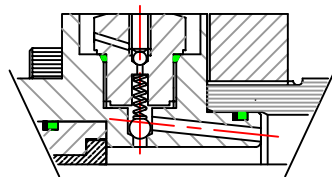
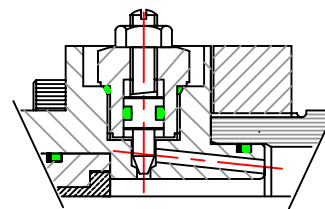


- ① GLAND RETAINER
MANUFACTURED FROM STEEL AND RETAINED BY HIGH TENSILE CAP SCREWS, ALLOWING QUICK ACCESS TO THE ROD SEAL WHEN REQUIRED. THE RETAINER ALSO HOUSES THE ROD WIPER AND GLAND BUSH.
- ② GLAND & BEARING BUSH
BOTH ITEMS MANUFACTURED FROM PHOSPHOR BRONZE. THE INNER ROD BEARING IS AUTOMATICALLY LUBRICATED.
- ③ GLAND SEAL
HEAVY DUTY CHEVRON PACKING.
- ④ GLAND CARTRIDGE
MANUFACTURED FROM STEEL. HOUSING THE GLAND SEAL AND ROD BEARING BUSH.
- ⑤ HEAD AND CAP RETAINING SCREWS
HIGH TENSILE SOCKET HEAD CAP SCREWS WITH NUTS AND LOCK NUTS.
- ⑥ PORTS
PORTS MAY BE LOCATED IN ANY OF FOUR POSITIONS RELATIVE TO THE VARIOUS STANDARD MOUNTINGS.
- ⑦ PISTON ROD
MANUFACTURED FROM ALLOY STEEL. ALL RODS ARE INDUCED HARDENED TO ROCKWELL "C" 54 MINIMUM BEFORE HARD CHROME PLATING AND POLISHING TO A MINIMUM OF 0.2 MICRONS TO ENSURE MAXIMUM SEAL AND BEARING LIFE.
- ⑧ HEAD & CAP ENDS
MANUFACTURED FROM STEEL WITH PRECISELY MACHINED SPIGOTS TO ENSURE ACCURATE ALIGNMENT WITH THE CYLINDER BORE. SEALING OF THE CAPS TO THE BARREL IS EFFECTED BY "O"-RING AND ANTI-EXTRUSION RING.
- ⑨ CYLINDER BARREL
MANUFACTURED FROM HEAVY WALL SEAMLESS TUBING. BORES ARE HONED AND POLISHED FOR LONGER SEAL LIFE. CHROME BORES ARE RECOMMENDED WHERE SOLUBLE OIL AND WATER SOLUTIONS ARE USED.
- ⑩ FRONT CUSHION SLEEVE
MANUFACTURED FROM BRONZE AND SELF CENTERING FOR PRECISE ALIGNMENT.
- ⑪ PISTON ASSEMBLY
TWO PIECE PISTON MANUFACTURED FROM STEEL. POSITIVELY SECURED TO THE ROD BY A GRUB SCREW AND PEENED OVER PRIOR TO FINAL ASSEMBLY.
- ⑫ PISTON SEALS
DOUBLE ACTING SEAL COMPRISING OF A SEAL AND TWO "L" SHAPED BEARING RINGS TO GIVE A VERY ROBUST HEAVY DUTY SEAL ASSEMBLY FOR SPLIT PISTONS. FOR ALTERNATIVE PISTON AND SEAL ARRANGEMENT REFER TO "NON-STANDARD" ALTERNATIVES.



CUSHION CHECK VALVE

CUSHIONED CYLINDERS ARE PROVIDED WITH A CHECK VALVE TO FACILITATE AN EFFECTIVE BREAKAWAY ON THE RETURN STROKE THE CHECK VALVE ALSO INCORPORATES AN AIR BLEED FOR VENTING THE CYLINDER



CUSHION NEEDLE VALVE

CUSHION NEEDLE ALLOWS CONTROL OVER RATE OF CUSHIONING CUSHION COMPONENTS FEATURE STAINLESS STEEL NEEDLE AND CHECK VALVE COMPRESSION SPRING AND HARDENED CHROME STEEL BALLS

NOMINAL PRESSURE 250 BAR
BORE SIZE 50 MM - 500 MM
FLANGED CONSTRUCTION AT EACH END
FACTOR OF SAFETY 4:1

HYDROIL PTY. LTD

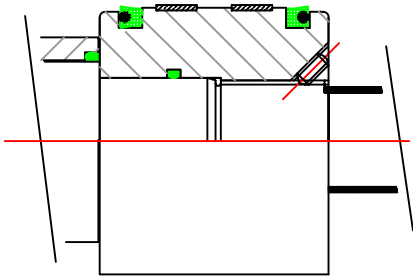
110-112 RICHMOND ROAD PH: (08) 8297 7533 FAX: (08) 8297 0549
KESWICK S.A. 5035

METRIC MILL CYLINDERS
ISO 6022

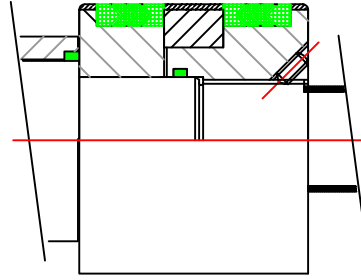
MARK	DESCRIPTION	NO. OFF	MATERIAL
SCALE			DRG. NO
APPROVED BY	DRAWN		HHMI SERIES
	TRACED		
DATE	CHECKED		REV

ITEM	RECORD CHANGE

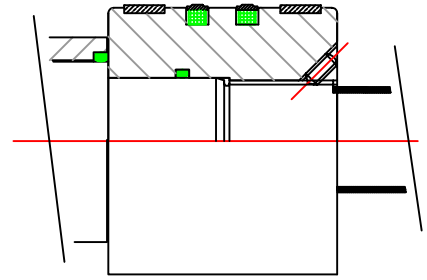
PISTON ALTERNATIVES.



ONE PIECE PISTON WITH
SINGLE LIP SEALS AND
WEAR RINGS OR FLAKE
FREE BRONZE LOADING

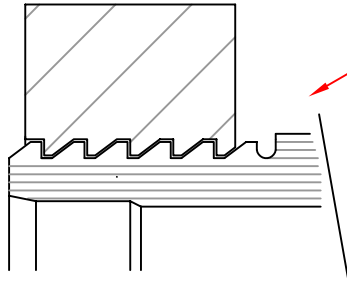


HEAVY DUTY PISTON
WITH "SHALLEX" VEE
PACKINGS AND FLAKE
FREE BRONZE LOADING



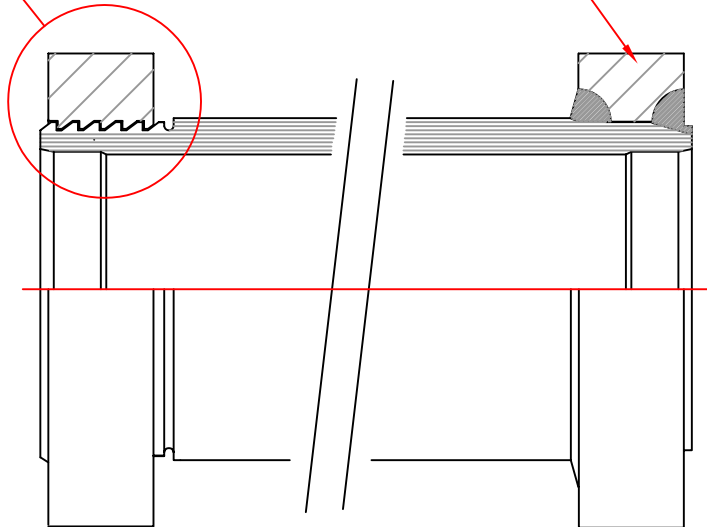
ONE PIECE PISTON WITH
LOW FRICTION SEALS
AND WEAR RINGS

NOTE: SIMILAR SEALS CAN ALSO BE INCORPORATED IN THE CYLINDER GLAND

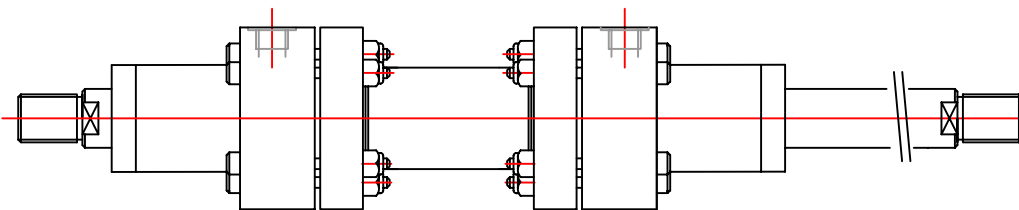


STANDARD FLANGE FIXING IS BY
MEANS OF A BUTTRESS THREAD

BARRELS CAN BE SUPPLIED WITH
"NON-STANDARD" WELDED FLANGES
IF REQUIRED



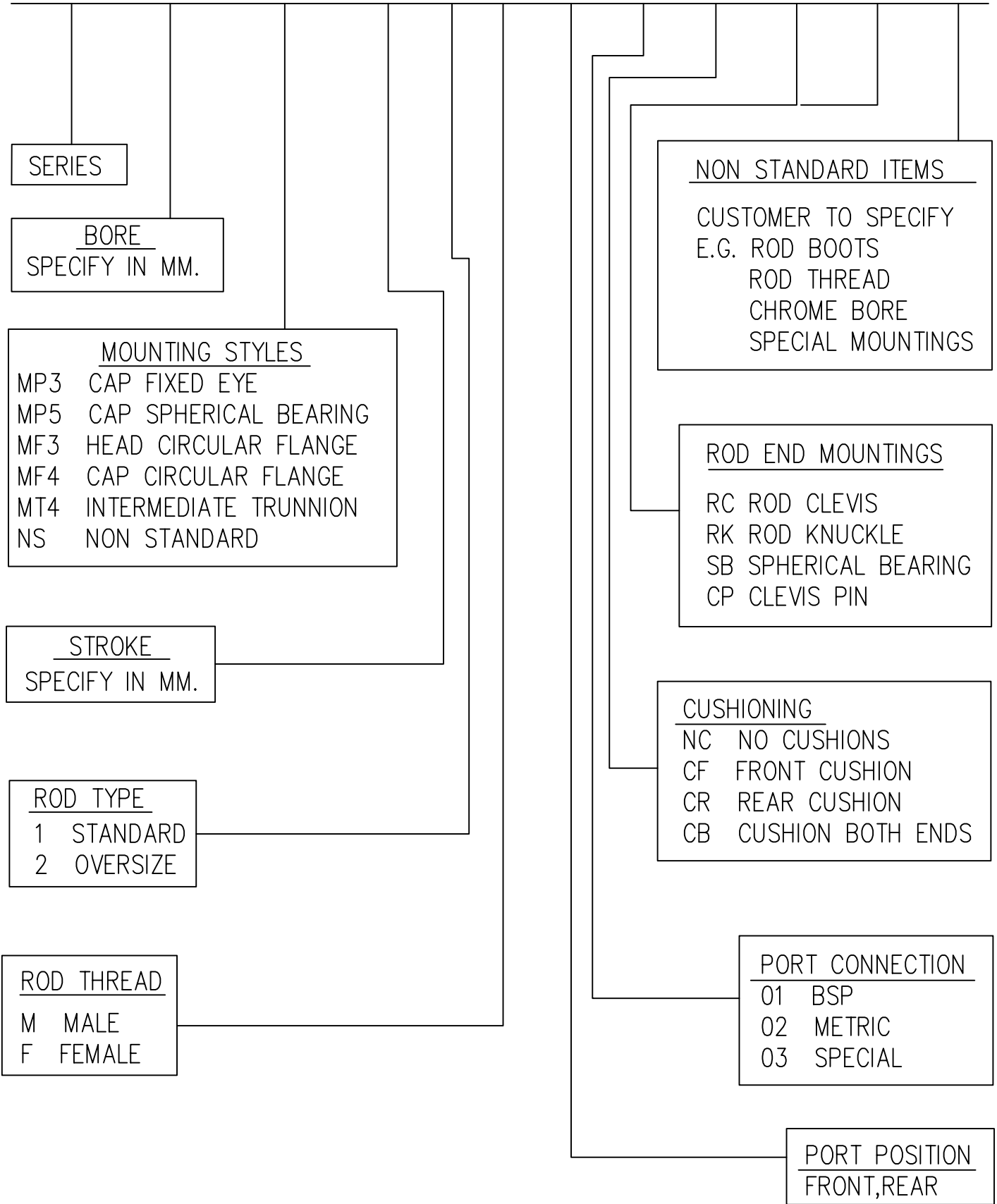
CYLINDER BARREL



DOUBLE ENDED CYLINDER

"NON-STANDARD" CYLINDERS CAN BE PRODUCED TO SUIT CUSTOMER REQUIREMENTS
PISTON ROD AND BORE DIAMETERS ETC. CONFORM TO ISO 6022

HHMI-100-MP3-700-1-M-1,1-01-CB-RC-CP-S*



SERIES

BORE
SPECIFY IN MM.

MOUNTING STYLES
MP3 CAP FIXED EYE
MP5 CAP SPHERICAL BEARING
MF3 HEAD CIRCULAR FLANGE
MF4 CAP CIRCULAR FLANGE
MT4 INTERMEDIATE TRUNNION
NS NON STANDARD

STROKE
SPECIFY IN MM.

ROD TYPE
1 STANDARD
2 OVERSIZE

ROD THREAD
M MALE
F FEMALE

NON STANDARD ITEMS
CUSTOMER TO SPECIFY
E.G. ROD BOOTS
ROD THREAD
CHROME BORE
SPECIAL MOUNTINGS

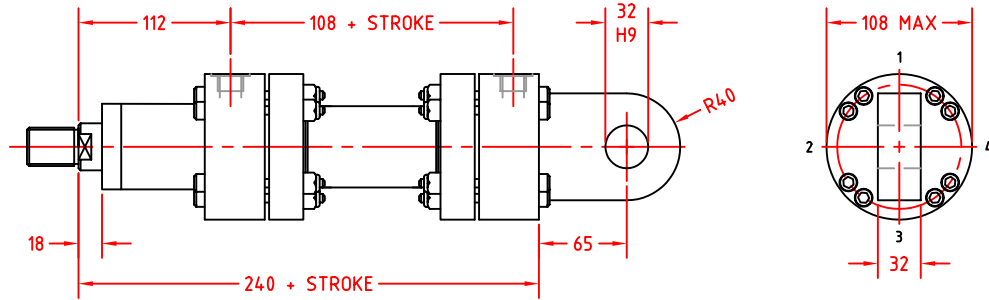
ROD END MOUNTINGS
RC ROD CLEVIS
RK ROD KNUCKLE
SB SPHERICAL BEARING
CP CLEVIS PIN

CUSHIONING
NC NO CUSHIONS
CF FRONT CUSHION
CR REAR CUSHION
CB CUSHION BOTH ENDS

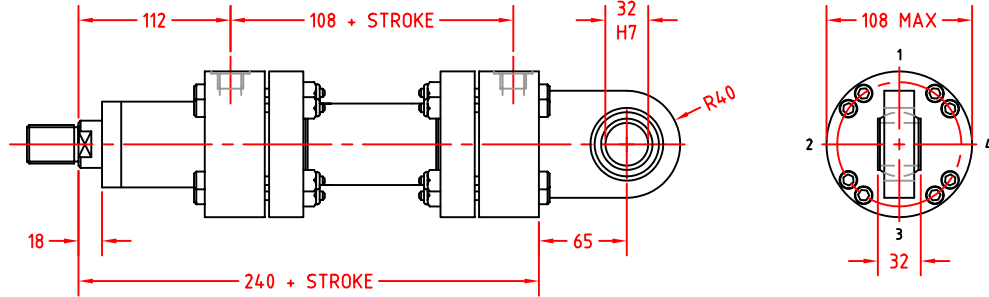
PORT CONNECTION
01 BSP
02 METRIC
03 SPECIAL

