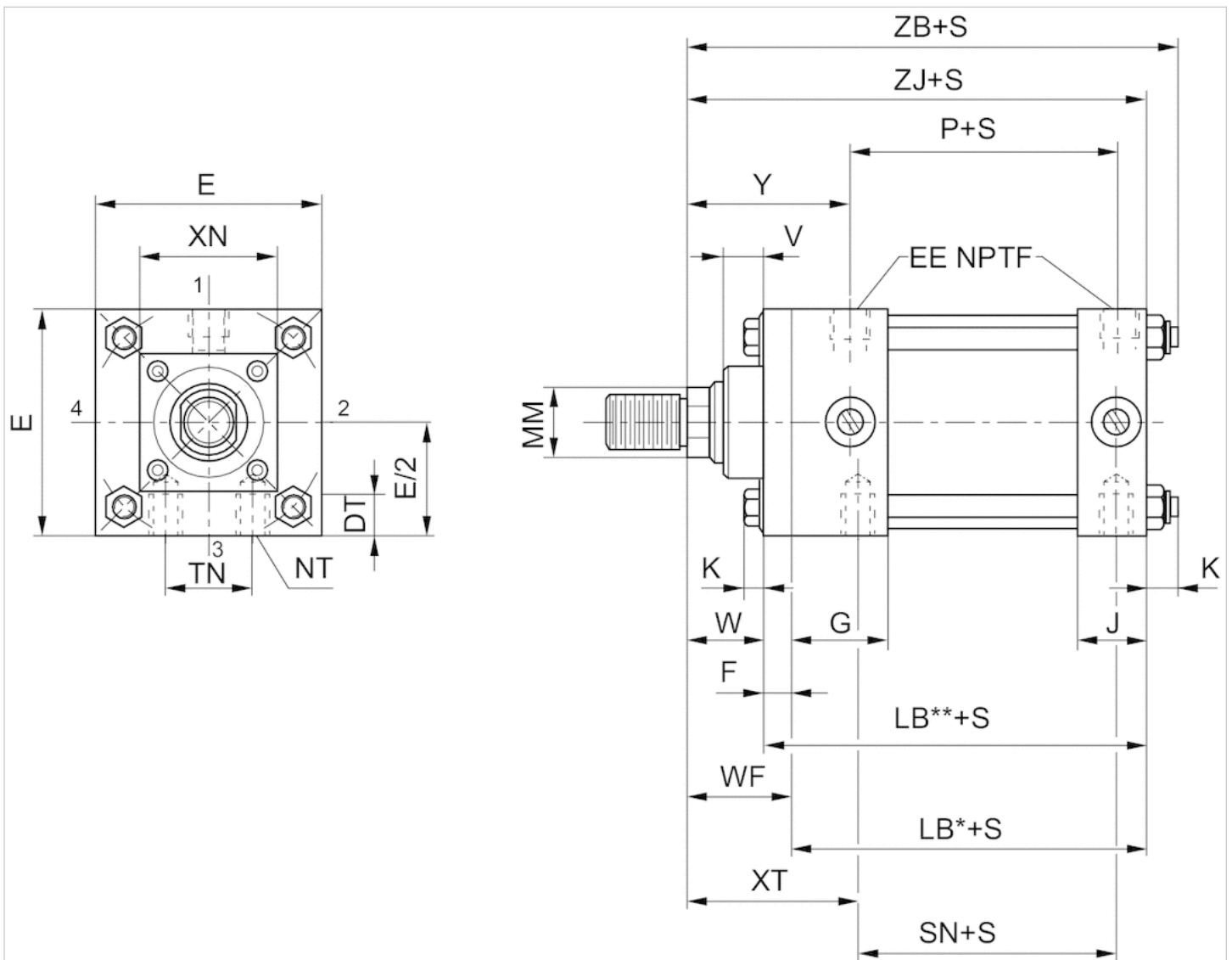
1) For piston rod  $\varnothing$

2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

The bearing retainer plate is the same as the “E” dimension for bore sizes 1-1/2” – 6” and the “XN” dimension for 8” – 14” bore sizes.

## Dimensions

### Side Tapped (MS4 mount)



Dimensions not affected by rod diameter

Ø	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch	8 inch	10 inch	12 inch
E	2.00	2.50	3.00	3.75	4.50	5.50	6.50	8.50	10.63	12.75
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75	0.75	0.75	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00	2.00	2.25	2.25
J	1.00	1.00	1.00	1.25	1.25	1.25	1.50	1.50	2.00	2.00
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44	0.56	0.66	0.66
P	2.25	2.25	2.38	2.63	2.63	2.88	3.13	3.25	4.13	4.63
DT	0.38	0.50	0.75	0.88	0.88	1.25	1.50	1.50	2.00	2.00
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75	0.75	1.00	1.00
LB	4.00	4.00	4.13	4.88	4.88	5.13	5.75	5.13	6.38	6.88
NT	0.25	0.31	0.38	0.50	0.50	0.63	0.75	0.75	1.00	1.00
SN	2.25	2.25	2.38	2.63	2.63	2.88	3.06	3.25	4.13	4.63
TN	0.63	0.88	1.25	1.50	2.06	2.69	3.25	4.50	5.50	7.25

14 inch	
	14.75
	0.75
	2.75
	2.25
	0.78
	5.50
	2.50
	1.25
	8.13
	1.25
	5.50
	8.38

Dimensions affected by rod diameter

Ø	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.50	0.25	0.50	0.63	0.25	0.50	0.63
W	0.63	1	0.63	1	1.25	0.63	1	1.25
WF	-	-	-	-	-	-	-	-
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
XN	-	-	-	-	-	-	-	-
XS	1.38	1.75	1.38	1.75	2.00	1.38	1.75	2.00
XT	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
ZB	4.85	5.22	4.90	5.27	5.52	5.02	5.40	5.65
ZJ	4.63	5.00	4.63	5.00	5.25	4.75	5.13	5.38

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.50	0.50	0.25	0.38	0.50	0.50	0.63
1.50	0.75	1.00	1.25	1.38	0.75	1.00	1.25	1.38	1.63
-	-	-	-	-	-	-	-	-	-
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
-	-	-	-	-	-	-	-	-	-
2.25	1.88	2.13	2.38	2.50	1.88	2.13	2.38	2.50	2.75
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
5.90	5.98	6.23	6.48	6.61	5.98	6.23	6.48	6.61	6.86
5.63	5.63	5.88	6.13	6.25	5.63	5.88	6.13	6.25	6.50

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	1.375	1.75	2	2.5	3
0.25	0.38	0.50	0.50	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5
0.75	1.00	1.25	1.38	1.63	1.63	1.63	0.88	1.13	1.25	1.50	1.50
-	-	-	-	-	-	-	-	-	-	-	-
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
-	-	-	-	-	-	-	-	-	-	-	-
2.06	2.31	2.56	2.69	2.94	2.94	2.94	2.31	2.56	2.69	2.94	2.94
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
6.32	6.57	6.82	6.94	7.19	7.19	7.19	7.07	7.32	7.44	7.69	7.69
5.88	6.13	6.83	6.50	6.75	6.75	6.75	6.63	6.88	7.00	7.25	7.25

6 inch	6 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch
3.5	4	1.375	1.75	2	2.5	3	3.5	4	4.5	5	5.5
0.5	0.5	0.25	0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1.50	1.50	-	-	-	-	-	-	-	-	-	-
-	-	1.63	1.88	2	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.44	3.44	2.81	3.06	3.19	3.44	3.44	3.44	3.44	3.44	3.44	3.44
-	-	4	4	4	4	5.50	5.50	5.50	6.5	6.5	7.25
2.94	2.94	2.31	2.56	2.69	2.94	2.94	2.94	2.94	2.94	2.94	2.94
3.44	3.44	2.81	3.06	3.19	3.44	3.44	3.44	3.44	3.44	3.44	3.44
7.69	7.69	7.31	7.56	7.69	7.94	7.94	7.94	7.94	7.94	7.94	7.94
7.25	7.25	6.75	7.00	7.13	7.38	7.38	7.38	7.38	7.38	7.38	7.38



10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	12 inch	12 inch
1.75	2	2.5	3	3.5	4	4.5	5	5.5	2	2.5
0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.38	0.5
-	-	-	-	-	-	-	-	-	-	-
1.88	2	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2	2.25
3.13	3.25	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.25	3.50
4	4	4	5.50	5.50	5.50	6.50	6.50	7.25	4	4
2.75	2.88	3.13	3.13	3.13	3.13	3.13	3.13	3.13	2.88	3.13
3.13	3.25	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.25	3.50
8.91	9.03	9.28	9.28	9.28	9.28	9.28	9.28	9.28	9.53	9.78
8.25	8.38	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.88	9.13

12 inch	12 inch	12 inch	12 inch	12 inch	12 inch	14 inch	14 inch	14 inch	14 inch	14 inch
3	3.5	4	4.5	5	5.5	2.5	3	3.5	4	4.5
0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
-	-	-	-	-	-	-	-	-	-	-
2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.50	3.50	3.50	3.50	3.50	3.50	3.81	3.81	3.81	3.81	3.81
5.50	5.50	5.50	6.50	6.50	7.25	4	5.50	5.50	5.50	5.50
3.13	3.13	3.13	3.13	3.13	3.13	3.38	3.38	3.38	3.38	3.38
3.50	3.50	3.50	3.50	3.50	3.50	3.81	3.81	3.81	3.81	3.81
9.78	9.78	9.78	9.78	9.78	9.78	11.16	11.16	11.16	11.16	11.16
9.13	9.13	9.13	9.13	9.13	9.13	10.38	10.38	10.38	10.38	10.38

14 inch	14 inch
5	5.5
0.5	0.5
-	-
2.25	2.25
3.81	3.81
6.50	7.25
3.38	3.38
3.81	3.81
11.16	11.16
10.38	10.38

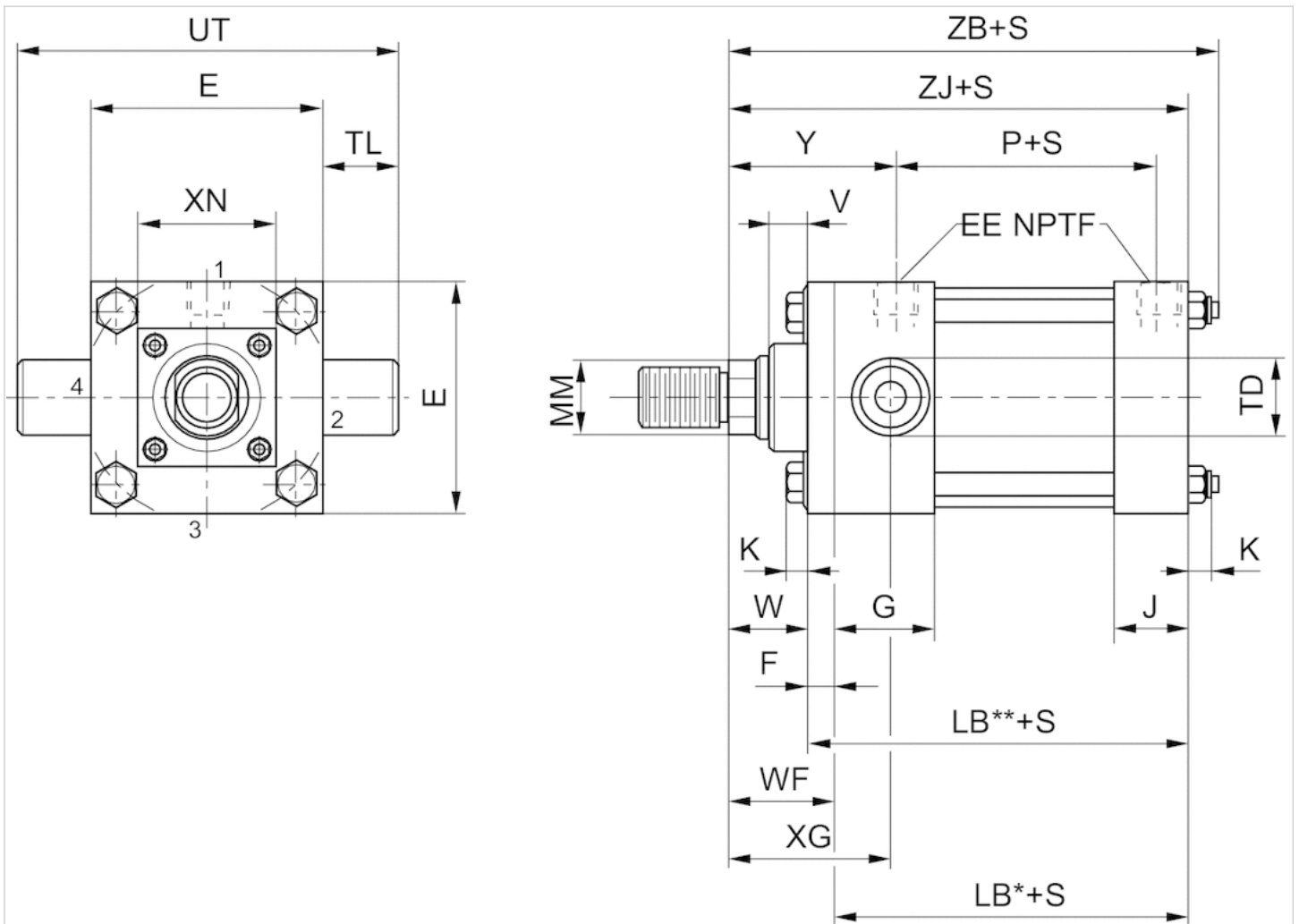
1) For piston rod Ø

2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

The bearing retainer plate is the same as the “E” dimension for bore sizes 1-1/2” – 6” and the “XN” dimension for 8” – 14” bore sizes.

## Dimensions

### Head Trunnion (MT1 mount)



S = stroke

### Dimensions not affected by rod diameter

Ø	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch	8 inch	10 inch	12 inch
E	2.00	2.50	3.00	3.75	4.50	5.50	6.50	8.50	10.63	12.75
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75	0.75	0.75	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00	2.00	2.25	2.25
J	1.00	1.00	1.00	1.25	1.25	1.25	1.50	1.50	2.00	2.00
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44	0.56	0.66	0.66
P	2.25	2.25	2.38	2.63	2.63	2.88	3.13	3.25	4.13	4.63
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75	0.75	1.00	1.00
LB	4.00	4.00	4.13	4.88	4.88	5.13	5.75	5.13	6.38	6.88
TD	1.00	1.00	1.00	1.00	1.00	1.00	1.375	1.375	1.75	1.75
TL	1.00	1.00	1.00	1.00	1.00	1.00	1.38	1.38	1.75	1.75
UT	4.00	4.50	5.00	5.75	6.50	7.50	9.25	11.25	14.13	16.25

14 inch

14.75

14 inch	
0.75	
2.75	
2.25	
0.78	
5.50	
1.25	
8.13	
2.00	
2.00	
18.75	

Dimensions affected by rod diameter

Ø	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.50	0.25	0.50	0.63	0.25	0.50	0.63
W	0.63	1	0.63	1	1.25	0.63	1	1.25
WF	-	-	-	-	-	-	-	-
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
XG	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
ZB	4.85	5.22	4.90	5.27	5.52	5.02	5.40	5.65
XI 1)	3.13	3.50	3.25	3.63	3.88	3.25	3.63	3.88
XJ	4.19	4.56	4.19	4.56	4.81	4.31	4.69	4.94
XN	-	-	-	-	-	-	-	-
ZJ	4.63	5.00	4.63	5.00	5.25	4.75	5.13	5.38

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.50	0.50	0.25	0.38	0.50	0.50	0.63
1.50	0.75	1.00	1.25	1.38	0.75	1.00	1.25	1.38	1.63
-	-	-	-	-	-	-	-	-	-
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
5.90	5.98	6.23	6.48	6.61	5.98	6.23	6.48	6.61	6.86
4.13	4.13	4.38	4.63	4.75	4.13	4.38	4.63	4.75	5.00
5.19	5.06	5.31	5.56	5.69	5.06	5.31	5.56	5.69	5.94
-	-	-	-	-	-	-	-	-	-
5.63	5.63	5.88	6.13	6.25	5.63	5.88	6.13	6.25	6.50

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	1.375	1.75	2	2.5	3
0.25	0.38	0.50	0.50	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5
0.75	1.00	1.25	1.38	1.63	1.63	1.63	0.88	1.13	1.25	1.50	1.50
-	-	-	-	-	-	-	-	-	-	-	-
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
6.32	6.57	6.82	6.94	7.19	7.19	7.19	7.07	7.32	7.44	7.69	7.69
4.13	4.38	4.63	4.75	5.00	5.00	5.00	4.88	5.13	5.25	5.50	5.50
5.31	5.56	5.81	5.94	6.19	6.19	6.19	5.94	6.19	6.31	6.56	6.56

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
-	-	-	-	-	-	-	-	-	-	-	-
5.88	6.13	6.38	6.50	6.75	6.75	6.75	6.63	6.88	7.00	7.25	7.25

6 inch	6 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch
3.5	4	1.375	1.75	2	2.5	3	3.5	4	4.5	5	5.5
0.5	0.5	0.25	0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1.50	1.50	-	-	-	-	-	-	-	-	-	-
-	-	1.63	1.88	2	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.44	3.44	2.81	3.06	3.19	3.44	3.44	3.44	3.44	3.44	3.44	3.44
3.44	3.44	2.81	3.06	3.19	3.44	3.44	3.44	3.44	3.44	3.44	3.44
7.69	7.69	7.31	7.56	7.69	7.94	7.94	7.94	7.94	7.94	7.94	7.94
5.50	5.50	4.88	5.13	5.25	5.50	5.50	5.50	5.50	5.50	5.50	5.50
6.56	6.56	6.06	6.44	6.56	6.69	6.69	6.69	6.69	6.69	6.69	6.69
-	-	4	4	4	4	5.50	5.50	5.50	6.5	6.5	7.25
7.25	7.25	6.75	7.00	7.13	7.38	7.38	7.38	7.38	7.38	7.38	7.38

10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	12 inch	12 inch
1.75	2	2.5	3	3.5	4	4.5	5	5.5	5.5	2	2.5
0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.38	0.5
-	-	-	-	-	-	-	-	-	-	-	-
1.88	2	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2	2.25
3.13	3.25	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.25	3.50
3.13	3.25	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.25	3.50
8.91	9.03	9.28	9.28	9.28	9.28	9.28	9.28	9.28	9.28	9.53	9.78
5.63	5.75	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	5.75	6.00
7.25	7.38	7.63	7.63	7.63	7.63	7.63	7.63	7.63	7.63	7.88	8.13
4	4	4	5.50	5.50	5.50	6.50	6.50	7.25	7.25	4	4
8.25	8.38	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.88	9.13

12 inch	12 inch	12 inch	12 inch	12 inch	12 inch	14 inch	14 inch	14 inch	14 inch	14 inch	14 inch
3	3.5	4	4.5	5	5.5	2.5	3	3.5	4	4.5	4.5
0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
-	-	-	-	-	-	-	-	-	-	-	-
2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.50	3.50	3.50	3.50	3.50	3.50	3.81	3.81	3.81	3.81	3.81	3.81
3.50	3.50	3.50	3.50	3.50	3.50	3.81	3.81	3.81	3.81	3.81	3.81
9.78	9.78	9.78	9.78	9.78	9.78	11.16	11.16	11.16	11.16	11.16	11.16
6.00	6.00	6.00	6.00	6.00	6.00	6.75	6.75	6.75	6.75	6.75	6.75
8.13	8.13	8.13	8.13	8.13	8.13	9.31	9.31	9.31	9.31	9.31	9.31
5.50	5.50	5.50	6.50	6.50	7.25	4	5.50	5.50	5.50	5.50	5.50
9.13	9.13	9.13	9.13	9.13	9.13	10.38	10.38	10.38	10.38	10.38	10.38

14 inch						14 inch					
5						5.5					
0.5						0.5					
-						-					
2.25						2.25					
3.81						3.81					
3.81						3.81					

14 inch	14 inch
11.16	11.16
6.75	6.75
9.31	9.31
6.50	7.25
10.38	10.38

1) For piston rod  $\varnothing$

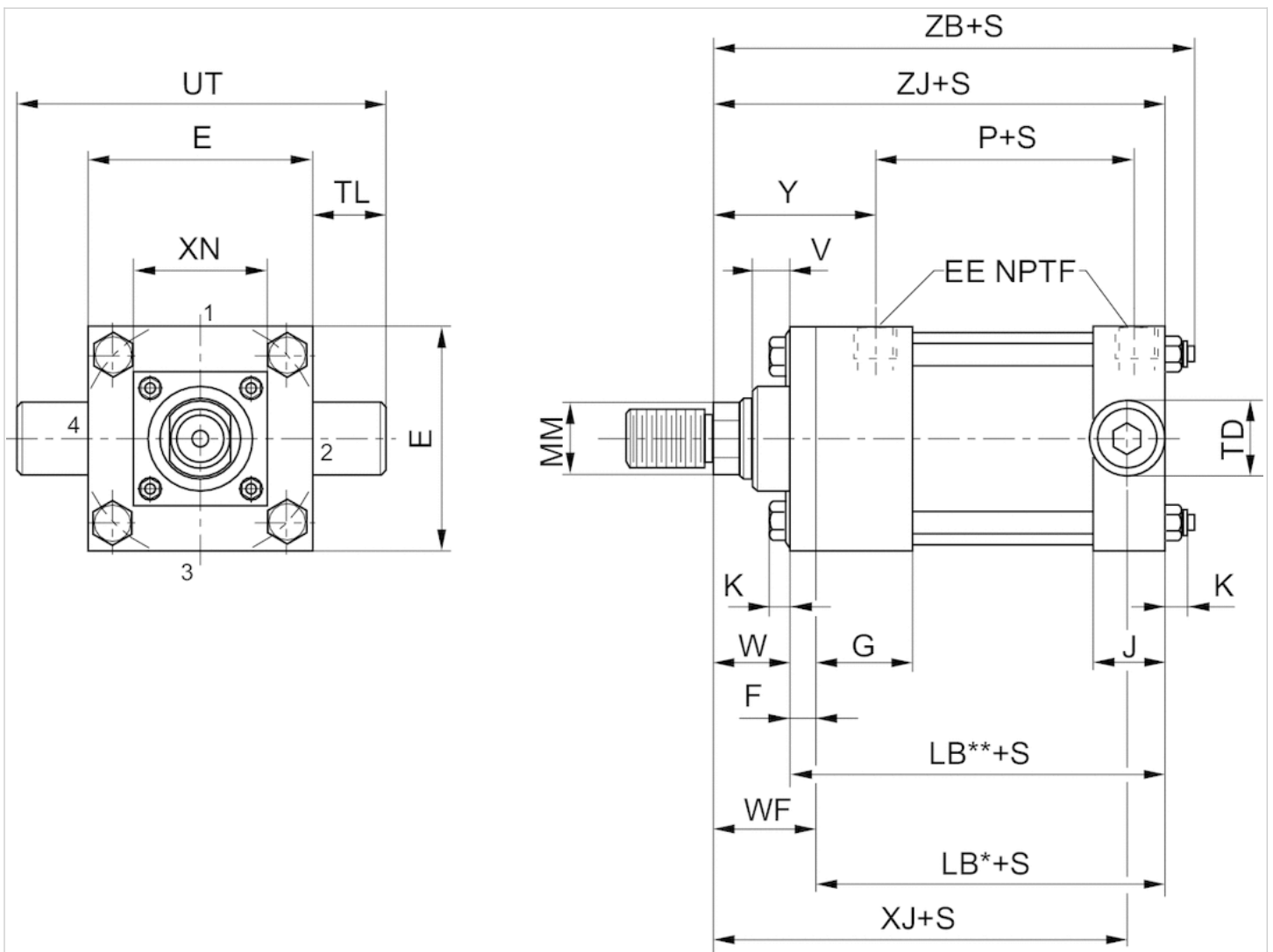
2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

The bearing retainer plate is the same as the “E” dimension for bore sizes 1-1/2” – 6” and the “XN” dimension for 8” – 14” bore sizes.

The “XG” and “XJ” dimensions for MT1 and MT2 mounting are not NFPA standard.

## Dimensions

### Cap Trunnion (MT2 mount)



S = stroke

Dimensions not affected by rod diameter

Ø	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch	8 inch	10 inch	12 inch
E	2.00	2.50	3.00	3.75	4.50	5.50	6.50	8.50	10.63	12.75
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75	0.75	0.75	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00	2.00	2.25	2.25
J	1.00	1.00	1.00	1.25	1.25	1.25	1.50	1.50	2.00	2.00
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44	0.56	0.66	0.66
P	2.25	2.25	2.38	2.63	2.63	2.88	3.13	3.25	4.13	4.63
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75	0.75	1.00	1.00
LB	4.00	4.00	4.13	4.88	4.88	5.13	5.75	5.13	6.38	6.88
TD	1.00	1.00	1.00	1.00	1.00	1.00	1.375	1.375	1.75	1.75
TL	1.00	1.00	1.00	1.00	1.00	1.00	1.38	1.38	1.75	1.75
UT	4.00	4.50	5.00	5.75	6.50	7.50	9.25	11.25	14.13	16.25

14 inch										
										14.75
										0.75
										2.75
										2.25
										0.78
										5.50
										1.25
										8.13
										2.00
										2.00
										18.75

Dimensions affected by rod diameter

Ø	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.50	0.25	0.50	0.63	0.25	0.50	0.63
W	0.63	1	0.63	1	1.25	0.63	1	1.25
WF	-	-	-	-	-	-	-	-
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
XG	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
ZB	4.85	5.22	4.90	5.27	5.52	5.02	5.40	5.65
XI 1)	3.13	3.50	3.25	3.63	3.88	3.25	3.63	3.88
XJ	4.19	4.56	4.19	4.56	4.81	4.31	4.69	4.94
XN	-	-	-	-	-	-	-	-
ZJ	4.63	5.00	4.63	5.00	5.25	4.75	5.13	5.38

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.50	0.50	0.25	0.38	0.50	0.50	0.63
1.50	0.75	1.00	1.25	1.38	0.75	1.00	1.25	1.38	1.63
-	-	-	-	-	-	-	-	-	-
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
5.90	5.98	6.23	6.48	6.61	5.98	6.23	6.48	6.61	6.86
4.13	4.13	4.38	4.63	4.75	4.13	4.38	4.63	4.75	5.00
5.19	5.06	5.31	5.56	5.69	5.06	5.31	5.56	5.69	5.94
-	-	-	-	-	-	-	-	-	-
5.63	5.63	5.88	6.13	6.25	5.63	5.88	6.13	6.25	6.50

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	1.375	1.75	2	2.5	3
0.25	0.38	0.50	0.50	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5
0.75	1.00	1.25	1.38	1.63	1.63	1.63	0.88	1.13	1.25	1.50	1.50
-	-	-	-	-	-	-	-	-	-	-	-
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
6.32	6.57	6.82	6.94	7.19	7.19	7.19	7.07	7.32	7.44	7.69	7.69
4.13	4.38	4.63	4.75	5.00	5.00	5.00	4.88	5.13	5.25	5.50	5.50
5.31	5.56	5.81	5.94	6.19	6.19	6.19	5.94	6.19	6.31	6.56	6.56
-	-	-	-	-	-	-	-	-	-	-	-
5.88	6.13	6.38	6.50	6.75	6.75	6.75	6.63	6.88	7.00	7.25	7.25

6 inch	6 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch
3.5	4	1.375	1.75	2	2.5	3	3.5	4	4.5	5	5.5
0.5	0.5	0.25	0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1.50	1.50	-	-	-	-	-	-	-	-	-	-
-	-	1.63	1.88	2	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.44	3.44	2.81	3.06	3.19	3.44	3.44	3.44	3.44	3.44	3.44	3.44
3.44	3.44	2.81	3.06	3.19	3.44	3.44	3.44	3.44	3.44	3.44	3.44
7.69	7.69	7.31	7.56	7.69	7.94	7.94	7.94	7.94	7.94	7.94	7.94
5.50	5.50	4.88	5.13	5.25	5.50	5.50	5.50	5.50	5.50	5.50	5.50
6.56	6.56	6.06	6.44	6.56	6.69	6.69	6.69	6.69	6.69	6.69	6.69
-	-	4	4	4	4	5.50	5.50	5.50	6.5	6.5	7.25
7.25	7.25	6.75	7.00	7.13	7.38	7.38	7.38	7.38	7.38	7.38	7.38

10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	12 inch	12 inch
1.75	2	2.5	3	3.5	4	4.5	5	5.5	5.5	2	2.5
0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.38	0.5
-	-	-	-	-	-	-	-	-	-	-	-
1.88	2	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2	2.25
3.13	3.25	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.25	3.50
3.13	3.25	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.25	3.50
8.91	9.03	9.28	9.28	9.28	9.28	9.28	9.28	9.28	9.28	9.53	9.78
5.63	5.75	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	5.75	6.00
7.25	7.38	7.63	7.63	7.63	7.63	7.63	7.63	7.63	7.63	7.88	8.13
4	4	4	5.50	5.50	5.50	6.50	6.50	6.50	7.25	4	4
8.25	8.38	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.88	9.13

