

TREBLE R FABRICATIONS

UNIT 42 – CROSSGATE ROAD – PARK FARM INDUSTRIAL ESTATE – REDDITCH – WORCS – B987SN

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Bevel / Spur Gearboxes

All penstock gates require opening and closing by a connecting spindle and operating device.

This can be either mounted direct to frame or remotely at coping level.

The operating device can be either of the following :

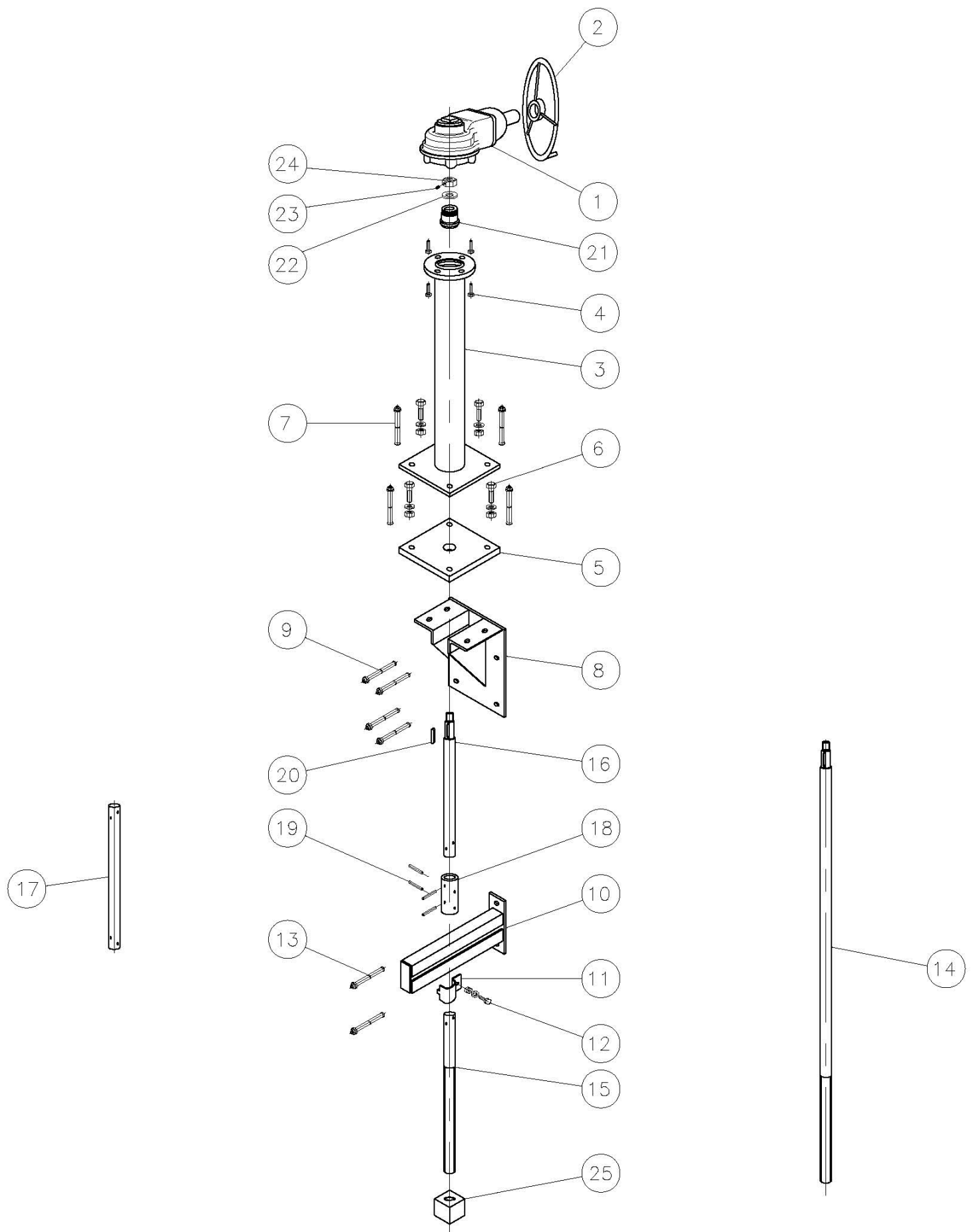
- . Square Cap
- . Handwheel
- . Electric Actuator
- . Bevel or Spur Gearbox
- . Hydraulic or Pneumatic Cylinder

Gearboxes are generally used on larger penstocks and valves for ease of operation. They can be used on any application where screwed or keyed shafts are used to operate the equipment. These gearboxes are manually operated by handwheel or square cap but can be easily converted by adding a input flange for motorised use.



