Energy Technology
Division

**GEA Krugersdorp
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TANK CONTAINER

OPERATING

MANUAL

WEW MODEL TC 2086 Eihd 6.0 . 2330Ø.24m³

DRAWINGS TC – 1558 – 1
DRAWINGS TC – 1558 – 2
DRAWINGS TC – 1558 – 3

LLOYDS APPROVAL GB – LR 8839 – 5/97

INTRODUCTION

This manual describes the requirements to operate an IMO Type 1 container which has been tested to the requirements of ISO 1496 and ASME VIII Div. 1. The required rail impact tests have been performed.

The container is suitable to transport products of class 3,6 and 1,8 and 9 (RID/ADR).

This manual is issued to provide a guide to operating a GEA KRUGERSDORP ENGINEERING tank container. No responsibility is taken for the accuracy of the information supplied or for any resulting liability, injury, loss or damage sustained to persons, property or equipment or any other consequences resulting in the following of the procedures described in this manual.

GEA KRUGERSDORP ENGINEERING thanks Fort Vale for permission to publish their drawings of tank container equipment.

CONTENTS

1.0 GENERAL TECHNICAL INFORMATION

1.1 CAPACITY

The capacity of the container is 24 000 litres in a single compartment (6340 US gallons).

1.2 FRAME DIMENSIONS AND MASS

LENGTH : 6058 mm (20ft)

WIDTH : 2438 mm (8 ft)

HEIGHT : 2591 mm (8,5 ft)

MAXIMUM GROSS WEIGHT : 36000 kg. (79365 lbs)

FRAME TEST : 36000 kg (79366 lbs)

1.3 SHELL AND HEADS

MATERIAL	:	DIN 17740	WERKSTOFF 1.4404
	:	DIN 17741	WERKSTOFF 1.4404
	:	DIN 17740	WERKSTOFF 1.4435
	:	AFNOR NFA 36 - 209 23 CND 17.11.02	
	:	DIN 17741	WERKSTOFF 1.4401 (C = 0,03% MAX.)

MINIMUM SHELL THICKNESS : 4,95 mm

MINIMUM HEAD THICKNESS : 6,4 mm

1.4 PRESSURES

ALLOWABLE WORKING PRESSURE OF CONTAINER : 4 BAR (58 PSI)

TEST PRESSURE OF CONTAINER : 6 BAR (87 PSI)

DESIGN PRESSURE OF CONTAINER : 4 BAR (58 PSI)

ALLOWABLE WORKING PRESSURE OF HEATING CIRCUIT : 6 BAR (87 PSI)

TEST PRESSURE OF HEATING CIRCUIT : 9 BAR (130,5 PSI)

DESIGN PRESSURE OF HEATING CIRCUIT : 6 BAR (87 PSI)

1.5 DESIGN TEMPERATURES

SHELL	:	130 DEG. C	(266 DEG. F)
HEADS	:	120 DEG. C	(200 DEG. F)

1.6 RADIOGRAPHY REQUIREMENTS

SHELL LONGITUDINAL SEAMS	100%
SHELL CIRCUMFERENTIAL SEAMS	25%
DISHED END SEAM	100%

1.7 APPROVALS

AAR 600	U S DOT
RID/ADR	U K DOT
CSC	CT
TIR	

1.8 INSULATION

The tank container is insulated with rock wool over the heating circuit area. The balance of the container is insulated with poluisocyanurate.

2.0 DESCRIPTION OF CONTAINER COMPONENTS

2.1 CENTRAL SPILL BOX

The central spill box contains the manway opening as well as two safety valves and calibration plate.

2.2 THE MANWAY EQUIPMENT

Fort Vale manway equipment is supplied as detailed on drawing supplied with this manual.

2.3 SAFETY RELIEF VALVE

One or two Fort Vale maxi highflow relief valves are used as detailed on drawings supplied with this manual. Rupture discs are provided on request.

2.4 CALIBRATION PLATE

A calibration plate is supplied with information in US gallons, UK gallons and litres. Filling level capacity and capacity per cm are also supplied.

2.5 DIP STICK

The dip stick is captive and is fitted in a bracket in the manway neck ring. The dip stick is graduated in cm and litres.

2.6 REAR SPILL BOX

The rear spill box contains an inlet valve and provision for a top discharge valve. The spill box is drained by two PVC drain tubes.

2.7 AIR INLET VALVE

A Fort Vale Air Inlet Valve is fitted as detailed on drawings supplied with the manual.

2.8 TOP DISCHARGE FLANGE AND BLANK

A blanked top discharge opening is provided as detailed on drawings supplied with this manual.

2.9 LADDER AND WALKWAYS

One ladder is provided at the rear of the container frame. On request an additional ladder is provided at the front of the container frame.

A walkway is fitted along the length of the tank container. Two walkways are provided to supply access to spill boxes. The material used for walkways is marine grade aluminium.

2.10 DOCUMENT BOX

A document box with a captive lid is fitted in the rear end of the frame.

2.11 STEAM HEATING CIRCUIT

The steam heating circuit area is 8m² and has a steam inlet and steam outlet fitting with diameter ¼" BSP respectively.

Captive protective caps are fitted.

2.12 THERMOMETER

A 100 diameter contact analogne thermometer is fitted to the rear end of the container.

2.13 TIR SEALING POINTS

All removable and openable fittings are provided with sealing facilities.

2.14 BOTTOM DISCHARGE VALVE

A Fort Vale Clean Flow bottom discharge valve is fitted as detailed on drawing supplied with this manual.

2.15 REMOTE CONTROL CABLE FOR BOTTOM DISCHARGE VALVE

A remote control cable is fitted on the side adjacent to the ladder to close the bottom discharge valve in case of an emergency.

2.16 DIP TUBE FOR TOP DISCHARGE

A dip tube will be fitted on request. A dip tube location plate is fitted as standard on all tank containers.

3.0 CONTAINER OPERATING INSTRUCTIONS

3.1 LOADING THROUGH MANHOLE

3.1.1 Connect the earth wire to the terminal

3.1.2 Close all bottom valves.

3.1.3 Open manhole and insert hose into tank.

3.1.4 Secure hose to stop possible whiplash.

3.1.5 Fill tank to the required level.

3.1.6 Drain hose and remove from tank.

3.1.7 Close manlid and tighten down.

3.1.8 Remove earth connection.

3.2 LOADING THROUGH BOTTOM DISCHARGE

3.2.1 Connect the earth wire to the terminal.

3.2.2 Open the manhole or the air inlet.

3.2.3 Remove the bottom discharge end cap, connect hose ensuring connection is correct and tight. Open valves.

3.2.4 Fill tank to the required level.

3.2.5 Close footvalve.

3.2.6 Drain hose.

3.2.7 Close external valve.

3.2.8 Disconnect hose and replace end cap.

3.2.9 Close manlid or air inlet flange and tighten down.

3.2.10 Remove earth connection.

3.3 UNLOADING - PRESSURE DISCHARGE THROUGH BOTTOM DISCHARGE

3.3.1 Connect the earth wire to the terminal.

3.3.2 Remove bottom discharge end cap connect hose ensuring connection is correct and tight.

3.3.3 Open footvalve and external valve.

3.3.4 Connect air line and open air inlet valve.

3.3.5 Apply pressure until discharge is completed.

3.3.6 When discharge is complete, and the hose line is empty, close air inlet valve, disconnect air line and replace flange / cap.

3.3.7 Close footvalve.

3.3.8 Drain hose.

3.3.9 Close external valve and replace bottom discharge end cap.

3.3.10 Remove earth connection.

3.4 LOADING THROUGH TOP DISCHARGE

3.4.1 Connect the earth wire to the terminal.

3.4.2 Remove top discharge blind flange, connect hose ensuring connection is correct and tight.

3.4.3 Close footvalve.

3.4.4 Remove air inlet cap. Connect vapour return line to air inlet and open valve to vent tank, to vent to atmosphere.

3.4.5 Fill tank to required level.

3.4.6 Drain hose, close external valve and remove hose from tank. Replace top discharge blind flange.

3.4.7 Close air inlet valve, disconnect vapour return line and replace cap.

3.4.8 Remove earth connection.

3.5 UNLOADING - PUMPED DISCHARGE WITH DIP TUBE FITTED

3.5.1 Connect the earth wire to the terminal.

3.5.2 Remove top discharge blind flange, connect hose ensuring connection is correct and tight.

3.5.3 Open manlid or remove air inlet cap and open air inlet connection to vent tank.

3.5.4 Open external valve and commence discharge.

3.5.5 When discharge is complete, drain hose, close top external valve and remove hose from tank. Replace top discharge blind flange.

3.5.6 Close manlid and tighten down or replace air inlet cap and close air inlet connection.

3.5.7 Remove earth connection.

3.6 UNLOADING - PRESSURE DISCHARGE WITH DIP TUBE FITTED

3.6.1 Connect the earth wire to the terminal.

3.6.2 Remove top discharge blind flange, connect hose ensuring connection is correct and tight.

3.6.3 Connect air supply to airline valve.

3.6.4 Open top discharge valve.

3.6.5 Open airline valve.

3.6.6 Apply pressure until discharge is completed. When discharge is complete and the hose line is empty, close air inlet valve, disconnect airline and replace cap.

3.6.7 Drain hose, close top external valve and remove hose from tank. Replace top discharge blind flange.

3.6.8 Remove earth connection.

3.7 STEAM HEATING

3.7.1 Connect the steam supply hose to the steam inlet connection.

3.7.2 Connect hose to the steam outlet connection and connect to a suitable disposal point either to drain or return condensate to the system. A steam trap may be fitted to the outlet pipe to allow the latent heat to be fully utilised.

3.7.3 Open steam supply slowly.

3.7.4 Do not exceed stated operating pressure.

3.8 LIFTING

3.8.1 Lifting of the tank container may only be performed by attachment of lifting equipment at the corner castings. No other methods may be employed as this will result in damage to the frame or tank.

