



Purchase Order No. : UZGTL-HDC-MEC-PO-0110
Requisition Title : API Centrifugal Pump(BB Type)

MECHANICAL SEAL & SYSTEM DRAWING FOR 130-PC-108 A/B/C, 130-PC-208 A/B/C (BFW CIRCULATION PUMPS)

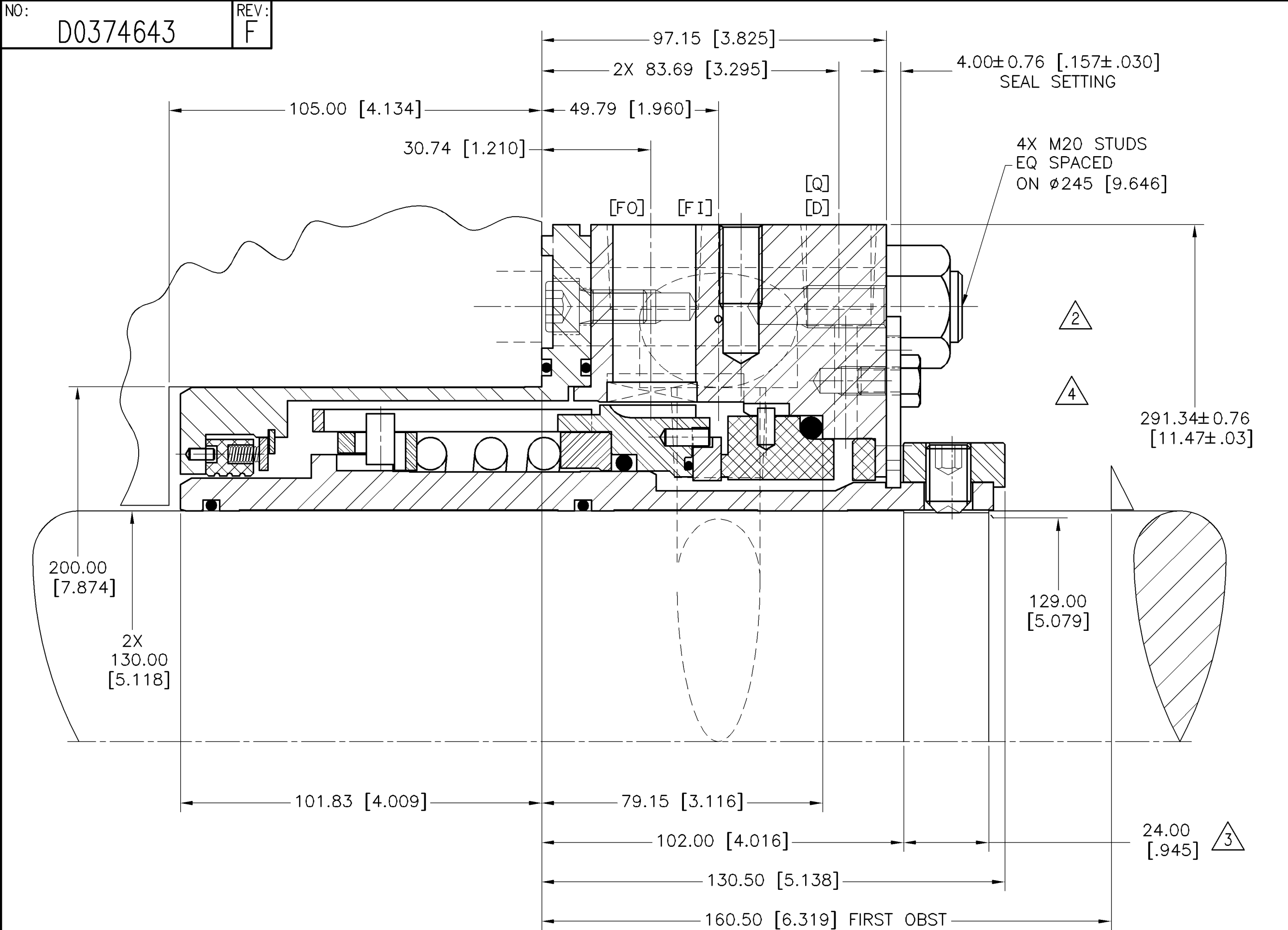
UZGTL-DY3-MEC-38-30-0-1805

FOO

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FINAL

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[FI] FLUSH INLET 3/4 NPT

[FO] FLUSH OUTLET 3/4 NPT

[Q] QUENCH 1/2 NPT

[D] DRAIN 1/2 NPT

NOTES:

1. FOR INSTALLATION AND OPERATING INSTRUCTIONS SEE APPROPRIATE FLOWERVE INSTALLATION SHEET (FIS).

2. DISENGAGE SETTING DEVICES (#103) BEFORE START-UP.

3. CUSTOMER TO REWORK SHAFT GROOVE WIDTH AS SHOWN.

4. TIGHTEN SETSCREWS EQUALLY, IN 4 STEPS. FINAL TORQUE: 620 LBF.INCH. [70 Nm]

DRIVE END

(SEE D0374643 SHEET 2 OF 2 FOR FREE END)

THIRD ANGLE

END VIEW
REDUCED SCALE:

ROTATION

[FO]

3X M12 FOR LIFTING

25°

[FI]

34.1 [1.343]

[Q]

45°

[D]

245.0 [9.646]