BEVEL / SPUR GEARBOXES

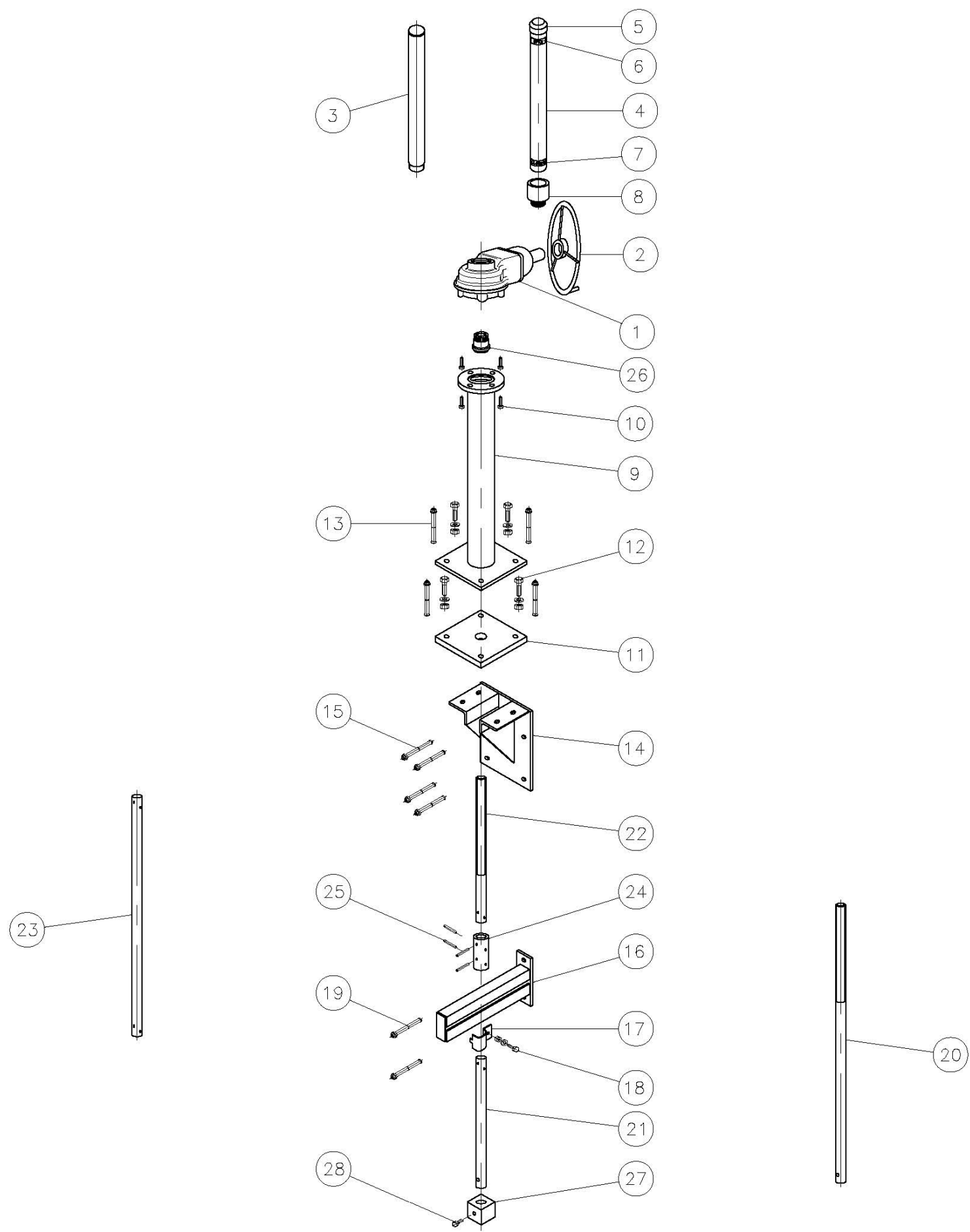
Gearbox / Handwheel – Non Rising type arrangement



Gearbox / Handwheel – Non Rising type arrangement part number listing

Part No	Qty	Component
1	1	Bevel Gearbox
2	1	Handwheel
3	1	Pillar
4	1 set	Bolts for operator to pillar
5	1	Guide Plate
6	4	Bolts for pillar to footplate
7	4	Fixing bolts for pillar to floor
8	1	Footplate
9	4	Fixing bolts for footplate to wall
10	Vary	Guide bracket body
11	Vary	Guide bracket cap
12	Vary	Bolt for cap to guide bracket body
13	Vary	Fixing bolts for guide bracket to wall
14	1	Non-Rising threaded spindle (single piece)
15	1	Lower extension spindle
16	1	Upper extension spindle
17	Vary	Intermediate extension spindle(s)
18	Vary	Muff coupling(s)
19	Vary	Spirol pins
20	1	Parallel feather key
21	1	Drive nut
22	1	Thrust washer
23	1	Captive nut
24	1	Grub screw
25	1	Door nut