PORT POSITION
FRONT, REAR

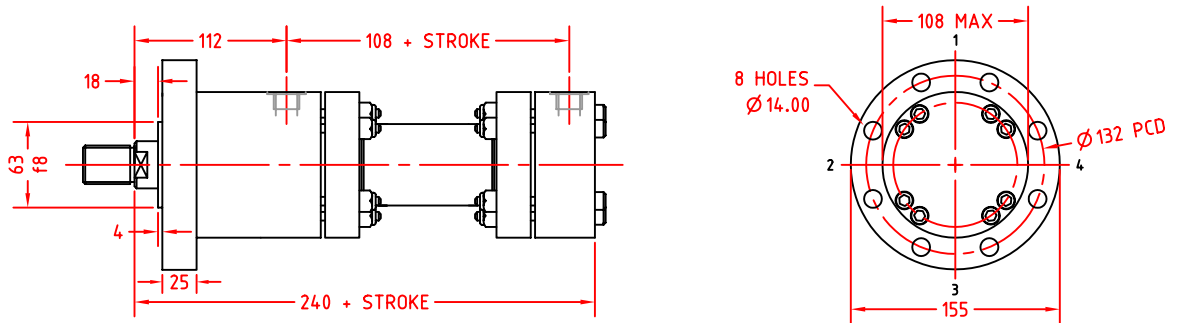
CAP FIXED EYE
MOUNTING STYLE
MP3



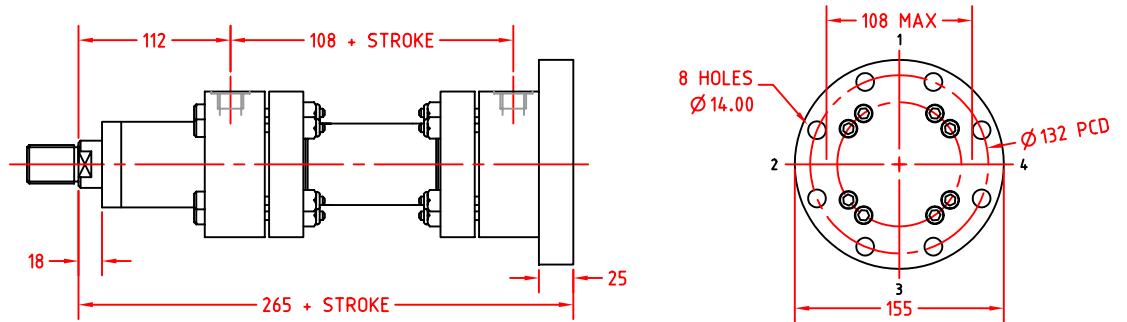
CAP SPHERICAL EYE
MOUNTING STYLE
MP5



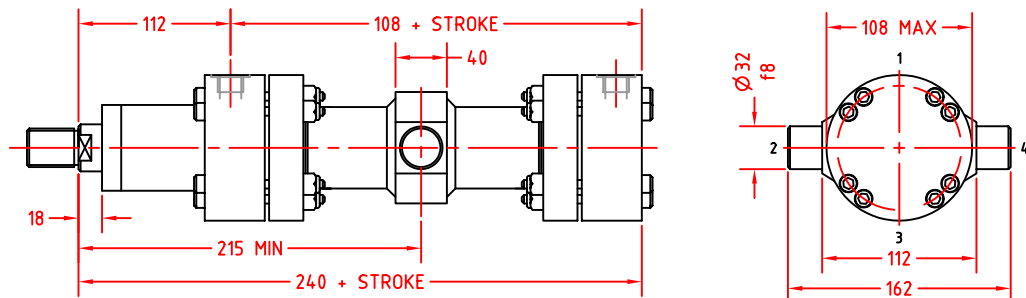
HEAD CIRCULAR FLANGE
MOUNTING STYLE
MF3



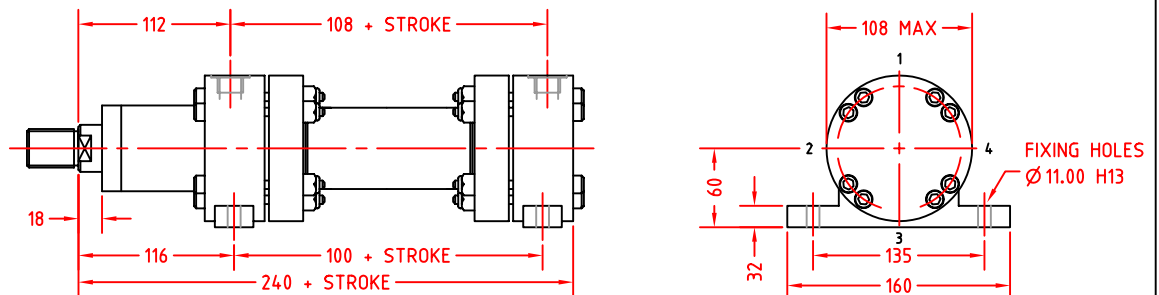
CAP CIRCULAR FLANGE
MOUNTING STYLE
MF4

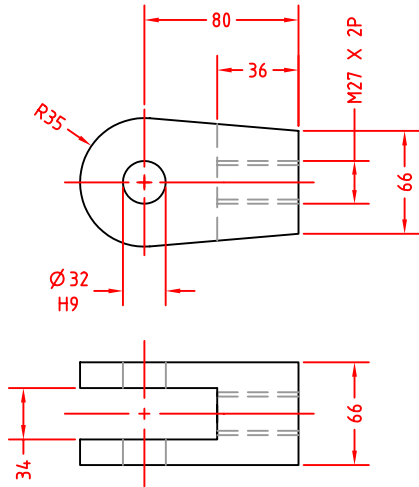


INTERMEDIATE TRUNNION
MOUNTING STYLE
MT4

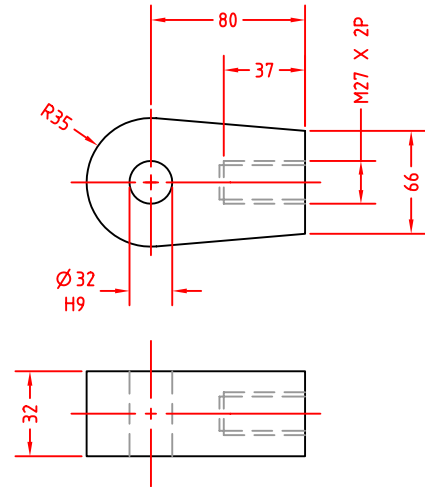


FOOT MOUNTING
MOUNTING STYLE
FM

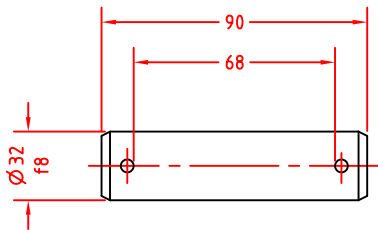




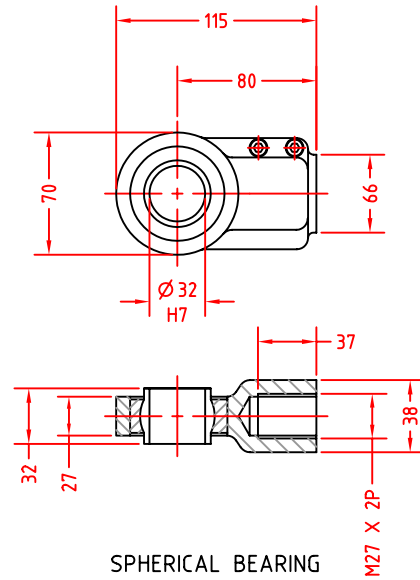
ROD CLEVIS
RC



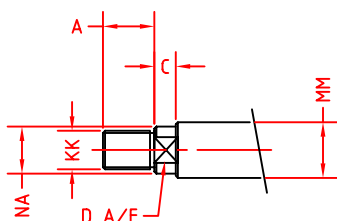
ROD KNUCKLE
RK



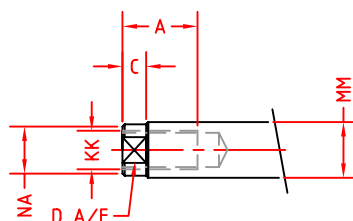
CLEVIS PIN
CP



SPHERICAL BEARING
SB



THREAD STYLE "M"



THREAD STYLE "F"