12 inch	12 inch	12 inch	12 inch	12 inch	12 inch	14 inch	14 inch	14 inch	14 inch	14 inch	14 inch
3	3.5	4	4.5	5	5.5	2.5	3	3.5	4	4	4.5
0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5

12 inch	12 inch	12 inch	12 inch	12 inch	12 inch	14 inch	14 inch	14 inch	14 inch	14 inch
-	-	-	-	-	-	-	-	-	-	-
2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.50	3.50	3.50	3.50	3.50	3.50	3.81	3.81	3.81	3.81	3.81
3.50	3.50	3.50	3.50	3.50	3.50	3.81	3.81	3.81	3.81	3.81
9.78	9.78	9.78	9.78	9.78	9.78	11.16	11.16	11.16	11.16	11.16
6.00	6.00	6.00	6.00	6.00	6.00	6.75	6.75	6.75	6.75	6.75
8.13	8.13	8.13	8.13	8.13	8.13	9.31	9.31	9.31	9.31	9.31
5.50	5.50	5.50	6.50	6.50	7.25	4	5.50	5.50	5.50	5.50
9.13	9.13	9.13	9.13	9.13	9.13	10.38	10.38	10.38	10.38	10.38

14 inch	14 inch
5	5.5
0.5	0.5
-	-
2.25	2.25
3.81	3.81
3.81	3.81
11.16	11.16
6.75	6.75
9.31	9.31
6.50	7.25
10.38	10.38

1) For piston rod Ø

2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

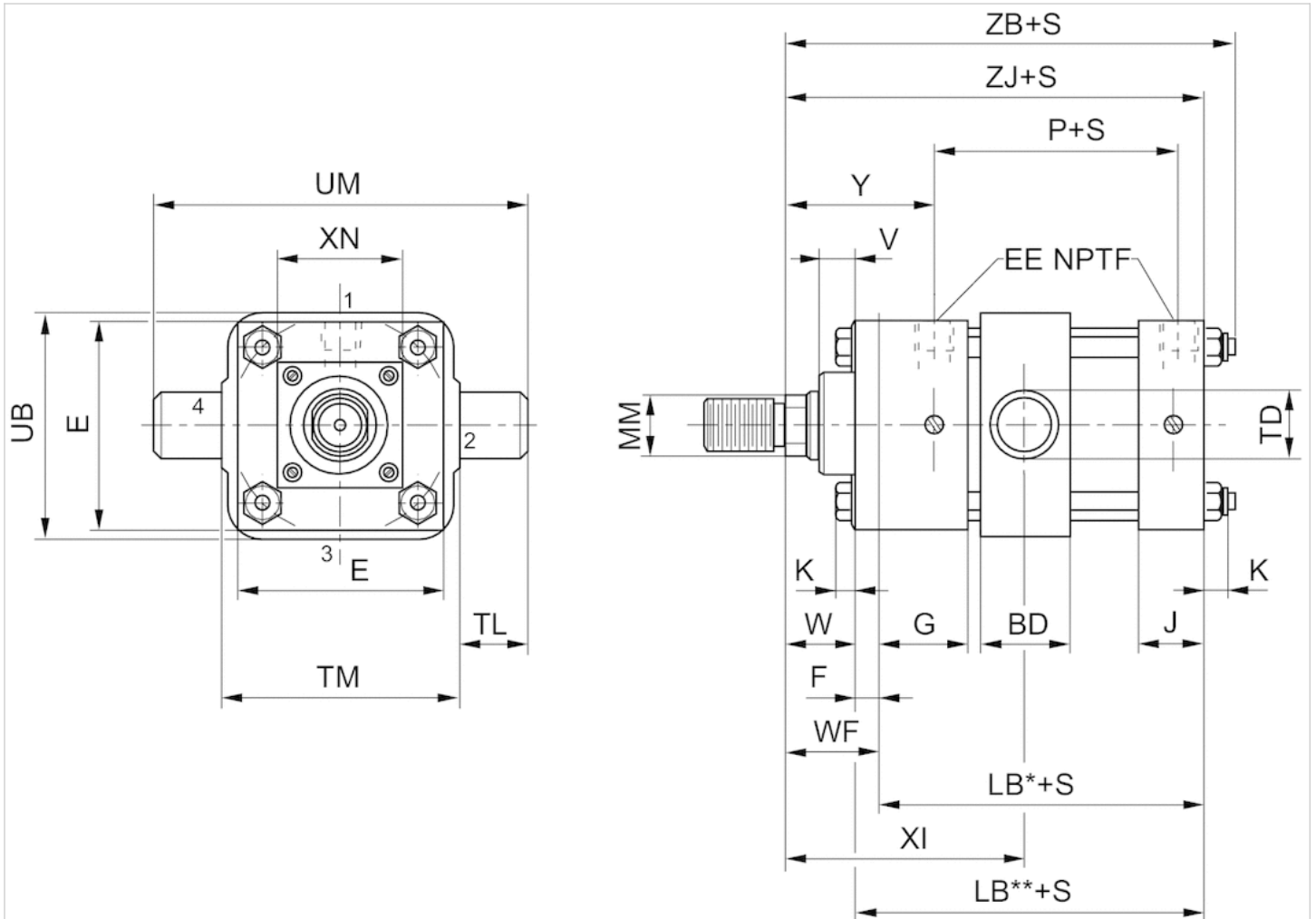
The bearing retainer plate is the same as the “E” dimension for bore sizes 1-1/2” – 6” and the “XN” dimension for 8” – 14” bore sizes.

The “XG” and “XJ” dimensions for MT1 and MT2 mounting are not NFPA standard.



## Dimensions

### Intermediate Fixed Trunnion (MT4 mount)



S = stroke

### Dimensions not affected by rod diameter

Ø	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch	8 inch	10 inch	12 inch
E	2.00	2.50	3.00	3.75	4.50	5.50	6.50	8.50	10.63	12.75
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75	0.75	0.75	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00	2.00	2.25	2.25
J	1.00	1.00	1.00	1.25	1.25	1.25	1.50	1.50	2.00	2.00
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44	0.56	0.66	0.66
P	2.25	2.25	2.38	2.63	2.63	2.88	3.13	3.25	4.13	4.63
BD	1.25	1.50	1.50	2.00	2.00	2.00	2.50	2.50	3.00	3.00
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75	0.75	1.00	1.00
LB	4.00	4.00	4.13	4.88	4.88	5.13	5.75	5.13	6.38	6.88
TD	1.00	1.00	1.00	1.00	1.00	1.00	1.375	1.375	1.75	1.75
TL	1.00	1.00	1.00	1.00	1.00	1.00	1.38	1.38	1.75	1.75
TM	2.50	3.00	3.50	4.50	5.25	6.25	7.63	9.75	12.00	14.00
UB	2.25	2.75	3.25	4.25	5.00	6.00	7.38	9.50	11.75	13.75
UM	4.50	5.00	5.50	6.50	7.25	8.25	10.38	12.50	15.50	17.50

14 inch
14.75
0.75
2.75
2.25
0.78
5.50
3.50
1.25
8.13
2.00
2.00
16.25
16.00
20.25

Dimensions affected by rod diameter

Ø	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.50	0.25	0.50	0.63	0.25	0.50	0.63
W	0.63	1	0.63	1	1.25	0.63	1	1.25
WF	-	-	-	-	-	-	-	-
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
ZB	4.85	5.22	4.90	5.27	5.52	5.02	5.40	5.65
XI 1)	3.13	3.50	3.25	3.63	3.88	3.25	3.63	3.88
XN	-	-	-	-	-	-	-	-
ZJ	4.63	5.00	4.63	5.00	5.25	4.75	5.13	5.38

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.50	0.50	0.25	0.38	0.50	0.50	0.63
1.50	0.75	1.00	1.25	1.38	0.75	1.00	1.25	1.38	1.63
-	-	-	-	-	-	-	-	-	-
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
5.90	5.98	6.23	6.48	6.61	5.98	6.23	6.48	6.61	6.86
4.13	4.13	4.38	4.63	4.75	4.13	4.38	4.63	4.75	5.00
-	-	-	-	-	-	-	-	-	-
5.63	5.63	5.88	6.13	6.25	5.63	5.88	6.13	6.25	6.50

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	1.375	1.75	2	2.5	3
0.25	0.38	0.50	0.50	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5
0.75	1.00	1.25	1.38	1.63	1.63	1.63	0.88	1.13	1.25	1.50	1.50
-	-	-	-	-	-	-	-	-	-	-	-
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
6.32	6.57	6.82	6.94	7.19	7.19	7.19	7.07	7.32	7.44	7.69	7.69
4.13	4.38	4.63	4.75	5.00	5.00	5.00	4.88	5.13	5.25	5.50	5.50
-	-	-	-	-	-	-	-	-	-	-	-
5.88	6.13	6.38	6.50	6.75	6.75	6.75	6.63	6.88	7.00	7.25	7.25

6 inch	6 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch
3.5	4	1.375	1.75	2	2.5	3	3.5	4	4.5	5	5.5
0.5	0.5	0.25	0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1.50	1.50	-	-	-	-	-	-	-	-	-	-
-	-	1.63	1.88	2	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.44	3.44	2.81	3.06	3.19	3.44	3.44	3.44	3.44	3.44	3.44	3.44
7.69	7.69	7.31	7.56	7.69	7.94	7.94	7.94	7.94	7.94	7.94	7.94
5.50	5.50	4.88	5.13	5.25	5.50	5.50	5.50	5.50	5.50	5.50	5.50
-	-	4	4	4	4	5.50	5.50	5.50	6.5	6.5	7.25
7.25	7.25	6.75	7.00	7.13	7.38	7.38	7.38	7.38	7.38	7.38	7.38

10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	12 inch	12 inch
1.75	2	2.5	3	3.5	4	4.5	5	5.5	5.5	2	2.5
0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.38	0.5
-	-	-	-	-	-	-	-	-	-	-	-
1.88	2	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2	2.25
3.13	3.25	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.25	3.50
8.91	9.03	9.28	9.28	9.28	9.28	9.28	9.28	9.28	9.28	9.53	9.78
5.63	5.75	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	5.75	6.00
4	4	4	5.50	5.50	5.50	6.50	6.50	7.25	7.25	4	4
8.25	8.38	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.88	9.13

12 inch	12 inch	12 inch	12 inch	12 inch	12 inch	14 inch	14 inch	14 inch	14 inch	14 inch
3	3.5	4	4.5	5	5.5	2.5	3	3.5	4	4.5
0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
-	-	-	-	-	-	-	-	-	-	-
2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.50	3.50	3.50	3.50	3.50	3.50	3.81	3.81	3.81	3.81	3.81
9.78	9.78	9.78	9.78	9.78	9.78	11.16	11.16	11.16	11.16	11.16
6.00	6.00	6.00	6.00	6.00	6.00	6.75	6.75	6.75	6.75	6.75
5.50	5.50	5.50	6.50	6.50	7.25	4	5.50	5.50	5.50	5.50
9.13	9.13	9.13	9.13	9.13	9.13	10.38	10.38	10.38	10.38	10.38

14 inch	14 inch
5	5.5
0.5	0.5
-	-
2.25	2.25
3.81	3.81
11.16	11.16
6.75	6.75
6.50	7.25
10.38	10.38

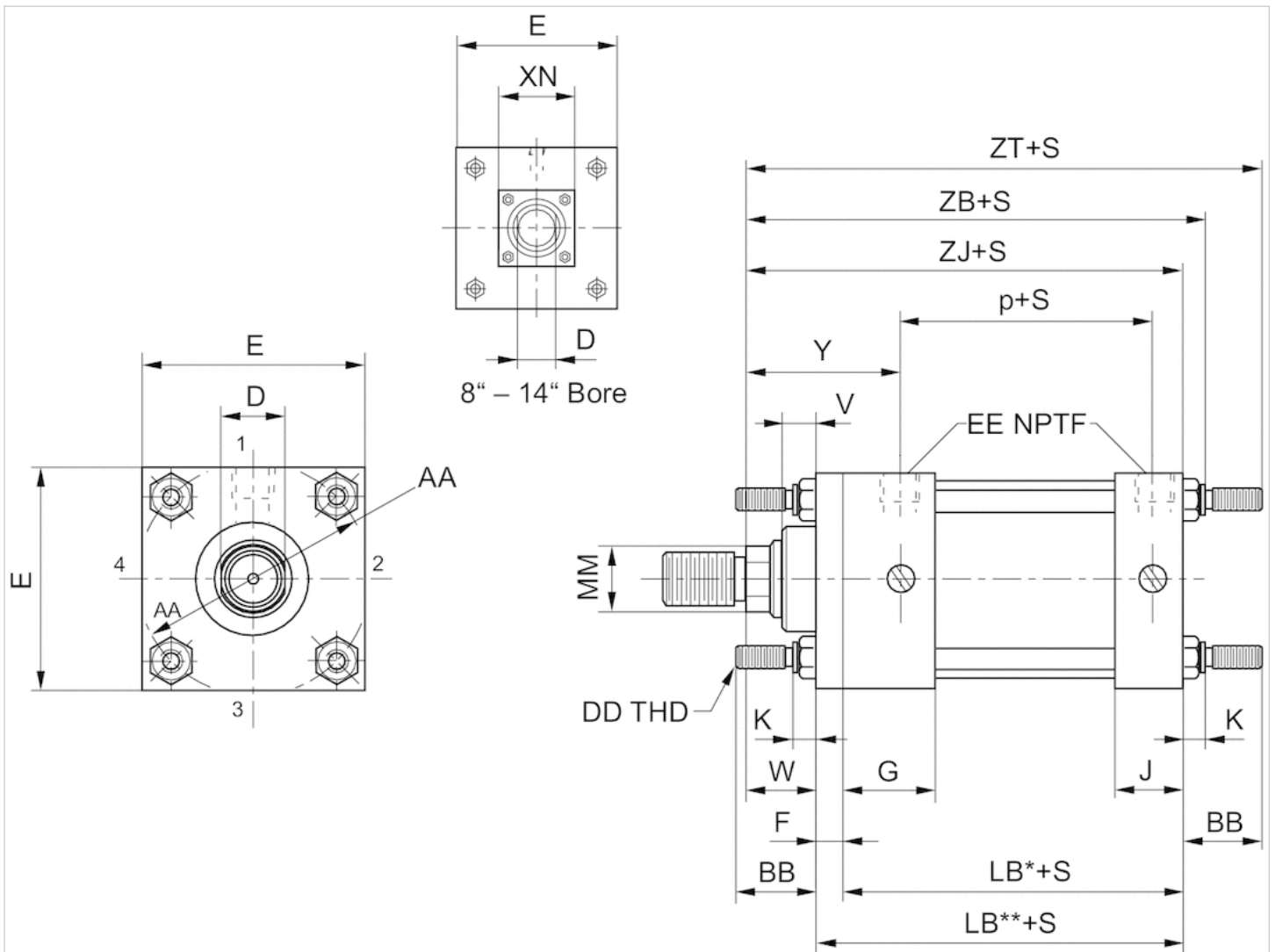
1) For piston rod Ø

2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

The bearing retainer plate is the same as the “E” dimension for bore sizes 1-1/2” – 6” and the “XN” dimension for 8” – 14” bore sizes. Specify the “XI” dimension when ordering MT4 intermediate trunnion mountings. If not specified, the trunnion will be located at the center of the tube.

## Dimensions

### Tie Rods Extended (MX1 mount)



S = stroke

### Dimensions not affected by rod diameter

Ø	1.50 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch	8 inch	10 inch	12 inch
E	2.00	2.50	3.00	3.75	4.50	5.50	6.50	8.50	10.63	12.75
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75	0.75	0.75	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00	2.00	2.25	2.25
J	1.00	1.00	1.00	1.25	1.25	1.25	1.50	1.50	2.00	2.00
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44	0.56	0.66	0.66
P	2.25	2.25	2.38	2.63	2.63	2.88	3.13	3.25	4.13	4.63
AA	2.02	2.60	3.10	3.90	4.70	5.80	6.90	9.10	11.20	13.30
BB	1.00	1.13	1.13	1.38	1.38	1.81	1.81	2.31	2.69	2.69
DD	0.25	0.31	0.31	0.38	0.38	0.50	0.50	0.63	0.75	0.75
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75	0.75	1.00	1.00
LB	4.00	4.00	4.13	4.88	4.88	5.13	5.75	5.13	6.38	6.88

14 inch
14.75
0.75
2.75
2.25
0.78
5.50
15.40
3.19
0.88
1.25
8.13

Dimensions affected by rod diameter

Ø	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.50	0.25	0.50	0.63	0.25	0.50	0.63
W	0.63	1	0.63	1	1.25	0.63	1	1.25
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
XN	-	-	-	-	-	-	-	-
ZB	4.85	5.22	4.90	5.27	5.52	5.02	5.40	5.65
ZJ	4.63	5.00	4.63	5.00	5.25	4.75	5.13	5.38
ZT	5.63	6.00	5.75	6.13	6.38	5.88	6.25	6.50

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.50	0.50	0.25	0.38	0.50	0.50	0.63
1.50	0.75	1.00	1.25	1.38	0.75	1.00	1.25	1.38	1.63
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
-	-	-	-	-	-	-	-	-	-
5.90	5.98	6.23	6.48	6.61	5.98	6.23	6.48	6.61	6.86
5.63	5.63	5.88	6.13	6.25	5.63	5.88	6.13	6.25	6.50
6.75	7.00	7.25	7.50	7.63	7.00	7.25	7.50	7.63	7.88

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	1.375	1.75	2	2.5	3
0.25	0.38	0.50	0.50	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5
0.75	1.00	1.25	1.38	1.63	1.63	1.63	0.88	1.13	1.25	1.50	1.50
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
-	-	-	-	-	-	-	-	-	-	-	-
6.32	6.57	6.82	6.94	7.19	7.19	7.19	7.07	7.32	7.44	7.69	7.69
5.88	6.13	6.38	6.50	6.75	6.75	6.75	6.63	6.88	7.00	7.25	7.25
7.69	7.94	8.06	8.31	8.56	8.56	8.56	8.44	8.69	8.81	9.06	9.06

6 inch	6 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch
3.5	4	1.375	1.75	2	2.5	3	3.5	4	4.5	5	5.5
0.5	0.5	0.25	0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1.50	1.50	-	-	-	-	-	-	-	-	-	-
3.44	3.44	2.81	3.06	3.19	3.44	3.44	3.44	3.44	3.44	3.44	3.44

6 inch	6 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch
-	-	4	4	4	4	5.50	5.50	5.50	6.5	6.5	7.25
7.69	7.69	7.31	7.56	7.69	7.94	7.94	7.94	7.94	7.94	7.94	7.94
7.25	7.25	6.75	7.00	7.13	7.38	7.38	7.38	7.38	7.38	7.38	7.38
9.06	9.06	9.06	9.31	9.44	9.69	9.69	9.69	9.69	9.69	9.69	9.69

10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	12 inch	12 inch
1.75	2	2.5	3	3.5	4	4.5	5	5.5	5.5	2	2.5
0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.38	0.5
-	-	-	-	-	-	-	-	-	-	-	-
3.13	3.25	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.25	3.50
4	4	4	5.50	5.50	5.50	6.50	6.50	7.25	7.25	4	4
8.91	9.03	9.28	9.28	9.28	9.28	9.28	9.28	9.28	9.28	9.53	9.78
8.25	8.38	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.88	9.13
10.94	11.06	11.31	11.31	11.31	11.31	11.31	11.31	11.31	11.31	11.56	11.81

12 inch	12 inch	12 inch	12 inch	12 inch	12 inch	14 inch	14 inch	14 inch	14 inch	14 inch	14 inch
3	3.5	4	4.5	5	5.5	2.5	3	3.5	4	4.5	4.5
0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
-	-	-	-	-	-	-	-	-	-	-	-
3.50	3.50	3.50	3.50	3.50	3.50	3.81	3.81	3.81	3.81	3.81	3.81
5.50	5.50	5.50	6.50	6.50	7.25	4	5.50	5.50	5.50	5.50	5.50
9.78	9.78	9.78	9.78	9.78	9.78	11.16	11.16	11.16	11.16	11.16	11.16
9.13	9.13	9.13	9.13	9.13	9.13	10.38	10.38	10.38	10.38	10.38	10.38
11.81	11.81	11.81	11.81	11.81	11.81	13.56	13.56	13.56	13.56	13.56	13.56

14 inch	14 inch
5	5.5
0.5	0.5
-	-
3.81	3.81
6.50	7.25
11.16	11.16
10.38	10.38
13.56	13.56

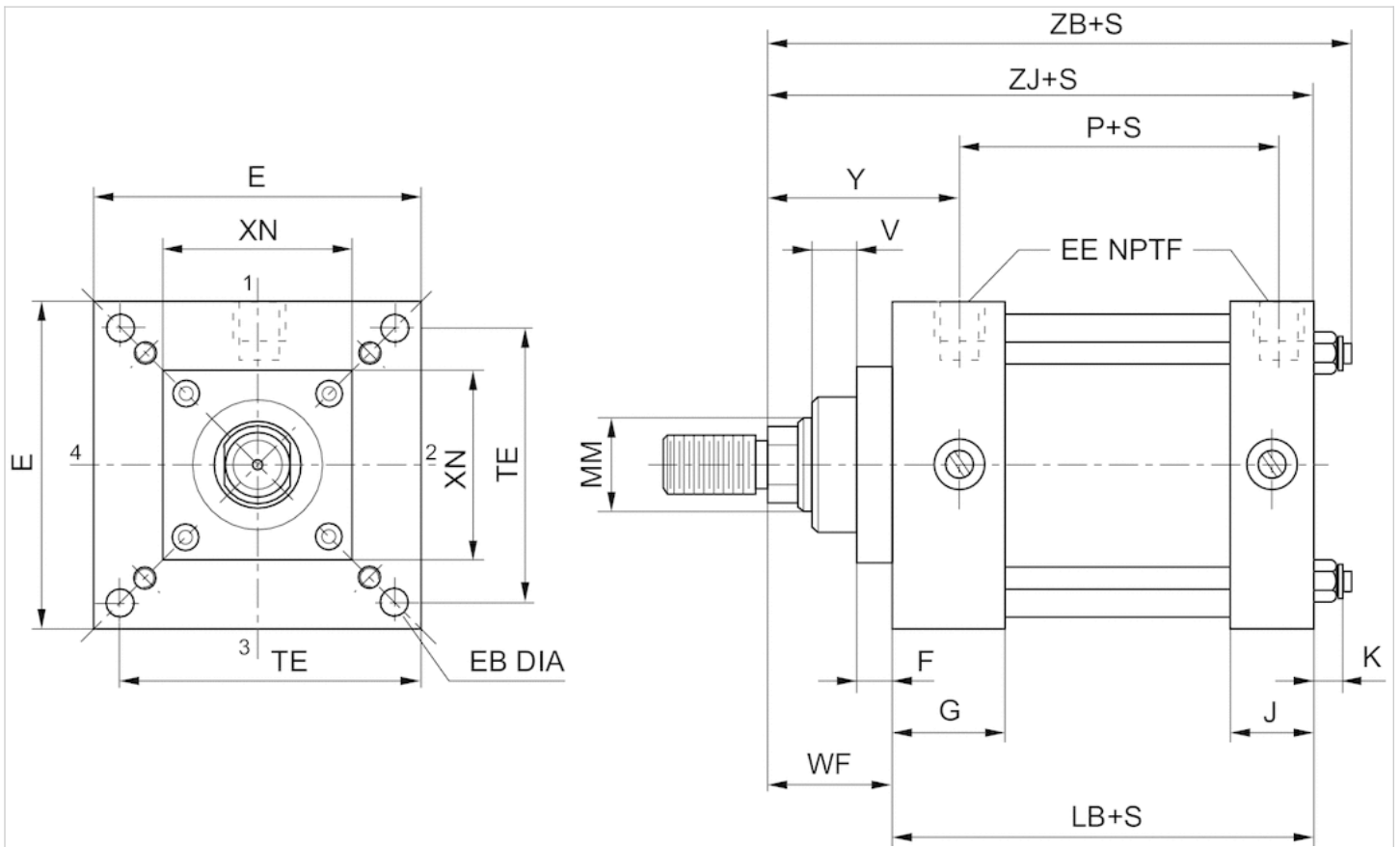
1) For piston rod Ø

2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

The bearing retainer plate is the same as the “E” dimension for bore sizes 1-1/2” – 6” and the “XN” dimension for 8” – 14” bore sizes.

## Dimensions

### Head Square Flange (ME3 mount)



S = stroke

### Dimensions not affected by rod diameter

Ø	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch	8 inch	10 inch	12 inch
E	2	2.5	3	3.75	4.5	5.5	6.5	8.50	10.63	12.75
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75	0.75	0.75	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00	2.00	2.25	2.25
J	1.00	1.00	1.00	1.25	1.25	1.25	1.50	1.50	2.00	2.00
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44	0.56	0.66	0.66
P	2.25	2.25	2.38	2.63	2.63	2.88	3.13	3.25	4.13	4.63
EB								0.63	0.75	0.75
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75	0.75	1.00	1.00
LB								5.13	6.38	6.88
TE								7.57	9.40	11.10

14 inch

14.75

0.75

2.75

2.25

0.78

5.50

14 inch	
	0.88
	1.25
	8.13
	12.87

Dimensions affected by rod diameter

∅	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.5	0.25	0.5	0.63	0.25	0.5	0.63
WF								
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
XN								
ZB	4.85	5.22	4.90	5.27	5.52	5.03	5.40	5.65
ZJ	4.63	5.00	4.63	5.00	5.25	4.75	5.13	5.38

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.5	0.5	0.25	0.38	0.5	0.5	0.63
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
5.90	5.97	6.22	6.47	6.60	5.97	6.22	6.47	6.60	6.85
5.63	5.63	5.88	6.13	6.25	5.63	5.88	6.13	6.25	6.50

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	3.5	1.375	1.75	2	2.5	3
0.25	0.38	0.5	0.5	0.63	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5
2.44	2.69	2.94	3.06	3.31	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
6.32	6.57	6.82	6.95	7.20	7.20	7.20	7.20	7.07	7.32	7.44	7.69	7.69
5.88	6.13	6.38	6.50	6.75	6.75	6.75	6.75	6.63	6.88	7.00	7.25	7.25

6 inch	6 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch
3.5	4	1.375	1.75	2	2.5	3	3.5	4	4.5	5	5.5	5.5
0.5	0.5	0.25	0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
		1.63	1.88	2	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.44	3.44	2.81	3.06	3.19	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44
		4	4	4	4	5.5	5.5	5.5	5.5	6.5	6.5	7.25
7.69	7.69	7.32	7.57	7.69	7.94	7.94	7.94	7.94	7.94	7.94	7.94	7.94
7.25	7.25	6.75	7.00	7.13	7.38	7.38	7.38	7.38	7.38	7.38	7.38	7.38

10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	12 inch	12 inch
1.75	2	2.5	3	3.5	4	4.5	5	5.5	5.5	2	2.5
0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.38	0.5
1.88	2	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2	2.25
3.13	3.25	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.25	3.5
4	4	4	5.5	5.5	5.5	6.5	6.5	6.5	7.25	4	4



10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	12 inch	12 inch
8.92	9.04	9.29	9.29	9.29	9.29	9.29	9.29	9.29	9.54	9.79
8.25	8.38	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.88	9.13

12 inch	12 inch	12 inch	12 inch	12 inch	12 inch	14 inch	14 inch	14 inch	14 inch	14 inch
3	3.5	4	4.5	5	5.5	2.5	3	3.5	4	4.5
0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.5	3.5	3.5	3.5	3.5	3.5	3.81	3.81	3.81	3.81	3.81
5.5	5.5	5.5	6.5	6.5	7.25	4	5.5	5.5	5.5	6.5
9.79	9.79	9.79	9.79	9.79	9.79	11.16	11.16	11.16	11.16	11.16
9.13	9.13	9.13	9.13	9.13	9.13	10.38	10.38	10.38	10.38	10.38

14 inch	14 inch
5	5.5
0.5	0.5
2.25	2.25
3.81	3.81
6.5	7.25
11.16	11.16
10.38	10.38

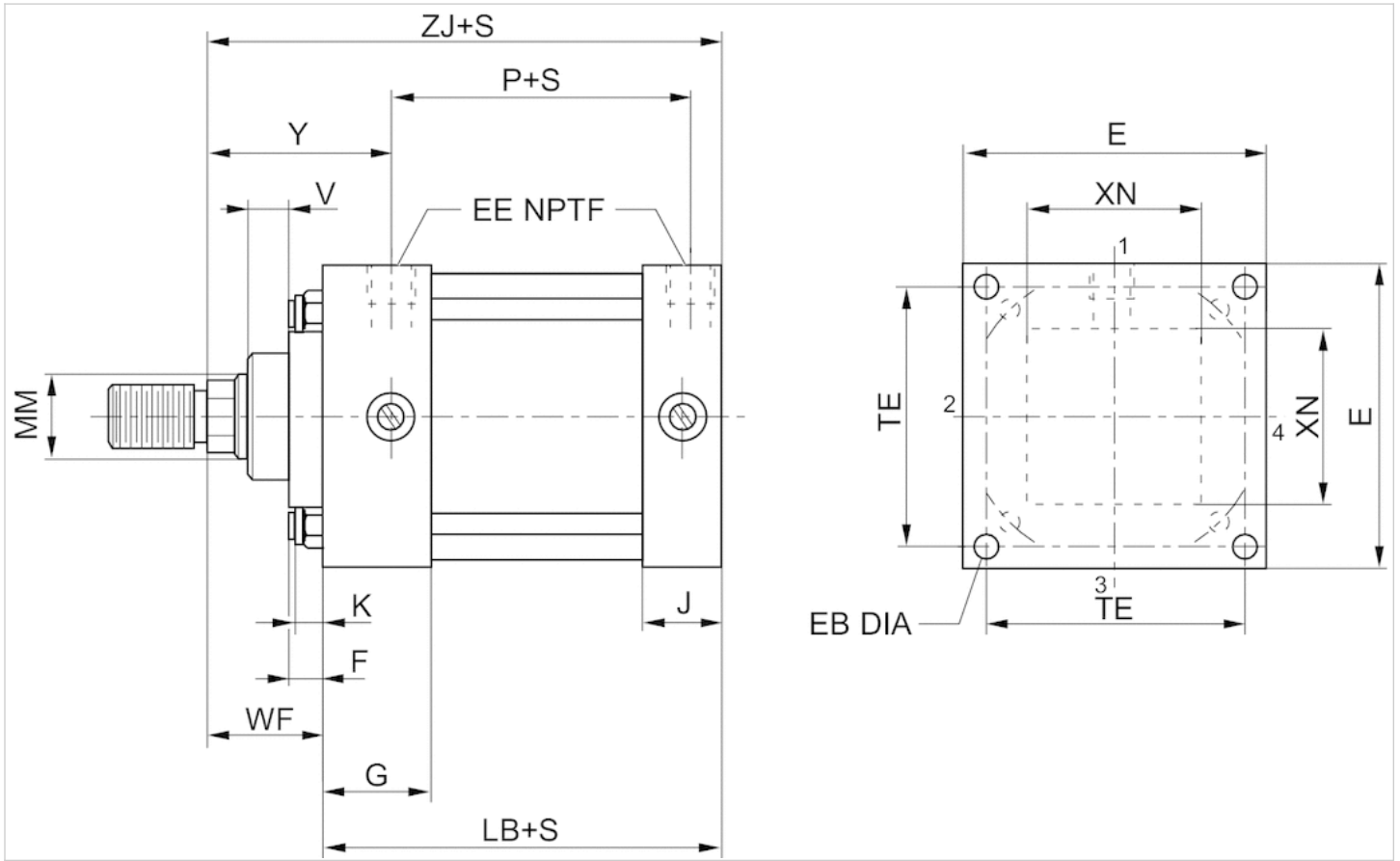
1) For piston rod Ø

2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

The bearing retainer plate is the same as the “E” dimension for bore sizes 1-1/2” – 6” and the “XN” dimension for 8” – 14” bore sizes.