BILL OF MATERIAL NO: B0374672

1 SUGGESTED SPARE PARTS
2 CODE/BSC [X] / OFF .STD [W]

NO	PARTCODE	QTY	DESCRIPTION	MATERIAL	1	2
1	C0386104DB	1	SLEEVE	316		
2	108394DB	1	SEAL DRIVE	316		X
3	622545DB	2	DRIVE KEY	316		X
5	670448DB	1	PIN	316		X
11	C0386106DB	1	GLAND	316		
11.1	C0386107DB	1	GLAND	316		
13	568440X790	1	SEAT GASKET	FLUORINATED ELAST.	*	X
14	C0386108GE	1	STATIONARY FACE	CARBON	*	W
15	666081SL	1	ROTATING FACE	SILICON CARBIDE	*	X
16	617031DB	1	COIL SPRING	316		X
16.1	628440NL	8	COIL SPRING	ALLOY C-276	*	
17	C0386109DB	1	SPRING HOLDER	316		W
18	568267X790	1	GLAND GASKET	FLUORINATED ELAST.	*	
18.1	568267X790	1	GLAND GASKET	FLUORINATED ELAST.	*	
19	568251X790	1	SLEEVE GASKET	FLUORINATED ELAST.	*	
19.1	568251X790	1	SLEEVE GASKET	FLUORINATED ELAST.	*	
24	C0386110GE	1	GLAND BUSHING	CARBON		
40	4N01762CI	4	SHCS 3/8-16 X 3/4	ALY STL, ZINC PLTD		
40.1	4R2889CI	5	HHCS 5/16-18 X 1/2	ALY STL, ZINC PLTD		
44	3R115307DB	1	BACKING RING	316		
57	4R0444CI	6	SSCP 1/2-13 X 3/4	ALY STL, ZINC PLTD	*	
58	4R4279DB	1	DRIVE COLLAR	316		
71	568361X790	1	O-RING GASKET	FLUORINATED ELAST.	*	W
76	568163X790	1	ROTATING FACE GASKET	FLUORINATED ELAST.	*	X
103	4R15130DB	5	SETTING DEVICE	316		
111	UR675CK	1	SNAP RING	18-8	*	
131	C0386111DB	1	BODY	316		W
230	3R115309GE	1	THROAT BUSHING	CARBON	*	

CUSTOM ENGINEERED
SEAL DESIGN

Approved by
I. Lincoln

Date
16-Oct-2017

Revision Approved by
I. Lincoln
C. Steward

Date
14-Dec-2017
13-Feb-2018

VENT

FO

FI

API PLAN 23
(WATER SERVICE)

RECIRCULATION FROM
SEAL WITH CIRCULATION
DEVICE THROUGH COOLER
AND BACK TO SEAL.

EXTERNAL SOURCE

PROVIDING A QUENCH
(COLD CONDENSATE).

API PLAN 62

DURING PUMP OPERATION, SEAL CHAMBER TEMPERATURE
NOT TO EXCEED 65° C [150° F].

PIPE EXTERNAL SOURCE TO QUENCH CONNECTION.
PRESSURE NOT TO EXCEED 0.1 BAR [1.5 PSI].

PIPING REQUIREMENTS

CUSTOMER: DONGYANG CHEMICAL PUMP CO. LTD.
ADDRESS: GOYANG KOREA, REPUBLIC OF ULTIMATE USER: OLTIN YO'L GTL
ADDRESS: UZBEKISTAN
PRODUCT: MP BOILER FEED WATER
TEMP: 200°C NORM / 230°C MAX
SPEC GRAVITY: 0.864 NORM / 0.821~0.864
VISCOSITY: 0.13 NORM / 0.12~0.13 CP
VAPOR PRES: 15.70 BAR NORM / 27 BAR MAX
SEAL CHAMBER PRES: 15.4 BAR NORM /

PIPING REQUIREMENTS

31.3 BAR MAX
SUCTION PRES: 15.4 BAR NORM / 31.3 BAR MAX
DISCH PRES: 22.0 BAR NORM / 37.9 BAR MAX
RPM: 990
INNER PLAN COOLANT: MP BOILER FEED WATER
EQUIP ITEM NO.: 130-PC-108A/B/C&208 A/B/C
API PLAN: 23/62
API CODE: ESA1A2362(1CW-FX)
SERVICE: BFW CIRCULATION PUMPS

SEAL TYPE: DW

SEAL SIZE: 6.000

SEAL CONFIG: SINGLE INSIDE-CARTRIDGE

MATL CODE: 5XYA

EQUIP MFR: DONG YANG CHEMICAL CO.,LTD.

EQUIP MODEL: TDP 24X18-31A / 1 STAGE

EQUIP DWG:

Flowserve

Flow Solutions Group

SCALE: TO SCALE

DRAWN: ARAJENDRAN

DATE: 09-OCT-2017

CHKD: ARAJENDRAN

APPVD:

JOB NO: 17KSM2001

PARTS LIST NO:

REF DWG: 04ELX675483

FORM DWG:

DRAWING NO: SHEET: 1 OF: 2

REV: F

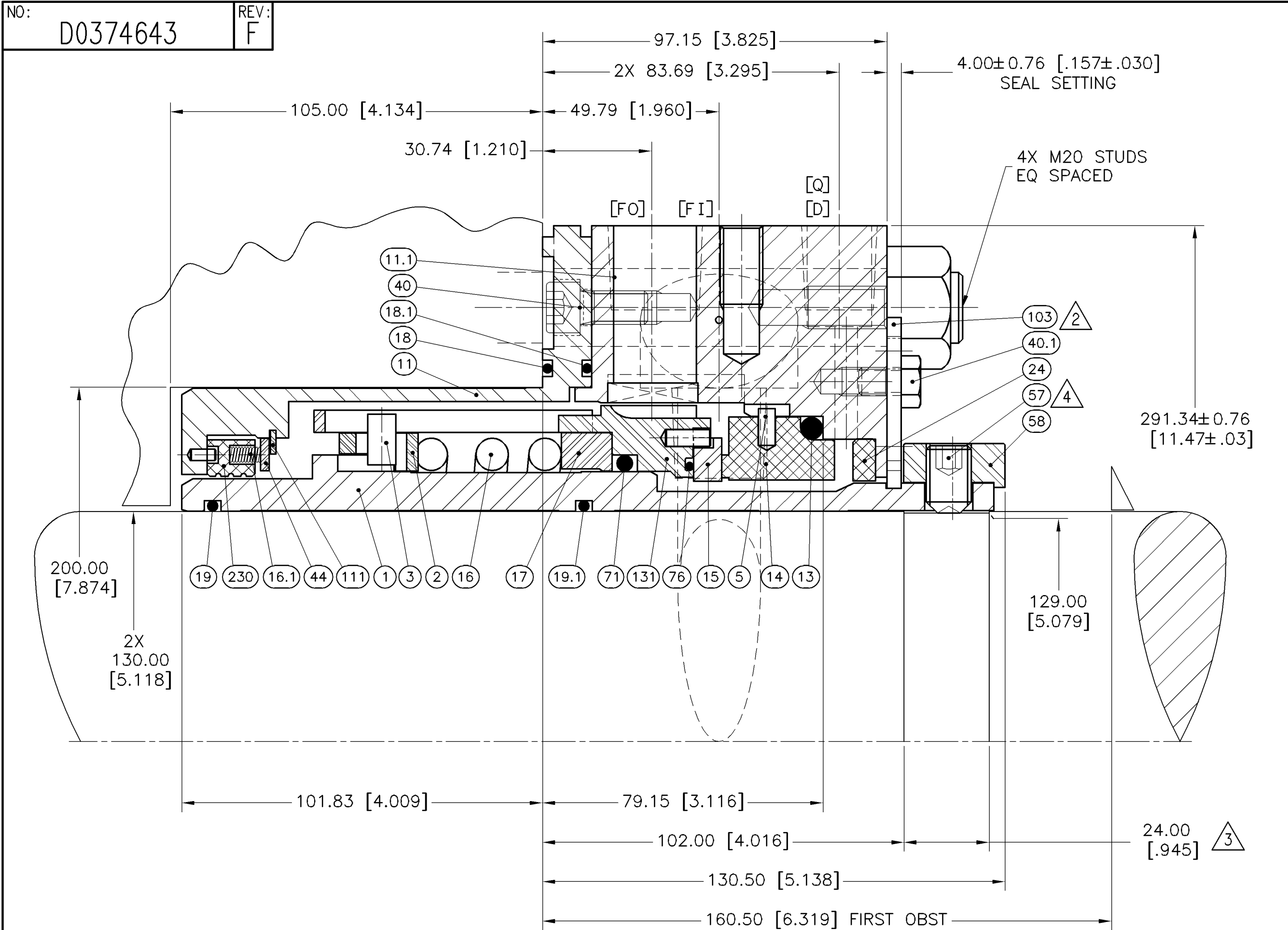
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DIM'S IN: MM [INCHES]

C/A2

JULY 2009



[FI] FLUSH INLET 3/4 NPT

[FO] FLUSH OUTLET 3/4 NPT

[Q] QUENCH 1/2 NPT

[D] DRAIN 1/2 NPT

NOTES:

1. FOR INSTALLATION AND OPERATING INSTRUCTIONS SEE APPROPRIATE FLOWERVE INSTALLATION SHEET (FIS).

2. DISENGAGE SETTING DEVICES (#103) BEFORE START-UP.

3. CUSTOMER TO REWORK SHAFT GROOVE WIDTH AS SHOWN.

4. TIGHTEN SETSCREWS EQUALLY, IN 4 STEPS. FINAL TORQUE: 620 LBF.INCH. [70 Nm]

FREE END

(SEE D0374643 SHEET 1 OF 2 FOR DRIVE END)

THIRD ANGLE

END VIEW REDUCED SCALE:

ROTATION

45°

25°

34.1 [1.343]

245.0 [9.646]

[FO]

[Q]

[FI]

[D]

3X M12 FOR LIFTING

BILL OF MATERIAL NO: B0374678

1 SUGGESTED SPARE PARTS
2 CODE/BSC [X]/OFF .STD [W]

NO	PARTCODE	QTY	DESCRIPTION	MATERIAL	1	2
1	C0386104DB	1	SLEEVE	316		
2	108394DB	1	SEAL DRIVE	316		X
3	622545DB	2	DRIVE KEY	316		X
5	670448DB	1	PIN	316		X
11	C0390967DB	1	GLAND INNER	316		
11.1	C0386112DB	1	GLAND	316		
13	568440X790	1	SEAT GASKET	FLUORINATED ELAST.	*	X
14	C0386108GE	1	STATIONARY FACE	CARBON	*	W
15	666081SL	1	ROTATING FACE	SILICON CARBIDE	*	X
16	617031DB	1	COIL SPRING	316		X
16.1	628440NL	8	COIL SPRING	ALLOY C-276	*	
17	C0386109DB	1	SPRING HOLDER	316		W
18	568267X790	1	GLAND GASKET	FLUORINATED ELAST.	*	
18.1	568267X790	1	GLAND GASKET	FLUORINATED ELAST.	*	
19	568251X790	1	SLEEVE GASKET	FLUORINATED ELAST.	*	
19.1	568251X790	1	SLEEVE GASKET	FLUORINATED ELAST.	*	
24	C0386110GE	1	GLAND BUSHING	CARBON		
40	4N01762CI	4	SHCS 3/8-16 X 3/4	ALY STL, ZINC PLTD		
40.1	4R2889CI	5	HHCS 5/16-18 X 1/2	ALY STL, ZINC PLTD		
44	3R115307DB	1	BACKING RING	316		
57	4R0444CI	6	SSCP 1/2-13 X 3/4	ALY STL, ZINC PLTD	*	
58	4R4279DB	1	DRIVE COLLAR	316		
71	568361X790	1	O-RING GASKET	FLUORINATED ELAST.	*	W
76	568163X790	1	ROTATING FACE GASKET	FLUORINATED ELAST.	*	X
103	4R15130DB	5	SETTING DEVICE	316		
111	UR675CK	1	SNAP RING	18-8	*	
131	C0386111DB	1	BODY	316		W
230	3R115309GE	1	THROAT BUSHING	CARBON	*	

