



COMPOSITE SUPPLY CUM ERECTION OF MECHANICAL PIPING WORKS FOR OSBL
FACILITIES ON ITEM RATE BASIS AT TALCHER FERTILIZERS LIMITED

NIT NO. : PNP/PC-183/E-601/NCB dated 27.03.2023

AMENDMENT No.: VI Dated 05.05.2023



Sl. No.	Reference of Bidding Document				Existing Clause	Amended Clause
	Vol-I/ Sec	Page No.	Clause No.	Subject / Heading		
1	S-II	12 of 726	1.0 Technical Criteria	Notes for 1.1 above:	III. Only documents (Work order, completion certificate, execution certificate etc.) which have been referred /specified in the bid shall be considered in reply to the queries during evaluation of bids.	<p>The referred Note no. III is modified as below (Additional Paragraph is added)</p> <p>III. Only documents (Work order, completion certificate, execution certificate etc.) which have been referred /specified in the bid shall be considered in reply to the queries during evaluation of bids.</p> <p>(After submission of bid, only related shortfall documents will be asked for in TQ/CQ and considered for evaluation. For example, if the bidder has submitted a contract without its completion/ performance certificate, the certificate will be asked for and considered. However, no new reference/ PO/WO/LOA is to be submitted by bidder in response to</p>



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						to be submitted by bidder in response to TQ/CQ so as to qualify and such documents will not be considered by TFL for evaluation of Bid.)
2	S-II		6.0	Authentication of documents submitted against BEC		Format for TPIA attached as Appendix-III.
3	S-V	289 of 726	11.0	ISSUE OF WORKING DRAWINGS	<p>All Working drawings shall be issued by the CONTRACTOR for review/approval by the OWNER/ PMC before issuance at work site. Working drawings shall be submitted by the CONTRACTOR during the period of the contract and shall be MARKED AS "Good for execution/ construction". The same shall be having sign & stamp of the CONTRACTOR.</p> <p>The Contractor shall not be entitled to put forth any claim whatsoever on account of delay in</p>	<p>The referred Clause 11.0 is modified as below:</p> <p>All working drawing shall be issued by the OWNER/ PMC to contractor for site construction.</p> <p>As-built drawing shall be prepared by the contractor itself and submitted to the Owner/PMC.</p> <p>Fabrication drawing, if any shall be prepared</p>



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					getting approval of the drawings to the Owner/ Consultant, if contractor fails to Incorporate the OWNERS/PMC comments timely. Fabrication drawing, if any shall be prepared by the contractor itself and submitted to the Owner/PMC for information	by the contractor itself and submitted to the Owner/PMC for approval.
4	S-VI		8.2	Master Index: Plot plan & Yard piping layout attachment		Overall Plot Plan-DWG. Nos. PC183-0000-0001, REV_3 dated 14.03.2023 & OSBL Pipe Rack & Sleeper Layout for Civil PC183-7511-0605, REV_2(Sheet 1 of 3, 2 of 3 & 3 of 3) dated-16.03.2023 (Enclosed)
5	S-VI					PMS (TFL-PDS-600, REV-5, dated-22.02.2022 enclosed)
6	S-VI					Datasheet of GAV401 enclosed.
7	S-VI					The schedule of thickness for weld neck flange enclosed.



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	Vol-I/ Sec	Page No.	Clause No.	Subject / Heading		
8	S-VI					Fitting Schedule or Thickness enclosed.
9	S-VI			VENDOR LIST		Vendors for Electrical /Cathodic Protection Equipment / Items added (Vendor List-Electrical/ Cathodic Protection Equipment attached.)

Note: - The clauses in Amendment shall take precedence/superseded over all other pre bid replies against the respective clause.

FOR & On behalf of
(Projects & Development India Ltd.)


Kailash Joshi
(Project Manager)

Format for Undertaking from TPIA
(On TPIA letter head duly stamped & signed)

Ref.:
Date :

To,

Talcher Fertilizers Limited.
.....
.....
.....

Dear Sir,

Subject: Verification and certification of documents pertaining to Technical Bid Evaluation Criteria (BEC)

Ref: Tender no. for

M/s. having Registered office at
..... intend to participate in above referred tender of Talcher Fertilizers Limited having its registered office at Plot 2/H, Kalpana Area, BJB Nagar, Khordha, Bhubaneswar-751014.

The tender conditions stipulates that the BIDDER shall submit Documents pertaining to Technical Bid Evaluation Criteria (BEC) duly verified and certified by designated independent Third Party Inspection Agency.

In this regard, this is to certify that copies of documents pertaining to Technical Bid Evaluation Criteria (BEC) submitted to us by the bidder have been verified and certified by us with the originals and found to be genuine. We have signed and stamped on the copies of all the verified and certified documents.

(Signature of a person duly authorized to

Sign on behalf of the TPIA)

(Seal of the Company)

Name:

Contact No.....

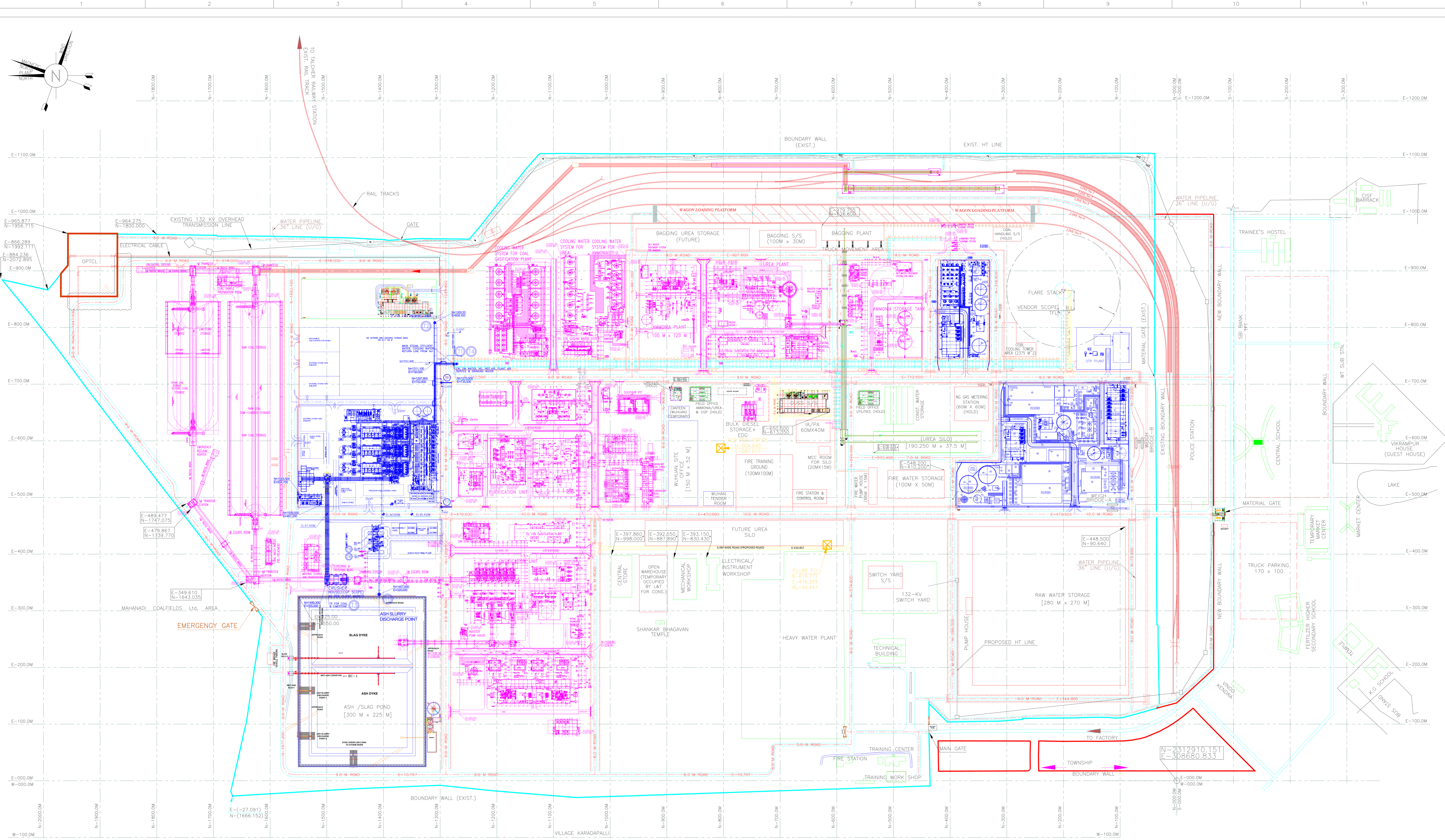


TABLE-1 LIST FACILITIES/UNITS OF COP

SLNO.	BLOCK DESCRIPTION	SIZE IN METRE	REMARKS
1.	AIR SEPARATION UNIT	210 M x 151 M	EXISTING
2.	CASIFICATION UNIT	200 M x 151 M	EXISTING
3.	PURIFICATION UNIT	213.7 M x 110 M	EXISTING
4.	SALUR RECOVERY UNIT	78 M x 55 M	EXISTING
5.	COOLING TOWER FOR GASIFICATION PLANT	161.5 M x 38.8 M	EXISTING
6.	INITIAL RAW WATER BASIN-1	36 M x 15 M	EXISTING
7.	INITIAL RAW WATER BASIN-2	23.5 M x 17.8 M	EXISTING
8.	COAL WASH WATER TREATMENT	461.5 M x 12.5 M	EXISTING
9.	SUBSTATION FOR GASIFICATION PLANT	56 M x 34 M	EXISTING
10.	SUBSTATION FOR COOLING TOWER	45 M x 30 M	EXISTING
11.	SUBSTATION FOR AMMONIA UNIT	55 M x 29 M	EXISTING
12.	SUBSTATION FOR SOLID MATERIAL STORAGE & TRANSPORTING	56 M x 28 M	EXISTING
13.	SUBSTATION FOR ASH	43 M x 24.5 M	EXISTING
14.	GENERAL CONTROL ROOM	55 M x 38 M	EXISTING
15.	RAW COAL STORAGE	375 M x 90 M	EXISTING
16.	PETCOKE/LIMESTONE STORAGE	97 M x 90 M	EXISTING
17.	LABORATORY BUILDING	50.15 M x 21.35 M	EXISTING

TABLE-2 LIST FACILITIES/UNITS OF AMMONIA/UREA PLANT

SLNO.	BLOCK DESCRIPTION	SIZE IN METRE	REMARKS
1.	AMMONIA UNIT	120 M x 100 M	EXISTING
2.	UREA UNIT	138 M x 31 M	EXISTING
3.	DM WATER PLANT	110 M x 26 M	EXISTING
4.	UREA BAGGING PLANT BUILDING	110 M x 26 M	EXISTING
5.	COIL COOLING TOWER	231.5 M	EXISTING
6.	WAGON LOADING PLATFORM	660 M x 30 M	EXISTING
7.	STEAM GENERATION PLANT	240 M x 20 M	EXISTING
8.	ELECTRICAL DISTRIBUTION SYSTEM	40 M x 40 M	EXISTING
9.	INSTRUMENT AIR PLANT AIR UNIT	100 M x 50 M	EXISTING
10.	FIRE WATER STORAGE	60 M x 25 M	EXISTING
11.	FIRE WATER PLANT HOUSE	60 M x 25 M	EXISTING
12.	BULK DIESEL STORAGE + EGG	42 M x 52 M	EXISTING
13.	FIRE STATION & CONTROL ROOM	60 M x 25 M	EXISTING
14.	FUTURE UREA SILO	150 M x 52 M	EXISTING
15.	EXISTING UREA SILO	190.250 M x 37.5 M	EXISTING
16.	FIELD OFFICE AMMONIA/UREA & COP (HOLD)	35 M x 23 M	EXISTING
17.	FIELD OFFICE UTILITIES (HOLD)	35 M x 23 M	EXISTING
18.	TRUCK PARKING AREA	150 M x 100 M	EXISTING
19.	ASH/SLAG POND	300 M x 225 M	EXISTING
20.	CENTRAL STORE	-	EXISTING
21.	MECHANICAL WORKSHOP	100 M x 50 M	EXISTING
22.	TRAINING CENTER	-	EXISTING
23.	TRAINING WORK SHOP	-	EXISTING

TABLE-3 OSBL FACILITIES/UNITS

SLNO.	BLOCK DESCRIPTION	SIZE IN METRE	REMARKS
1.	RAW WATER STORAGE	-	EXISTING
2.	RAW WATER TREATMENT PLANT + ETP + STP	-	EXISTING
3.	DM WATER PLANT	-	EXISTING
4.	UREA BAGGING PLANT BUILDING	-	EXISTING
5.	COIL COOLING TOWER	-	EXISTING
6.	WAGON LOADING PLATFORM	-	EXISTING
7.	STEAM GENERATION PLANT	-	EXISTING
8.	ELECTRICAL DISTRIBUTION SYSTEM	-	EXISTING
9.	INSTRUMENT AIR PLANT AIR UNIT	-	EXISTING
10.	FIRE WATER STORAGE	-	EXISTING
11.	FIRE WATER PLANT HOUSE	-	EXISTING
12.	BULK DIESEL STORAGE + EGG	-	EXISTING
13.	FIRE STATION & CONTROL ROOM	-	EXISTING
14.	FUTURE UREA SILO	-	EXISTING
15.	EXISTING UREA SILO	-	EXISTING
16.	FIELD OFFICE AMMONIA/UREA & COP (HOLD)	-	EXISTING
17.	FIELD OFFICE UTILITIES (HOLD)	-	EXISTING
18.	TRUCK PARKING AREA	-	EXISTING
19.	ASH/SLAG POND	-	EXISTING
20.	CENTRAL STORE	-	EXISTING
21.	MECHANICAL WORKSHOP	-	EXISTING
22.	TRAINING CENTER	-	EXISTING
23.	TRAINING WORK SHOP	-	EXISTING

TABLE-4 OSBL SUBSTATION

SLNO.	BLOCK DESCRIPTION	SIZE IN METRE	REMARKS
1.	SUB-STATION (DM WATER PLANT)	-	EXISTING
2.	SUB-STATION (RAW WATER TREATMENT PLANT + ETP)	-	EXISTING
3.	SUB-STATION (BAGGING PLANT BUILDING)	-	EXISTING
4.	SUB-STATION (COIL COOLING TOWER)	-	EXISTING
5.	SUB-STATION (STEAM GENERATION PLANT)	-	EXISTING
6.	SUB-STATION (ASH DYKE)	-	EXISTING
7.	SUB-STATION (COOLING TOWER-MCC ROOM)	-	EXISTING
8.	SUB-STATION (E13-W/ SWITCH YARD)	-	EXISTING
9.	SUB-STATION (MCC-EGG)	-	EXISTING
10.	SUB-STATION (ASH HANDLING)	-	EXISTING
11.	SUB-STATION (COIL)	-	EXISTING
12.	SUB-STATION (SLO-MCC ROOM)	-	EXISTING

- NOTES:-**
- ALL DIMENSIONS AND COORDINATES ARE IN METERS UNLESS OTHERWISE SPECIFIED.
 - REFERENCE BENCH MARK (⊕) POINTS IS W.R.T GLOBAL CO-ORDINATES HAVING N-2312910.151 & E-308680.833 (GRID COORDINATES N=000.0M, E=000.0M).
 - BLOCK SIZE OF FACILITIES ARE TO BE FINALIZED AFTER GETTING VENDOR INFO.
 - * INDICATES HOLD.

LEGEND :-

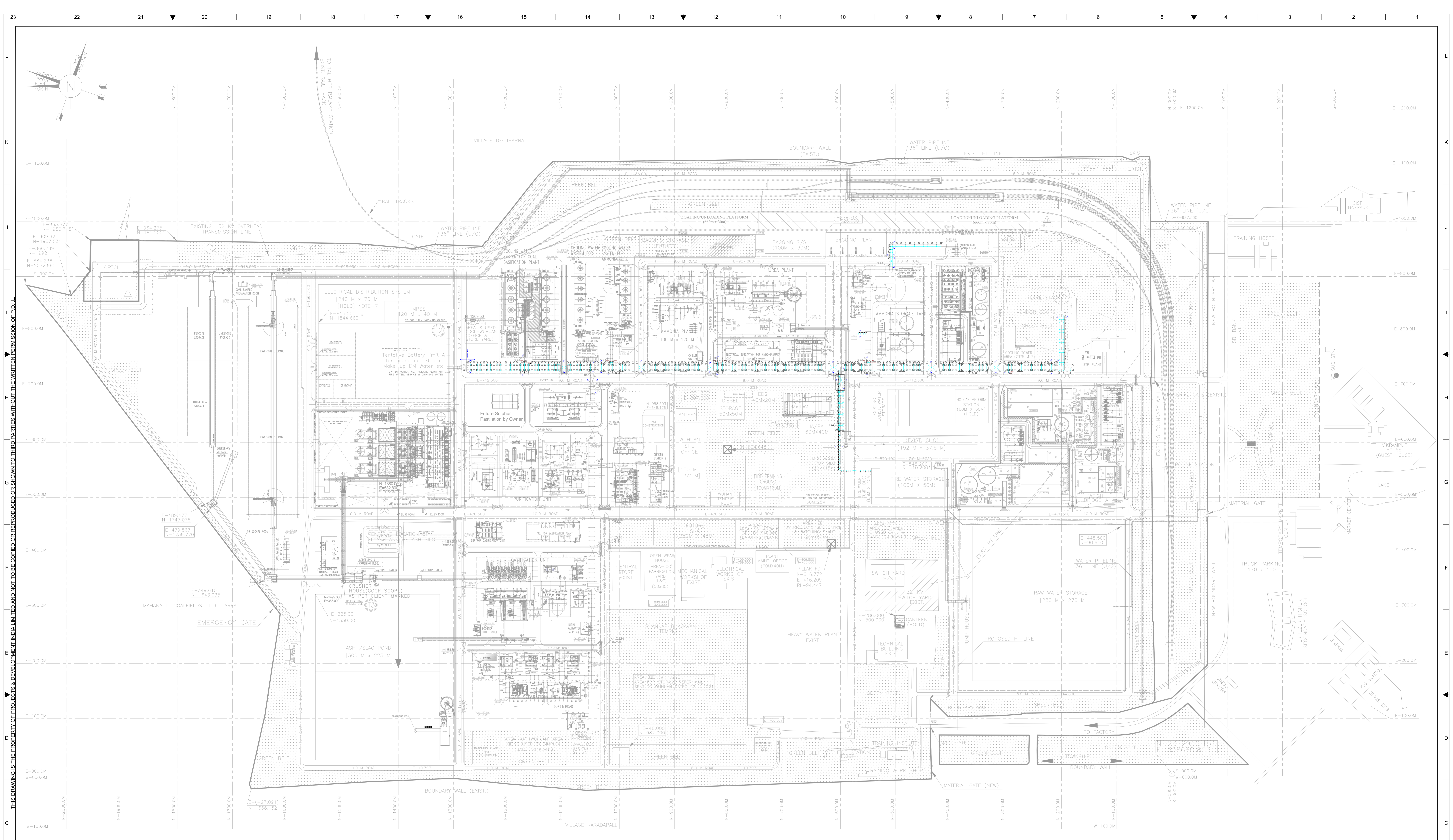
- PLANT BOUNDARY
- PROPOSED NEW FACILITIES (OSBL)
- PROPOSED NEW FACILITIES (ISBL)
- EXISTING FACILITIES TO BE USED AFTER REFURBISHMENT
- RAILWAY LINE
- PROPOSED ROAD
- PROPOSED GREEN BELT
- PIPE RACK

3_OP	14.03.2023	UPDATED & ISSUED	ANIL RRV/NSY	AMAR
2	09.12.2022	UPDATED & ISSUED	ANIL RRV/NSY	AMAR
1	28.07.2022	ISSUED	ANIL RRV/NSY	AMAR
0	15.02.2022	ISSUED FOR COMMENT	SAYEED RRV/NSY	AMAR
P	19.01.21	PRELIMINARY ISSUE	AM DD/NS	AMAR
REV.	DATE	DESCRIPTION	PPD.	CKD.

CLIENT : M/s. TALCHER FERTILIZER LIMITED
 PROJECT : INTEGRATED COAL BASED FERTILIZER AND CHEMICAL COMPLEX
 TITLE : OVERALL PLOT PLAN
 PROJECTS & DEVELOPMENT INDIA LTD. NOIDA

SCALE : 1 : 2200
 SHEET 1 OF 1
 FILE : PC183-000-001_Rev 3_OP

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NOTES :-

1. ALL DIMENSIONS ARE IN MM, COORDINATES AND ELEVATIONS ARE IN METERS UNLESS OTHERWISE SPECIFIED.
2. REFERENCE EL.100.00M CORRESPONDS TO EL. 91.000M.
3. REFERENCE BENCH MARK (⊕) POINTS IS W.R.T GLOBAL CO-ORDINATES HAVING N-2312910.151 & E-308680.833 (GRID COORDINATES N=000.0M, E=000.0M).
4. SUPPORTS FOR PIPE 1 1/2" & SMALLER IF NOT SHOWN MAY BE SUITABLY DECIDED AT SITE.
5. CONTRACTOR SHALL PHYSICALLY VERIFY THE ROUTING OF PIPE BEFORE PRE FABRICATION.
6. CO-ORDINATES/DIMENSION OF EXISTING EQUIPMENTS/ROADS/UNDERGROUND TO BE VERIFIED.
7. FOR FABRICATION/DIMENSIONS REFER RESPECTED ISOMETRICS.
8. * INDICATES HOLD.

REV.	DATE	DESCRIPTION	PPD.	CHKD.	APPD.
2	16.03.2023	ISSUED	ANL	RKV / NSY	AMAR
1	13.06.2022	ISSUED	ANL	RKV / NSY	AMAR
0	21.02.2022	ISSUED	ANL	RKV / NSY	AMAR
PO	26.10.2021	PRELIMINARY	ANL	RKV / NSY	AMAR

CLIENT :-	M/s. TALCHER FERTILIZER LIMITED	CLIENT DOCUMENT NO.	---
PROJECT :-	TALCHER, ANGUL DISTRICT, ODISHA (INDIA)	PROJ.NO	PLANT
TITLE :-	OSBL PIPE RACK & SLEEPER LAYOUT FOR CIVIL SCOPE	SECTION	DEPT.
		---	---
		DWG NO. :-	PCB3-7911-0665
		SCALE 1:200	DWG NO-SHEET
		SHEET 1 OF 3	82X 118X94

PROJECTS & DEVELOPMENT INDIA LTD.	NOIDA
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FLARE LINES PIPE RACK ELEVATION (3rd TIER)

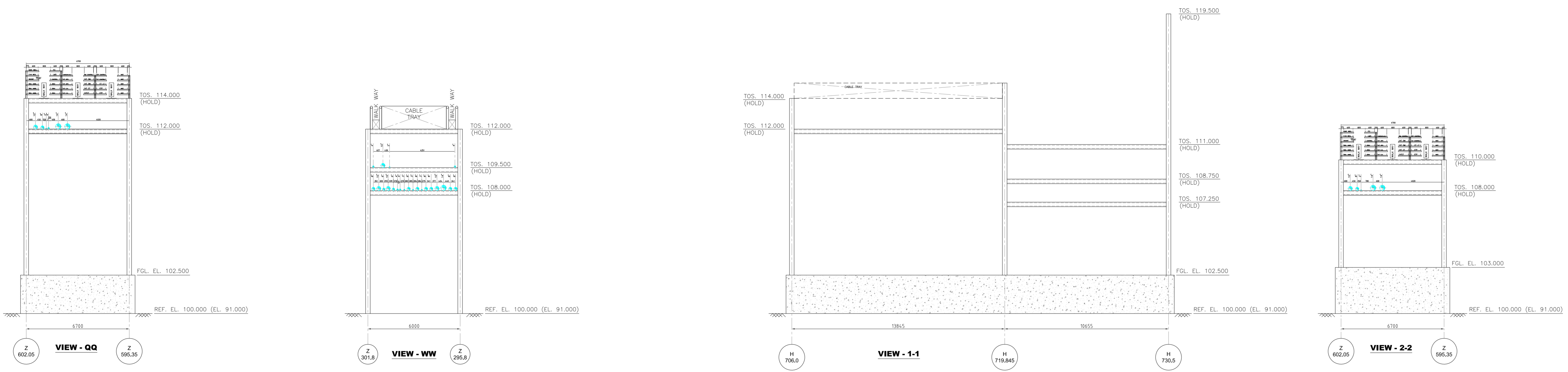
Sl. NO.	NORTHING COORDINATES	3rd TIER ELEVATION
1	Z - 1274.000 TO Z - 1112.200	110700
2	Z - 1092.500 TO Z - 1058.200	114000
3	Z - 1052.300 TO Z - 1044.300	114400
4	Z - 1038.300 TO Z - 1012.200	114400
5	Z - 1006.200 TO Z - 928.700	114200
6	Z - 922.700 TO Z - 843.200	114000
7	Z - 827.000 TO Z - 765.500	113800
8	Z - 759.500 TO Z - 693.500	113600
9	Z - 675.500 TO Z - 604.250	113400
10	Z - 595.350 TO Z - 574.000	111000
11	Z - 568.000 TO Z - 522.000	111000
12	Z - 516.000 TO Z - 443.350	110800
13	Z - 426.850 TO Z - 366.600	110600
14	Z - 348.600 TO Z - 266.200	110400
15	Z - 260.200 TO Z - 208.000	110250

FLARE LINES PIPE RACK ELEVATION (1st TIER)

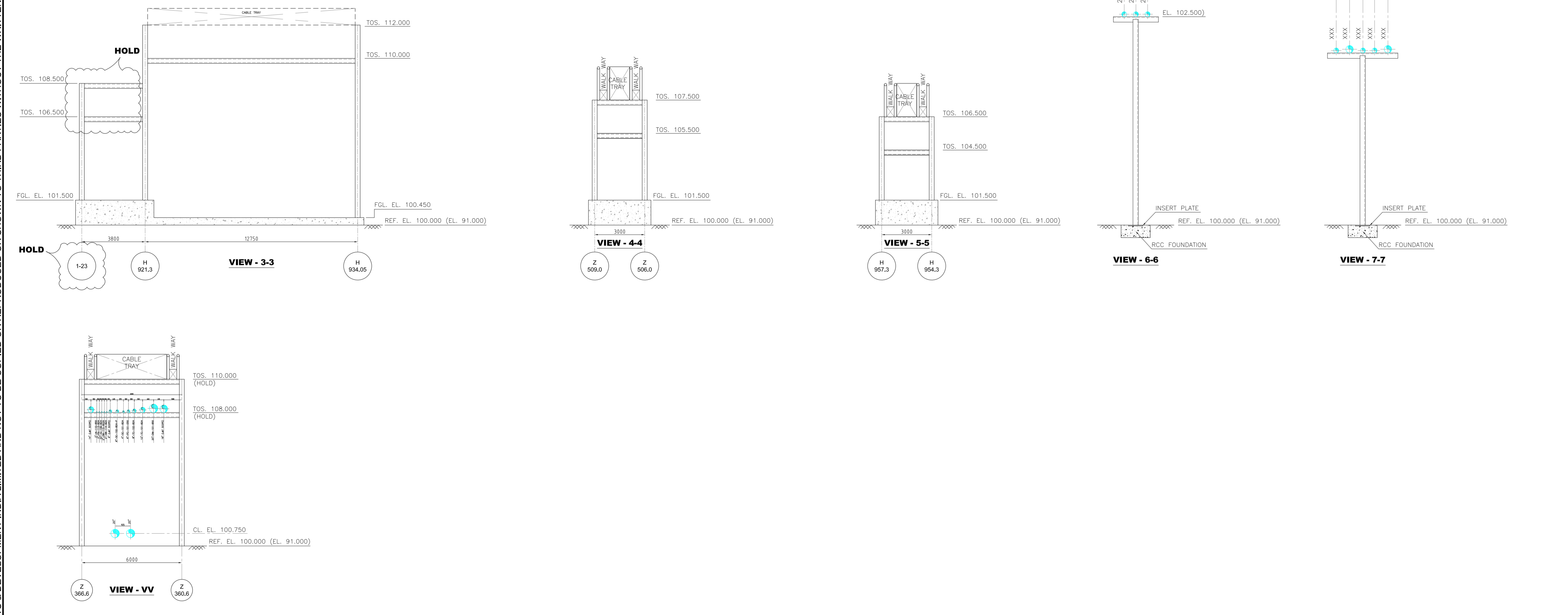
Sl. NO.	NORTHING COORDINATES	1st TIER ELEVATION
1	H - 740.500 TO H - 782.500	110150
2	H - 800.500 TO H - 848.500	109950

- NOTES :-**
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 - REFERENCE EL.100.000M CORRESPONDS TO EL. 91.000M.
 - CO-ORDINATES HAVING N=2312910.151 & E=308680.833 (GRID COORDINATES N=000.0M, E=000.0M).
 - SUPPORTS FOR PIPE 1 1/2" & SMALLER IF NOT SHOWN MAY BE SUITABLY DECIDED AT SITE.
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 - * INDICATES HOLD.