## Dimensions

### Cap Square Flange (ME4 mount)



S = stroke

### Dimensions not affected by rod diameter

Ø	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch	8 inch	10 inch	12 inch
E	2.00	2.50	3.00	3.75	4.50	5.50	6.50	8.50	10.63	12.75
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75	0.75	0.75	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00	2.00	2.25	2.25
J	1.00	1.00	1.00	1.25	1.25	1.25	1.50	1.50	2.00	2.00
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44	0.56	0.66	0.66
P	2.25	2.25	2.38	2.63	2.63	2.88	3.13	3.25	4.13	4.63
EB								0.63	0.75	0.75
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75	0.75	1.00	1.00
LB								5.13	6.38	6.88
TE								7.57	9.40	11.10

14 inch

14.75

0.75

2.75

2.25

0.78

14 inch
5.50
0.88
1.25
8.13
12.87

Dimensions affected by rod diameter

Ø	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.5	0.25	0.5	0.63	0.25	0.5	0.63
WF								
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
XN								
ZJ	4.63	5.00	4.63	5.00	5.25	4.75	5.13	5.38

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.5	0.5	0.25	0.38	0.5	0.5	0.63
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
5.63	5.63	5.88	6.13	6.25	5.63	5.88	6.13	6.25	6.50

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	1.375	1.75	2	2.5	3
0.25	0.38	0.5	0.5	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
5.88	6.13	6.38	6.50	6.75	6.75	6.75	6.63	6.88	7.00	7.25	7.25

6 inch	6 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch
3.5	4	1.375	1.75	2	2.5	3	3.5	4	4.5	5	5.5
0.5	0.5	0.25	0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5
		1.63	1.88	2.00	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.44	3.44	2.81	3.06	3.19	3.44	3.44	3.44	3.44	3.44	3.44	3.44
		4	4	4	4	5.5	5.5	5.5	6.5	6.5	7.25
7.25	7.25	6.75	7.00	7.13	7.38	7.38	7.38	7.38	7.38	7.38	7.38

10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	12 inch	12 inch
1.75	2	2.5	3	3.5	4	4.5	5	5.5	5.5	2	2.5
0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.38	0.5
1.88	2.00	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.00	2.25
3.13	3.25	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.25	3.5
4	4	4	5.5	5.5	5.5	6.5	6.5	6.5	6.5	4	4
8.25	8.38	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.88	9.13

12 inch	12 inch	12 inch	12 inch	12 inch	12 inch	14 inch	14 inch	14 inch	14 inch	14 inch
3	3.5	4	4.5	5	5.5	2.5	3	3.5	4	4.5
0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.5	3.5	3.5	3.5	3.5	3.5	3.81	3.81	3.81	3.81	3.81
5.5	5.5	5.5	6.5	6.5	7.25	4	5.5	5.5	5.5	6.5
9.13	9.13	9.13	9.13	9.13	9.13	10.38	10.38	10.38	10.38	10.38

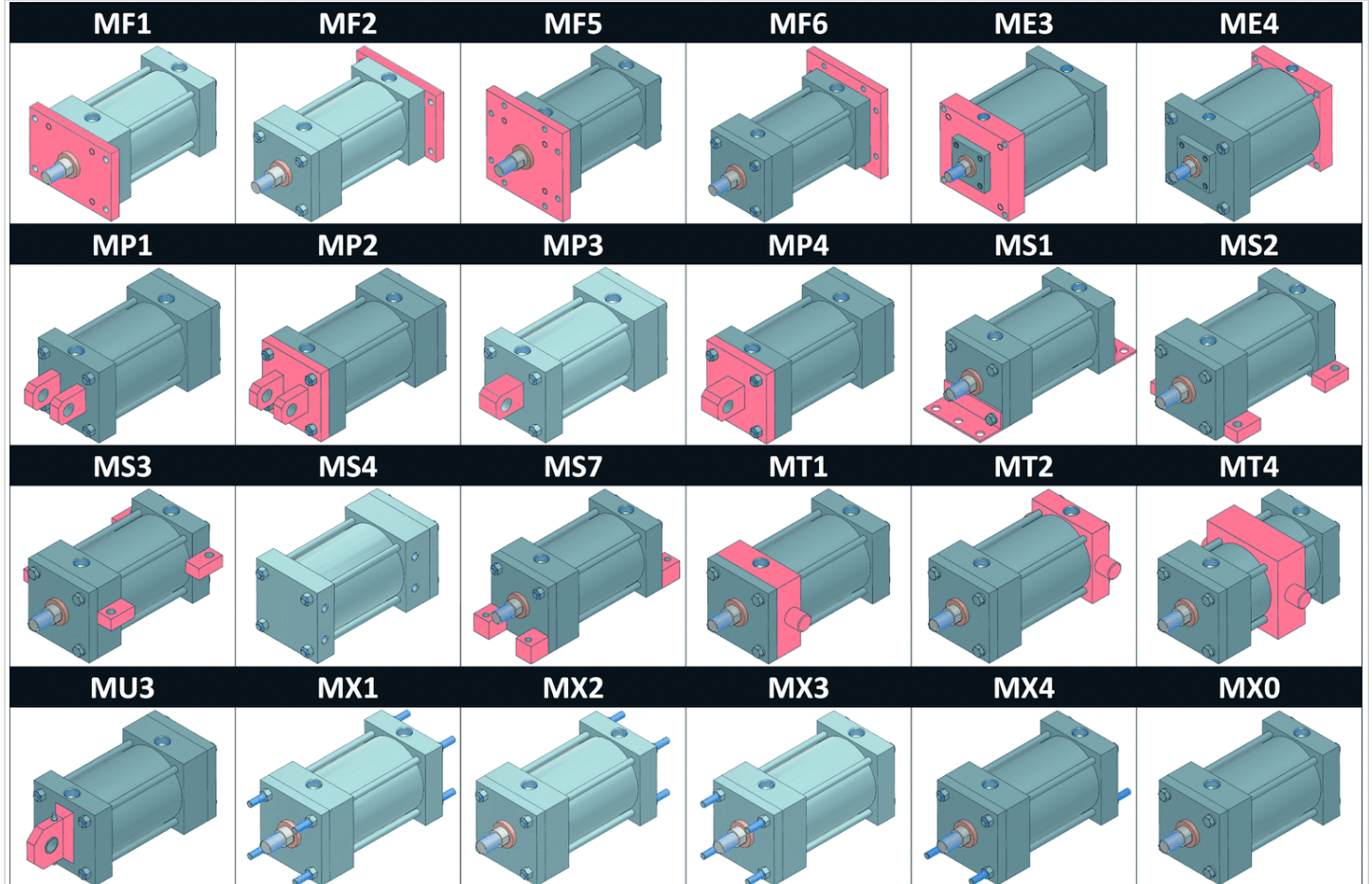
14 inch	14 inch
5	5.5
0.5	0.5
2.25	2.25
3.81	3.81
6.5	7.25
10.38	10.38

1) For piston rod  $\varnothing$

2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

The bearing retainer plate is the same as the “E” dimension for bore sizes 1-1/2” – 6” and the “XN” dimension for 8” – 14” bore sizes.

## Accessories overview



### Flange mounts

Flange mounting is one of the strongest, most rigid methods of mounting. With this mounting type, there is little allowance for misalignment, so when long strokes are required, the free end opposite the mounting should be supported to prevent sagging and

possible binding of the cylinder. Blind or cap end mountings are best for thrust load applications, and rod or head end mountings are best in tension applications. If less rigid mounting can be used and the cylinder can be attached to a panel or bulkhead, tie rod extension mounting could be considered.

#### Fixed, Detachable and Universal Clevis Mounts

Clevis mounting is one of the most widely used mounting types. For short strokes, medium, or small cylinder applications, clevis mounting is recommended. If stroke requirements lead to an excessive overall length, cap trunnion mounting can be used. Pivot mounting must always be used with a pivot-type rod end attachment.

#### Trunnion Mounts

All cylinders with trunnion mounting need to provide for pivoting on both ends. These types of cylinders are designed to carry shear loads, and the trunnion and pivot pins should be supported by bearings that rigidly hold and closely fit across the entire length of the pin. Head or rod end trunnions should be carefully applied to either short strokes or to applications where the weight of the cylinder falls vertically below the pin.

#### Side and Centerline Lug Mounts

Cylinders with side or lug mounting provide fairly rigid mounting. These mounting types can tolerate a slight amount of misalignment when the cylinder is at full stroke, but as the piston moves toward the blind end, the tolerance for misalignment decreases. It is important to note that, if the cylinder is used properly, the mounting bolts are either in simple shear or tension without any compound stresses.

#### Side End and Angle Mounts

Side end mounting lends itself to easy mounting and replacement. It also permits side-by-side mounting in confined areas. As with side

lug mounting, proper use will place the bolts in simple shear or tension without any compound stresses. Proper alignment is critical to maximum service life. When specifying the mounting type, carefully check the distance between the rod and lug or angle to determine if there is enough clearance for the rod end attachment. It may be necessary to add a plain piston rod extension to move the threaded rod end out beyond the lug.

#### Extended Tie Rod Mounts

Tie rod and flange mounting are basically the same, except that the tie rods are extended and used to mount the cylinder. To prevent misalignment, sagging, or binding of the cylinder when long strokes are required, the free end of the cylinder should be supported. For thrust load applications, blind or cap end tie rod extensions are best. For tension load applications, rod or head end extensions are best. Tie rod mounting is suitable for many applications, however, it should be noted that it is not as rigid as flange mounting.

# NFPA, PowerMaster® Hydraulic (PHT)

- Steel version
- Ø 38.1-355.6 mm
- double-acting
- Cushioning adjustable (optional)

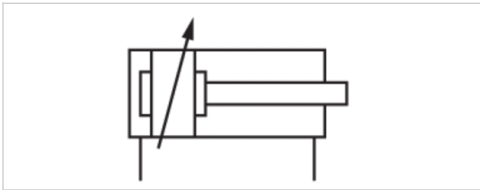


## Standards

Compressed air connection  
 Working pressure min./max.  
 Ambient temperature min./max.  
 Medium temperature min./max.  
 Medium

## NFPA

NPT / SAE optional  
 17.25 ... 103.44 bar  
 -54 ... 93.33 °C  
 -54 ... 93.33 °C  
 Hydraulic oil



## Technical information

AVENTICS hydraulic cylinders are designed for operation with clean, petroleum-based hydraulic fluid. Operation using fire-resistant or other special types of fluids may require special sealing. Please consult the factory for details.

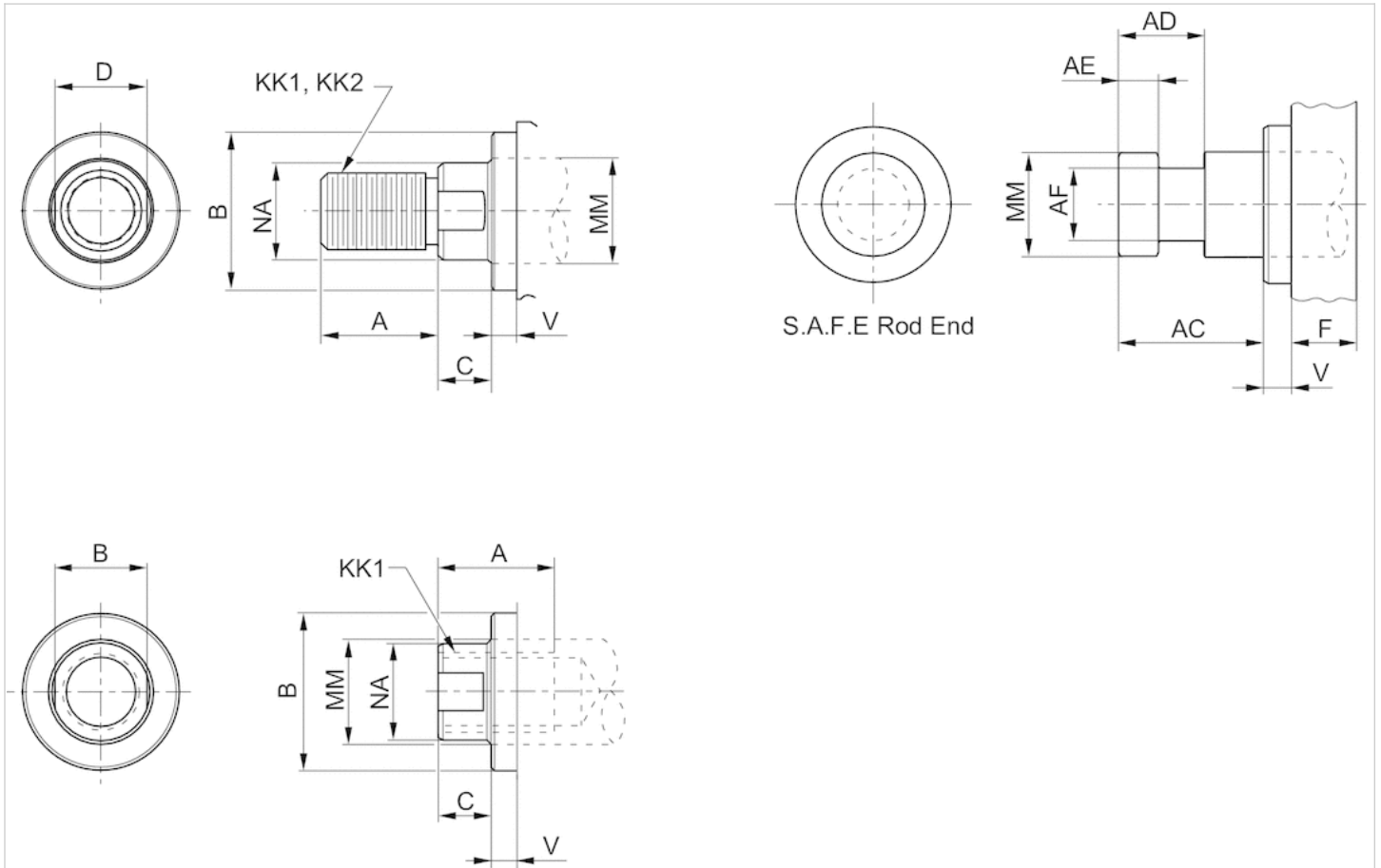
Pressure ratings vary based on the cylinder mounting style and bore/rod combination. Please refer to the NFPA online catalog (SC-200) or consult the factory.

## Technical information

Material	
Cylinder tube	Steel, Honed to 12 micro-inches or better
Piston rod	Carbon steel, Case hardened, chrome-plated (5/8" version not case hardened)
Piston	Ductile iron
Front cover	Steel
End cover	Steel
Seal	Buna-N
Scraper	Polyurethane
Tie-rods	Stress proof steel, high tensile

## Dimensions

### Rod end dimensions



#### Rod thread options

Standard KK1 external thread supplied unless specified otherwise.

External thread available in KK1 and KK2 thread sizes.

KK1 studded male rod end available on request.

Internal thread available in KK1 thread size only.

## Dimensions

MM 1)	0.625	1	1.375	1.75	2	2.5	3	3.5	4
A	0.75	1.125	1.625	2	2.25	3	3.5	3.5	4
B+0.000-0.003	1.024	1.499	1.999	2.374	2.624	3.124	3.749	4.249	4.749
C	0.38	0.50	0.62	0.75	0.88	1	1	1	1
D	0.50	0.88	1.12	1.50	1.69	2.06	2.62	3	3.38
AC	1.12	1.62	1.75	2	2.62	3.25	3.62	4.38	4.50
AD	0.62	0.94	1.06	1.31	1.69	1.94	2.44	2.69	2.69
AE+0.000-0.005	0.250	0.375	0.375	0.500	0.625	0.750	0.875	1	1
AF	0.375	0.688	0.875	1.125	1.380	1.750	2.250	2.500	3.000
KK1	7/16-20	3/4-16	1-14	1 1/4-12	1 1/2-12	1 7/8-12	2 1/4-12	2 1/2-12	3-12
KK2	1/2-20	7/8-14	1 1/4-12	1 1/2-12	1 3/4-12	2 1/4-12	2 3/4-12	3-12	3 1/2-12
NA+0.002-0.002	0.563	0.938	1.313	1.688	1.940	2.438	2.938	3.438	3.938



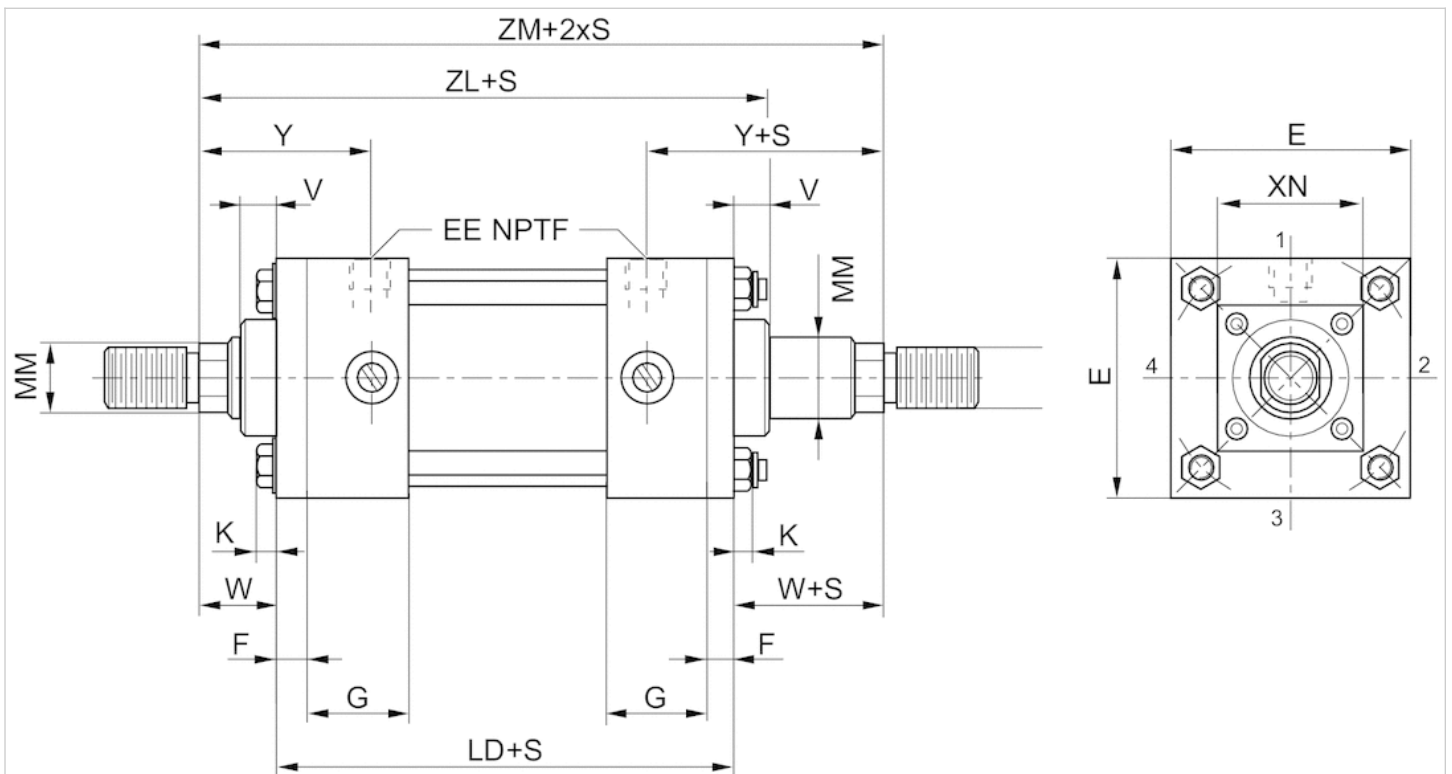
4.5	5	5.5
4.5	5	5
5.249	5.749	6.246
1	1	1
SH 1	SH 1	SH 1
5.25	5.38	6.25
3.19	3.19	3.94
1.500	1.500	1.875
3.500	3.875	4.375
3 1/4-12	3 1/2-12	4-12
4 1/4-12	4 3/4-12	5 1/4-12
4.438	4.938	5.438

1) For piston rod Ø

Spanner wrench holes: SH 1 = 0.56" dia., SH 2 = 0.66" dia.

## Dimensions

### Double rod cylinder, Dimensions in inches



S = stroke

### Dimensions not affected by rod diameter

Ø	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch	8 inch	10 inch	12 inch
E	2.00	2.50	3.00	3.75	4.50	5.50	6.50	8.50	10.63	12.75
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75	0.75	1.00	1.00
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75	0.75	0.75	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00	2.00	2.25	2.25
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44	0.56	0.66	0.66

∅	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch	8 inch	10 inch	12 inch
LD	4.88	4.88	5.00	6.00	6.00	6.25	7.00	5.63	6.63	7.13

14 inch										
14.75										
1.25										
0.75										
2.75										
0.78										
8.63										

Dimensions affected by rod diameter

∅	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.5	0.25	0.5	0.63	0.25	0.5	0.63
W	0.63	1	0.63	1	1.25	0.63	1	1.25
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
XN								
ZL	5.73	6.1	5.78	6.15	6.4	5.9	6.27	6.52
ZM	6.13	6.88	6.13	6.88	7.38	6.25	7	7.5

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.5	0.5	0.25	0.38	0.5	0.5	0.63
1.5	0.75	1	1.25	1.38	0.75	1	1.25	1.38	1.63
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
6.77	7.09	7.34	7.59	7.72	7.09	7.34	7.59	7.72	7.97
8	7.5	8	8.5	8.75	7.5	8	8.5	8.75	9.25

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	1.375	1.75	2	2.5	3
0.25	0.38	0.5	0.5	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5
0.75	1	1.25	1.38	1.63	1.63	1.63	0.88	1.13	1.25	1.5	1.5
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
7.44	7.69	7.94	8.07	8.32	8.32	8.32	8.32	8.57	8.69	8.94	8.94
7.75	8.25	8.75	9	9.5	9.5	9.5	8.75	9.25	9.5	10	10

6 inch	6 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch
3.5	4	1.375	1.75	2	2.5	3	3.5	4	4.5	5	5.5
0.5	0.5	0.25	0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1.5	1.5										
3.44	3.44	2.81	3.06	3.19	3.44	3.44	3.44	3.44	3.44	3.44	3.44
		4	4	4	4	5.5	5.5	5.5	6.5	6.5	7.25
8.94	8.94	7.82	8.07	8.19	8.44	8.44	8.44	8.44	8.44	8.44	8.44
10	10	8.88	9.38	9.63	10.13	10.13	10.13	10.13	10.13	10.13	10.13

10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	12 inch	12 inch
1.75	2	2.5	3	3.5	4	4.5	5	5.5	2	2.5
0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.38	0.5
3.13	3.25	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.25	3.5
4	4	4	5.5	5.5	5.5	6.5	6.5	7.25	4	4
9.17	9.29	9.54	9.54	9.54	9.54	9.54	9.54	9.54	9.79	10.04
10.38	10.63	11.13	11.13	11.13	11.13	11.13	11.13	11.13	11.13	11.63

12 inch	12 inch	12 inch	12 inch	12 inch	12 inch	14 inch	14 inch	14 inch	14 inch	14 inch
3	3.5	4	4.5	5	5.5	2.5	3	3.5	4	4.5
0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
3.5	3.5	3.5	3.5	3.5	3.5	3.81	3.81	3.81	3.81	3.81
5.5	5.5	5.5	6.5	6.5	7.25	4	5.5	5.5	5.5	6.5
10.04	10.04	10.04	10.04	10.04	10.04	11.66	11.66	11.66	11.66	11.66
11.63	11.63	11.63	11.63	11.63	11.63	13.13	13.13	13.13	13.13	13.13

14 inch	14 inch
5	5.5
0.5	0.5
3.81	3.81
6.5	7.25
11.66	11.66
13.13	13.13

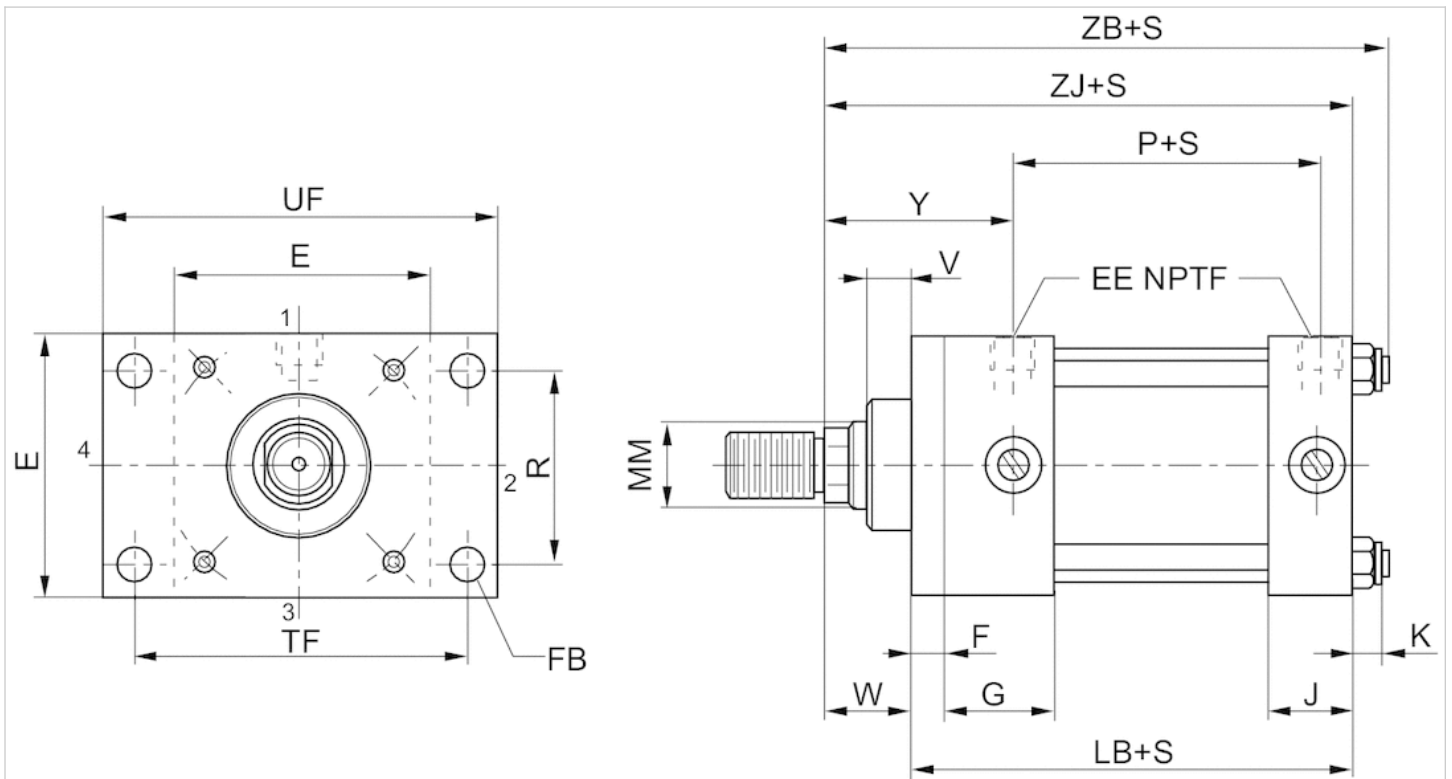
1) For piston rod Ø

2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

The bearing retainer plate is the same as the “E” dimension for bore sizes 1-1/2” – 6” and the “XN” dimension for 8” – 14” bore sizes.