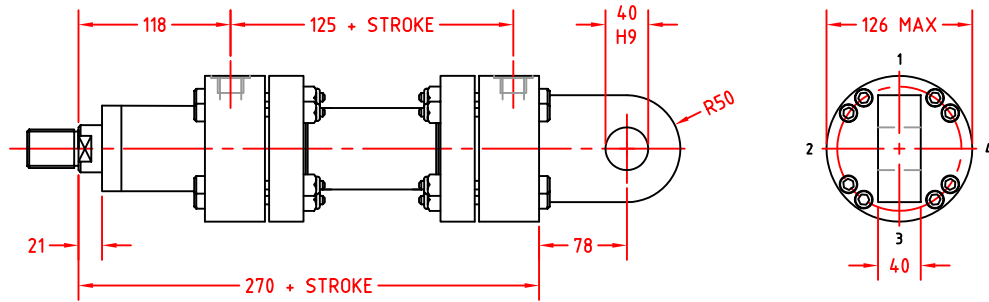
PISTON ROD DIMENSIONS

ROD	TYPE 1	TYPE 2
MM	Ø 32.00	Ø 36.00
NA	Ø 31.00	Ø 35.00
KK	M27 x 2P	M27 x 2P
A	36.00	36.00
D	27.00 A/F	30.00 A/F
C	15	15

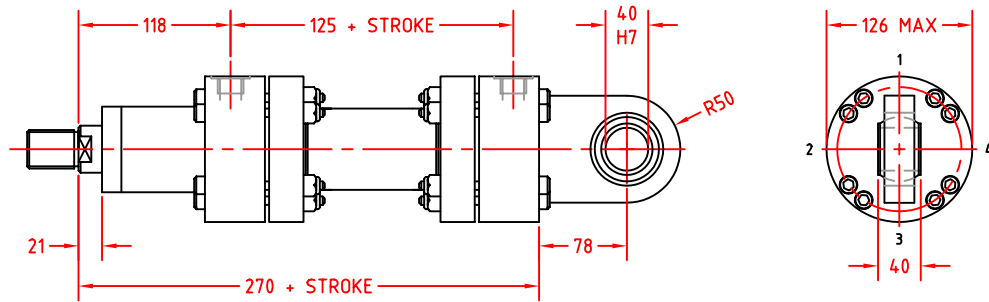
PORT CONNECTIONS

TYPE - 01	1/2" BSPP
TYPE - 02	M22 x 1.5P

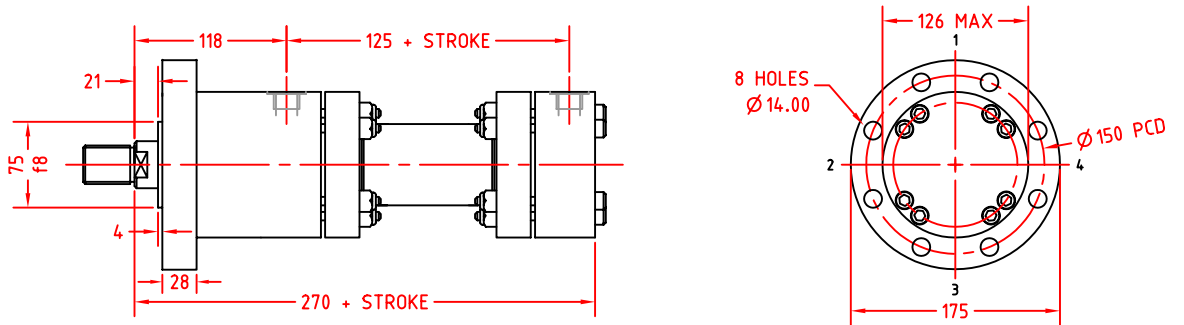
CAP FIXED EYE
MOUNTING STYLE
MP3



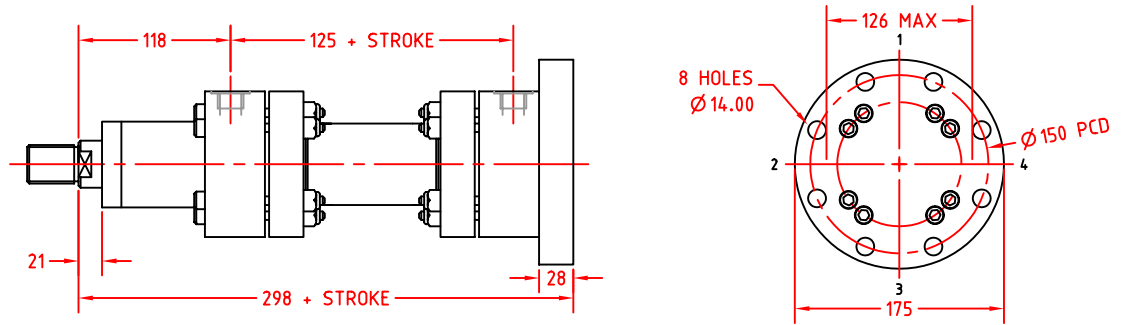
CAP SPHERICAL EYE
MOUNTING STYLE
MP5



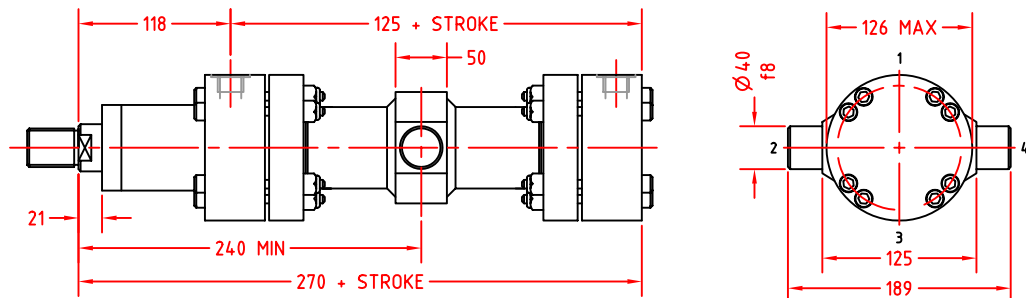
HEAD CIRCULAR FLANGE
MOUNTING STYLE
MF3



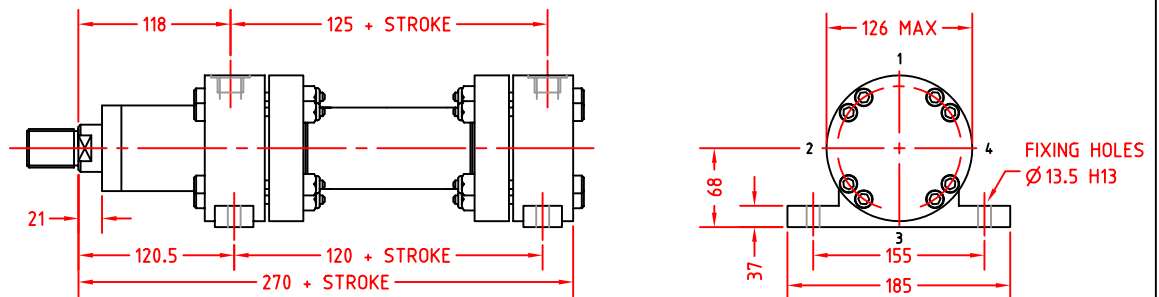
CAP CIRCULAR FLANGE
MOUNTING STYLE
MF4

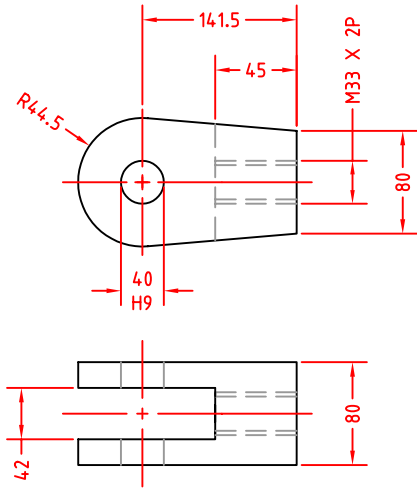


INTERMEDIATE TRUNNION
MOUNTING STYLE
MT4

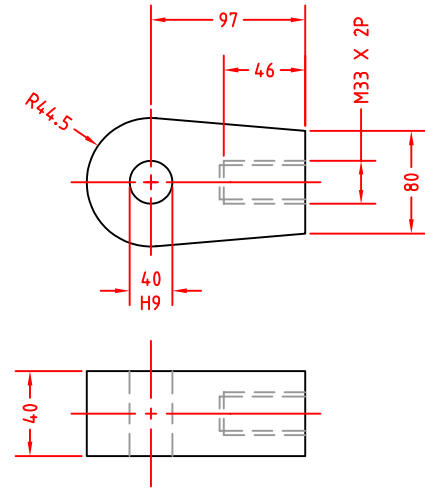


FOOT MOUNTING
MOUNTING STYLE
FM

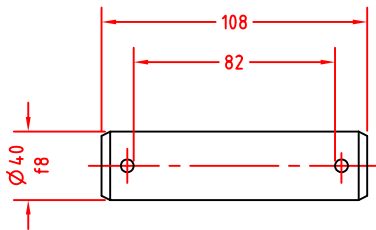




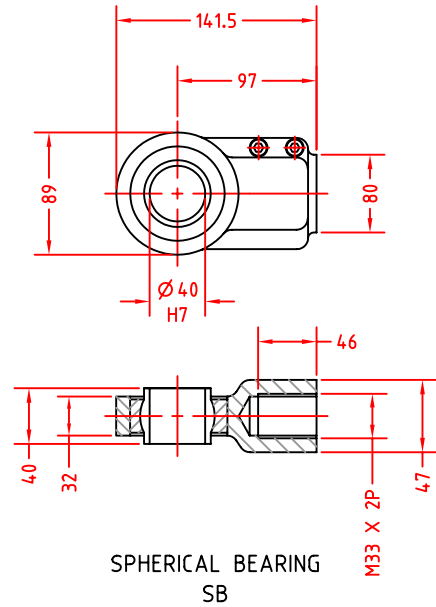
ROD CLEVIS
RC



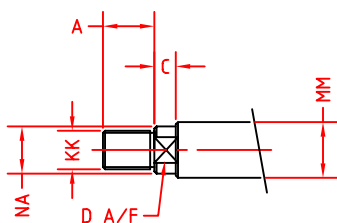
ROD KNUCKLE
RK



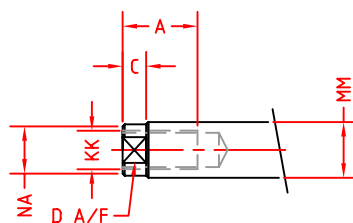
CLEVIS PIN
CP



SPHERICAL BEARING
SB



THREAD STYLE "M"



THREAD STYLE "F"

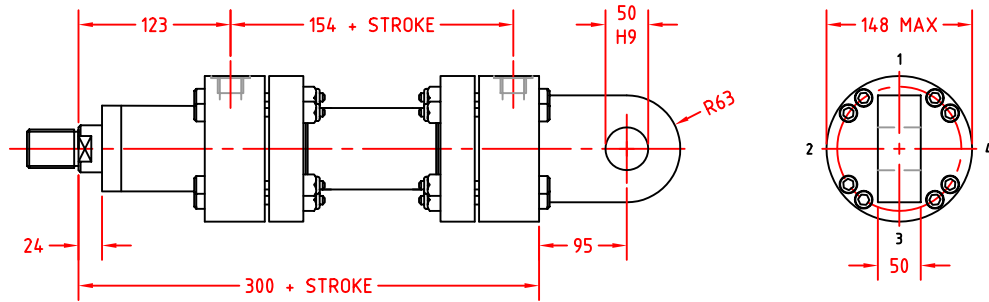
PISTON ROD DIMENSIONS

ROD	TYPE 1	TYPE 2
MM	\varnothing 40.00	\varnothing 45.00
NA	\varnothing 39.00	\varnothing 44.00
KK	M22 x 2P	M33 x 2P
A	45.00	45.00
D	32.00 A/F	36.00 A/F
C	18	18

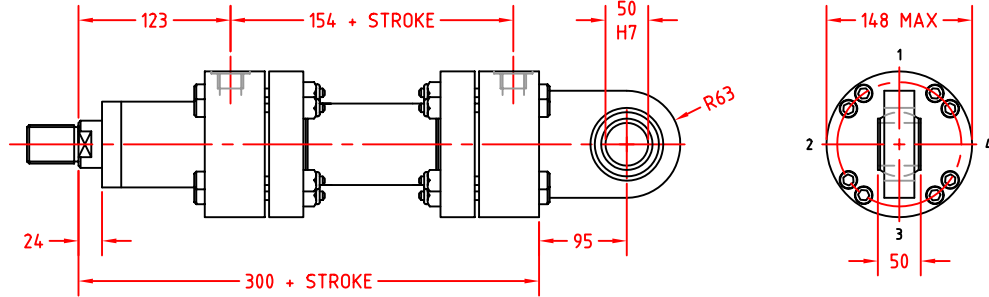
PORT CONNECTIONS

- TYPE - 01 3/4" BSPP
- TYPE - 02 M27 X2P

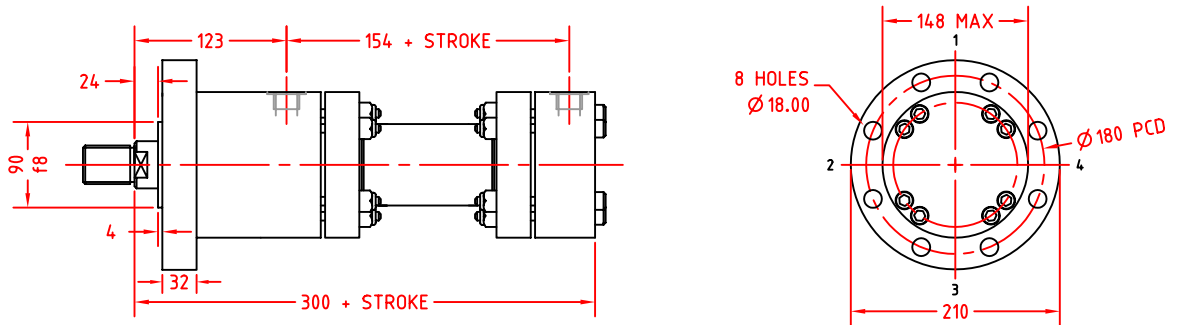
CAP FIXED EYE
MOUNTING STYLE
MP3



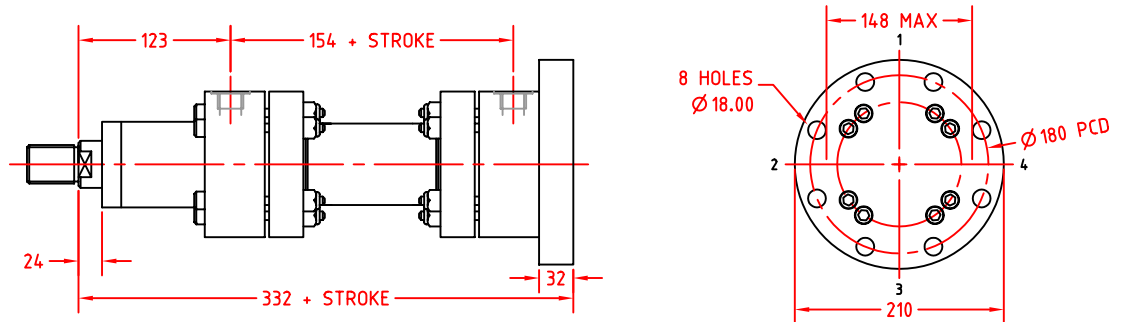
CAP SPHERICAL EYE
MOUNTING STYLE
MP5



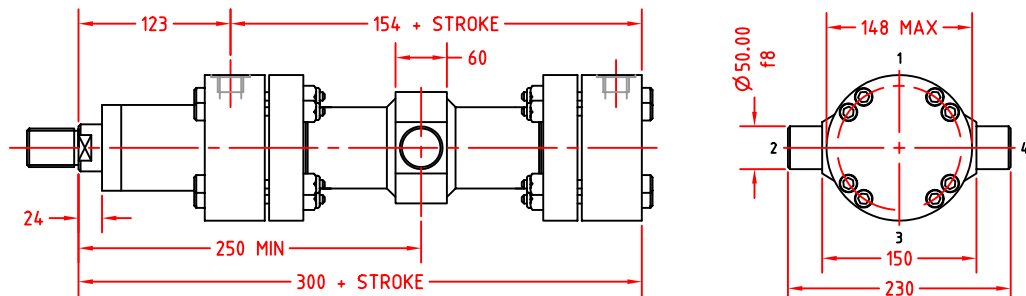
HEAD CIRCULAR FLANGE
MOUNTING STYLE
MF3



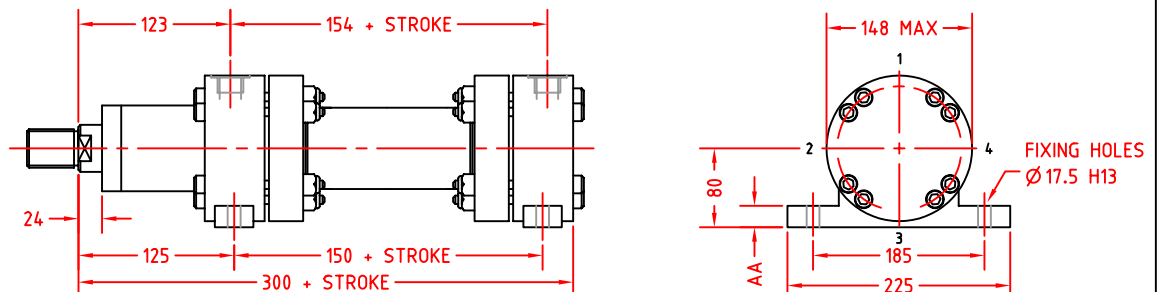
CAP CIRCULAR FLANGE
MOUNTING STYLE
MF4

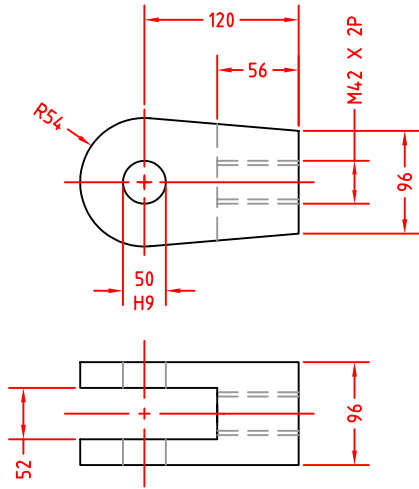


INTERMEDIATE TRUNNION
MOUNTING STYLE
MT4

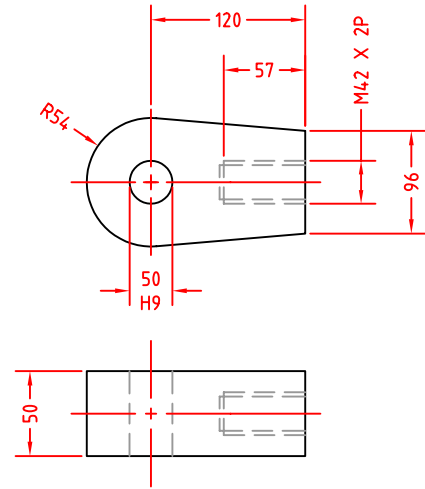


FOOT MOUNTING
MOUNTING STYLE
FM

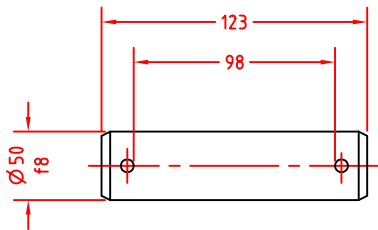




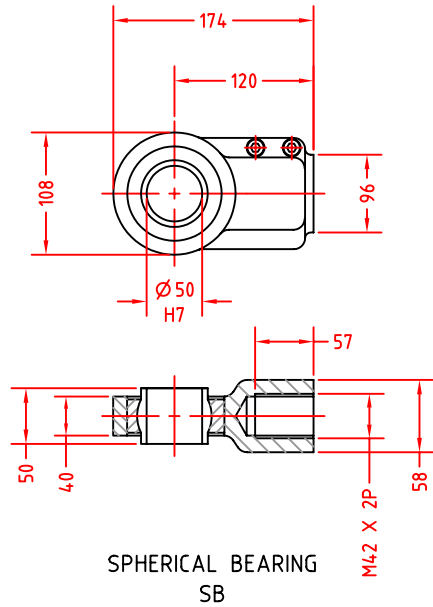
ROD CLEVIS
RC



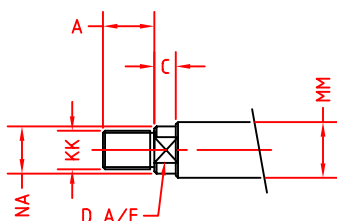
ROD KNUCKLE
RK



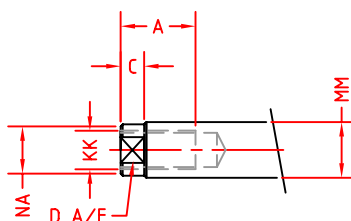
CLEVIS PIN
CP



SPHERICAL BEARING
SB



THREAD STYLE "M"



THREAD STYLE "F"