2	16.03.2023	ISSUED	ANL	RKV / NSY	AMAR
1	13.06.2022	ISSUED	ANL	RKV / NSY	AMAR
0	21.02.2022	ISSUED	ANL	RKV / NSY	AMAR
PO	26.10.2021	PRELIMINARY	ANL	RKV / NSY	AMAR
REV.	DATE	DESCRIPTION	PPD.	CHKD.	APPD.
CLIENT :-			CLIENT DOCUMENT NO. :-		
PROJECT :-			PROJECT NO. PLANT SECTION DEPT.		
TITLE :-			DWG NO. : PDI183-7511-0865		
PROJECTS & DEVELOPMENT INDIA LTD.			SCALE :- DWG NO-SHEET		
NOIDA			SHEET: 2 OF 3		



FLARE LINES PIPE RACK ELEVATION (3rd TIER)		
Sl. NO.	NORTHING COORDINATES	3rd TIER ELEVATION
1	Z - 1274.000 TO Z - 1112.200	110700
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1	H - 740.500 TO H - 782.500	110150
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2	16.03.2023	ISSUED	ANL	RKV / NSY	AMAR
1	13.06.2022	ISSUED	ANL	RKV / NSY	AMAR
0	21.02.2022	ISSUED	ANL	RKV / NSY	AMAR
PO	26.10.2021	PRELIMINARY	ANL	RKV / NSY	AMAR
REV.	DATE	DESCRIPTION	PPD.	CHKD.	APPD.
CLIENT :-			CLIENT DOCUMENT NO.		
M/s. TALCHER FERTILIZER LIMITED			---		
PROJECT :-			PROJ.NO	PLANT	SECTION
TALCHER, ANGUL DISTRICT, ODISHA (INDIA)			---	---	---
TITLE :-			DWG NO. :	---	
OSBL PIPE RACK & SLEEPER LAYOUT FOR CIVIL SCOPE			PC183-7811-0805	---	
			SCALE :-	DWG NO-SHEET	---
			SHEET: 3 OF 3	SIZE	1189X841
PROJECTS & DEVELOPMENT INDIA LTD. NOIDA					

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	PROJECTS & DEVELOPMENT INDIA LTD	TFL-PDS-600	5
		DOCUMENT NO	REV


PIPING MATERIAL SPECIFICATION
AMMONIA UREA COAL BASED FERTILIZER PROJECT.
TALCHER FERTILIZER LTD., ODISHA.

5	22.02.2022	22.02.2022	ISSUED FOR USE	NAZ	NS	GL/HOD
4	12.10.2021	12.10.2021	ISSUED FOR COMMENT	NAZ	NS/RK	GL/HOD
3	03.02.2021	03.02.2021	ISSUED FOR COMMENT	VINEETA	NS/RK	GL/HOD
2	28.12.2020	28.12.2020	ISSUED FOR COMMENT	VINEETA	NS/RK	GL/HOD
1	25.15.2020	28.12.2017	ISSUED	VINEETA	NS/RK	GL/HOD
0	09.03.2020	09.03.2020	ISSUED	VINEETA	NS/RK	GL/HOD
REV	REV DATE	EFF DATE	PURPOSE	PREPD	REVWD	APPD

	PROJECTS & DEVELOPMENT INDIA LTD	TFL-PDS-600	0
		DOCUMENT NO	REV

CONTENTS

- **Service Index**
- **Piping Element Data Sheets**
- **Branch Tables**
- **Valve Data Sheets**
- **Strainer Data sheets**
- **Other Standards**

		Service Index (SI) of Piping Material Classes		TFL-PDS-600		5
				DOCUMENT NO.		REV. NO.
SL.NO.	PMC	SERVICE	RATING, FACE ,D.TEMP.	BASIC MATERIAL	CORROSION ALLOW. (MIN.)	REV. NO.
1	B14	AG,AL,FG	CLASS 150, RF,250°C Max, -33°C Min.	LTCS	1.5 MM	1
2	B20	CW (UG)	CLASS 150, RF, 70°C Max	CS	1.5MM	1
3	B22G	DW	CLASS 150, RF, 70°C Max	CS (GALV)	1.5MM	1
4	B22IS	CONST.WATER	CLASS 150, FF, 80°C Max	CS	1.5 MM	1
5	B22ISG	FW	CLASS 150, FF, 80°C Max	CS (GALV)	1.5 MM	0
6	B24	BD,CW,CWS,CWR,DO,ES,FG,FN,FO,FW,IAW,NI,,PA,PG,PN,PV,PW,SA,SC,SW,TC,WW.	CLASS 150, RF, 200 °C Max	CS	1.5 MM	1
7	B24D	WASTE EFFLUENT	CLASS 150, FF, 50°C Max	HDPE	0.0 MM	0
8	B24FL	EFFLUENT,ACIDIC H2O ETC.	CLASS 150, FF, 80°C Max	CS FRP LINED	1.5 MM	0
9	B24G	FW	CLASS 150, FF, 200 °C Max	CS (GALV)	1.5 MM	0
10	B24P	ETP	CLASS 150, FF, 80°C Max	CPVC	0.0 MM	0
11	B24RL	EFFLUENT, WASTE H2O, CHLORINATED H2O	CLASS 150, FF, 80°C Max	CSRL	1.5 MM	0
12	B24S	SL,SC (IBR)	CLASS 150, RF, 240°C Max	CS	1.5 MM	0
13	B24Z	FLARE	CLASS 150, RF, 400 °C Max	CS	3.0 MM	1
14	B40	CD,FG,HG,PA,PC	CLASS 150, RF,150°C Max	304L SS	0.0 MM	0
15	B50	AF, AW, CD, DW, HZ, IA, MDA, PC, PH, VS	CLASS 150, RF,150°C Max	304 SS	0.0 MM	1
16	B52	UL, WET ACID FLARE GAS	CLASS 150, RF,150°C Max	316L SS	0.0 MM	2
17	D14	AG,AL,FG	CLASS 300, RF,70°C Max, -35°C Min.	LTCS	1.5 MM	1
18	D24	AG,AL,AW,FG,FN,HG,IAH,IAW, PA	CLASS 300, RF,280°C Max	CS	1.5 MM	0
19	D50	AW,PH,PC	CLASS 300, RF,200°C Max	304 SS	0.0 MM	0
20	D52	UL	CLASS 300, RF,150°C Max	316L SS	0.0 MM	2
21	F24	AW,HG,PA,PC,PN,SG	CLASS 600, RF,425°C Max	CS	1.5 MM	0
22	F24S	BB,BF,SC,SM	CLASS 600, RF,425°C Max	CS(IBR)	1.5 MM	0
23	H24S	BB,BF,SC,SH	CLASS 1500, RJ,340°C Max	CS(IBR)	1.5MM	0
24	J36S	SC,SH	CLASS 2500, RJ,540°C Max	AS(IBR)	1.5 MM	1

Abbrev. Service
AF Antifoam solution
AG Ammonia Gaseous
AL/LA Ammonia Liquid
AW Ammonia water
BB Boiler BlowDown
BD Blow Down
BF Boiler feed water
CD CO2/Steam mixture
CW Cooling water
CWS Cooling water supply
CWR Cooling water return
DM DM water
DW Drinking Water

DO Diesel Oil
ES Exhaust steam
FG Fuel gas
FO Fuel oil
FN Fuel Naphtha
FW Fire Water
HC Mixed Hydrocarbons
HG Hydrogen Gas
HZ Hydrazine
IA Instrument air
IAH Instrument air(High pressure)
IAW Instrument air(Wet)
IG Inert gas
NG Natural gas
NI Nitrogen
PA Process Air
PC Process condensate
PG Process Gas

Abbrev. Service
PH Phosphate Solution
PN Process Nephtha
PV Vent gas
PW Process Water
SA service air
SC Steam condensate
SG Synthesis Gas
SH/HPS/HP High Pressure Steam
SL/LP/LPS LP Steam
SM/MPS Medium Pressure Steam
SW Service water
TC Turbine Condensate
UL Urea solutions handling

WW Waste Water

**PIPING MATERIAL SPECIFICATION**

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project ..TFL
 DOC. No.TFL-PDS-600
 Rev.:2

Class: B14

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE AG,AL,FG	TEMPERATURE LIMITS (Deg.C)						
	Ref.SI	Ref.SI					
RATING ASME 150# RF	CORROSION ALLOWANCE 1.5 MM(MIN.)	MATERIAL LT CS					
ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
PIPE							
PIPE		2 - 21/2	SCH 40	BE	SMLS,ASTM A333 GR.6,ASME B36.10,	PPP611300	
PIPE		3 - 4	SCH 40	BE	SMLS,ASTM A333 GR.6,ASME B36.10,	PPP611300	
PIPE		5 - 6	SCH 40	BE	SMLS,ASTM A333 GR.6,ASME B36.10,	PPP611300	
PIPE		8 - 10	SCH 20	BE	SMLS,ASTM A333 GR.6,ASME B36.10,	PPP611300	
PIPE		12 - 12	SCH 20	BE	SMLS,ASTM A333 GR.6,ASME B36.10,	PPP611300	
PIPE		14 - 16	SCH 10	BE	SMLS,ASTM A333 GR.6,ASME B36.10,	PPP611300	
PIPE		1/2 - 3/4	SCH 80	PE	SMLS,ASTM A333 GR.6,ASME B36.10,	PPP621300	
PIPE		1 - 11/4	SCH 80	PE	SMLS,ASTM A333 GR.6,ASME B36.10,	PPP621300	
PIPE		11/2 - 11/2	SCH 80	PE	SMLS,ASTM A333 GR.6,ASME B36.10,	PPP621300	
PIPE		18 - 20	SCH 10	BE	SMLS,ASTM A333 GR.6,ASME B36.10,	PPP611300	
PIPE		22 - 24	SCHSTD	BE	SMLS,ASTM A333 GR.6,ASME B36.10,	PPP611300	
PIPE		42 - 42	SCH XS	BE	EFW,ASTM A671 GR.CC60.CL32,ASME B36.10,	PP0111300	
FLANGE							
LONG W.N.FLANGE		1 - 1	300#	WN-RF 125 AARH	ASTM A350 LF2 CL.1,ASME B16.5,24mmBORE,200mmLONG	LN3570802	
W.N.FLANGE		1/2 - 24	150#	WN-RF 125 AARH	ASTM A350 LF2 CL.1,ASME B16.5,WELD NECK	WN3570801	5
W.N.FLANGE		1/2 - 24	300#	WN-RF 125 AARH	ASTM A350 LF2 CL.1,ASME B16.5,WELD NECK	WN3570802	6
SPACER AND BLIND		14 - 24	150#	RF 125 AARH	ASTM A350 LF2 CL.1,ASME B16.48,	RS352PO01	
SPECL BLIND		1/2 - 12	150#	RF 125 AARH	ASTM A350 LF2 CL.1,ASME B16.48,	SP352PO01	
BLIND FLANGE							
BLIND FLANGE		1/2 - 24	150#	RF 125 AARH	ASTM A350 LF2 CL.1,ASME B16.5,	BF3520801	
GASKET							
GASKET		1/2 - 24	150#	SPRL-WND RF	TP304 SS WDG;GPH FLR;TP304 SS INR RNG;CS OTR RNG,ASME B16.20,	GSQN30301	
STUD & NUTS							
STUD & 2NUTS HVY		-			ASTM A320 GR.L7/ASTM A194 GR.7.,	SNDA00000	
HEX							
FITTING (BW)							
BRANCH WELD WITH RP		2 - 24		BW	LT CARBON STEEL,ASME B31.3,	WBE211200	
CAP		2 - 24		BW	ASTM A420 WPL6-SMLS,ASME B16.9,	CP4910900	
ELBOW		2 - 24		BW	ASTM A420 WPL6-SMLS,ASME B16.9,	EL4910900	
ELBOW		42 - 42		BW	ASTM A420 WPL6-WLDD,ASME B16.9,	ELO310900	
REDUCER CONC.		2 - 24		BW	ASTM A420 WPL6-SMLS,ASME B16.9,	RC4910900	
REDUCER ECC.		2 - 24		BW	ASTM A420 WPL6-SMLS,ASME B16.9,	RE4910900	
TEE		2 - 24		BW	ASTM A420 WPL6-SMLS,ASME B16.9,	TE4910900	
TEE		42 - 42		BW	ASTM A420 WPL6-WLDD,ASME B16.9,	TEO310900	
WELDOLET		2 - 24		BW	ASTM A350 LF2 CL.1,MSS SP 97,	WL3513300	
FITTING (SW)							
CAP		1/2 - 11/2	3000#	SOCW	ASTM A350 LF2 CL.1,ASME B16.11,	CP3530207	W
COUPLING		1/2 - 11/2	3000#	SOCW	ASTM A350 LF2 CL.1,ASME B16.11,	CN3530207	
ELBOW		1/2 - 11/2	3000#	SOCW	ASTM A350 LF2 CL.1,ASME B16.11,	EL3530207	
HALF COUPLING		1/2 - 11/2	3000#	SOCW	ASTM A350 LF2 CL.1,ASME B16.11,	HF3530207	W
SOCKOLET		1/2 - 24	3000#	SOCW	ASTM A350 LF2 CL.1,MSS SP 97,	SL3533307	
TEE		1/2 - 11/2	3000#	SOCW	ASTM A350 LF2 CL.1,ASME B16.11,	TE3530207	
FITTING (THD)							
CAP		1/2 - 11/2	3000#	THD	ASTM A350 LF2 CL.1,ASME B16.11,	CP3540207	T
HALF COUPLING		1/2 - 11/2	3000#	THD	ASTM A350 LF2 CL.1,ASME B16.11,	HF3540207	T
PLUG		1/2 - 11/2		THD	ASTM A350 LF2 CL.1,ASME B16.11,ROUND HEAD	PG3540200	
THREDOLET		1/2 - 24	3000#	THD	ASTM A350 LF2 CL.1,MSS SP 97,	TL3543307	
NIPPLE							
NIPPLE		1/2 - 11/2	SCH160	PLN-PLN	SMLS,ASTM A333 GR.6,ASME B36.10,	NPP651312	1
NIPPLE		1/2 - 11/2	SCH160	PLN-THD	SMLS,ASTM A333 GR.6,ASME B36.10,NPT	NPP661312	2



PIPING MATERIAL SPECIFICATION

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project :TFL
 DOC. No.TFL-PDS-600
 Rev.:2

Class: B14

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE AG,AL,FG	TEMPERATURE LIMITS (Deg.C)			
	Ref.SI	Ref.SI		
RATING ASME 150# RF	CORROSION ALLOWANCE 1.5 MM(MIN.)	MATERIAL LT CS		

ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
NIPPLE		1/2 - 1 1/2	SCH160	THD	SMLS,ASTM A333 GR.6,ASME B36.10,NPT	NPP641312	3
SWAGE NIPPLE							
SWAGE (CONC)		1/2 - 1 1/2		PE	ASTM A420 WPL6-SMLS.MSS SP 95,	NC49J4500	
SWAGE (ECC)		1/2 - 1 1/2		PE	ASTM A420 WPL6-SMLS.MSS SP 95,	NE49J4500	
VALVES							
GATE VALVE		1/2 - 1 1/2	800#	SOCW	LTCS BODY ASTM A350 GR LF2,GAV101,	GAV101	W
GATE VALVE		1/2 - 1 1/2	150#	FLG	LTCS BODY ASTM A352 GR LCB,GAV110,	GAV110	F
GATE VALVE		2 - 24	150#	FLG	LTCS BODY ASTM A352 GR LCB,GAV110,	GAV110	
GLOBE VALVE		1/2 - 1 1/2	800#	SOCW	LTCS BODY ASTM A350 GR LF2,GLV101,	GLV101	W
GLOBE VALVE		2 - 8	150#	FLG	LTCS BODY ASTM A352 GR LCB,GLV110,	GLV110	
GLOBE VALVE		1/2 - 1 1/2	150#	FLG	LTCS BODY ASTM A352 GR LCB,GLV110,	GLV110	F
CHECK VALVE		1/2 - 1 1/2	800#	SOCW	LTCS BODY ASTM A350 GR LF2,CHV101,	CHV101	
CHECK VALVE		2 - 24	150#	FLG	LTCS BODY ASTM A352 GR LCB,CHV110,	CHV110	
BALL VALVE		1/2 - 1 1/2	800#	SOCW	LTCS BODY ASTM A350 GR LF2,BAV101,	BAV101	W
BALL VALVE		1/2 - 1 1/2	150#	FLG	LTCS BODY ASTM A352 GR LCB,BAV110,	BAV110	F
BALL VALVE		2 - 24	150#	FLG	LTCS BODY ASTM A352 GR LCB,BAV110,	BAV110	
BUTTERFLY VALVE		2 - 24	150#	FLG	LTCS BODY ASTM A352 GR LCB,BUV101,	BUV101	

**PIPING MATERIAL SPECIFICATION**

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project ..TFL
 DOC. No.TFL-PDS-600
 Rev.:1

Class: B20

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE CW(UG)	TEMPERATURE LIMITS (Deg.C)			
	Ref.SI	Ref.SI		
RATING ASME 150# RF	CORROSION ALLOWANCE 1.5 MM(MIN.)	MATERIAL CS		

ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
PIPE							
PIPE		2 - 6	SCH 40	BE	SMLS,API 5L GR.B,C&W,ASME B36.10,	PPX111300	
PIPE		40 - 42	10.00 MM	BE	LSAW,IS 3589 GR.FE410 C&W,ASME B36.10,	PPQW11300	
PIPE		44 - 46	10.00 MM	BE	LSAW,IS 3589 GR.FE410 C&W,ASME B36.10,	PPQW11300	
PIPE		48 - 48	10.00 MM	BE	LSAW,IS 3589 GR.FE410 C&W,ASME B36.10,	PPQW11300	
PIPE		8 - 10	SCH 10	BE	ERW,API 5L GR.B,C&W,ASME B36.10,	PPX411300	
PIPE		12 - 14	SCH 10	BE	ERW,API 5L GR.B,C&W,ASME B36.10,	PPX411300	
PIPE		16 - 18	SCH 10	BE	LSAW,API 5L GR.B,C&W,ASME B36.10,	PP1A11300	
PIPE		20 - 24	SCH 10	BE	LSAW,API 5L GR.B,C&W,ASME B36.10,	PP1A11300	
PIPE		1/2 - 3/4	SCH 80	PE	SMLS,API 5L GR.B,C&W,ASME B36.10,	PPX121300	
PIPE		1 - 1 1/4	SCH 80	PE	SMLS,API 5L GR.B,C&W,ASME B36.10,	PPX121300	
PIPE		1 1/2 - 1 1/2	SCH 80	PE	SMLS,API 5L GR.B,C&W,ASME B36.10,	PPX121300	
PIPE		26 - 28	08.00 MM	BE	LSAW,IS 3589 GR.FE410 C&W,ASME B36.10,	PPQW11300	
PIPE		30 - 32	08.00 MM	BE	LSAW,IS 3589 GR.FE410 C&W,ASME B36.10,	PPQW11300	
PIPE		34 - 36	08.00 MM	BE	LSAW,IS 3589 GR.FE410 C&W,ASME B36.10,	PPQW11300	
PIPE		38 - 38	08.00 MM	BE	LSAW,IS 3589 GR.FE410 C&W,ASME B36.10,	PPQW11300	
PIPE		52 - 54	12.00 MM	BE	LSAW,IS 3589 GR.FE410 C&W,ASME B36.10,	PPQW11300	
PIPE		56 - 58	12.00 MM	BE	LSAW,IS 3589 GR.FE410 C&W,ASME B36.10,	PPQW11300	
PIPE		60 - 62	12.00 MM	BE	LSAW,IS 3589 GR.FE410 C&W,ASME B36.10,	PPQW11300	
PIPE		64 - 66	12.00 MM	BE	LSAW,IS 3589 GR.FE410 C&W,ASME B36.10,	PPQW11300	
PIPE		68 - 70	14.00 MM	BE	LSAW,IS 3589 GR.FE410 C&W,ASME B36.10,	PPQW11300	
PIPE		72 - 72	14.00 MM	BE	LSAW,IS 3589 GR.FE410 C&W,ASME B36.10,	PPQW11300	
FLANGE							
FLANGE		1/2 - 24	150#	SO-RF 125 AARH	CS ASTM A105,ASME B16.5,SLIP ON	FL0260801	
FLANGE		26 - 72	150#	SO-FF	IS2062 GR.B,AWWA C207-D,RING TYPE,SLIP ON	FLA452701	
SPACER AND BLIND		14 - 24	150#	RF 125 AARH	CS ASTM A105,ASME B16.48,	RS022P001	
SPECL BLIND		1/2 - 12	150#	RF 125 AARH	CS ASTM A105,ASME B16.48,	SP022P001	
BLIND FLANGE							
BLIND FLANGE		1/2 - 24	150#	RF 125 AARH	CS ASTM A105,ASME B16.5,	BF0220801	
BLIND FLANGE		26 - 72	150#	FF	IS2062 GR.B,AWWA C207-D,	BFA412701	
GASKET							
GASKET		1/2 - 24	150#	SPRL-WND RF	TP304 SS WDG,GPH FLR;TP304 SS INR RNG;CS OTR RNG,ASME B16.20,	GSQN30301	
GASKET		26 - 72	150#	3.0 MM THK FF	GSKT FLAT RNG,GARLOCK 3000(SYN FBR W/NBR BDR),ASME B16.21/AWWA C207-D,RING TYPE	GSTO8QS01	
STUD & NUTS							
STUD & 2NUTS HVY		-			ASTM A193 GR.B7/ASTM A194 GR.2H,,	SNDE00000	
HEX							
FITTING (BW)							
BRANCH WELD		2 - 48		BW	CARBON STEEL,ASME B31.3,	RWOJ11200	
BRANCH WELD WITH RP		2 - 48		BW	CARBON STEEL,ASME B31.3,	WBOJ11200	
CAP		2 - 24		BW	ASTM A234 WPB-SMLS,ASME B16.9,	CP7310900	
ELBOW		8 - 24		BW	ASTM A234 WPB-WLDD,ASME B16.9,	ELOY10900	
ELBOW		2 - 6		BW	ASTM A234 WPB-SMLS,ASME B16.9,	EL7310900	
ELBOW		26 - 48		BW	IS2062 GR.B,ASME B16.9,	ELA410900	
REDUCER CONC.		2 - 6		BW	ASTM A234 WPB-SMLS,ASME B16.9,	RC7310900	
REDUCER CONC.		8 - 24		BW	ASTM A234 WPB-WLDD,ASME B16.9,	RCOY10900	
REDUCER CONC.		26 - 48		BW	IS2062 GR.B,ASME B16.9,	RCA410900	
REDUCER ECC.		2 - 6		BW	ASTM A234 WPB-SMLS,ASME B16.9,	RE7310900	
REDUCER ECC.		8 - 24		BW	ASTM A234 WPB-WLDD,ASME B16.9,	REOY10900	
REDUCER ECC.		26 - 48		BW	IS2062 GR.B,ASME B16.9,	REA410900	



PIPING MATERIAL SPECIFICATION

CLIENT : M/S..TFL
PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
LOCATION : TALCHER,ODISHA

Project :TFL
DOC. No.TFL-PDS-600
Rev.:1

Class: B20

PROJECTS AND DEVELOPMENT INDIA LIMITED

Table with columns: SERVICE CW(UG), TEMPERATURE LIMITS (Deg.C), Ref.SI, Ref.SI

Table with columns: RATING ASME 150# RF, CORROSION ALLOWANCE 1.5 MM(MIN.), MATERIAL CS

Main table with columns: ITEM, NOTES, SIZE (NPS), SCH/ RAT, END, DESCRIPTION, COMM CODE, SPCL REV. Includes sections for FITTING (SW), FITTING (THD), NIPPLE, SWAGE NIPPLE, and VALVES.