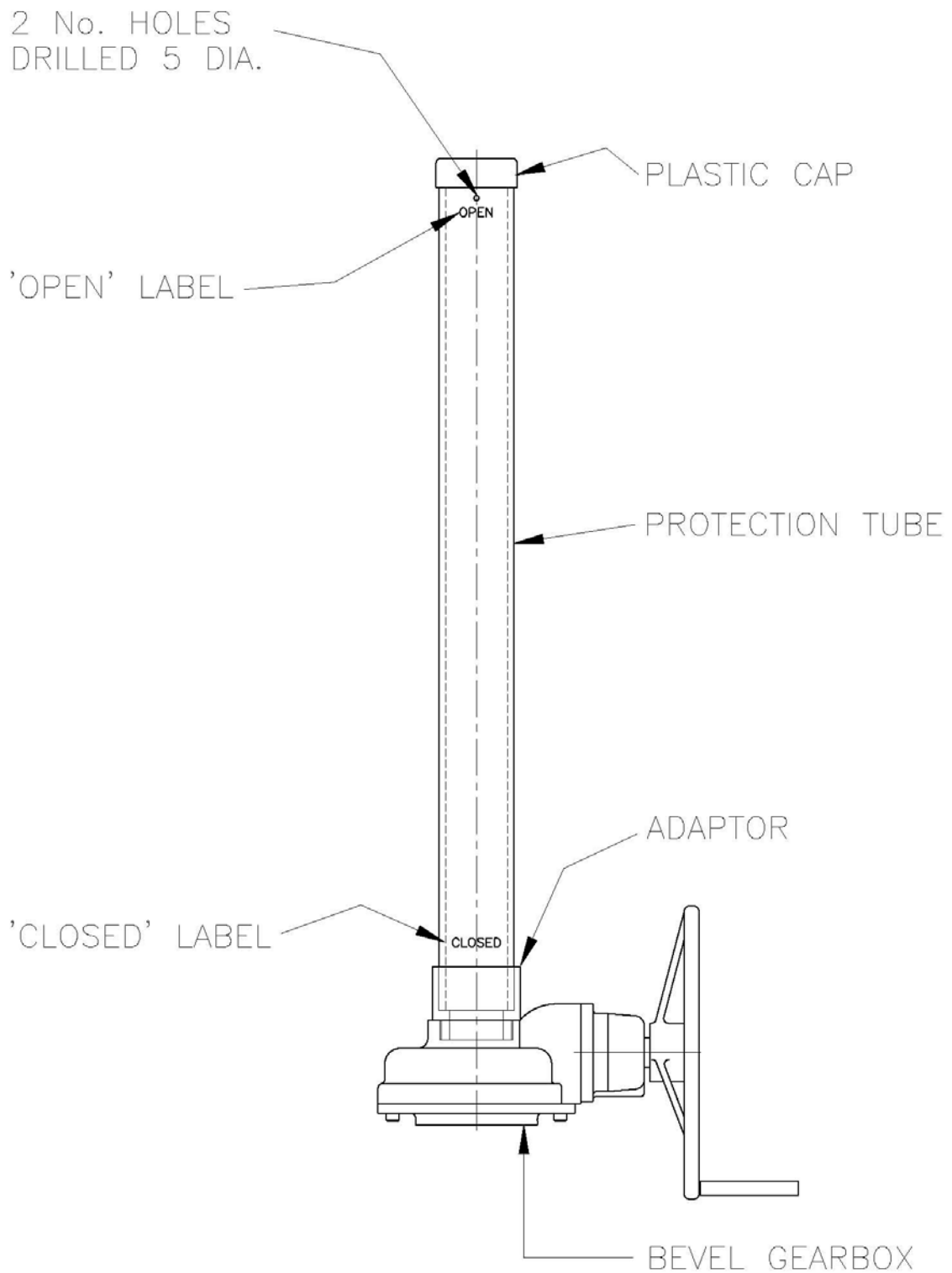
Gearbox/Handwheel – Rising Type Arrangement



Gearbox/Handwheel – Rising Type Arrangement Part Number Listing

Part No	Description
1	Gearbox
2	Handwheel
3	Steel Protection Tube
4	Clear Protection Tube
5	Protection Tube Cap
6	Indication Label (Top)
7	Indication Label (Bottom)
8	Adaptor
9	Pillar
10	Screws for item 1 to item 9
11	Guide Plate
12	Bolt, N & W for item 9 to item 14
13	Fixing Bolts for item 9
14	Footplate
15	Fixing bolts for item 14
16	Guide Bracket
17	Guide Bracket Cup
18	Bolts, N & W for item 17
19	Fixing Bolts for item 16
20	Rising Spindle (Direct)
21	Rising Spindle (In-Direct)
22	Extension Stem (No 1)
23	Extension Stem (No 2)
24	Muff Coupling
25	Pins for item 24
26	Drive Sleeve for item 1
27	Stem Block
28	Bolt for item 27