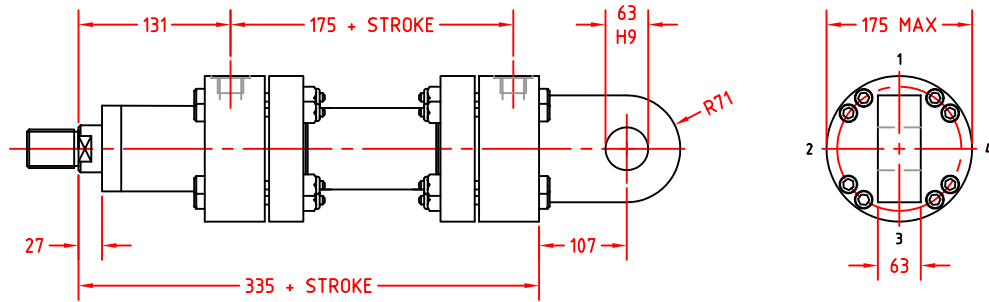
PISTON ROD DIMENSIONS

ROD	TYPE 1	TYPE 2
MM	Ø 50.00	Ø 56.00
NA	Ø 49.00	Ø 55.00
KK	M42 x 2P	M42 x 2P
A	56.00	56.00
D	41.00 A/F	46.00 A/F
C	20	20

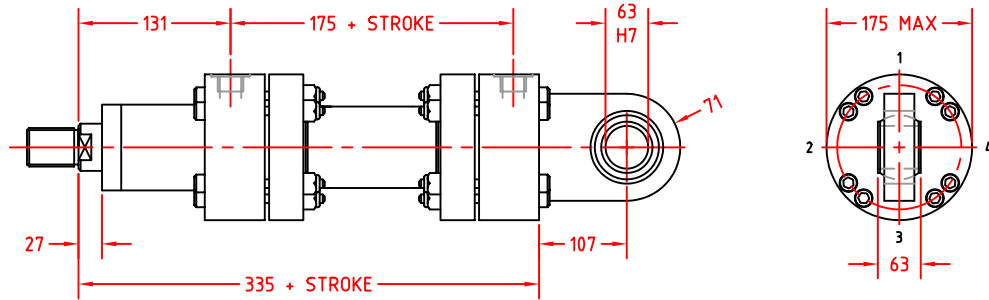
PORT CONNECTIONS

- TYPE - 01 3/4" BSPP
- TYPE - 02 M27 x 2P

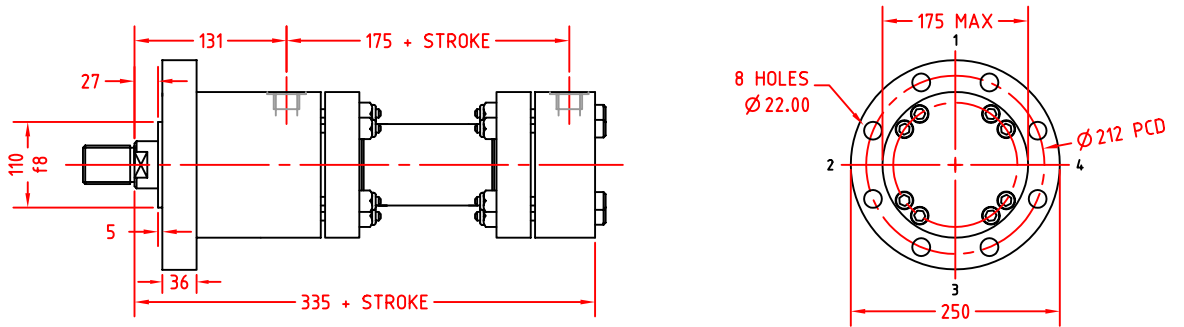
CAP FIXED EYE
MOUNTING STYLE
MP3



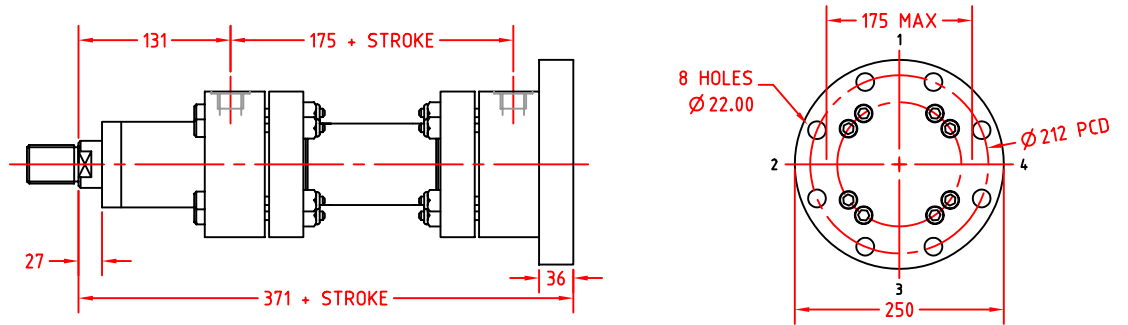
CAP SPHERICAL EYE
MOUNTING STYLE
MP5



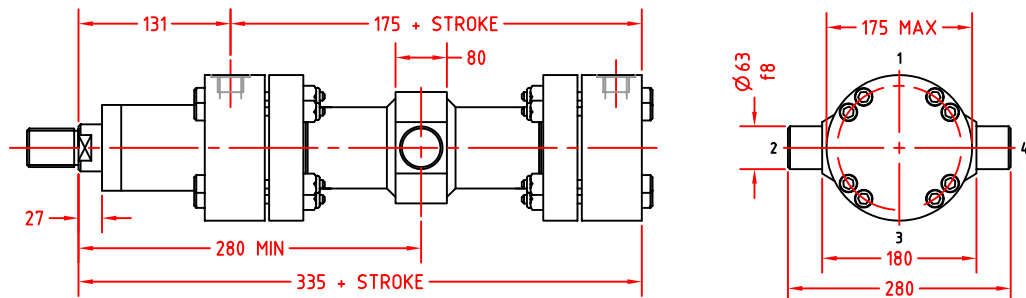
HEAD CIRCULAR FLANGE
MOUNTING STYLE
MF3



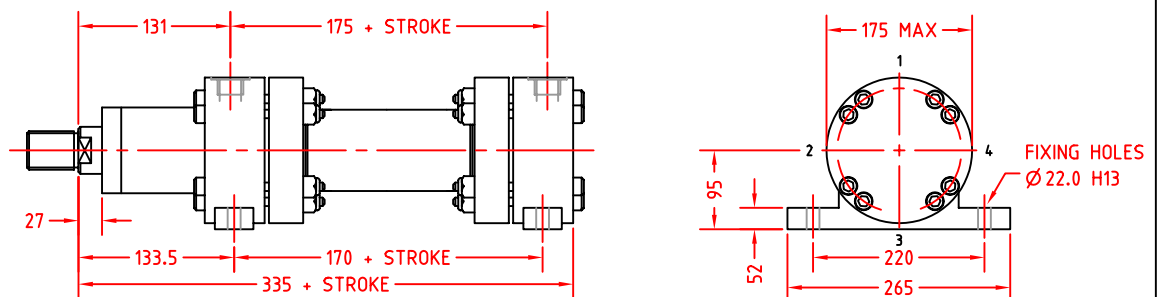
CAP CIRCULAR FLANGE
MOUNTING STYLE
MF4

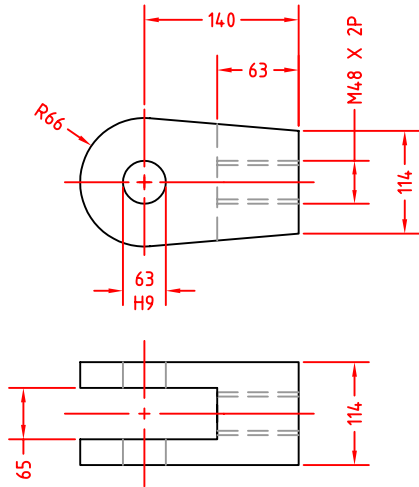


INTERMEDIATE TRUNNION
MOUNTING STYLE
MT4

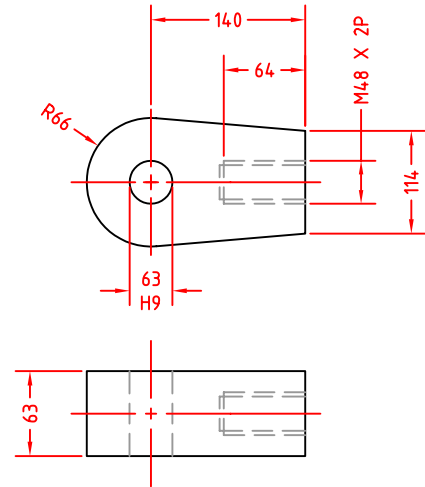


FOOT MOUNTING
MOUNTING STYLE
FM

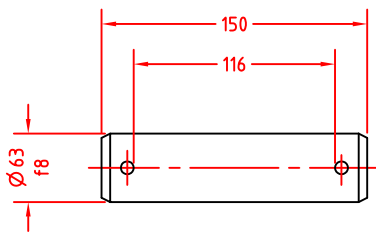




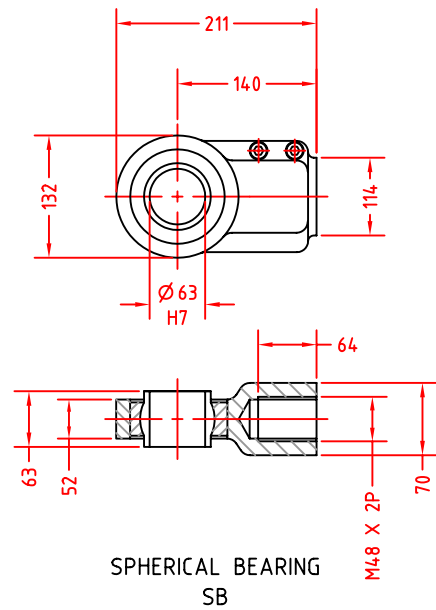
ROD CLEVIS
RC



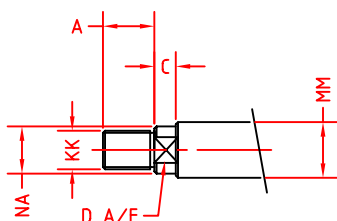
ROD KNUCKLE
RK



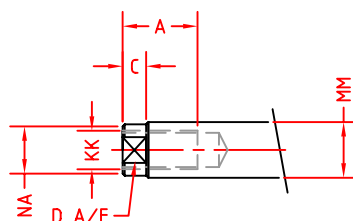
CLEVIS PIN
CP



SPHERICAL BEARING
SB



THREAD STYLE "M"



THREAD STYLE "F"