**PIPING MATERIAL SPECIFICATION**

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project ..TFL
 DOC. No.TFL-PDS-600
 Rev.:2


Class: B22G

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE DW,AIR	TEMPERATURE LIMITS (Deg.C)						
	Ref.SI	Ref.SI					
RATING ASME 150# THD	CORROSION ALLOWANCE 1.5 MM(MIN.)		MATERIAL CS(GALVANISED)				
ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
PIPE							
PIPE		1/2 - 3/4	SCH XS	THD	SMLS,ASTM A106 GR.B,HOT DIP GALV.,ASME B36.10,	PPAC31300	
PIPE		1 - 1 1/4	SCH XS	THD	SMLS,ASTM A106 GR.B,HOT DIP GALV.,ASME B36.10,	PPAC31300	
PIPE		1 1/2 - 2	SCH XS	THD	SMLS,ASTM A106 GR.B,HOT DIP GALV.,ASME B36.10,	PPAC31300	
PIPE		2 1/2 - 3	SCHSTD	THD	SMLS,ASTM A106 GR.B,HOT DIP GALV.,ASME B36.10,	PPAC31300	
PIPE		4 - 4	SCHSTD	THD	SMLS,ASTM A106 GR.B,HOT DIP GALV.,ASME B36.10,	PPAC31300	
PIPE		6 - 8	SCHSTD	BE	SMLS,ASTM A106 GR.B,HOT DIP GALV.,ASME B36.10,	PPAC11300	
FLANGE							
FLANGE		1/2 - 4	150#	THD-RF 125 AARH	ASTM A105 HOT DIP GALV.,ASME B16.5,	FLFDK0801	
W.N.FLANGE		6 - 8	150#	WN-RF 125 AARH	ASTM A105 HOT DIP GALV.,ASME B16.5,	WNFD70801	
SPECL BLIND		1/2 - 8	150#	THD-RF 125 AARH	ASTM A105 HOT DIP GALV.,ASME B16.48,	SPFDKPO01	
BLIND FLANGE							
BLIND FLANGE		1/2 - 8	150#	RF 125 AARH	ASTM A105 HOT DIP GALV.,ASME B16.5,	BFFD20801	
GASKET							
GASKET		6 - 8	150#	SPRL-WND RF	TP304 SS WDG;GPH FLR;TP304 SS INR RNG;CS OTR RNG,ASME B16.20,	GSQN30301	
GASKET		1/2 - 4	150#	3.0 MM THK RF	BUTYL RUBBER,ASME B16.21,	GS6720401	
STUD & NUTS							
STUD & 2NUTS HVY		-			ASTM A193GR.B7/A194GR.2H,HOT DIP GALV.,,	SNZC00000	
HEX							
FITTING (BW)							
CAP		6 - 8		BW	ASTM A234 WPB-SMLS,HOT DIP GALV.,ASME B16.9,	CPPD10900	
ELBOW		6 - 8		BW	ASTM A234 WPB-SMLS,HOT DIP GALV.,ASME B16.9,	ELPD10900	
REDUCER CONC.		6 - 8		BW	ASTM A234 WPB-SMLS,HOT DIP GALV.,ASME B16.9,	RCPD10900	
REDUCER ECC.		6 - 8		BW	ASTM A234 WPB-SMLS,HOT DIP GALV.,ASME B16.9,	REPD10900	
TEE		6 - 8		BW	ASTM A234 WPB-SMLS,HOT DIP GALV.,ASME B16.9,	TEPD10900	
WELDOLET		6 - 8		BW	ASTM A105 HOT DIP GALV.,MSS SP 97,	WLF13300	
FITTING (THD)							
CAP		1/2 - 4	3000#	THD	ASTM A105 HOT DIP GALV.,ASME B16.11,	CPFD40207	
COUPLING		1/2 - 1 1/2	3000#	THD	ASTM A105 HOT DIP GALV.,ASME B16.11,	CNFD40207	
ELBOW		1/2 - 4	3000#	THD	ASTM A105 HOT DIP GALV.,ASME B16.11,	ELFD40207	
HALF COUPLING		1/2 - 1 1/2	3000#	THD	ASTM A105 HOT DIP GALV.,ASME B16.11,	HFFD40207	
PLUG		1/2 - 1 1/2		THD	ASTM A105 HOT DIP GALV.,ASME B16.11,ROUND HEAD	PGFD40200	
REDUCER CONC.		2 - 4		THD	ASTM A105 HOT DIP GALV.,ASME B16.11,	RCFD40200	
REDUCER ECC.		2 - 4		THD	ASTM A105 HOT DIP GALV.,ASME B16.11,	REFD40200	
TEE		1/2 - 4	3000#	THD	ASTM A105 HOT DIP GALV.,ASME B16.11,	TEFD40207	
THREDOLET		1/2 - 1 1/2	3000#	THD	ASTM A105 HOT DIP GALV.,MSS SP 97,	TLFD43307	
NIPPLE							
NIPPLE		1/2 - 12		THD	SMLS,ASTM A106 GR.B,HOT DIP GALV.,ASME B36.10,NPT	NPAC41344	
SWAGE NIPPLE							
SWAGE (CONC)		1/2 - 1 1/2		THD	ASTM A105 HOT DIP GALV.,MSS SP 95,	NCFD44500	
SWAGE (ECC)		1/2 - 1 1/2		THD	ASTM A105 HOT DIP GALV.,MSS SP 95,	NEFD44500	
VALVES							
GATE VALVE		2 - 8	150#	FLG	CS BODY ASTM A216 GR WCB,GAV210,	GAV210	
GATE VALVE		1/2 - 1 1/2	800#	THRD	CS BODY ASTM A105,GAV207,	GAV207	
CHECK VALVE		1/2 - 1 1/2	800#	THRD	CS BODY ASTM A105,CHV207,	CHV207	
CHECK VALVE		2 - 8	150#	FLG	CS BODY ASTM A216 GR WCB,CHV210,	CHV210	
BUTTERFLY VALVE		2 - 8	150#	RF	CS BODY ASTM A216 GR WCB,BUV203,LUG TYPE	BUV203	
PLUG VALVE		2 - 8	150#	FLG	CS BODY ASTM A216 GR WCB,PLV202,	PLV202	

Note : 1. Hot Dip Galvanizing shall be done in accordance with ASTM A53 for Pipes & ASTM A153 for flanged & fittings.

2.Surface where Galvanizing has been burnt off during welding etc. shall be wire brushed ,zinc coated or cold galvanized.

 PIPING MATERIAL SPECIFICATION		CLIENT : M/S..TFL PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT. LOCATION : TALCHER,ODISHA			Project ..TFL DOC. No.TFL-PDS-600 Rev.:1		
Class: B22IS		PROJECTS AND DEVELOPMENT INDIA LIMITED					
SERVICE CONSTRUCTION WATER		TEMPERATURE LIMITS (Deg.C) Ref.SI Ref.SI					
RATING ASME 150# RF	CORROSION ALLOWANCE 1.5 MM(MIN.)	MATERIAL CS					
ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
PIPE							
PIPE		2 - 2 1/2	04.50 MM	BE	SMLS,IS1239 BLACK,IS 1239 PART I,HVY	PPD512600	
PIPE		3 - 3	4.80 MM	BE	SMLS,IS1239 BLACK,IS 1239 PART I,HVY	PPD512600	
PIPE		4 - 5	05.40 MM	BE	SMLS,IS1239 BLACK,IS 1239 PART I,HVY	PPD512600	
PIPE		6 - 6	05.40 MM	BE	SMLS,IS1239 BLACK,IS 1239 PART I,HVY	PPD512600	
PIPE		1/2 - 3/4	3.20 MM	PE	SMLS,IS1239 BLACK,IS 1239 PART I,HVY	PPD522600	
PIPE		1 - 1 1/4	04.00 MM	PE	SMLS,IS1239 BLACK,IS 1239 PART I,HVY	PPD522600	
PIPE		1 1/2 - 1 1/2	04.00 MM	PE	SMLS,IS1239 BLACK,IS 1239 PART I,HVY	PPD522600	
PIPE		8 - 10	6.30 MM	BE	ERW,IS 3589 GR.FE410,IS 3589,	PP521PK00	
PIPE		12 - 14	6.30 MM	BE	ERW,IS 3589 GR.FE410,IS 3589,	PP521PK00	
PIPE		16 - 18	6.30 MM	BE	LSAW,IS 3589 GR.FE410,IS 3589,	PPT11PK00	
PIPE		20 - 20	6.30 MM	BE	LSAW,IS 3589 GR.FE410,IS 3589,	PPT11PK00	
PIPE		22 - 24	08.00 MM	BE	LSAW,IS 3589 GR.FE410,IS 3589,	PPT11PK00	
PIPE		26 - 28	08.00 MM	BE	LSAW,IS 3589 GR.FE410,IS 3589,	PPT11PK00	
PIPE		30 - 30	08.00 MM	BE	LSAW,IS 3589 GR.FE410,IS 3589,	PPT11PK00	
PIPE		32 - 34	10.00 MM	BE	LSAW,IS 3589 GR.FE410,IS 3589,	PPT11PK00	
PIPE		36 - 38	10.00 MM	BE	LSAW,IS 3589 GR.FE410,IS 3589,	PPT11PK00	
PIPE		40 - 42	12.00 MM	BE	LSAW,IS 3589 GR.FE410,IS 3589,	PPT11PK00	
PIPE		44 - 46	12.00 MM	BE	LSAW,IS 3589 GR.FE410,IS 3589,	PPT11PK00	
PIPE		48 - 48	12.00 MM	BE	LSAW,IS 3589 GR.FE410,IS 3589,	PPT11PK00	
FLANGE							
FLANGE		1/2 - 1 1/2	150#	SW-RF 125 AARH	CS ASTM A105,ASME B16.5,	FL02L0801	
FLANGE		2 - 24	150#	SO-RF 125 AARH	CS ASTM A105,ASME B16.5,SLIP ON	FL0260801	1
FLANGE		26 - 48	150#	SO-FF	IS2062 GR.B,AWWA C207-D,RING TYPE,SLIP ON	FLA452701	C
LONG W.N.FLANGE		1 1/2 - 1 1/2	300#	WN-RF 125 AARH	CS ASTM A105,ASME B16.5,38mmBORE,200mmLONG	LN0270802	
W.N.FLANGE		26 - 48	150#	WN-RF 125 AARH	CS ASTM A105,ASME B16.47 SR.B,WELD NECK	WN0270701	B
W.N.FLANGE		2 - 24	150#	WN-RF 125 AARH	CS ASTM A105,ASME B16.5,WELD NECK	WN0270801	2
SPACER AND BLIND		14 - 24	150#	RF 125 AARH	CS ASTM A105,ASME B16.48,	RS022P001	
SPECL BLIND		1/2 - 12	150#	RF 125 AARH	CS ASTM A105,ASME B16.48,	SP022P001	
BLIND FLANGE							
BLIND FLANGE		26 - 48	150#	RF 125 AARH	CS ASTM A105,ASME B16.47 SR.B,	BF0220701	
BLIND FLANGE		1/2 - 24	150#	RF 125 AARH	CS ASTM A105,ASME B16.5,	BF0220801	
GASKET							
GASKET		1/2 - 24	150#	SPRL-WND RF	TP304 SS WDG;GPH FLR;TP304 SS INR RNG;CS OTR RNG,ASME B16.20,	GSQN30301	
GASKET		26 - 48	150#	SPRL-WND RF	TP304 SS WDG;GPH FLR;TP304 SS INR RNG;CS OTR RNG,ASME B16.20/B16.47 SR.B,	GSQN3QJ01	9
GASKET		26 - 48	150#	3.0 MM THK FF	GSKT FLAT RNG,GARLOCK 3000(SYN FBR W/NBR BDR),ASME B16.21/AWWA C207-D,RING TYPE	GSTO8QS01	F
STUD & NUTS							
STUD & 2NUTS HVY		-			ASTM A193 GR.B7/ASTM A194 GR.2H,,	SNDE00000	
HEX							
FITTING (BW)							
BRANCH WELD		2 - 48		BW	CARBON STEEL,ASME B31.3,	RWOJ11200	
BRANCH WELD WITH		2 - 48		BW	CARBON STEEL,ASME B31.3,	WBOJ11200	
RP							
CAP		2 - 48		BW	ASTM A234 WPB-SMLS,ASME B16.9,	CP7310900	
ELBOW		2 - 6		BW	ASTM A234 WPB-SMLS,ASME B16.9,	EL7310900	
ELBOW		8 - 48		BW	ASTM A234 WPB-WLDD,ASME B16.9,	ELOY10900	
REDUCER CONC.		2 - 6		BW	ASTM A234 WPB-SMLS,ASME B16.9,	RC7310900	
REDUCER CONC.		8 - 48		BW	ASTM A234 WPB-WLDD,ASME B16.9,	RCOY10900	
REDUCER ECC.		2 - 6		BW	ASTM A234 WPB-SMLS,ASME B16.9,	RE7310900	
REDUCER ECC.		8 - 48		BW	ASTM A234 WPB-WLDD,ASME B16.9,	REOY10900	

**PIPING MATERIAL SPECIFICATION**

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project :TFL
 DOC. No.TFL-PDS-600
 Rev.:1

Class: B22IS

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE		TEMPERATURE LIMITS (Deg.C)					
CONSTRUCTION WATER		Ref.SI	Ref.SI				
RATING ASME	CORROSION ALLOWANCE	MATERIAL					
150# RF	1.5 MM(MIN.)	CS					
ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
TEE		2 - 6		BW	ASTM A234 WPB-SMLS,ASME B16.9,	TE7310900	
TEE		8 - 48		BW	ASTM A234 WPB-WLDD,ASME B16.9,	TEOY10900	
WELDOLET		2 - 48		BW	CS ASTM A105,MSS SP 97,	WL0213300	
FITTING (SW)							
CAP		1/2 - 11/2	3000#	SOCW	CS ASTM A105,ASME B16.11,	CP0230207	W
COUPLING		1/2 - 11/2	3000#	SOCW	CS ASTM A105,ASME B16.11,	CN0230207	
ELBOW		1/2 - 11/2	3000#	SOCW	CS ASTM A105,ASME B16.11,	EL0230207	
SOCKOLET		1/2 - 48	3000#	SOCW	CS ASTM A105,MSS SP 97,	SL0233307	
TEE		1/2 - 11/2	3000#	SOCW	CS ASTM A105,ASME B16.11,	TE0230207	
FITTING (THD)							
CAP		1/2 - 11/2	3000#	THD	CS ASTM A105,ASME B16.11,	CP0240207	T
PLUG		1/2 - 11/2		THD	CS ASTM A105,ASME B16.11,ROUND HEAD	PG0240200	
THREDOLET		1/2 - 48	3000#	THD	CS ASTM A105,MSS SP 97,	TL0243307	
NIPPLE							
NIPPLE		1/2 - 11/2	SCH 80	PLN-PLN	SMLS,IS1239 BLACK,IS 1239 PART I,	NPD552611	1
NIPPLE		1/2 - 11/2	SCH 80	PLN-THD	SMLS,IS1239 BLACK,IS 1239 PART I,NPT	NPD562611	2
NIPPLE		1/2 - 11/2	SCH 80	THD	SMLS,IS1239 BLACK,IS 1239 PART I,NPT	NPD542611	3
SWAGE NIPPLE							
SWAGE (CONC)		1/2 - 11/2		PE	ASTM A234 WPB-SMLS,MSS SP 95,	NC73J4500	P
SWAGE (CONC)		1/2 - 11/2		PLN-THD	ASTM A234 WPB-SMLS,MSS SP 95,	NC7364500	T
SWAGE (ECC)		1/2 - 11/2		PE	ASTM A234 WPB-SMLS,MSS SP 95,	NE73J4500	P
SWAGE (ECC)		1/2 - 11/2		PLN-THD	ASTM A234 WPB-SMLS,MSS SP 95,	NE7364500	T
VALVES							
GATE VALVE		1/2 - 11/2	800#	SOCW	CS BODY ASTM A105,GAV201,	GAV201	W
GATE VALVE		1/2 - 11/2	150#	FLG	CS BODY ASTM A216 GR WCB,GAV210,	GAV210	F
GATE VALVE		2 - 24	150#	FLG	CS BODY ASTM A216 GR WCB,GAV210,	GAV210	
GLOBE VALVE		1/2 - 11/2	800#	SOCW	CS BODY ASTM A105,GLV201,	GLV201	
GLOBE VALVE		2 - 12	150#	FLG	CS BODY ASTM A216 GR WCB,GLV210,	GLV210	
CHECK VALVE		1/2 - 11/2	800#	SOCW	CS BODY ASTM A105,CHV201,	CHV201	
CHECK VALVE		2 - 24	150#	FLG	CS BODY ASTM A216 GR WCB,CHV210,	CHV210	
BALL VALVE		1/2 - 1	800#	SOCW	CS BODY ASTM A105,BAV201,	BAV201	
BALL VALVE		11/2 - 11/2	800#	SOCW	CS BODY ASTM A105,BAV201,	BAV201	W
BALL VALVE		11/2 - 11/2	150#	FLG	CS BODY ASTM A216 GR WCB,BAV210,	BAV210	F
BALL VALVE		2 - 16	150#	FLG	CS BODY ASTM A216 GR WCB,BAV210,	BAV210	
BUTTERFLY VALVE		3 - 24	150#	RF	CS BODY ASTM A216 GR WCB,BUV203,LUG TYPE	BUV203	
PLUG VALVE		1/2 - 1	600#	THRD	CS BODY ASTM A105,PLV201,	PLV201	
PLUG VALVE		11/2 - 24	150#	FLG	CS BODY ASTM A216 GR WCB,PLV202,	PLV202	

**PIPING MATERIAL SPECIFICATION**

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project :TFL
 DOC. No.TFL-PDS-600
 Rev.:1

Class: B22ISG

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE FW	TEMPERATURE LIMITS (Deg.C)			
	Ref.SI	Ref.SI		
RATING ASME 150# THD	CORROSION ALLOWANCE 1.5 MM(MIN.)	MATERIAL CS(GALVANIZED)		

ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
PIPE							
PIPE		1/2 - 3/4	3.20 MM	THD	SMLS,IS1239 GALV.,IS 1239 PART I,HVY	PPDH32600	
PIPE		1 - 11/4	04.00 MM	THD	SMLS,IS1239 GALV.,IS 1239 PART I,HVY	PPDH32600	
PIPE		11/2 - 11/2	04.00 MM	THD	SMLS,IS1239 GALV.,IS 1239 PART I,HVY	PPDH32600	
PIPE		2 - 21/2	04.50 MM	THD	SMLS,IS1239 GALV.,IS 1239 PART I,HVY	PPDH32600	
PIPE		3 - 3	4.80 MM	THD	SMLS,IS1239 GALV.,IS 1239 PART I,HVY	PPDH32600	
PIPE		4 - 5	05.40 MM	THD	SMLS,IS1239 GALV.,IS 1239 PART I,HVY	PPDH32600	
PIPE		6 - 6	05.40 MM	THD	SMLS,IS1239 GALV.,IS 1239 PART I,HVY	PPDH32600	
FLANGE							
FLANGE		1/2 - 6	150#	THD-RF 125 AARH	ASTM A105 HOT DIP GALV.,ASME B16.5,	FLFDK0801	
SPECL BLIND		1/2 - 6	150#	RF 125 AARH	ASTM A105 HOT DIP GALV.,ASME B16.48,	SPFD2P001	
BLIND FLANGE							
BLIND FLANGE		1/2 - 6	150#	RF 125 AARH	ASTM A105 HOT DIP GALV.,ASME B16.5,	BFFD20801	
GASKET							
GASKET		1/2 - 4	150#	3.0 MM THK RF	BUTYL RUBBER,ASME B16.21,	GS6720401	
STUD & NUTS							
STUD & 2NUTS HVY		-			ASTM A193GR.B7/A194GR.2H,HOT DIP GALV.,,	SNZC00000	
HEX							
FITTING (THD)							
CAP		1/2 - 6	3000#	THD	ASTM A105 HOT DIP GALV.,ASME B16.11,	CPFD40207	
COUPLING		1/2 - 6	3000#	THD	ASTM A105 HOT DIP GALV.,ASME B16.11,	CNFD40207	
ELBOW		1/2 - 6	3000#	THD	ASTM A105 HOT DIP GALV.,ASME B16.11,	ELFD40207	
HALF COUPLING		1/2 - 6	3000#	THD	ASTM A105 HOT DIP GALV.,ASME B16.11,	HFFD40207	
PLUG		1/2 - 11/2		THD	ASTM A105 HOT DIP GALV.,ASME B16.11,ROUND HEAD	PGFD40200	
REDUCER CONC.		2 - 6		THD	ASTM A105 HOT DIP GALV.,ASME B16.11,	RCFD40200	
REDUCER ECC.		2 - 6		THD	ASTM A105 HOT DIP GALV.,ASME B16.11,	REFD40200	
TEE		1/2 - 6	3000#	THD	ASTM A105 HOT DIP GALV.,ASME B16.11,	TEFD40207	
THREDOLET		1/2 - 11/2	3000#	THD	ASTM A105 HOT DIP GALV.,MSS SP 97,	TLFD43307	
NIPPLE							
NIPPLE		1/2 - 11/2		THD	SMLS,ASTM A106 GR.B,HOT DIP GALV.,ASME B36.10,NPT	NPAC41344	
SWAGE NIPPLE							
SWAGE (CONC)		1/2 - 11/2		THD	ASTM A105 HOT DIP GALV.,MSS SP 95,	NCFD44500	
SWAGE (ECC)		1/2 - 11/2		THD	ASTM A105 HOT DIP GALV.,MSS SP 95,	NEFD44500	
VALVES							
GATE VALVE		2 - 6	150#	FLG	CS BODY ASTM A216 GR WCB,GAV210,	GAV210	
GATE VALVE		1/2 - 11/2	800#	THRD	CS BODY ASTM A105,GAV207,	GAV207	
CHECK VALVE		1/2 - 11/2	800#	THRD	CS BODY ASTM A105,CHV207,	CHV207	
CHECK VALVE		2 - 6	150#	FLG	CS BODY ASTM A216 GR WCB,CHV210,	CHV210	
BUTTERFLY VALVE		3 - 6	150#	RF	CS BODY ASTM A216 GR WCB,BUV203,LUG TYPE	BUV203	
PLUG VALVE		2 - 6	150#	FLG	CS BODY ASTM A216 GR WCB,PLV202,	PLV202	

Note : 1. Hot Dip Galvanizing shall be done in accordance with ASTM A53 for Pipes & ASTM A153 for flanged & fittings.

2.Surface where Galvanizing has been burnt off during welding etc. shall be wire brushed ,zinc coated or cold galvanized.

**PIPING MATERIAL SPECIFICATION**

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project :TFL
 DOC. No.TFL-PDS-600
 Rev.:1

Class: B24

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE BD,CWS,CWR,DO,ES,FG,FN,FO,FW,IAW,NI,PA,P G ETC	TEMPERATURE LIMITS (Deg.C)			
	Ref.SI	Ref.SI		
RATING ASME 150# RF	CORROSION ALLOWANCE 1.5 MM(MIN.)	MATERIAL CS		

ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
PIPE							
PIPE		2 - 6	SCH 40	BE	SMLS,API 5L GR.B,ASME B36.10,	PPA111300	
PIPE		8 - 10	SCH 20	BE	ERW,API 5L GR.B,ASME B36.10,	PPA211300	
PIPE		12 - 12	SCH 20	BE	ERW,API 5L GR.B,ASME B36.10,	PPA211300	
PIPE		1/2 - 3/4	SCH 80	PE	SMLS,API 5L GR.B,ASME B36.10,	PPA121300	
PIPE		1 - 1 1/4	SCH 80	PE	SMLS,API 5L GR.B,ASME B36.10,	PPA121300	
PIPE		1 1/2 - 1 1/2	SCH 80	PE	SMLS,API 5L GR.B,ASME B36.10,	PPA121300	
PIPE		14 - 14	SCH 10	BE	ERW,API 5L GR.B,ASME B36.10,	PPA211300	
PIPE		16 - 18	SCH 10	BE	LSAW,API 5L GR.B,ASME B36.10,	PP9611300	
PIPE		20 - 20	SCH 10	BE	LSAW,API 5L GR.B,ASME B36.10,	PP9611300	
PIPE		22 - 24	SCHSTD	BE	LSAW,API 5L GR.B,ASME B36.10,	PP9611300	
PIPE		26 - 28	SCHSTD	BE	LSAW,API 5L GR.B,ASME B36.10,	PP9611300	
PIPE		30 - 32	SCHSTD	BE	LSAW,API 5L GR.B,ASME B36.10,	PP9611300	
PIPE		34 - 34	SCHSTD	BE	LSAW,API 5L GR.B,ASME B36.10,	PP9611300	
PIPE		36 - 38	SCH XS	BE	LSAW,API 5L GR.B,ASME B36.10,	PP9611300	
PIPE		40 - 42	SCH XS	BE	LSAW,API 5L GR.B,ASME B36.10,	PP9611300	
PIPE		44 - 46	SCH XS	BE	LSAW,API 5L GR.B,ASME B36.10,	PP9611300	
PIPE		48 - 48	SCH XS	BE	LSAW,API 5L GR.B,ASME B36.10,	PP9611300	
FLANGE							
FLANGE		1/2 - 24	150#	SO-RF 125 AARH	CS ASTM A105,ASME B16.5,SLIP ON	FL0260801	
LONG W.N.FLANGE		1 1/2 - 1 1/2	300#	WN-RF 125 AARH	CS ASTM A105,ASME B16.5,24mm Bore,200mm Long	LN0270802	
W.N.FLANGE		26 - 48	150#	WN-RF 125 AARH	CS ASTM A105,ASME B16.47 SR.B,WELD NECK	WN0270701	
SPACER AND BLIND		14 - 48	150#	RF 125 AARH	CS ASTM A105,ASME B16.48,	RS022P001	
SPECL BLIND		1/2 - 12	150#	RF 125 AARH	CS ASTM A105,ASME B16.48,	SP022P001	
BLIND FLANGE							
BLIND FLANGE		26 - 48	150#	RF 125 AARH	CS ASTM A105,ASME B16.47 SR.B,	BF0220701	
BLIND FLANGE		1/2 - 24	150#	RF 125 AARH	CS ASTM A105,ASME B16.5,	BF0220801	
GASKET							
GASKET		1/2 - 24	150#	SPRL-WND RF	TP304 SS WDG;GPH FLR;TP304 SS INR RNG;CS OTR RNG,ASME B16.20,	GSQN30301	
GASKET		26 - 48	150#	SPRL-WND RF	TP304 SS WDG;GPH FLR;TP304 SS INR RNG;CS OTR RNG,ASME B16.20/B16.47 SR.B,	GSQN30301	
STUD & NUTS							
STUD & 2NUTS HVY		-			ASTM A193 GR.B7/ASTM A194 GR.2H,,	SNDE00000	
HEX							
DRIP RING							
DRIP RING		3 - 3	150#	RF 125 AARH	CS ASTM A105,PDIL-PDS-600,	DR022QK01	
FITTING (BW)							
BRANCH WELD		2 - 48		BW	CARBON STEEL,ASME B31.3,	RWOJ11200	
BRANCH WELD WITH RP		2 - 48		BW	CARBON STEEL,ASME B31.3,	WBOJ11200	
CAP		2 - 48		BW	ASTM A234 WPB-SMLS,ASME B16.9,	CP7310900	
ELBOW		2 - 6		BW	ASTM A234 WPB-SMLS,ASME B16.9,	EL7310900	
ELBOW		8 - 48		BW	ASTM A234 WPB-WLDD,ASME B16.9,	ELOY10900	L
ELBOW		8 - 48		BW	ASTM A234 WPB-WLDD,PDIL-PDS-600,R=3D	ELOY1QK00	3
ELBOW		8 - 48		BW	ASTM A234 WPB-WLDD,PDIL-PDS-600,R=5D	ELOY1QK00	5
ELBOW		8 - 48		BW	ASTM A234 WPB-WLDD,PDIL-PDS-600,R=7D	ELOY1QK00	7
REDUCER CONC.		2 - 6		BW	ASTM A234 WPB-SMLS,ASME B16.9,	RC7310900	
REDUCER CONC.		8 - 48		BW	ASTM A234 WPB-WLDD,ASME B16.9,	RCOY10900	
REDUCER ECC.		2 - 6		BW	ASTM A234 WPB-SMLS,ASME B16.9,	RE7310900	
REDUCER ECC.		8 - 48		BW	ASTM A234 WPB-WLDD,ASME B16.9,	REOY10900	
TEE		2 - 6		BW	ASTM A234 WPB-SMLS,ASME B16.9,	TE7310900	
TEE		8 - 48		BW	ASTM A234 WPB-WLDD,ASME B16.9,	TEOY10900	