## Dimensions

### Head Rectangular Flange (MF1 mount)



S = stroke

### Dimensions not affected by rod diameter

Ø	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch
E	2.00	2.50	3.00	3.75	4.50	5.50	6.50
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00
J	1.00	1.00	1.00	1.25	1.25	1.25	1.50
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44
P	2.25	2.25	2.38	2.63	2.63	2.88	3.13
R	1.43	1.84	2.19	2.76	3.32	4.10	4.88
FB	0.25	0.31	0.31	0.38	0.38	0.50	0.50
LB	4.00	4.00	4.13	4.88	4.88	5.13	5.75
TF	2.75	3.38	3.88	4.69	5.44	6.63	7.63
UF	3.38	4.13	4.63	5.50	6.25	7.63	8.63

Dimensions affected by rod diameter

Ø	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.5	0.25	0.5	0.63	0.25	0.5	0.63
W	0.63	1	0.63	1	1.25	0.63	1	1.25
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
ZB	4.85	5.22	4.90	5.27	5.52	5.02	5.40	5.65
ZJ	4.63	5.00	4.63	5.00	5.25	4.75	5.13	5.38

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.5	0.5	0.25	0.38	0.5	0.5	0.63
1.5	0.75	1	1.25	1.38	0.75	1	1.25	1.38	1.63
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
5.90	5.98	6.23	6.48	6.61	5.98	6.23	6.48	6.61	6.86
5.63	5.63	5.88	6.13	6.25	5.63	5.88	6.13	6.25	6.50

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	1.375	1.75	2	2.5	3
0.25	0.38	0.5	0.5	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5
0.75	1	1.25	1.38	1.63	1.63	1.63	0.88	1.13	1.25	1.5	1.5
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
6.32	6.57	6.82	6.94	7.19	7.19	7.19	7.07	7.32	7.44	7.69	7.69
5.88	6.13	6.25	6.50	6.75	6.75	6.75	6.63	6.88	7.00	7.25	7.25

6 inch		6 inch	
3.5		4	
0.5		0.5	
1.5		1.5	
3.44		3.44	
7.69		7.69	
7.25		7.25	

1) For piston rod Ø

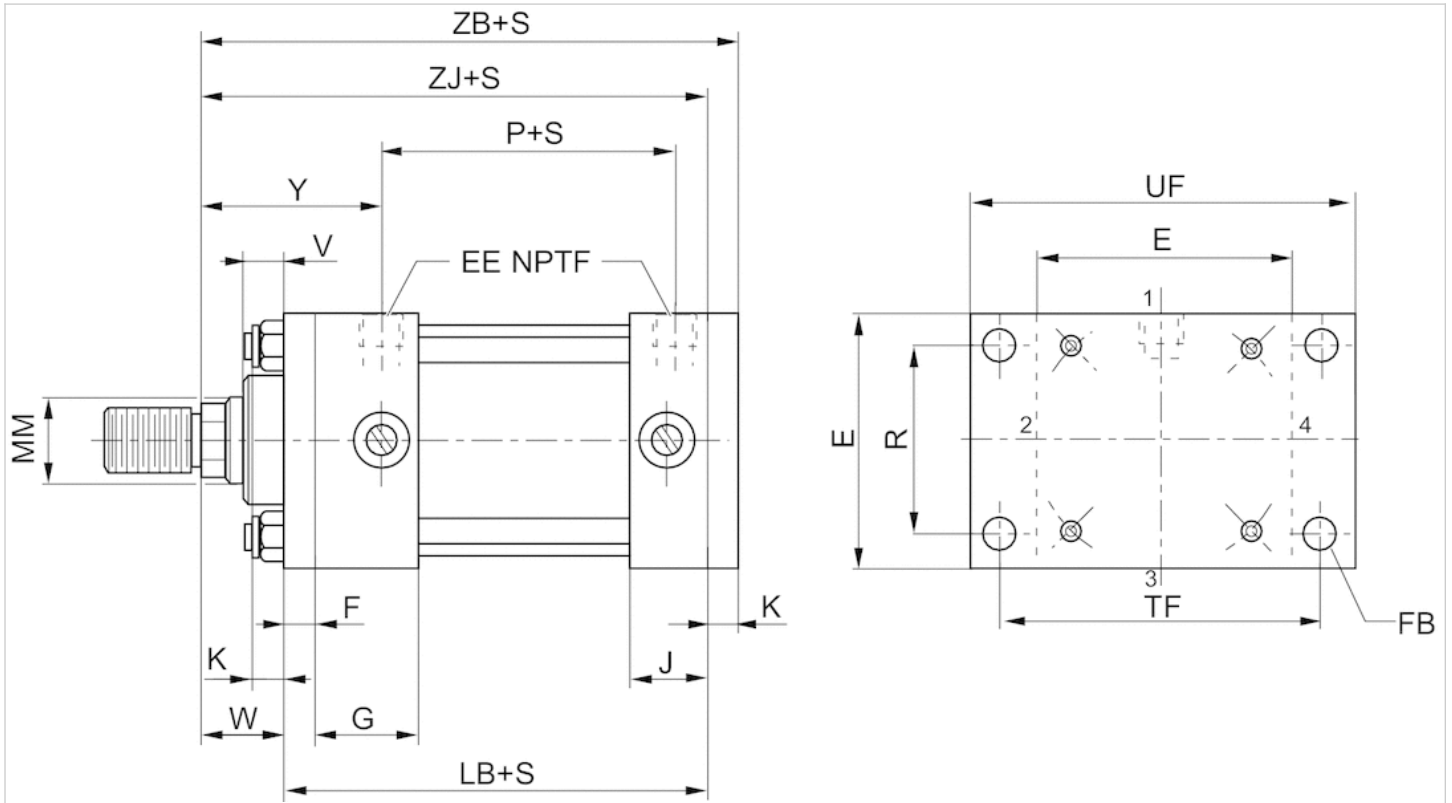
2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

The bearing retainer plate is the same as the “E” dimension for bore sizes 1-1/2” – 6” and the “XN” dimension for 8” – 14” bore sizes.

Removable bearing retainer is not available in 1-1/2” – 6” bore cylinders. The bearing retainer plate is the same as the “E” dimension for 1-1/2” – 6” bore sizes.

## Dimensions

### Cap Rectangular Flange (MF2 mount)



S = stroke

### Dimensions not affected by rod diameter

Ø	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch
E	2.00	2.50	3.00	3.75	4.50	5.50	6.50
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00
J	1.00	1.00	1.00	1.25	1.25	1.25	1.50
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44
P	2.25	2.25	2.38	2.63	2.63	2.88	3.13
R	1.43	1.84	2.19	2.76	3.32	4.10	4.88
FB	0.25	0.31	0.31	0.38	0.38	0.50	0.50
LB	4.00	4.00	4.13	4.88	4.88	5.13	5.75
TF	2.75	3.38	3.88	4.69	5.44	6.63	7.63
UF	3.38	4.13	4.63	5.50	6.25	7.63	8.63

## Dimensions affected by rod diameter

Ø	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.5	0.25	0.5	0.63	0.25	0.5	0.63
W	0.63	1	0.63	1	1.25	0.63	1	1.25
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
ZB	4.85	5.22	4.90	5.27	5.52	5.02	5.40	5.65
ZF	5.00	5.38	5.00	5.38	5.62	5.13	5.50	5.75
ZJ	4.63	5.00	4.63	5.00	5.25	4.75	5.13	5.38

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.5	0.5	0.25	0.38	0.5	0.5	0.63
1.5	0.75	1	1.25	1.38	0.75	1	1.25	1.38	1.63
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
5.90	5.98	6.23	6.48	6.61	5.98	6.23	6.48	6.61	6.86
6.00	6.25	6.50	6.75	6.88	6.25	6.50	6.75	6.88	7.13
5.63	5.63	5.88	6.13	6.25	5.63	5.88	6.13	6.25	6.50

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	1.375	1.75	2	2.5	3	
0.25	0.38	0.5	0.5	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5	
0.75	1	1.25	1.38	1.63	1.63	1.63	0.88	1.13	1.25	1.5	1.5	
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44	
6.32	6.57	6.82	6.94	7.19	7.19	7.19	7.07	7.32	7.44	7.69	7.69	
6.50	6.75	7.00	7.13	7.38	7.38	7.38	7.38	7.63	7.75	8.00	8.00	
5.88	6.13	6.25	6.50	6.75	6.75	6.75	6.63	6.88	7.00	7.25	7.25	

6 inch	6 inch
3.5	4
0.5	0.5
1.5	1.5
3.44	3.44
7.69	7.69
8.00	8.00
7.25	7.25

1) For piston rod Ø

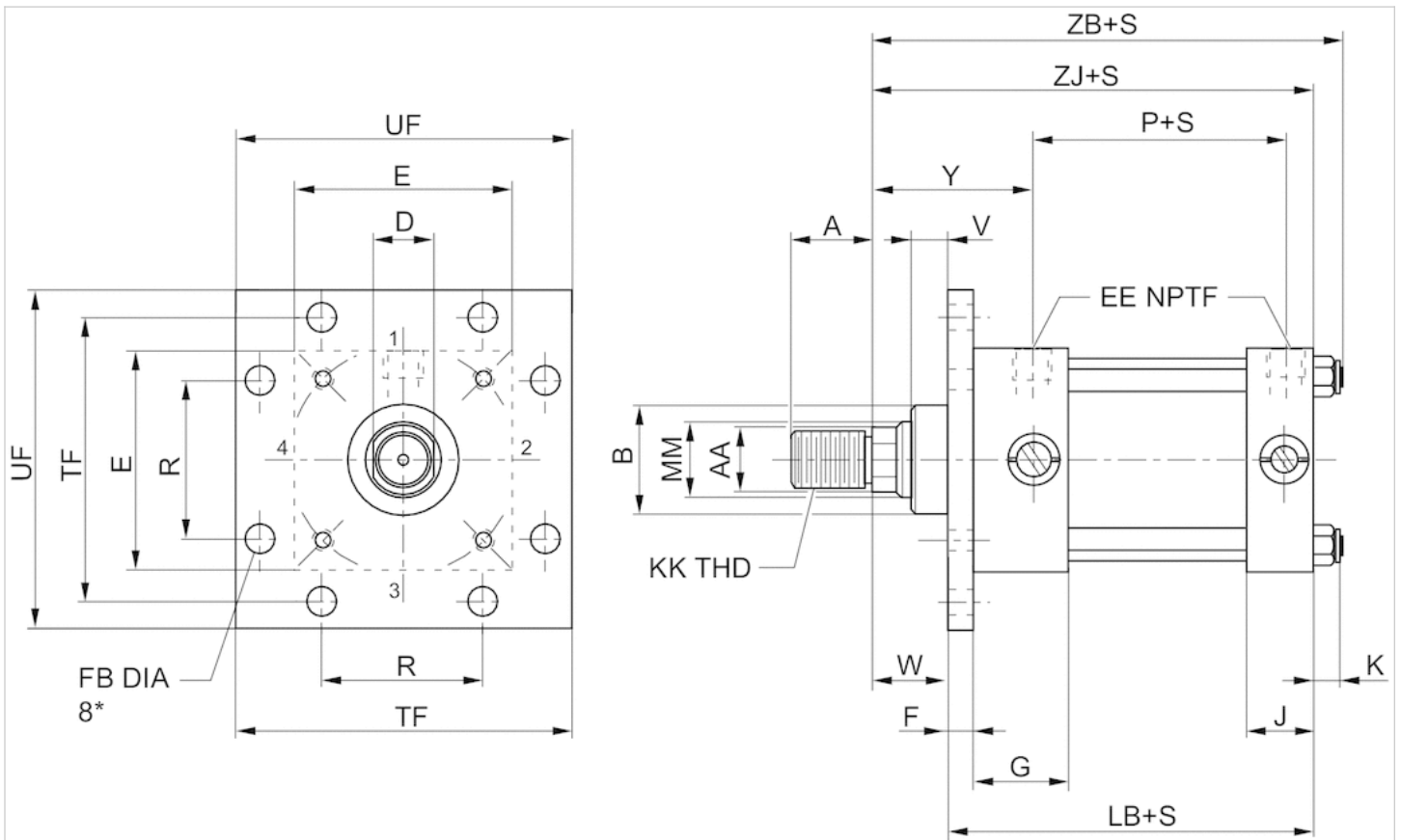
2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

The bearing retainer plate is the same as the "E" dimension for bore sizes 1-1/2" – 6" and the "XN" dimension for 8" – 14" bore sizes.

Removable bearing retainer is not available in 1-1/2" – 6" bore cylinders. The bearing retainer plate is the same as the "E" dimension for 1-1/2" – 6" bore sizes.

## Dimensions

### Head Square Flange (MF5 mount)



S = stroke

### Dimensions not affected by rod diameter

Ø	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch
E	2.00	2.50	3.00	3.75	4.50	5.50	6.50
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00
J	1.00	1.00	1.00	1.25	1.25	1.25	1.50
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44
P	2.25	2.25	2.38	2.63	2.63	2.88	3.13
R	1.43	1.84	2.19	2.76	3.32	4.10	4.88
FB	0.25	0.31	0.31	0.38	0.38	0.50	0.50
LB	4.00	4.00	4.13	4.88	4.88	5.13	5.75
TF	2.75	3.38	3.88	4.69	5.44	6.63	7.63
UF	3.38	4.13	4.63	5.50	6.25	7.63	8.63



Dimensions affected by rod diameter

Ø	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.5	0.25	0.5	0.63	0.25	0.5	0.63
W	0.63	1	0.63	1	1.25	0.63	1	1.25
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
ZB	4.85	5.22	4.90	5.27	5.52	5.02	5.40	5.65
ZJ	4.63	5.00	4.63	5.00	5.25	4.75	5.13	5.38

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.5	0.5	0.25	0.38	0.5	0.5	0.63
1.5	0.75	1	1.25	1.38	0.75	1	1.25	1.38	1.63
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
5.90	5.98	6.23	6.48	6.61	5.98	6.23	6.48	6.61	6.86
5.63	5.63	5.88	6.13	6.25	5.63	5.88	6.13	6.25	6.50

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	1.375	1.75	2	2.5	3
0.25	0.38	0.5	0.5	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5
0.75	1	1.25	1.38	1.63	1.63	1.63	0.88	1.13	1.25	1.5	1.5
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
6.32	6.57	6.82	6.94	7.19	7.19	7.19	7.07	7.32	7.44	7.69	7.69
5.88	6.13	6.25	6.50	6.75	6.75	6.75	6.63	6.88	7.00	7.25	7.25

6 inch						6 inch					
3.5						4					
0.5						0.5					
1.5						1.5					
3.44						3.44					
7.69						7.69					
7.25						7.25					

1) For piston rod Ø

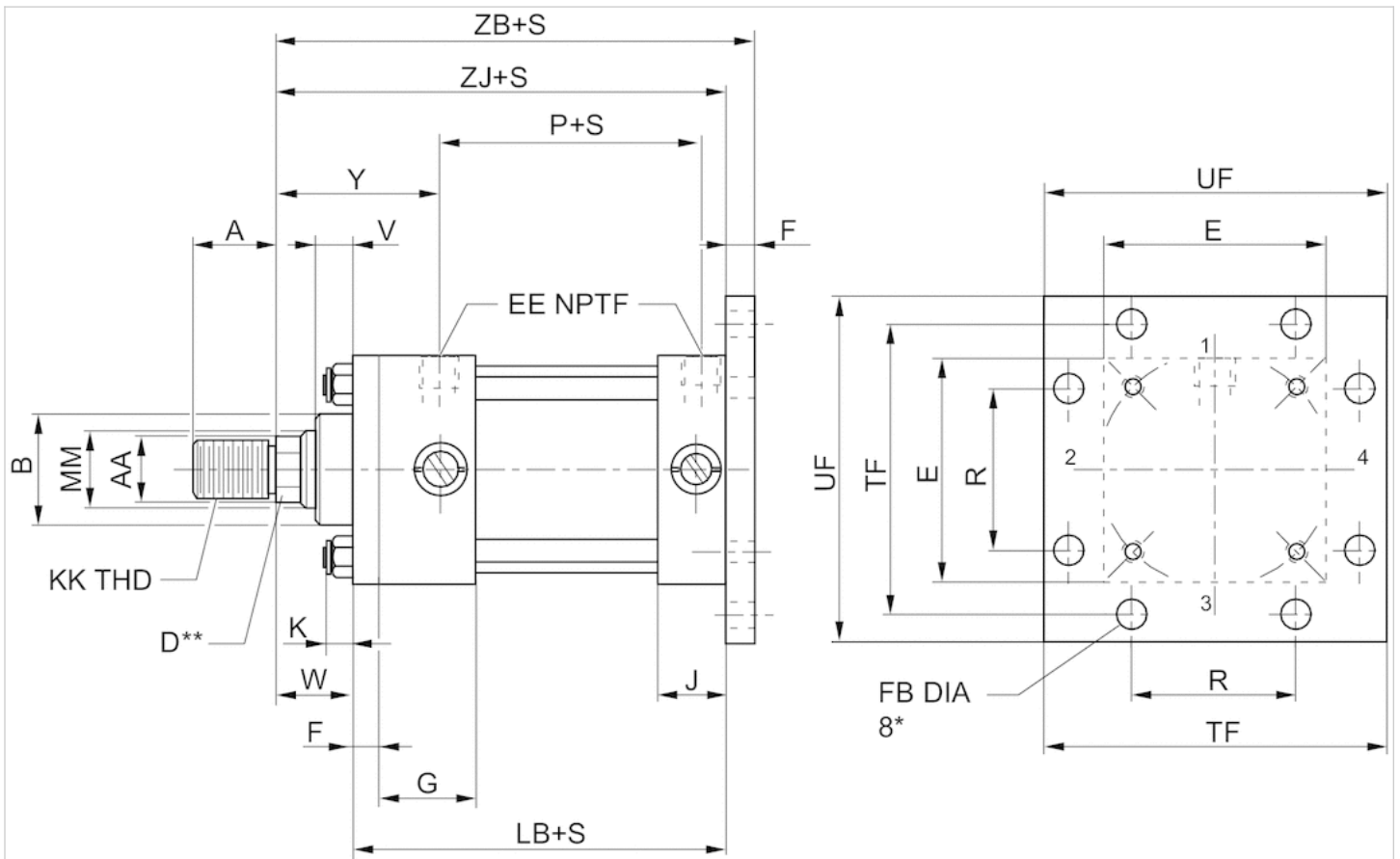
2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

The bearing retainer plate is the same as the “E” dimension for bore sizes 1-1/2” – 6” and the “XN” dimension for 8” – 14” bore sizes.

Removable bearing retainer is not available in 1-1/2” – 6” bore cylinders. The bearing retainer plate is the same as the “E” dimension for 1-1/2” – 6” bore sizes.

## Dimensions

### Cap Square Flange (MF6 mount)



S = stroke

### Dimensions not affected by rod diameter

∅	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch
E	2.00	2.50	3.00	3.75	4.50	5.50	6.50
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00
J	1.00	1.00	1.00	1.25	1.25	1.25	1.50
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44
P	2.25	2.25	2.38	2.63	2.63	2.88	3.13
R	1.43	1.84	2.19	2.76	3.32	4.10	4.88
FB	0.25	0.31	0.31	0.38	0.38	0.50	0.50
LB	4.00	4.00	4.13	4.88	4.88	5.13	5.75
TF	2.75	3.38	3.88	4.69	5.44	6.63	7.63
UF	3.38	4.13	4.63	5.50	6.25	7.63	8.63

Dimensions affected by rod diameter

Ø	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.5	0.25	0.5	0.63	0.25	0.5	0.63
W	0.63	1	0.63	1	1.25	0.63	1	1.25
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
ZB	4.85	5.22	4.90	5.27	5.52	5.02	5.40	5.65
ZJ	4.63	5.00	4.63	5.00	5.25	4.75	5.13	5.38

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.5	0.5	0.25	0.38	0.5	0.5	0.63
1.5	0.75	1	1.25	1.38	0.75	1	1.25	1.38	1.63
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
5.90	5.98	6.23	6.48	6.61	5.98	6.23	6.48	6.61	6.86
5.63	5.63	5.88	6.13	6.25	5.63	5.88	6.13	6.25	6.50

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	1.375	1.75	2	2.5	3
0.25	0.38	0.5	0.5	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5
0.75	1	1.25	1.38	1.63	1.63	1.63	0.88	1.13	1.25	1.5	1.5
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
6.32	6.57	6.82	6.94	7.19	7.19	7.19	7.07	7.32	7.44	7.69	7.69
5.88	6.13	6.25	6.50	6.75	6.75	6.75	6.63	6.88	7.00	7.25	7.25

6 inch						6 inch					
3.5						4					
0.5						0.5					
1.5						1.5					
3.44						3.44					
7.69						7.69					
7.25						7.25					

1) For piston rod Ø

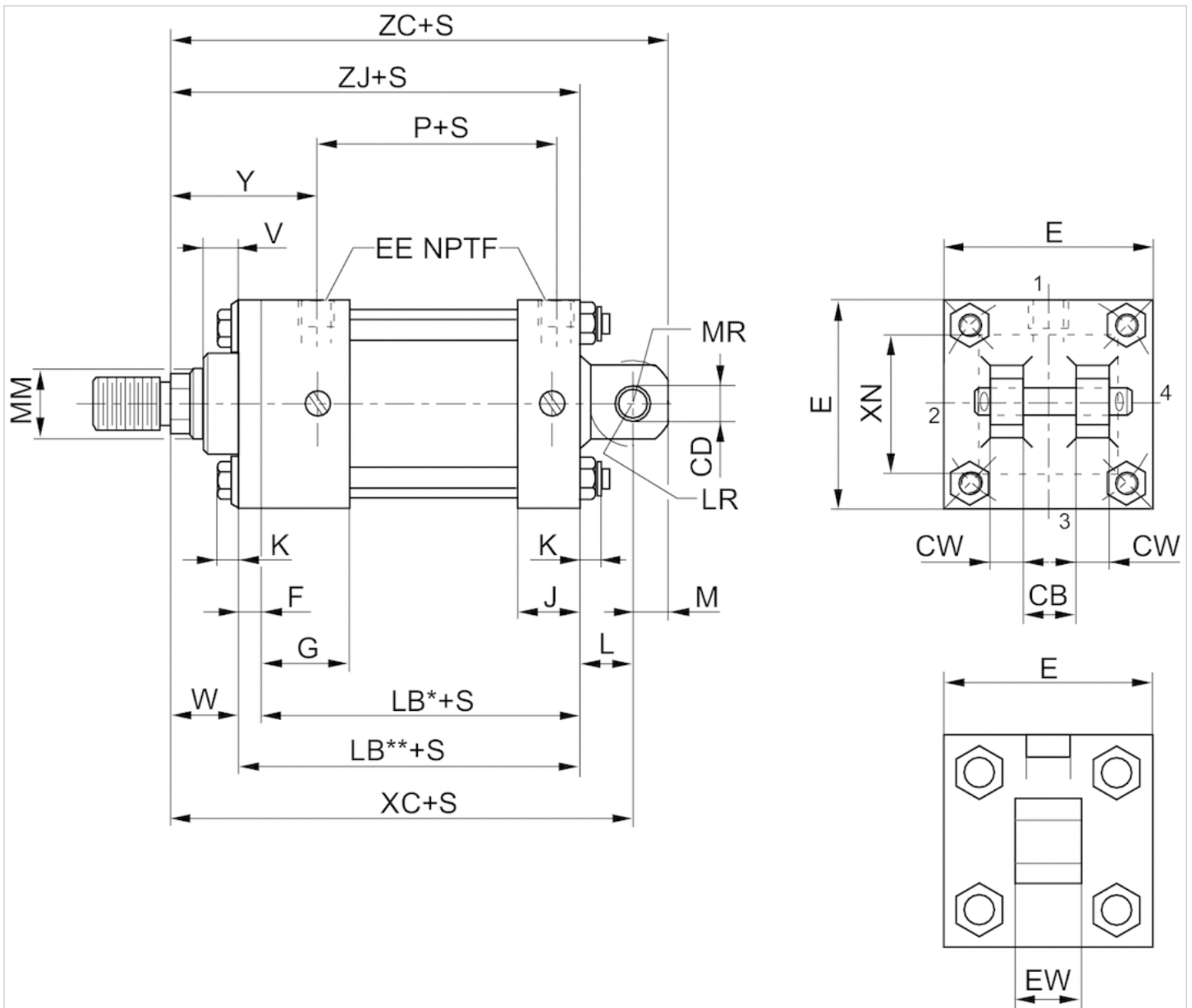
2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

The bearing retainer plate is the same as the “E” dimension for bore sizes 1-1/2” – 6” and the “XN” dimension for 8” – 14” bore sizes.

Removable bearing retainer is not available in 1-1/2” – 6” bore cylinders. The bearing retainer plate is the same as the “E” dimension for 1-1/2” – 6” bore sizes.