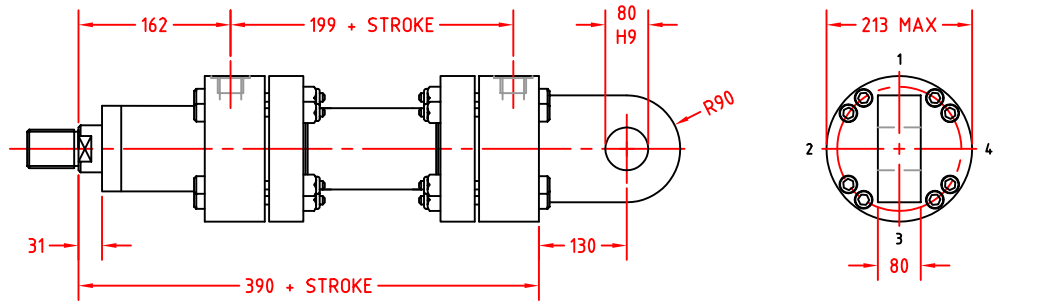
PISTON ROD DIMENSIONS

ROD	TYPE 1	TYPE 2
MM	Ø 63.00	Ø 70.00
NA	Ø 62.00	Ø 69.00
KK	M48 x 2P	M48 x 2P
A	63.00	63.00
D	50.00 A/F	50.00 A/F
C	23	23

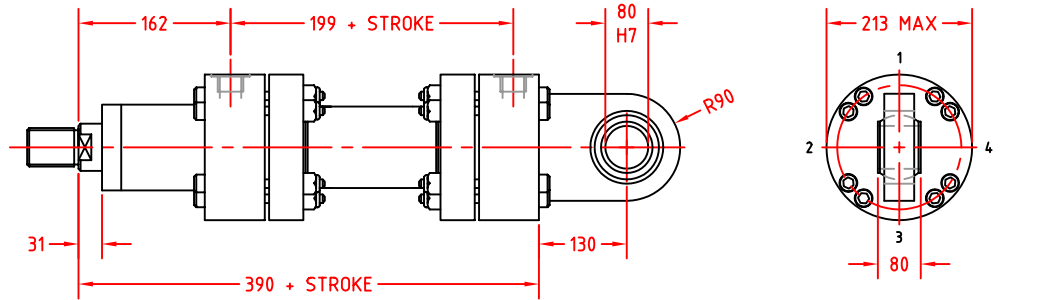
PORT CONNECTIONS

TYPE - 01	1" BSPP
TYPE - 02	M33 x 2P

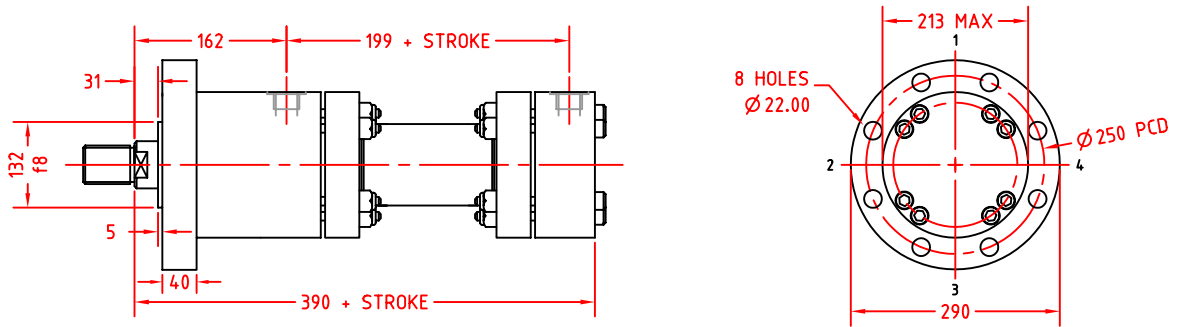
CAP FIXED EYE
MOUNTING STYLE
MP3



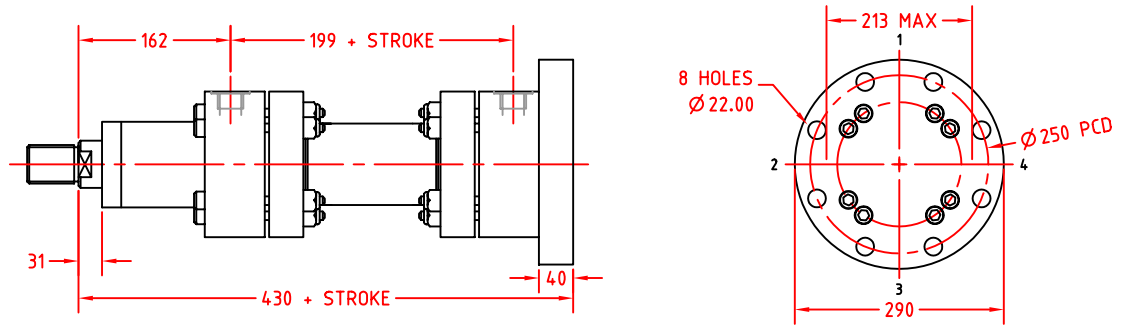
CAP SPHERICAL EYE
MOUNTING STYLE
MP5



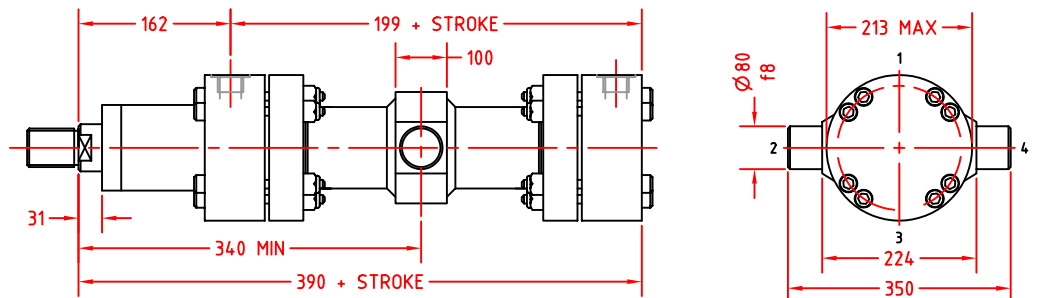
HEAD CIRCULAR FLANGE
MOUNTING STYLE
MF3



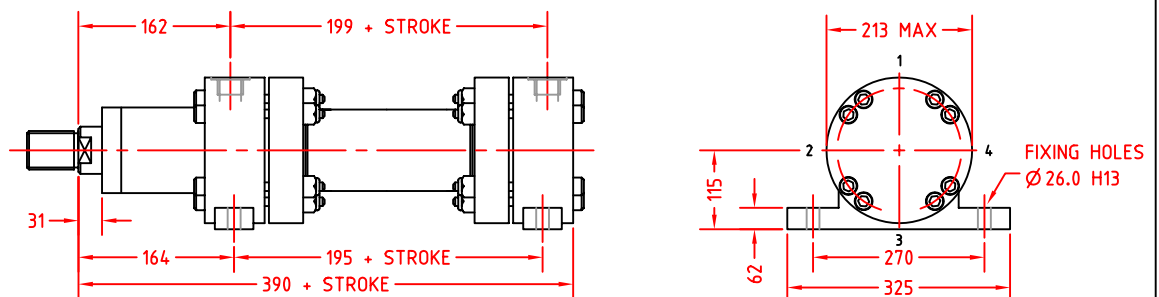
CAP CIRCULAR FLANGE
MOUNTING STYLE
MF4

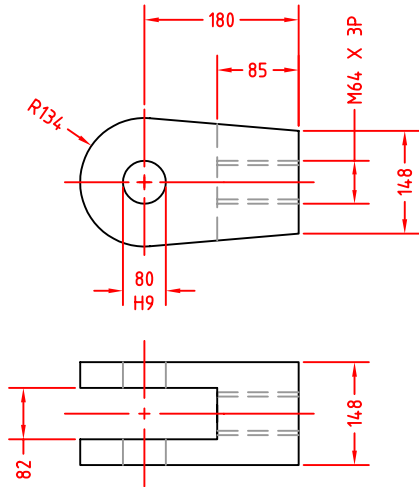


INTERMEDIATE TRUNNION
MOUNTING STYLE
MT4

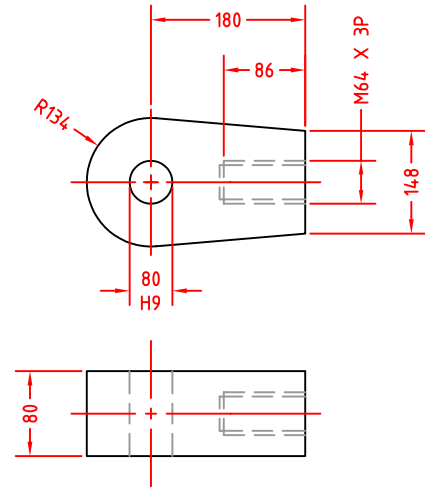


FOOT MOUNTING
MOUNTING STYLE
FM

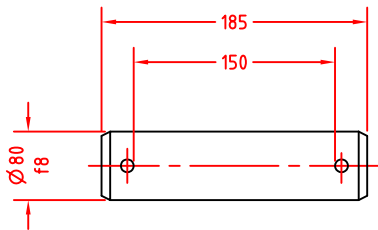




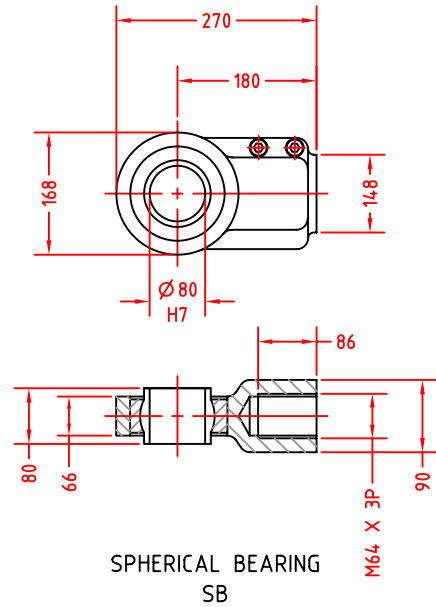
ROD CLEVIS
RC



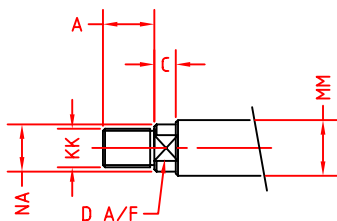
ROD KNUCKLE
RK



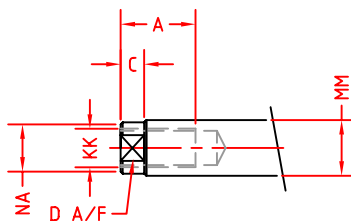
CLEVIS PIN
CP



SPHERICAL BEARING
SB



THREAD STYLE "M"



THREAD STYLE "F"

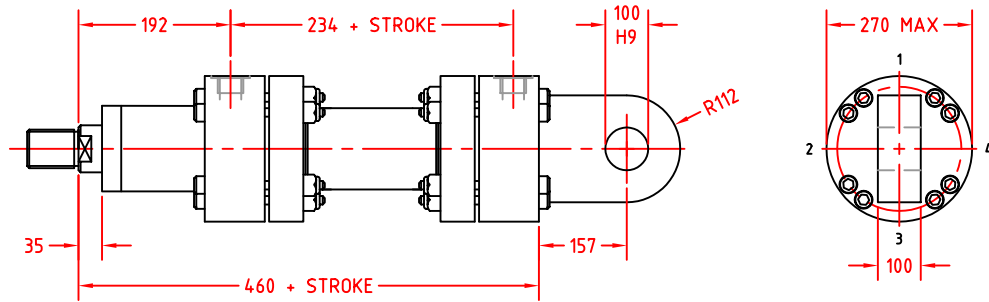
PISTON ROD DIMENSIONS

ROD	TYPE 1	TYPE 2
MM	Ø 80.00	Ø 90.00
NA	Ø 79.00	Ø 89.00
KK	M64 x 3P	M64 x 3P
A	85.00	85.00
D	65.00 A/F	75.00 A/F
C	27	27

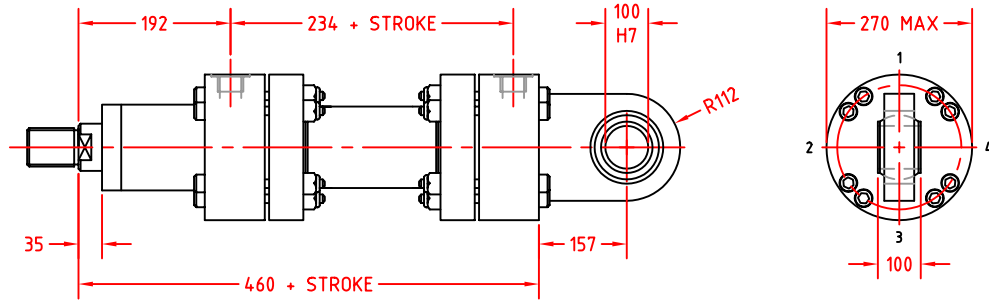
PORT CONNECTIONS

- TYPE - 01 1" BSPP
- TYPE - 02 M33 x 2P

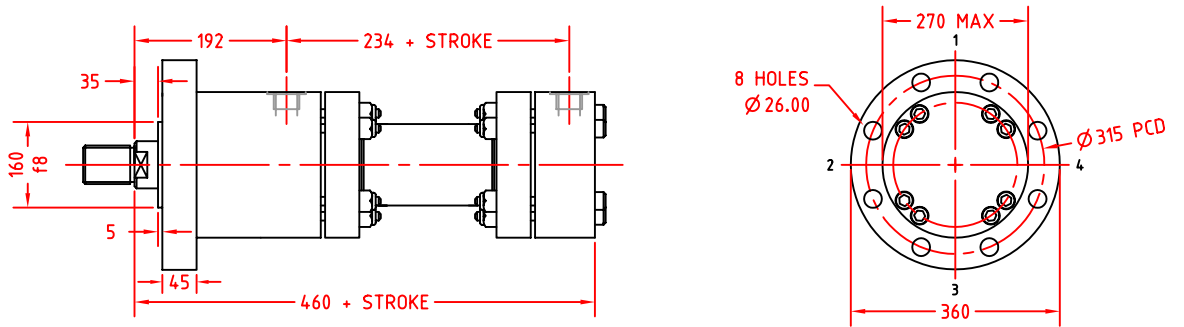
**CAP FIXED EYE
MOUNTING STYLE
MP3**



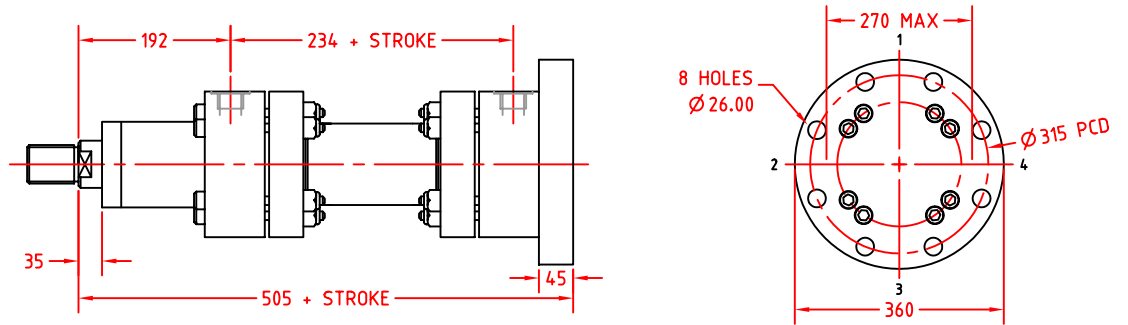
**CAP SPHERICAL EYE
MOUNTING STYLE
MP5**



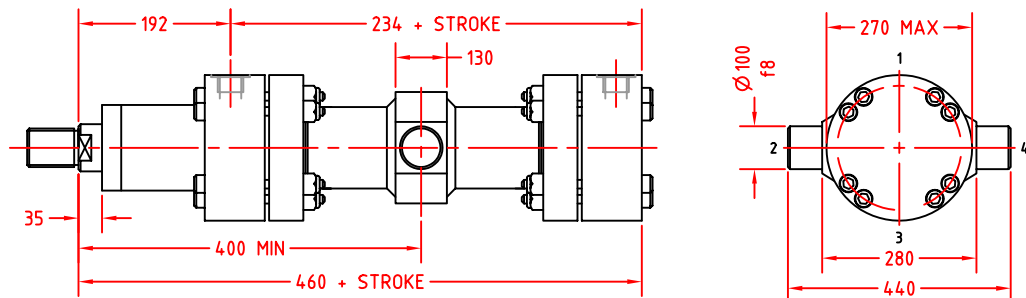
**HEAD CIRCULAR FLANGE
MOUNTING STYLE
MF3**



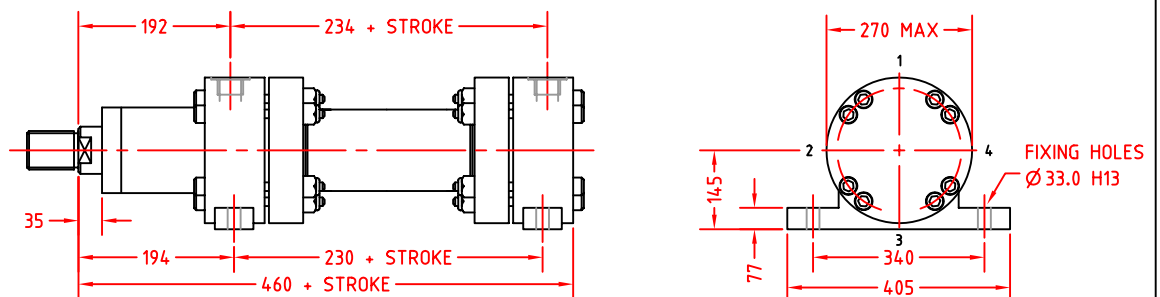
**CAP CIRCULAR FLANGE
MOUNTING STYLE
MF4**

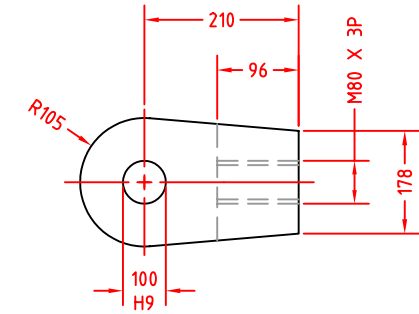


**INTERMEDIATE TRUNNION
MOUNTING STYLE
MT4**

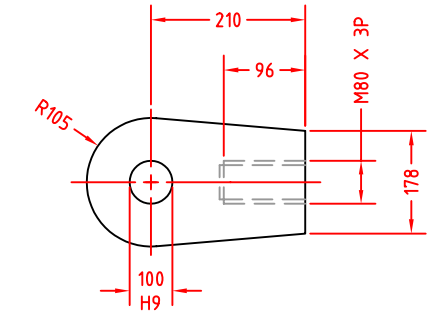


**FOOT MOUNTING
MOUNTING STYLE
FM**

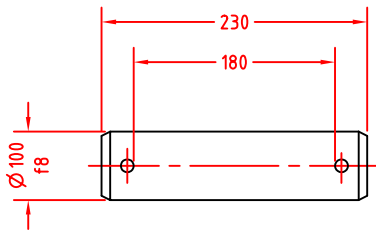




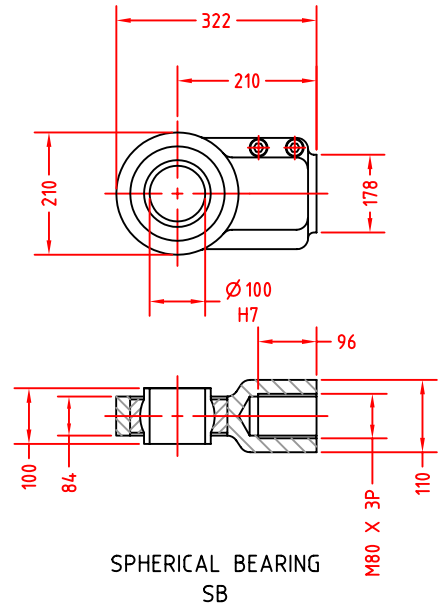
ROD CLEVIS
RC



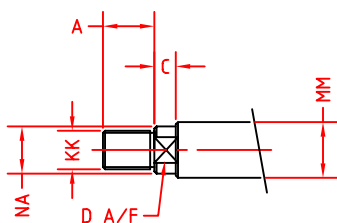
ROD KNUCKLE
RK



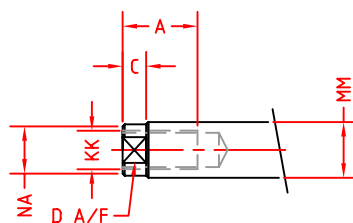
CLEVIS PIN
CP



SPHERICAL BEARING
SB



THREAD STYLE "M"



THREAD STYLE "F"

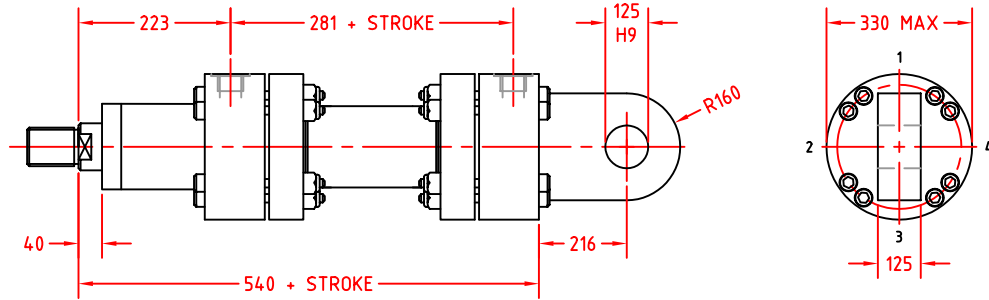
PISTON ROD DIMENSIONS

ROD	TYPE 1	TYPE 2
MM	Ø 100.00	Ø 110.00
NA	Ø 99.00	Ø 109.00
KK	M80 x 3P	M80 x 3P
A	95.00	95.00
D	85.00 A/F	95.00 A/F
C	31	31