**PIPING MATERIAL SPECIFICATION**

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project :TFL
 DOC. No.TFL-PDS-600
 Rev.:1

Class: B24

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE BD,CWS,CWR,DO,ES,FG,FN,FO,FW,IAW,NI,PA,P G ETC		TEMPERATURE LIMITS (Deg.C)			
		Ref.SI	Ref.SI		
RATING ASME 150# RF	CORROSION ALLOWANCE 1.5 MM(MIN.)	MATERIAL CS			

ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
WELDOLET		2 - 48		BW	CS ASTM A105,MSS SP 97,	WL0213300	
FITTING (SW)							
CAP		1/2 - 1 1/2	3000#	SOCW	CS ASTM A105,ASME B16.11,	CP0230207	W
COUPLING		1/2 - 1 1/2	3000#	SOCW	CS ASTM A105,ASME B16.11,	CN0230207	W
ELBOW		1/2 - 1 1/2	3000#	SOCW	CS ASTM A105,ASME B16.11,	EL0230207	
HALF COUPLING		1/2 - 1 1/2	3000#	SOCW	CS ASTM A105,ASME B16.11,	HF0230207	
SOCKOLET		1/2 - 48	3000#	SOCW	CS ASTM A105,MSS SP 97,	SL0233307	
TEE		1/2 - 1 1/2	3000#	SOCW	CS ASTM A105,ASME B16.11,	TE0230207	
FITTING (THD)							
CAP		1/2 - 1 1/2	3000#	THD	CS ASTM A105,ASME B16.11,	CP0240207	T
COUPLING		1/2 - 1 1/2	3000#	THD	CS ASTM A105,ASME B16.11,	CN0240207	T
PLUG		1/2 - 1 1/2		THD	CS ASTM A105,ASME B16.11,ROUND HEAD	PG0240200	
THREDOLET		1/2 - 48	3000#	THD	CS ASTM A105,MSS SP 97,	TL0243307	
NIPPLE							
NIPPLE		1/2 - 1 1/2	SCH160	PLN-PLN	SMLS,API 5L GR.B,ASME B36.10,	NPA151312	1
NIPPLE		1/2 - 1 1/2	SCH160	PLN-THD	SMLS,API 5L GR.B,ASME B36.10,NPT	NPA161312	2
NIPPLE		1/2 - 1 1/2	SCH160	THD	SMLS,API 5L GR.B,ASME B36.10,NPT	NPA141312	3
SWAGE NIPPLE							
SWAGE (CONC)		1/2 - 1 1/2		PE	ASTM A234 WPB-SMLS,MSS SP 95,	NC73J4500	P
SWAGE (CONC)		1/2 - 1 1/2		PLN-THD	ASTM A234 WPB-SMLS,MSS SP 95,	NC7364500	T
SWAGE (ECC)		1/2 - 1 1/2		PE	ASTM A234 WPB-SMLS,MSS SP 95,	NE73J4500	P
SWAGE (ECC)		1/2 - 1 1/2		PLN-THD	ASTM A234 WPB-SMLS,MSS SP 95,	NE7364500	T
STRAINER							
T-TYPE STRAINER		2 - 24	150#	FLGD	CS ASTM A216 GR WCB,TTS210,	TTS210	
Y-TYPE STRAINER		1/2 - 1 1/2	600#	SOCW	CS ASTM A105,YTS201,	YTS201	
Y-TYPE STRAINER		2 - 24	150#	FLGD	CS ASTM A216 GR WCB,YTS210,	YTS210	
VALVES							
GATE VALVE		1/2 - 1 1/2	800#	SOCW	CS BODY ASTM A105,GAV201,	GAV201	
GATE VALVE		2 - 48	150#	FLG	CS BODY ASTM A216 GR WCB,GAV210,	GAV210	
GLOBE VALVE		1/2 - 1 1/2	800#	SOCW	CS BODY ASTM A105,GLV201,	GLV201	
GLOBE VALVE		2 - 12	150#	FLG	CS BODY ASTM A216 GR WCB,GLV210,	GLV210	
CHECK VALVE		1/2 - 1 1/2	800#	SOCW	CS BODY ASTM A105,CHV201,	CHV201	
CHECK VALVE		2 - 24	150#	FLG	CS BODY ASTM A216 GR WCB,CHV210,	CHV210	
BALL VALVE		1/2 - 1 1/2	800#	SOCW	CS BODY ASTM A105,BAV201,	BAV201	
BALL VALVE		2 - 24	150#	FLG	CS BODY ASTM A216 GR WCB,BAV210,	BAV210	
BUTTERFLY VALVE		2 - 24	150#	RF	CS BODY ASTM A216 GR WCB,BUV203,LUG TYPE	BUV203	
BUTTERFLY VALVE		26 - 48	150#	FLG	CS BODY ASTM A216 GR WCB,BUV204,	BUV204	
PLUG VALVE		1/2 - 1	600#	THRD	CS BODY ASTM A105,PLV201,	PLV201	
PLUG VALVE		1 1/2 - 24	150#	FLG	CS BODY ASTM A216 GR WCB,PLV202,	PLV202	

**PIPING MATERIAL SPECIFICATION**

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project :TFL
 DOC. No.TFL-PDS-600
 Rev.:0

Class: B24D

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE WASTE EFFLUENT,HCL	TEMPERATURE LIMITS (Deg.C)			
	Ref.SI	Ref.SI		
RATING ASME 150# FF	CORROSION ALLOWANCE NONE	MATERIAL HDPE		

ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
PIPE							
PIPE		1 - 1 1/4	CALC	PE	HDPE ASTM D3350 CELL 345464C(PE 3608),D-3035,SDR7	PP5922A00	
PIPE		1 1/2 - 2	CALC	PE	HDPE ASTM D3350 CELL 345464C(PE 3608),D-3035,SDR7	PP5922A00	
PIPE		3 - 4	CALC	PE	HDPE ASTM D3350 CELL 345464C(PE 3608),D-3035,SDR7	PP5922A00	
PIPE		5 - 6	CALC	PE	HDPE ASTM D3350 CELL 345464C(PE 3608),D-3035,SDR7	PP5922A00	
PIPE		8 - 10	CALC	PE	HDPE ASTM D3350 CELL 345464C(PE 3608),D-3035,SDR7	PP5922A00	
PIPE		12 - 12	CALC	PE	HDPE ASTM D3350 CELL 345464C(PE 3608),D-3035,SDR7	PP5922A00	
FLANGE							
FLANGE		1 - 12	150#	LJ-FF	DI ASTM A536 GR.65-45-12,MF.STD/ASME B16.5,	FL5193501	
BLIND FLANGE							
BLIND FLANGE		1 - 12	150#	FF	CS ASTM A105,ASME B16.5,	BF0210801	
GASKET							
GASKET		1 - 12	150#	3.0 MM THK FF	EPDM,ASME B16.21,	GS7880401	
STUD & NUTS							
STUD & 2NUTS HVY		-			A307 GR.B/A563 GR.B.,	SN3B00000	
HEX							
FITTING							
ELBOW		1 - 12		PE	HDPE ASTM D3350 CELL 345464C(PE 3608),D-3035/MF.STD,SDR7	EL59J2B00	
REDUCER CONC.		1 - 12		PE	HDPE ASTM D3350 CELL 345464C(PE 3608),D-3035/MF.STD,SDR7	RC59J2B00	
REDUCER ECC.		1 - 12		PE	HDPE ASTM D3350 CELL 345464C(PE 3608),D-3035/MF.STD,SDR7	RE59J2B00	
STUB END		1 - 12		PE	HDPE ASTM D3350 CELL 345464C(PE 3608),MF.STD/ASME B16.5,SDR7	SE59J3500	
TEE		1 - 12		PE	HDPE ASTM D3350 CELL 345464C(PE 3608),D-3035/MF.STD,SDR7	TE59J2B00	
VALVES							
CHECK VALVE		1 - 12	150#	FLG	CS BODY ASTM A216 GR.WCB RUBBER LINED,CHV210D,	CHV210D	
BALL VALVE		1 - 12	150#	FLG	SS BODY ASTM A351 GR CF8M,BAV510,	BAV510	
BUTTERFLY VALVE		1 - 12	150#	FF	CS BODY ASTM A216 GR.WCB RUBBER LINED,BUV203F,LUG TYPE	BUV203F	

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PIPING MATERIAL SPECIFICATION

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project :TFL
 DOC. No.TFL-PDS-600
 Rev.:0

Class: B24FL

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE EFFLUENT,ACIDIC H2O ETC.	TEMPERATURE LIMITS (Deg.C)			
	Ref.SI	Ref.SI		
RATING ASME 150# FF	CORROSION ALLOWANCE NONE	MATERIAL CS FRP LND.		

ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
PIPE							
PIPE		1 - 11/4	SCH XS	FLGD	CS,SMLS,API 5L GR.B,FRP LND.,ASME B36.10,THK OF LING AS PER MFR.	PP5661300	
PIPE		1 1/2 - 11/2	SCH XS	FLGD	CS,SMLS,API 5L GR.B,FRP LND.,ASME B36.10,THK OF LING AS PER MFR.	PP5661300	
PIPE		2 - 21/2	SCHSTD	FLGD	CS,SMLS,API 5L GR.B,FRP LND.,ASME B36.10,THK OF LING AS PER MFR.	PP5661300	
PIPE		3 - 4	SCHSTD	FLGD	CS,SMLS,API 5L GR.B,FRP LND.,ASME B36.10,THK OF LING AS PER MFR.	PP5661300	
PIPE		5 - 6	SCHSTD	FLGD	CS,SMLS,API 5L GR.B,FRP LND.,ASME B36.10,THK OF LING AS PER MFR.	PP5661300	
PIPE		8 - 10	SCH 20	FLGD	CS,ERW,API 5L GR.B,FRP LND,ASME B36.10,THK OF LING AS PER MFR.	PP5761300	
PIPE		12 - 12	SCH 20	FLGD	CS,ERW,API 5L GR.B,FRP LND,ASME B36.10,THK OF LING AS PER MFR.	PP5761300	
FLANGE							
FLANGE		1 - 2	150#	SO-FF	CS,ASTM A105,FRP LND.,ASME B16.5,THK OF LING AS PER MFR.	FL5850801	
W.N.FLANGE		1 - 12	150#	WN-FF	CS,ASTM A105,FRP LND.,ASME B16.5,THK OF LING AS PER MFR.	WN58M0801	
SPECL BLIND		1 - 12	150#	FF	CS PLT,ASTM A516 GR.60,FRP LND.,ASME B16.48,THK OF LING AS PER MFR.	SP641P001	
BLIND FLANGE							
BLIND FLANGE		1 - 12	150#	FF	CS,ASTM A105,FRP LND.,ASME B16.5,THK OF LING AS PER MFR.	BF5810801	
GASKET							
GASKET		1 - 12	150#	FLAT	GASKET,SOFT RUBBER,ASME B16.21,3MM THK.	GSW190401	
STUD & NUTS							
STUD & 2NUTS HVY HEX		-			ASTM A193 GR.B7/ASTM A194 GR.2H,,	SNDE00000	
FITTING							
ELBOW		1 - 6		FLGD	CS,ASTM A234 WPB-SMLS,FRP LND,ASME B16.9,THK OF LING AS PER MFR.	EL62Z0900	
ELBOW		8 - 12		FLGD	CS,ASTM A234 WPB-WLDD,FRP LND.,ASME B16.9,THK OF LING AS PER MFR.	EL63Z0900	
REDUCER CONC.		1 - 6		FLGD	CS,ASTM A234 WPB-SMLS,FRP LND,ASME B16.9,THK OF LING AS PER MFR.	RC62Z0900	
REDUCER CONC.		8 - 12		FLGD	CS,ASTM A234 WPB-WLDD,FRP LND.,ASME B16.9,THK OF LING AS PER MFR.	RC63Z0900	
REDUCER ECC.		1 - 6		FLGD	CS,ASTM A234 WPB-SMLS,FRP LND,ASME B16.9,THK OF LING AS PER MFR.	RE62Z0900	
REDUCER ECC.		8 - 12		FLGD	CS,ASTM A234 WPB-WLDD,FRP LND.,ASME B16.9,THK OF LING AS PER MFR.	RE63Z0900	
TEE		1 - 6		FLGD	CS,ASTM A234 WPB-SMLS,FRP LND,ASME B16.9,THK OF LING AS PER MFR.	TE62Z0900	
TEE		8 - 12		FLGD	CS,ASTM A234 WPB-WLDD,FRP LND.,ASME B16.9,THK OF LING AS PER MFR.	TE63Z0900	
VALVES							
GATE VALVE		2 - 12	150#	FLG	SS BODY ASTM A351 GR CF8,GAV510,	GAV510	
GLOBE VALVE		2 - 12	150#	FLG	SS BODY ASTM A351 GR CF8,GLV510,	GLV510	
CHECK VALVE		2 - 12	150#	FLG	CS BODY ASTM A216 GR.WCB RUBBER LINED,CHV210D,	CHV210D	
BALL VALVE		2 - 12	150#	FLG	SS BODY ASTM A351 GR CF8M,BAV510,	BAV510	
BUTTERFLY VALVE		2 - 12	150#	FF	CS BODY ASTM A216 GR.WCB RUBBER LINED,BUV203,LUG TYPE	BUV203	

NOTE: 1. S.O. Flanges shall be used with pipe spools.
 2. All fittings shall have ends connected to flanges.

**PIPING MATERIAL SPECIFICATION**

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project :TFL
 DOC. No.TFL-PDS-600
 Rev.:0

Class: B24G

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE FW	TEMPERATURE LIMITS (Deg.C)			
	Ref.SI	Ref.SI		
RATING ASME 150#	CORROSION ALLOWANCE 1.5 MM(MIN.)	MATERIAL CS(GALVANIZED)		

ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
PIPE							
PIPE		1/2 - 3/4	SCH 80	THD	SMLS,API 5L GR.B,HOT DIP GALV.,ASME B36.10,	PPW231300	
PIPE		1 - 1 1/4	SCH 80	THD	SMLS,API 5L GR.B,HOT DIP GALV.,ASME B36.10,	PPW231300	
PIPE		1 1/2 - 2	SCH 80	THD	SMLS,API 5L GR.B,HOT DIP GALV.,ASME B36.10,	PPW231300	
PIPE		2 1/2 - 3	SCH 40	THD	SMLS,API 5L GR.B,HOT DIP GALV.,ASME B36.10,	PPW231300	
PIPE		4 - 4	SCH 40	THD	SMLS,API 5L GR.B,HOT DIP GALV.,ASME B36.10,	PPW231300	
PIPE		6 - 6	SCH 40	BE	SMLS,API 5L GR.B,HOT DIP GALV.,ASME B36.10,	PPW211300	
FLANGE							
FLANGE		1/2 - 4	150#	THD-RF 125 AARH	ASTM A105 HOT DIP GALV.,ASME B16.5,	FLFDK0801	
W.N.FLANGE		6 - 6	150#	WN-RF 125 AARH	ASTM A105 HOT DIP GALV.,ASME B16.5,	WNFD70801	
SPECL BLIND		1/2 - 6	150#	RF 125 AARH	ASTM A105 HOT DIP GALV.,ASME B16.48,	SPFD2P001	
BLIND FLANGE							
BLIND FLANGE		1/2 - 6	150#	RF 125 AARH	ASTM A105 HOT DIP GALV.,ASME B16.5,	BFFD20801	
GASKET							
GASKET		6 - 6	150#	SPRL-WND RF	TP304 SS WDG;GPH FLR;TP304 SS INR RNG;CS OTR RNG,ASME B16.20,	GSQN30301	
GASKET		1/2 - 4	150#	3.0 MM THK RF	BUTYL RUBBER,ASME B16.21,	GS6720401	
STUD & NUTS							
STUD & 2NUTS HVY		-			ASTM A193GR.B7/A194GR.2H,HOT DIP GALV.,,	SNZC00000	
HEX							
FITTING (BW)							
CAP		6 - 6		BW	ASTM A234 WPB-SMLS,HOT DIP GALV.,ASME B16.9,	CPPD10900	
ELBOW		6 - 6		BW	ASTM A234 WPB-SMLS,HOT DIP GALV.,ASME B16.9,	ELPD10900	
REDUCER CONC.		6 - 6		BW	ASTM A234 WPB-SMLS,HOT DIP GALV.,ASME B16.9,	RCPD10900	
REDUCER ECC.		6 - 6		BW	ASTM A234 WPB-SMLS,HOT DIP GALV.,ASME B16.9,	REPD10900	
TEE		6 - 6		BW	ASTM A234 WPB-SMLS,HOT DIP GALV.,ASME B16.9,	TEPD10900	
FITTING (THD)							
CAP		1/2 - 4	3000#	THD	ASTM A105 HOT DIP GALV.,ASME B16.11,	CPFD40207	
COUPLING		1/2 - 1 1/2	3000#	THD	ASTM A105 HOT DIP GALV.,ASME B16.11,	CNFD40207	
ELBOW		1/2 - 4	3000#	THD	ASTM A105 HOT DIP GALV.,ASME B16.11,	ELFD40207	
PLUG		1/2 - 1 1/2		THD	ASTM A105 HOT DIP GALV.,ASME B16.11,ROUND HEAD	PGFD40200	
REDUCER CONC.		1/2 - 4	3000#	THD	ASTM A105 HOT DIP GALV.,ASME B16.11,	RCFD40207	
REDUCER ECC.		1/2 - 4	3000#	THD	ASTM A105 HOT DIP GALV.,ASME B16.11,	REFD40207	
TEE		1/2 - 4	3000#	THD	ASTM A105 HOT DIP GALV.,ASME B16.11,	TEFD40207	
THREDOLET		1/2 - 1 1/2	3000#	THD	ASTM A105 HOT DIP GALV.,MSS SP 97,	TLFD43307	
NIPPLE							
NIPPLE		1/2 - 6	SCH160	THD	SMLS,API 5L GR.B,HOT DIP GALV.,ASME B36.10,NPT	NPW241312	
SWAGE NIPPLE							
SWAGE (CONC)		1/2 - 1 1/2		THD	ASTM A234 WPB-SMLS,HOT DIP GALV.,MSS SP 95,	NCPD44500	
SWAGE (ECC)		1/2 - 1 1/2		THD	ASTM A234 WPB-SMLS,HOT DIP GALV.,MSS SP 95,	NEPD44500	
VALVES							
GATE VALVE		2 - 6	150#	FLG	CS BODY ASTM A216 GR WCB,GAV210,	GAV210	
GATE VALVE		1/2 - 1 1/2	800#	THRD	CS BODY ASTM A105,GAV207,	GAV207	
CHECK VALVE		1/2 - 1 1/2	800#	THRD	CS BODY ASTM A105,CHV207,	CHV207	
CHECK VALVE		2 - 6	150#	FLG	CS BODY ASTM A216 GR WCB,CHV210,	CHV210	

Note : 1. Hot Dip Galvanizing shall be done in accordance with ASTM A53 for Pipes & ASTM A153 for flanged & fittings.

2.Surface where Galvanizing has been burnt off during welding etc. shall be wire brushed ,zinc coated or cold galvanized.

**PIPING MATERIAL SPECIFICATION**

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project :TFL
 DOC. No.TFL-PDS-600
 Rev.:0

Class: B24P

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE ETP	TEMPERATURE LIMITS (Deg.C)			
	Ref.SI	Ref.SI		
RATING ASME 150# FF	CORROSION ALLOWANCE NONE	MATERIAL CPVC		

ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
PIPE							
PIPE		2 - 3	SCH 80	PE	CPVC,ASTM F441,MF.STD/ASTM F441,PLASTIC PIPE	PP552QC00	
PIPE		4 - 6	SCH 80	PE	CPVC,ASTM F441,MF.STD/ASTM F441,PLASTIC PIPE	PP552QC00	
PIPE		8 - 10	SCH 80	PE	CPVC,ASTM F441,MF.STD/ASTM F441,PLASTIC PIPE	PP552QC00	
PIPE		12 - 12	SCH 80	PE	CPVC,ASTM F441,MF.STD/ASTM F441,PLASTIC PIPE	PP552QC00	
PIPE		1/2 - 3/4	SCH 80	PE	CPVC,ASTM F441,MF.STD/ASTM F441,PLASTIC PIPE	PP552QC00	
PIPE		1 - 1 1/2	SCH 80	PE	CPVC,ASTM F441,MF.STD/ASTM F441,PLASTIC PIPE	PP552QC00	
FLANGE							
FLANGE		1/2 - 12	150#	FF	CPVC,ASTM F441,MF.STD/ASTM F441,SCH80	FL551QC01	
BLIND FLANGE							
BLIND FLANGE		1/2 - 12	150#	FF	CPVC,ASTM F441,MF.STD/ASTM F441,	BF551QC01	
GASKET							
GASKET		1/2 - 12	150#	3.0 MM THK FF	EPDM,MF.STD./ASME B16.21,FULL FACE	GS788PA01	
STUD & NUTS							
STUD & 2NUTS HVY		-			ASTM A193 GR.B7/ASTM A194 GR.2H,,	SNDE00000	
HEX							
FITTING (BW)							
BRANCH WELD WITH RP		1/2 - 12		PE	CPVC,ASTM F441,MF.STD/ASTM F441,	WB55JQC00	
FITTING (THD)							
CAP		1/2 - 1 1/2	3000#	THD	CPVC,ASTM F441,MF.STD/ASTM F441,	CP554QC07	
FITTING							
ELBOW		1/2 - 12		PE	CPVC,ASTM F441,MF.STD/ASTM F441,	EL55JQC00	
REDUCER CONC.		1/2 - 12		PE	CPVC,ASTM F441,MF.STD/ASTM F441,	RC55JQC00	
REDUCER ECC.		1/2 - 12		PE	CPVC,ASTM F441,MF.STD/ASTM F441,	RE55JQC00	
TEE		1/2 - 12		PE	CPVC,ASTM F441,MF.STD/ASTM F441,	TE55JQC00	
UNION (GJ)		1/2 - 12		PE	CPVC,ASTM F441,MF.STD/ASTM F441,	UN55JQC00	
NIPPLE							
NIPPLE		1/2 - 1 1/2	SCH160	PLN-PLN	CPVC,ASTM F441,MF.STD/ASTM F441,	NP555QC12	1
NIPPLE		1/2 - 1 1/2	SCH160	PLN-THD	CPVC,ASTM F441,MF.STD/ASTM F441,PLASTIC PIPE NPT	NP556QC12	2
NIPPLE		1/2 - 1 1/2	SCH160	THD	CPVC,ASTM F441,MF.STD/ASTM F441,PLASTIC PIPE NPT	NP554QC12	3
VALVES							
GATE VALVE		1/2 - 12	150#	FF	CPVC BODY W/ PP PLUG & EPDM SEATS,GAV500C,	GAV500C	
CHECK VALVE		1/2 - 12	150#	FF	CPVC BODY,CHV500C,	CHV500C	
BALL VALVE		1/2 - 2	150#	FF	CPVC BODY WITH CPVC BALL,BAV500C,	BAV500C	
BALL VALVE		3 - 6	150#	FF	CPVC BODY WITH CPVC BALL,BAV501C,	BAV501C	

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PIPING MATERIAL SPECIFICATION

CLIENT : M/S..TFL
PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
LOCATION : TALCHER,ODISHA

Project ..TFL
DOC. No.TFL-PDS-600
Rev.:0

Class: B24RL

PROJECTS AND DEVELOPMENT INDIA LIMITED

Table with columns: SERVICE EFFLUENT, WASTE H2O, CHLORINATED H2O; TEMPERATURE LIMITS (Deg.C) Ref.SI; RATING ASME 150# FF; CORROSION ALLOWANCE 1.5 MM(MIN.); MATERIAL CSRL

Table with columns: ITEM, NOTES, SIZE (NPS), SCH/ RAT, END, DESCRIPTION, COMM CODE, SPCL REV

PIPE

Table listing pipe specifications: PIPE, SIZE (NPS), SCH/ RAT, END, DESCRIPTION, COMM CODE

FLANGE

Table listing flange specifications: FLANGE, SPECTL BLIND, SIZE (NPS), SCH/ RAT, END, DESCRIPTION, COMM CODE

BLIND FLANGE

Table listing blind flange specifications: BLIND FLANGE, SIZE (NPS), SCH/ RAT, END, DESCRIPTION, COMM CODE

GASKET

Table listing gasket specifications: GASKET, SIZE (NPS), SCH/ RAT, END, DESCRIPTION, COMM CODE

STUD & NUTS

Table listing stud & nuts specifications: STUD & 2NUTS HVY, HEX, SIZE (NPS), SCH/ RAT, END, DESCRIPTION, COMM CODE

FITTING

Table listing fitting specifications: DIAPH. VALVE, ELBOW, REDUCER CONC., REDUCER ECC., TEE, SIZE (NPS), SCH/ RAT, END, DESCRIPTION, COMM CODE

VALVES

Table listing valve specifications: GATE VALVE, GLOBE VALVE, CHECK VALVE, BALL VALVE, BUTTERFLY VALVE, SIZE (NPS), SCH/ RAT, END, DESCRIPTION, COMM CODE

NOTE: 1. S.O. Flanges shall be used with pipe spools.
2. All fittings shall have ends connected to flanges.