SECTION 4.0

DRAWINGS

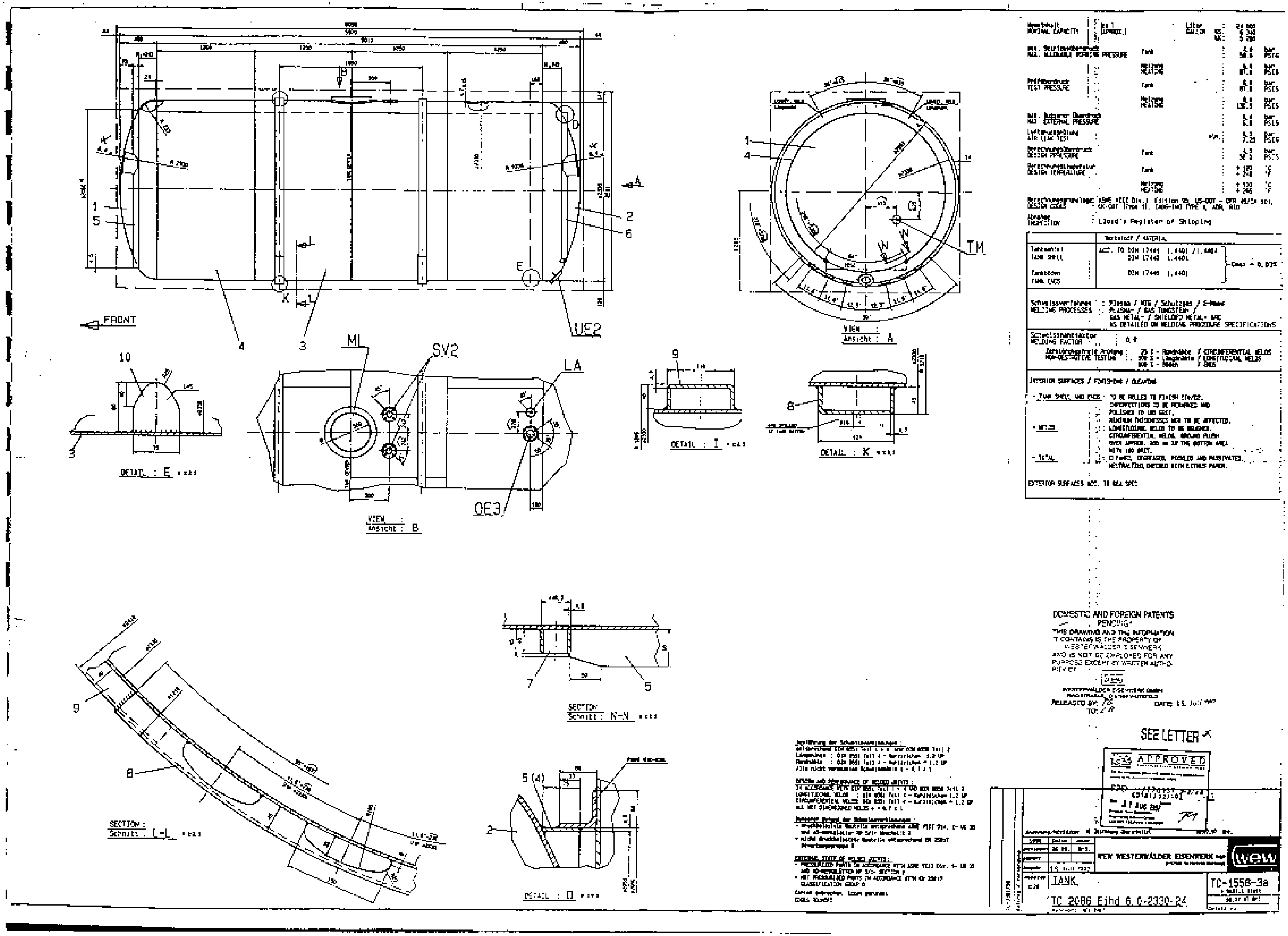
4.1

MAIN DRAWINGS

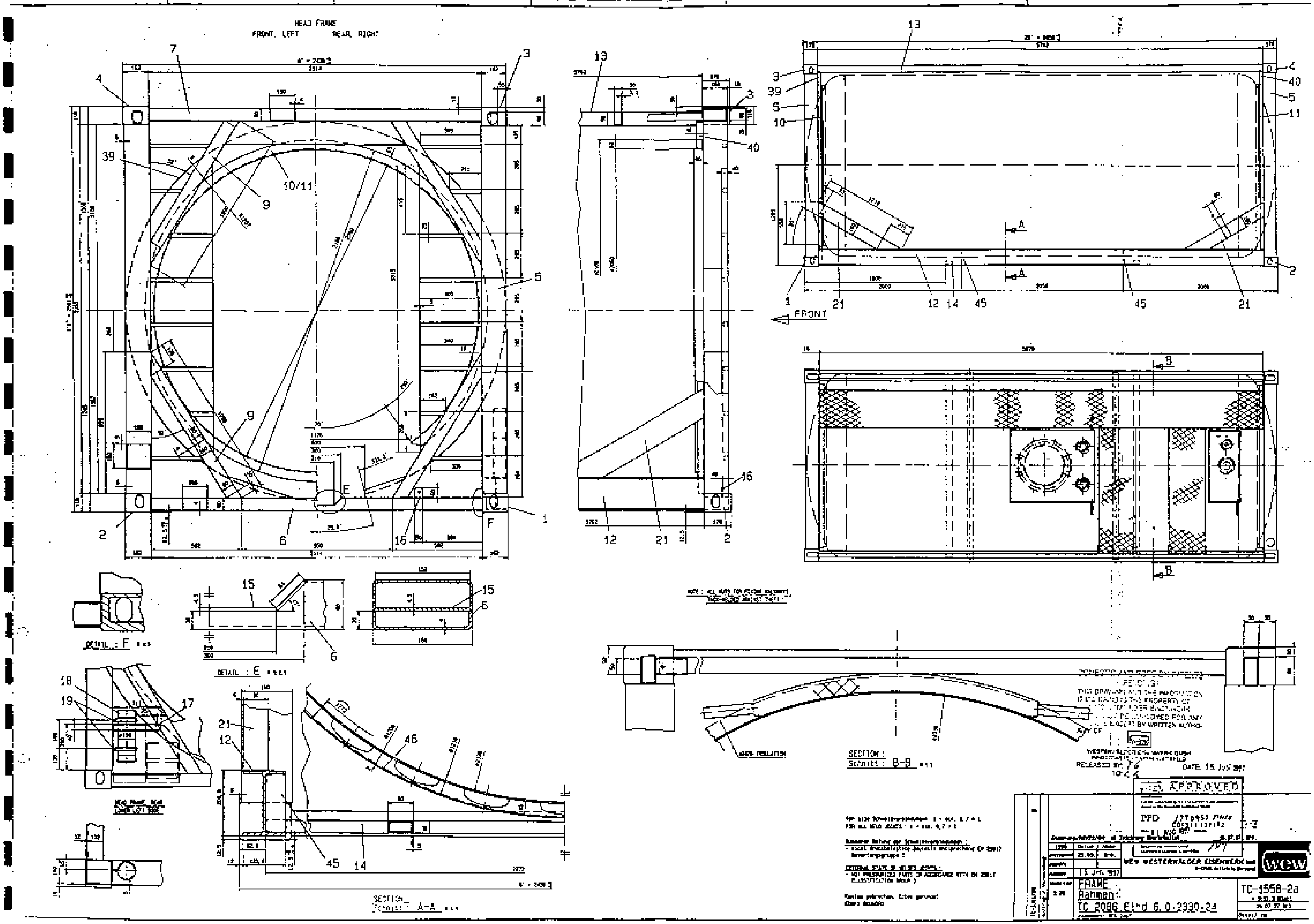
G A

TANK

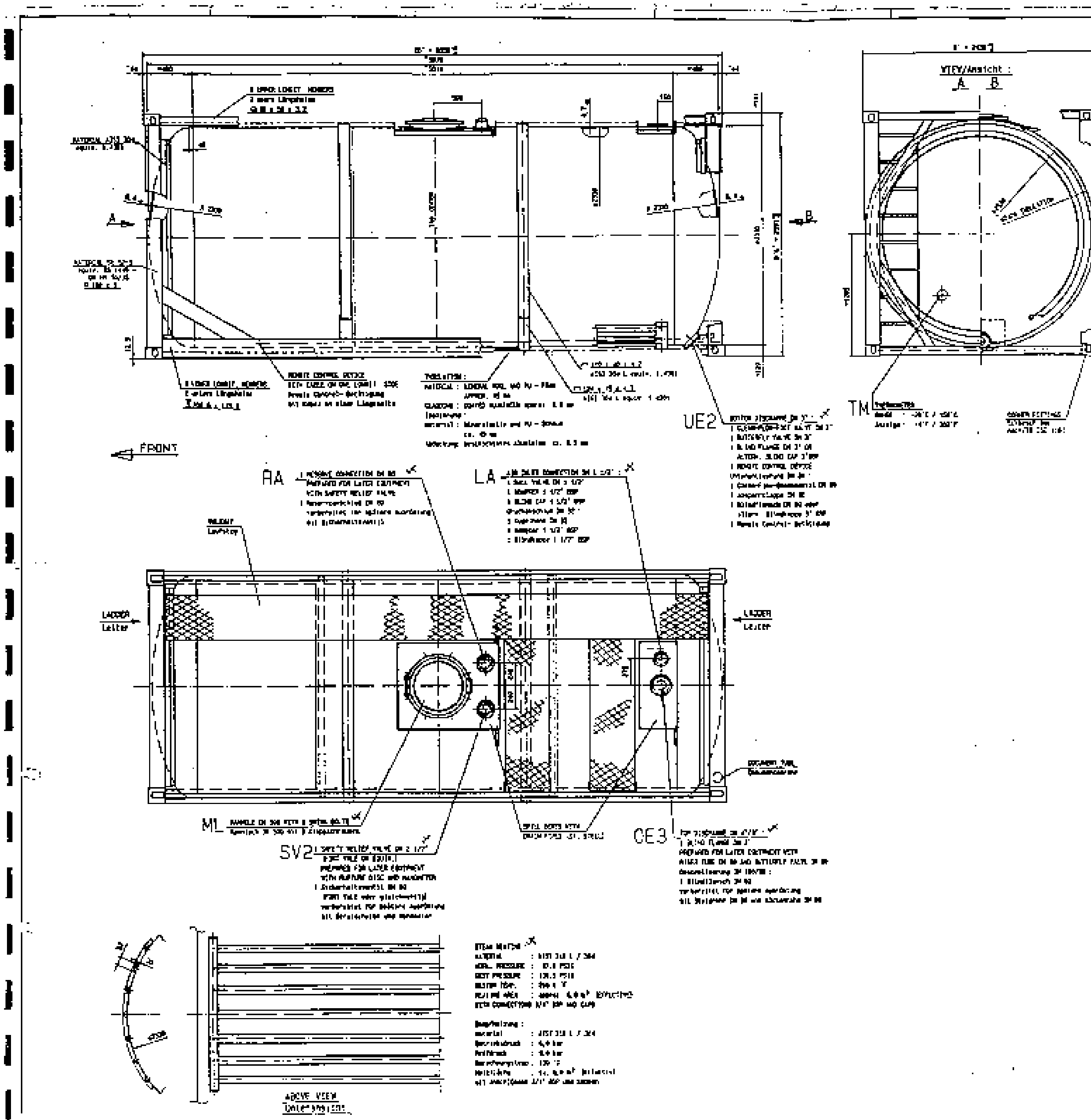
FRAME



FRONT
VIEW : Ansicht : A
TM
VIEW : Ansicht : B
ML
SV2
LA
OE3
UE2
DETAIL : E
DETAIL : I
DETAIL : K
DETAIL : D
SECTION : Schnitt : L-L
SECTION : Schnitt : N-N
NOMINAL CAPACITY
MAX. ALLOWABLE WORKING PRESSURE
TEST PRESSURE
MAX. EXTERNAL PRESSURE
AIR LEAK TEST
DESIGN PRESSURE
DESIGN TEMPERATURE
DESIGN CODES
Lloyd's Register of Shipping
TANK SHELL
TANK ENDS
WELDING PROCESSES
AS DETAILED ON WELDING PROCEDURE SPECIFICATIONS
WELDING FACTOR
NON-DESTRUCTIVE TESTING
EXTERIOR SURFACES ACC. TO WEW SPEC
DOMESTIC AND FOREIGN PATENTS PENDING
SEE LETTER
APPROVED
WEW WESTERWÄLDER EISENWERK
TANK
TC-1558-3a
TC 2086 Eihd 6.0-2330-24



HEAD FRAME
FRONT, LEFT REAR, RIGHT
FRONT
DETAIL : F
DETAIL : E
SECTION : A-A
SECTION : B-B
APPROVED
DATE: 15. JUN 1997
WEW WESTERWÄLDER EISENWERK
FRAME
Rahmen
TC 2086 Ethd 6.0.2330-24
TC-1558-2a



*) = MECHANICAL PROPERTIES OF TANK SHELL AND ENDS :

	°C	N/mm²			
		Rp 1.0	Rp 0.2	Rm	A
ENDS 1.4401 DIN 17445	20	225.0	205.0	510	40
	93	213.6	179.6		
	120	233.4	171.0		
SHELL 1.4401 DIN 17440	20	250.0	205.0	550	45
	93	213.6	192.0		
	120	203.0	190.0		
SHELL 1.4401 DIN 17441	20	270.0	240.0	550	45
	93	205.5	230.5		
	120	221.0	191.0		

**) - AS FAR AS APPLICABLE FOR ISO-, UIC- STANDARDS AND FOR USE ON U.S. - ROAD ON SKELETAL TRAILERS

DOMESTIC AND FOREIGN PATENTS PENDING!

RELEASED BY: DATE

SEE LETTER

ALL OTHER DETAILS ACC. TO DRAWING No. TC 1356-11 / 1 TO 4 AND LR TYPE APPROVAL No.

APPROVED

PPD

WEW WESTERWÄLDER EISENWERK

IMO 1 - Tankcontainer

TC 2086 Eind 6,0-2330-24

TC-1558-1a

4.2

TOP DISCHARGE

G A

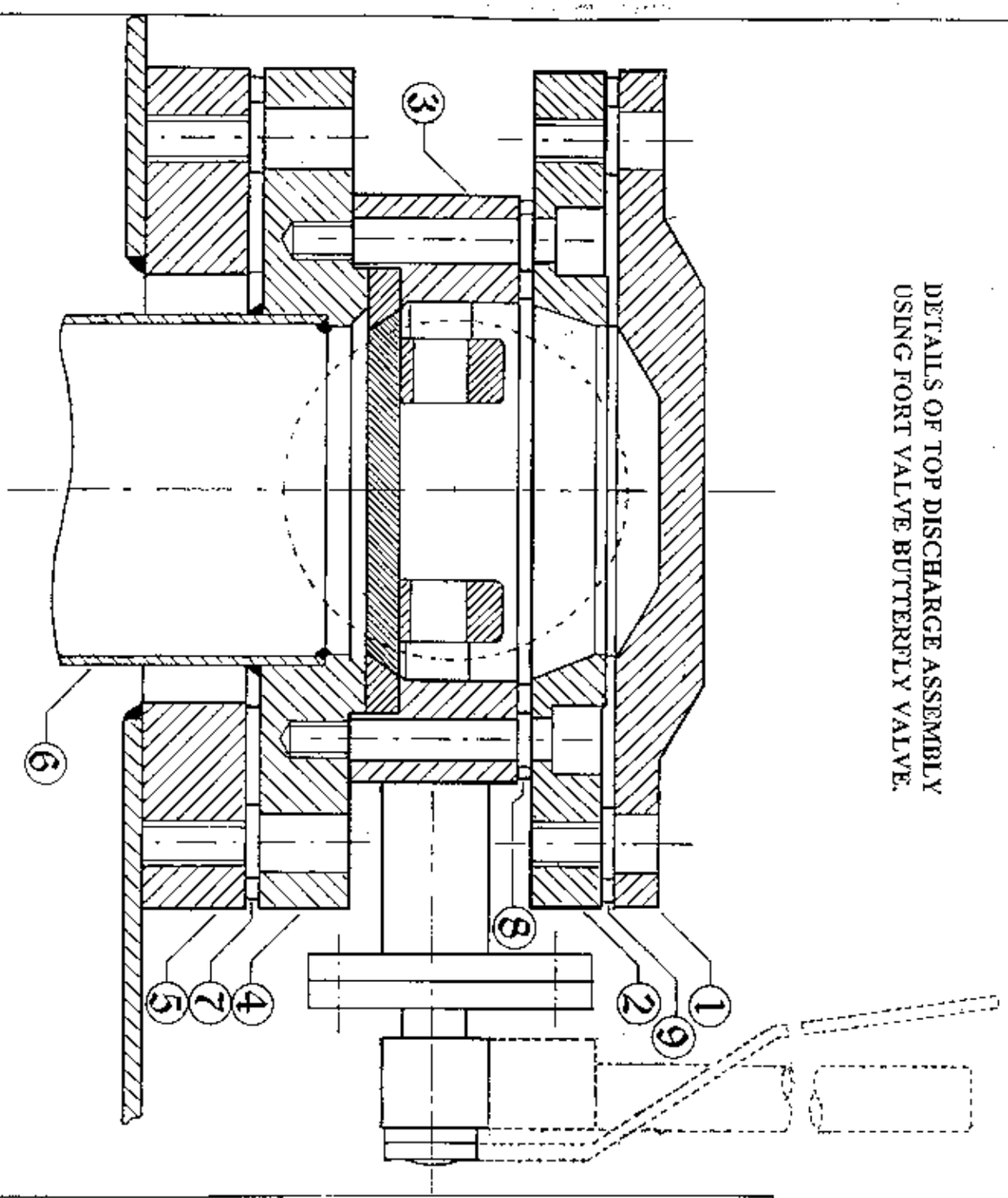
ADAPTOR FLANGE

SHAPED BLANK

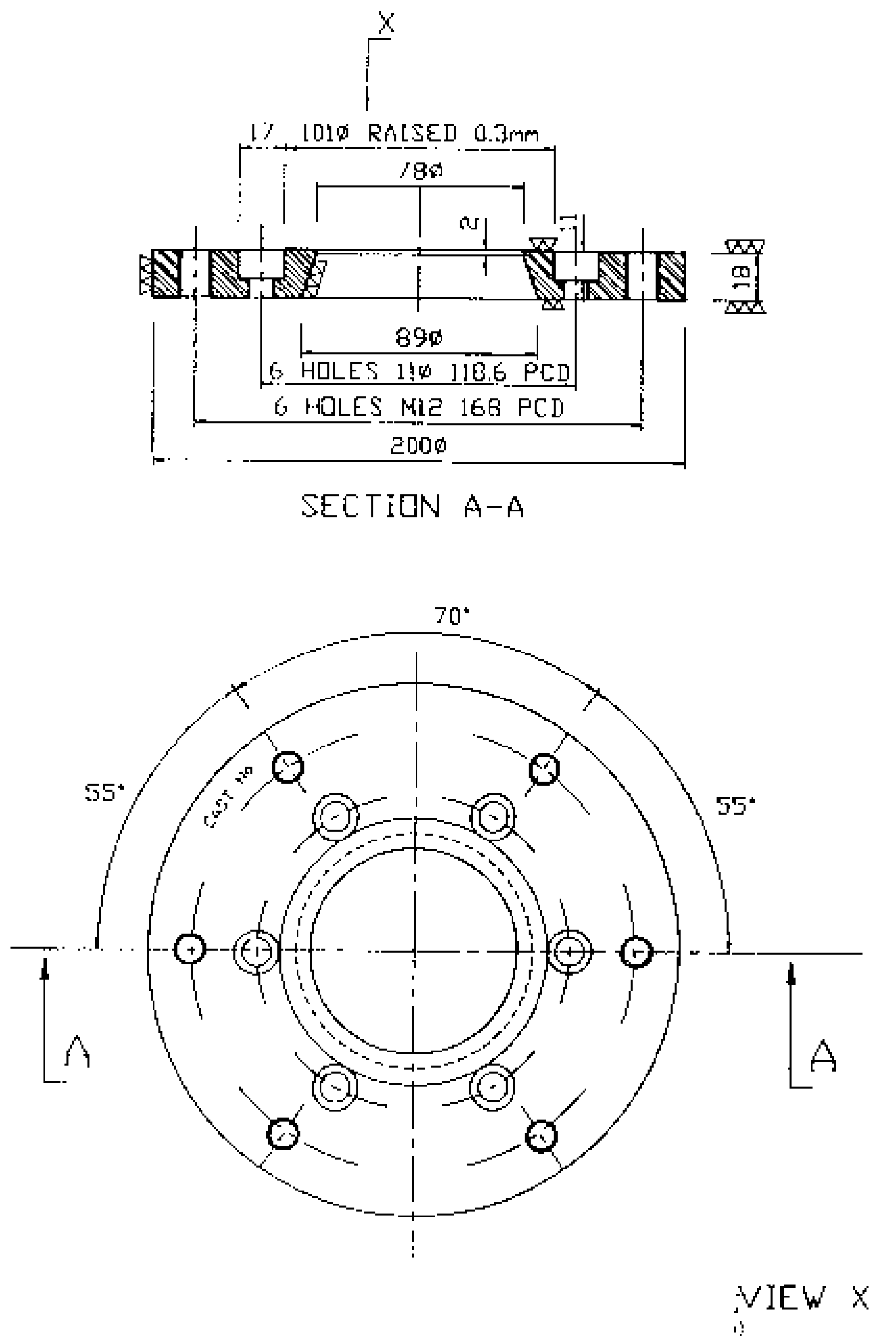
GASKETS

FORT VALE ADAPTOR PIECE

DETAILS OF TOP DISCHARGE ASSEMBLY USING FORT VALVE BUTTERFLY VALVE.