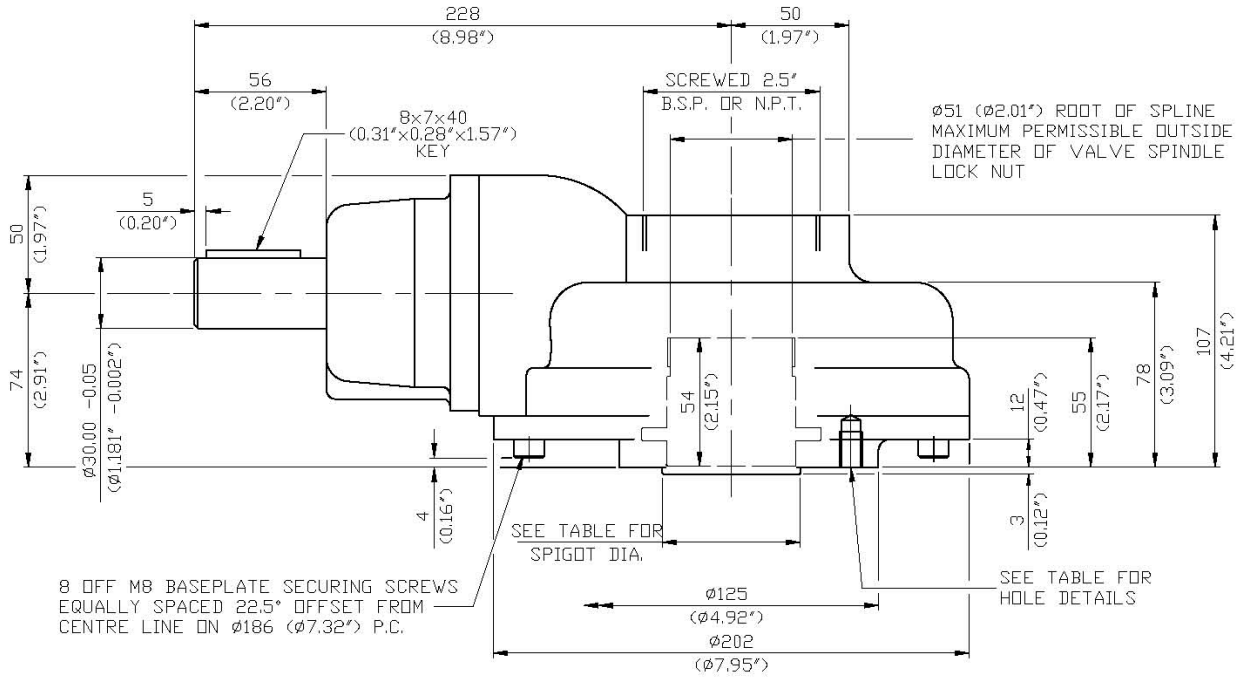
Gearbox/Handwheel/Clear Protection Tube Assembly



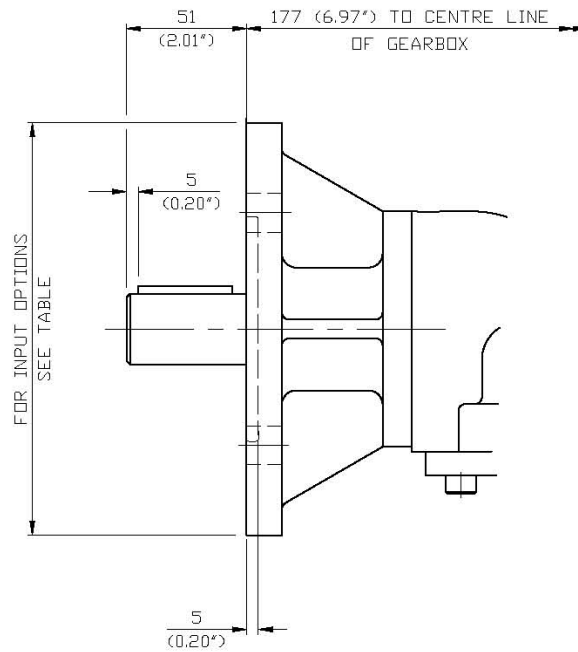
NOTE:

FOR WEIR PENSTOCKS: CLOSE LABEL
AT TOP, OPEN LABEL AT BOTTOM.