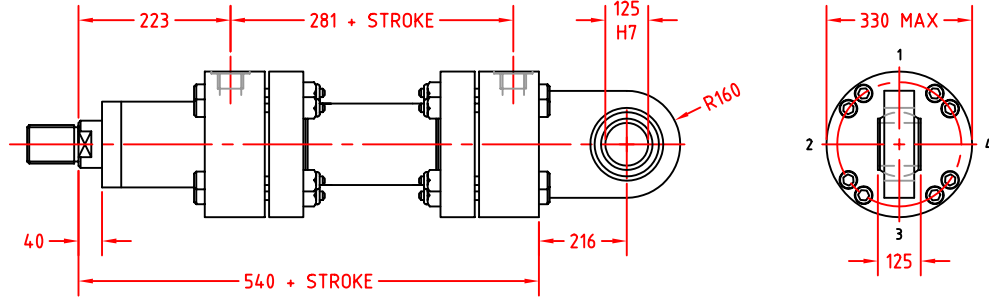
PORT CONNECTIONS

- TYPE - 01 1-1/4" BSPP
- TYPE - 02 M42 x 2P

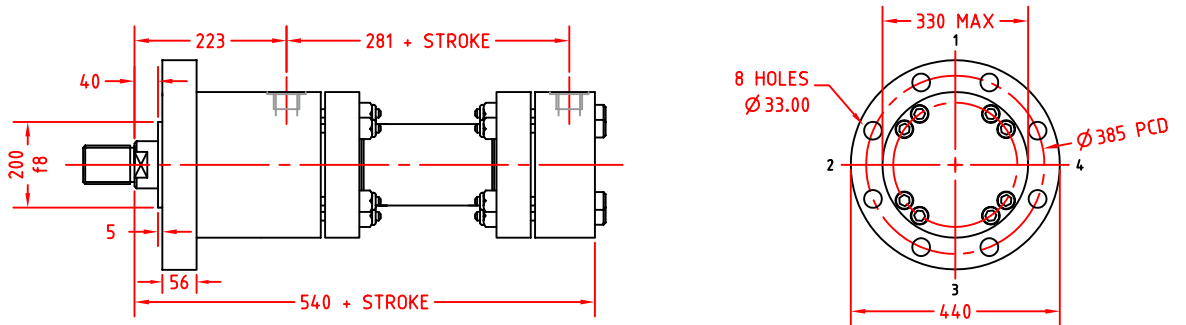
CAP FIXED EYE
MOUNTING STYLE
MP3



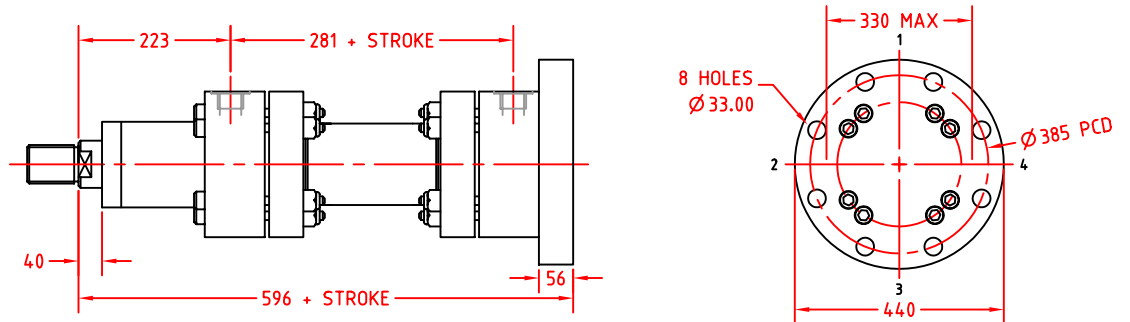
CAP SPHERICAL EYE
MOUNTING STYLE
MP5



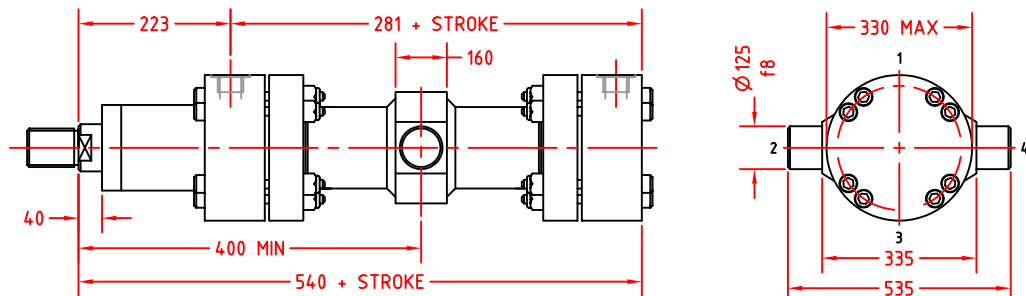
HEAD CIRCULAR FLANGE
MOUNTING STYLE
MF3



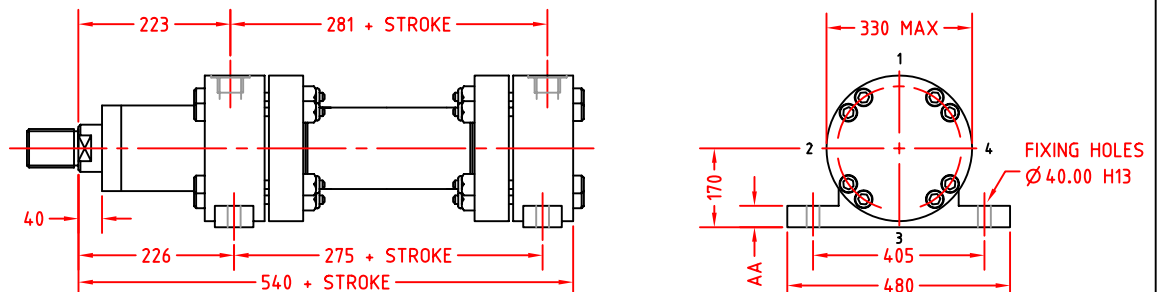
CAP CIRCULAR FLANGE
MOUNTING STYLE
MF4

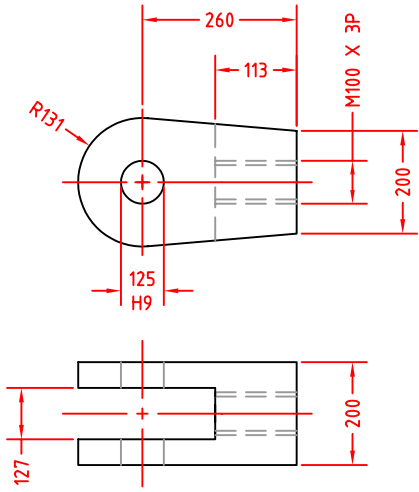


INTERMEDIATE TRUNNION
MOUNTING STYLE
MT4

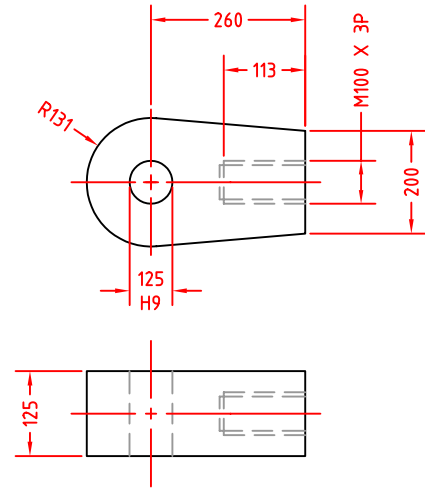


FOOT MOUNTING
MOUNTING STYLE
FM

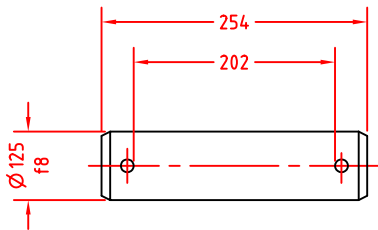




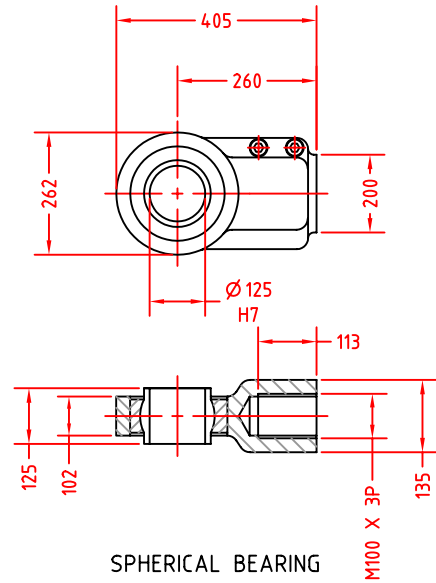
ROD CLEVIS
RC



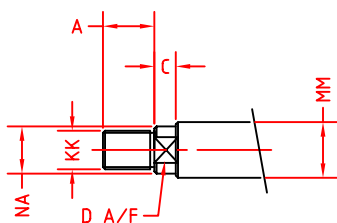
ROD KNUCKLE
RK



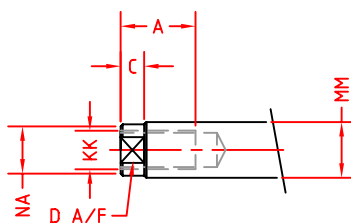
CLEVIS PIN
CP



SPHERICAL BEARING
SB



THREAD STYLE "M"



THREAD STYLE "F"

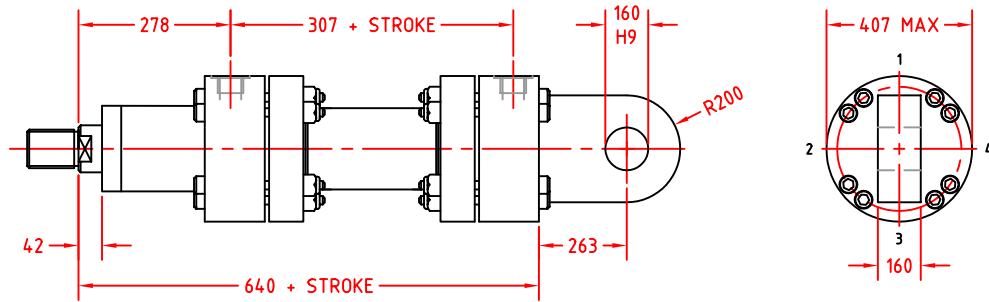
PISTON ROD DIMENSIONS

ROD	TYPE 1	TYPE 2
MM	Ø 125.00	Ø 140.00
NA	Ø 124.00	Ø 139.00
KK	M100 x 3P	M100 x 3P
A	113.00	113.00
D	115.00 A/F	120.00 A/F
C	36	36

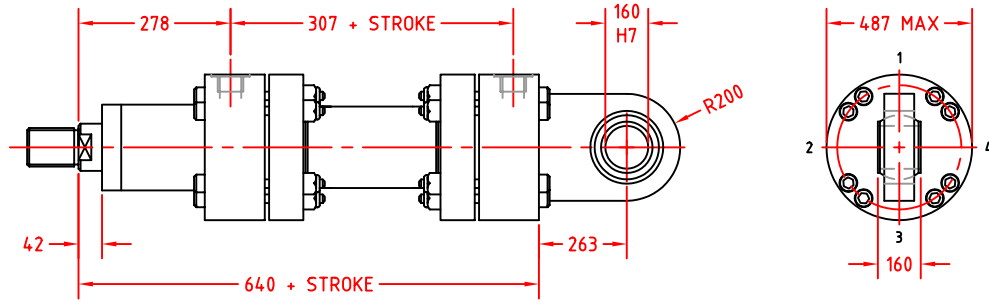
PORT CONNECTIONS

TYPE - 01 1-1/4" BSPP
TYPE - 02 M42 x 2P

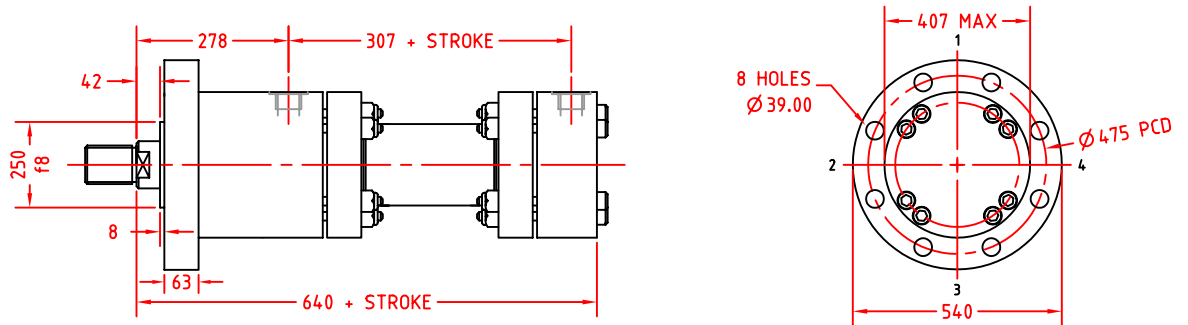
CAP FIXED EYE
MOUNTING STYLE
MP3



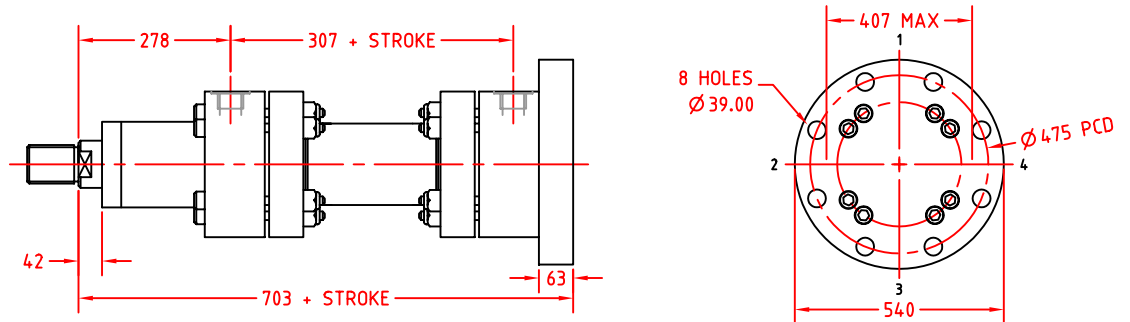
CAP SPHERICAL EYE
MOUNTING STYLE
MP5



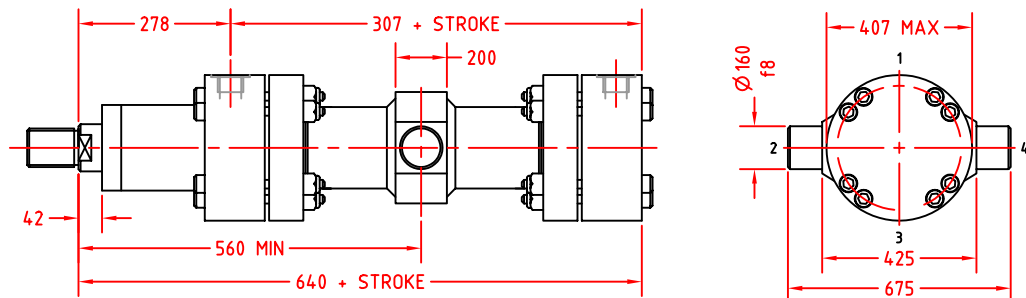
HEAD CIRCULAR FLANGE
MOUNTING STYLE
MF3



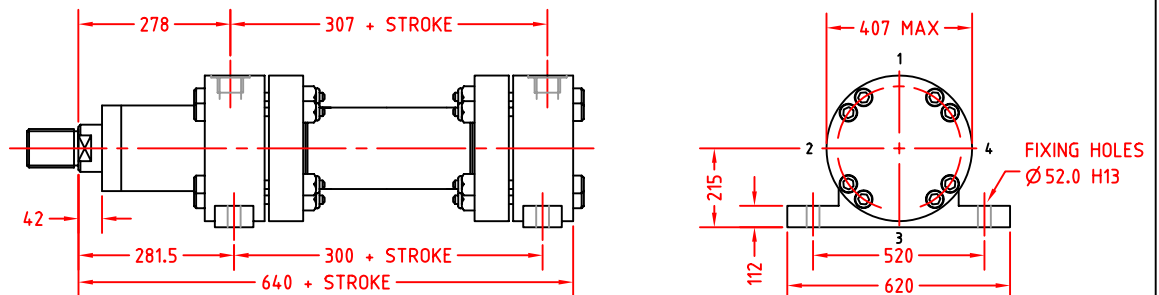
CAP CIRCULAR FLANGE
MOUNTING STYLE
MF4

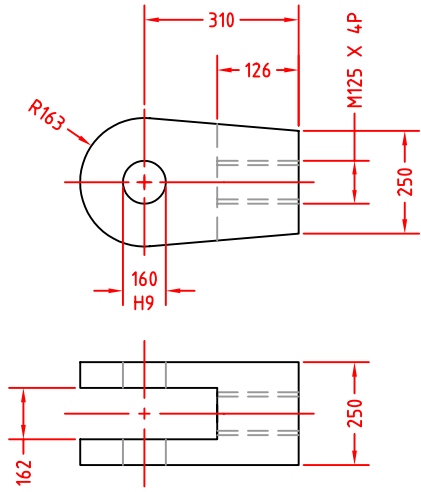


INTERMEDIATE TRUNNION
MOUNTING STYLE
MT4

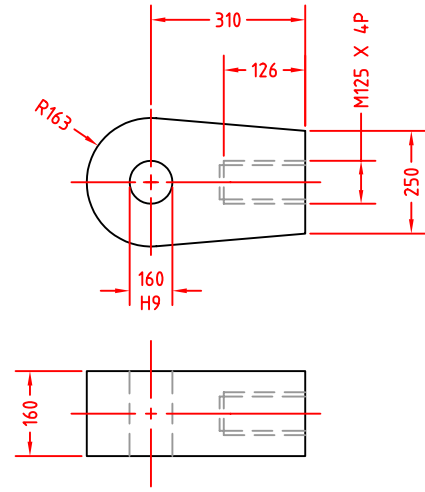


FOOT MOUNTING
MOUNTING STYLE
FM



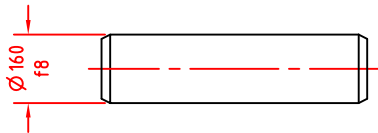


ROD CLEVIS
RC

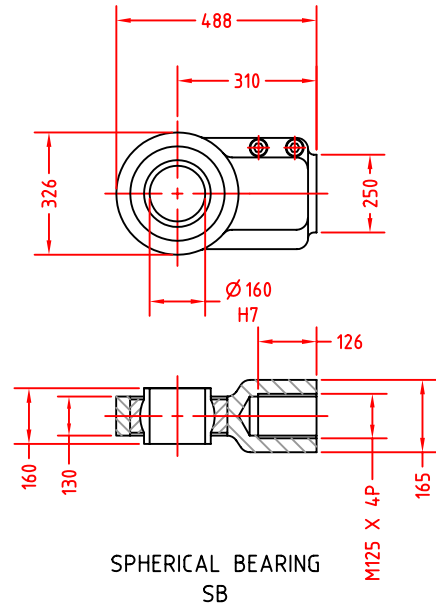


ROD KNUCKLE
RK

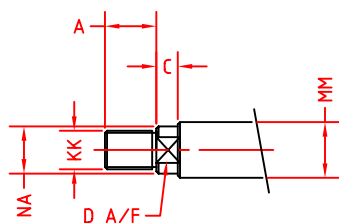
OVERALL LENGTH & RETAINING METHOD
TO SUIT APPLICATION