ARTICLE NUMBER	DRG PART NUMBER	DESCRIPTION
37600 112	1	Shaped blank flange 203 O/D x 86 I/D x 10 (316)
37600 110	2	Adaptor flange 200 O/D x 89 I/D x 18 (316)
37600 200	3	Butterfly component of bottom discharge composite valve
37600 111	4	Adaptor flange with stub 200 O/D x 78 I/D x 21 (316)
37600 010	5	Top discharge block flange 200 O/D x 102 I/D x 25 (316)
37600 100	6	Dip tube 85 O/D x 2,0 wall (316)
37600 035	7	Gasket PTFE 200O/D x 102 I/D x 1,5
37600 037	8	Gasket PTFE 107 O/D x 89 I/D x 1,5
37600 036	9	Gasket PTFE 200O/D x 78 I/D x 1.5
37600 070	10	Cap screws 6 - M10 x 60 (316)
37600 080	10	Hex set screws/washer 6 - M12 x 30 (316)
37600 090	10	Stud/Washer/Nut 6 - M12 x 60 (316)



PARTS LIST

ITEM	QTY.	DESCRIPTION	MATERIAL
1	1	ADAPTOR FLANGE FOR DISCHARGE ASSEMBLY	SA 240-316L

NOTES: 1 HOLES ON 118.6 PCD ARE EQUALLY SPACED
2 HOLES ON 168 PCD ARE AS SHOWN

FLANGE TOLERANCES TABLE

OUTSIDE DIAMETER	+1mm -1mm
INSIDE DIAMETER	+0.5mm -0.5mm
THICKNESS	-0.5mm -0.5mm
PITCH CIRCLE DIAMETER	+0.25mm - 0.25mm
BOLT PITCH	+0.25mm -0.25mm
CLEARANCE HOLE	-0mm +0.5mm
▽▽▽	1.6 um Ra
▽▽	12.5 um Ra (GRAMOPHONE FINISH).
▽	NUMBER 1 PLATE FINISH ACCEPTABLE.

REV.	DATE	NAME	REMARKS	CHCK.	APP.
3					
2					
1					

DRWN	JUNE 97	EX.H
CHCK.	JULY 97	KC
APP.	JULY 97	KC
AutoCAD ADAPRDIP		
SCALE 1:2	REV. 0	
ARTICLE No 376 000 110	SIZE A3	

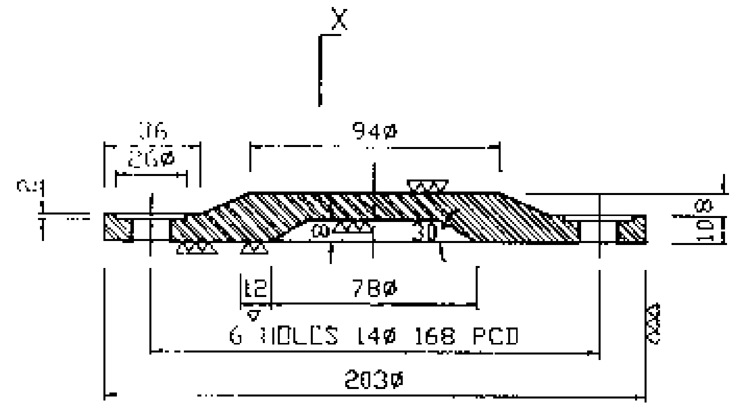
GEA
Thermal and Energy Technology Division

GEA Krugersdorp Engineering (Pty) Ltd

TITLE ADAPTOR FLANGE FOR TOP DISCHARGE ASSEMBLY

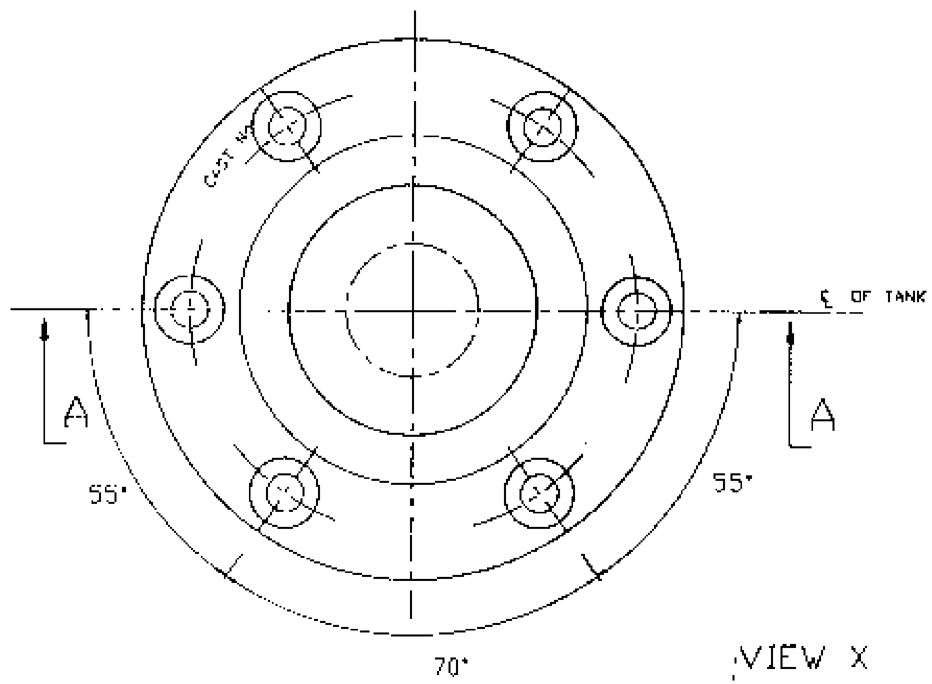
PARTS LIST

ITEM	QTY.	DESCRIPTION	MATERIAL
1	1	SHAPED BLANK FLANGE FOR TOP DISCHARGE ASS.	SA 240-316L



SECTION A-A

NOTE: THE GASKET SEALING FACE IS 12mm WIDE AND HAS A FINISH OF 12.5μmRa



VIEW X

FLANGE TOLERANCES TABLE

OUTSIDE DIAMETER	+1mm	-1mm
INSIDE DIAMETER	+1mm	-1mm
THICKNESS	-0.5mm	
PITCH CIRCLE DIAMETER	+0.5mm	-0.5mm
BOLT PITCH	+0.5mm	-0.5mm
CLEARANCE HOLE	-0mm	+0.5mm

▽▽▽	1.6 um Ra
▽▽	12.5 um Ra (GRAMOPHONE FINISH)
▽	NUMBER 1 PLATE FINISH ACCEPTABLE

REV.	DATE	NAME	REMARKS	CHCK.	APP.
3					
2					
1					

	DATE	NAME
DRWN	JUNE 97	E.K.N
CHCK.	JULY 97	KC
APP.	JULY 97	KC

AutoCAD SHAPETOP

SCALE 1:2 | REV. 0

ARTICLE No 376 00 112 | SIZE A3

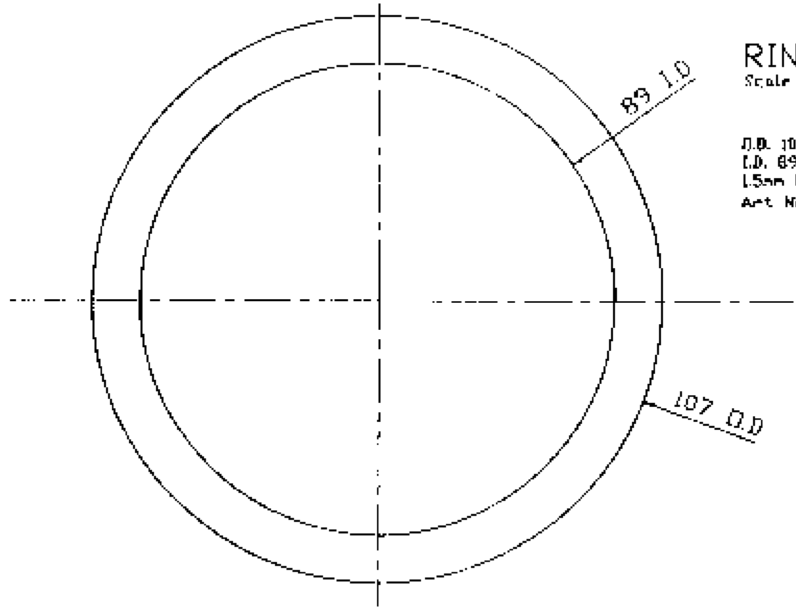
GEA Krugersdorp Engineering (Pty) Ltd

Thermal and Energy Technology Division

TITLE: SHAPED BLANK FLANGE FOR TOP DISCHARGE ASSEMBLY

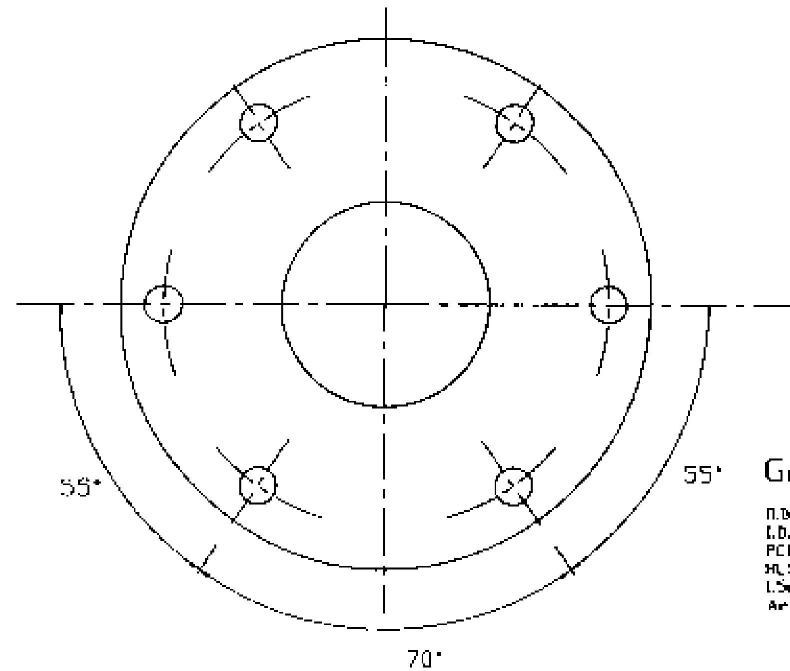
PARTS LIST

ITEM	QTY.	DESCRIPTION	MATERIAL
1	1	1.5mm PTFE GASKET I.D. 78Ø O.D. 200Ø	PTFE
2	1	1.5mm PTFE GASKET I.D. 102Ø O.D. 200Ø	PTFE
3	1	1.5mm PTFE GASKET I.D. 69Ø O.D. 107Ø	PTFE



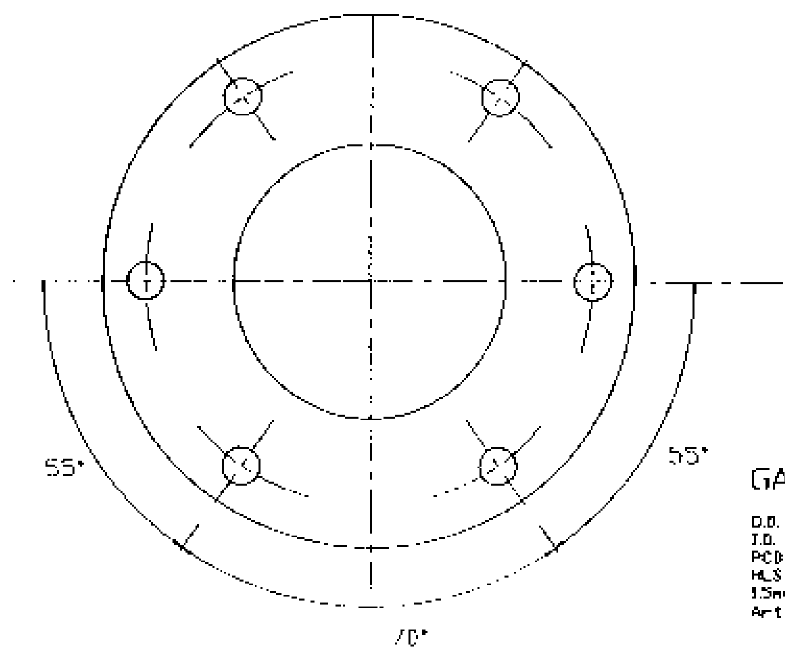
RING GASKET
Scale 1:1

O.D. 107Ø
I.D. 69Ø
1.5mm PTFE GASKET
Art No: 376 000 37



GASKET 1

O.D. 200Ø
I.D. 78Ø
PCD 168
HLS 14Ø
1.5mm PTFE GASKET
Art No: 376 000 36



GASKET 2

O.D. 200Ø
I.D. 102Ø
PCD 168
HLS 14Ø
1.5mm PTFE GASKET
Art No: 376 000 35

GASKET TOLERANCES TABLE

OUTSIDE DIAMETER	+1mm -1mm
INSIDE DIAMETER	+1mm -1mm
THICKNESS	-0.5mm
PITCH CIRCLE DIAMETER	+0.5mm -0.5mm
BOLT PITCH	+0.5mm -0.5mm
CLEARANCE HOLE	-0mm +0.5mm

REV.	DATE	NAME	REMARKS	CHCK.	APP.
3					
2					
1					

	DATE	NAME
DRWN.	JUNE 97	E.K.N
CHCK.	JULY 97	KC
APP.	JULY 97	KC

AutoCAD GASKET

SCALE 1:2/1 | REV. 0

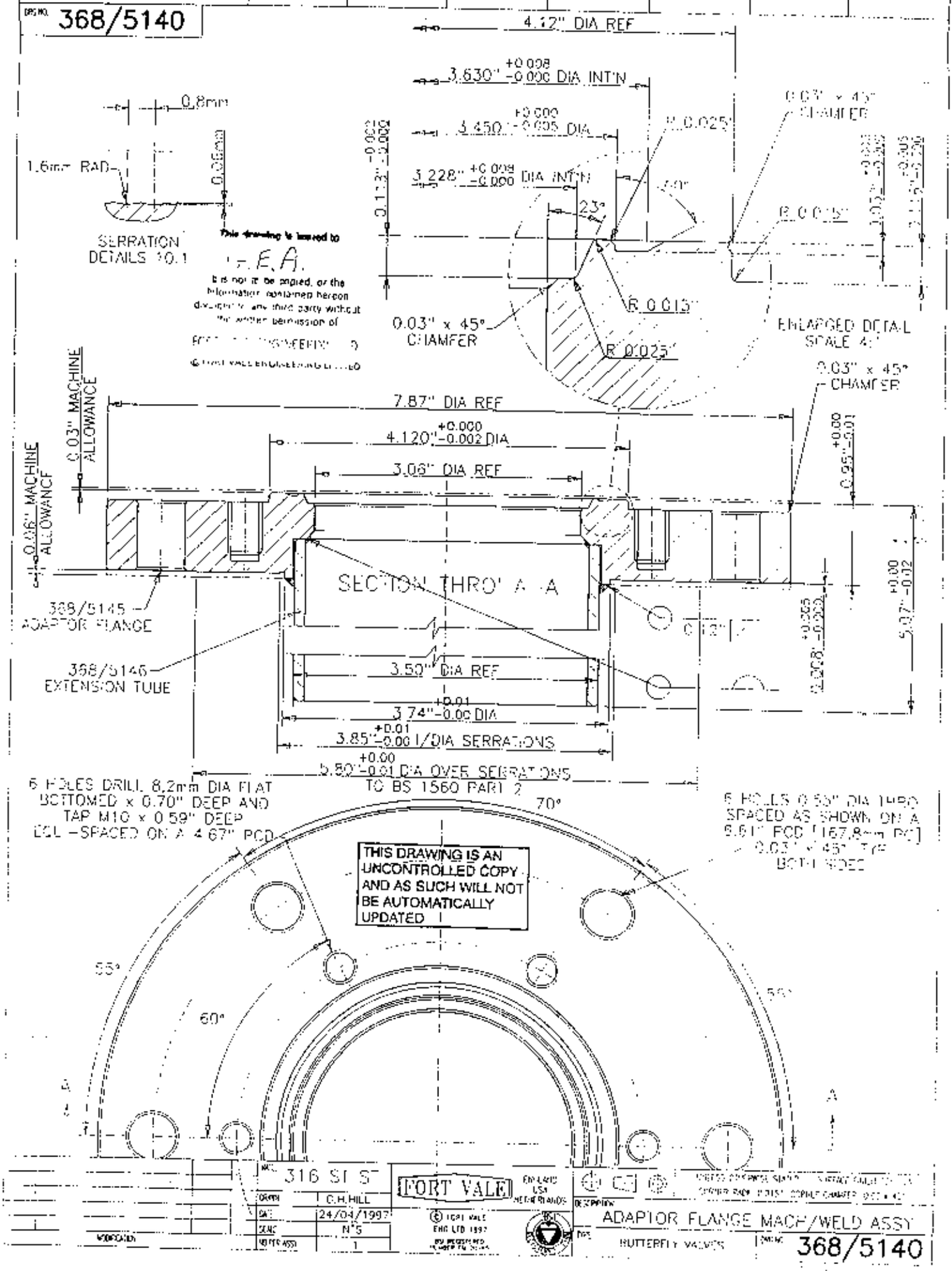
ARTICLE No 376 000 35 | SIZE A3

GEA Krugersdorp Engineering (Pty) Ltd
Thermal and Energy Technology Division

TITLE SOLID PTFE GASKETS FOR TOP DISCHARGE ASSEMBLY

DRAWLIB SECTIONS

DRG NO. 368/5140



MATL	316 SI S	FORT VALE	ADAPTOR FLANGE MACH/WELD ASSY	
DRAWN	C.H.HILL			
DATE	24/04/1997			
SCALE	N°5			
QUANTITY ASSY	1		BUTTERFLY VALVES	DWG NO. 368/5140