GEARBOX : IB4

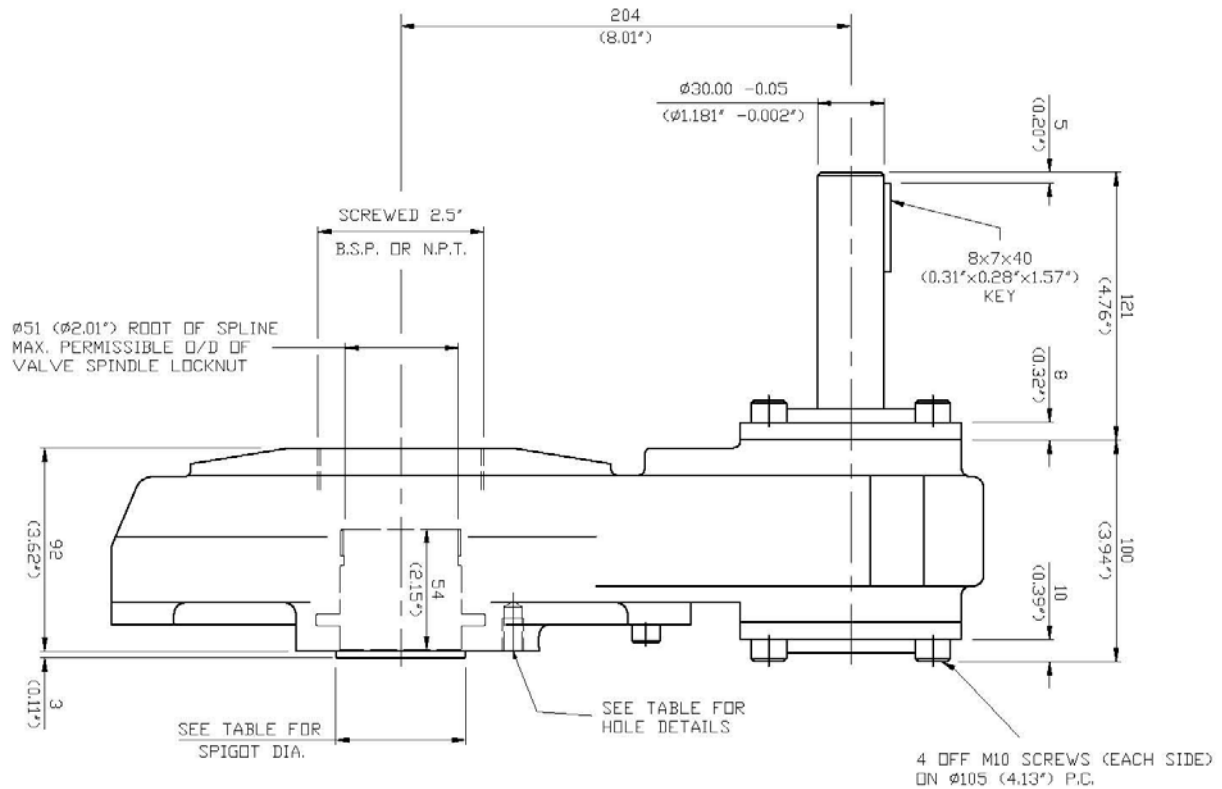


BASEPLATE DETAILS		
	SPIGOT DIA.	HOLE DETAILS (45° OFF CENTRES)
ISO F10	Ø69.95 -0.05 (Ø2.754" -0.002")	4 HOLES M10x15 (0.59") DEEP ON Ø102.0 (Ø4.02") P.C.
FA10	Ø58.70 -0.05 (Ø2.311" -0.002")	4 HOLES 3/8"UNCx15 (0.59") DEEP ON Ø101.6 (Ø4.00") P.C.

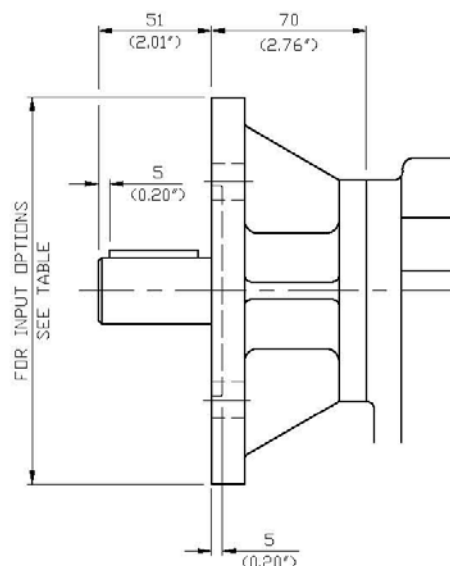


INPUT FLANGE DETAILS					
	FLANGE Ø/DIA. & THICKNESS	SHAFT DIA.	RECESS DIA.	HOLE DETAILS (45° OFF CENTRES)	KEY DETAILS
ISO F10	Ø125 (Ø4.92") x 10 (0.39")	Ø20.00 -0.05 (Ø0.787" -0.002")	Ø70.05 +0.05 (Ø2.758" +0.002")	4 HOLES Ø10.5 (Ø0.41") ON Ø102.0 (Ø4.02") P.C.	6x6x40 (0.24"x0.24"x1.57")
FA10	Ø125 (Ø4.92") x 10 (0.39")	Ø20.00 -0.05 (Ø0.787" -0.002")	Ø58.75 +0.05 (Ø2.313" +0.002")	4 HOLES Ø10.5 (Ø0.41") ON Ø102.0 (Ø4.02") P.C.	6x6x40 (0.24"x0.24"x1.57")
ISO F14	Ø175 (Ø6.89") x 15 (0.59")	Ø30.00 -0.05 (Ø1.181" -0.002")	Ø100.05 +0.05 (Ø3.939" +0.002")	4 HOLES Ø16.5 (Ø0.65") ON Ø140.0 (Ø5.51") P.C.	8x7x40 (0.31"x0.28"x1.57")
FA14	Ø175 (Ø6.89") x 15 (0.59")	Ø30.00 -0.05 (Ø1.181" -0.002")	Ø95.27 +0.05 (Ø3.751" +0.002")	4 HOLES Ø16.5 (Ø0.65") ON Ø140.0 (Ø5.51") P.C.	8x7x40 (0.31"x0.28"x1.57")