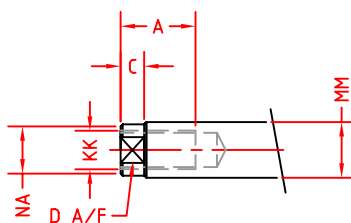
CLEVIS PIN
CP



SPHERICAL BEARING
SB



THREAD STYLE "M"



THREAD STYLE "F"

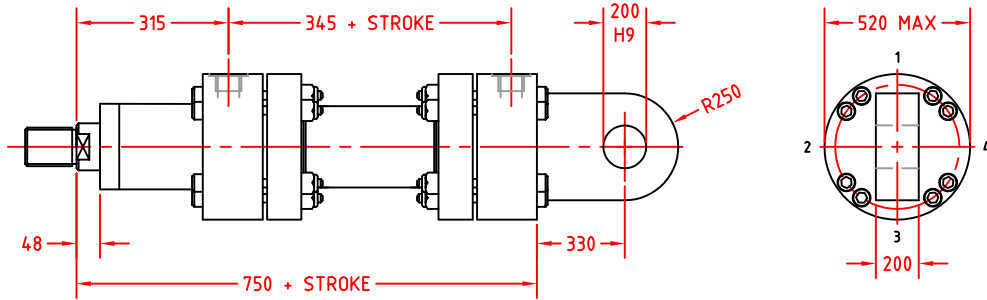
PISTON ROD DIMENSIONS

ROD	TYPE 1	TYPE 2
MM	Ø 160.00	Ø 180.00
NA	Ø 159.00	Ø 179.00
KK	M125 x 4P	M125 x 4P
A	125.00	125.00
D	140.00 A/F	160.00 A/F
C	38	38

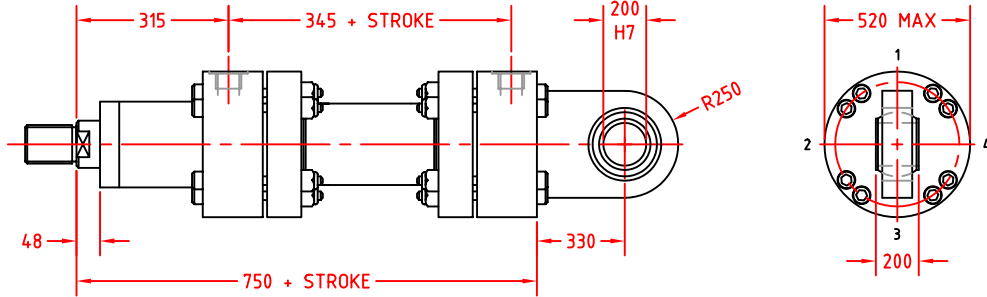
PORT CONNECTIONS

TYPE - 01 1-1/2" BSPP
TYPE - 02 M48 x 2P

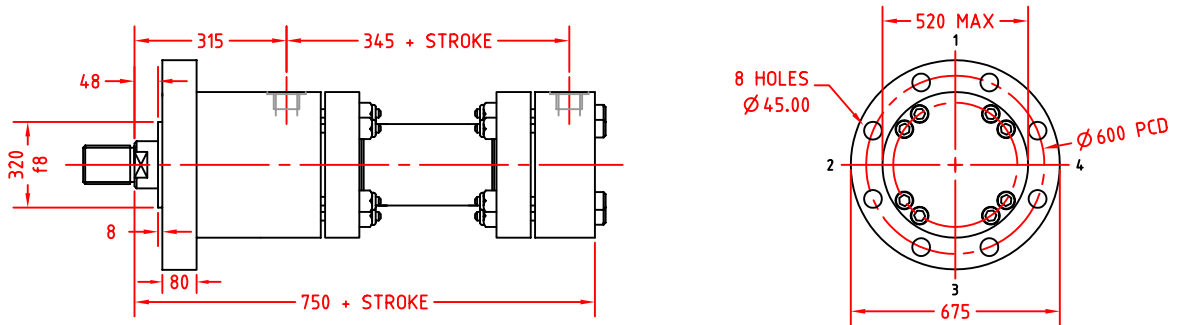
CAP FIXED EYE
MOUNTING STYLE
MP3



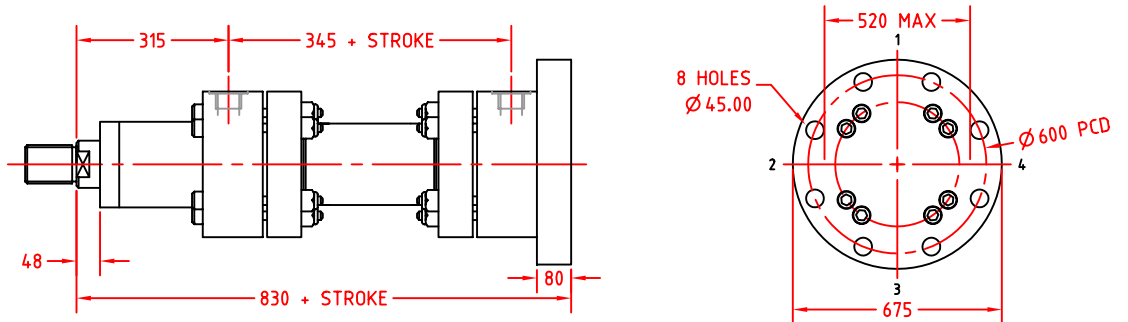
CAP SPHERICAL EYE
MOUNTING STYLE
MP5



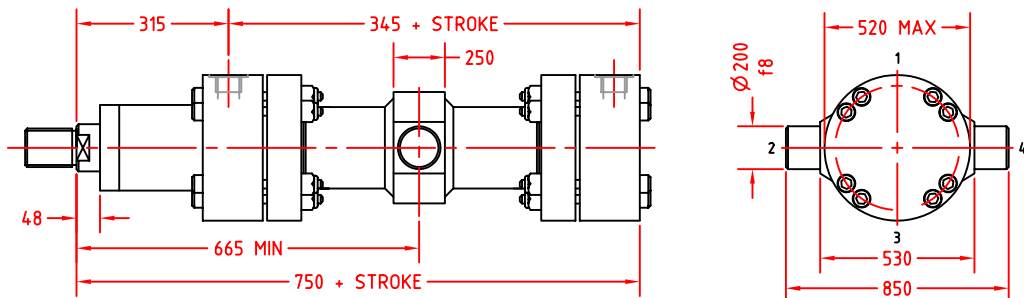
HEAD CIRCULAR FLANGE
MOUNTING STYLE
MF3



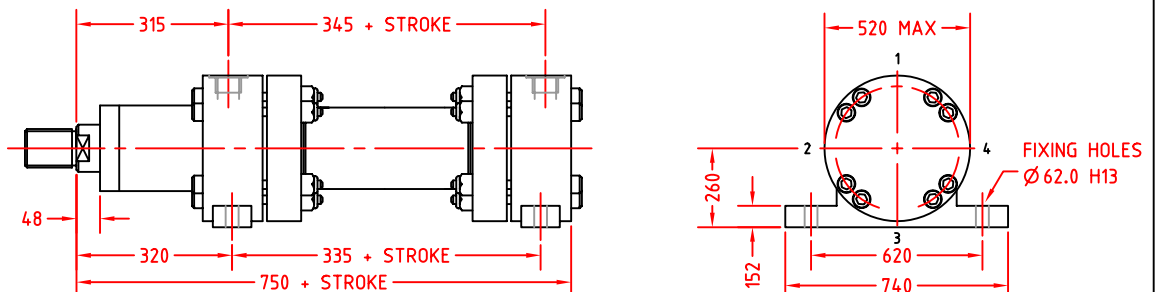
CAP CIRCULAR FLANGE
MOUNTING STYLE
MF4

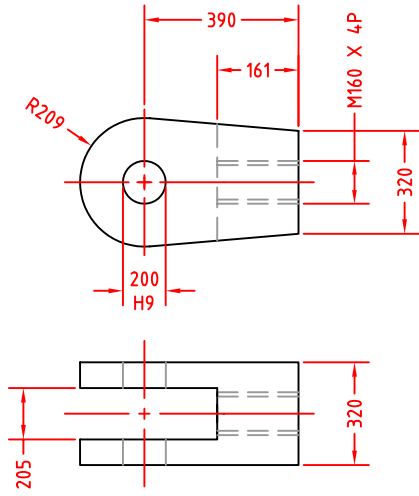


INTERMEDIATE TRUNNION
MOUNTING STYLE
MT4

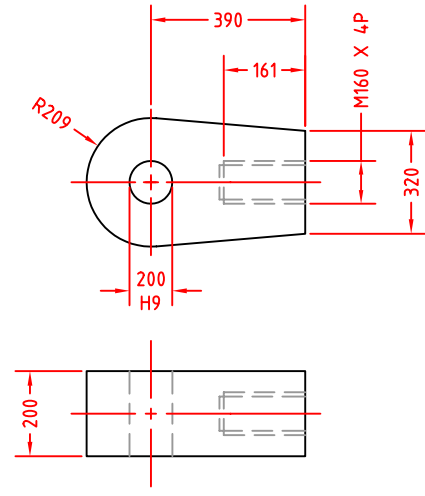


FOOT MOUNTING
MOUNTING STYLE
FM



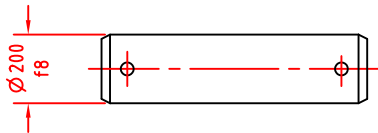


ROD CLEVIS
RC

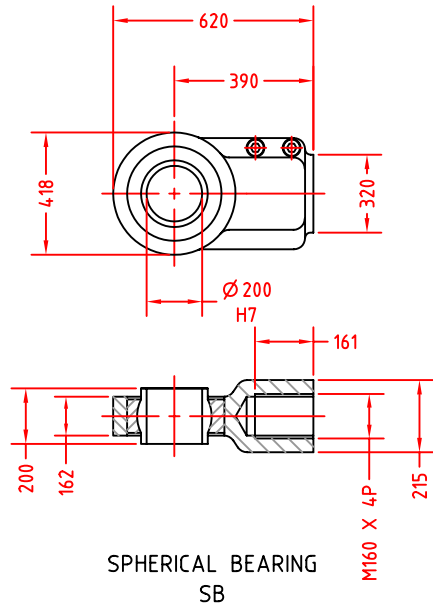


ROD KNUCKLE
RK

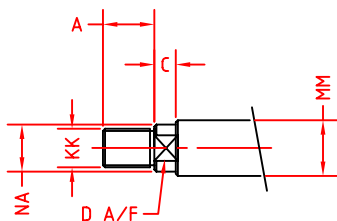
OVERALL LENGTH & RETAINING METHOD
TO SUIT APPLICATION



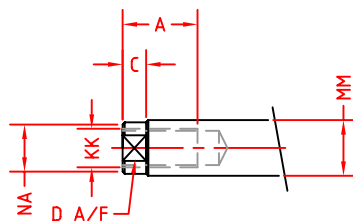
CLEVIS PIN
CP



SPHERICAL BEARING
SB



THREAD STYLE "M"



THREAD STYLE "F"

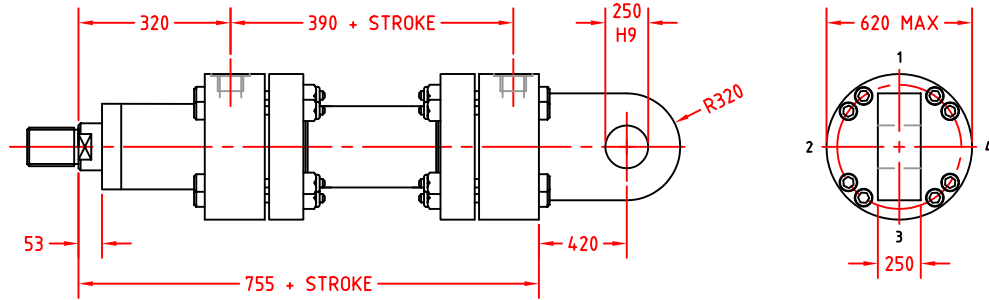
PISTON ROD DIMENSIONS

ROD	TYPE 1	TYPE 2
MM	Ø 200.00	Ø 220.00
NA	Ø 199.00	Ø 219.00
KK	M160 x 4P	M160 x 4P
A	160.00	160.00
D	180.00 A/F	200.00 A/F
C	44	44