**PIPING MATERIAL SPECIFICATION**

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project :TFL
 DOC. No.TFL-PDS-600
 Rev.:0

Class: B24S

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE SL,SC (IBR)	TEMPERATURE LIMITS (Deg.C)						
	Ref.SI	Ref.SI					
RATING ASME 150# RF	CORROSION ALLOWANCE 1.5 MM(MIN.)	MATERIAL CS					
ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
PIPE							
PIPE		2 - 6	SCH 40	BE IBR	SMLS,ASTM A106 GR.B,ASME B36.10,	PP03A1300	
PIPE		8 - 10	SCH 20	BE IBR	SMLS,ASTM A106 GR.B,ASME B36.10,	PP03A1300	
PIPE		12 - 12	SCH 20	BE IBR	SMLS,ASTM A106 GR.B,ASME B36.10,	PP03A1300	
PIPE		1/2 - 3/4	SCH 80	PE IBR	SMLS,ASTM A106 GR.B,ASME B36.10,	PP03B1300	
PIPE		1 - 1 1/4	SCH 80	PE IBR	SMLS,ASTM A106 GR.B,ASME B36.10,	PP03B1300	
PIPE		1 1/2 - 1 1/2	SCH 80	PE IBR	SMLS,ASTM A106 GR.B,ASME B36.10,	PP03B1300	
PIPE		14 - 16	SCH 10	BE IBR	SMLS,ASTM A106 GR.B,ASME B36.10,	PP03A1300	
PIPE		18 - 20	SCH 10	BE IBR	SMLS,ASTM A106 GR.B,ASME B36.10,	PP03A1300	
PIPE		24 - 24	SCHSTD	BE IBR	SMLS,ASTM A106 GR.B,ASME B36.10,	PP03A1300	
PIPE		26 - 28	SCHSTD	BE IBR	EFW,ASTM A671 GR.CC60 CL.22,ASME B36.10,	PPRXA1300	
PIPE		30 - 32	SCHSTD	BE IBR	EFW,ASTM A671 GR.CC60 CL.22,ASME B36.10,	PPRXA1300	
PIPE		34 - 34	SCHSTD	BE IBR	EFW,ASTM A671 GR.CC60 CL.22,ASME B36.10,	PPRXA1300	
PIPE		36 - 38	SCH XS	BE IBR	EFW,ASTM A671 GR.CC60 CL.22,ASME B36.10,	PPRXA1300	
PIPE		40 - 42	SCH XS	BE IBR	EFW,ASTM A671 GR.CC60 CL.22,ASME B36.10,	PPRXA1300	
PIPE		44 - 46	SCH XS	BE IBR	EFW,ASTM A671 GR.CC60 CL.22,ASME B36.10,	PPRXA1300	
PIPE		48 - 48	14.27 MM	BE IBR	EFW,ASTM A671 GR.CC60 CL.22,ASME B36.10,	PPRXA1300	
FLANGE							
FLANGE		1/2 - 24	150#	SO-RF 125 AARH IBR	CS ASTM A105,ASME B16.5,SLIP ON	FL02F0801	
W.N.FLANGE		26 - 48	150#	WN-RF 125 AARH IBR	CS ASTM A105,ASME B16.47 SR.B,WELD NECK	WN02G0701	
SPACER AND BLIND		14 - 24	150#	RF 125 AARH IBR	CS ASTM A105,ASME B16.48,	RS02BPO01	
SPECL BLIND		1/2 - 12	150#	RF 125 AARH IBR	CS ASTM A105,ASME B16.48,	SP02BPO01	
BLIND FLANGE							
BLIND FLANGE		26 - 48	150#	RF 125 AARH IBR	CS ASTM A105,ASME B16.47 SR.B,	BF02B0701	
BLIND FLANGE		1/2 - 24	150#	RF 125 AARH IBR	CS ASTM A105,ASME B16.5,	BF02B0801	
GASKET							
GASKET		1/2 - 24	150#	SPRL-WND RF	TP304 SS WDG;GPH FLR;TP304 SS INR RNG;CS OTR RNG,ASME B16.20,	GSQN30301	
GASKET		26 - 48	150#	SPRL-WND RF	TP304 SS WDG;GPH FLR;TP304 SS INR RNG;CS OTR RNG,ASME B16.20/B16.47 SR.B,	GSQN3QJ01	
STUD & NUTS							
STUD & 2NUTS HVY HEX		-			ASTM A193 GR.B7/ASTM A194 GR.2H,,	SNDE00000	
FITTING (BW)							
BRANCH WELD		2 - 48		BW IBR	CARBON STEEL,ASME B31.3,	RWOJA1200	
BRANCH WELD WITH RP		2 - 48		BW IBR	CARBON STEEL,ASME B31.3,	WBOJA1200	
CAP		2 - 48		BW IBR	ASTM A234 WPB-SMLS,ASME B16.9,	CP73A0900	
ELBOW		2 - 24		BW IBR	ASTM A234 WPB-SMLS,ASME B16.9,	EL73A0900	
ELBOW		26 - 48		BW IBR	ASTM A234 WPB-WLDD,ASME B16.9,	ELOYA0900	
REDUCER CONC.		2 - 24		BW IBR	ASTM A234 WPB-SMLS,ASME B16.9,	RC73A0900	
REDUCER CONC.		26 - 48		BW IBR	ASTM A234 WPB-WLDD,ASME B16.9,	RCOYA0900	
REDUCER ECC.		2 - 24		BW IBR	ASTM A234 WPB-SMLS,ASME B16.9,	RE73A0900	
REDUCER ECC.		26 - 48		BW IBR	ASTM A234 WPB-WLDD,ASME B16.9,	REOYA0900	
TEE		2 - 24		BW IBR	ASTM A234 WPB-SMLS,ASME B16.9,	TE73A0900	
TEE		26 - 48		BW IBR	ASTM A234 WPB-WLDD,ASME B16.9,	TEOYA0900	
WELDOLET		2 - 48		BW IBR	CS ASTM A105,MSS SP 97,	WL02A3300	
FITTING (SW)							
CAP		1/2 - 1 1/2	3000#	SOCW IBR	CS ASTM A105,ASME B16.11,	CP02C0207	W
COUPLING		1/2 - 1 1/2	3000#	SOCW IBR	CS ASTM A105,ASME B16.11,	CN02C0207	



PIPING MATERIAL SPECIFICATION

CLIENT : M/S..TFL
PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
LOCATION : TALCHER,ODISHA

Project :TFL
DOC. No.TFL-PDS-600
Rev.:0

Class: B24S

PROJECTS AND DEVELOPMENT INDIA LIMITED

Table with columns: SERVICE SL.SC (IBR), TEMPERATURE LIMITS (Deg.C) (Ref.SI), RATING ASME (150# RF), CORROSION ALLOWANCE (1.5 MM(MIN.)), MATERIAL (CS)

Main table with columns: ITEM, NOTES, SIZE (NPS), SCH/ RAT, END, DESCRIPTION, COMM CODE, SPCL REV. Includes sections for FITTING (THD), NIPPLE, SWAGE NIPPLE, and VALVES.

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**PIPING MATERIAL SPECIFICATION**

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project :TFL
 DOC. No.TFL-PDS-600
 Rev.:2

Class: B24Z

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE FLARE	TEMPERATURE LIMITS (Deg.C)						
	Ref.SI	Ref.SI					
RATING ASME 150# RF	CORROSION ALLOWANCE 3.0 MM(MIN.)	MATERIAL CS					
ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
PIPE							
PIPE		2 - 2	SCH 80	BE	SMLS,API 5L GR.B,ASME B36.10,	PPA111300	
PIPE		2 1/2 - 3	SCHSTD	BE	SMLS,API 5L GR.B,ASME B36.10,	PPA111300	
PIPE		4 - 5	SCHSTD	BE	SMLS,API 5L GR.B,ASME B36.10,	PPA111300	
PIPE		6 - 6	SCHSTD	BE	SMLS,API 5L GR.B,ASME B36.10,	PPA111300	
PIPE		8 - 10	SCHSTD	BE	ERW,API 5L GR.B,ASME B36.10,	PPA211300	
PIPE		12 - 14	SCHSTD	BE	ERW,API 5L GR.B,ASME B36.10,	PPA211300	
PIPE		1/2 - 3/4	SCH160	PE	SMLS,API 5L GR.B,ASME B36.10,	PPA121300	
PIPE		1 - 1 1/4	SCH160	PE	SMLS,API 5L GR.B,ASME B36.10,	PPA121300	
PIPE		1 1/2 - 1 1/2	SCH160	PE	SMLS,API 5L GR.B,ASME B36.10,	PPA121300	
PIPE		16 - 18	SCHSTD	BE	LSAW,API 5L GR.B,ASME B36.10,	PP9611300	
PIPE		20 - 22	SCHSTD	BE	LSAW,API 5L GR.B,ASME B36.10,	PP9611300	
PIPE		24 - 24	SCHSTD	BE	LSAW,API 5L GR.B,ASME B36.10,	PP9611300	
PIPE		26 - 28	SCH XS	BE	LSAW,API 5L GR.B,ASME B36.10,	PP9611300	
PIPE		30 - 32	SCH XS	BE	LSAW,API 5L GR.B,ASME B36.10,	PP9611300	
PIPE		34 - 36	SCH XS	BE	LSAW,API 5L GR.B,ASME B36.10,	PP9611300	
PIPE		38 - 40	SCH XS	BE	LSAW,API 5L GR.B,ASME B36.10,	PP9611300	
PIPE		42 - 44	SCH XS	BE	LSAW,API 5L GR.B,ASME B36.10,	PP9611300	
PIPE		46 - 48	SCH XS	BE	LSAW,API 5L GR.B,ASME B36.10,	PP9611300	
FLANGE							
FLANGE		1/2 - 24	150#	SO-RF 125 AARH	CS ASTM A105,ASME B16.5,SLIP ON	FL0260801	
LONG W.N.FLANGE		1 1/2 - 1 1/2	300#	WN-RF 125 AARH	CS ASTM A105,ASME B16.5,24mm Bore,200mm Long	LN0270802	
W.N.FLANGE		26 - 48	150#	WN-RF 125 AARH	CS ASTM A105,ASME B16.47 SR.B,WELD NECK	WN0270701	
SPACER AND BLIND		14 - 48	150#	RF 125 AARH	CS ASTM A105,ASME B16.48,	RS022P001	
SPECL BLIND		1/2 - 12	150#	RF 125 AARH	CS ASTM A105,ASME B16.48,	SP022P001	
BLIND FLANGE							
BLIND FLANGE		26 - 48	150#	RF 125 AARH	CS ASTM A105,ASME B16.47 SR.B,	BF0220701	
BLIND FLANGE		1/2 - 24	150#	RF 125 AARH	CS ASTM A105,ASME B16.5,	BF0220801	
GASKET							
GASKET		1/2 - 24	150#	SPRL-WND RF	TP304 SS WDG;GPH FLR;TP304 SS INR RNG;CS OTR RNG,ASME B16.20,	GSQN30301	
GASKET		26 - 48	150#	SPRL-WND RF	TP304 SS WDG;GPH FLR;TP304 SS INR RNG;CS OTR RNG,ASME B16.20/B16.47 SR.B,	GSQN30J01	
STUD & NUTS							
STUD & 2NUTS HVY		-			ASTM A193 GR.B7/ASTM A194 GR.2H,,	SNDE00000	
HEX							
DRIP RING							
DRIP RING		3 - 3	150#	RF 125 AARH	CS ASTM A105,PDIL-PDS-600,	DR022QK01	
FITTING (BW)							
BRANCH WELD		2 - 48		BW	CARBON STEEL,ASME B31.3,	RWOJ11200	
BRANCH WELD WITH RP		2 - 48		BW	CARBON STEEL,ASME B31.3,	WBOJ11200	
CAP		2 - 48		BW	ASTM A234 WPB-SMLS,ASME B16.9,	CP7310900	
ELBOW		2 - 6		BW	ASTM A234 WPB-SMLS,ASME B16.9,	EL7310900	
ELBOW		8 - 48		BW	ASTM A234 WPB-WLDD,ASME B16.9,	ELOY10900	L
ELBOW		8 - 48		BW	ASTM A234 WPB-WLDD,PDIL-PDS-600,R=3D	ELOY1QK00	3
ELBOW		8 - 48		BW	ASTM A234 WPB-WLDD,PDIL-PDS-600,R=5D	ELOY1QK00	5
ELBOW		8 - 48		BW	ASTM A234 WPB-WLDD,PDIL-PDS-600,R=7D	ELOY1QK00	7
REDUCER CONC.		2 - 6		BW	ASTM A234 WPB-SMLS,ASME B16.9,	RC7310900	
REDUCER CONC.		8 - 48		BW	ASTM A234 WPB-WLDD,ASME B16.9,	RCOY10900	
REDUCER ECC.		2 - 6		BW	ASTM A234 WPB-SMLS,ASME B16.9,	RE7310900	
REDUCER ECC.		8 - 48		BW	ASTM A234 WPB-WLDD,ASME B16.9,	REOY10900	
TEE		2 - 6		BW	ASTM A234 WPB-SMLS,ASME B16.9,	TE7310900	

**PIPING MATERIAL SPECIFICATION**

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project :TFL
 DOC. No.TFL-PDS-600
 Rev.:2

Class: B24Z

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE FLARE	TEMPERATURE LIMITS (Deg.C)			
	Ref.SI	Ref.SI		
RATING ASME 150# RF	CORROSION ALLOWANCE 3.0 MM(MIN.)	MATERIAL CS		

ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
TEE		8 - 48		BW	ASTM A234 WPB-WLDD,ASME B16.9,	TEOY10900	
WELDOLET		2 - 48		BW	CS ASTM A105,MSS SP 97,	WL0213300	
FITTING (SW)							
CAP		1/2 - 11/2	3000#	SOCW	CS ASTM A105,ASME B16.11,	CP0230207	W
COUPLING		1/2 - 11/2	3000#	SOCW	CS ASTM A105,ASME B16.11,	CN0230207	W
ELBOW		1/2 - 11/2	3000#	SOCW	CS ASTM A105,ASME B16.11,	EL0230207	
HALF COUPLING		1/2 - 11/2	3000#	SOCW	CS ASTM A105,ASME B16.11,	HF0230207	
SOCKOLET		1/2 - 48	3000#	SOCW	CS ASTM A105,MSS SP 97,	SL0233307	
TEE		1/2 - 11/2	3000#	SOCW	CS ASTM A105,ASME B16.11,	TE0230207	
FITTING (THD)							
CAP		1/2 - 11/2	3000#	THD	CS ASTM A105,ASME B16.11,	CP0240207	T
COUPLING		1/2 - 11/2	3000#	THD	CS ASTM A105,ASME B16.11,	CN0240207	T
PLUG		1/2 - 11/2		THD	CS ASTM A105,ASME B16.11,ROUND HEAD	PG0240200	
THREDOLET		1/2 - 48	3000#	THD	CS ASTM A105,MSS SP 97,	TL0243307	
NIPPLE							
NIPPLE		1/2 - 11/2	SCH160	PLN-PLN	SMLS,API 5L GR.B,ASME B36.10,	NPA151312	1
NIPPLE		1/2 - 11/2	SCH160	PLN-THD	SMLS,API 5L GR.B,ASME B36.10,NPT	NPA161312	2
NIPPLE		1/2 - 11/2	SCH160	THD	SMLS,API 5L GR.B,ASME B36.10,NPT	NPA141312	3
SWAGE NIPPLE							
SWAGE (CONC)		1/2 - 11/2		PE	ASTM A234 WPB-SMLS,MSS SP 95,	NC73J4500	P
SWAGE (CONC)		1/2 - 11/2		PLN-THD	ASTM A234 WPB-SMLS,MSS SP 95,	NC7364500	T
SWAGE (ECC)		1/2 - 11/2		PE	ASTM A234 WPB-SMLS,MSS SP 95,	NE73J4500	P
SWAGE (ECC)		1/2 - 11/2		PLN-THD	ASTM A234 WPB-SMLS,MSS SP 95,	NE7364500	T
STRAINER							
T-TYPE STRAINER		2 - 24	150#	FLGD	CS ASTM A216 GR WCB,TTS210,	TTS210	
Y-TYPE STRAINER		1/2 - 11/2	600#	SOCW	CS ASTM A105,YTS201,	YTS201	
Y-TYPE STRAINER		2 - 24	150#	FLGD	CS ASTM A216 GR WCB,YTS210,	YTS210	
VALVES							
GATE VALVE		1/2 - 11/2	800#	SOCW	CS BODY ASTM A105,GAV201,	GAV201	
GATE VALVE		2 - 48	150#	FLG	CS BODY ASTM A216 GR WCB,GAV210,	GAV210	
GLOBE VALVE		1/2 - 11/2	800#	SOCW	CS BODY ASTM A105,GLV201,	GLV201	
GLOBE VALVE		2 - 12	150#	FLG	CS BODY ASTM A216 GR WCB,GLV210,	GLV210	
CHECK VALVE		1/2 - 11/2	800#	SOCW	CS BODY ASTM A105,CHV201,	CHV201	
CHECK VALVE		2 - 24	150#	FLG	CS BODY ASTM A216 GR WCB,CHV210,	CHV210	
BALL VALVE		1/2 - 11/2	800#	SOCW	CS BODY ASTM A105,BAV201,	BAV201	
BALL VALVE		2 - 24	150#	FLG	CS BODY ASTM A216 GR WCB,BAV210,	BAV210	
BUTTERFLY VALVE		2 - 24	150#	RF	CS BODY ASTM A216 GR WCB,BUV203,LUG TYPE	BUV203	
BUTTERFLY VALVE		26 - 48	150#	FLG	CS BODY ASTM A216 GR WCB,BUV204,	BUV204	
PLUG VALVE		1/2 - 1	600#	THRD	CS BODY ASTM A105,PLV201,	PLV201	
PLUG VALVE		11/2 - 24	150#	FLG	CS BODY ASTM A216 GR WCB,PLV202,	PLV202	

**PIPING MATERIAL SPECIFICATION**

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project ..TFL
 DOC. No.TFL-PDS-600
 Rev.:0

Class: B40

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE CD,FG,HG,PA,PC		TEMPERATURE LIMITS (Deg.C)					
		Ref.SI	Ref.SI				
RATING ASME 150# RF	CORROSION ALLOWANCE NONE	MATERIAL SS 304L					
ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
PIPE							
PIPE		26 - 28	SCH 10	BE	EFW,STR.WELD,ASTM A312 TP304L,ASME B36.10,	PPZ511300	
PIPE		30 - 32	SCH 10	BE	EFW,STR.WELD,ASTM A312 TP304L,ASME B36.10,	PPZ511300	
PIPE		34 - 36	SCH 10	BE	EFW,STR.WELD,ASTM A312 TP304L,ASME B36.10,	PPZ511300	
PIPE		2 - 4	SCH10S	BE	EFW,STR.WELD,ASTM A312 TP304L,ASME B36.19,	PPZ511400	
PIPE		1/2 - 3/4	SCH40S	PE	SMLS,ASTM A312 TP304L,ASME B36.19,	PP8521400	
PIPE		1 - 1 1/4	SCH40S	PE	SMLS,ASTM A312 TP304L,ASME B36.19,	PP8521400	
PIPE		1 1/2 - 1 1/2	SCH40S	PE	SMLS,ASTM A312 TP304L,ASME B36.19,	PP8521400	
PIPE		6 - 8	SCH10S	BE	EFW,STR.WELD,ASTM A312 TP304L,ASME B36.19,	PPZ511400	
PIPE		10 - 12	SCH10S	BE	EFW,STR.WELD,ASTM A312 TP304L,ASME B36.19,	PPZ511400	
PIPE		14 - 16	SCH10S	BE	EFW,STR.WELD,ASTM A312 TP304L,ASME B36.19,	PPZ511400	
PIPE		18 - 20	SCH10S	BE	EFW,STR.WELD,ASTM A312 TP304L,ASME B36.19,	PPZ511400	
PIPE		22 - 24	SCH10S	BE	EFW,STR.WELD,ASTM A312 TP304L,ASME B36.19,	PPZ511400	
FLANGE							
LONG W.N.FLANGE		11/2 - 1 1/2	300#	WN-RF 125 AARH	ASTM A182 F304L,ASME B16.5,38mmBORE,200mmLONG	LN8170802	
W.N.FLANGE		26 - 36	150#	WN-RF 125 AARH	ASTM A182 F304L,ASME B16.47 SR.B,WELD NECK	WN8170701	
W.N.FLANGE		1/2 - 24	150#	WN-RF 125 AARH	ASTM A182 F304L,ASME B16.5,WELD NECK	WN8170801	5
W.N.FLANGE		1/2 - 24	300#	WN-RF 125 AARH	ASTM A182 F304L,ASME B16.5,WELD NECK	WN8170802	6
SPACER AND BLIND		14 - 24	150#	RF 125 AARH	ASTM A182 F304L,ASME B16.48,	RS812P001	
SPECL BLIND		1/2 - 12	150#	RF 125 AARH	ASTM A182 F304L,ASME B16.48,	SP812P001	
BLIND FLANGE							
BLIND FLANGE		26 - 36	150#	RF 125 AARH	ASTM A182 F304L,ASME B16.47 SR.B,	BF8120701	
BLIND FLANGE		1/2 - 24	150#	RF 125 AARH	ASTM A182 F304L,ASME B16.5,	BF8120801	1
BLIND FLANGE		1/2 - 24	300#	RF 125 AARH	ASTM A182 F304L,ASME B16.5,	BF8120802	2
GASKET							
GASKET		1/2 - 24	150#	SPRL-WND RF	TP304 SS WDG; GPH FLR; TP304 SS INR RNG/ OTR RNG,ASME B16.20,	GSQ130301	1
GASKET		1/2 - 24	300#	SPRL-WND RF	TP304 SS WDG; GPH FLR; TP304 SS INR RNG/ OTR RNG,ASME B16.20,	GSQ130302	2
GASKET		26 - 36	150#	SPRL-WND RF	TP304 SS WDG; GPH FLR; TP304 SS INR RNG/ OTR RNG,ASME B16.20/B16.47 SR.B,	GSQ13QJ01	
STUD & NUTS							
STUD & 2NUTS HVY		-			ASTM A193 GR.B8 CL.2/ASTM A194 GR.8,,	SNA600000	
DRIP RING							
DRIP RING		3 - 3	150#	RF 125 AARH	ASTM A182 F304L,PDIL-PDS-600,	DR812QK01	
FITTING (BW)							
BRANCH WELD		2 - 36		BW	STAINLESS STEEL,ASME B31.3,	RWOK11200	
BRANCH WELD WITH RP		2 - 36		BW	STAINLESS STEEL,ASME B31.3,	WBOK11200	
CAP		2 - 36		BW	ASTM A403 WP304L-SMLS,ASME B16.9,	CP8310900	
ELBOW		2 - 36		BW	ASTM A403 WP304L-WLDD,ASME B16.9,	EL8410900	L
ELBOW		2 - 36	19.05 MM	BW	ASTM A403 WP304L-WLDD,PDIL-PDS-600,R=3D	EL841QK60	3
ELBOW		2 - 36	19.05 MM	BW	ASTM A403 WP304L-WLDD,PDIL-PDS-600,R=5D	EL841QK60	5
REDUCER CONC.		2 - 36		BW	ASTM A403 WP304L-WLDD,ASME B16.9,	RC8410900	
REDUCER ECC.		2 - 36		BW	ASTM A403 WP304L-WLDD,ASME B16.9,	RE8410900	
TEE		2 - 36		BW	ASTM A403 WP304L-WLDD,ASME B16.9,	TE8410900	
WELDOLET		2 - 36		BW	ASTM A182 F304L,MSS SP 97,	WL8113300	
FITTING (SW)							
CAP		1/2 - 1 1/2	3000#	SOCW	ASTM A182 F304L,ASME B16.11,	CP8130207	W
COUPLING		1/2 - 1 1/2	3000#	SOCW	ASTM A182 F304L,ASME B16.11,	CN8130207	
ELBOW		1/2 - 1 1/2	3000#	SOCW	ASTM A182 F304L,ASME B16.11,	EL8130207	
HALF COUPLING		1/2 - 1 1/2	3000#	SOCW	ASTM A182 F304L,ASME B16.11,	HF8130207	
SOCKOLET		1/2 - 36	3000#	SOCW	ASTM A182 F304L,MSS SP 97,	SL8133307	

**PIPING MATERIAL SPECIFICATION**

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project :TFL
 DOC. No.TFL-PDS-600
 Rev.:0

Class: B40

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE CD,FG,HG,PA,PC	TEMPERATURE LIMITS (Deg.C)			
	Ref.SI	Ref.SI		
RATING ASME 150# RF	CORROSION ALLOWANCE NONE	MATERIAL SS 304L		

ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
TEE		1/2 - 1 1/2	3000#	SOCW	ASTM A182 F304L,ASME B16.11,	TE8130207	
FITTING (THD)							
CAP		1/2 - 1 1/2	3000#	THD	ASTM A182 F304L,ASME B16.11,	CP8140207	T
PLUG		1/2 - 1 1/2		THD	ASTM A182 F304L,ASME B16.11,ROUND HEAD	PG8140200	
THREDOLET		1/2 - 3/6	3000#	THD	ASTM A182 F304L,MSS SP 97,	TL8143307	
NIPPLE							
NIPPLE		1/2 - 1 1/2	SCH80S	PLN-PLN	SMLS,ASTM A312 TP304L,ASME B36.19,	NP8551413	1
NIPPLE		1/2 - 1 1/2	SCH80S	PLN-THD	SMLS,ASTM A312 TP304L,ASME B36.19,NPT	NP8561413	2
NIPPLE		1/2 - 1 1/2	SCH80S	THD	SMLS,ASTM A312 TP304L,ASME B36.19,NPT	NP8541413	3
SWAGE NIPPLE							
SWAGE (CONC)		1/2 - 1 1/2		PE	ASTM A403 WP304L-SMLS,MSS SP 95,	NC83J4500	P
SWAGE (CONC)		1/2 - 1 1/2		PLN-THD	ASTM A403 WP304L-SMLS,MSS SP 95,	NC8364500	T
SWAGE (ECC)		1/2 - 1 1/2		PE	ASTM A403 WP304L-SMLS,MSS SP 95,	NE83J4500	P
SWAGE (ECC)		1/2 - 1 1/2		PLN-THD	ASTM A403 WP304L-SMLS,MSS SP 95,	NE8364500	T
VALVES							
GATE VALVE		1/2 - 1	800#	SOCW	SS BODY ASTM A182 GR F304,GAV501,	GAV501	
GATE VALVE		1 1/2 - 1 1/2	800#	SOCW	SS BODY ASTM A182 GR F304,GAV501,	GAV501	W
GATE VALVE		1 1/2 - 1 1/2	150#	FLG	SS BODY ASTM A351 GR CF8,GAV510,	GAV510	F
GATE VALVE		2 - 24	150#	FLG	SS BODY ASTM A351 GR CF8,GAV510,	GAV510	
GLOBE VALVE		1/2 - 1 1/2	800#	SOCW	SS BODY ASTM A182 GR F304,GLV501,	GLV501	
GLOBE VALVE		2 - 12	150#	FLG	SS BODY ASTM A351 GR CF8,GLV510,	GLV510	
CHECK VALVE		1/2 - 1 1/2	800#	SOCW	SS BODY ASTM A182 GR F304,CHV501,	CHV501	
CHECK VALVE		2 - 24	150#	FLG	SS BODY ASTM A351 GR CF8,CHV510,	CHV510	
BALL VALVE		1/2 - 1	800#	THRD	SS BODY AISI 316,BAV501,	BAV501	
BALL VALVE		1 1/2 - 1 1/2	800#	THRD	SS BODY AISI 316,BAV501,	BAV501	T
BALL VALVE		1 1/2 - 1 1/2	150#	FLG	SS BODY ASTM A351 GR CF8M,BAV510,	BAV510	F
BALL VALVE		2 - 12	150#	FLG	SS BODY ASTM A351 GR CF8M,BAV510,	BAV510	

**PIPING MATERIAL SPECIFICATION**

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project ..TFL
 DOC. No.TFL-PDS-600
 Rev.:1

Class: B50

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE AF,AW,CD,DM,HZ,IA,MDA,PC,PH,VS,CH	TEMPERATURE LIMITS (Deg.C)			
	Ref.SI	Ref.SI		
RATING ASME 150# RF	CORROSION ALLOWANCE NONE	MATERIAL SS 304		

ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
PIPE							
PIPE		26 - 28	06.35 MM	BE	EFW,ASTM A358 GR.TP304 CL.1,ASME B36.10,	PPW911300	
PIPE		30 - 32	SCH 10	BE	EFW,ASTM A358 GR.TP304 CL.1,ASME B36.10,	PPW911300	
PIPE		34 - 36	SCH 10	BE	EFW,ASTM A358 GR.TP304 CL.1,ASME B36.10,	PPW911300	
PIPE		38 - 40	SCHSTD	BE	EFW,ASTM A358 GR.TP304 CL.1,ASME B36.10,	PPW911300	
PIPE		42 - 44	SCHSTD	BE	EFW,ASTM A358 GR.TP304 CL.1,ASME B36.10,	PPW911300	
PIPE		46 - 48	SCHSTD	BE	EFW,ASTM A358 GR.TP304 CL.1,ASME B36.10,	PPW911300	
PIPE		1/2 - 3/4	SCH40S	PE	SMLS,ASTM A312 TP304,ASME B36.19,	PPPE21400	
PIPE		1 - 11/4	SCH40S	PE	SMLS,ASTM A312 TP304,ASME B36.19,	PPPE21400	
PIPE		11/2 - 11/2	SCH40S	PE	SMLS,ASTM A312 TP304,ASME B36.19,	PPPE21400	
PIPE		2 - 4	SCH10S	BE	EFW,STR.WELD,ASTM A312 TP304,ASME B36.19,	PPZ111400	
PIPE		6 - 8	SCH10S	BE	EFW,STR.WELD,ASTM A312 TP304,ASME B36.19,	PPZ111400	
PIPE		10 - 12	SCH10S	BE	EFW,STR.WELD,ASTM A312 TP304,ASME B36.19,	PPZ111400	
PIPE		14 - 16	SCH10S	BE	EFW,STR.WELD,ASTM A312 TP304,ASME B36.19,	PPZ111400	
PIPE		18 - 20	SCH10S	BE	EFW,STR.WELD,ASTM A312 TP304,ASME B36.19,	PPZ111400	
PIPE		22 - 24	SCH10S	BE	EFW,STR.WELD,ASTM A312 TP304,ASME B36.19,	PPZ111400	
FLANGE							
W.N.FLANGE		26 - 48	150#	WN-RF 125 AARH	ASTM A182 F304,ASME B16.47 SR.B,WELD NECK	WN0670701	
W.N.FLANGE		1/2 - 24	150#	WN-RF 125 AARH	ASTM A182 F304,ASME B16.5,WELD NECK	WN0670801	
SPACER AND BLIND		14 - 24	150#	RF 125 AARH	ASTM A182 F304,ASME B16.48,	RS062P001	
SPECL BLIND		1/2 - 12	150#	RF 125 AARH	ASTM A182 F304,ASME B16.48,	SP062P001	
BLIND FLANGE							
BLIND FLANGE		26 - 48	150#	RF 125 AARH	ASTM A182 F304,ASME B16.47 SR.B,	BF0620701	
BLIND FLANGE		1/2 - 24	150#	RF 125 AARH	ASTM A182 F304,ASME B16.5,	BF0620801	
GASKET							
GASKET		1/2 - 24	150#	SPRL-WND RF	TP304 SS WDG; GPH FLR; TP304 SS INR RNG/ OTR RNG,ASME B16.20,	GSQ130301	
GASKET		26 - 48	150#	SPRL-WND RF	TP304 SS WDG; GPH FLR; TP304 SS INR RNG/ OTR RNG,ASME B16.20/B16.47 SR.B,	GSQ13QJ01	
STUD & NUTS							
STUD & 2NUTS HVY		-			ASTM A193 GR.B8 CL.2/ASTM A194 GR.8,,	SNA600000	
HEX							
DRIP RING							
DRIP RING		3 - 3	150#	RF 125 AARH	ASTM A182 F304,PDIL-PDS-600,	DR062QK01	
FITTING (BW)							
BRANCH WELD		2 - 48		BW	STAINLESS STEEL,ASME B31.3,	RWOK11200	
BRANCH WELD WITH		2 - 48		BW	STAINLESS STEEL,ASME B31.3,	WBOK11200	
RP							
CAP		2 - 48		BW	ASTM A403 WP304-SMLS,ASME B16.9,	CP7410900	
ELBOW		2 - 48		BW	ASTM A403 WP304-WLDD,ASME B16.9,	ELZ410900	
REDUCER CONC.		2 - 48		BW	ASTM A403 WP304-WLDD,ASME B16.9,	RCZ410900	
REDUCER ECC.		2 - 48		BW	ASTM A403 WP304-WLDD,ASME B16.9,	REZ410900	
TEE		2 - 48		BW	ASTM A403 WP304-WLDD,ASME B16.9,	TEZ410900	
WELDOLET		2 - 48		BW	ASTM A182 F304,MSS SP 97,	WL0613300	
FITTING (SW)							
CAP		1/2 - 11/2	3000#	SOCW	ASTM A182 F304,ASME B16.11,	CP0630207	W
COUPLING		1/2 - 11/2	3000#	SOCW	ASTM A182 F304,ASME B16.11,	CN0630207	
ELBOW		1/2 - 11/2	3000#	SOCW	ASTM A182 F304,ASME B16.11,	EL0630207	
HALF COUPLING		1/2 - 11/2	3000#	SOCW	ASTM A182 F304,ASME B16.11,	HF0630207	
SOCKOLET		1/2 - 48	3000#	SOCW	ASTM A182 F304,MSS SP 97,	SL0633307	
TEE		1/2 - 11/2	3000#	SOCW	ASTM A182 F304,ASME B16.11,	TE0630207	
FITTING (THD)							
CAP		1/2 - 11/2	3000#	THD	ASTM A182 F304,ASME B16.11,	CP0640207	T

**PIPING MATERIAL SPECIFICATION**

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project :TFL
 DOC. No.TFL-PDS-600
 Rev.:1

Class: B50

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE AF,AW,CD,DM,HZ,IA,MDA,PC,PH,VS,CH		TEMPERATURE LIMITS (Deg.C)			
		Ref.SI	Ref.SI		
RATING ASME 150# RF	CORROSION ALLOWANCE NONE	MATERIAL SS 304			

ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
PLUG		1/2 - 11/2		THD	ASTM A182 F304,ASME B16.11,ROUND HEAD	PG0640200	
THREDOLET		1/2 - 48	3000#	THD	ASTM A182 F304,MSS SP 97,	TL0643307	
NIPPLE							
NIPPLE		1/2 - 11/2	SCH80S	PLN-PLN	SMLS,ASTM A312 TP304,ASME B36.19,	NPPE51413	1
NIPPLE		1/2 - 11/2	SCH80S	PLN-THD	SMLS,ASTM A312 TP304,ASME B36.19,NPT	NPPE61413	2
NIPPLE		1/2 - 11/2	SCH80S	THD	SMLS,ASTM A312 TP304,ASME B36.19,NPT	NPPE41413	3
SWAGE NIPPLE							
SWAGE (CONC)		1/2 - 11/2		PE	ASTM A403 WP304-SMLS,MSS SP 95,	NC74J4500	P
SWAGE (CONC)		1/2 - 11/2		PLN-THD	ASTM A403 WP304-SMLS,MSS SP 95,	NC7464500	T
SWAGE (ECC)		1/2 - 11/2		PE	ASTM A403 WP304-SMLS,MSS SP 95,	NE74J4500	P
SWAGE (ECC)		1/2 - 11/2		PLN-THD	ASTM A403 WP304-SMLS,MSS SP 95,	NE7464500	T
STRAINER							
T-TYPE STRAINER		2 - 24	150#	FLGD	SS ASTM A351 GR CF8,TTS510,	TTS510	
Y-TYPE STRAINER		2 - 24	150#	FLGD	SS ASTM A351 GR CF8,YTS510,	YTS510	
Y-TYPE STRAINER		1/2 - 11/2	600#	SOCW	ASTM A182 F304,YTS501,	YTS501	
VALVES							
GATE VALVE		1/2 - 11/2	800#	SOCW	SS BODY ASTM A182 GR F304,GAV501,	GAV501	
GATE VALVE		2 - 24	150#	FLG	SS BODY ASTM A351 GR CF8,GAV510,	GAV510	
GLOBE VALVE		1/2 - 11/2	800#	SOCW	SS BODY ASTM A182 GR F304,GLV501,	GLV501	
GLOBE VALVE		2 - 12	150#	FLG	SS BODY ASTM A351 GR CF8,GLV510,	GLV510	
CHECK VALVE		1/2 - 11/2	800#	SOCW	SS BODY ASTM A182 GR F304,CHV501,	CHV501	
CHECK VALVE		2 - 24	150#	FLG	SS BODY ASTM A351 GR CF8,CHV510,	CHV510	
CHECK VALVE		26 - 36	150#	FLG	SS BODY ASTM A351 GR CF8,CHV520,	CHV520	
BALL VALVE		1/2 - 11/2	800#	THRD	SS BODY AISI 316,BAV501,	BAV501	
BALL VALVE		2 - 6	150#	FLG	SS BODY ASTM A351 GR CF8M,BAV510,	BAV510	
BALL VALVE		8 - 24	150#	FLG	SS BODY ASTM A351 GR CF8M,BAV520,	BAV520	
BUTTERFLY VALVE		6 - 48	150#	RF	SS BODY ASTM A351 GR CF8,BUV510,WAFER TYPE	BUV510	
PLUG VALVE		1/2 - 1	600#	THRD	SS BODY AISI 316,PLV501,	PLV501	
PLUG VALVE		11/2 - 6	150#	FLG	SS BODY ASTM A351 GR CF8M,PLV510,	PLV510	

**PIPING MATERIAL SPECIFICATION**

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project ..TFL
 DOC. No.TFL-PDS-600
 Rev.:2

Class: B52

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE UL,WET ACID FLARE GAS	TEMPERATURE LIMITS (Deg.C)			
	Ref.SI	Ref.SI		
RATING ASME 150# RF	CORROSION ALLOWANCE NONE	MATERIAL SS 316L		

ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
PIPE							
PIPE		1/2 - 3/4	SCH40S	PE	SS,SMLS,ASTM A312 TP316L,ASME B36.19,	PP9121400	
PIPE		1 - 1 1/2	SCH40S	PE	SS,SMLS,ASTM A312 TP316L,ASME B36.19,	PP9121400	
PIPE		2 - 3	SCH10S	BE	SS,SMLS,ASTM A312 TP316L,ASME B36.19,	PP9111400	
PIPE		4 - 6	SCH10S	BE	SS,SMLS,ASTM A312 TP316L,ASME B36.19,	PP9111400	
PIPE		8 - 10	SCH10S	BE	SS,EFW,ASTM A358 TP316L CL.1,ASME B36.19,	PP9211400	
PIPE		12 - 14	SCH10S	BE	SS,EFW,ASTM A358 TP316L CL.1,ASME B36.19,	PP9211400	
PIPE		16 - 18	SCH10S	BE	SS,EFW,ASTM A358 TP316L CL.1,ASME B36.19,	PP9211400	
FLANGE							
FLANGE		1/2 - 1 1/2	150#	SW-RF 125 AARH	SS,ASTM A182 F316L,ASME B16.5,SOCKET WELD	FL88L0801	5
FLANGE		1/2 - 1 1/2	300#	SW-RF 125 AARH	SS,ASTM A182 F316L,ASME B16.5,SOCKET WELD	FL88L0802	6
W.N.FLANGE		2 - 4	150#	WN-RF 125 AARH	SS,ASTM A182 F316L,ASME B16.5,WELD NECK	WN8870801	5
W.N.FLANGE		6 - 18	150#	WN-RF 125 AARH	SS,ASTM A182 F316L,ASME B16.5,WELD NECK	WN8870801	
W.N.FLANGE		2 - 4	300#	WN-RF 125 AARH	SS,ASTM A182 F316L,ASME B16.5,WELD NECK	WN8870802	6
SPACER AND BLIND		18 - 18	150#	RF 125 AARH	ASTM A240 TP316L,ASME B16.48,	RS932PO01	
SPECL BLIND		1/2 - 16	150#	RF 125 AARH	ASTM A240 TP316L,ASME B16.48,	SP932PO01	
BLIND FLANGE							
BLIND FLANGE		1/2 - 18	150#	RF 125 AARH	SS,ASTM A182 F316L,ASME B16.5,	BF8820801	
GASKET							
GASKET		1/2 - 4	150#	SPRL-WND RF	GASKET,TP316L SS WDG;GPH FLR;TP316L SS INR RNG/ OTR RNG,ASME B16.20,	GS0830301	5
GASKET		6 - 18	150#	SPRL-WND RF	GASKET,TP316L SS WDG;GPH FLR;TP316L SS INR RNG/ OTR RNG,ASME B16.20,	GS0830301	
GASKET		1/2 - 4	300#	SPRL-WND RF	GASKET,TP316L SS WDG;GPH FLR;TP316L SS INR RNG/ OTR RNG,ASME B16.20,	GS0830302	6
STUD & NUTS							
STUD & 2NUTS HVY		-			ASTM A193 GR.B8 CL.2/ASTM A194 GR.8.,	SNA600000	
HEX							
FITTING (BW)							
CAP		2 - 18		BW	SS,ASTM A403 WP316L-SMLS,ASME B16.9,	CP8910900	
ELBOW		2 - 6		BW	SS,ASTM A403 WP316L-SMLS,ASME B16.9,	EL8910900	
ELBOW		8 - 18		BW	SS,ASTM A403 WP316L-WLDD,ASME B16.9,	EL9010900	
REDUCER CONC.		2 - 6		BW	SS,ASTM A403 WP316L-SMLS,ASME B16.9,	RC8910900	
REDUCER CONC.		8 - 18		BW	SS,ASTM A403 WP316L-WLDD,ASME B16.9,	RC9010900	
REDUCER ECC.		2 - 6		BW	SS,ASTM A403 WP316L-SMLS,ASME B16.9,	RE8910900	
REDUCER ECC.		8 - 18		BW	SS,ASTM A403 WP316L-WLDD,ASME B16.9,	RE9010900	
TEE		2 - 6		BW	SS,ASTM A403 WP316L-SMLS,ASME B16.9,	TE8910900	
TEE		8 - 18		BW	SS,ASTM A403 WP316L-WLDD,ASME B16.9,	TE9010900	
WELDOLET		2 - 18		BW	SS,ASTM A182 F316L,MSS SP 97,	WL8813300	
FITTING (SW)							
CAP		1/2 - 1 1/2	3000#	SOCW	SS,ASTM A182 F316L,ASME B16.11,	CP8830207	
COUPLING		1/2 - 1 1/2	3000#	SOCW	SS,ASTM A182 F316L,ASME B16.11,	CN8830207	W
ELBOW		1/2 - 1 1/2	3000#	SOCW	SS,ASTM A182 F316L,ASME B16.11,	EL8830207	
HALF COUPLING		1/2 - 1 1/2	3000#	SOCW	SS,ASTM A182 F316L,ASME B16.11,	HF8830207	W
SOCKOLET		1/2 - 18	3000#	SOCW	SS,ASTM A182 F316L,MSS SP 97,	SL8833307	
TEE		1/2 - 1 1/2	3000#	SOCW	SS,ASTM A182 F316L,ASME B16.11,	TE8830207	
FITTING (THD)							
COUPLING		1/2 - 1 1/2	3000#	THD	SS,ASTM A182 F316L,ASME B16.11,	CN8840207	T
ELBOLET		1/2 - 18	3000#	THD	SS,ASTM A182 F316L,MSS SP 97,	ET8843307	
HALF COUPLING		1/2 - 1 1/2	3000#	THD	SS,ASTM A182 F316L,ASME B16.11,	HF8840207	T
PLUG		1/2 - 1 1/2		THD	SS,ASTM A182 F316L,ASME B16.11,ROUND HEAD	PG8840200	
THREDOLET		1/2 - 18	3000#	THD	SS,ASTM A182 F316L,MSS SP 97,	TL8843307	



PIPING MATERIAL SPECIFICATION

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project :TFL
 DOC. No.TFL-PDS-600
 Rev.:2

Class: B52

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE UL.WET ACID FLARE GAS	TEMPERATURE LIMITS (Deg.C)			
	Ref.SI	Ref.SI		
RATING ASME 150# RF	CORROSION ALLOWANCE NONE	MATERIAL SS 316L		

ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
NIPPLE							
NIPPLE		1/2 - 11/2	SCH80S	PLN-PLN	SS,SMLS,ASTM A312 TP316L,ASME B36.19,	NP9151413	1
NIPPLE		1/2 - 11/2	SCH80S	PLN-THD	SS,SMLS,ASTM A312 TP316L,ASME B36.19,	NP9161413	2
NIPPLE		1/2 - 11/2	SCH80S	THD	SS,SMLS,ASTM A312 TP316L,ASME B36.19,	NP9141413	3
SWAGE NIPPLE							
SWAGE (CONC)		1/2 - 11/2		PE	SS,ASTM A182 F316L,MSS SP 95,	NC88J4500	
SWAGE (ECC)		1/2 - 11/2		PE	SS,ASTM A182 F316L,MSS SP 95,	NE88J4500	
VALVES							
GATE VALVE		1/2 - 11/2	800#	SOCW	SS BODY AISI 316L,GAV401,	GAV401	
GATE VALVE		2 - 6	150#	FLG	SS BODY ASTM A351 GR CF3M,GAV410,	GAV410	
GLOBE VALVE		1/2 - 11/2	800#	SOCW	SS BODY AISI 316L,GLV401,	GLV401	
GLOBE VALVE		2 - 6	150#	FLG	SS BODY ASTM A351 GR CF3M,GLV410,	GLV410	
CHECK VALVE		1/2 - 11/2	800#	SOCW	SS BODY AISI 316L,CHV401,	CHV401	
CHECK VALVE		2 - 12	150#	FLG	SS BODY ASTM A351 GR CF3M,CHV410,	CHV410	
BUTTERFLY VALVE		6 - 18	150#	RF	SS BODY ASTM A351 GR CF3M,BUV410,WAFER TYPE	BUV410	

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**PIPING MATERIAL SPECIFICATION**

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project ..TFL
 DOC. No.TFL-PDS-600
 Rev.:1

Class: D14

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE AG,AL,FG	TEMPERATURE LIMITS (Deg.C)						
	Ref.SI	Ref.SI					
RATING ASME 300# RF	CORROSION ALLOWANCE 1.5 MM(MIN.)	MATERIAL LT CS					
ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
PIPE							
PIPE		2 - 6	SCH 40	BE	SMLS,ASTM A333 GR.6,ASME B36.10,	PPP611300	
PIPE		8 - 10	SCH 30	BE	SMLS,ASTM A333 GR.6,ASME B36.10,	PPP611300	
PIPE		12 - 14	SCH 40	BE	SMLS,ASTM A333 GR.6,ASME B36.10,	PPP611300	
PIPE		1/2 - 3/4	SCH 80	PE	SMLS,ASTM A333 GR.6,ASME B36.10,	PPP621300	
PIPE		1 - 1 1/4	SCH 80	PE	SMLS,ASTM A333 GR.6,ASME B36.10,	PPP621300	
PIPE		1 1/2 - 1 1/2	SCH 80	PE	SMLS,ASTM A333 GR.6,ASME B36.10,	PPP621300	
PIPE		16 - 18	SCH 40	BE	SMLS,ASTM A333 GR.6,ASME B36.10,	PPP611300	
PIPE		20 - 22	SCH 40	BE	SMLS,ASTM A333 GR.6,ASME B36.10,	PPP611300	
PIPE		24 - 24	SCH 40	BE	SMLS,ASTM A333 GR.6,ASME B36.10,	PPP611300	
FLANGE							
LONG W.N.FLANGE		1 1/2 - 1 1/2	300#	WN-RF 125 AARH	ASTM A350 LF2 CL.1,ASME B16.5,38mmBORE,200mmLONG	LN3570802	
W.N.FLANGE		1/2 - 24	300#	WN-RF 125 AARH	ASTM A350 LF2 CL.1,ASME B16.5,WELD NECK	WN3570802	
SPACER AND BLIND		14 - 24	300#	RF 125 AARH	ASTM A350 LF2 CL.1,ASME B16.48,	RS352PO02	
SPECL BLIND		1/2 - 12	300#	RF 125 AARH	ASTM A350 LF2 CL.1,ASME B16.48,	SP352PO02	
BLIND FLANGE							
BLIND FLANGE		1/2 - 24	300#	RF 125 AARH	ASTM A350 LF2 CL.1,ASME B16.5,	BF3520802	
GASKET							
GASKET		1/2 - 24	300#	SPRL-WND RF	TP304 SS WDG;GPH FLR;TP304 SS INR RNG;CS OTR RNG,ASME B16.20,	GSQN30302	
STUD & NUTS							
STUD & 2NUTS HVY		-			ASTM A320 GR.L7/ASTM A194 GR.7,,	SNDA00000	
HEX							
FITTING (BW)							
BRANCH WELD WITH RP		2 - 24		BW	LT CARBON STEEL,ASME B31.3,	WBE211200	
CAP		2 - 24		BW	ASTM A420 WPL6-SMLS,ASME B16.9,	CP4910900	
ELBOW		2 - 24		BW	ASTM A420 WPL6-SMLS,ASME B16.9,	EL4910900	
REDUCER CONC.		2 - 24		BW	ASTM A420 WPL6-SMLS,ASME B16.9,	RC4910900	
REDUCER ECC.		2 - 24		BW	ASTM A420 WPL6-SMLS,ASME B16.9,	RE4910900	
TEE		2 - 24		BW	ASTM A420 WPL6-SMLS,ASME B16.9,	TE4910900	
WELDOLET		2 - 24		BW	ASTM A350 LF2 CL.1,MSS SP 97,	WL3513300	
FITTING (SW)							
CAP		1/2 - 1 1/2	3000#	SOCW	ASTM A350 LF2 CL.1,ASME B16.11,	CP3530207	W
COUPLING		1/2 - 1 1/2	3000#	SOCW	ASTM A350 LF2 CL.1,ASME B16.11,	CN3530207	
ELBOW		1/2 - 1 1/2	3000#	SOCW	ASTM A350 LF2 CL.1,ASME B16.11,	EL3530207	
HALF COUPLING		1/2 - 1 1/2	3000#	SOCW	ASTM A350 LF2 CL.1,ASME B16.11,	HF3530207	
SOCKOLET		1/2 - 24	3000#	SOCW	ASTM A350 LF2 CL.1,MSS SP 97,	SL3533307	
TEE		1/2 - 1 1/2	3000#	SOCW	ASTM A350 LF2 CL.1,ASME B16.11,	TE3530207	
FITTING (THD)							
CAP		1/2 - 1 1/2	3000#	THD	ASTM A350 LF2 CL.1,ASME B16.11,	CP3540207	T
PLUG		1/2 - 1 1/2		THD	ASTM A350 LF2 CL.1,ASME B16.11,ROUND HEAD	PG3540200	
THREDOLET		1/2 - 24	3000#	THD	ASTM A350 LF2 CL.1,MSS SP 97,	TL3543307	
NIPPLE							
NIPPLE		1/2 - 1 1/2	SCH160	PLN-PLN	SMLS,ASTM A333 GR.6,ASME B36.10,	NPP651312	1
NIPPLE		1/2 - 1 1/2	SCH160	PLN-THD	SMLS,ASTM A333 GR.6,ASME B36.10,NPT	NPP661312	2
NIPPLE		1/2 - 1 1/2	SCH160	THD	SMLS,ASTM A333 GR.6,ASME B36.10,NPT	NPP641312	3
SWAGE NIPPLE							
SWAGE (CONC)		1/2 - 1 1/2		PE	ASTM A420 WPL6-SMLS,MSS SP 95,	NC49J4500	P
SWAGE (CONC)		1/2 - 1 1/2		PLN-THD	ASTM A420 WPL6-SMLS,MSS SP 95,	NC4964500	T
SWAGE (ECC)		1/2 - 1 1/2		PE	ASTM A420 WPL6-SMLS,MSS SP 95,	NE49J4500	P
SWAGE (ECC)		1/2 - 1 1/2		PLN-THD	ASTM A420 WPL6-SMLS,MSS SP 95,	NE4964500	T
VALVES							



PIPING MATERIAL SPECIFICATION

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project :TFL
 DOC. No.TFL-PDS-600
 Rev.:1

Class: D14

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE AG,AL,FG	TEMPERATURE LIMITS (Deg.C)			
	Ref.SI	Ref.SI		