BLOCK FLANGES & MANWAY

MANWAY

SAFETY RELIEF VALVE

BOTTOM DRAIN FLANGE

AIR INLET

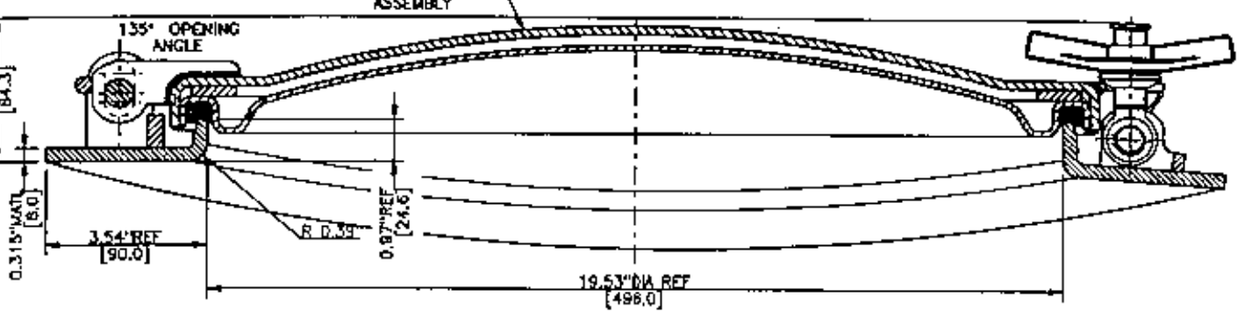
TOP DISCHARGE

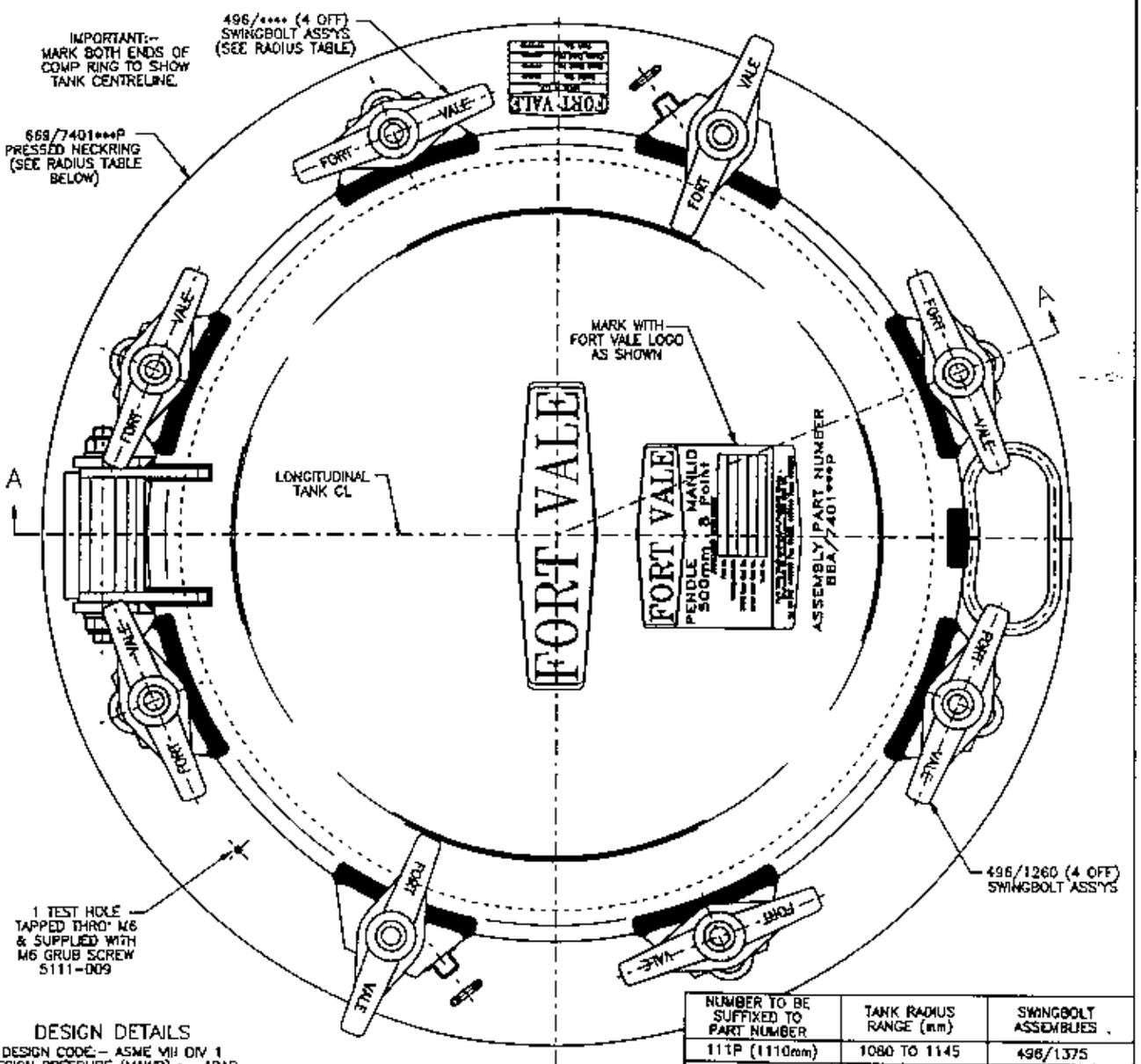
DRAWLIB SECTIONS

DRGNO. 88A/7401•••P

736/00004135
4 BAR 6 POINT
PRESSED LID
ASSEMBLY

SECTION ON AA





DESIGN DETAILS

DESIGN CODE:- ASME VIII DIV 1
DESIGN PRESSURE (MAWP) :- 4BAR
DESIGN TEMPERATURE :- 180° C
SERVICE TEST PRESSURE :- 6BAR

NUMBER TO BE SUFFIXED TO PART NUMBER	TANK RADIUS RANGE (mm)	SWINGBOLT ASSEMBLIES
111P (1110mm)	1080 TO 1145	496/1375
116P (1160mm)	1145 TO 1200	496/1342
122P (1220mm)	1200 TO 1260	496/1342

UNLESS OTHERWISE STATED SURFACE FINISH 125 CLA
CORNER RADII 0.015" CORNER CHAMFER 0.03 x 45°

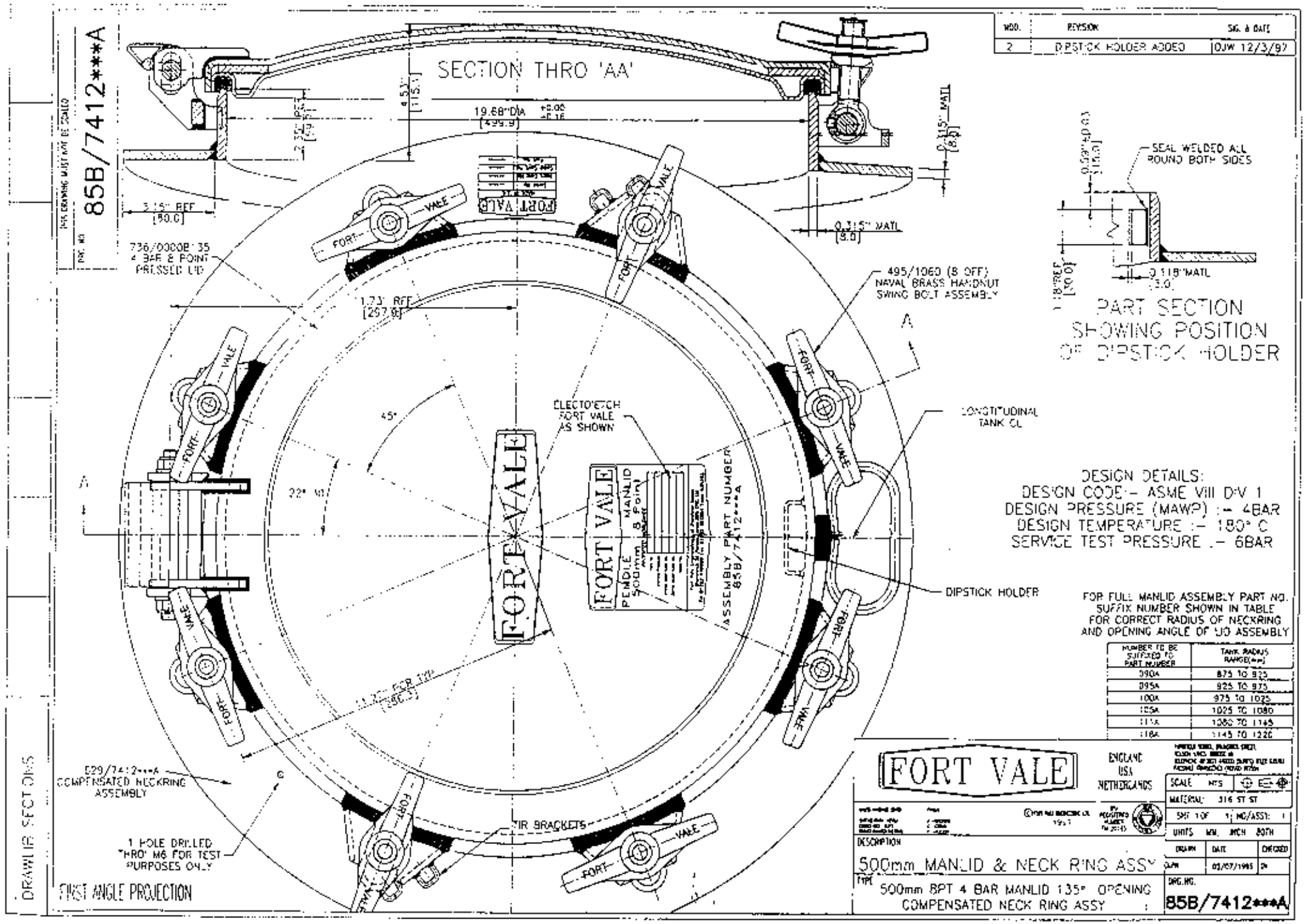
				MTL 316L ST ST	FORT VALE ENGLAND USA NETHERLANDS
				DRAWN CHH	
1	SWINGBOLT ASSYS ADDED TO RAD TABLE ; 1110MM RAD 496/1375 WERE 496/1342	15/5/98	DJW	DATE 05/08/1998	© FORT VALE ENG LTD 1998
				SCALE NTS	
	INCORPORATION			WEIGHT ASSY 1	

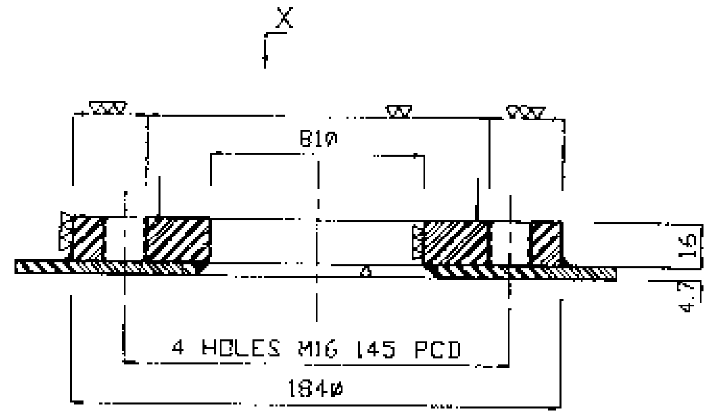
DESCRIPTION MANLID NECKRING ASSEMBLY

TYPE 500mm 4BAR 6PT MANLID PROF. NECK 8mm COMP. 80 x 6mm

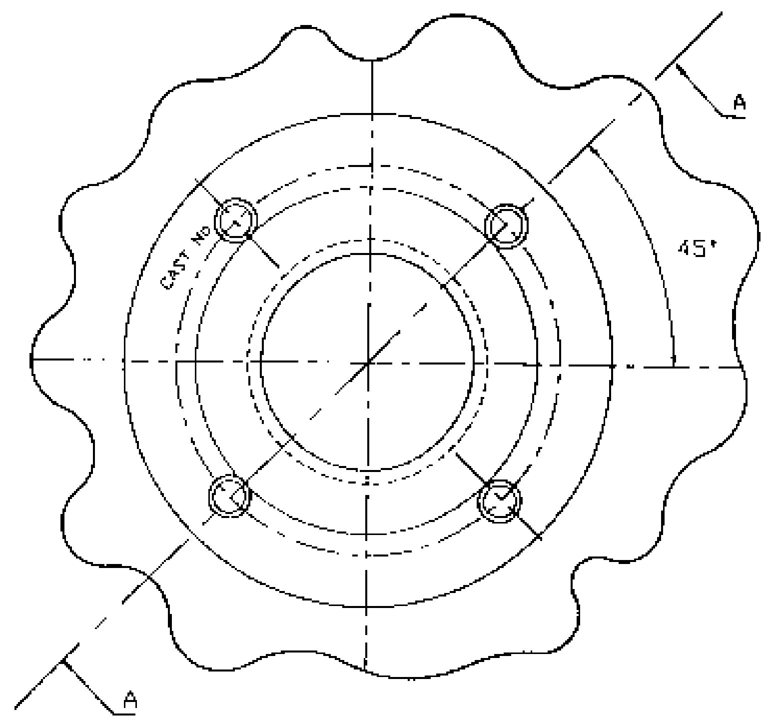
DRGNO. 88A/7401•••P

OVN 4719


SECTION THRO 'AA'
85B/7412***A
DRAWING MUST NOT BE SCALED
PART NO
DRAWING SECTIONS
FIRST ANGLE PROJECTION
736/0000B/35
4 BAR 8 POINT
PRESSED LID
495/1060 (8 OFF)
NAVAL BRASS HANDNUT
SWING BOLT ASSEMBLY
SEAL WELDED ALL
ROUND BOTH SIDES
PART SECTION
SHOWING POSITION
OF DIPSTICK HOLDER
LONGITUDINAL
TANK CL
DIPSTICK HOLDER
ELECTO'ETCH
FORT VALE
AS SHOWN
FORT VALE
MANLID
8 Point
PENDLE
500mm
ASSEMBLY PART NUMBER
85B/7412***A
45°
22° NO
829/7412***A
COMPENSATED NECKRING
ASSEMBLY
1 HOLE DRILLED
THRO' M6 FOR TEST
PURPOSES ONLY
AIR BRACKETS
DESIGN DETAILS:
DESIGN CODE :- ASME VIII DIV 1
DESIGN PRESSURE (MAWP) :- 4BAR
DESIGN TEMPERATURE :- 180° C
SERVICE TEST PRESSURE :- 6BAR
FOR FULL MANLID ASSEMBLY PART NO.
SUFFIX NUMBER SHOWN IN TABLE
FOR CORRECT RADIUS OF NECKRING
AND OPENING ANGLE OF LID ASSEMBLY
NUMBER TO BE SUFFIXED TO PART NUMBER
TANK RADIUS RANGE(mm)
090A 875 TO 925
095A 925 TO 975
100A 975 TO 1025
105A 1025 TO 1080
115A 1080 TO 1145
118A 1145 TO 1220
NO. REVISION SIG. & DATE
2 DIPSTICK HOLDER ADDED DJW 12/3/97
FORT VALE
ENGLAND
USA
NETHERLANDS
SCALE NTS
MATERIAL 316 ST ST
SHT 1 OF 1 NO/ASSY 1
UNITS MM. INCH BOTH
DRAWN DATE CHECKED
DJW 03/07/1995
DESCRIPTION
500mm MANLID & NECK RING ASSY
TYPE 500mm 8PT 4 BAR MANLID 135° OPENING
COMPENSATED NECK RING ASSY
DRG.NO.
85B/7412***A



SECTION A-A



VIEW X

PARTS LIST

ITEM	QTY.	DESCRIPTION	MATERIAL
1	1	SAFETY RELIEF BLOCK FLANGE DN 75	SA 240-316L

FLANGE TOLERANCES TABLE

OUTSIDE DIAMETER	+1mm -1mm
INSIDE DIAMETER	+1mm -1mm
THICKNESS	-0.5mm
PITCH CIRCLE DIAMETER	+0.5mm -0.5mm
BOLT PITCH	+0.5mm -0.5mm
CLEARANCE HOLE	-0mm +0.5mm
▽▽▽	1.6 um Ra
▽▽	12.5 um Ra (GRAMOPHONE FINISH).
▽	NUMBER 1 PLATE FINISH ACCEPTABLE.