CUSTOM ENGINEERED SEAL DESIGN

Approved by
I. Lincoln

Date
16-Oct-2017

Revision Approved by
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Date
14-Dec-2017

C. Steward

13-Feb-2018

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API PLAN 23
(WATER SERVICE)

RECIRCULATION FROM SEAL WITH CIRCULATION DEVICE THROUGH COOLER AND BACK TO SEAL.

DURING PUMP OPERATION, SEAL CHAMBER TEMPERATURE NOT TO EXCEED 65° C [150° F].

EXTERNAL SOURCE

Q

D

API PLAN 62
EXTERNAL SOURCE PROVIDING A QUENCH (COLD CONDENSATE).

PIPE EXTERNAL SOURCE TO QUENCH CONNECTION. PRESSURE NOT TO EXCEED 0.1 BAR [1.5 PSI].

PIPING REQUIREMENTS

CUSTOMER: DONGYANG CHEMICAL PUMP CO. LTD.
ADDRESS: GOYANG KOREA, REPUBLIC OF ULTIMATE USER: OLTIN YO'L GTL
ADDRESS: UZBEKISTAN
PRODUCT: MP BOILER FEED WATER
TEMP: 200°C NORM / 230°C MAX
SPEC GRAVITY: 0.864 NORM / 0.821~0.864
VISCOSITY: 0.13 NORM / 0.12~0.13 CP
VAPOR PRES: 15.70 BAR NORM / 27 BAR MAX
SEAL CHAMBER PRES: 15.4 BAR NORM /

PIPING REQUIREMENTS

31.3 BAR MAX
SUCT PRES: 15.4 BAR NORM / 31.3 BAR MAX
DISCH PRES: 22 BAR NORM / 37.9 BAR MAX
RPM: 990
INNER PLAN COOLANT: MP BOILER FEED WATER
EQUIP ITEM NO.: 130-PC-108A/B/C&208 A/B/C
API PLAN: 23/62
API CODE: ESA1A2362(1CW-FX)
SERVICE: BFW CIRCULATION PUMPS

SEAL TYPE: DW

SEAL SIZE: 6.000

SEAL CONFIG: SINGLE INSIDE-CARTRIDGE

MATL CODE: 5XYA

EQUIP MFR: DONG YANG CHEMICAL CO.,LTD.

EQUIP MODEL: TDP 24X18-31A / 1 STAGE

EQUIP DWG:

FLOWERVE

Flow Solutions Group

SCALE: TO SCALE

DRAWN: ARAJENDRAN

DATE: 09-OCT-2017

CHKD: ARAJENDRAN

APPVD:

JOB NO: 17KSM2001

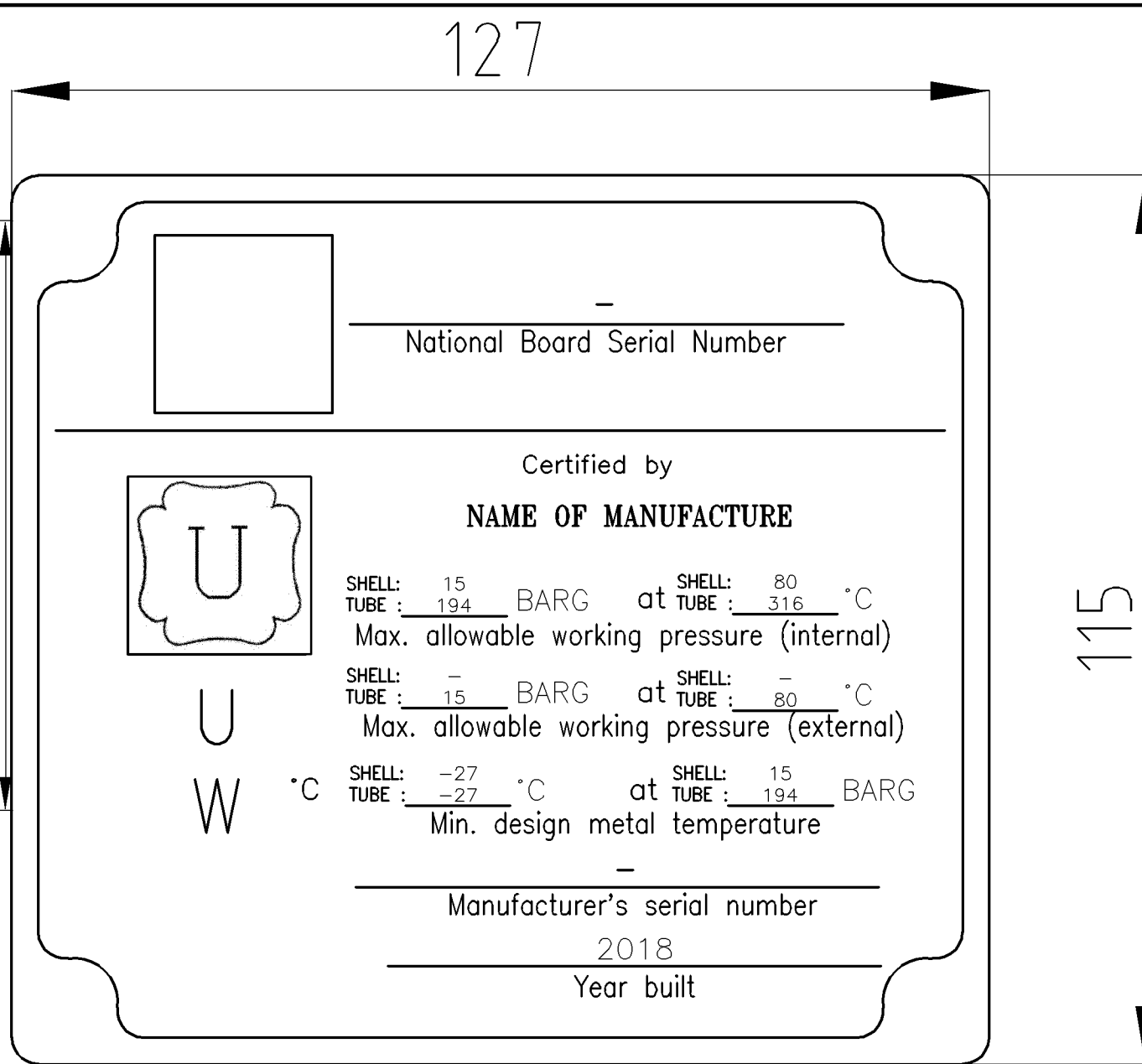
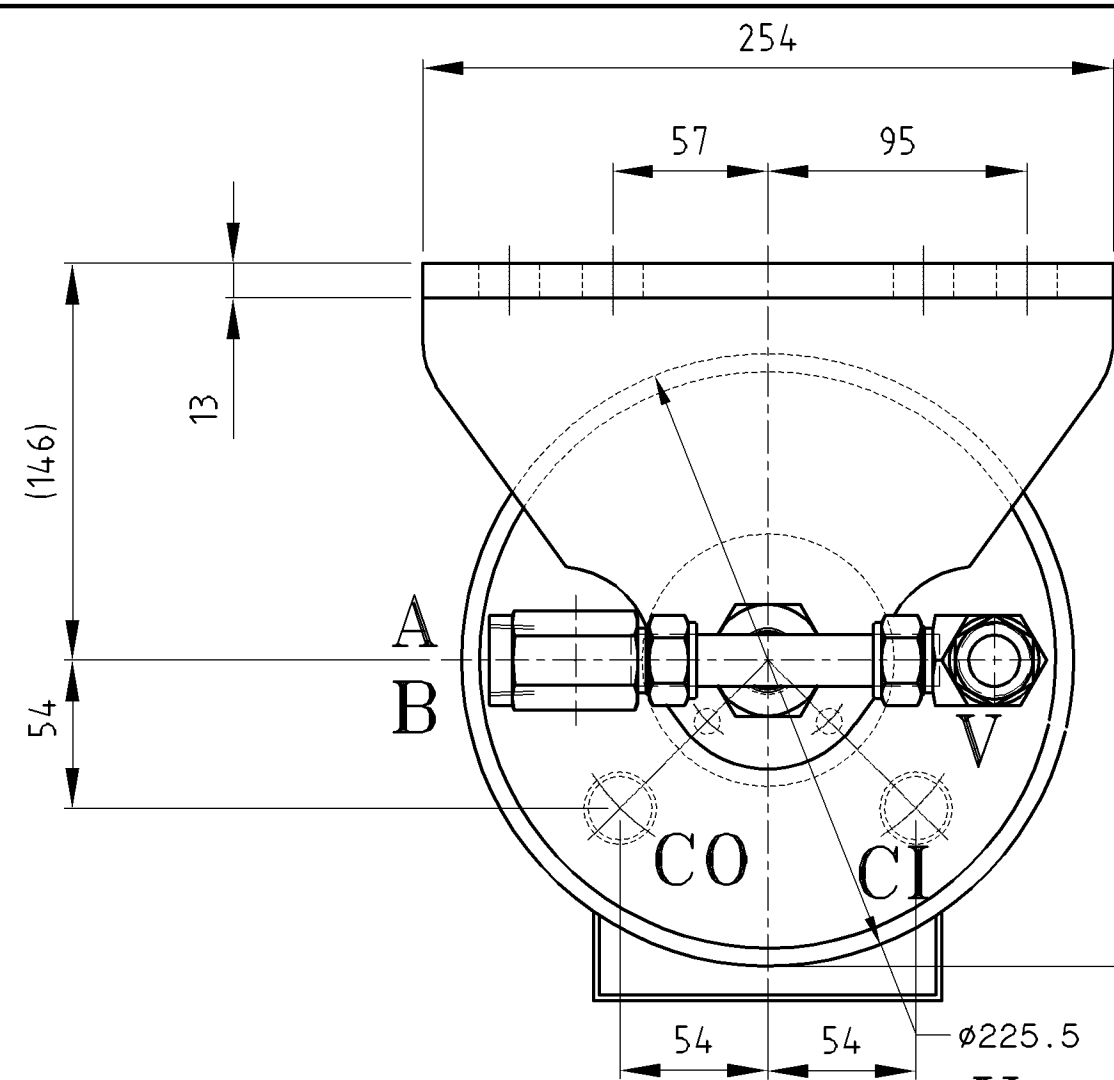
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REF DWG: 04ELX675483