## Dimensions

### Fixed Clevis (MP1 mount)



S = stroke

### Dimensions not affected by rod diameter

Ø	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch	8 inch	10 inch	12 inch
E	2.00	2.50	3.00	3.75	4.50	5.50	6.50	8.50	10.63	12.75
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75	0.75	0.75	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00	2.00	2.25	2.25
J	1.00	1.00	1.00	1.25	1.25	1.25	1.50	1.50	2.00	2.00
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44	0.56	0.66	0.66
L	0.75	0.75	0.75	1.25	1.25	1.25	1.50	1.50	2.13	2.25
M	0.50	0.50	0.50	0.75	0.75	0.75	1	1	1.38	1.75
P	2.25	2.25	2.38	2.63	2.63	2.88	3.13	3.25	4.13	4.63
EW/CB	0.75	0.75	0.75	1.25	1.25	1.25	1.50	1.50	2	2.50

Ø	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch	8 inch	10 inch	12 inch
CD	0.50	0.50	0.50	0.75	0.75	0.75	1	1	1.375	1.75
CW	0.50	0.50	0.50	0.63	0.63	0.63	0.75	0.75	1	1.25
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75	0.75	1.00	1.00
LB	4.00	4.00	4.13	4.88	4.88	5.13	5.75	5.13	6.38	6.88
LR	0.59	0.59	0.59	0.88	0.88	0.88	1.19	1.19	1.63	2.06
MR	0.69	0.69	0.69	1	1	1	1.38	1.38	2	2.25

14 inch	
14.75	
0.75	
2.75	
2.25	
0.78	
2.50	
2.00	
5.50	
2.50	
2.00	
1.25	
1.25	
8.13	
2.38	
2.50	

Dimensions affected by rod diameter

Ø	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.50	0.25	0.50	0.63	0.25	0.50	0.63
W	0.63	1	0.63	1	1.25	0.63	1	1.25
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
XC	5.38	5.75	5.38	5.75	6.00	5.50	5.88	6.13
XN	-	-	-	-	-	-	-	-
ZC	5.88	6.25	5.88	6.25	6.50	6.00	6.38	6.63
ZJ	4.63	5.00	4.63	5.00	5.25	4.75	5.13	5.38

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.50	0.50	0.25	0.38	0.50	0.50	0.63
1.50	0.75	1.00	1.25	1.38	0.75	1.00	1.25	1.38	1.63
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
6.38	6.88	7.13	7.38	7.50	6.88	7.13	7.38	7.50	7.75
-	-	-	-	-	-	-	-	-	-
6.88	7.63	7.88	8.13	8.25	7.63	7.88	8.13	8.25	8.50
5.63	5.63	5.88	6.13	6.25	5.63	5.88	6.13	6.25	6.50

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	1.375	1.75	2	2.5	3
0.25	0.38	0.50	0.50	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
0.75	1.00	1.25	1.38	1.63	1.63	1.63	0.88	1.13	1.25	1.50	1.50
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
7.13	7.38	7.63	7.75	8.00	8.00	8.00	8.13	8.38	8.50	8.75	8.75
-	-	-	-	-	-	-	-	-	-	-	-
7.88	8.13	8.38	8.50	8.75	8.75	8.75	9.13	9.38	9.50	9.75	9.75
5.88	6.13	6.83	6.50	6.75	6.75	6.75	6.63	6.88	7.00	7.25	7.25

6 inch	6 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch
3.5	4	1.375	1.75	2	2.5	3	3.5	4	4.5	5	5.5
0.5	0.5	0.25	0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1.50	1.50	-	-	-	-	-	-	-	-	-	-
3.44	3.44	2.81	3.06	3.19	3.44	3.44	3.44	3.44	3.44	3.44	3.44
8.75	8.75	8.25	8.50	8.63	8.88	8.88	8.88	8.88	8.88	8.88	8.88
-	-	4	4	4	4	5.50	5.50	5.50	6.5	6.5	7.25
9.75	9.75	9.25	9.50	9.63	9.88	9.88	9.88	9.88	9.88	9.88	9.88
7.25	7.25	6.75	7.00	7.13	7.38	7.38	7.38	7.38	7.38	7.38	7.38

10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	12 inch	12 inch
1.75	2	2.5	3	3.5	4	4.5	5	5.5	5.5	2	2.5
0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.38	0.5
-	-	-	-	-	-	-	-	-	-	-	-
3.13	3.25	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.25	3.50
10.38	10.50	10.75	10.75	10.75	10.75	10.75	10.75	10.75	10.75	11.13	11.38
4	4	4	5.50	5.50	5.50	6.50	6.50	7.25	7.25	4	4
11.75	11.88	12.13	12.13	12.13	12.13	12.13	12.13	12.13	12.13	12.88	13.13
8.25	8.38	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.88	9.13

12 inch	12 inch	12 inch	12 inch	12 inch	12 inch	14 inch	14 inch	14 inch	14 inch	14 inch	14 inch
3	3.5	4	4.5	5	5.5	2.5	3	3.5	4	4.5	4.5
0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
-	-	-	-	-	-	-	-	-	-	-	-
3.50	3.50	3.50	3.50	3.50	3.50	3.81	3.81	3.81	3.81	3.81	3.81
11.38	11.38	11.38	11.38	11.38	11.38	12.88	12.88	12.88	12.88	12.88	12.88
5.50	5.50	5.50	6.50	6.50	7.25	4	5.50	5.50	5.50	5.50	5.50
13.13	13.13	13.13	13.13	13.13	13.13	14.88	14.88	14.88	14.88	14.88	14.88
9.13	9.13	9.13	9.13	9.13	9.13	10.38	10.38	10.38	10.38	10.38	10.38

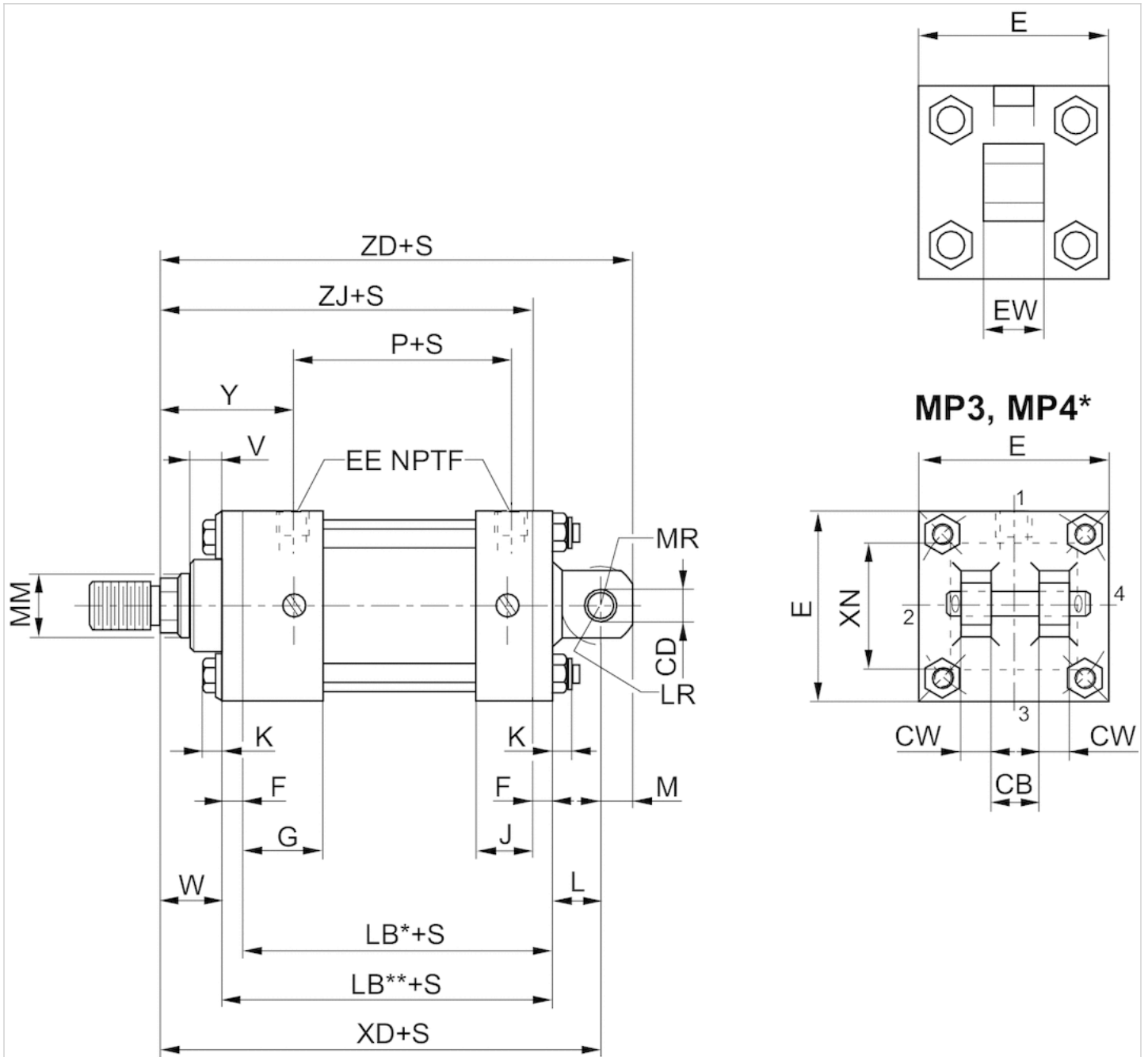
14 inch						14 inch					
5						5.5					
0.5						0.5					
-						-					
3.81						3.81					
12.88						12.88					
6.50						7.25					
14.88						14.88					
10.38						10.38					

- 1) For piston rod Ø
  - 2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.
- The bearing retainer plate is the same as the “E” dimension for bore sizes 1-1/2” – 6” and the “XN” dimension for 8” – 14” bore sizes.

MP1 and MP2 mounts include pivot pin. MP3, MP4, and MU3 mounts do not include pivot pin.

## Dimensions

### Detachable Clevis (MP2 mount)



S = stroke

\* Cap

### Dimensions not affected by rod diameter

Ø	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch	8 inch
E	2.00	2.50	3.00	3.75	4.50	5.50	6.50	8.50
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00	2.00
J	1.00	1.00	1.00	1.25	1.25	1.25	1.50	1.50

Ø	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch	8 inch
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44	0.56
L	0.75	0.75	0.75	1.25	1.25	1.25	1.50	1.50
M	0.50	0.50	0.50	0.75	0.75	0.75	1	1
P	2.25	2.25	2.38	2.63	2.63	2.88	3.13	3.25
EW/CB	0.75	0.75	0.75	1.25	1.25	1.25	1.50	1.50
CD	0.50	0.50	0.50	0.75	0.75	0.75	1	1
CW	0.50	0.50	0.50	0.63	0.63	0.63	0.75	0.75
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75	0.75
LB	4.00	4.00	4.13	4.88	4.88	5.13	5.75	5.13
LR	0.59	0.59	0.59	0.88	0.88	0.88	1.19	1.19
MR	0.69	0.69	0.69	1	1	1	1.38	1.38

Dimensions affected by rod diameter

Ø	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.50	0.25	0.50	0.63	0.25	0.50	0.63
W	0.63	1	0.63	1	1.25	0.63	1	1.25
WF	-	-	-	-	-	-	-	-
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
XC	5.38	5.75	5.38	5.75	6.00	5.50	5.88	6.13
XD	5.75	6.13	5.75	6.13	6.38	5.88	6.25	6.50
XH	5.50	5.88	5.50	5.88	6.13	5.63	6.00	6.25
XN	-	-	-	-	-	-	-	-
ZC	5.88	6.25	5.88	6.25	6.50	6.00	6.38	6.63
ZD	6.25	6.63	6.25	6.63	6.88	6.38	6.75	7.00
ZH	6.25	6.63	6.25	6.63	6.88	6.38	6.75	7.00
ZJ	4.63	5.00	4.63	5.00	5.25	4.75	5.13	5.38

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.50	0.50	0.25	0.38	0.50	0.50	0.63
1.50	0.75	1.00	1.25	1.38	0.75	1.00	1.25	1.38	1.63
-	-	-	-	-	-	-	-	-	-
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
6.38	6.88	7.13	7.38	7.50	6.88	7.13	7.38	7.50	7.75
6.75	7.50	7.75	8.00	8.13	7.50	7.75	8.00	8.13	8.38
6.50	6.88	7.13	7.38	7.50	6.88	7.13	7.38	7.50	7.15
-	-	-	-	-	-	-	-	-	-
6.88	7.63	7.88	8.13	8.25	7.63	7.88	8.13	8.25	8.50
7.25	8.25	8.50	8.75	8.88	8.25	8.50	8.75	8.88	9.13
7.25	8.13	8.38	8.63	8.75	8.13	8.38	8.63	8.75	9.00
5.63	5.63	5.88	6.13	6.25	5.63	5.88	6.13	6.25	6.50

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	1.375	1.75	2	2.5	3
0.25	0.38	0.50	0.50	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5
0.75	1.00	1.25	1.38	1.63	1.63	1.63	0.88	1.13	1.25	1.50	1.50
-	-	-	-	-	-	-	-	-	-	-	-



5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
7.13	7.38	7.63	7.75	8.00	8.00	8.00	8.13	8.38	8.50	8.75	8.75
7.75	8.00	8.25	8.38	8.63	8.63	8.63	8.88	9.13	9.25	9.50	9.50
7.13	7.38	7.63	7.75	8.00	8.00	8.00	8.25	8.50	8.63	8.88	8.88
-	-	-	-	-	-	-	-	-	-	-	-
7.88	8.13	8.38	8.50	8.75	8.75	8.75	9.13	9.38	9.50	9.75	9.75
8.50	8.75	9.00	9.13	9.38	9.38	9.38	9.88	10.13	10.25	10.50	10.50
8.38	8.63	8.88	9.00	9.25	9.25	9.25	9.75	10.00	10.13	10.38	10.38
5.88	6.13	6.83	6.50	6.75	6.75	6.75	6.63	6.88	7.00	7.25	7.25

6 inch	6 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch
3.5	4	1.375	1.75	2	2.5	3	3.5	4	4.5	5	5.5
0.5	0.5	0.25	0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1.50	1.50	-	-	-	-	-	-	-	-	-	-
-	-	1.63	1.88	2	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.44	3.44	2.81	3.06	3.19	3.44	3.44	3.44	3.44	3.44	3.44	3.44
8.75	8.75	8.25	8.50	8.63	8.88	8.88	8.88	8.88	8.88	8.88	8.88
9.50	9.50	9.25	9.50	9.63	9.88	9.88	9.88	9.88	9.88	9.88	9.88
8.88	8.88	-	-	-	-	-	-	-	-	-	-
-	-	4	4	4	4	5.50	5.50	5.50	6.5	6.5	7.25
9.75	9.75	9.25	9.50	9.63	9.88	9.88	9.88	9.88	9.88	9.88	9.88
10.50	10.50	10.25	10.50	10.63	10.88	10.88	10.88	10.88	10.88	10.88	10.88
10.38	10.38	-	-	-	-	-	-	-	-	-	-
7.25	7.25	6.75	7.00	7.13	7.38	7.38	7.38	7.38	7.38	7.38	7.38

1) For piston rod Ø

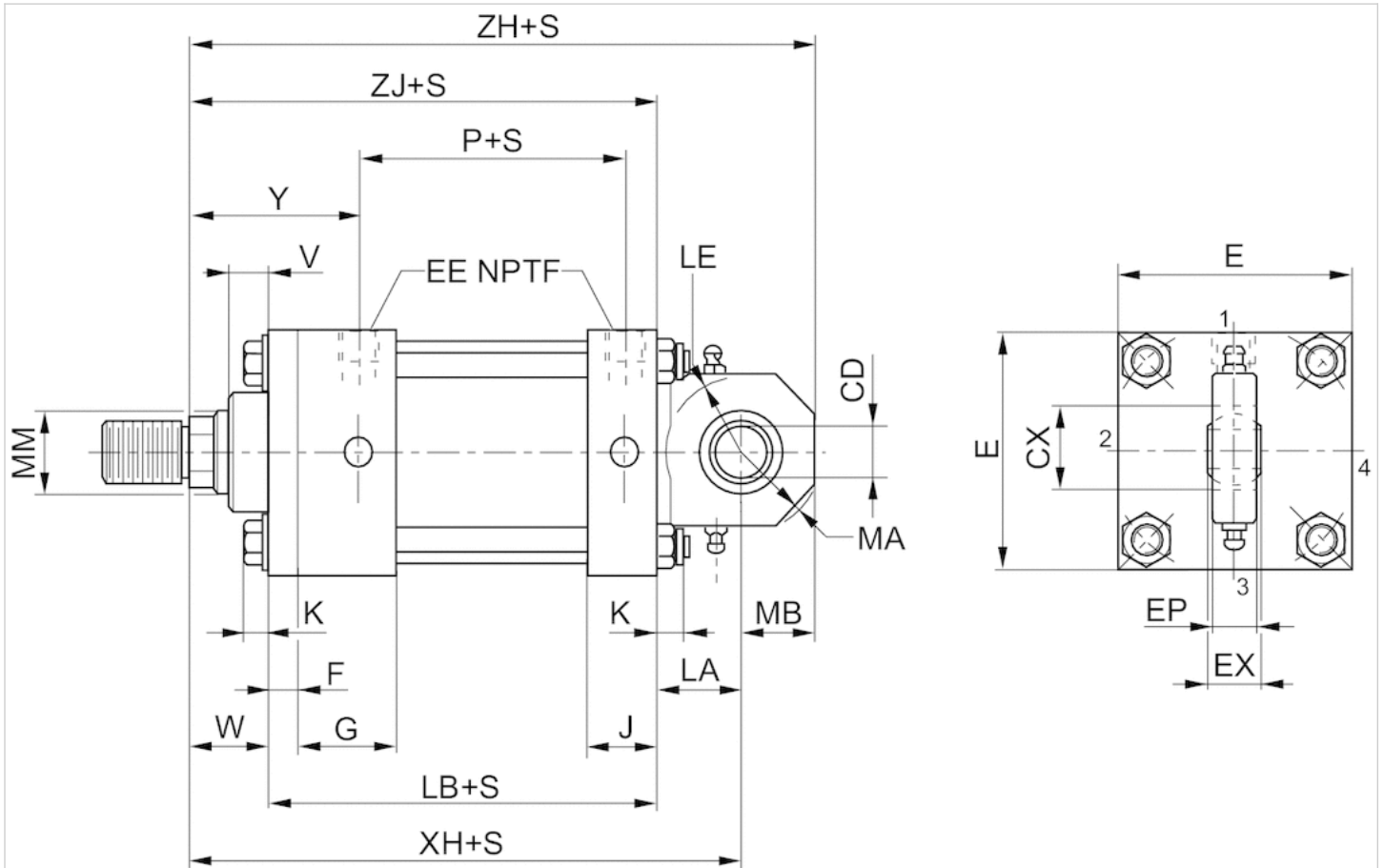
2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

The bearing retainer plate is the same as the “E” dimension for bore sizes 1-1/2” – 6” and the “XN” dimension for 8” – 14” bore sizes.

MP1 and MP2 mounts include pivot pin. MP3, MP4, and MU3 mounts do not include pivot pin.

## Dimensions

### Universal Clevis (MU3 mount)



S = stroke

### Dimensions not affected by rod diameter

∅	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch
E	2.00	2.50	3.00	3.75	4.50	5.50	6.50
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00
J	1.00	1.00	1.00	1.25	1.25	1.25	1.50
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44
P	2.25	2.25	2.38	2.63	2.63	2.88	3.13
CD	0.50	0.50	0.50	0.75	0.75	0.75	1
CX	0.87	0.87	0.87	1.25	1.25	1.25	1.63
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75
EX	0.437	0.437	0.437	0.656	0.656	0.656	0.875
EP	0.38	0.38	0.38	0.56	0.56	0.56	0.75
LA	0.88	0.88	0.88	1.25	1.25	1.25	1.63
LB	4.00	4.00	4.13	4.88	4.88	5.13	5.75
LE	0.63	0.63	0.63	0.94	0.94	0.94	1.13
MA	0.88	0.88	0.88	1.38	1.38	1.38	1.63
MB	0.75	0.75	0.75	1.25	1.25	1.25	1.50

Dimensions affected by rod diameter

Ø	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.50	0.25	0.50	0.63	0.25	0.50	0.63
W	0.63	1	0.63	1	1.25	0.63	1	1.25
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
XH	5.50	5.88	5.50	5.88	6.13	5.63	6.00	6.25
ZH	6.25	6.63	6.25	6.63	6.88	6.38	6.75	7.00
ZJ	4.63	5.00	4.63	5.00	5.25	4.75	5.13	5.38

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.50	0.50	0.25	0.38	0.50	0.50	0.63
1.50	0.75	1.00	1.25	1.38	0.75	1.00	1.25	1.38	1.63
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
6.50	6.88	7.13	7.38	7.50	6.88	7.13	7.38	7.50	7.15
7.25	8.13	8.38	8.63	8.75	8.13	8.38	8.63	8.75	9.00
5.63	5.63	5.88	6.13	6.25	5.63	5.88	6.13	6.25	6.50

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	1.375	1.75	2	2.5	3
0.25	0.38	0.50	0.50	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5
0.75	1.00	1.25	1.38	1.63	1.63	1.63	0.88	1.13	1.25	1.50	1.50
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
7.13	7.38	7.63	7.75	8.00	8.00	8.00	8.25	8.50	8.63	8.88	8.88
8.38	8.63	8.88	9.00	9.25	9.25	9.25	9.75	10.00	10.13	10.38	10.38
5.88	6.13	6.83	6.50	6.75	6.75	6.75	6.63	6.88	7.00	7.25	7.25

6 inch	6 inch
3.5	4
0.5	0.5
1.50	1.50
3.44	3.44
8.88	8.88
10.38	10.38
7.25	7.25

1) For piston rod Ø

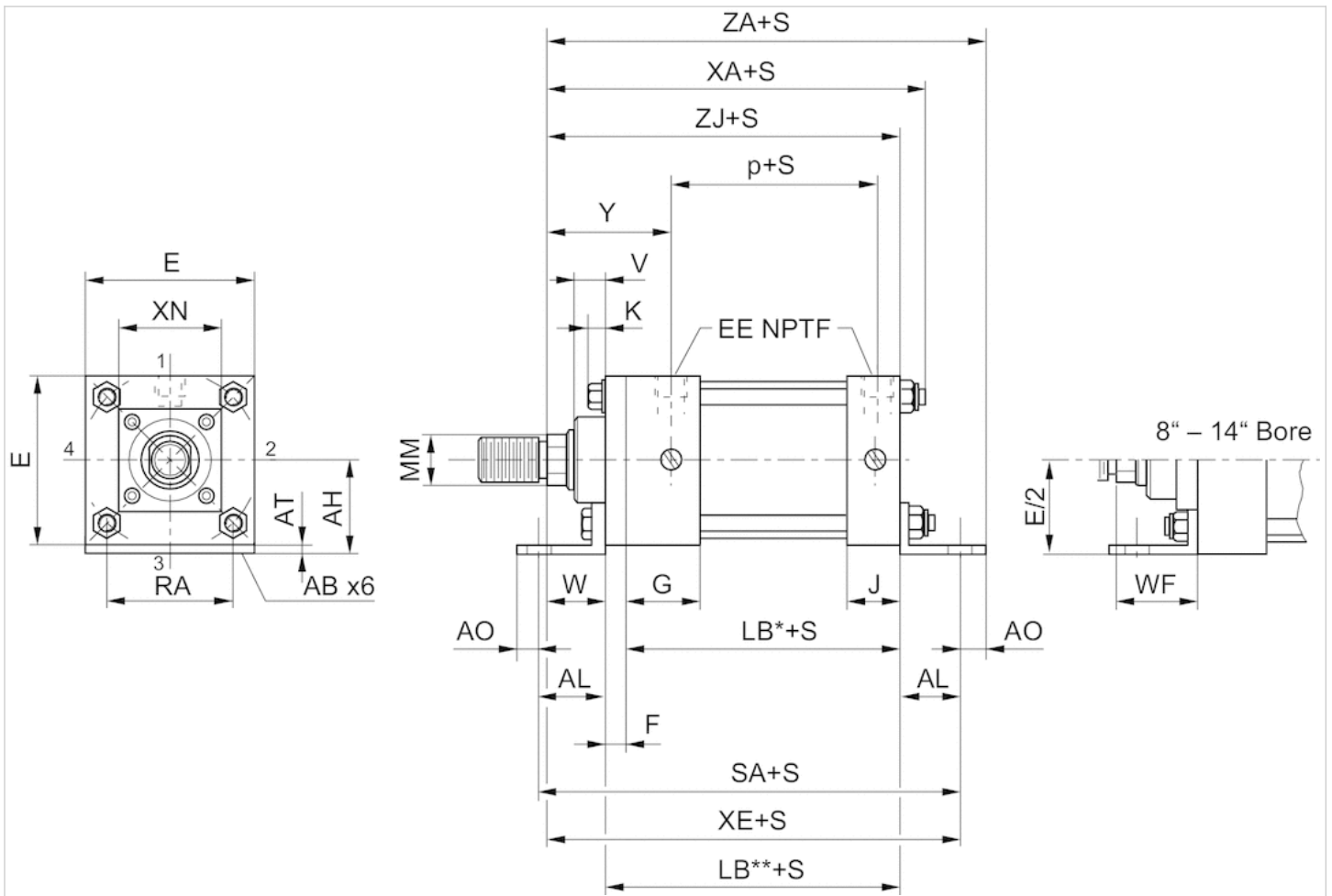
2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

The bearing retainer plate is the same as the “E” dimension for bore sizes 1-1/2” – 6” and the “XN” dimension for 8” – 14” bore sizes.

MP1 and MP2 mounts include pivot pin. MP3, MP4, and MU3 mounts do not include pivot pin.

## Dimensions

### Side End Angles (M51 mount)



S = stroke

### Dimensions not affected by rod diameter

Ø	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch	8 inch	10 inch	12 inch
E	2.00	2.50	3.00	3.75	4.50	5.50	6.50	8.50	10.63	12.75
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75	0.75	0.75	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00	2.00	2.25	2.25
J	1.00	1.00	1.00	1.25	1.25	1.25	1.50	1.50	2.00	2.00
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44	0.56	0.66	0.66
P	2.25	2.25	2.38	2.63	2.63	2.88	3.13	3.25	4.13	4.63
AB	0.38	0.38	0.38	0.50	0.50	0.63	0.75	0.75	1.00	1.00
AH	1.19	1.44	1.63	1.94	2.25	2.75	3.25	4.25	5.31	6.38
AL	1.00	1.00	1.00	1.25	1.25	1.38	1.38	1.81	2.13	2.13
AO	0.38	0.38	0.38	0.50	0.50	0.63	0.63	0.69	0.88	0.88
AT	0.13	0.13	0.13	0.13	0.13	0.19	0.19	0.25	0.25	0.38
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75	0.75	1.00	1.00
LB	4.00	4.00	4.13	4.88	4.88	5.13	5.75	5.13	6.38	6.88
RA	1.25	1.75	2.25	2.75	3.50	4.25	5.25	7.13	8.88	11.00
SA	6.00	6.00	6.13	7.38	7.38	7.88	8.50	8.75	10.63	11.13

14 inch
14.75
0.75
2.75
2.25
0.78
5.50
1.25
7.38
2.44
1.06
0.38
1.25
8.13
12.63
13.00

Dimensions affected by rod diameter

Ø	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.50	0.25	0.50	0.63	0.25	0.50	0.63
W	0.63	1	0.63	1	1.25	0.63	1	1.25
WF	-	-	-	-	-	-	-	-
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
XA	5.63	6.00	5.63	6.00	6.25	5.75	6.13	6.38
XE	5.38	5.75	5.56	5.94	6.19	5.81	6.19	6.44
XN	-	-	-	-	-	-	-	-
ZA	6.00	6.38	6.00	6.38	6.63	6.13	6.50	6.75
ZB	4.85	5.22	4.90	5.27	5.52	5.02	5.40	5.65
ZE	5.63	6.00	5.88	6.25	6.50	6.13	6.50	6.75
ZJ	4.63	5.00	4.63	5.00	5.25	4.75	5.13	5.38

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.50	0.50	0.25	0.38	0.50	0.50	0.63
1.50	0.75	1.00	1.25	1.38	0.75	1.00	1.25	1.38	1.63
-	-	-	-	-	-	-	-	-	-
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
6.63	6.88	7.13	7.38	7.50	6.88	7.13	7.38	7.50	7.75
6.69	6.50	6.75	7.00	7.13	6.63	6.88	7.13	7.25	7.50
-	-	-	-	-	-	-	-	-	-
7.00	7.38	7.63	7.88	8.00	7.38	7.63	7.88	8.00	8.25
5.90	5.98	6.23	6.48	6.61	5.98	6.23	6.48	6.61	6.86
7.00	6.88	7.13	7.38	7.50	7.00	7.25	7.50	7.63	7.88
5.63	5.63	5.88	6.13	6.25	5.63	5.88	6.13	6.25	6.50

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	1.375	1.75	2	2.5	3
0.25	0.38	0.50	0.50	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
0.75	1.00	1.25	1.38	1.63	1.63	1.63	0.88	1.13	1.25	1.50	1.50
-	-	-	-	-	-	-	-	-	-	-	-
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
7.25	7.50	7.75	7.88	8.13	8.13	8.13	8.00	8.25	8.38	8.63	8.63
6.94	7.19	7.44	7.56	7.81	7.81	7.81	7.63	7.88	8.00	8.25	8.25
-	-	-	-	-	-	-	-	-	-	-	-
7.88	8.13	8.38	8.50	8.75	8.75	8.75	8.63	8.88	9.00	9.25	9.25
6.32	6.57	6.82	6.94	7.19	7.19	7.19	7.07	7.32	7.44	7.69	7.69
7.44	7.69	7.94	8.06	8.31	8.31	8.31	8.13	8.38	8.50	8.75	8.75
5.88	6.13	6.83	6.50	6.75	6.75	6.75	6.63	6.88	7.00	7.25	7.25

6 inch	6 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch
3.5	4	1.375	1.75	2	2.5	3	3.5	4	4.5	5	5.5
0.5	0.5	0.25	0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1.50	1.50	-	-	-	-	-	-	-	-	-	-
-	-	1.63	1.88	2	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.44	3.44	2.81	3.06	3.19	3.44	3.44	3.44	3.44	3.44	3.44	3.44
8.63	8.63	8.56	8.81	8.94	9.19	9.19	9.19	9.19	9.19	9.19	9.19
8.25	8.25	7.88	8.13	8.25	9.25	9.25	9.25	9.25	9.25	9.25	9.25
-	-	4	4	4	4	5.50	5.50	5.50	6.5	6.5	7.25
9.25	9.25	9.25	9.50	9.63	9.88	9.88	9.88	9.88	9.88	9.88	9.88
7.69	7.69	7.31	7.56	7.69	7.94	7.94	7.94	7.94	7.94	7.94	7.94
8.75	8.75	8.50	8.75	8.88	9.88	9.88	9.88	9.88	9.88	9.88	9.88
7.25	7.25	6.75	7.00	7.13	7.38	7.38	7.38	7.38	7.38	7.38	7.38