GEARBOX : IS4

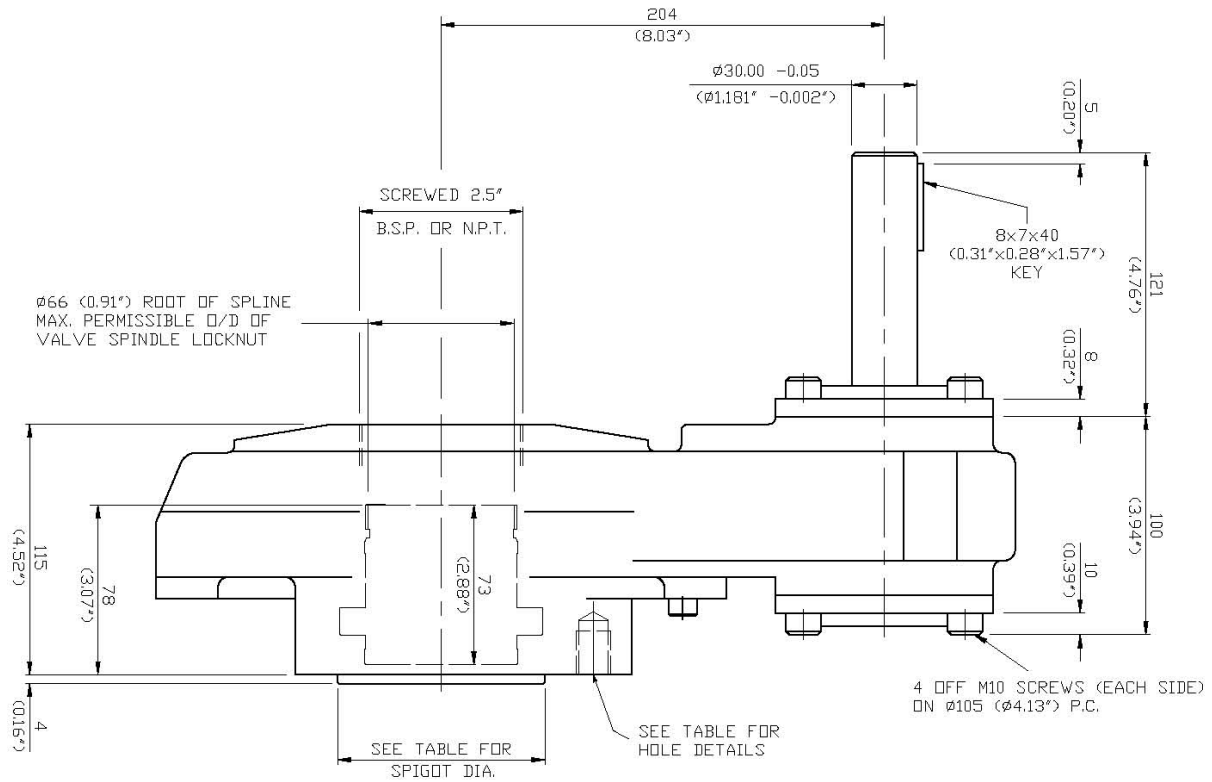


BASEPLATE DETAILS		
	SPIGOT DIA.	HOLE DETAILS (45° OFF CENTRES)
ISO F10	$\varnothing 69.95 \pm 0.05$ $(\varnothing 2.754" \pm 0.002")$	4 HOLES M10x15 (0.59") DEEP ON $\varnothing 102.0$ ($\varnothing 4.02"$) P.C.
FA10	$\varnothing 58.70 \pm 0.05$ $(\varnothing 2.311" \pm 0.002")$	4 HOLES 3/8"UNCx15 (0.59") DEEP ON $\varnothing 101.6$ ($\varnothing 4.00"$) P.C.