FORM DWG:

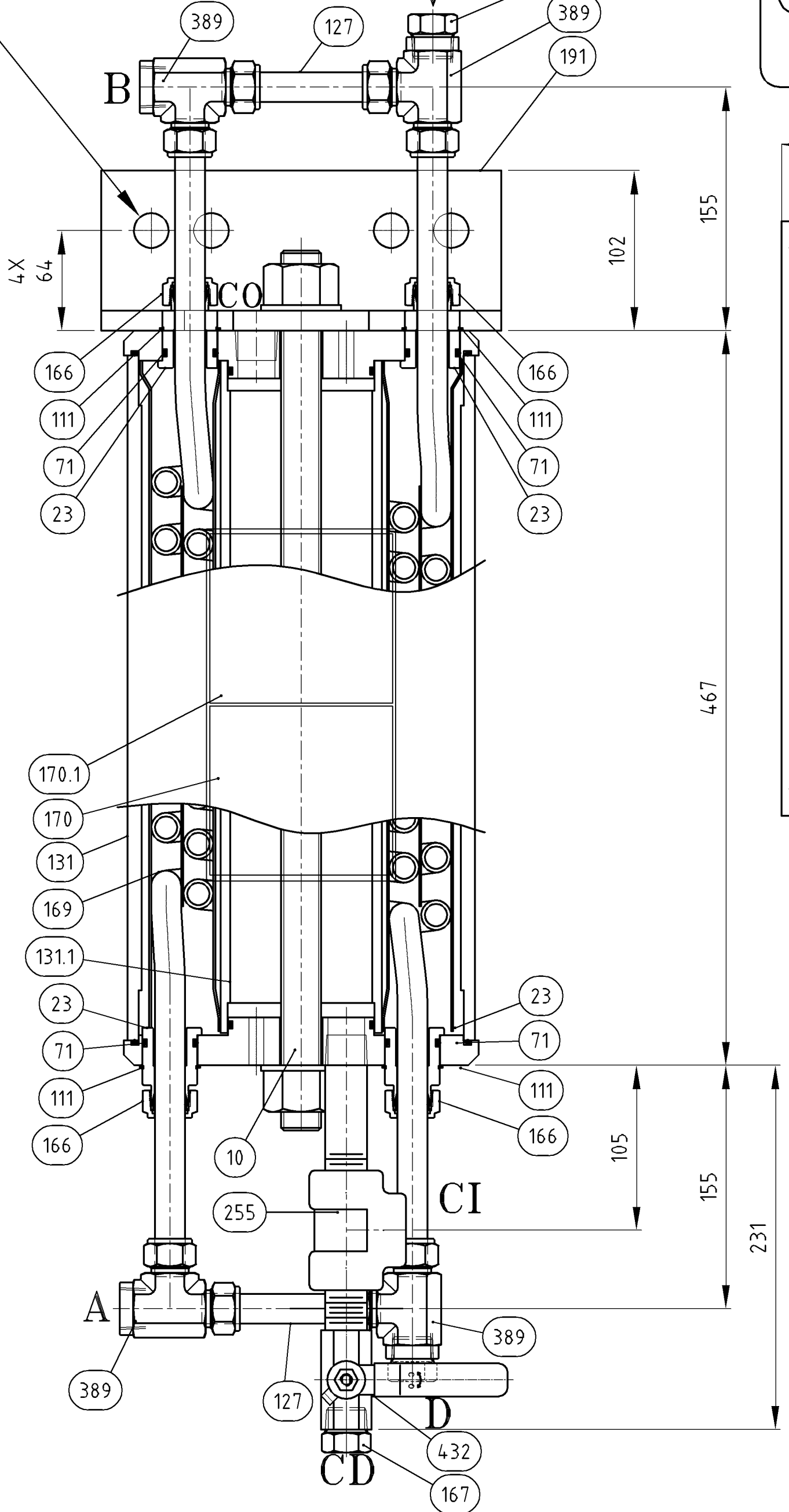
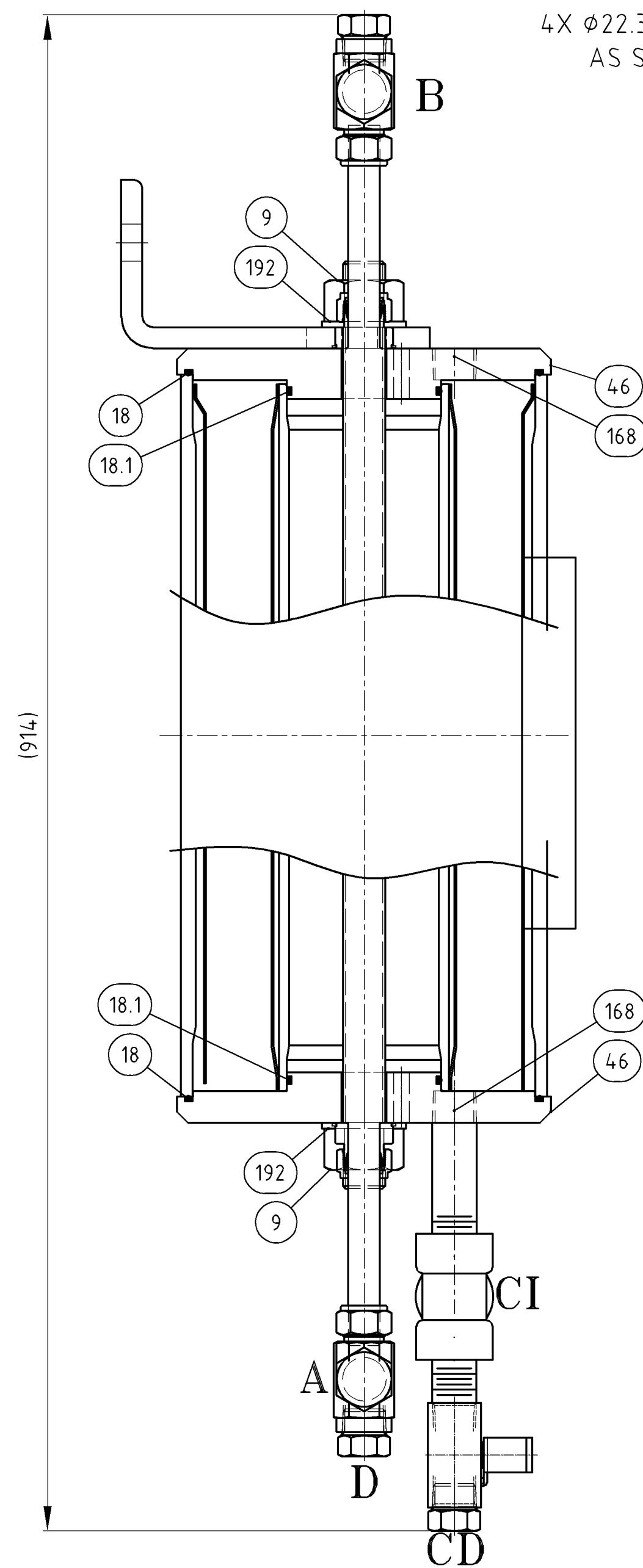
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REV: F