10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	12 inch	12 inch
1.75	2	2.5	3	3.5	4	4.5	5	5.5	5.5	2	2.5
0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.38	0.5
-	-	-	-	-	-	-	-	-	-	-	-
1.88	2	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2	2.25
3.13	3.25	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.25	3.50
10.38	10.50	10.75	10.75	10.75	10.75	10.75	10.75	10.75	10.75	11.00	11.25
9.56	9.69	9.94	9.94	9.94	9.94	9.94	9.94	9.94	9.94	10.19	10.44
4	4	4	5.50	5.50	5.50	6.50	6.50	7.25	7.25	4	4
11.25	11.38	11.63	11.63	11.63	11.63	11.63	11.63	11.63	11.63	11.88	12.13
8.91	9.03	9.28	9.28	9.28	9.28	9.28	9.28	9.28	9.28	9.53	9.78
10.19	10.31	10.56	10.56	10.56	10.56	10.56	10.56	10.56	10.56	10.81	11.06
8.25	8.38	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.88	9.13

12 inch	12 inch	12 inch	12 inch	12 inch	12 inch	14 inch	14 inch	14 inch	14 inch	14 inch	14 inch
3	3.5	4	4.5	5	5.5	2.5	3	3.5	4	4.5	4.5
0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
-	-	-	-	-	-	-	-	-	-	-	-
2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.50	3.50	3.50	3.50	3.50	3.50	3.81	3.81	3.81	3.81	3.81	3.81
11.25	11.25	11.25	11.25	11.25	11.25	12.81	12.81	12.81	12.81	12.81	12.81
10.44	10.44	10.44	10.44	10.44	10.44	11.88	11.88	11.88	11.88	11.88	11.88
5.50	5.50	5.50	6.50	6.50	7.25	4	5.50	5.50	5.50	5.50	5.50
12.13	12.13	12.13	12.13	12.13	12.13	13.88	13.88	13.88	13.88	13.88	13.88

12 inch	12 inch	12 inch	12 inch	12 inch	12 inch	14 inch	14 inch	14 inch	14 inch	14 inch
9.78	9.78	9.78	9.78	9.78	9.78	11.16	11.16	11.16	11.16	11.16
11.06	11.06	11.06	11.06	11.06	11.06	12.63	12.63	12.63	12.63	12.63
9.13	9.13	9.13	9.13	9.13	9.13	10.38	10.38	10.38	10.38	10.38

14 inch	14 inch
5	5.5
0.5	0.5
-	-
2.25	2.25
3.81	3.81
12.81	12.81
11.88	11.88
6.50	7.25
13.88	13.88
11.16	11.16
12.63	12.63
10.38	10.38

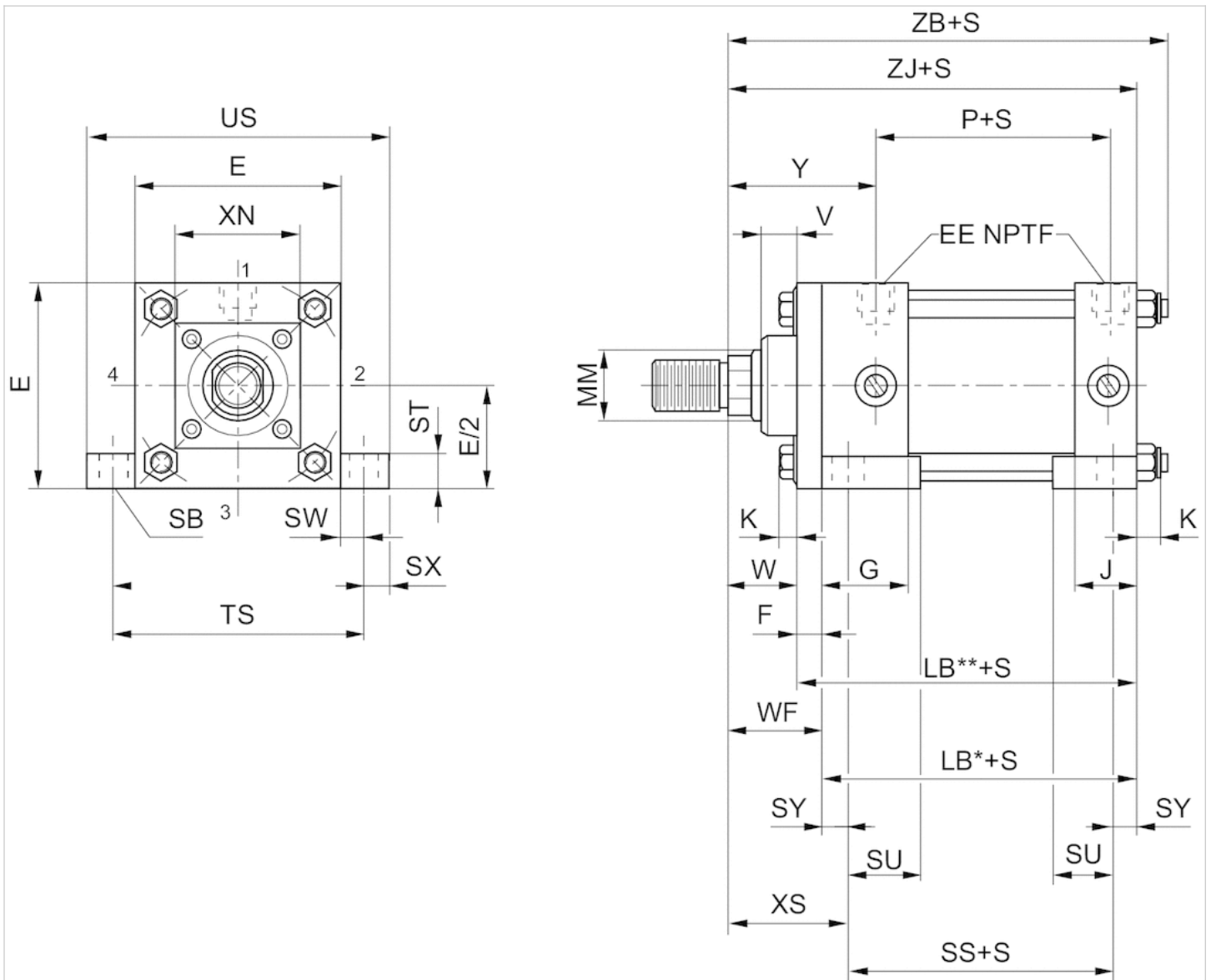
1) For piston rod  $\emptyset$

2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

The bearing retainer plate is the same as the "E" dimension for bore sizes 1-1/2" – 6" and the "XN" dimension for 8" – 14" bore sizes.

## Dimensions

### Side Lugs (MS2 mount)



S = stroke

### Dimensions not affected by rod diameter

Ø	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch	8 inch	10 inch	12 inch
E	2.00	2.50	3.00	3.75	4.50	5.50	6.50	8.50	10.63	12.75
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75	0.75	0.75	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00	2.00	2.25	2.25
J	1.00	1.00	1.00	1.25	1.25	1.25	1.50	1.50	2.00	2.00
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44	0.56	0.66	0.66
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75	0.75	1.00	1.00
LB	4.00	4.00	4.13	4.88	4.88	5.13	5.75	5.13	6.38	6.88
SB	0.38	0.38	0.38	0.50	0.50	0.75	0.75	0.75	1.00	1.00
SS	2.88	2.88	3.00	3.25	3.25	3.13	3.63	3.75	4.63	5.13
ST	0.50	0.50	0.50	0.75	0.75	1.00	1.00	1.00	1.25	1.25



Ø	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch	8 inch	10 inch	12 inch
SU	0.94	0.94	0.94	1.25	1.25	1.56	1.56	1.56	2.00	2.00
SW	0.38	0.38	0.38	0.50	0.50	0.69	0.69	0.69	0.88	0.88
SX	0.38	0.38	0.38	0.50	0.50	0.69	0.69	0.69	0.88	0.88
SY	0.38	0.38	0.38	0.50	0.50	0.69	0.69	0.69	0.88	0.88
TS	2.75	3.25	3.75	4.75	5.50	6.88	7.88	9.88	12.38	14.50
US	3.50	4.00	4.50	5.75	6.50	8.25	9.25	11.25	14.13	16.25

14 inch	
14.75	
0.75	
2.75	
2.25	
0.78	
1.25	
8.13	
1.25	
5.88	
1.50	
2.50	
1.13	
1.13	
1.13	
17.00	
19.25	

### Dimensions affected by rod diameter

Ø	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.50	0.25	0.50	0.63	0.25	0.50	0.63
W	0.63	1	0.63	1	1.25	0.63	1	1.25
WF	-	-	-	-	-	-	-	-
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
XN	-	-	-	-	-	-	-	-
XS	1.38	1.75	1.38	1.75	2.00	1.38	1.75	2.00
XT	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
ZB	4.85	5.22	4.90	5.27	5.52	5.02	5.40	5.65
ZJ	4.63	5.00	4.63	5.00	5.25	4.75	5.13	5.38

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.50	0.50	0.25	0.38	0.50	0.50	0.63
1.50	0.75	1.00	1.25	1.38	0.75	1.00	1.25	1.38	1.63
-	-	-	-	-	-	-	-	-	-
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
-	-	-	-	-	-	-	-	-	-
2.25	1.88	2.13	2.38	2.50	1.88	2.13	2.38	2.50	2.75
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
5.90	5.98	6.23	6.48	6.61	5.98	6.23	6.48	6.61	6.86

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
5.63	5.63	5.88	6.13	6.25	5.63	5.88	6.13	6.25	6.50

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	1.375	1.75	2	2.5	3
0.25	0.38	0.50	0.50	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5
0.75	1.00	1.25	1.38	1.63	1.63	1.63	0.88	1.13	1.25	1.50	1.50
-	-	-	-	-	-	-	-	-	-	-	-
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
-	-	-	-	-	-	-	-	-	-	-	-
2.06	2.31	2.56	2.69	2.94	2.94	2.94	2.31	2.56	2.69	2.94	2.94
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
6.32	6.57	6.82	6.94	7.19	7.19	7.19	7.07	7.32	7.44	7.69	7.69
5.88	6.13	6.83	6.50	6.75	6.75	6.75	6.63	6.88	7.00	7.25	7.25

6 inch	6 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch
3.5	4	1.375	1.75	2	2.5	3	3.5	4	4.5	5	5.5
0.5	0.5	0.25	0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1.50	1.50	-	-	-	-	-	-	-	-	-	-
-	-	1.63	1.88	2	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.44	3.44	2.81	3.06	3.19	3.44	3.44	3.44	3.44	3.44	3.44	3.44
-	-	4	4	4	4	5.50	5.50	5.50	6.5	6.5	7.25
2.94	2.94	2.31	2.56	2.69	2.94	2.94	2.94	2.94	2.94	2.94	2.94
3.44	3.44	2.81	3.06	3.19	3.44	3.44	3.44	3.44	3.44	3.44	3.44
7.69	7.69	7.31	7.56	7.69	7.94	7.94	7.94	7.94	7.94	7.94	7.94
7.25	7.25	6.75	7.00	7.13	7.38	7.38	7.38	7.38	7.38	7.38	7.38

10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	12 inch	12 inch
1.75	2	2.5	3	3.5	4	4.5	5	5.5	5.5	2	2.5
0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.38	0.5
-	-	-	-	-	-	-	-	-	-	-	-
1.88	2	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2	2.25
3.13	3.25	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.25	3.50
4	4	4	5.50	5.50	5.50	6.50	6.50	7.25	7.25	4	4
2.75	2.88	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13	2.88	3.13
3.13	3.25	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.25	3.50
8.91	9.03	9.28	9.28	9.28	9.28	9.28	9.28	9.28	9.28	9.53	9.78
8.25	8.38	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.88	9.13

12 inch	12 inch	12 inch	12 inch	12 inch	12 inch	14 inch	14 inch	14 inch	14 inch	14 inch	14 inch
3	3.5	4	4.5	5	5.5	2.5	3	3.5	4	4.5	4.5
0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
-	-	-	-	-	-	-	-	-	-	-	-
2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.50	3.50	3.50	3.50	3.50	3.50	3.81	3.81	3.81	3.81	3.81	3.81
5.50	5.50	5.50	6.50	6.50	7.25	4	5.50	5.50	5.50	5.50	5.50
3.13	3.13	3.13	3.13	3.13	3.13	3.38	3.38	3.38	3.38	3.38	3.38
3.50	3.50	3.50	3.50	3.50	3.50	3.81	3.81	3.81	3.81	3.81	3.81
9.78	9.78	9.78	9.78	9.78	9.78	11.16	11.16	11.16	11.16	11.16	11.16
9.13	9.13	9.13	9.13	9.13	9.13	10.38	10.38	10.38	10.38	10.38	10.38

14 inch	14 inch
5	5.5
0.5	0.5
-	-
2.25	2.25
3.81	3.81
6.50	7.25
3.38	3.38
3.81	3.81
11.16	11.16
10.38	10.38

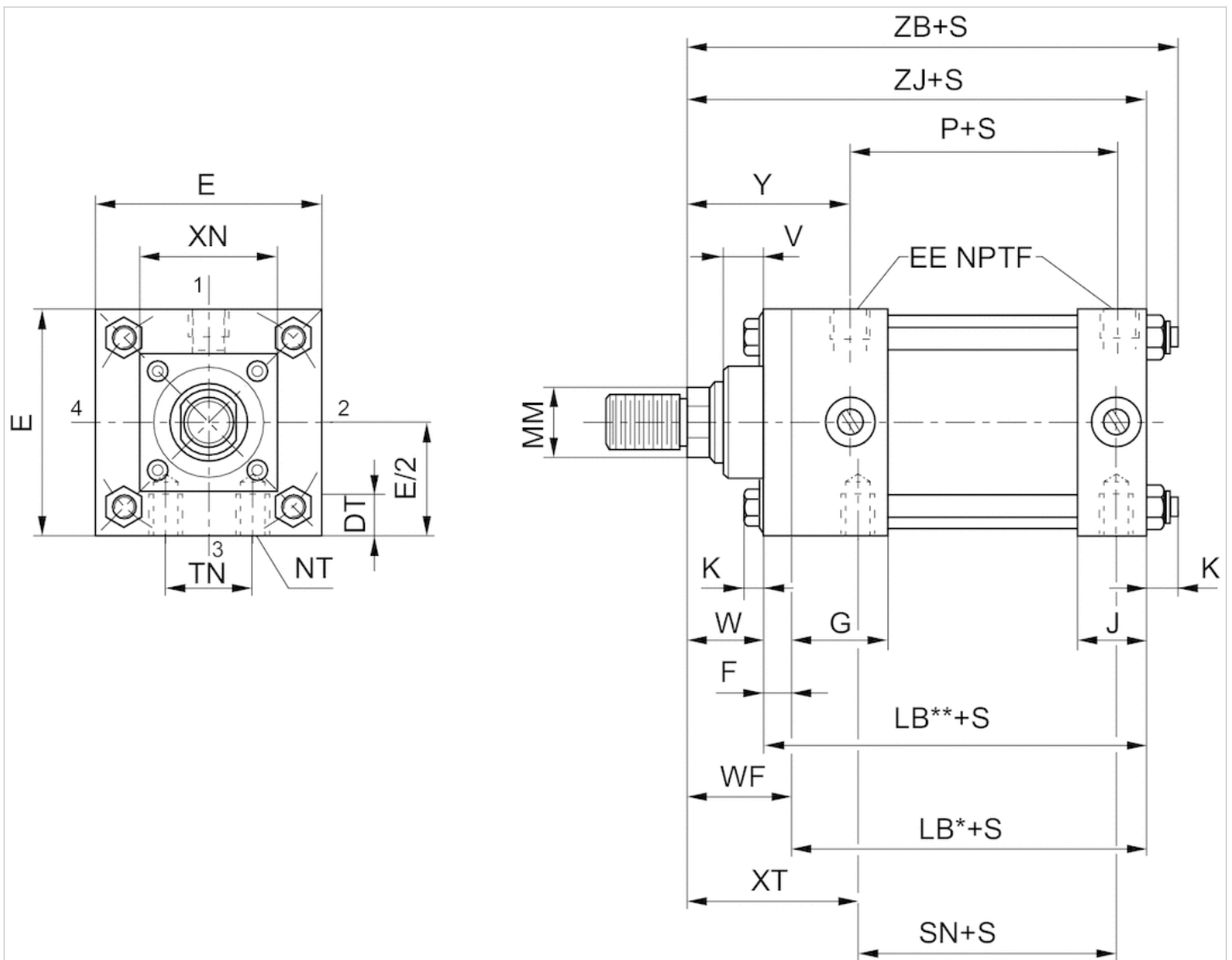
1) For piston rod  $\varnothing$

2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

The bearing retainer plate is the same as the “E” dimension for bore sizes 1-1/2” – 6” and the “XN” dimension for 8” – 14” bore sizes.

## Dimensions

### Side Tapped (MS4 mount)



Dimensions not affected by rod diameter

Ø	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch	8 inch	10 inch	12 inch
E	2.00	2.50	3.00	3.75	4.50	5.50	6.50	8.50	10.63	12.75
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75	0.75	0.75	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00	2.00	2.25	2.25
J	1.00	1.00	1.00	1.25	1.25	1.25	1.50	1.50	2.00	2.00
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44	0.56	0.66	0.66
P	2.25	2.25	2.38	2.63	2.63	2.88	3.13	3.25	4.13	4.63
DT	0.38	0.50	0.75	0.88	0.88	1.25	1.50	1.50	2.00	2.00
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75	0.75	1.00	1.00
LB	4.00	4.00	4.13	4.88	4.88	5.13	5.75	5.13	6.38	6.88
NT	0.25	0.31	0.38	0.50	0.50	0.63	0.75	0.75	1.00	1.00
SN	2.25	2.25	2.38	2.63	2.63	2.88	3.06	3.25	4.13	4.63
TN	0.63	0.88	1.25	1.50	2.06	2.69	3.25	4.50	5.50	7.25

14 inch	
	14.75
	0.75
	2.75
	2.25
	0.78
	5.50
	2.50
	1.25
	8.13
	1.25
	5.50
	8.38

Dimensions affected by rod diameter

Ø	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.50	0.25	0.50	0.63	0.25	0.50	0.63
W	0.63	1	0.63	1	1.25	0.63	1	1.25
WF	-	-	-	-	-	-	-	-
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
XN	-	-	-	-	-	-	-	-
XS	1.38	1.75	1.38	1.75	2.00	1.38	1.75	2.00
XT	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
ZB	4.85	5.22	4.90	5.27	5.52	5.02	5.40	5.65
ZJ	4.63	5.00	4.63	5.00	5.25	4.75	5.13	5.38

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.50	0.50	0.25	0.38	0.50	0.50	0.63
1.50	0.75	1.00	1.25	1.38	0.75	1.00	1.25	1.38	1.63
-	-	-	-	-	-	-	-	-	-
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
-	-	-	-	-	-	-	-	-	-
2.25	1.88	2.13	2.38	2.50	1.88	2.13	2.38	2.50	2.75
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
5.90	5.98	6.23	6.48	6.61	5.98	6.23	6.48	6.61	6.86
5.63	5.63	5.88	6.13	6.25	5.63	5.88	6.13	6.25	6.50

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	1.375	1.75	2	2.5	3
0.25	0.38	0.50	0.50	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5
0.75	1.00	1.25	1.38	1.63	1.63	1.63	0.88	1.13	1.25	1.50	1.50
-	-	-	-	-	-	-	-	-	-	-	-
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
-	-	-	-	-	-	-	-	-	-	-	-
2.06	2.31	2.56	2.69	2.94	2.94	2.94	2.31	2.56	2.69	2.94	2.94
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
6.32	6.57	6.82	6.94	7.19	7.19	7.19	7.07	7.32	7.44	7.69	7.69
5.88	6.13	6.83	6.50	6.75	6.75	6.75	6.63	6.88	7.00	7.25	7.25

6 inch	6 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch
3.5	4	1.375	1.75	2	2.5	3	3.5	4	4.5	5	5.5
0.5	0.5	0.25	0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1.50	1.50	-	-	-	-	-	-	-	-	-	-
-	-	1.63	1.88	2	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.44	3.44	2.81	3.06	3.19	3.44	3.44	3.44	3.44	3.44	3.44	3.44
-	-	4	4	4	4	5.50	5.50	5.50	6.5	6.5	7.25
2.94	2.94	2.31	2.56	2.69	2.94	2.94	2.94	2.94	2.94	2.94	2.94
3.44	3.44	2.81	3.06	3.19	3.44	3.44	3.44	3.44	3.44	3.44	3.44
7.69	7.69	7.31	7.56	7.69	7.94	7.94	7.94	7.94	7.94	7.94	7.94
7.25	7.25	6.75	7.00	7.13	7.38	7.38	7.38	7.38	7.38	7.38	7.38

10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	12 inch	12 inch
1.75	2	2.5	3	3.5	4	4.5	5	5.5	2	2.5
0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.38	0.5
-	-	-	-	-	-	-	-	-	-	-
1.88	2	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2	2.25
3.13	3.25	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.25	3.50
4	4	4	5.50	5.50	5.50	6.50	6.50	7.25	4	4
2.75	2.88	3.13	3.13	3.13	3.13	3.13	3.13	3.13	2.88	3.13
3.13	3.25	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.25	3.50
8.91	9.03	9.28	9.28	9.28	9.28	9.28	9.28	9.28	9.53	9.78
8.25	8.38	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.88	9.13

12 inch	12 inch	12 inch	12 inch	12 inch	12 inch	14 inch	14 inch	14 inch	14 inch	14 inch
3	3.5	4	4.5	5	5.5	2.5	3	3.5	4	4.5
0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
-	-	-	-	-	-	-	-	-	-	-
2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.50	3.50	3.50	3.50	3.50	3.50	3.81	3.81	3.81	3.81	3.81
5.50	5.50	5.50	6.50	6.50	7.25	4	5.50	5.50	5.50	5.50
3.13	3.13	3.13	3.13	3.13	3.13	3.38	3.38	3.38	3.38	3.38
3.50	3.50	3.50	3.50	3.50	3.50	3.81	3.81	3.81	3.81	3.81
9.78	9.78	9.78	9.78	9.78	9.78	11.16	11.16	11.16	11.16	11.16
9.13	9.13	9.13	9.13	9.13	9.13	10.38	10.38	10.38	10.38	10.38

14 inch	14 inch
5	5.5
0.5	0.5
-	-
2.25	2.25
3.81	3.81
6.50	7.25
3.38	3.38
3.81	3.81
11.16	11.16
10.38	10.38

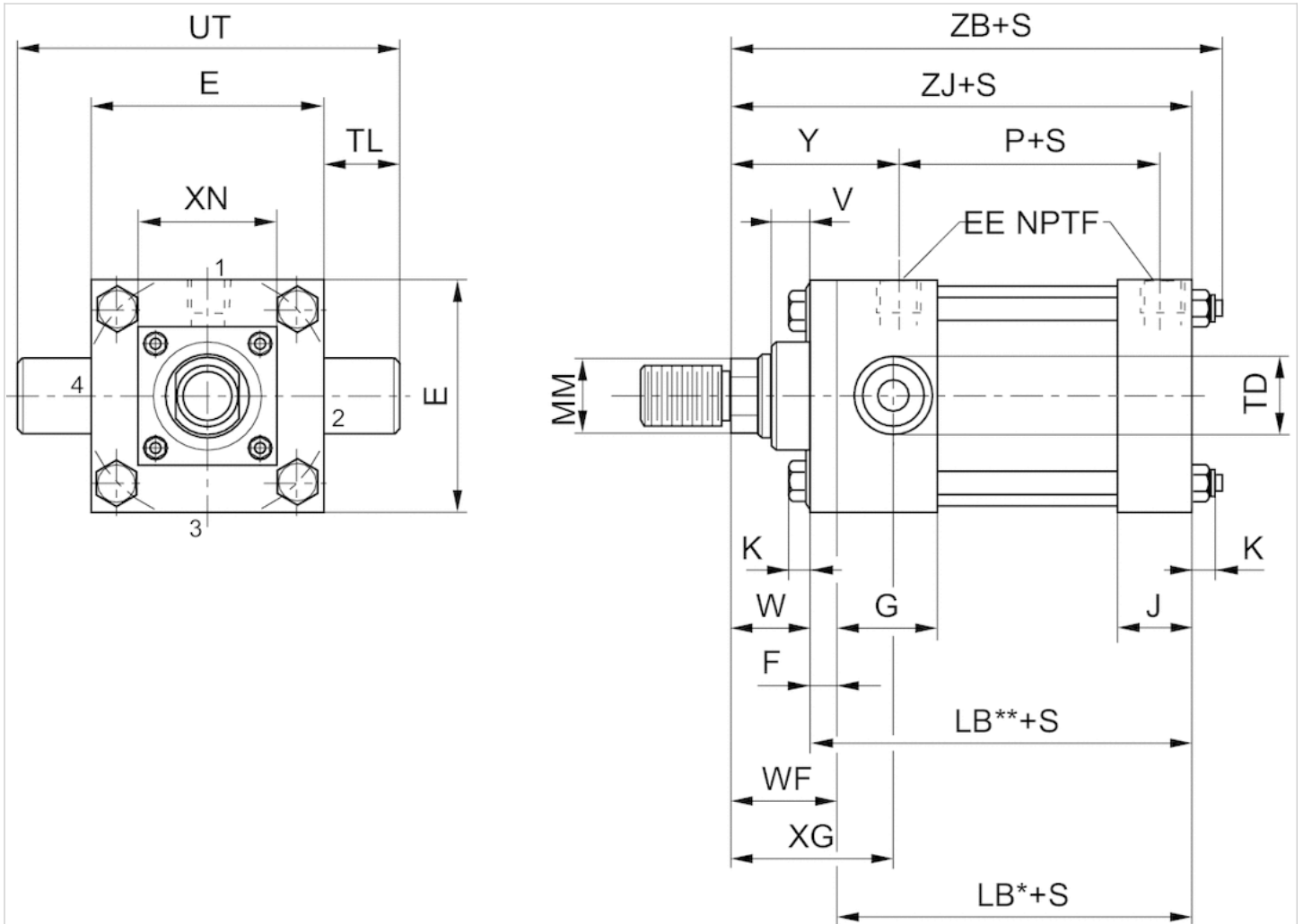
1) For piston rod Ø

2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

The bearing retainer plate is the same as the “E” dimension for bore sizes 1-1/2” – 6” and the “XN” dimension for 8” – 14” bore sizes.