REV.	DATE	NAME	REMARKS	CHCK.	APP.
3					
2					
1					

	DATE	NAME
DRWN	JUNE 97	E.K.N
CHCK.	JULY 97	KC
APP.	JULY 97	KC
AutoCAD	SAFEBLOK	

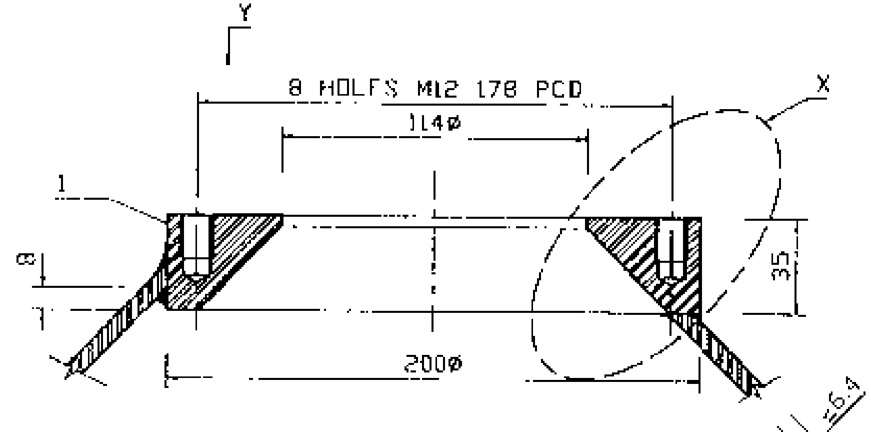
GEA Thermal and Energy Technology Division

GEA Krugersdorp Engineering (Pty) Ltd.

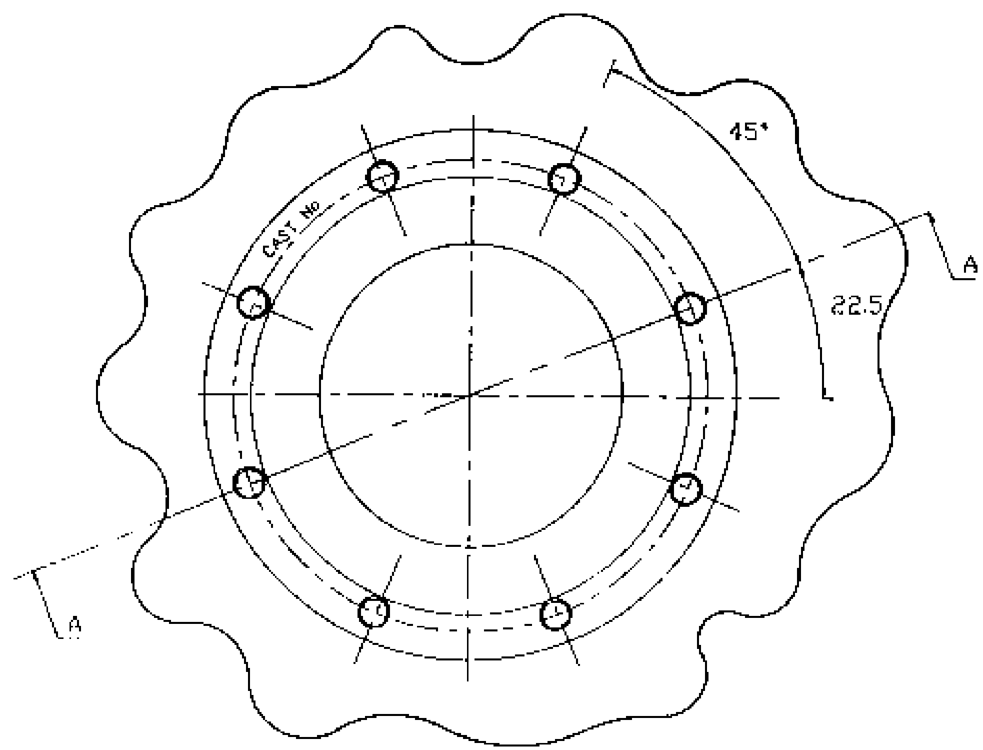
SCALE	REV.	ARTICLE No	SIZE	TITLE
1:2	0	374 000 10	A3	SAFETY RELIEF BLOCK FLANGE DN 75

PARTS LIST

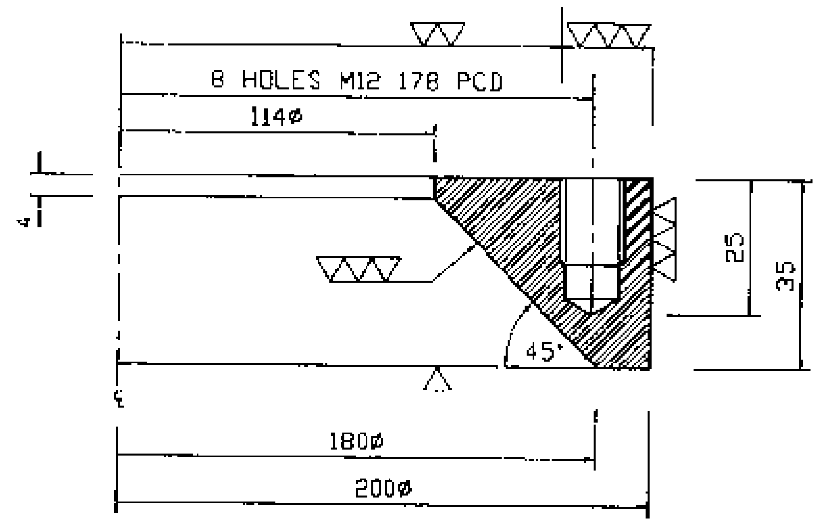
ITEM	QTY.	DESCRIPTION	MATERIAL
1	1	BOTTOM DRAIN BLOCK FLANGE DN 80	SA 240-316L



SECTION A-A



VIEW Y



DETAIL X
Scale 1:1

FLANGE TOLERANCES TABLE

OUTSIDE DIAMETER	+1mm -1mm
INSIDE DIAMETER	+1mm -1mm
THICKNESS	-0.5mm
PITCH CIRCLE DIAMETER	+0.5mm -0.5mm
BOLT PITCH	+0.5mm -0.5mm
CLEARANCE HOLE	-0mm +0.5mm
∇∇∇	1.6 µm Ra
∇∇	12.5 µm Ra (GRAMOPHONE FINISH)
∇	NUMBER 1 PLATE FINISH ACCEPTABLE

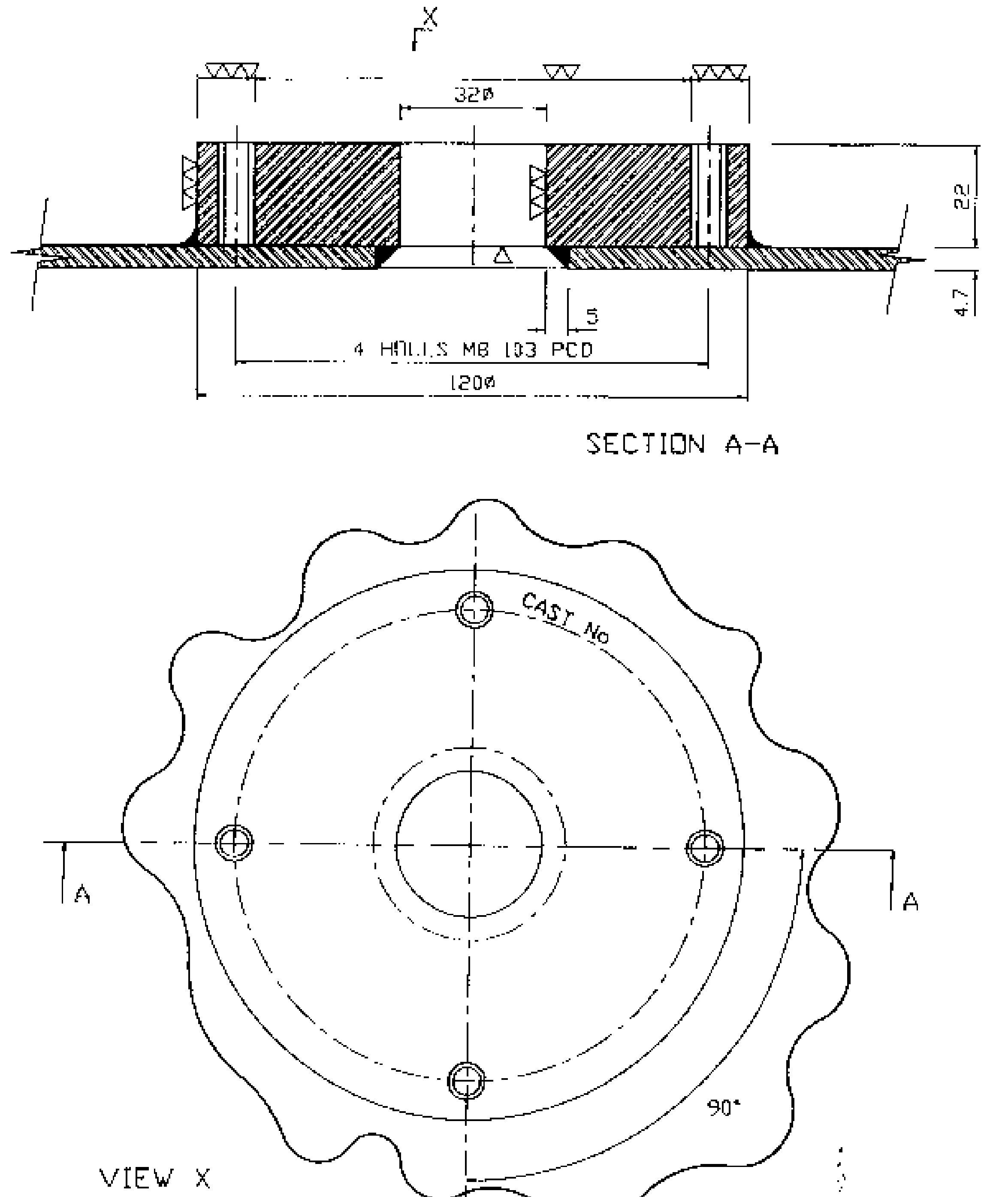
REV.	DATE	NAME	REMARKS	CHCK.	APP.
3					
2					
1					

DRWN	JUNE 97	E.K.N
CHCK.	JULY 97	KC
APP.	JULY 97	KC
AutoCAD BOTDRAIN		
SCALE 1:2	REV. 0	
ARTICLE No 377 000 10	SIZE A3	

GEA Krugersdorp Engineering (Pty) Ltd.

Thermal and Energy Technology Division

TITLE: BOTTOM DISCHARGE BLOCK FLANGE DN 80



PARTS LIST

ITEM	QTY.	DESCRIPTION	MATERIAL
1	1	AIR INLET BLOCK FLANGE DN 50	SA. 240-316L

FLANGE TOLERANCES TABLE

OUTSIDE DIAMETER	+1mm -1mm
INSIDE DIAMETER	+1mm -1mm
THICKNESS	-0.5mm
PITCH CIRCLE DIAMETER	+0.5mm -0.5mm
BOLT PITCH	+0.5mm +0.5mm
CLEARANCE HOLE	-0mm +0.5mm
∇∇∇	1.6 µm Ra
∇∇	12.5 µm Ra (GRAMOPHONE FINISH).
∇	NUMBER 1 PLATE FINISH ACCEPTABLE.

REV.	DATE	NAME	REMARKS	CHCK.	APP.
3					
2					
1					
DRWN	JUNE 97	E.K.N			
CHCK.	JULY 97	KC			
APP.	JULY 97	KC			

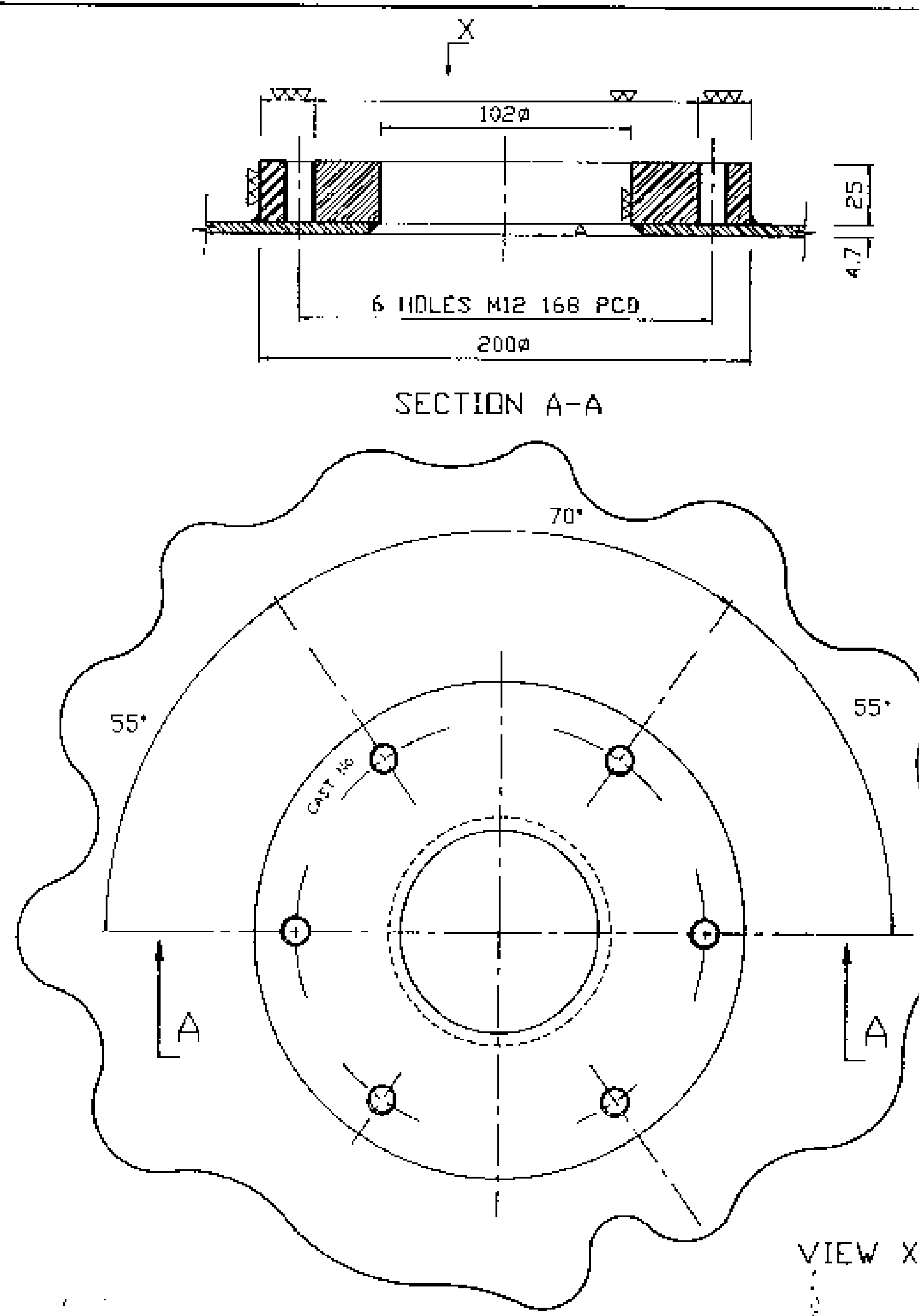
AutoCAD AIRINLET

SCALE	REV
1:1	0

Thermal and Energy Technology Division

GEA Krugersdorp Engineering (Pty) Ltd.