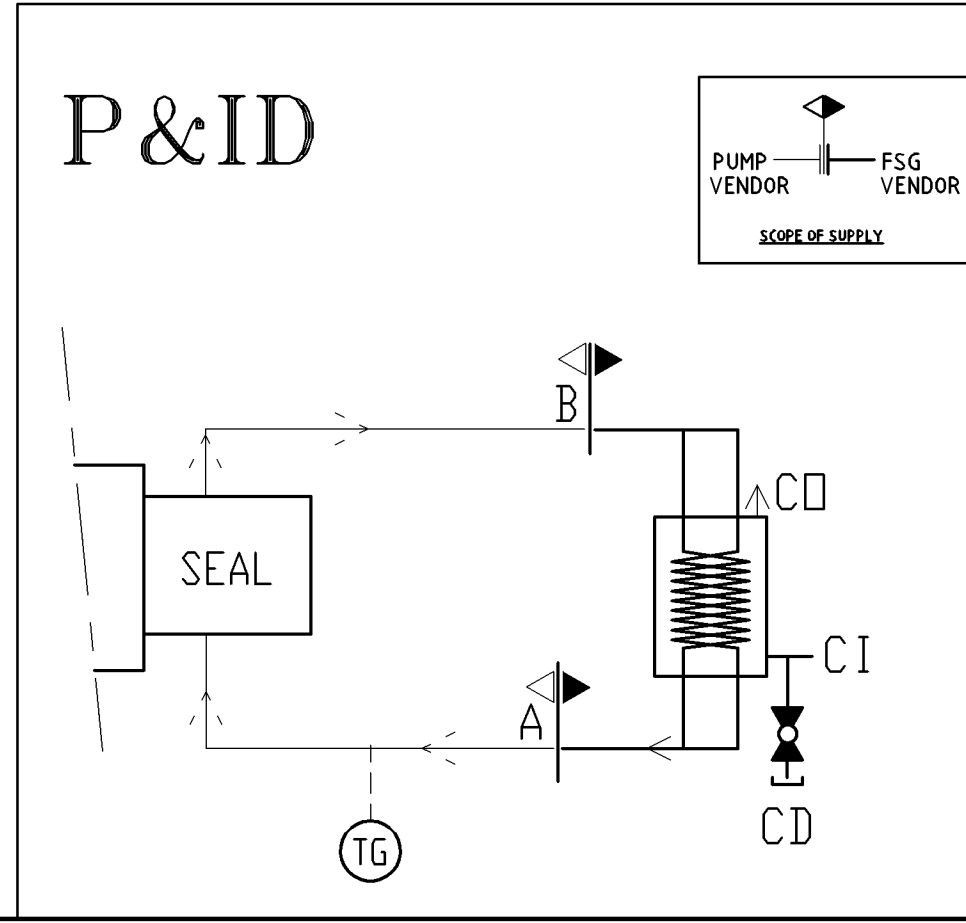


CONNECTIONS		
NO.	NAME	SIZE
A	TO SEAL	3/4" NPT
B	FROM SEAL	3/4" NPT
V	VENT	3/4" NPT (PLUGGED)
D	DRAIN	3/4" NPT (PLUGGED)
CI	COOLING WATER INLET	3/4" NPT
CO	COOLING WATER OUTLET	3/4" NPT
CD	COOLING WATER DRAIN	3/4" NPT (PLUGGED)