## Dimensions

### Head Trunnion (MT1 mount)



S = stroke

### Dimensions not affected by rod diameter

Ø	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch	8 inch	10 inch	12 inch
E	2.00	2.50	3.00	3.75	4.50	5.50	6.50	8.50	10.63	12.75
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75	0.75	0.75	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00	2.00	2.25	2.25
J	1.00	1.00	1.00	1.25	1.25	1.25	1.50	1.50	2.00	2.00
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44	0.56	0.66	0.66
P	2.25	2.25	2.38	2.63	2.63	2.88	3.13	3.25	4.13	4.63
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75	0.75	1.00	1.00
LB	4.00	4.00	4.13	4.88	4.88	5.13	5.75	5.13	6.38	6.88
TD	1.00	1.00	1.00	1.00	1.00	1.00	1.375	1.375	1.75	1.75
TL	1.00	1.00	1.00	1.00	1.00	1.00	1.38	1.38	1.75	1.75
UT	4.00	4.50	5.00	5.75	6.50	7.50	9.25	11.25	14.13	16.25

14 inch

14.75

14 inch	
0.75	
2.75	
2.25	
0.78	
5.50	
1.25	
8.13	
2.00	
2.00	
18.75	

Dimensions affected by rod diameter

Ø	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.50	0.25	0.50	0.63	0.25	0.50	0.63
W	0.63	1	0.63	1	1.25	0.63	1	1.25
WF	-	-	-	-	-	-	-	-
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
XG	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
ZB	4.85	5.22	4.90	5.27	5.52	5.02	5.40	5.65
XI 1)	3.13	3.50	3.25	3.63	3.88	3.25	3.63	3.88
XJ	4.19	4.56	4.19	4.56	4.81	4.31	4.69	4.94
XN	-	-	-	-	-	-	-	-
ZJ	4.63	5.00	4.63	5.00	5.25	4.75	5.13	5.38

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.50	0.50	0.25	0.38	0.50	0.50	0.63
1.50	0.75	1.00	1.25	1.38	0.75	1.00	1.25	1.38	1.63
-	-	-	-	-	-	-	-	-	-
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
5.90	5.98	6.23	6.48	6.61	5.98	6.23	6.48	6.61	6.86
4.13	4.13	4.38	4.63	4.75	4.13	4.38	4.63	4.75	5.00
5.19	5.06	5.31	5.56	5.69	5.06	5.31	5.56	5.69	5.94
-	-	-	-	-	-	-	-	-	-
5.63	5.63	5.88	6.13	6.25	5.63	5.88	6.13	6.25	6.50

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	1.375	1.75	2	2.5	3
0.25	0.38	0.50	0.50	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5
0.75	1.00	1.25	1.38	1.63	1.63	1.63	0.88	1.13	1.25	1.50	1.50
-	-	-	-	-	-	-	-	-	-	-	-
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
6.32	6.57	6.82	6.94	7.19	7.19	7.19	7.07	7.32	7.44	7.69	7.69
4.13	4.38	4.63	4.75	5.00	5.00	5.00	4.88	5.13	5.25	5.50	5.50
5.31	5.56	5.81	5.94	6.19	6.19	6.19	5.94	6.19	6.31	6.56	6.56



5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
-	-	-	-	-	-	-	-	-	-	-	-
5.88	6.13	6.38	6.50	6.75	6.75	6.75	6.63	6.88	7.00	7.25	7.25

6 inch	6 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch
3.5	4	1.375	1.75	2	2.5	3	3.5	4	4.5	5	5.5
0.5	0.5	0.25	0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1.50	1.50	-	-	-	-	-	-	-	-	-	-
-	-	1.63	1.88	2	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.44	3.44	2.81	3.06	3.19	3.44	3.44	3.44	3.44	3.44	3.44	3.44
3.44	3.44	2.81	3.06	3.19	3.44	3.44	3.44	3.44	3.44	3.44	3.44
7.69	7.69	7.31	7.56	7.69	7.94	7.94	7.94	7.94	7.94	7.94	7.94
5.50	5.50	4.88	5.13	5.25	5.50	5.50	5.50	5.50	5.50	5.50	5.50
6.56	6.56	6.06	6.44	6.56	6.69	6.69	6.69	6.69	6.69	6.69	6.69
-	-	4	4	4	4	5.50	5.50	5.50	6.5	6.5	7.25
7.25	7.25	6.75	7.00	7.13	7.38	7.38	7.38	7.38	7.38	7.38	7.38

10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	12 inch	12 inch
1.75	2	2.5	3	3.5	4	4.5	5	5.5	5.5	2	2.5
0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.38	0.5
-	-	-	-	-	-	-	-	-	-	-	-
1.88	2	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2	2.25
3.13	3.25	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.25	3.50
3.13	3.25	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.25	3.50
8.91	9.03	9.28	9.28	9.28	9.28	9.28	9.28	9.28	9.28	9.53	9.78
5.63	5.75	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	5.75	6.00
7.25	7.38	7.63	7.63	7.63	7.63	7.63	7.63	7.63	7.63	7.88	8.13
4	4	4	5.50	5.50	5.50	6.50	6.50	7.25	7.25	4	4
8.25	8.38	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.88	9.13

12 inch	12 inch	12 inch	12 inch	12 inch	12 inch	14 inch	14 inch	14 inch	14 inch	14 inch	14 inch
3	3.5	4	4.5	5	5.5	2.5	3	3.5	4	4.5	4.5
0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
-	-	-	-	-	-	-	-	-	-	-	-
2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.50	3.50	3.50	3.50	3.50	3.50	3.81	3.81	3.81	3.81	3.81	3.81
3.50	3.50	3.50	3.50	3.50	3.50	3.81	3.81	3.81	3.81	3.81	3.81
9.78	9.78	9.78	9.78	9.78	9.78	11.16	11.16	11.16	11.16	11.16	11.16
6.00	6.00	6.00	6.00	6.00	6.00	6.75	6.75	6.75	6.75	6.75	6.75
8.13	8.13	8.13	8.13	8.13	8.13	9.31	9.31	9.31	9.31	9.31	9.31
5.50	5.50	5.50	6.50	6.50	7.25	4	5.50	5.50	5.50	5.50	5.50
9.13	9.13	9.13	9.13	9.13	9.13	10.38	10.38	10.38	10.38	10.38	10.38

14 inch	14 inch
5	5.5
0.5	0.5
-	-
2.25	2.25
3.81	3.81
3.81	3.81

14 inch	14 inch
11.16	11.16
6.75	6.75
9.31	9.31
6.50	7.25
10.38	10.38

1) For piston rod  $\varnothing$

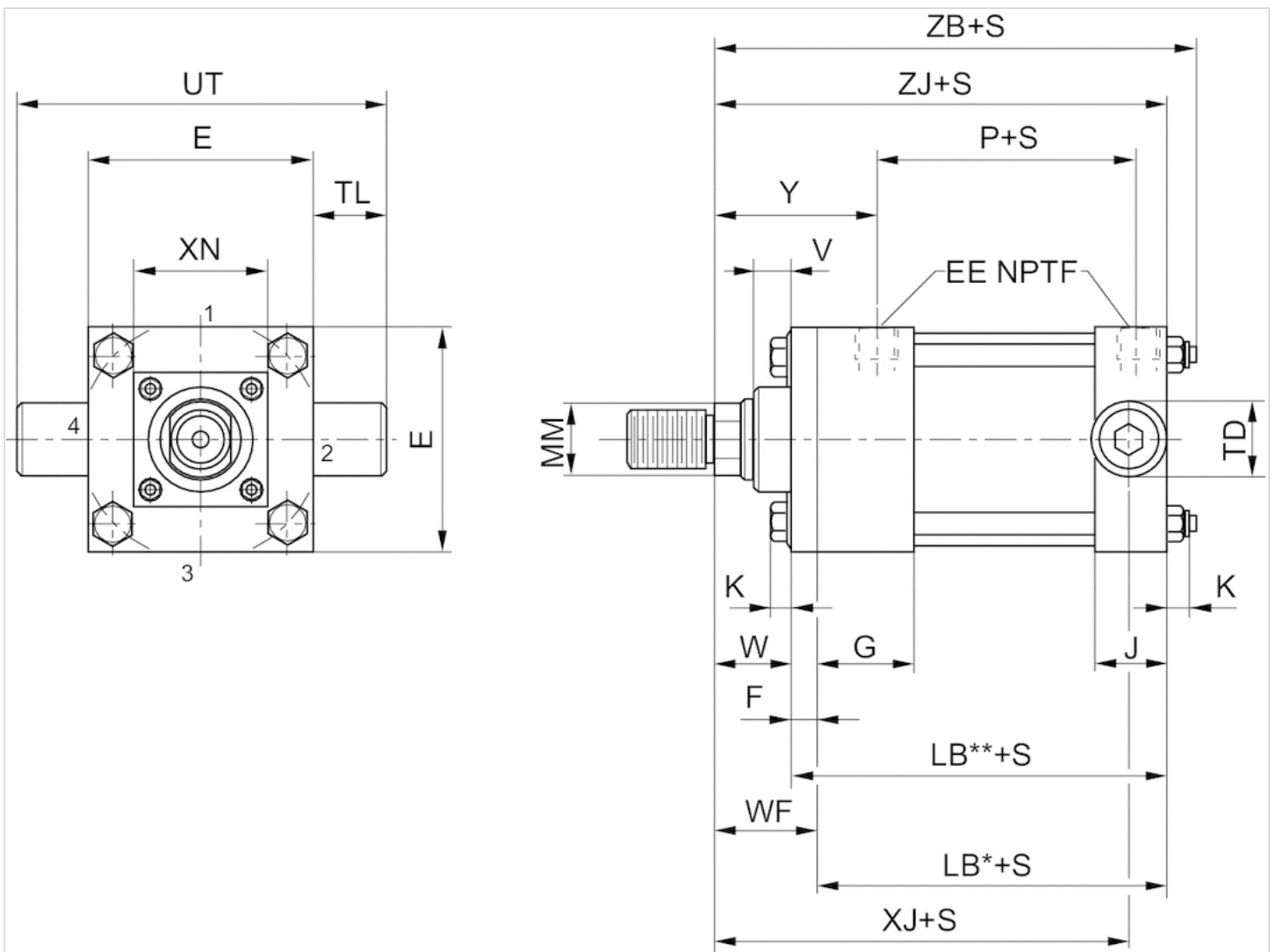
2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

The bearing retainer plate is the same as the “E” dimension for bore sizes 1-1/2” – 6” and the “XN” dimension for 8” – 14” bore sizes.

The “XG” and “XJ” dimensions for MT1 and MT2 mounting are not NFPA standard.

## Dimensions

### Cap Trunnion (MT2 mount)



S = stroke

Dimensions not affected by rod diameter

Ø	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch	8 inch	10 inch	12 inch
E	2.00	2.50	3.00	3.75	4.50	5.50	6.50	8.50	10.63	12.75
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75	0.75	0.75	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00	2.00	2.25	2.25
J	1.00	1.00	1.00	1.25	1.25	1.25	1.50	1.50	2.00	2.00
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44	0.56	0.66	0.66
P	2.25	2.25	2.38	2.63	2.63	2.88	3.13	3.25	4.13	4.63
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75	0.75	1.00	1.00
LB	4.00	4.00	4.13	4.88	4.88	5.13	5.75	5.13	6.38	6.88
TD	1.00	1.00	1.00	1.00	1.00	1.00	1.375	1.375	1.75	1.75
TL	1.00	1.00	1.00	1.00	1.00	1.00	1.38	1.38	1.75	1.75
UT	4.00	4.50	5.00	5.75	6.50	7.50	9.25	11.25	14.13	16.25

14 inch										
										14.75
										0.75
										2.75
										2.25
										0.78
										5.50
										1.25
										8.13
										2.00
										2.00
										18.75

Dimensions affected by rod diameter

Ø	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.50	0.25	0.50	0.63	0.25	0.50	0.63
W	0.63	1	0.63	1	1.25	0.63	1	1.25
WF	-	-	-	-	-	-	-	-
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
XG	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
ZB	4.85	5.22	4.90	5.27	5.52	5.02	5.40	5.65
XI 1)	3.13	3.50	3.25	3.63	3.88	3.25	3.63	3.88
XJ	4.19	4.56	4.19	4.56	4.81	4.31	4.69	4.94
XN	-	-	-	-	-	-	-	-
ZJ	4.63	5.00	4.63	5.00	5.25	4.75	5.13	5.38

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.50	0.50	0.25	0.38	0.50	0.50	0.63
1.50	0.75	1.00	1.25	1.38	0.75	1.00	1.25	1.38	1.63
-	-	-	-	-	-	-	-	-	-
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
5.90	5.98	6.23	6.48	6.61	5.98	6.23	6.48	6.61	6.86
4.13	4.13	4.38	4.63	4.75	4.13	4.38	4.63	4.75	5.00
5.19	5.06	5.31	5.56	5.69	5.06	5.31	5.56	5.69	5.94
-	-	-	-	-	-	-	-	-	-
5.63	5.63	5.88	6.13	6.25	5.63	5.88	6.13	6.25	6.50

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	1.375	1.75	2	2.5	3
0.25	0.38	0.50	0.50	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5
0.75	1.00	1.25	1.38	1.63	1.63	1.63	0.88	1.13	1.25	1.50	1.50
-	-	-	-	-	-	-	-	-	-	-	-
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
6.32	6.57	6.82	6.94	7.19	7.19	7.19	7.07	7.32	7.44	7.69	7.69
4.13	4.38	4.63	4.75	5.00	5.00	5.00	4.88	5.13	5.25	5.50	5.50
5.31	5.56	5.81	5.94	6.19	6.19	6.19	5.94	6.19	6.31	6.56	6.56
-	-	-	-	-	-	-	-	-	-	-	-
5.88	6.13	6.38	6.50	6.75	6.75	6.75	6.63	6.88	7.00	7.25	7.25

6 inch	6 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch
3.5	4	1.375	1.75	2	2.5	3	3.5	4	4.5	5	5.5
0.5	0.5	0.25	0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1.50	1.50	-	-	-	-	-	-	-	-	-	-
-	-	1.63	1.88	2	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.44	3.44	2.81	3.06	3.19	3.44	3.44	3.44	3.44	3.44	3.44	3.44
3.44	3.44	2.81	3.06	3.19	3.44	3.44	3.44	3.44	3.44	3.44	3.44
7.69	7.69	7.31	7.56	7.69	7.94	7.94	7.94	7.94	7.94	7.94	7.94
5.50	5.50	4.88	5.13	5.25	5.50	5.50	5.50	5.50	5.50	5.50	5.50
6.56	6.56	6.06	6.44	6.56	6.69	6.69	6.69	6.69	6.69	6.69	6.69
-	-	4	4	4	4	5.50	5.50	5.50	6.5	6.5	7.25
7.25	7.25	6.75	7.00	7.13	7.38	7.38	7.38	7.38	7.38	7.38	7.38

10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	12 inch	12 inch
1.75	2	2.5	3	3.5	4	4.5	5	5.5	5.5	2	2.5
0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.38	0.5
-	-	-	-	-	-	-	-	-	-	-	-
1.88	2	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2	2.25
3.13	3.25	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.25	3.50
3.13	3.25	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.25	3.50
8.91	9.03	9.28	9.28	9.28	9.28	9.28	9.28	9.28	9.28	9.53	9.78
5.63	5.75	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	5.75	6.00
7.25	7.38	7.63	7.63	7.63	7.63	7.63	7.63	7.63	7.63	7.88	8.13
4	4	4	5.50	5.50	5.50	6.50	6.50	6.50	7.25	4	4
8.25	8.38	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.88	9.13

12 inch	12 inch	12 inch	12 inch	12 inch	12 inch	14 inch	14 inch	14 inch	14 inch	14 inch	14 inch
3	3.5	4	4.5	5	5.5	2.5	3	3.5	4	4	4.5
0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5

12 inch	12 inch	12 inch	12 inch	12 inch	12 inch	14 inch	14 inch	14 inch	14 inch	14 inch
-	-	-	-	-	-	-	-	-	-	-
2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.50	3.50	3.50	3.50	3.50	3.50	3.81	3.81	3.81	3.81	3.81
3.50	3.50	3.50	3.50	3.50	3.50	3.81	3.81	3.81	3.81	3.81
9.78	9.78	9.78	9.78	9.78	9.78	11.16	11.16	11.16	11.16	11.16
6.00	6.00	6.00	6.00	6.00	6.00	6.75	6.75	6.75	6.75	6.75
8.13	8.13	8.13	8.13	8.13	8.13	9.31	9.31	9.31	9.31	9.31
5.50	5.50	5.50	6.50	6.50	7.25	4	5.50	5.50	5.50	5.50
9.13	9.13	9.13	9.13	9.13	9.13	10.38	10.38	10.38	10.38	10.38

14 inch	14 inch
5	5.5
0.5	0.5
-	-
2.25	2.25
3.81	3.81
3.81	3.81
11.16	11.16
6.75	6.75
9.31	9.31
6.50	7.25
10.38	10.38

1) For piston rod Ø

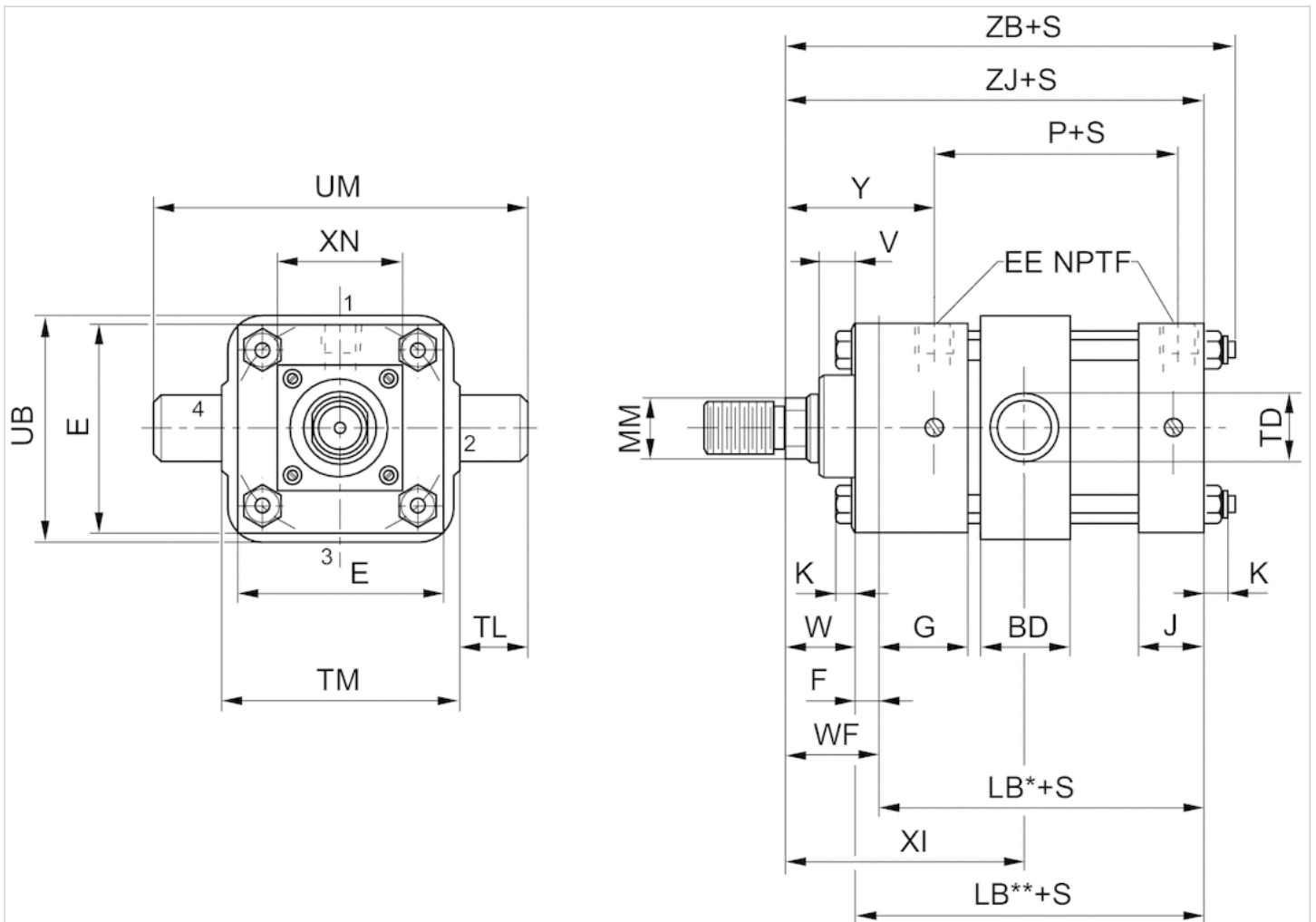
2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

The bearing retainer plate is the same as the “E” dimension for bore sizes 1-1/2” – 6” and the “XN” dimension for 8” – 14” bore sizes.

The “XG” and “XJ” dimensions for MT1 and MT2 mounting are not NFPA standard.

## Dimensions

### Intermediate Fixed Trunnion (MT4 mount)



S = stroke

### Dimensions not affected by rod diameter

Ø	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch	8 inch	10 inch	12 inch
E	2.00	2.50	3.00	3.75	4.50	5.50	6.50	8.50	10.63	12.75
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75	0.75	0.75	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00	2.00	2.25	2.25
J	1.00	1.00	1.00	1.25	1.25	1.25	1.50	1.50	2.00	2.00
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44	0.56	0.66	0.66
P	2.25	2.25	2.38	2.63	2.63	2.88	3.13	3.25	4.13	4.63
BD	1.25	1.50	1.50	2.00	2.00	2.00	2.50	2.50	3.00	3.00
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75	0.75	1.00	1.00
LB	4.00	4.00	4.13	4.88	4.88	5.13	5.75	5.13	6.38	6.88
TD	1.00	1.00	1.00	1.00	1.00	1.00	1.375	1.375	1.75	1.75
TL	1.00	1.00	1.00	1.00	1.00	1.00	1.38	1.38	1.75	1.75
TM	2.50	3.00	3.50	4.50	5.25	6.25	7.63	9.75	12.00	14.00
UB	2.25	2.75	3.25	4.25	5.00	6.00	7.38	9.50	11.75	13.75
UM	4.50	5.00	5.50	6.50	7.25	8.25	10.38	12.50	15.50	17.50

14 inch
14.75
0.75
2.75
2.25
0.78
5.50
3.50
1.25
8.13
2.00
2.00
16.25
16.00
20.25

Dimensions affected by rod diameter

Ø	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.50	0.25	0.50	0.63	0.25	0.50	0.63
W	0.63	1	0.63	1	1.25	0.63	1	1.25
WF	-	-	-	-	-	-	-	-
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
ZB	4.85	5.22	4.90	5.27	5.52	5.02	5.40	5.65
XI 1)	3.13	3.50	3.25	3.63	3.88	3.25	3.63	3.88
XN	-	-	-	-	-	-	-	-
ZJ	4.63	5.00	4.63	5.00	5.25	4.75	5.13	5.38

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.50	0.50	0.25	0.38	0.50	0.50	0.63
1.50	0.75	1.00	1.25	1.38	0.75	1.00	1.25	1.38	1.63
-	-	-	-	-	-	-	-	-	-
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
5.90	5.98	6.23	6.48	6.61	5.98	6.23	6.48	6.61	6.86
4.13	4.13	4.38	4.63	4.75	4.13	4.38	4.63	4.75	5.00
-	-	-	-	-	-	-	-	-	-
5.63	5.63	5.88	6.13	6.25	5.63	5.88	6.13	6.25	6.50

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	1.375	1.75	2	2.5	3
0.25	0.38	0.50	0.50	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5
0.75	1.00	1.25	1.38	1.63	1.63	1.63	0.88	1.13	1.25	1.50	1.50
-	-	-	-	-	-	-	-	-	-	-	-
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
6.32	6.57	6.82	6.94	7.19	7.19	7.19	7.07	7.32	7.44	7.69	7.69
4.13	4.38	4.63	4.75	5.00	5.00	5.00	4.88	5.13	5.25	5.50	5.50
-	-	-	-	-	-	-	-	-	-	-	-
5.88	6.13	6.38	6.50	6.75	6.75	6.75	6.63	6.88	7.00	7.25	7.25

6 inch	6 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch
3.5	4	1.375	1.75	2	2.5	3	3.5	4	4.5	5	5.5
0.5	0.5	0.25	0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1.50	1.50	-	-	-	-	-	-	-	-	-	-
-	-	1.63	1.88	2	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.44	3.44	2.81	3.06	3.19	3.44	3.44	3.44	3.44	3.44	3.44	3.44
7.69	7.69	7.31	7.56	7.69	7.94	7.94	7.94	7.94	7.94	7.94	7.94
5.50	5.50	4.88	5.13	5.25	5.50	5.50	5.50	5.50	5.50	5.50	5.50
-	-	4	4	4	4	5.50	5.50	5.50	6.5	6.5	7.25
7.25	7.25	6.75	7.00	7.13	7.38	7.38	7.38	7.38	7.38	7.38	7.38

10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	12 inch	12 inch
1.75	2	2.5	3	3.5	4	4.5	5	5.5	5.5	2	2.5
0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.38	0.5
-	-	-	-	-	-	-	-	-	-	-	-
1.88	2	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2	2.25
3.13	3.25	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.25	3.50
8.91	9.03	9.28	9.28	9.28	9.28	9.28	9.28	9.28	9.28	9.53	9.78
5.63	5.75	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	5.75	6.00
4	4	4	5.50	5.50	5.50	6.50	6.50	7.25	7.25	4	4
8.25	8.38	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.88	9.13

12 inch	12 inch	12 inch	12 inch	12 inch	12 inch	14 inch	14 inch	14 inch	14 inch	14 inch	14 inch
3	3.5	4	4.5	5	5.5	2.5	3	3.5	4	4.5	4.5
0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
-	-	-	-	-	-	-	-	-	-	-	-
2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.50	3.50	3.50	3.50	3.50	3.50	3.81	3.81	3.81	3.81	3.81	3.81
9.78	9.78	9.78	9.78	9.78	9.78	11.16	11.16	11.16	11.16	11.16	11.16
6.00	6.00	6.00	6.00	6.00	6.00	6.75	6.75	6.75	6.75	6.75	6.75
5.50	5.50	5.50	6.50	6.50	7.25	4	5.50	5.50	5.50	5.50	5.50
9.13	9.13	9.13	9.13	9.13	9.13	10.38	10.38	10.38	10.38	10.38	10.38

14 inch	14 inch
5	5.5
0.5	0.5
-	-
2.25	2.25
3.81	3.81
11.16	11.16
6.75	6.75
6.50	7.25
10.38	10.38

1) For piston rod Ø

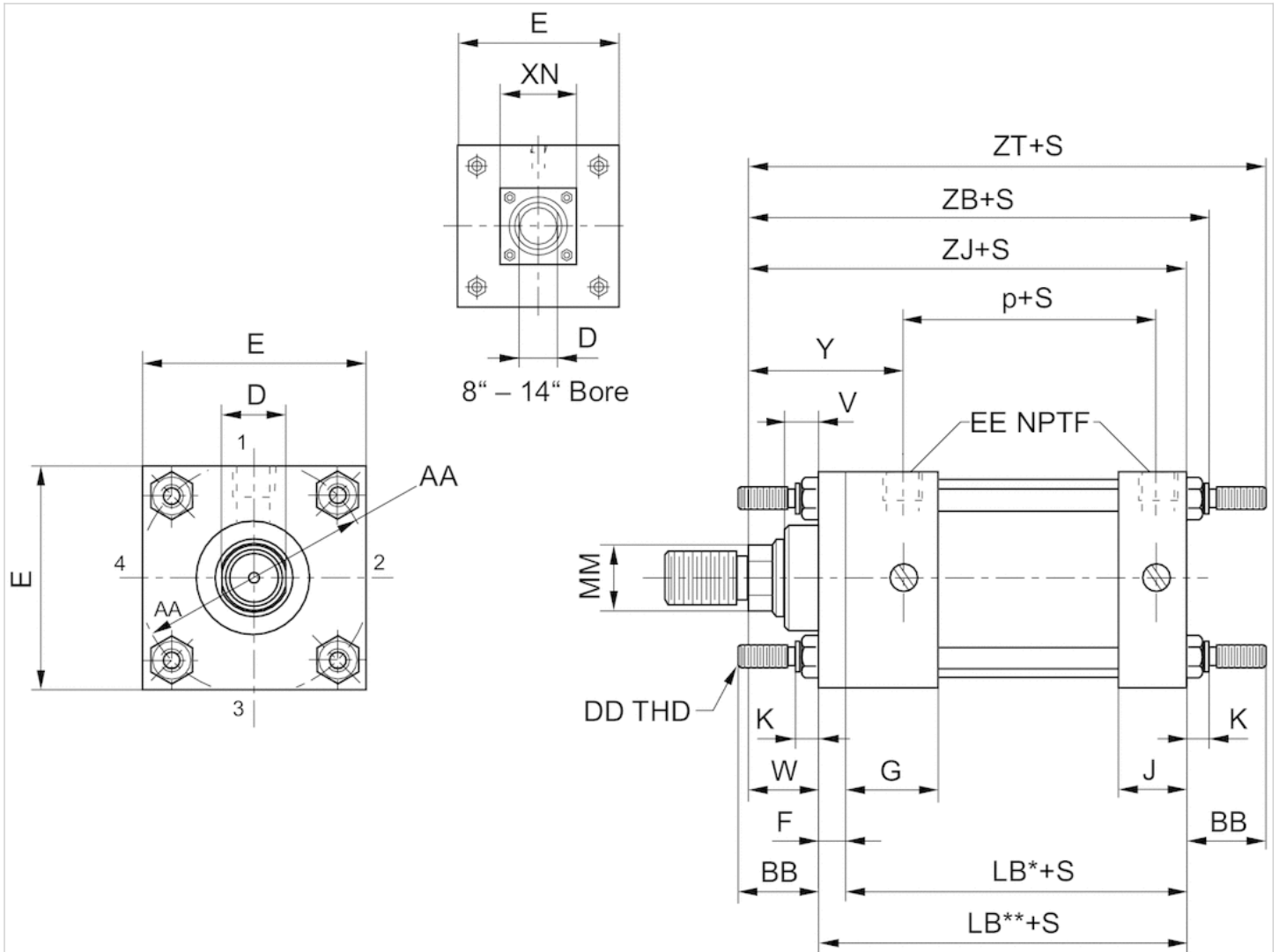
2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

The bearing retainer plate is the same as the “E” dimension for bore sizes 1-1/2” – 6” and the “XN” dimension for 8” – 14” bore sizes. Specify the “XI” dimension when ordering MT4 intermediate trunnion mountings. If not specified, the trunnion will be located at the center of the tube.