ARTICLE No	SIZE	TITLE
375 000 10	A3	AIR INLET BLOCK FLANGE DN 50



PARTS LIST

ITEM	QTY.	DESCRIPTION	MATERIAL
1	1	TOP DISCHARGE BLOCK FLANGE DN 100/80	SA 240-316L

FLANGE TOLERANCES TABLE

OUTSIDE DIAMETER	+1mm -1mm
INSIDE DIAMETER	+1mm -1mm
THICKNESS	-0.5mm
PITCH CIRCLE DIAMETER	+0.5mm -0.5mm
BOLT PITCH	+0.5mm -0.5mm
CLEARANCE HOLE	-0mm +0.5mm
▽▽▽	1.6 um Ra
▽▽	12.5 um Ra (GRAMOPHONE FINISH).
▽	NUMBER 1 PLATE FINISH ACCEPTABLE.

REV.	DATE	NAME	REMARKS	CHCK.	APP.
3					
2					
1					

DRWN.	JUNE 97	E.K.H
CHCK.	JULY 97	KC
APP.	JULY 97	KC

AutoCAD TOPBLOCK

SCALE 1:2 | REV. 0

GEA Krugersdorp Engineering (Pty) Ltd

Thermal and Energy Technology Division

ARTICLE No 376 000 10 | SIZE A3

TITLE TOP DISCHARGE BLOCK FLANGE DN 100/80

4.4

FITTINGS AND BLANKS

SAFETY VALVE BLANK

TOP DISCHARGE BLANK

CLEAN FLOW & BUTTERFLY VALVE

FOOT VALVE LEVER

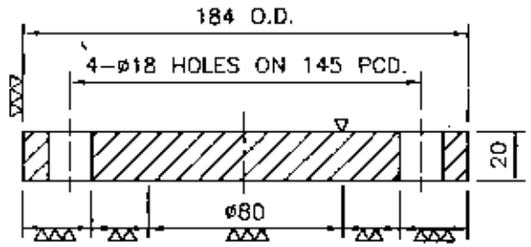
AIR LINE BALL VALVE

SAFETY VALVE

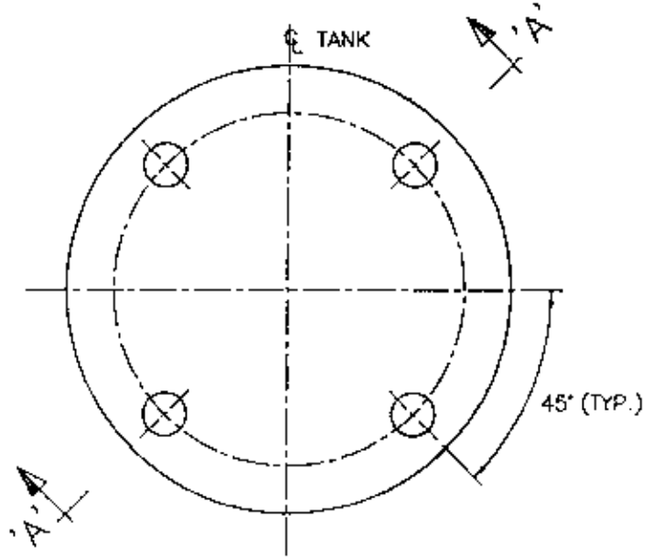
CALIBRATION PLATE

PARTS LIST

ITEM	QTY.	DESCRIPTION	MATERIAL
1	1	SAFETY RELIEF BLIND FLANGE DN 75	SA.240-316L



SECTION 'A-A'



PLAN

FLANGE TOLERANCE TABLE	
OUTSIDE DIAMETER	±1 mm
INSIDE DIAMETER	±1 mm
THICKNESS	-0,5 mm
PITCH CIRCLE DIAMETER	±0,5 mm
BOLT PITCH	±0,5 mm
CLEARANCE HOLE	+0,5 mm -0,0 mm
▽▽▽	1,6 µm Ra
▽▽	12,5 µm Ra (GRAMOPHONE FINISH)
▽	NUMBER 1 PLATE FINISH ACCEPTABLE

REV.	DATE	NAME	REMARKS	DATE	CHCK.	APPD.
3						
2						
1						
DRWN.	5.2.98	B.B.				
CHCK.						
APP.						

AUTOCAD: SAFEBLIN

SCALE:	REV.
1:2	0

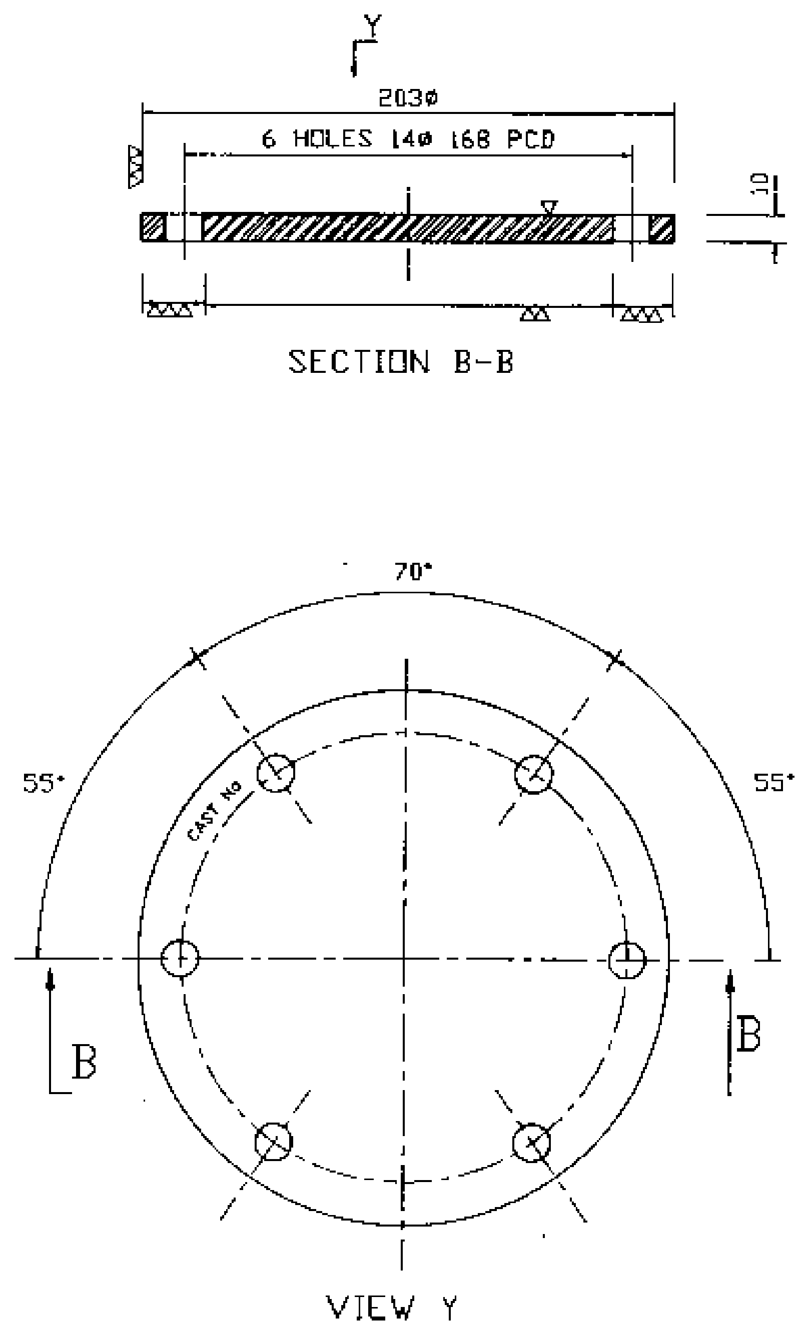
ARTICLE No.	SIZE
374 000 27	A3

GEA Krugersdorp Engineering (Pty)Ltd.
(Reg.No. 90/10588/07)
9 Pilans Street, Chamdor.
P.O.Box 4173, Luipaardsvlei 1743.
Gauteng, South Africa.
Tel.(011) 762-5251 Telefax (011) 762-1940
Thermal and Energy Technology Division

TITLE: SAFETY RELIEF BLIND FLANGE DN 75

PARTS LIST

ITEM	QTY.	DESCRIPTION	MATERIAL
1	1	TOP DISCHARGE BLIND FLANGE DN 100	SA 240-316L



FLANGE TOLERANCES TABLE

OUTSIDE DIAMETER	+1mm -1mm
INSIDE DIAMETER	+1mm -1mm
THICKNESS	-0.5mm
PITCH CIRCLE DIAMETER	+0.5mm -0.5mm
BOLT PITCH	+0.5mm -0.5mm
CLEARANCE HOLE	-0mm +0.5mm
▽▽▽	1.6 um Ra
▽▽	12.5 um Ra (GRAMOPHONE FINISH).
▽	NUMBER 1 PLATE FINISH ACCEPTABLE.

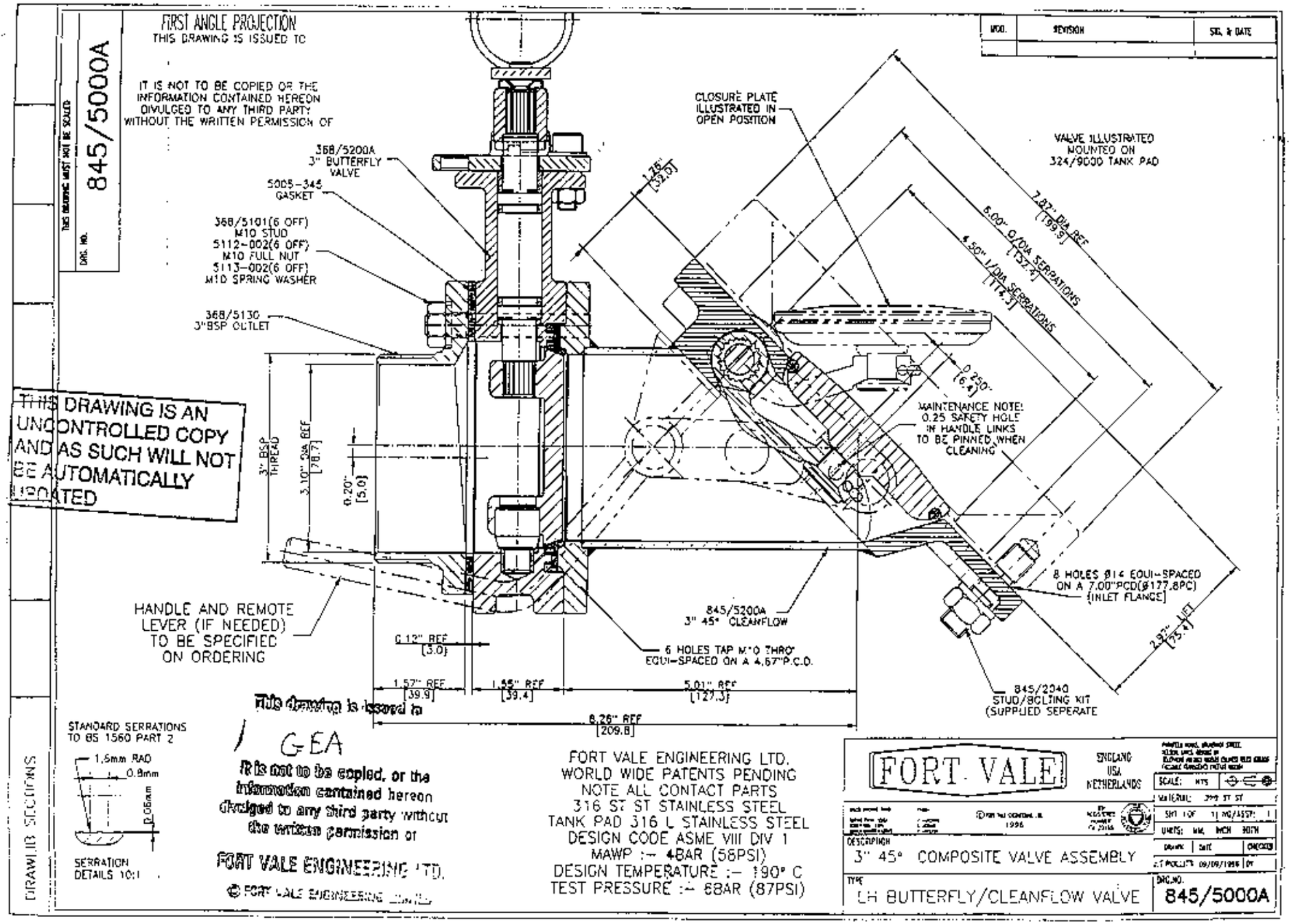
REV.	DATE	NAME	REMARKS	CHCK.	APP.
3					
2					
1					
DRWN.	JUNE 97	E.K.N			
CHCK.	JULY 97	KC			
APP.	JULY 97	KC			