BILL OF MATERIAL NO: B0375441				1 SUGGESTED SPARE PARTS 2 CODE/BSC(X)/OFF, STD(W)	
NO	PARTCODE	QTY	DESCRIPTION	MATERIAL	1 2
77	C0376178Z2	1	SEAL COOLER - API 682	CARBON STEEL	
9	4R6121Z2	2	NUT HEX 1-8 UNC Hvy DUTY	SA-194 GRADE 2H CBN STL	
10	4R17370AC	1	STUD 1-8 X 22	A193 GRADE B7	
18	568267GU	2	O-RING	FLUOROELASTOMER	
18.1	568237GU	2	O-RING	FLUOROELASTOMER	
23	4R17360X953	4	ADAPTER SLEEVE	SA-479 TY316/316L	
46	C0392391Z2	2	COVER	SA-516 GR 70 CBN STL(SPECIAL)	
71	568216GU	4	O-RING GASKET	FLUOROELASTOMER	
111	RS1137CK	4	SNAP RING	18-8	
131	2R24048X949	1	BODY - OUTER CASING	SA-53 TYPE E GR B CBN STL WELDED	
131.1	2R24049X949	1	BODY - INNER CASING	SA-53 TYPE E GR B CBN STL WELDED	
166	4R17372DB	4	CONNECTOR ASSEMBLY - FITTING NUT	316	
169	2R24050X103	1	COIL ASSEMBLY	DUPLEX 2205	
191	4R17359EP	1	MOUNTING PLATE	CARBON STEEL	
192	4R3457EP	2	FLAT WASHER	CARBON STEEL	
127	4R121574JL	2	TUBING - 3/4" SEAMLESS	ASTM A213 TP316/ 316L SEAMLESS	
167	0060016860	3	PIPE PLUG 3/4" NPT HEX HEAD CL. 3000	ASME SA-182 F 316L	
170	C0329218ND	1	NAMEPLATE	304 SS	
170.1	C0141815Z2	1	NAMEPLATE FOR U-STAMP	304 SS	
255	C0167843Z2	1	TEE FITTING 3/4" NPT, 3M	SA-182 F316L	
389	C0170906Z2	4	TUBE FITTING RUN TEE, 3/4" TUBE X 3/4" NPTF	SA-182 316 SS	
432	C0153245Z2	1	BALL VALVE 3/4" NPTF	A276 TY316 SS	



- NOTES:
1. TUBE AND CASING TO BE HYDROSTATIC TESTED AT 1.5 TIMES MAXIMUM WORKING PRESSURE. WRITTEN TEST CERTIFICATION OF HYDROSTATIC TEST, PRESSURE AND DURATION TO BE SUPPLIED WITH STANDARD MATERIAL CERTIFICATES.
 2. PT: 100%, RT: 10%
 3. PAINTING AS PER SPEC.UZGTL-81-1 REVISION 06(COLOR: RAL 7035(LIGHT GRAY))
 4. DESIGNED TO MEET API 682 3rd EDITION.
 5. EMPTY WEIGHT: ABOUT 50KG
 6. SEAL COOLER HEIGHT SHALL BE LOCATED 450MM TO 600MM.(REFER TO GENERAL ARRANGEMENT DRAWING FOR EXACT VALUE)
- P&ID



ITEM NO. (*)	WO/SN (**)
130-PC-108A (DE)	17KSM2001S-01
130-PC-108B (DE)	17KSM2001S-02
130-PC-108C (DE)	17KSM2001S-03
130-PC-208A (DE)	17KSM2001S-04
130-PC-208B (DE)	17KSM2001S-05
130-PC-208C (DE)	17KSM2001S-06
130-PC-108A(NDE)	17KSM2001S-07
130-PC-108B (NDE)	17KSM2001S-08
130-PC-108C (NDE)	17KSM2001S-09
130-PC-208A (NDE)	17KSM2001S-10
130-PC-208B (NDE)	17KSM2001S-11
130-PC-208C (NDE)	17KSM2001S-12

CUSTOMER: DONGYANG CHEMICAL PUMP CO. LTD.		SUCTION PRES: 15.4 BAR NORM / 31.3 BAR MAX		
ADDRESS: GOYANG KOREA, REPUBLIC OF ULTIMATE USER: OLTIN YO' L GTL		DISCH PRES: 22.0 BAR NORM / 37.9 BAR MAX		
ADDRESS: UZBEKISTAN		RPM: 990		
PRODUCT: MP BOILER FEED WATER		INNER PLAN COOLANT: MP BOILER FEED WATER		
TEMP: 200°C NORM / 230°C MAX		EQUIP ITEM NO.: 130-PC-108A/B/C&208A/B/C		
SPEC GRAVITY: 0.864 NORM / 0.821~0.864		API PLAN: 23/62		
VISCOSITY: 0.13 NRM / 0.12~0.13 CP		SERVICE: BFW CIRCULATION PUMPS		
VAPOR PRES: 7.27 BAR				
SEAL CHAMBER PRES: 15.4 BAR NORM / 31.3 BAR MAX				
AUXILIARY TYPE: SEAL COOLER — API 682 PLAN 23				
AUX CODE: PLAN 23				
REF PART CODE:		SEAL REF:		
 Flow Solutions Group	SCALE: TO SCALE		PARTS LIST NO:	
	DRAWN: IRCHOI		REF DWG: D0202220	
	DATE: 18-OCT-2017		FORM DWG:	
	CHKD: CHANGLEE		DRAWING NO: SHEET: 1 OF: 1 REV:	
	APPVD:		D0375391	E
	JOB NO: 17KSM2001S			

# CW FLOWRATE IS FOR ONE COOLER			
	CW TEMP. (°C)	CW PRESSURE (BARG)	# CW FLOWRATE (M3/H)
INLET	28	4	1.5
OUTLET	MAX 38	MIN 2	