RATING ASME 300# RF	CORROSION ALLOWANCE 1.5 MM(MIN.)	MATERIAL LT CS			
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ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
GATE VALVE		1/2 - 1	800#	SOCW	LTCS BODY ASTM A350 GR LF2,GAV101,	GAV101	
GATE VALVE		1 1/2 - 1 1/2	800#	SOCW	LTCS BODY ASTM A350 GR LF2,GAV101,	GAV101	W
GATE VALVE		1 1/2 - 1 1/2	300#	FLG	LTCS BODY ASTM A352 GR LCB,GAV111,	GAV111	F
GATE VALVE		2 - 24	300#	FLG	LTCS BODY ASTM A352 GR LCB,GAV111,	GAV111	
GLOBE VALVE		1/2 - 1 1/2	800#	SOCW	LTCS BODY ASTM A350 GR LF2,GLV101,	GLV101	
GLOBE VALVE		2 - 8	300#	FLG	LTCS BODY ASTM A352 GR LCB,GLV111,	GLV111	
CHECK VALVE		1/2 - 1 1/2	800#	SOCW	LTCS BODY ASTM A350 GR LF2,CHV101,	CHV101	
CHECK VALVE		2 - 24	300#	FLG	LTCS BODY ASTM A352 GR LCB,CHV111,	CHV111	
BALL VALVE		1/2 - 1	800#	SOCW	LTCS BODY ASTM A350 GR LF2,BAV101,	BAV101	
BALL VALVE		1 1/2 - 1 1/2	800#	SOCW	LTCS BODY ASTM A350 GR LF2,BAV101,	BAV101	W
BALL VALVE		1 1/2 - 1 1/2	300#	FLG	LTCS BODY ASTM A352 GR LCB,BAV111,	BAV111	F
BALL VALVE		2 - 14	300#	FLG	LTCS BODY ASTM A352 GR LCB,BAV111,	BAV111	

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**PIPING MATERIAL SPECIFICATION**

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project :TFL
 DOC. No.TFL-PDS-600
 Rev.:0

Class: D24

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE AG,AL,AW,FG,FN,HG,IAH,IAW,NG,NI,PA,PN,VS ETC.	TEMPERATURE LIMITS (Deg.C)			
	Ref SI	Ref SI		
RATING ASME 300# RF	CORROSION ALLOWANCE 1.5 MM(MIN)	MATERIAL CS		

ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
PIPE							
PIPE		2 - 6	SCH 40	BE	SMLS,API 5L GR.B,ASME B36.10,	PPA111300	
PIPE		8 - 8	SCH 20	BE	SMLS,API 5L GR.B,ASME B36.10,	PPA111300	
PIPE		1/2 - 3/4	SCH 80	PE	SMLS,API 5L GR.B,ASME B36.10,	PPA121300	
PIPE		1 - 11/4	SCH 80	PE	SMLS,API 5L GR.B,ASME B36.10,	PPA121300	
PIPE		11/2 - 11/2	SCH 80	PE	SMLS,API 5L GR.B,ASME B36.10,	PPA121300	
PIPE		10 - 12	SCH 30	BE	SMLS,API 5L GR.B,ASME B36.10,	PPA111300	
PIPE		14 - 14	SCH 30	BE	SMLS,API 5L GR.B,ASME B36.10,	PPA111300	
PIPE		16 - 18	SCH XS	BE	SMLS,API 5L GR.B,ASME B36.10,	PPA111300	
PIPE		20 - 20	SCH XS	BE	SMLS,API 5L GR.B,ASME B36.10,	PPA111300	
PIPE		22 - 22	17.48 MM	BE	SMLS,API 5L GR.B,ASME B36.10,	PPA111300	
PIPE		24 - 24	SCH 40	BE	SMLS,API 5L GR.B,ASME B36.10,	PPA111300	
PIPE		26 - 28	17.40 MM	BE	SMLS,API 5L GR.B,ASME B36.10,	PPA111300	
FLANGE							
LONG W.N.FLANGE		11/2 - 11/2	300#	WN-RF 125 AARH	CS ASTM A105,ASME B16.5,38mmBORE,200mmLONG	LN0270802	
W.N.FLANGE		26 - 28	300#	WN-RF 125 AARH	CS ASTM A105,ASME B16.47 SR.B,WELD NECK	WN0270702	
W.N.FLANGE		1/2 - 24	300#	WN-RF 125 AARH	CS ASTM A105,ASME B16.5,WELD NECK	WN0270802	
SPACER AND BLIND		14 - 24	300#	RF 125 AARH	CS ASTM A105,ASME B16.48,	RS022P002	
SPECL BLIND		1/2 - 12	300#	RF 125 AARH	CS ASTM A105,ASME B16.48,	SP022P002	
BLIND FLANGE							
BLIND FLANGE		26 - 28	300#	RF 125 AARH	CS ASTM A105,ASME B16.47 SR.B,	BF0220702	
BLIND FLANGE		1/2 - 24	300#	RF 125 AARH	CS ASTM A105,ASME B16.5,	BF0220802	
GASKET							
GASKET		1/2 - 24	300#	SPRL-WND RF	TP304 SS WDG;GPH FLR;TP304 SS INR RNG;CS OTR RNG,ASME B16.20,	GSQN30302	
GASKET		26 - 28	300#	SPRL-WND RF	TP304 SS WDG;GPH FLR;TP304 SS INR RNG;CS OTR RNG,ASME B16.20/B16.47 SR.B,	GSQN3QJ02	
STUD & NUTS							
STUD & 2NUTS HVY HEX		-			ASTM A193 GR.B7/ASTM A194 GR.2H,,	SNDE00000	
DRIP RING							
DRIP RING		3 - 3	300#	RF 125 AARH	CS ASTM A105,PDIL-PDS-600,	DR022QK02	
FITTING (BW)							
BRANCH WELD		2 - 28		BW	CARBON STEEL,ASME B31.3,	RWOJ11200	
BRANCH WELD WITH RP		2 - 28		BW	CARBON STEEL,ASME B31.3,	WBOJ11200	
CAP		2 - 28		BW	ASTM A234 WPB-SMLS,ASME B16.9,	CP7310900	
ELBOW		2 - 28		BW	ASTM A234 WPB-SMLS,ASME B16.9,	EL7310900	
REDUCER CONC.		2 - 28		BW	ASTM A234 WPB-SMLS,ASME B16.9,	RC7310900	
REDUCER ECC.		2 - 28		BW	ASTM A234 WPB-SMLS,ASME B16.9,	RE7310900	
TEE		2 - 28		BW	ASTM A234 WPB-SMLS,ASME B16.9,	TE7310900	
WELDOLET		2 - 28		BW	CS ASTM A105,MSS SP 97,	WL0213300	
FITTING (SW)							
CAP		1/2 - 11/2	3000#	SOCW	CS ASTM A105,ASME B16.11,	CP0230207	W
COUPLING		1/2 - 11/2	3000#	SOCW	CS ASTM A105,ASME B16.11,	CN0230207	
ELBOW		1/2 - 11/2	3000#	SOCW	CS ASTM A105,ASME B16.11,	EL0230207	
HALF COUPLING		1/2 - 11/2	3000#	SOCW	CS ASTM A105,ASME B16.11,	HF0230207	
SOCKOLET		1/2 - 28	3000#	SOCW	CS ASTM A105,MSS SP 97,	SL0233307	
TEE		1/2 - 11/2	3000#	SOCW	CS ASTM A105,ASME B16.11,	TE0230207	
FITTING (THD)							
CAP		1/2 - 11/2	3000#	THD	CS ASTM A105,ASME B16.11,	CP0240207	T
PLUG		1/2 - 11/2		THD	CS ASTM A105,ASME B16.11,ROUND HEAD	PG0240200	
THREDOLET		1/2 - 28	3000#	THD	CS ASTM A105,MSS SP 97,	TL0243307	



PIPING MATERIAL SPECIFICATION

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project :TFL
 DOC. No.TFL-PDS-600
 Rev.:0

Class: D24

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE AG,AL,AW,FG,FN,HG,IAH,IAW,NG,NI,PA,PN,VS ETC.	TEMPERATURE LIMITS (Deg.C)			
	Ref SI	Ref SI		
RATING ASME 300# RF	CORROSION ALLOWANCE 1.5 MM(MIN)	MATERIAL CS		

ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
NIPPLE							
NIPPLE		1/2 - 1 1/2	SCH160	PLN-PLN	SMLS,API 5L GR.B,ASME B36.10,	NPA151312	1
NIPPLE		1/2 - 1 1/2	SCH160	PLN-THD	SMLS,API 5L GR.B,ASME B36.10,NPT	NPA161312	2
NIPPLE		1/2 - 1 1/2	SCH160	THD	SMLS,API 5L GR.B,ASME B36.10,NPT	NPA141312	3
SWAGE NIPPLE							
SWAGE (CONC)		1/2 - 1 1/2		PE	ASTM A234 WPB-SMLS,MSS SP 95,	NC73J4500	P
SWAGE (CONC)		1/2 - 1 1/2		PLN-THD	ASTM A234 WPB-SMLS,MSS SP 95,	NC7364500	T
SWAGE (ECC)		1/2 - 1 1/2		PE	ASTM A234 WPB-SMLS,MSS SP 95,	NE73J4500	P
SWAGE (ECC)		1/2 - 1 1/2		PLN-THD	ASTM A234 WPB-SMLS,MSS SP 95,	NE7364500	T
VALVES							
GATE VALVE		2 - 24	300#	FLG	CS BODY ASTM A216 GR WCB,GAV211,	GAV211	
GATE VALVE		1/2 - 1 1/2	800#	SOCW	CS BODY ASTM A105,GAV201,	GAV201	
GLOBE VALVE		1/2 - 1 1/2	800#	SOCW	CS BODY ASTM A105,GLV201,	GLV201	
GLOBE VALVE		2 - 12	300#	FLG	CS BODY ASTM A216 GR WCB,GLV211,	GLV211	
CHECK VALVE		1/2 - 1 1/2	800#	SOCW	CS BODY ASTM A105,CHV201,	CHV201	
CHECK VALVE		2 - 24	300#	FLG	CS BODY ASTM A216 GR WCB,CHV211,	CHV211	
BALL VALVE		1/2 - 1 1/2	800#	SOCW	CS BODY ASTM A105,BAV202,	BAV202	
BALL VALVE		2 - 6	300#	FLG	CS BODY ASTM A216 GR WCB,BAV211,	BAV211	
BALL VALVE		8 - 24	300#	FLG	CS BODY ASTM A216 GR WCB,BAV221,	BAV221	
BUTTERFLY VALVE		3 - 24	300#	RF	CS BODY ASTM A216 GR WCB,BUV202,WAFER TYPE	BUV202	
PLUG VALVE		1/2 - 1	600#	THRD	CS BODY ASTM A105,PLV201,	PLV201	
PLUG VALVE		1 1/2 - 6	300#	FLG	CS BODY ASTM A216 GR WCB,PLV205,	PLV205	

**PIPING MATERIAL SPECIFICATION**

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project ..TFL
 DOC. No.TFL-PDS-600
 Rev.:0

Class: D50

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE AW,PH,PC,AF,DM,MD,IA	TEMPERATURE LIMITS (Deg.C)			
	Ref SI	Ref SI		
RATING ASME 300# RF	CORROSION ALLOWANCE NONE	MATERIAL SS 304		

ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
PIPE							
PIPE		14 - 14	SCHSTD	BE	EFW,STR.WELD,ASTM A312 TP304,ASME B36.10,	PPZ111300	
PIPE		16 - 18	SCH XS	BE	EFW,ASTM A358 GR.TP304 CL.1,ASME B36.10,	PPW911300	
PIPE		20 - 20	SCH XS	BE	EFW,ASTM A358 GR.TP304 CL.1,ASME B36.10,	PPW911300	
PIPE		24 - 24	SCH 40	BE	EFW,ASTM A358 GR.TP304 CL.1,ASME B36.10,	PPW911300	
PIPE		26 - 28	17.48 MM	BE	EFW,ASTM A358 GR.TP304 CL.1,ASME B36.10,	PPW911300	
PIPE		1/2 - 3/4	SCH40S	PE	SMLS,ASTM A312 TP304,ASME B36.19,	PPPE21400	
PIPE		1 - 1 1/4	SCH40S	PE	SMLS,ASTM A312 TP304,ASME B36.19,	PPPE21400	
PIPE		1 1/2 - 1 1/2	SCH40S	PE	SMLS,ASTM A312 TP304,ASME B36.19,	PPPE21400	
PIPE		2 - 4	SCH10S	BE	EFW,STR.WELD,ASTM A312 TP304,ASME B36.19,	PPZ111400	
PIPE		6 - 8	SCH40S	BE	EFW,STR.WELD,ASTM A312 TP304,ASME B36.19,	PPZ111400	
PIPE		10 - 12	SCH40S	BE	EFW,STR.WELD,ASTM A312 TP304,ASME B36.19,	PPZ111400	
FLANGE							
W.N.FLANGE		26 - 28	300#	WN-RF 125 AARH	ASTM A182 F304,ASME B16.47 SR.B,WELD NECK	WN0670702	
W.N.FLANGE		1/2 - 24	300#	WN-RF 125 AARH	ASTM A182 F304,ASME B16.5,WELD NECK	WN0670802	
SPACER AND BLIND		14 - 28	300#	RF 125 AARH	ASTM A182 F304,ASME B16.48,	RS062P002	
SPECL BLIND		1/2 - 12	300#	RF 125 AARH	ASTM A182 F304,ASME B16.48,	SP062P002	
BLIND FLANGE							
BLIND FLANGE		26 - 28	300#	RF 125 AARH	ASTM A182 F304,ASME B16.47 SR.B,	BF0620702	
BLIND FLANGE		1/2 - 28	300#	RF 125 AARH	ASTM A182 F304,ASME B16.5,	BF0620802	
GASKET							
GASKET		1/2 - 24	300#	SPRL-WND RF	TP304 SS WDG/ GPH FLR; TP304 SS INR RNG/ OTR RNG,ASME B16.20,	GSQL30302	
GASKET		26 - 28	300#	SPRL-WND RF	TP304 SS WDG/ GPH FLR; TP304 SS INR RNG/ OTR RNG,ASME B16.20/B16.47 SR.B,	GSQL3QJ02	
STUD & NUTS							
STUD & 2NUTS HVY		-			ASTM A193 GR.B8T CL.2/ASTM A194 GR.8TA,,	SNQG00000	
HEX							
DRIP RING							
DRIP RING		3 - 12	300#	RF 125 AARH	ASTM A182 F304,PDIL-PDS-600,	DR062QK02	
FITTING (BW)							
BRANCH WELD		2 - 28		BW	STAINLESS STEEL,ASME B31.3,	RWOK11200	
BRANCH WELD WITH RP		2 - 28		BW	STAINLESS STEEL,ASME B31.3,	WBOK11200	
CAP		2 - 24		BW	ASTM A403 WP304-SMLS,ASME B16.9,	CP7410900	
ELBOW		2 - 28		BW	ASTM A403 WP304-WLDD,ASME B16.9,	ELZ410900	L
ELBOW		2 - 28	19.05 MM	BW	ASTM A403 WP304-WLDD,PDIL-PDS-600,R=3D	ELZ41QK60	3
REDUCER CONC.		2 - 28		BW	ASTM A403 WP304-WLDD,ASME B16.9,	RCZ410900	
REDUCER ECC.		2 - 28		BW	ASTM A403 WP304-WLDD,ASME B16.9,	REZ410900	
TEE		2 - 28		BW	ASTM A403 WP304-WLDD,ASME B16.9,	TEZ410900	
WELDOLET		2 - 28		BW	ASTM A182 F304,MSS SP 97,	WL0613300	
FITTING (SW)							
CAP		1/2 - 1 1/2	3000#	SOCW	ASTM A182 F304,ASME B16.11,	CP0630207	W
COUPLING		1/2 - 1 1/2	3000#	SOCW	ASTM A182 F304,ASME B16.11,	CN0630207	
ELBOW		1/2 - 1 1/2	3000#	SOCW	ASTM A182 F304,ASME B16.11,	EL0630207	
HALF COUPLING		1/2 - 1 1/2	3000#	SOCW	ASTM A182 F304,ASME B16.11,	HF0630207	
SOCKOLET		1/2 - 28	3000#	SOCW	ASTM A182 F304,MSS SP 97,	SL0633307	
TEE		1/2 - 1 1/2	3000#	SOCW	ASTM A182 F304,ASME B16.11,	TE0630207	
FITTING (THD)							
CAP		1/2 - 1 1/2	3000#	THD	ASTM A182 F304,ASME B16.11,	CP0640207	T
PLUG		1/2 - 1 1/2		THD	ASTM A182 F304,ASME B16.11,ROUND HEAD	PG0640200	
THREDOLET		1/2 - 28	3000#	THD	ASTM A182 F304,MSS SP 97,	TL0643307	
NIPPLE							



PIPING MATERIAL SPECIFICATION

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project :TFL
 DOC. No.TFL-PDS-600
 Rev.:0

Class: D50

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE AW,PH,PC,AF,DM,MD,IA	TEMPERATURE LIMITS (Deg.C)			
	Ref SI	Ref SI		

RATING ASME 300# RF	CORROSION ALLOWANCE NONE	MATERIAL SS 304			
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ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
NIPPLE		1/2 - 11/2	SCH80S	PLN-PLN	SMLS,ASTM A312 TP304,ASME B36.19,	NPPE51413	1
NIPPLE		1/2 - 11/2	SCH80S	PLN-THD	SMLS,ASTM A312 TP304,ASME B36.19,NPT	NPPE61413	2
NIPPLE		1/2 - 11/2	SCH80S	THD	SMLS,ASTM A312 TP304,ASME B36.19,NPT	NPPE41413	3
SWAGE NIPPLE							
SWAGE (CONC)		1/2 - 11/2		PE	ASTM A403 WP304-SMLS,MSS SP 95,	NC74J4500	P
SWAGE (CONC)		1/2 - 11/2		PLN-THD	ASTM A403 WP304-SMLS,MSS SP 95,	NC7464500	T
SWAGE (ECC)		1/2 - 11/2		PE	ASTM A403 WP304-SMLS,MSS SP 95,	NE74J4500	P
SWAGE (ECC)		1/2 - 11/2		PLN-THD	ASTM A403 WP304-SMLS,MSS SP 95,	NE7464500	T
VALVES							
GATE VALVE		1/2 - 1	800#	SOCW	SS BODY ASTM A182 GR F304,GAV501,	GAV501	
GATE VALVE		11/2 - 11/2	800#	SOCW	SS BODY ASTM A182 GR F304,GAV501,	GAV501	W
GATE VALVE		11/2 - 11/2	300#	FLG	SS BODY ASTM A351 GR CF8M,GAV511,	GAV511	F
GATE VALVE		2 - 24	300#	FLG	SS BODY ASTM A351 GR CF8M,GAV511,	GAV511	
GLOBE VALVE		1/2 - 11/2	800#	SOCW	SS BODY ASTM A182 GR F304,GLV501,	GLV501	
GLOBE VALVE		2 - 12	300#	FLG	SS BODY ASTM A351 GR CF8M,GLV511,	GLV511	
CHECK VALVE		1/2 - 11/2	800#	SOCW	SS BODY ASTM A182 GR F304,CHV501,	CHV501	
CHECK VALVE		2 - 24	300#	FLG	SS BODY ASTM A351 GR CF8M,CHV511,	CHV511	
BALL VALVE		1/2 - 11/2	800#	THRD	SS BODY AISI 316,BAV501,	BAV501	
BALL VALVE		8 - 24	300#	FLG	SS BODY ASTM A351 GR CF8M,BAV521,	BAV521	
PLUG VALVE		1/2 - 1	600#	THRD	SS BODY AISI 316,PLV501,	PLV501	
PLUG VALVE		11/2 - 6	300#	FLG	SS BODY ASTM A351 GR CF8M,PLV511,	PLV511	

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**PIPING MATERIAL SPECIFICATION**

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project ..TFL
 DOC. No.TFL-PDS-600
 Rev.:3

Class: D52

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE UL	TEMPERATURE LIMITS (Deg.C)						
	Ref.SI	Ref.SI					
RATING ASME 300# RF	CORROSION ALLOWANCE NONE	MATERIAL SS 316L					
ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
PIPE							
PIPE		1/2 - 3/4	SCH40S	PE	SS,SMLS,ASTM A312 TP316L,ASME B36.19,	PP9121400	
PIPE		1 - 1 1/2	SCH40S	PE	SS,SMLS,ASTM A312 TP316L,ASME B36.19,	PP9121400	
PIPE		2 - 3	SCH10S	BE	SS,SMLS,ASTM A312 TP316L,ASME B36.19,	PP9111400	
PIPE		4 - 6	SCH10S	BE	SS,SMLS,ASTM A312 TP316L,ASME B36.19,	PP9111400	
PIPE		8 - 10	SCH10S	BE	SS,EFW,ASTM A358 TP316L CL.1,ASME B36.19,	PP9211400	
PIPE		12 - 14	SCH10S	BE	SS,EFW,ASTM A358 TP316L CL.1,ASME B36.19,	PP9211400	
PIPE		16 - 18	SCH10S	BE	SS,EFW,ASTM A358 TP316L CL.1,ASME B36.19,	PP9211400	
FLANGE							
FLANGE		1/2 - 1 1/2	300#	SW-RF 125 AARH	SS,ASTM A182 F316L,ASME B16.5,SOCKET WELD	FL88L0802	
W.N.FLANGE		2 - 18	300#	WN-RF 125 AARH	SS,ASTM A182 F316L,ASME B16.5,WELD NECK	WN8870802	
SPACER AND BLIND		18 - 18	300#	RF 125 AARH	ASTM A240 TP316L,ASME B16.48,	RS932PO02	
SPECL BLIND		1/2 - 16	300#	RF 125 AARH	ASTM A240 TP316L,ASME B16.48,	SP932PO02	
BLIND FLANGE							
BLIND FLANGE		1/2 - 18	300#	RF 125 AARH	SS,ASTM A182 F316L,ASME B16.5,	BF8820802	
GASKET							
GASKET		1/2 - 18	300#	SPRL-WND RF	GASKET,TP316L SS WDG;GPH FLR;TP316L SS INR RNG/ OTR RNG,ASME B16.20,	GS0830302	
STUD & NUTS							
STUD & 2NUTS HVY		-			ASTM A193 GR.B8 CL.2/ASTM A194 GR.8,,	SNA600000	
HEX							
FITTING (BW)							
CAP		2 - 18		BW	SS,ASTM A403 WP316L-SMLS,ASME B16.9,	CP8910900	
ELBOW		2 - 6		BW	SS,ASTM A403 WP316L-SMLS,ASME B16.9,	EL8910900	
ELBOW		8 - 18		BW	SS,ASTM A403 WP316L-WLDD,ASME B16.9,	EL9010900	
REDUCER CONC.		2 - 6		BW	SS,ASTM A403 WP316L-SMLS,ASME B16.9,	RC8910900	
REDUCER CONC.		8 - 18		BW	SS,ASTM A403 WP316L-WLDD,ASME B16.9,	RC9010900	
REDUCER ECC.		2 - 6		BW	SS,ASTM A403 WP316L-SMLS,ASME B16.9,	RE8910900	
REDUCER ECC.		8 - 18		BW	SS,ASTM A403 WP316L-WLDD,ASME B16.9,	RE9010900	
TEE		2 - 6		BW	SS,ASTM A403 WP316L-SMLS,ASME B16.9,	TE8910900	
TEE		8 - 18		BW	SS,ASTM A403 WP316L-WLDD,ASME B16.9,	TE9010900	
WELDOLET		2 - 18		BW	SS,ASTM A182 F316L,MSS SP 97,	WL8813300	
FITTING (SW)							
CAP		1/2 - 1 1/2	3000#	SOCW	SS,ASTM A182 F316L,ASME B16.11,	CP8830207	
COUPLING		1/2 - 1 1/2	3000#	SOCW	SS,ASTM A182 F316L,ASME B16.11,	CN8830207	W
ELBOW		1/2 - 1 1/2	3000#	SOCW	SS,ASTM A182 F316L,ASME B16.11,	EL8830207	
HALF COUPLING		1/2 - 1 1/2	3000#	SOCW	SS,ASTM A182 F316L,ASME B16.11,	HF8830207	W
SOCKOLET		1/2 - 18	3000#	SOCW	SS,ASTM A182 F316L,MSS SP 97,	SL8833307	
TEE		1/2 - 2 1/2	3000#	SOCW	SS,ASTM A182 F316L,ASME B16.11,	TE8830207	
FITTING (THD)							
COUPLING		1/2 - 1 1/2	3000#	THD	SS,ASTM A182 F316L,ASME B16.11,	CN8840207	T
ELBOLET		1/2 - 18	3000#	THD	SS,ASTM A182 F316L,MSS SP 97,	ET8843307	
HALF COUPLING		1/2 - 1 1/2	3000#	THD	SS,ASTM A182 F316L,ASME B16.11,	HF8840207	T
PLUG		1/2 - 1 1/2		THD	SS,ASTM A182 F316L,ASME B16.11,ROUND HEAD	PG8840200	
THREDOLET		1/2 - 18	3000#	THD	SS,ASTM A182 F316L,MSS SP 97,	TL8843307	
NIPPLE							
NIPPLE		1/2 - 1 1/2	SCH80S	PLN-PLN	SS,SMLS,ASTM A312 TP316L,ASME B36.19,	NP9151413	1
NIPPLE		1/2 - 1 1/2	SCH80S	PLN-THD	SS,SMLS,ASTM A312 TP316L,ASME B36.19,	NP9161413	2
NIPPLE		1/2 - 1 1/2	SCH80S	THD	SS,SMLS,ASTM A312 TP316L,ASME B36.19,	NP9141413	3
SWAGE NIPPLE							
SWAGE (CONC)		1/2 - 1 1/2		PE	SS,ASTM A182 F316L,MSS SP 95,	NC88J4500	
SWAGE (ECC)		1/2 - 1 1/2		PE	SS,ASTM A182 F316L,MSS SP 95,	NE88J4500	



PIPING MATERIAL SPECIFICATION

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project :TFL
 DOC. No.TFL-PDS-600
 Rev.:3

Class: D52

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE UL	TEMPERATURE LIMITS (Deg.C)			
	Ref.SI	Ref.SI		
RATING ASME 300# RF	CORROSION ALLOWANCE NONE	MATERIAL SS 316L		

ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
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VALVES