GEA Krugersdorp Engineering (Pty) Ltd

Thermal and Energy Technology Division

AutoCAD	TOPBLIND
SCALE 1:2	REV. 0
ARTICLE No 376 000 20	SIZE A3

TITLE: TOP DISCHARGE BLIND FLANGE DN 100


FIRST ANGLE PROJECTION
THIS DRAWING IS ISSUED TO
IT IS NOT TO BE COPIED OR THE INFORMATION CONTAINED HEREON DIVULGED TO ANY THIRD PARTY WITHOUT THE WRITTEN PERMISSION OF
THIS DRAWING MUST NOT BE SCALED
DRG. NO. 845/5000A
368/5200A 3" BUTTERFLY VALVE
5005-345 GASKET
368/5101(6 OFF) M10 STUD
5112-002(6 OFF) M10 FULL NUT
5113-002(6 OFF) M10 SPRING WASHER
368/5130 3"BSP OUTLET
CLOSURE PLATE ILLUSTRATED IN OPEN POSITION
VALVE ILLUSTRATED MOUNTED ON 324/9000 TANK PAD
1.25" [32.0]
7.87" DIA REF [199.9]
5.00" O/DIA SERRATIONS [127.4]
4.50" I/DIA SERRATIONS [114.3]
0.250" [6.4]
MAINTENANCE NOTE: 0.25 SAFETY HOLE IN HANDLE LINKS TO BE PINNED WHEN CLEANING
THIS DRAWING IS AN UNCONTROLLED COPY AND AS SUCH WILL NOT BE AUTOMATICALLY UPDATED
3" BSP THREAD
3.10" DIA REF [78.7]
0.20" [5.0]
HANDLE AND REMOTE LEVER (IF NEEDED) TO BE SPECIFIED ON ORDERING
845/5200A 3" 45° CLEANFLOW
8 HOLES Ø14 EQUI-SPACED ON A 7.00"PCD(Ø177.8PC) (INLET FLANGE)
2.87" [73.4] LIFT
6 HOLES TAP M10 THRO' EQUI-SPACED ON A 4.67"P.C.D.
0.12" REF [3.0]
1.57" REF [39.9]
1.55" REF [39.4]
5.01" REF [127.3]
8.26" REF [209.8]
845/2040 STUD/BOLTING KIT (SUPPLIED SEPERATE
STANDARD SERRATIONS TO BS 1560 PART 2
1.6mm RAD
0.8mm
0.06mm
SERRATION DETAILS 10:1
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GEA
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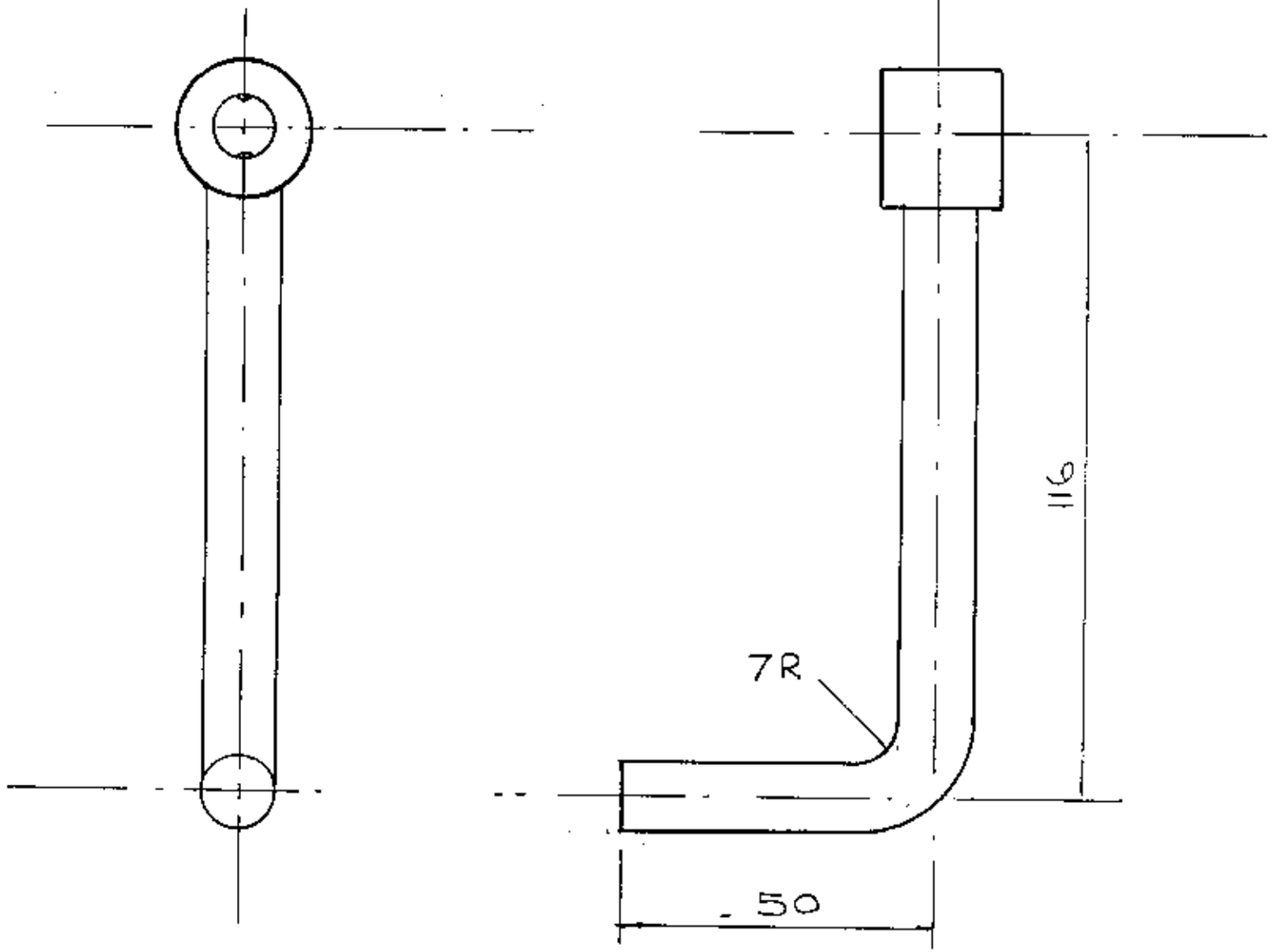
FORT VALE ENGINEERING LTD.
© FORT VALE ENGINEERING LIMITED
FORT VALE ENGINEERING LTD.
WORLD WIDE PATENTS PENDING
NOTE ALL CONTACT PARTS
316 ST ST STAINLESS STEEL
TANK PAD 316 L STAINLESS STEEL
DESIGN CODE ASME VIII DIV 1
MAWP :- 4BAR (58PSI)
DESIGN TEMPERATURE :- 190° C
TEST PRESSURE :- 6BAR (87PSI)
DRAWING SECTIONS
MOD. REVISION SIG. & DATE
FORT VALE
ENGLAND USA NETHERLANDS
SCALE: NTS
MATERIAL: 316 ST ST
SHT 1 OF 1 NO/ASSY: 1
UNITS: MM INCH BOTH
DRAWN DATE CHECKED
DESCRIPTION
3" 45° COMPOSITE VALVE ASSEMBLY
TYPE
LH BUTTERFLY/CLEANFLOW VALVE
DRG.NO.
845/5000A

FOOT VALVE LEVER.



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FIRST ANGLE PROJECTION

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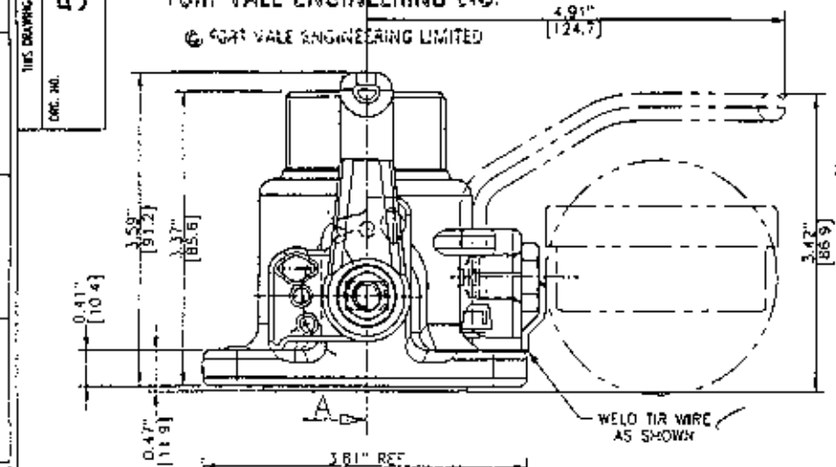
MOD.	REVISION	SIG. & DATE
1	5003-002 was 5003-026 530/0003 WAS 1 OFF. 5005-048 ADDED	D BAILEY 4\3\98
2	T.I.R. WIRE ADDED	D.BAILEY 9\7\98

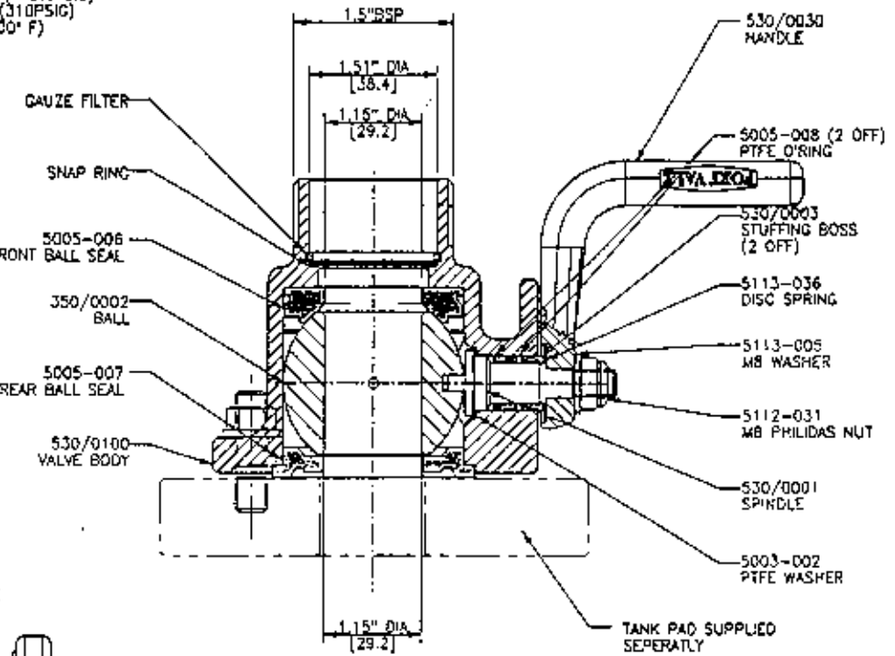
DRG. NO. 530/0200

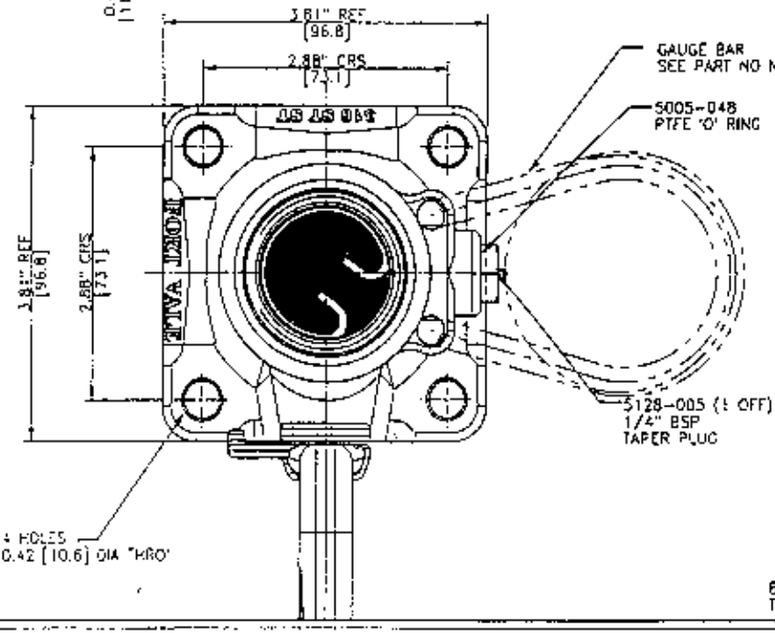
THIS DRAWING MUST NOT BE SCALED

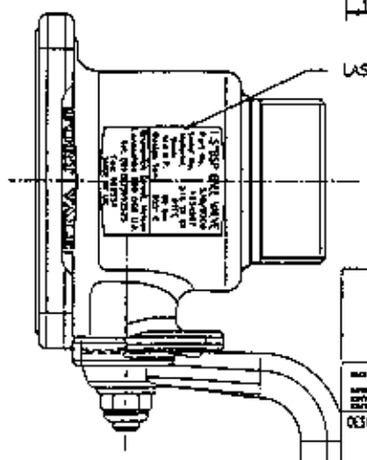
DESIGN CODE ASME VIII DIVI
MAWP (DES.PRESS):- 10.0 BARG (145.0PSIG)
TEST PRESSURE:- 21.4 BARG (310PSIG)
DESIGN TEMP:- 205° C (400° F)

SECTION ON AA









PART NUMBER	SUFFIX	SUFFIX	DESCRIPTION
530/0200		G	GAUGE GUARD 530/0040
530/0200	F		GAUZE FILTER 353/0010 SNAP RING 5120-017
530/0200			STANDARD VALVE

FORT VALE

ENGLAND
USA
NETHERLANDS

SCALE: NTS

MATERIAL: 316 SP SS

SHT 1 OF 1 NO/ASSY: 1

UNITS: MM INCH BOTH

DRAWN DATE CHECKED

D BAILEY 24/03/1998 BY

DESCRIPTION
1.5" BSP BALLVALVE

TYPE
1.5" MK III AIR LINE BALLVALVE.

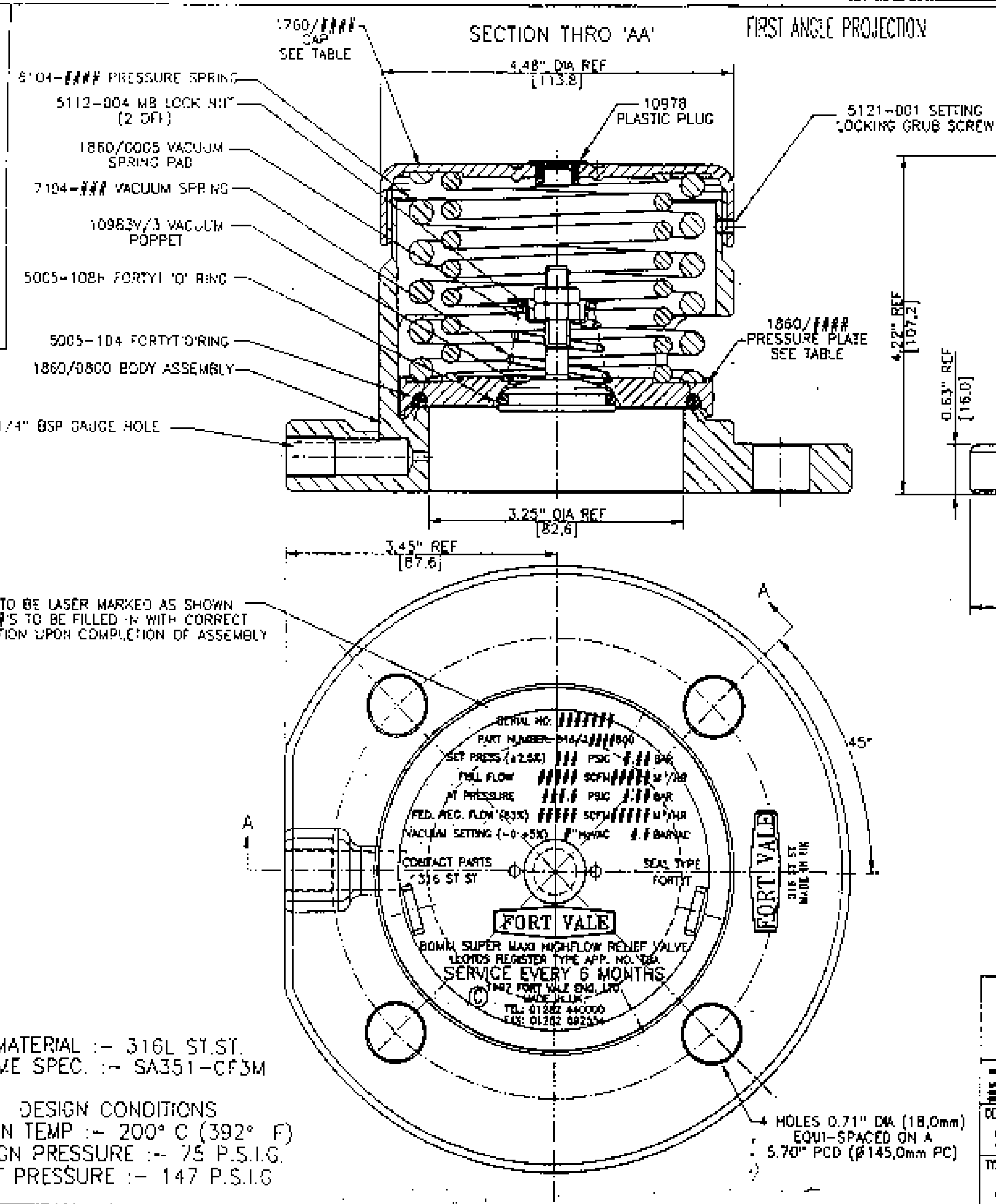
DRG NO.
530/0200

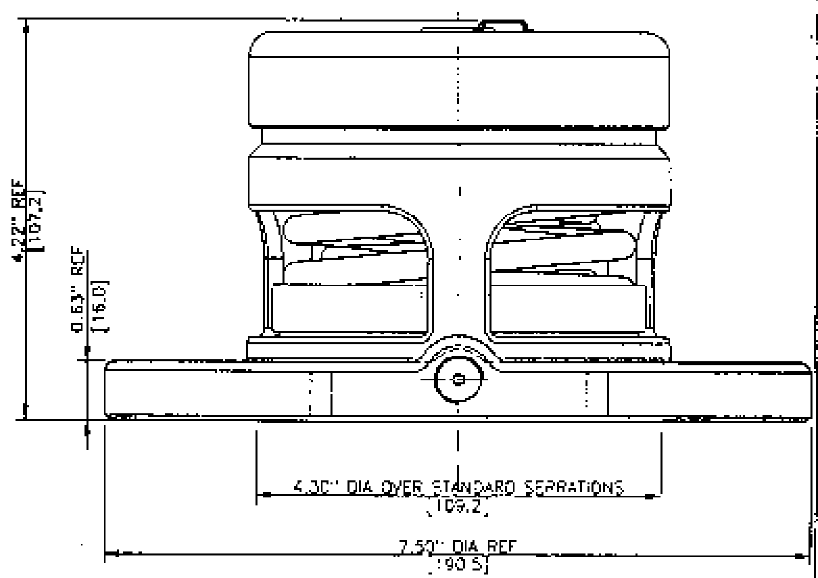
DRAWLIB SECTIONS

FIRST ANGLE PROJECTION

ISS	REVISION	SIG & DATE
3	PART No 013/13002800 OUTER PRESSURE SPRING WAS 6104-0300	C.H.HILL 1/7/97
4	013/12901800 ADDED	C.I.POLLITT 26/09/97
5	CAP No & PRESSURE PLATE No ADDED TO TABLE SERRATIONS TO BE 5MS PART 2 DELETED	G.H.H. 8/10/97
6	013/14612800 ADDED	G.H.H. 27/10/97