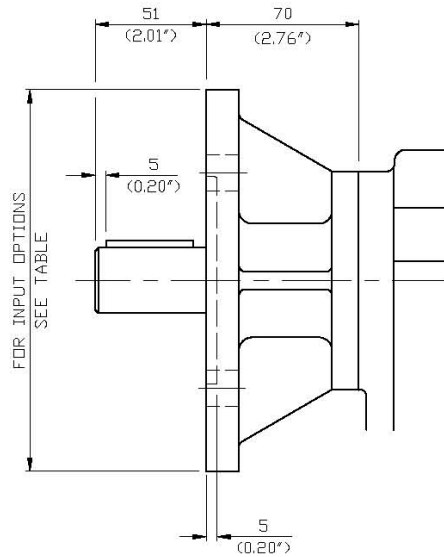


INPUT FLANGE DETAILS					
	FLANGE Ø/DIA. & THICKNESS	SHAFT DIA.	RECESS DIA.	HOLE DETAILS (45° OFF CENTRES)	KEY DETAILS
ISO F10	Ø125 (Ø4.92") × 10 (0.39")	Ø20.00 -0.05 (Ø0.787" -0.002")	Ø70.05 +0.05 (Ø2.758" +0.002")	4 HOLES Ø10.5 (Ø0.41") ON Ø102.0 (Ø4.02") P.C.	6x6x40 (Ø.24"×0.24"×1.57")
FA10	Ø125 (Ø4.92") × 10 (0.39")	Ø20.00 -0.05 (Ø0.787" -0.002")	Ø58.75 +0.05 (Ø2.313" +0.002")	4 HOLES Ø10.5 (Ø0.41") ON Ø102.0 (Ø4.02") P.C.	6x6x40 (Ø.24"×0.24"×1.57")
ISO F14	Ø175 (Ø6.89") × 15 (0.59")	Ø30.00 -0.05 (Ø1.181" -0.002")	Ø100.05 +0.05 (Ø3.939" +0.002")	4 HOLES Ø16.5 (Ø0.65") ON Ø140.0 (Ø5.51") P.C.	8x7x40 (Ø.31"×0.28"×1.57")
FA14	Ø175 (Ø6.89") × 15 (0.59")	Ø30.00 -0.05 (Ø1.181" -0.002")	Ø95.27 +0.05 (Ø3.751" +0.002")	4 HOLES Ø16.5 (Ø0.65") ON Ø140.0 (Ø5.51") P.C.	8x7x40 (Ø.31"×0.28"×1.57")

GEARBOX : IS5

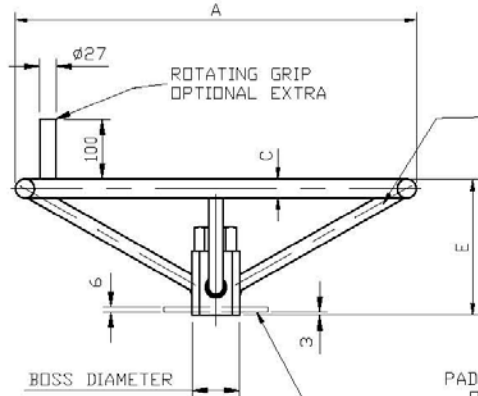
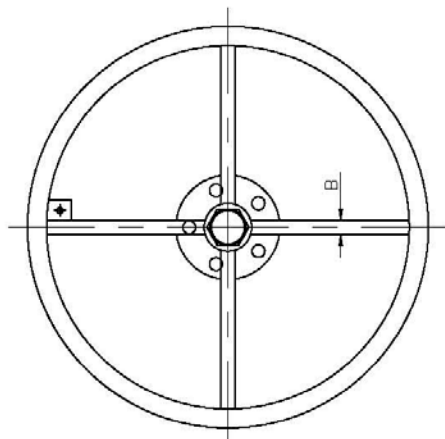


BASEPLATE DETAILS		
	SPIGOT DIA.	HOLE DETAILS (45° OFF CENTRES)
ISO F14	$\phi 99.95 \pm 0.05$ ($\phi 3.935" \pm 0.002"$)	4 HOLES M16x20 (0.79") DEEP ON $\phi 140.0$ ($\phi 5.51"$) P.C.
FA14	$\phi 95.22 \pm 0.10$ ($\phi 3.749" \pm 0.004"$)	4 HOLES 5/8"UNCx20 (0.79") DEEP ON $\phi 139.7$ ($\phi 5.50"$) P.C.