## Dimensions

### Tie Rods Extended (MX1 mount)



S = stroke

### Dimensions not affected by rod diameter

∅	1.50 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch	8 inch	10 inch	12 inch
E	2.00	2.50	3.00	3.75	4.50	5.50	6.50	8.50	10.63	12.75
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75	0.75	0.75	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00	2.00	2.25	2.25
J	1.00	1.00	1.00	1.25	1.25	1.25	1.50	1.50	2.00	2.00
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44	0.56	0.66	0.66
P	2.25	2.25	2.38	2.63	2.63	2.88	3.13	3.25	4.13	4.63
AA	2.02	2.60	3.10	3.90	4.70	5.80	6.90	9.10	11.20	13.30
BB	1.00	1.13	1.13	1.38	1.38	1.81	1.81	2.31	2.69	2.69
DD	0.25	0.31	0.31	0.38	0.38	0.50	0.50	0.63	0.75	0.75
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75	0.75	1.00	1.00
LB	4.00	4.00	4.13	4.88	4.88	5.13	5.75	5.13	6.38	6.88

14 inch
14.75
0.75
2.75
2.25
0.78
5.50
15.40
3.19
0.88
1.25
8.13

Dimensions affected by rod diameter

Ø	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.50	0.25	0.50	0.63	0.25	0.50	0.63
W	0.63	1	0.63	1	1.25	0.63	1	1.25
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
XN	-	-	-	-	-	-	-	-
ZB	4.85	5.22	4.90	5.27	5.52	5.02	5.40	5.65
ZJ	4.63	5.00	4.63	5.00	5.25	4.75	5.13	5.38
ZT	5.63	6.00	5.75	6.13	6.38	5.88	6.25	6.50

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.50	0.50	0.25	0.38	0.50	0.50	0.63
1.50	0.75	1.00	1.25	1.38	0.75	1.00	1.25	1.38	1.63
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
-	-	-	-	-	-	-	-	-	-
5.90	5.98	6.23	6.48	6.61	5.98	6.23	6.48	6.61	6.86
5.63	5.63	5.88	6.13	6.25	5.63	5.88	6.13	6.25	6.50
6.75	7.00	7.25	7.50	7.63	7.00	7.25	7.50	7.63	7.88

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	1.375	1.75	2	2.5	3
0.25	0.38	0.50	0.50	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5
0.75	1.00	1.25	1.38	1.63	1.63	1.63	0.88	1.13	1.25	1.50	1.50
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
-	-	-	-	-	-	-	-	-	-	-	-
6.32	6.57	6.82	6.94	7.19	7.19	7.19	7.07	7.32	7.44	7.69	7.69
5.88	6.13	6.38	6.50	6.75	6.75	6.75	6.63	6.88	7.00	7.25	7.25
7.69	7.94	8.06	8.31	8.56	8.56	8.56	8.44	8.69	8.81	9.06	9.06

6 inch	6 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch
3.5	4	1.375	1.75	2	2.5	3	3.5	4	4.5	5	5.5
0.5	0.5	0.25	0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1.50	1.50	-	-	-	-	-	-	-	-	-	-
3.44	3.44	2.81	3.06	3.19	3.44	3.44	3.44	3.44	3.44	3.44	3.44

6 inch	6 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch
-	-	4	4	4	4	5.50	5.50	5.50	6.5	6.5	7.25
7.69	7.69	7.31	7.56	7.69	7.94	7.94	7.94	7.94	7.94	7.94	7.94
7.25	7.25	6.75	7.00	7.13	7.38	7.38	7.38	7.38	7.38	7.38	7.38
9.06	9.06	9.06	9.31	9.44	9.69	9.69	9.69	9.69	9.69	9.69	9.69

10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	12 inch	12 inch
1.75	2	2.5	3	3.5	4	4.5	5	5.5	5.5	2	2.5
0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.38	0.5
-	-	-	-	-	-	-	-	-	-	-	-
3.13	3.25	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.25	3.50
4	4	4	5.50	5.50	5.50	6.50	6.50	7.25	7.25	4	4
8.91	9.03	9.28	9.28	9.28	9.28	9.28	9.28	9.28	9.28	9.53	9.78
8.25	8.38	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.88	9.13
10.94	11.06	11.31	11.31	11.31	11.31	11.31	11.31	11.31	11.31	11.56	11.81

12 inch	12 inch	12 inch	12 inch	12 inch	12 inch	14 inch	14 inch	14 inch	14 inch	14 inch	14 inch
3	3.5	4	4.5	5	5.5	2.5	3	3.5	4	4.5	4.5
0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
-	-	-	-	-	-	-	-	-	-	-	-
3.50	3.50	3.50	3.50	3.50	3.50	3.81	3.81	3.81	3.81	3.81	3.81
5.50	5.50	5.50	6.50	6.50	7.25	4	5.50	5.50	5.50	5.50	5.50
9.78	9.78	9.78	9.78	9.78	9.78	11.16	11.16	11.16	11.16	11.16	11.16
9.13	9.13	9.13	9.13	9.13	9.13	10.38	10.38	10.38	10.38	10.38	10.38
11.81	11.81	11.81	11.81	11.81	11.81	13.56	13.56	13.56	13.56	13.56	13.56

14 inch	14 inch
5	5.5
0.5	0.5
-	-
3.81	3.81
6.50	7.25
11.16	11.16
10.38	10.38
13.56	13.56

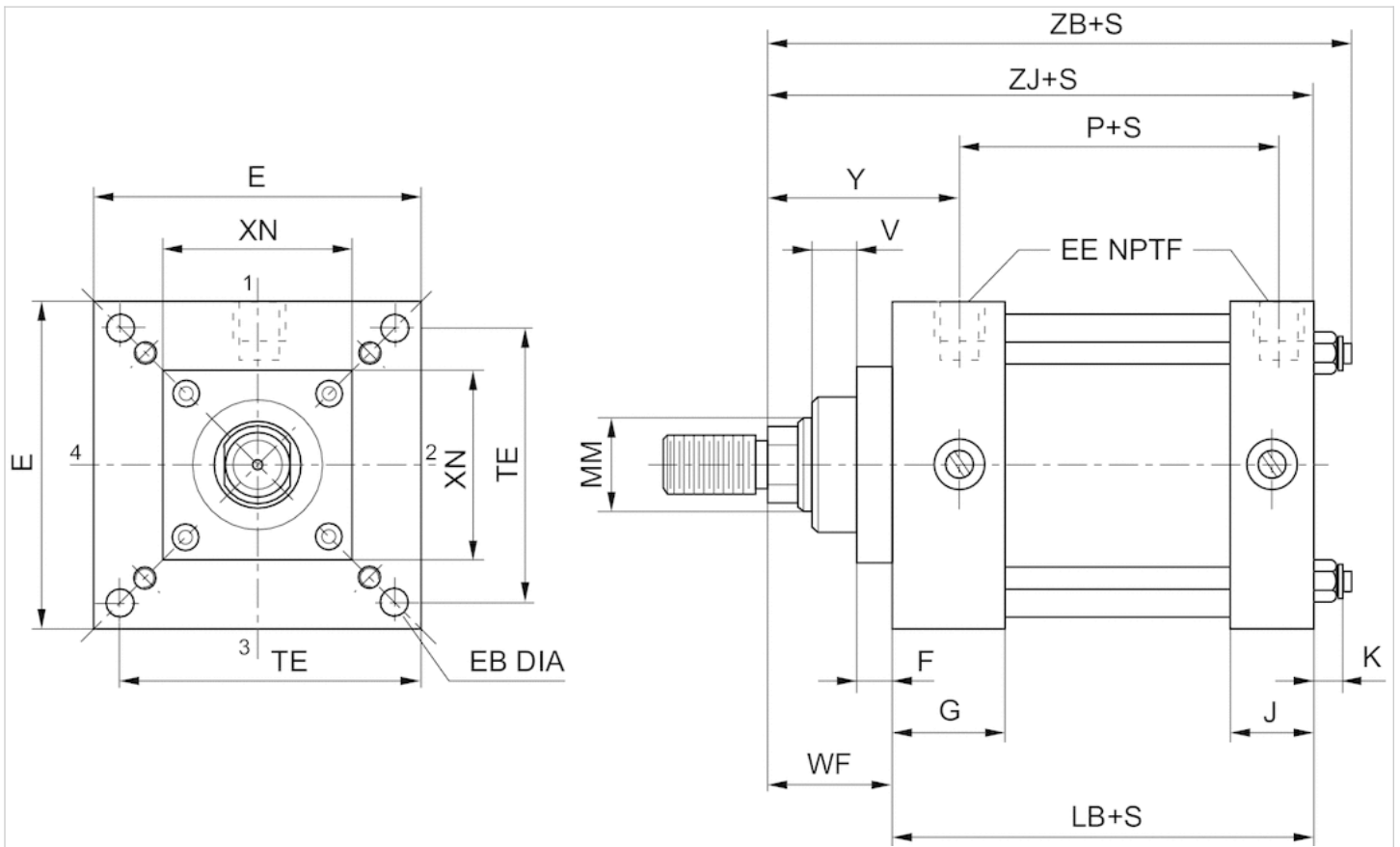
1) For piston rod Ø

2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

The bearing retainer plate is the same as the “E” dimension for bore sizes 1-1/2” – 6” and the “XN” dimension for 8” – 14” bore sizes.

## Dimensions

### Head Square Flange (ME3 mount)



S = stroke

### Dimensions not affected by rod diameter

∅	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch	8 inch	10 inch	12 inch
E	2	2.5	3	3.75	4.5	5.5	6.5	8.50	10.63	12.75
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75	0.75	0.75	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00	2.00	2.25	2.25
J	1.00	1.00	1.00	1.25	1.25	1.25	1.50	1.50	2.00	2.00
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44	0.56	0.66	0.66
P	2.25	2.25	2.38	2.63	2.63	2.88	3.13	3.25	4.13	4.63
EB								0.63	0.75	0.75
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75	0.75	1.00	1.00
LB								5.13	6.38	6.88
TE								7.57	9.40	11.10

#### 14 inch

14.75
0.75
2.75
2.25
0.78
5.50

14 inch	
	0.88
	1.25
	8.13
	12.87

Dimensions affected by rod diameter

∅	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.5	0.25	0.5	0.63	0.25	0.5	0.63
WF								
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
XN								
ZB	4.85	5.22	4.90	5.27	5.52	5.03	5.40	5.65
ZJ	4.63	5.00	4.63	5.00	5.25	4.75	5.13	5.38

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.5	0.5	0.25	0.38	0.5	0.5	0.63
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
5.90	5.97	6.22	6.47	6.60	5.97	6.22	6.47	6.60	6.85
5.63	5.63	5.88	6.13	6.25	5.63	5.88	6.13	6.25	6.50

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	3.5	1.375	1.75	2	2.5	3
0.25	0.38	0.5	0.5	0.63	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5
2.44	2.69	2.94	3.06	3.31	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
6.32	6.57	6.82	6.95	7.20	7.20	7.20	7.20	7.07	7.32	7.44	7.69	7.69
5.88	6.13	6.38	6.50	6.75	6.75	6.75	6.75	6.63	6.88	7.00	7.25	7.25

6 inch	6 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch
3.5	4	1.375	1.75	2	2.5	3	3.5	4	4.5	5	5.5	5.5
0.5	0.5	0.25	0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
		1.63	1.88	2	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.44	3.44	2.81	3.06	3.19	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44
		4	4	4	4	5.5	5.5	5.5	5.5	6.5	6.5	7.25
7.69	7.69	7.32	7.57	7.69	7.94	7.94	7.94	7.94	7.94	7.94	7.94	7.94
7.25	7.25	6.75	7.00	7.13	7.38	7.38	7.38	7.38	7.38	7.38	7.38	7.38

10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	12 inch	12 inch
1.75	2	2.5	3	3.5	4	4.5	5	5.5	5.5	2	2.5
0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.38	0.5
1.88	2	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2	2.25
3.13	3.25	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.25	3.5
4	4	4	5.5	5.5	5.5	6.5	6.5	6.5	7.25	4	4

10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	12 inch	12 inch
8.92	9.04	9.29	9.29	9.29	9.29	9.29	9.29	9.29	9.54	9.79
8.25	8.38	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.88	9.13

12 inch	12 inch	12 inch	12 inch	12 inch	12 inch	14 inch	14 inch	14 inch	14 inch	14 inch
3	3.5	4	4.5	5	5.5	2.5	3	3.5	4	4.5
0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.5	3.5	3.5	3.5	3.5	3.5	3.81	3.81	3.81	3.81	3.81
5.5	5.5	5.5	6.5	6.5	7.25	4	5.5	5.5	5.5	6.5
9.79	9.79	9.79	9.79	9.79	9.79	11.16	11.16	11.16	11.16	11.16
9.13	9.13	9.13	9.13	9.13	9.13	10.38	10.38	10.38	10.38	10.38

14 inch	14 inch
5	5.5
0.5	0.5
2.25	2.25
3.81	3.81
6.5	7.25
11.16	11.16
10.38	10.38

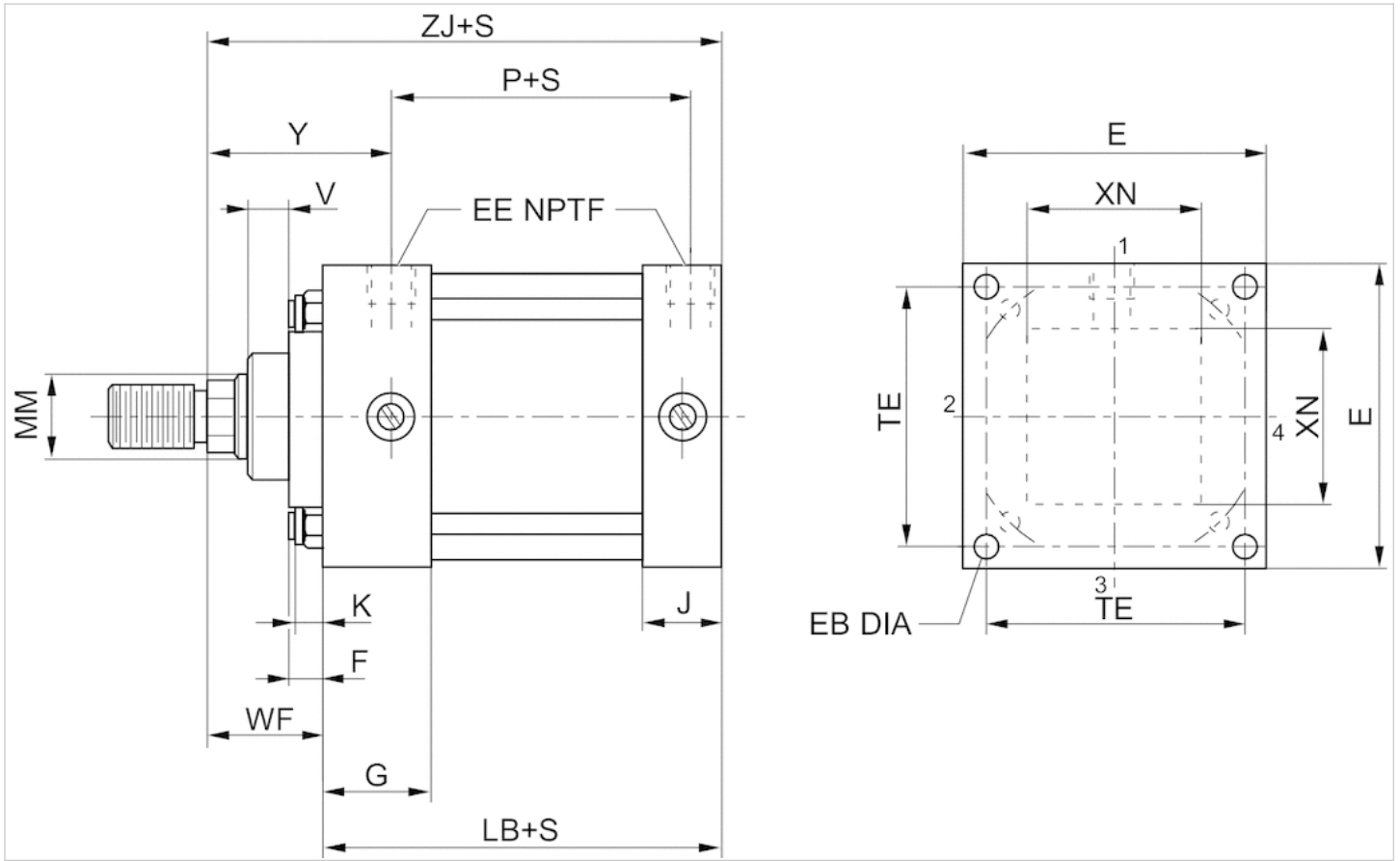
1) For piston rod Ø

2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

The bearing retainer plate is the same as the “E” dimension for bore sizes 1-1/2” – 6” and the “XN” dimension for 8” – 14” bore sizes.

## Dimensions

### Cap Square Flange (ME4 mount)



S = stroke

### Dimensions not affected by rod diameter

Ø	1.5 inch	2 inch	2.5 inch	3.25 inch	4 inch	5 inch	6 inch	8 inch	10 inch	12 inch
E	2.00	2.50	3.00	3.75	4.50	5.50	6.50	8.50	10.63	12.75
F	0.38	0.38	0.38	0.63	0.63	0.63	0.75	0.75	0.75	0.75
G	1.50	1.50	1.50	1.75	1.75	1.75	2.00	2.00	2.25	2.25
J	1.00	1.00	1.00	1.25	1.25	1.25	1.50	1.50	2.00	2.00
K	0.22	0.27	0.27	0.34	0.34	0.44	0.44	0.56	0.66	0.66
P	2.25	2.25	2.38	2.63	2.63	2.88	3.13	3.25	4.13	4.63
EB								0.63	0.75	0.75
EE NPTF	0.38	0.38	0.38	0.50	0.50	0.50	0.75	0.75	1.00	1.00
LB								5.13	6.38	6.88
TE								7.57	9.40	11.10

14 inch

14.75

0.75

2.75

2.25

0.78

14 inch
5.50
0.88
1.25
8.13
12.87

Dimensions affected by rod diameter

Ø	1.5 inch	1.5 inch 2)	2 inch	2 inch	2 inch 2)	2.5 inch	2.5 inch	2.5 inch
MM 1)	0.625	1	0.625	1	1.375	0.625	1	1.375
V	0.25	0.5	0.25	0.5	0.63	0.25	0.5	0.63
WF								
Y	1.94	2.31	1.94	2.31	2.56	1.94	2.31	2.56
XN								
ZJ	4.63	5.00	4.63	5.00	5.25	4.75	5.13	5.38

2.5 inch 2)	3.25 inch	3.25 inch	3.25 inch	3.25 inch 2)	4 inch	4 inch	4 inch	4 inch	4 inch
1.75	1	1.375	1.75	2	1	1.375	1.75	2	2.5
0.75	0.25	0.38	0.5	0.5	0.25	0.38	0.5	0.5	0.63
2.81	2.44	2.69	2.94	3.06	2.44	2.69	2.94	3.06	3.31
5.63	5.63	5.88	6.13	6.25	5.63	5.88	6.13	6.25	6.50

5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	5 inch	6 inch	6 inch	6 inch	6 inch	6 inch
1	1.375	1.75	2	2.5	3	3.5	1.375	1.75	2	2.5	3
0.25	0.38	0.5	0.5	0.63	0.63	0.63	0.25	0.38	0.38	0.5	0.5
2.44	2.69	2.94	3.06	3.31	3.31	3.31	2.81	3.06	3.19	3.44	3.44
5.88	6.13	6.38	6.50	6.75	6.75	6.75	6.63	6.88	7.00	7.25	7.25

6 inch	6 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch	8 inch
3.5	4	1.375	1.75	2	2.5	3	3.5	4	4.5	5	5.5
0.5	0.5	0.25	0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5
		1.63	1.88	2.00	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.44	3.44	2.81	3.06	3.19	3.44	3.44	3.44	3.44	3.44	3.44	3.44
		4	4	4	4	5.5	5.5	5.5	6.5	6.5	7.25
7.25	7.25	6.75	7.00	7.13	7.38	7.38	7.38	7.38	7.38	7.38	7.38

10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	10 inch	12 inch	12 inch
1.75	2	2.5	3	3.5	4	4.5	5	5.5	5.5	2	2.5
0.38	0.38	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.38	0.5
1.88	2.00	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.00	2.25
3.13	3.25	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.25	3.5
4	4	4	5.5	5.5	5.5	6.5	6.5	6.5	6.5	4	4
8.25	8.38	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.63	8.88	9.13



12 inch	12 inch	12 inch	12 inch	12 inch	12 inch	14 inch	14 inch	14 inch	14 inch	14 inch
3	3.5	4	4.5	5	5.5	2.5	3	3.5	4	4.5
0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
3.5	3.5	3.5	3.5	3.5	3.5	3.81	3.81	3.81	3.81	3.81
5.5	5.5	5.5	6.5	6.5	7.25	4	5.5	5.5	5.5	6.5
9.13	9.13	9.13	9.13	9.13	9.13	10.38	10.38	10.38	10.38	10.38

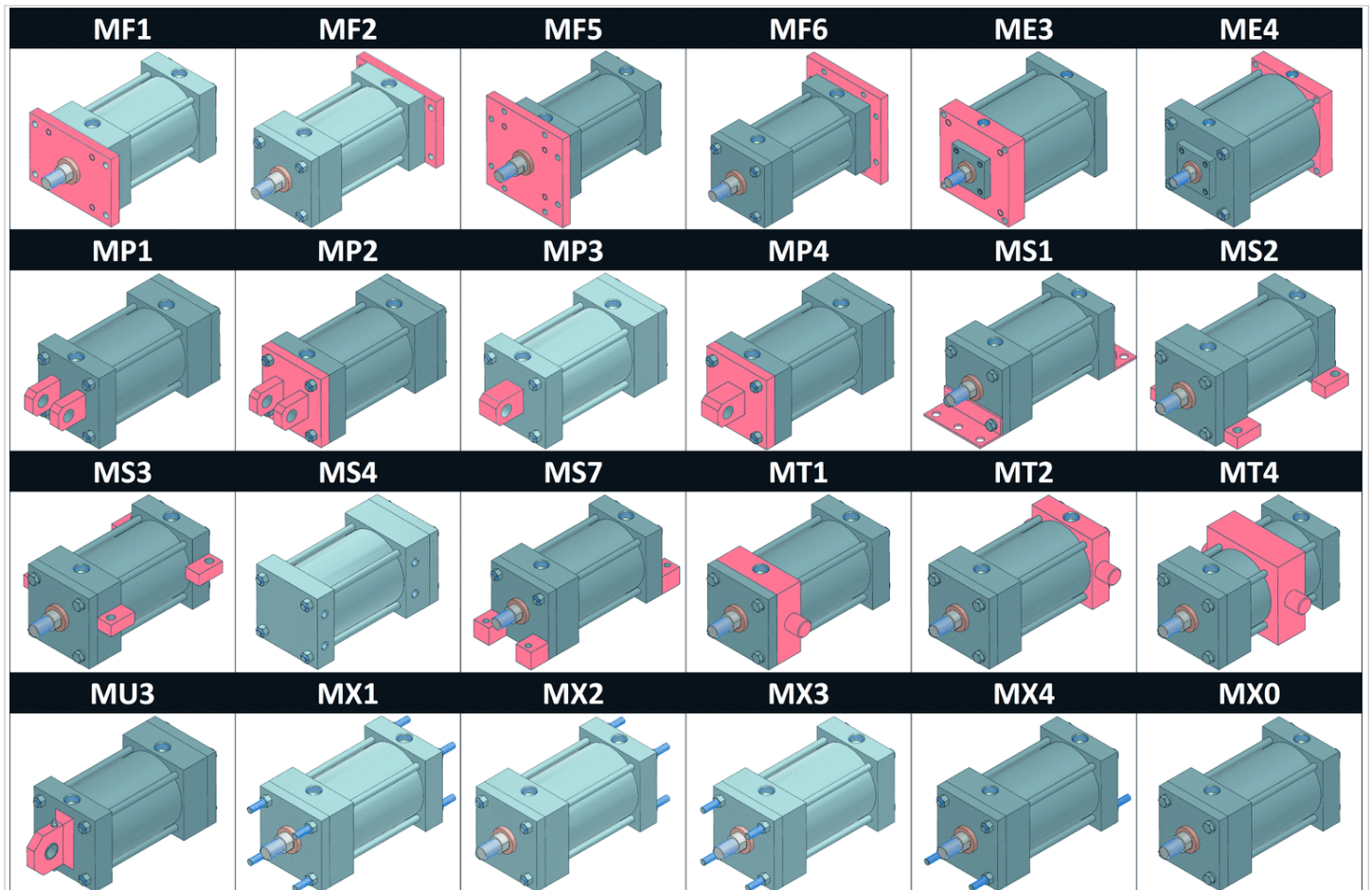
14 inch	14 inch
5	5.5
0.5	0.5
2.25	2.25
3.81	3.81
6.5	7.25
10.38	10.38

1) For piston rod  $\varnothing$

2) Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

The bearing retainer plate is the same as the “E” dimension for bore sizes 1-1/2” – 6” and the “XN” dimension for 8” – 14” bore sizes.

## Accessories overview



### Flange mounts

Flange mounting is one of the strongest, most rigid methods of mounting. With this mounting type, there is little allowance for misalignment, so when long strokes are required, the free end opposite the mounting should be supported to prevent sagging and

possible binding of the cylinder. Blind or cap end mountings are best for thrust load applications, and rod or head end mountings are best in tension applications. If less rigid mounting can be used and the cylinder can be attached to a panel or bulkhead, tie rod extension mounting could be considered.

#### Fixed, Detachable and Universal Clevis Mounts

Clevis mounting is one of the most widely used mounting types. For short strokes, medium, or small cylinder applications, clevis mounting is recommended. If stroke requirements lead to an excessive overall length, cap trunnion mounting can be used. Pivot mounting must always be used with a pivot-type rod end attachment.

#### Trunnion Mounts

All cylinders with trunnion mounting need to provide for pivoting on both ends. These types of cylinders are designed to carry shear loads, and the trunnion and pivot pins should be supported by bearings that rigidly hold and closely fit across the entire length of the pin. Head or rod end trunnions should be carefully applied to either short strokes or to applications where the weight of the cylinder falls vertically below the pin.

#### Side and Centerline Lug Mounts

Cylinders with side or lug mounting provide fairly rigid mounting. These mounting types can tolerate a slight amount of misalignment when the cylinder is at full stroke, but as the piston moves toward the blind end, the tolerance for misalignment decreases. It is important to note that, if the cylinder is used properly, the mounting bolts are either in simple shear or tension without any compound stresses.

#### Side End and Angle Mounts

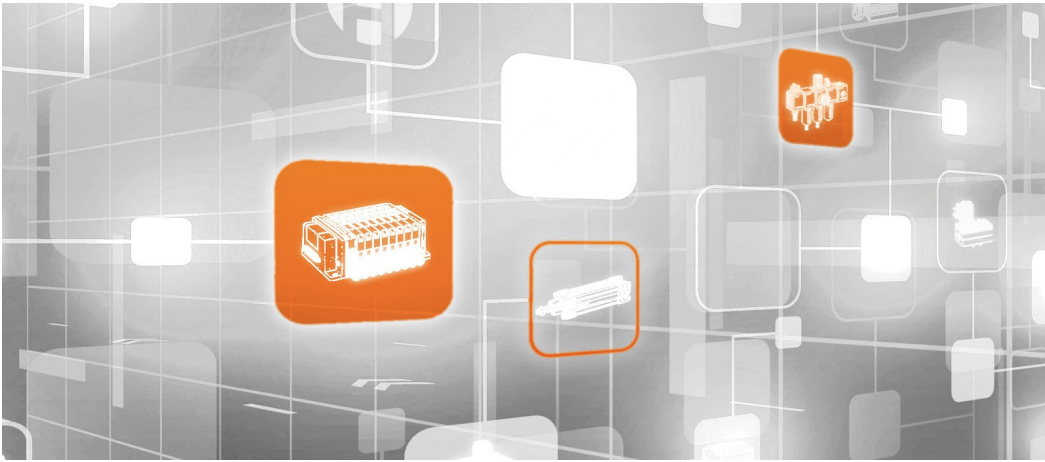
Side end mounting lends itself to easy mounting and replacement. It also permits side-by-side mounting in confined areas. As with side

lug mounting, proper use will place the bolts in simple shear or tension without any compound stresses. Proper alignment is critical to maximum service life. When specifying the mounting type, carefully check the distance between the rod and lug or angle to determine if there is enough clearance for the rod end attachment. It may be necessary to add a plain piston rod extension to move the threaded rod end out beyond the lug.

#### Extended Tie Rod Mounts

Tie rod and flange mounting are basically the same, except that the tie rods are extended and used to mount the cylinder. To prevent misalignment, sagging, or binding of the cylinder when long strokes are required, the free end of the cylinder should be supported. For thrust load applications, blind or cap end tie rod extensions are best. For tension load applications, rod or head end extensions are best. Tie rod mounting is suitable for many applications, however, it should be noted that it is not as rigid as flange mounting.

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