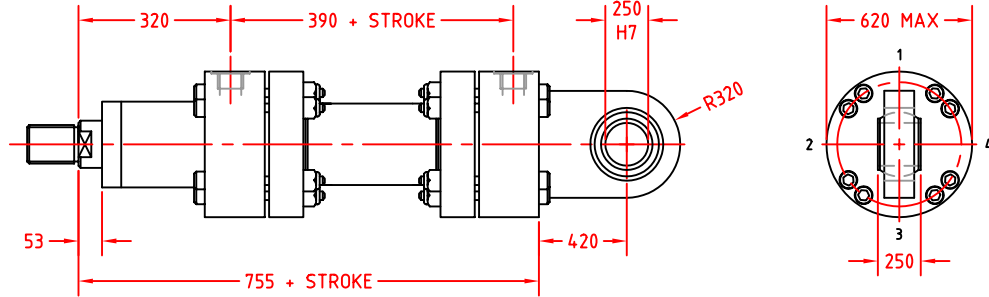
PORT CONNECTIONS

- TYPE - 01 2" BSPP
- TYPE - 02 M60 x 2P

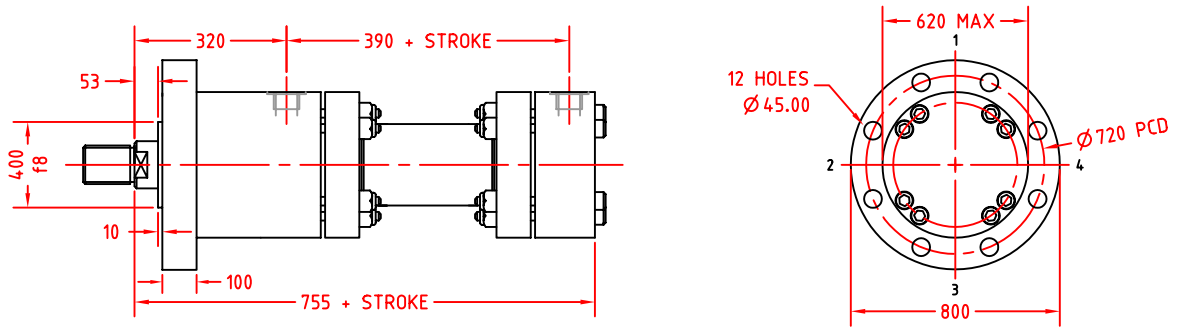
CAP FIXED EYE
MOUNTING STYLE
MP3



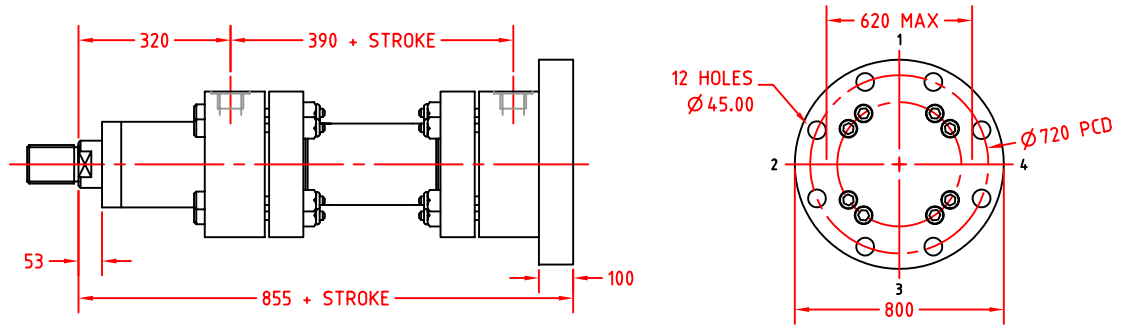
CAP SPHERICAL EYE
MOUNTING STYLE
MP5



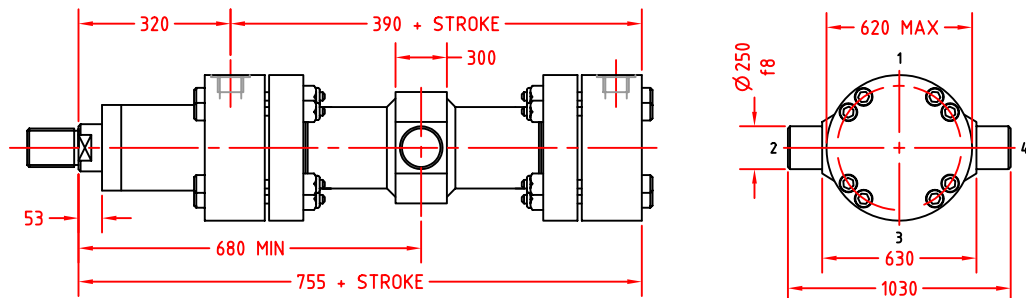
HEAD CIRCULAR FLANGE
MOUNTING STYLE
MF3



CAP CIRCULAR FLANGE
MOUNTING STYLE
MF4

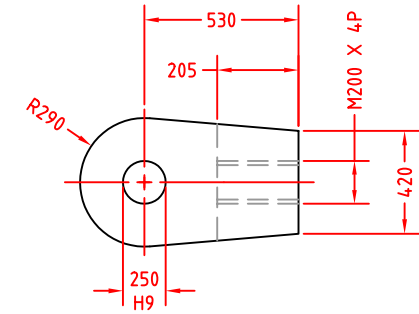


INTERMEDIATE TRUNNION
MOUNTING STYLE
MT4

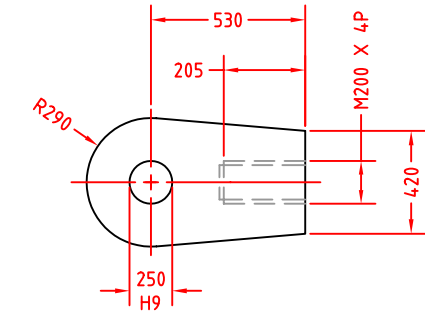


FOOT MOUNTING
MOUNTING STYLE
FM

NOT RECOMMENDED FOR USE WITH 400MM BORE CYLINDERS

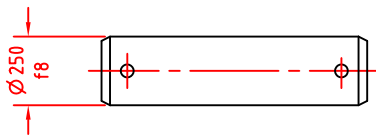


ROD CLEVIS
RC

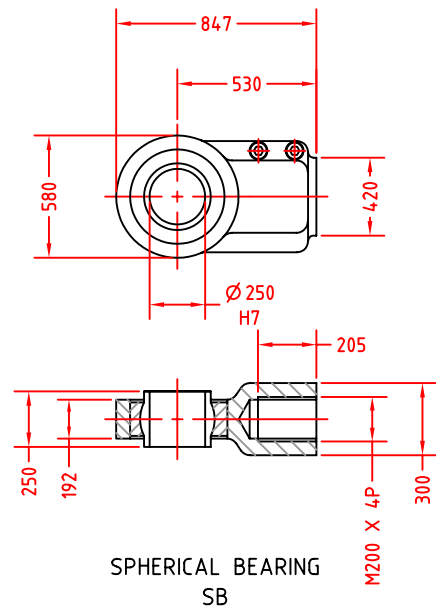


ROD KNUCKLE
RK

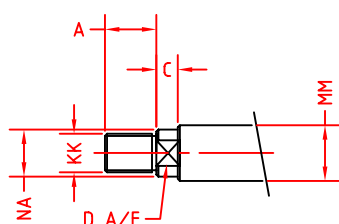
OVERALL LENGTH & RETAINING METHOD
TO SUIT APPLICATION



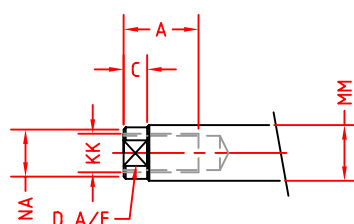
CLEVIS PIN
CP



SPHERICAL BEARING
SB



THREAD STYLE "M"



THREAD STYLE "F"

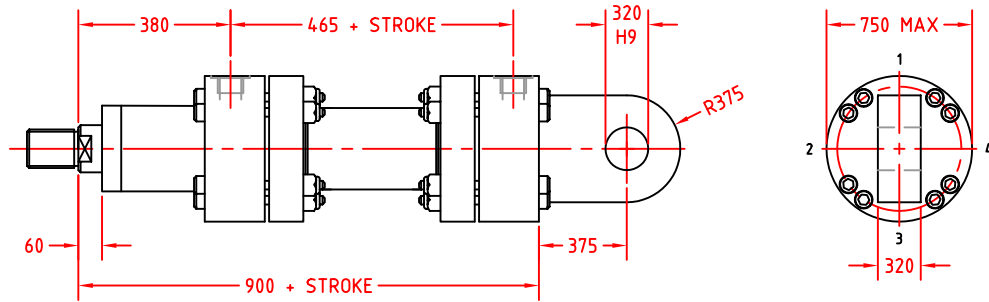
PISTON ROD DIMENSIONS

ROD	TYPE 1	TYPE 2
MM	Ø 250.00	Ø 280.00
NA	Ø 249.00	Ø 279.00
KK	M200 x 4P	M200 x 4P
A	200.00	200.00
D	230.00 A/F	260.00 A/F
C	50	50

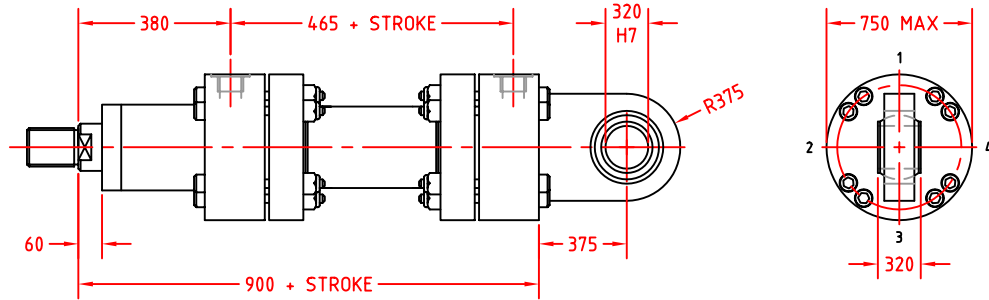
PORT CONNECTIONS

TYPE - 01 2" BSPP
TYPE - 02 M60 x 2P

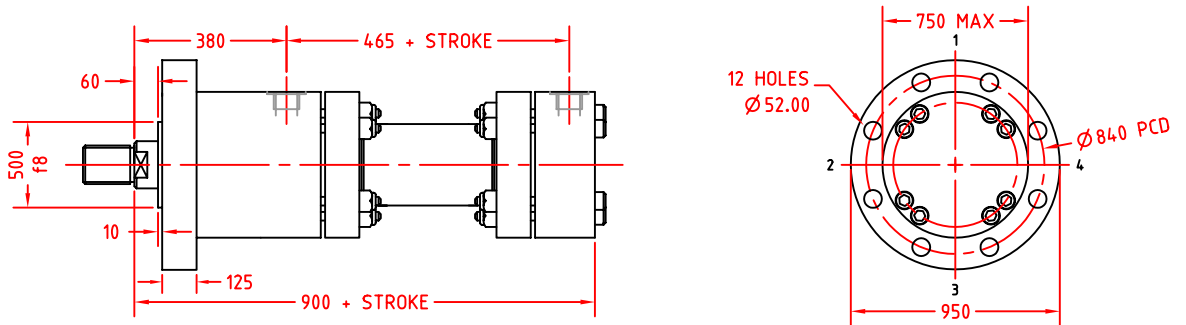
CAP FIXED EYE
MOUNTING STYLE
MP3



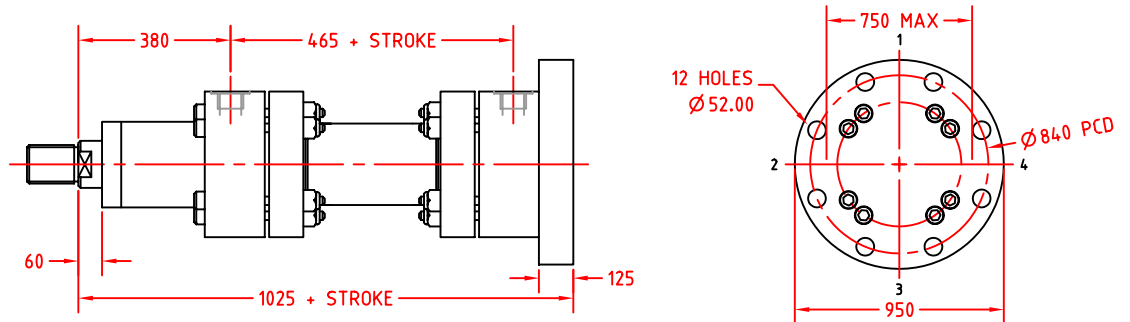
CAP SPHERICAL EYE
MOUNTING STYLE
MP5



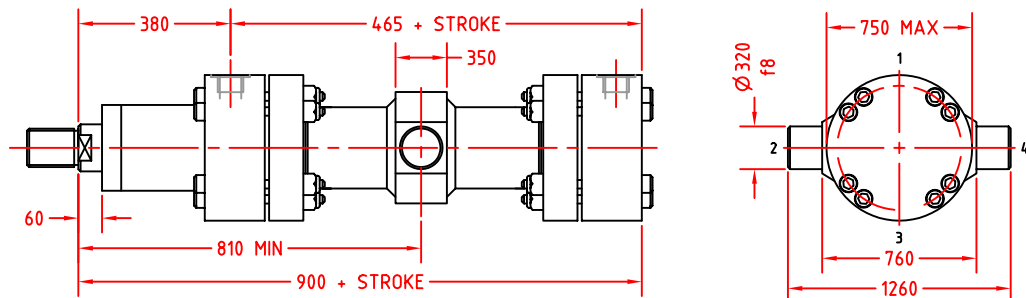
HEAD CIRCULAR FLANGE
MOUNTING STYLE
MF3



CAP CIRCULAR FLANGE
MOUNTING STYLE
MF4

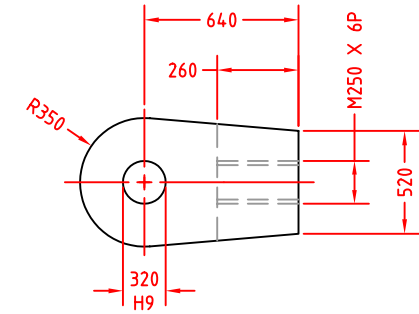


INTERMEDIATE TRUNNION
MOUNTING STYLE
MT4

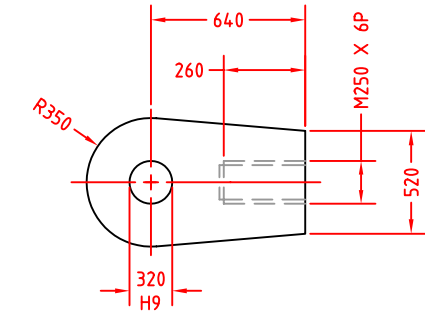


FOOT MOUNTING
MOUNTING STYLE
FM

NOT RECOMMENDED FOR USE WITH 500MM BORE CYLINDERS

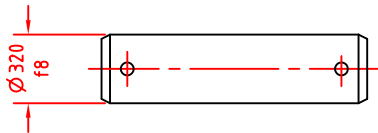


ROD CLEVIS
RC

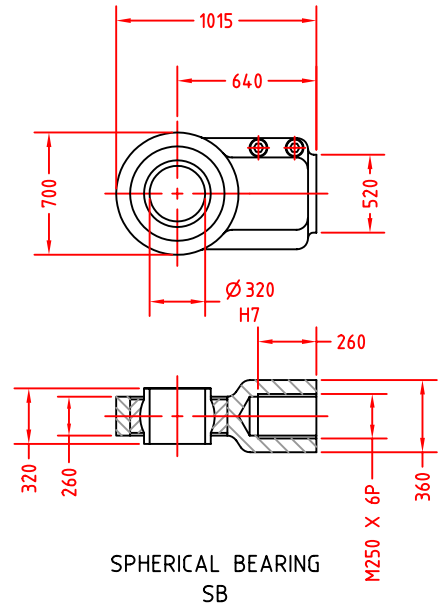


ROD KNUCKLE
RK

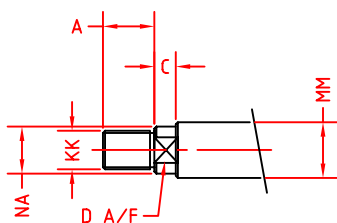
OVERALL LENGTH & RETAINING METHOD
TO SUIT APPLICATION



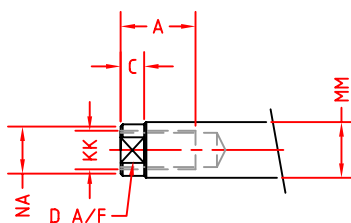
CLEVIS PIN
CP



SPHERICAL BEARING
SB



THREAD STYLE "M"



THREAD STYLE "F"

PISTON ROD DIMENSIONS

ROD	TYPE 1	TYPE 2
MM	Ø 320.00	Ø 360.00
NA	Ø 319.00	Ø 359.00
KK	M250 x 6P	M250 x 6P
A	250.00	250.00
D	300.00 A/F	340.00 A/F
C	50	50

PORT CONNECTIONS

TYPE - 01 2" BSPP
TYPE - 02 M60 x 2P