INPUT FLANGE DETAILS					
	FLANGE O/DIA. & THICKNESS	SHAFT DIA.	RECESS DIA.	HOLE DETAILS (45° OFF CENTRES)	KEY DETAILS
ISO F10	$\phi 125$ ($\phi 4.92"$) x 10 (0.39")	$\phi 20.00 \pm 0.05$ ($\phi 0.787" \pm 0.002"$)	$\phi 70.05 \pm 0.05$ ($\phi 2.758" \pm 0.002"$)	4 HOLES $\phi 10.5$ ($\phi 0.41"$) ON $\phi 102.0$ ($\phi 4.02"$) P.C.	6x6x40 (0.24"x0.24"x1.57")
FA10	$\phi 125$ ($\phi 4.92"$) x 10 (0.39")	$\phi 20.00 \pm 0.05$ ($\phi 0.787" \pm 0.002"$)	$\phi 58.75 \pm 0.05$ ($\phi 2.313" \pm 0.002"$)	4 HOLES $\phi 10.5$ ($\phi 0.41"$) ON $\phi 102.0$ ($\phi 4.02"$) P.C.	6x6x40 (0.24"x0.24"x1.57")
ISO F14	$\phi 175$ ($\phi 6.89"$) x 15 (0.59")	$\phi 30.00 \pm 0.05$ ($\phi 1.181" \pm 0.002"$)	$\phi 100.05 \pm 0.05$ ($\phi 3.939" \pm 0.002"$)	4 HOLES $\phi 16.5$ ($\phi 0.65"$) ON $\phi 140.0$ ($\phi 5.51"$) P.C.	8x7x40 (0.31"x0.28"x1.57")
FA14	$\phi 175$ ($\phi 6.89"$) x 15 (0.59")	$\phi 30.00 \pm 0.05$ ($\phi 1.181" \pm 0.002"$)	$\phi 95.27 \pm 0.05$ ($\phi 3.751" \pm 0.002"$)	4 HOLES $\phi 16.5$ ($\phi 0.65"$) ON $\phi 140.0$ ($\phi 5.51"$) P.C.	8x7x40 (0.31"x0.28"x1.57")

GEARBOX HANDWHEELS



"D" No SPOKES
EQUALLY SPACED

PADLOCKABLE FLANGE
OPTIONAL EXTRA
Ø125 (5 HOLES Ø11
EQUISPACED
102 P.C.D.)

HANDWHEEL PART CODE									
TYPE CODE	MANDATORY SELECTION					OPTIONAL EXTRA ITEMS			
	HANDWHEEL DIAMETER ±1000	BORE REF	BOSS LENGTH	HANDWHEEL MATERIAL	ROTATING GRIP	NUT REF	PADLOCKABLE HANDWHEEL	INDICATOR	AC = ANTI-CLOCKWISE TO CLOSE CC = CLOCKWISE TO CLOSE
F	200	A	OL	ST	RG	N1	PAD	AC	
	300	D	EX	SS		N2			
	400	F	LX			N3			
	500	F							
	600	G							
	700	H							
	800	J							
	900	K							
	1000								
	1100								
	1200								

MATERIAL	
CODE	MATERIAL DESCRIPTION
ST	BLACK POWDER COATED MILD STEEL M8X20 HEX SET SCREW ZINC PLATED
SS	STAINLESS STEEL GRADE 304 M8X20 HEX SET SCREW ST/ST
316	STAINLESS STEEL GRADE 316 M8X20 HEX SET SCREW ST/ST

PART No	A	B	C	D	E MIN	APPROX WT (KG)
F 200	Ø200	Ø12 - BAR	Ø12 - BAR	3	53	1.25
F 300	Ø300	Ø12 - BAR	19 (3/4")OD - TUBE (16 SWG)	3	78	1.49
F 400	Ø400	Ø12 - BAR	19 (3/4")OD - TUBE (16 SWG)	4	78	2.35
F 500	Ø500	Ø12 - BAR	25.4 (1")OD - TUBE (16 SWG)	4	78	3.13
F 600	Ø600	Ø12 - BAR	25.4 (1")OD - TUBE (16 SWG)	4	78	3.60
F 700	Ø700	Ø12 - BAR	25.4 (1")OD - TUBE (16 SWG)	6	78	4.64
F 800	Ø800	Ø15 - BAR	25.4 (1")OD - TUBE (16 SWG)	6	78	6.30
F 900	Ø900	Ø15 - BAR	25.4 (1")OD - TUBE (16 SWG)	6	78	6.88
F 1000	Ø1000	Ø15 - BAR	25.4 (1")OD - TUBE (16 SWG)	6	78	7.71
F 1100	Ø1100	Ø15 - BAR	25.4 (1")OD - TUBE (16 SWG)	6	78	9.05
F 1200	Ø1200	Ø15 - BAR	25.4 (1")OD - TUBE (16 SWG)	8	78	10.69

DRIVE NUT			
NUT REF	A/F	NUT LENGTH	NUT TYPE
N1	1.5" $+0.000$ -0.038	25	HEX
N2	50.80 $+0.000$ -0.009	75	SQ
N3	1.0" $+0.000$ -0.038	51	HEX

HANDWHEEL BOSS DIMENSIONS			
BORE REF	BORE DIAMETER +0.02/-0.07	BOSS DIAMETER KEYWAY WIDTH +0.02	KEYWAY DEPTH
A	12.35	4	13.80 $+0.16$ -0.16
D	15.35	5	17.30 $+0.16$ -0.16
F	17.45	5	19.30 $+0.16$ -0.16
G	20.45	6	22.80 $+0.16$ -0.16
H	25.50	8	28.30 $+0.20$ -0.20
J	30.50	12	33.30 $+0.20$ -0.20
K	40.75	14	43.80 $+0.20$ -0.20

HANDWHEEL BOSS