SECTION THRO 'AA'





MATERIAL :- 316L ST.ST.
ASME SPEC. :- SA351-CF3M

DESIGN CONDITIONS
DESIGN TEMP :- 200° C (392° F)
DESIGN PRESSURE :- 75 P.S.I.G.
TEST PRESSURE :- 147 P.S.I.G

EXAMPLE OF PART NUMBER

013/15412800 VALVE DENOTES 80MM DN65 PN10 FLANGED MAXI HIGHFLOW RELIEF VALVE PRESSURE VACUUM WITH 54.0 PSIG PRESSURE SETTING & 6"HG VACUUM SETTING USING PRESSURE SPRING PAIR No 6104-0570 & VACUUM SPRING No 7104-012 & CAP No 1760/0005 & PRESSURE PLATE No 1860/0051

66.00 PSI MAXIMUM SETTING

PART NUMBER	PRESSURE SPRINGS INNER	PRESSURE SPRINGS OUTER	VACUUM SPRING	PRESSURE PLATE	CAP No
013/16324800	6104-0660 SPRING PAIR		7104-024	1860/0066	1760/0007
013/16313800	6104-0665 SPRING PAIR		7104-012	1860/0068	1760/0007
013/15412800	6104-0570 SPRING PAIR		7104-012	1860/0061	1760/0005
013/14612800	6104-0048	6104-0184	7104-013	1860/0061	1760/0005
013/13312800		6104-0510	7104-012	1860/0061	1760/0005
013/13002800		6104-0310	7104-003	1860/0061	1760/0005
013/12901800		6104-0310	7104-001	1860/0061	1760/0005
013/10301800	6104-0048		7104-001	1860/0061	1760/0005
013/10201800	6104-0033		7104-001	1860/0061	1760/0005

FORT VALE

ENGLAND
USA
NETHERLANDS

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SCALE: NTS
MATERIAL: SEE NOTE
SHT 1 OF 1 | NO/ASSY: 1
UNITS: MM INCH BOTH
DRAWN: D.BAILEY | DATE: 31/08/1996 | CHECKED: DY

DESCRIPTION
SUPER MAXI HIGHFLOW DN65 PN10

TYPE
80mm MK3 SUPER MAXI HIGHFLOW

DRG NO.
013/1####800

THIS DRAWING MUST NOT BE SCALED
DRG. NO. 013/1####800

DRAWLIB SECTIONS

CALIBRATION CHART

CAPACITY: LITRE / US GALLONS

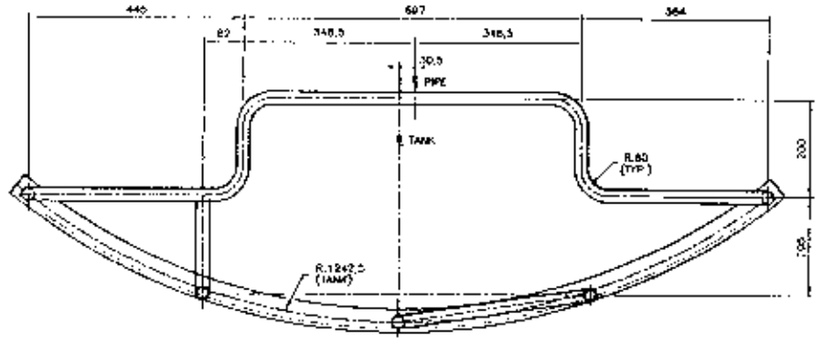
LEVEL CM	CAPACITY LITRE	CAPACITY US GAL	LEVEL CM	CAPACITY LITRE	CAPACITY US GAL	LEVEL CM	CAPACITY LITRE	CAPACITY US GAL	LEVEL CM	CAPACITY LITRE	CAPACITY US GAL
0	24000	6340	21	23357	6170	42	21623	5712	63	19325	5105
1	23998	6339	22	23294	6154	43	21522	5686	64	19211	5075
2	23995	6338	23	23229	6136	44	21420	5659	65	19097	5045
3	23990	6337	24	23161	6118	45	21316	5631	66	18981	5014
4	23983	6336	25	23090	6100	46	21214	5604	67	18866	4984
5	23973	6333	26	23020	6081	47	21107	5576	68	18750	4953
6	23961	6330	27	22943	6061	48	21002	5548	69	18633	4922
7	23946	6326	28	22867	6041	49	20896	5520	70	18519	4892
8	23928	6321	29	22792	6021	50	20788	5492	71	18400	4861
9	23908	6316	30	22711	6000	51	20678	5462	72	18279	4829
10	23882	6309	31	22630	5978	52	20567	5433	73	18164	4798
11	23852	6301	32	22548	5957	53	20460	5405	74	18047	4768
12	23816	6292	33	22462	5934	54	20346	5375	75	17930	4737
13	23776	6281	34	22375	5911	55	20236	5346	76	17806	4704
14	23733	6270	35	22285	5887	56	20125	5316	77	17688	4673
15	23687	6257	36	22196	5864	57	20012	5286	78	17568	4641
16	23637	6244	37	22105	5840	58	19899	5257	79	17447	4609
17	23585	6230	38	22012	5815	59	19785	5227	80	17331	4578
18	23531	6216	39	21916	5790	60	19670	5196	81	17210	4546
19	23475	6201	40	21822	5765	61	19554	5166	82	17089	4514
20	23417	6186	41	21722	5738	62	19443	5136	83	16966	4482

4.5 STEAM HEADER PIPING

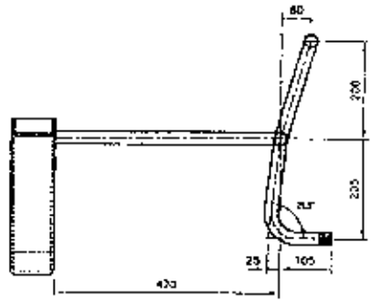
AND

HEATING CIRCUIT

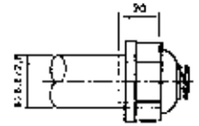
DETAILS



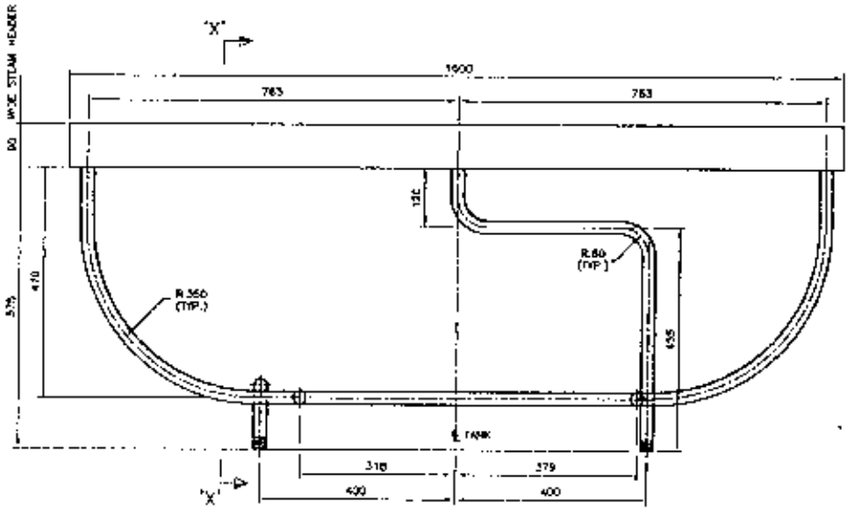
ELEVATION



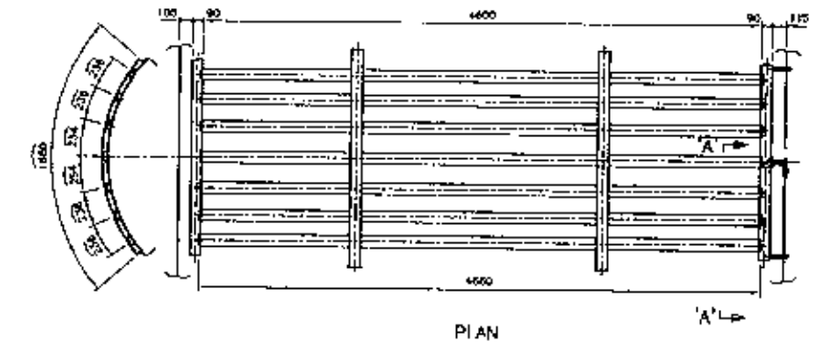
SECTION 'X-X'



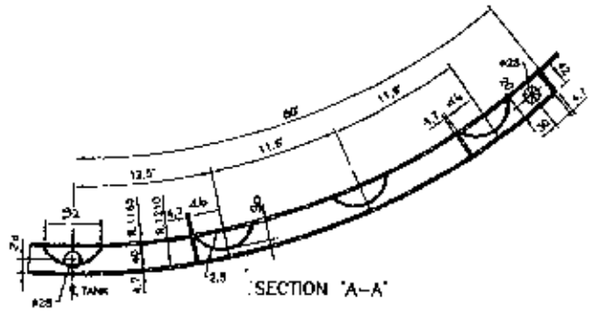
3/4" BSP BLIND CAP
DETAIL



PLAN



PLAN



SECTION 'A-A'

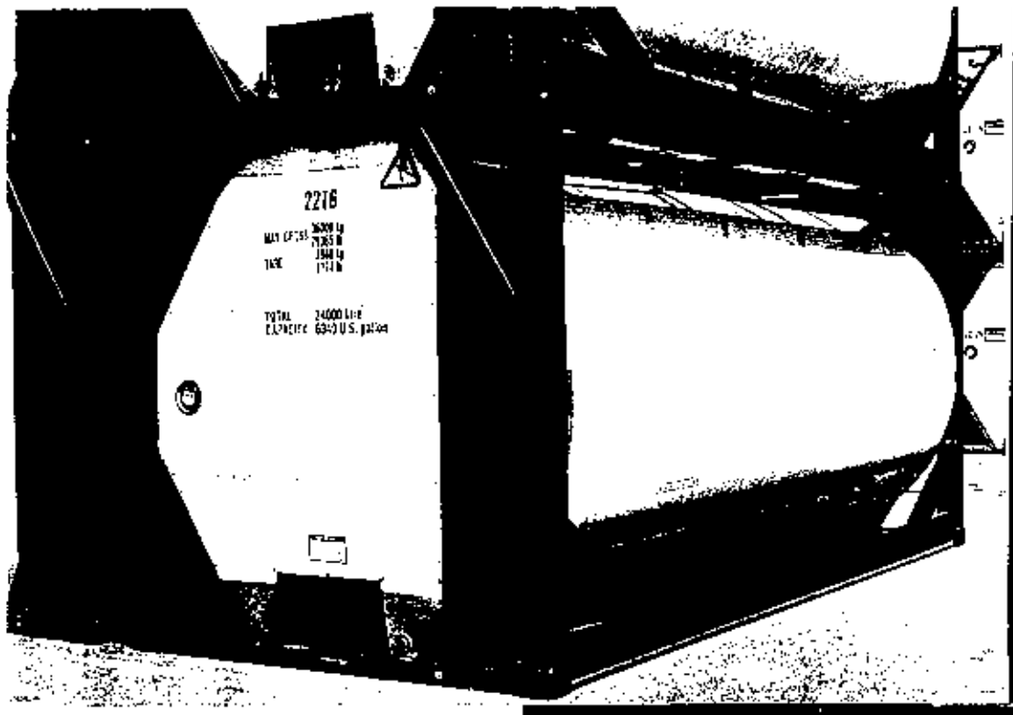
MATERIAL:
PIPE: SA-312-TP304L
PLATE: SA-240-304L

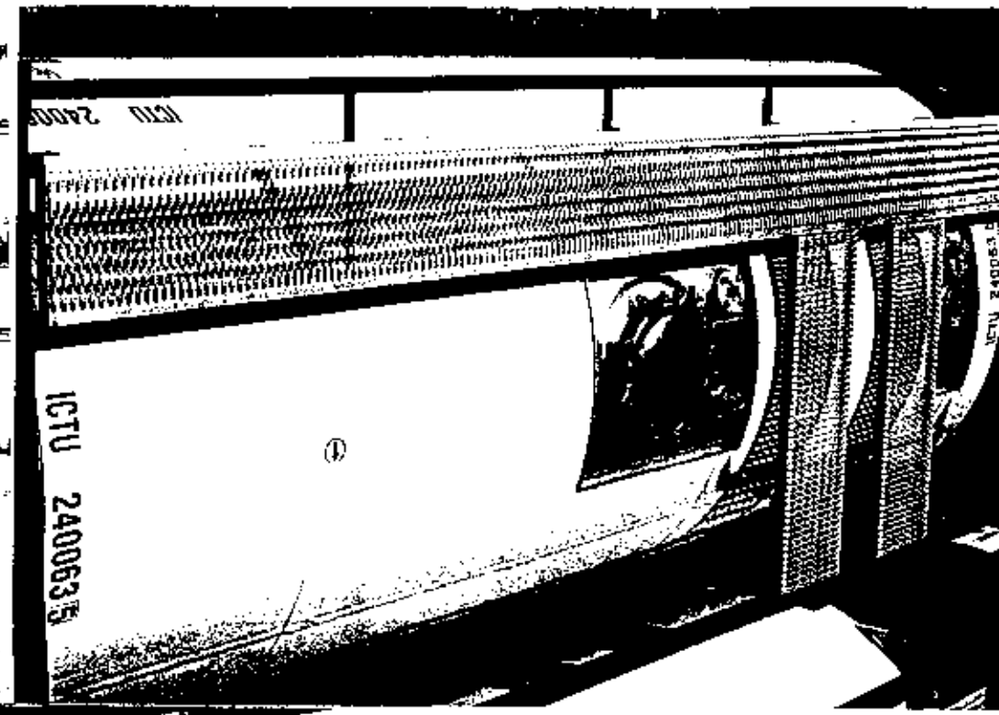
REV.	DATE	NAME	REMARKS	DATE	CHECK	APPD
	DATE	NAME				
DRWN	21.8.98	B.R.				
CHKR						
APP.						

GEA Krugersdorp Engineering (Pty) Ltd.

TITLE:
STEAM HEADER PIPING & HEATING CIRCUIT DETAILS

SCALE: 1:5
SIZE: A2
DWG No.
REV: 0


2276


ICTU 2400635