GATE VALVE		1/2 - 11/2	800#	SOCW	SS BODY AISI 316L,GAV401,	GAV401	
GATE VALVE		2 - 6	300#	FLG	SS BODY ASTM A351 GR CF3M,GAV411,	GAV411	
GLOBE VALVE		1/2 - 11/2	800#	SOCW	SS BODY AISI 316L,GLV401,	GLV401	
GLOBE VALVE		2 - 6	300#	FLG	SS BODY ASTM A351 GR CF3M,GLV411,	GLV411	
CHECK VALVE		1/2 - 11/2	800#	SOCW	SS BODY AISI 316L,CHV401,	CHV401	
CHECK VALVE		2 - 12	300#	FLG	SS BODY ASTM A351 GR CF3M,CHV411,	CHV411	
BUTTERFLY VALVE		6 - 18	300#	RF	SS BODY ASTM A351 GR CF3M,BUV411,WAFFER TYPE	BUV411	

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**PIPING MATERIAL SPECIFICATION**

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project ..TFL
 DOC. No.TFL-PDS-600
 Rev.:0

Class: F24

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE AW,HG,PA,PC,PN,SG		TEMPERATURE LIMITS (Deg.C)					
		Ref SI	Ref SI				
RATING ASME 600# RF	CORROSION ALLOWANCE 1.5 MM(MIN.)	MATERIAL CS					
ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
PIPE							
PIPE		2 - 3	SCH 40	BE	SMLS,API 5L GR.B,ASME B36.10,	PPA111300	
PIPE		4 - 5	SCH 80	BE	SMLS,API 5L GR.B,ASME B36.10,	PPA111300	
PIPE		6 - 8	SCH 80	BE	SMLS,API 5L GR.B,ASME B36.10,	PPA111300	
PIPE		10 - 12	SCH 80	BE	SMLS,API 5L GR.B,ASME B36.10,	PPA111300	
PIPE		14 - 16	SCH 80	BE	SMLS,API 5L GR.B,ASME B36.10,	PPA111300	
PIPE		18 - 20	SCH 80	BE	SMLS,API 5L GR.B,ASME B36.10,	PPA111300	
PIPE		22 - 24	SCH 80	BE	SMLS,API 5L GR.B,ASME B36.10,	PPA111300	
PIPE		1/2 - 3/4	SCH 80	PE	SMLS,API 5L GR.B,ASME B36.10,	PPA121300	
PIPE		1 - 1 1/4	SCH 80	PE	SMLS,API 5L GR.B,ASME B36.10,	PPA121300	
PIPE		1 1/2 - 1 1/2	SCH 80	PE	SMLS,API 5L GR.B,ASME B36.10,	PPA121300	
FLANGE							
LONG W.N.FLANGE		1 1/2 - 1 1/2	600#	WN-RF 125 AARH	CS ASTM A105,ASME B16.5,38mmBORE,200mmLONG	LN0270803	
W.N.FLANGE		1/2 - 24	600#	WN-RF 125 AARH	CS ASTM A105,ASME B16.5,WELD NECK	WN0270803	
SPACER AND BLIND		10 - 24	600#	RF 125 AARH	CS ASTM A105,ASME B16.48,	RS022P003	
SPECL BLIND		1/2 - 8	600#	RF 125 AARH	CS ASTM A105,ASME B16.48,	SP022P003	
BLIND FLANGE							
BLIND FLANGE		1/2 - 24	600#	RF 125 AARH	CS ASTM A105,ASME B16.5,	BF0220803	
GASKET							
GASKET		1/2 - 24	600#	SPRL-WND RF	TP304 SS WDG;GPH FLR;TP304 SS INR RNG;CS OTR RNG,ASME B16.20,	GSQN30303	
STUD & NUTS							
STUD & 2NUTS HVY		-			ASTM A193 GR.B7/ASTM A194 GR.2H,,	SNDE00000	
HEX							
FITTING (BW)							
BRANCH WELD		2 - 24		BW	CARBON STEEL,ASME B31.3,	RWOJ11200	
BRANCH WELD WITH		2 - 24		BW	CARBON STEEL,ASME B31.3,	WBOJ11200	
RP							
CAP		2 - 24		BW	ASTM A234 WPB-SMLS,ASME B16.9,	CP7310900	
ELBOW		2 - 24		BW	ASTM A234 WPB-SMLS,ASME B16.9,	EL7310900	
REDUCER CONC.		2 - 24		BW	ASTM A234 WPB-SMLS,ASME B16.9,	RC7310900	
REDUCER ECC.		2 - 24		BW	ASTM A234 WPB-SMLS,ASME B16.9,	RE7310900	
TEE		2 - 24		BW	ASTM A234 WPB-SMLS,ASME B16.9,	TE7310900	
WELDOLET		2 - 24		BW	CS ASTM A105,MSS SP 97,	WL0213300	
FITTING (SW)							
CAP		1/2 - 1 1/2	3000#	SOCW	CS ASTM A105,ASME B16.11,	CP0230207	W
COUPLING		1/2 - 1 1/2	3000#	SOCW	CS ASTM A105,ASME B16.11,	CN0230207	
ELBOW		1/2 - 1 1/2	3000#	SOCW	CS ASTM A105,ASME B16.11,	EL0230207	
HALF COUPLING		1/2 - 1 1/2	3000#	SOCW	CS ASTM A105,ASME B16.11,	HF0230207	
SOCKOLET		1/2 - 24	3000#	SOCW	CS ASTM A105,MSS SP 97,	SL0233307	
TEE		1/2 - 1 1/2	3000#	SOCW	CS ASTM A105,ASME B16.11,	TE0230207	
FITTING (THD)							
CAP		1/2 - 1 1/2	3000#	THD	CS ASTM A105,ASME B16.11,	CP0240207	T
PLUG		1/2 - 1 1/2		THD	CS ASTM A105,ASME B16.11,ROUND HEAD	PG0240200	
THREDOLET		1/2 - 24	3000#	THD	CS ASTM A105,MSS SP 97,	TL0243307	
NIPPLE							
NIPPLE		1/2 - 1 1/2	SCH160	PLN-PLN	SMLS,API 5L GR.B,ASME B36.10,	NPA151312	1
NIPPLE		1/2 - 1 1/2	SCH160	PLN-THD	SMLS,API 5L GR.B,ASME B36.10,NPT	NPA161312	2
NIPPLE		1/2 - 1 1/2	SCH160	THD	SMLS,API 5L GR.B,ASME B36.10,NPT	NPA141312	3
SWAGE NIPPLE							
SWAGE (CONC)		1/2 - 1 1/2		PE	ASTM A234 WPB-SMLS,MSS SP 95,	NC73J4500	P
SWAGE (CONC)		1/2 - 1 1/2		PLN-THD	ASTM A234 WPB-SMLS,MSS SP 95,	NC7364500	T
SWAGE (ECC)		1/2 - 1 1/2		PE	ASTM A234 WPB-SMLS,MSS SP 95,	NE73J4500	P



PIPING MATERIAL SPECIFICATION

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project :TFL
 DOC. No.TFL-PDS-600
 Rev.:0

Class: F24

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE AW,HG,PA,PC,PN,SG	TEMPERATURE LIMITS (Deg.C)			
	Ref SI	Ref SI		
RATING ASME 600# RF	CORROSION ALLOWANCE 1.5 MM(MIN.)	MATERIAL CS		

ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
SWAGE (ECC)		1/2 - 1 1/2		PLN-THD	ASTM A234 WPB-SMLS,MSS SP 95,	NE7364500	T
VALVES							
GATE VALVE		1 1/2 - 1 1/2	600#	FLG	CS BODY ASTM A216 GR WCB,GAV212,	GAV212	F
GATE VALVE		2 - 24	600#	FLG	CS BODY ASTM A216 GR WCB,GAV212,	GAV212	
GATE VALVE		1/2 - 1	800#	SOCW	CS BODY ASTM A105,GAV201,	GAV201	
GATE VALVE		1 1/2 - 1 1/2	800#	SOCW	CS BODY ASTM A105,GAV201,	GAV201	W
GLOBE VALVE		1/2 - 1 1/2	800#	SOCW	CS BODY ASTM A105,GLV201,	GLV201	
GLOBE VALVE		2 - 8	600#	FLG	CS BODY ASTM A216 GR WCB,GLV212,	GLV212	
CHECK VALVE		1/2 - 1 1/2	800#	SOCW	CS BODY ASTM A105,CHV201,	CHV201	
CHECK VALVE		2 - 16	600#	FLG	CS BODY ASTM A216 GR WCB,CHV212,	CHV212	
BALL VALVE		4 - 24	600#	FLG	CS BODY ASTM A216 GR WCB,BAV222,	BAV222	
NEEDLE VALVE		1/2 - 1/2	800#	SOCW	SS BODY ASTM A182 GR F316,NEV501,	NEV501	

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**PIPING MATERIAL SPECIFICATION**

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project ..TFL
 DOC. No.TFL-PDS-600
 Rev.:0

Class: F24S

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE BB,BF,SM,SC (IBR)		TEMPERATURE LIMITS (Deg.C)					
		Ref SI	Ref SI				
RATING ASME 600# RF	CORROSION ALLOWANCE 1.5 MM(MIN.)	MATERIAL CS					
ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
PIPE							
PIPE		2 - 6	SCH 40	BE IBR	SMLS,ASTM A106 GR.B,ASME B36.10,	PP03A1300	
PIPE		8 - 10	SCH 60	BE IBR	SMLS,ASTM A106 GR.B,ASME B36.10,	PP03A1300	
PIPE		12 - 14	SCH 60	BE IBR	SMLS,ASTM A106 GR.B,ASME B36.10,	PP03A1300	
PIPE		16 - 18	SCH 60	BE IBR	SMLS,ASTM A106 GR.B,ASME B36.10,	PP03A1300	
PIPE		20 - 22	SCH 60	BE IBR	SMLS,ASTM A106 GR.B,ASME B36.10,	PP03A1300	
PIPE		24 - 24	SCH 60	BE IBR	SMLS,ASTM A106 GR.B,ASME B36.10,	PP03A1300	
PIPE		1/2 - 3/4	SCH 80	PE IBR	SMLS,ASTM A106 GR.B,ASME B36.10,	PP03B1300	
PIPE		1 - 11/4	SCH 80	PE IBR	SMLS,ASTM A106 GR.B,ASME B36.10,	PP03B1300	
PIPE		11/2 - 11/2	SCH 80	PE IBR	SMLS,ASTM A106 GR.B,ASME B36.10,	PP03B1300	
FLANGE							
LONG W.N.FLANGE		11/2 - 11/2	600#	WN-RF 125 AARH	CS ASTM A105,ASME B16.5,38mmBORE,200mmLONG	LN02G0803	
				IBR			
W.N.FLANGE		1/2 - 24	600#	WN-RF 125 AARH	CS ASTM A105,ASME B16.5,WELD NECK	WN02G0803	D
				IBR			
W.N.FLANGE		1/2 - 24	600#	WN-RJ IBR	CS ASTM A105,ASME B16.5,WELD NECK	WN02W0803	R
SPACER AND BLIND		10 - 24	600#	RF 125 AARH IBR	CS ASTM A105,ASME B16.48,	RS02BPO03	
SPECL BLIND		1/2 - 8	600#	RF 125 AARH IBR	CS ASTM A105,ASME B16.48,	SP02BPO03	
BLIND FLANGE							
BLIND FLANGE		1/2 - 24	600#	RF 125 AARH IBR	CS ASTM A105,ASME B16.5,	BF02B0803	
GASKET							
GASKET		1/2 - 24	600#	SPRL-WND RF	TP304 SS WDG;GPH FLR;TP304 SS INR RNG;CS OTR.RNG,ASME B16.20,	GSQN30303	
STUD & NUTS							
STUD & 2NUTS HVY		-			ASTM A193 GR.B7/ASTM A194 GR.2H,,	SNDE00000	
HEX							
FITTING (BW)							
BRANCH WELD		2 - 24		BW IBR	CARBON STEEL,ASME B31.3,	RWOJA1200	
BRANCH WELD WITH RP		2 - 24		BW IBR	CARBON STEEL,ASME B31.3,	WBOJA1200	
CAP		2 - 24		BW IBR	ASTM A234 WPB-SMLS,ASME B16.9,	CP73A0900	
ELBOW		2 - 24		BW IBR	ASTM A234 WPB-SMLS,ASME B16.9,	EL73A0900	
REDUCER CONC.		2 - 24		BW IBR	ASTM A234 WPB-SMLS,ASME B16.9,	RC73A0900	
REDUCER ECC.		2 - 24		BW IBR	ASTM A234 WPB-SMLS,ASME B16.9,	RE73A0900	
TEE		2 - 24		BW IBR	ASTM A234 WPB-SMLS,ASME B16.9,	TE73A0900	
WELDOLET		2 - 24		BW IBR	CS ASTM A105,MSS SP 97,	WL02A3300	
FITTING (SW)							
CAP		1/2 - 11/2	3000#	SOCW IBR	CS ASTM A105,ASME B16.11,	CP02C0207	W
COUPLING		1/2 - 11/2	3000#	SOCW IBR	CS ASTM A105,ASME B16.11,	CN02C0207	
ELBOW		1/2 - 11/2	3000#	SOCW IBR	CS ASTM A105,ASME B16.11,	EL02C0207	
HALF COUPLING		1/2 - 11/2	3000#	SOCW IBR	CS ASTM A105,ASME B16.11,	HF02C0207	
SOCKOLET		1/2 - 24	3000#	SOCW IBR	CS ASTM A105,MSS SP 97,	SL02C3307	
TEE		1/2 - 11/2	3000#	SOCW IBR	CS ASTM A105,ASME B16.11,	TE02C0207	
FITTING (THD)							
CAP		1/2 - 11/2	3000#	THD IBR	CS ASTM A105,ASME B16.11,	CP02D0207	T
PLUG		1/2 - 11/2		THD IBR	CS ASTM A105,ASME B16.11,ROUND HEAD	PG02D0200	
THREDOLET		1/2 - 24	3000#	THD IBR	CS ASTM A105,MSS SP 97,	TL02D3307	
NIPPLE							
NIPPLE		1/2 - 11/2	SCH160	PLN-PLN IBR	SMLS,ASTM A106 GR.B,ASME B36.10,	NP03E1312	1
NIPPLE		1/2 - 11/2	SCH160	PLN-THD IBR	SMLS,ASTM A106 GR.B,ASME B36.10,NPT	NP03F1312	2
NIPPLE		1/2 - 11/2	SCH160	THD IBR	SMLS,ASTM A106 GR.B,ASME B36.10,NPT	NP03D1312	3
SWAGE NIPPLE							
SWAGE (CONC)		1/2 - 11/2		PE IBR	ASTM A234 WPB-SMLS,MSS SP 95,	NC73Q4500	P



PIPING MATERIAL SPECIFICATION

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project :TFL
 DOC. No.TFL-PDS-600
 Rev.:0

Class: F24S

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE BB,BF,SM,SC (IBR)	TEMPERATURE LIMITS (Deg.C)			
	Ref SI	Ref SI		
RATING ASME 600# RF	CORROSION ALLOWANCE 1.5 MM(MIN.)	MATERIAL CS		

ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
SWAGE (CONC)		1/2 - 11/2		PLN-THD IBR	ASTM A234 WPB-SMLS,MSS SP 95,	NC73F4500	T
SWAGE (ECC)		1/2 - 11/2		PE IBR	ASTM A234 WPB-SMLS,MSS SP 95,	NE73Q4500	P
SWAGE (ECC)		1/2 - 11/2		PLN-THD IBR	ASTM A234 WPB-SMLS,MSS SP 95,	NE73F4500	T
VALVES							
GATE VALVE		1/2 - 1	800#	SOCW IBR	CS BODY ASTM A105,GAV202S,	GAV202S	
GATE VALVE		11/2 - 11/2	800#	SOCW IBR	CS BODY ASTM A105,GAV202S,	GAV202S	W
GATE VALVE		11/2 - 11/2	600#	FLG IBR	CS BODY ASTM A216 GR WCB,GAV212S,	GAV212S	F
GATE VALVE		2 - 24	600#	FLG IBR	CS BODY ASTM A216 GR WCB,GAV212S,	GAV212S	
GLOBE VALVE		1/2 - 11/2	800#	SOCW IBR	CS BODY ASTM A105,GLV201S,	GLV201S	
GLOBE VALVE		2 - 12	600#	FLG IBR	CS BODY ASTM A216 GR WCB,GLV212S,	GLV212S	
CHECK VALVE		1/2 - 11/2	800#	SOCW IBR	CS BODY ASTM A105,CHV201S,	CHV201S	
CHECK VALVE		2 - 16	600#	FLG IBR	CS BODY ASTM A216 GR WCB,CHV212S,	CHV212S	
NEEDLE VALVE		1/2 - 1/2	800#	SOCW IBR	SS BODY ASTM A182 GR F316,NEV501S,	NEV501S	

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**PIPING MATERIAL SPECIFICATION**

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project ..TFL
 DOC. No.TFL-PDS-600
 Rev.:0

Class: H24S

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE BB,BF,HS,SC (IBR)		TEMPERATURE LIMITS (Deg.C)					
		Ref SI	Ref SI				
RATING ASME 1500# RJ	CORROSION ALLOWANCE 1.5 MM(MIN.)	MATERIAL CS					
ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
PIPE							
PIPE		1/2 - 3/4	SCH160	PE IBR	SMLS,ASTM A106 GR.B,ASME B36.10,	PP03B1300	
PIPE		1 - 1 1/4	SCH160	PE IBR	SMLS,ASTM A106 GR.B,ASME B36.10,	PP03B1300	
PIPE		1 1/2 - 1 1/2	SCH160	PE IBR	SMLS,ASTM A106 GR.B,ASME B36.10,	PP03B1300	
PIPE		2 - 3	SCH160	BE IBR	SMLS,ASTM A106 GR.B,ASME B36.10,	PP03A1300	
PIPE		4 - 5	SCH120	BE IBR	SMLS,ASTM A106 GR.B,ASME B36.10,	PP03A1300	
PIPE		6 - 8	SCH120	BE IBR	SMLS,ASTM A106 GR.B,ASME B36.10,	PP03A1300	
PIPE		10 - 12	SCH140	BE IBR	SMLS,ASTM A106 GR.B,ASME B36.10,	PP03A1300	
PIPE		14 - 16	SCH140	BE IBR	SMLS,ASTM A106 GR.B,ASME B36.10,	PP03A1300	
PIPE		18 - 20	SCH140	BE IBR	SMLS,ASTM A106 GR.B,ASME B36.10,	PP03A1300	
PIPE		22 - 24	SCH140	BE IBR	SMLS,ASTM A106 GR.B,ASME B36.10,	PP03A1300	
FLANGE							
LONG W.N.FLANGE		1 1/2 - 1 1/2	1500#	WN-RJ IBR	CS ASTM A105,ASME B16.5,38mmBORE,200mmLONG	LN02W0805	
W.N.FLANGE		1/2 - 24	1500#	WN-RJ IBR	CS ASTM A105,ASME B16.5,WELD NECK	WN02W0805	
SPACER AND BLIND		8 - 24	1500#	WN-RJ IBR	CS ASTM A105,ASME B16.48,	RS02WPO05	
SPECL BLIND		1/2 - 6	1500#	WN-RJ IBR	CS ASTM A105,ASME B16.48,	SP02WPO05	
BLIND FLANGE							
BLIND FLANGE		1/2 - 24	1500#	WN-RJ IBR	CS ASTM A105,ASME B16.5,	BF02W0805	
GASKET							
GASKET		1/2 - 24	1500#	RJ OCT	SOFT IRON,ASME B16.20,	GS7940305	
STUD & NUTS							
STUD & 2NUTS HVY		-			ASTM A193 GR.B7/ASTM A194 GR.2H,,	SNDE00000	
HEX							
FITTING (BW)							
BRANCH WELD		2 - 24		BW IBR	CARBON STEEL,ASME B31.3,	RWOJA1200	
BRANCH WELD WITH		2 - 24		BW IBR	CARBON STEEL,ASME B31.3,	WBOJA1200	
RP							
CAP		2 - 24		BW IBR	ASTM A234 WPB-SMLS,ASME B16.9,	CP73A0900	
ELBOW		2 - 24		BW IBR	ASTM A234 WPB-SMLS,ASME B16.9,	EL73A0900	
REDUCER CONC.		2 - 24		BW IBR	ASTM A234 WPB-SMLS,ASME B16.9,	RC73A0900	
REDUCER ECC.		2 - 24		BW IBR	ASTM A234 WPB-SMLS,ASME B16.9,	RE73A0900	
TEE		2 - 24		BW IBR	ASTM A234 WPB-SMLS,ASME B16.9,	TE73A0900	
WELDOLET		2 - 24		BW IBR	CS ASTM A105,MSS SP 97,	WL02A3300	
FITTING (SW)							
CAP		1/2 - 1 1/2	6000#	SOCW IBR	CS ASTM A105,ASME B16.11,	CP02C0208	W
COUPLING		1/2 - 1 1/2	6000#	SOCW IBR	CS ASTM A105,ASME B16.11,	CN02C0208	
ELBOW		1/2 - 1 1/2	6000#	SOCW IBR	CS ASTM A105,ASME B16.11,	EL02C0208	
HALF COUPLING		1/2 - 1 1/2	6000#	SOCW IBR	CS ASTM A105,ASME B16.11,	HF02C0208	
SOCKOLET		1/2 - 24	6000#	SOCW IBR	CS ASTM A105,MSS SP 97,	SL02C3308	
TEE		1/2 - 1 1/2	6000#	SOCW IBR	CS ASTM A105,ASME B16.11,	TE02C0208	
FITTING (THD)							
CAP		1/2 - 1 1/2	6000#	THD IBR	CS ASTM A105,ASME B16.11,	CP02D0208	T
PLUG		1/2 - 1 1/2		THD IBR	CS ASTM A105,ASME B16.11,ROUND HEAD	PG02D0200	
THREDOLET		1/2 - 1 1/2	6000#	THD IBR	CS ASTM A105,MSS SP 97,	TL02D3308	
NIPPLE							
NIPPLE		1/2 - 1 1/2	SCHXXS	PLN-PLN IBR	SMLS,ASTM A106 GR.B,ASME B36.10,	NP03E1314	1
NIPPLE		1/2 - 1 1/2	SCHXXS	PLN-THD IBR	SMLS,ASTM A106 GR.B,ASME B36.10,NPT	NP03F1314	2
NIPPLE		1/2 - 1 1/2	SCHXXS	THD IBR	SMLS,ASTM A106 GR.B,ASME B36.10,NPT	NP03D1314	3
SWAGE NIPPLE							
SWAGE (CONC)		1/2 - 1 1/2		PE IBR	ASTM A234 WPB-SMLS,MSS SP 95,	NC73Q4500	P
SWAGE (CONC)		1/2 - 1 1/2		PLN-THD IBR	ASTM A234 WPB-SMLS,MSS SP 95,	NC73F4500	T
SWAGE (ECC)		1/2 - 1 1/2		PE IBR	ASTM A234 WPB-SMLS,MSS SP 95,	NE73Q4500	P



PIPING MATERIAL SPECIFICATION

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project :TFL
 DOC. No.TFL-PDS-600
 Rev.:0

Class: H24S

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE BB,BF,HS,SC (IBR)	TEMPERATURE LIMITS (Deg.C)			
	Ref SI	Ref SI		
RATING ASME 1500# RJ	CORROSION ALLOWANCE 1.5 MM(MIN.)	MATERIAL CS		

ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
SWAGE (ECC)		1/2 - 1 1/2		PLN-THD IBR	ASTM A234 WPB-SMLS,MSS SP 95,	NE73F4500	T
VALVES							
GATE VALVE		1/2 - 1	1500#	SOCW IBR	CS BODY ASTM A105,GAV204S,	GAV204S	
GATE VALVE		1 1/2 - 24	1500#	BW IBR	CS BODY ASTM A216 GR WCB,GAV216S,	GAV216S	
GLOBE VALVE		1/2 - 1	1500#	SOCW IBR	CS BODY ASTM A105,GLV204S,	GLV204S	
GLOBE VALVE		1 1/2 - 8	1500#	BW IBR	CS BODY ASTM A216 GR WCB,GLV216S,	GLV216S	
CHECK VALVE		1/2 - 1	1500#	SOCW IBR	CS BODY ASTM A105,CHV204S,	CHV204S	
CHECK VALVE		1 1/2 - 24	1500#	BW IBR	CS BODY ASTM A216 GR WCB,CHV216S,	CHV216S	
NEEDLE VALVE		1/2 - 1/2	1500#	SOCW IBR	SS BODY ASTM A182 GR F316,NEV502S,	NEV502S	

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**PIPING MATERIAL SPECIFICATION**

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project ..TFL
 DOC. No.TFL-PDS-600
 Rev.:4

Class: J36S

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE SH,SC (IBR)	TEMPERATURE LIMITS (Deg.C)			
	Ref.SI	Ref.SI		
RATING ASME 2500#RJ	CORROSION ALLOWANCE 1.5 MM(MIN.)	MATERIAL AS		

ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
PIPE							
PIPE		1/2 - 3/4	SCHXXS	BE IBR	SMLS,ASTM A335 GR.P22,ASME B36.10,	PP34A1300	
PIPE		1 - 1 1/4	SCHXXS	BE IBR	SMLS,ASTM A335 GR.P22,ASME B36.10,	PP34A1300	
PIPE		1 1/2 - 2	SCHXXS	BE IBR	SMLS,ASTM A335 GR.P22,ASME B36.10,	PP34A1300	
PIPE		2 1/2 - 3	SCHXXS	BE IBR	SMLS,ASTM A335 GR.P22,ASME B36.10,	PP34A1300	
PIPE		4 - 4	SCHXXS	BE IBR	SMLS,ASTM A335 GR.P22,ASME B36.10,	PP34A1300	
PIPE		6 - 6	24.00 MM	BE IBR	SMLS,ASTM A335 GR.P22,ASME B36.10,	PP34A1300	
PIPE		8 - 8	30.00 MM	BE IBR	SMLS,ASTM A335 GR.P22,ASME B36.10,	PP34A1300	
PIPE		10 - 10	38.00 MM	BE IBR	SMLS,ASTM A335 GR.P22,ASME B36.10,	PP34A1300	
PIPE		12 - 12	44.00 MM	BE IBR	SMLS,ASTM A335 GR.P22,ASME B36.10,	PP34A1300	
PIPE		14 - 14	48.00 MM	BE IBR	SMLS,ASTM A335 GR.P22,ASME B36.10,	PP34A1300	
PIPE		16 - 16	55.00 MM	BE IBR	SMLS,ASTM A335 GR.P22,ASME B36.10,	PP34A1300	
PIPE		18 - 18	62.00 MM	BE IBR	SMLS,ASTM A335 GR.P22,ASME B36.10,	PP34A1300	
PIPE		20 - 20	68.00 MM	BE IBR	SMLS,ASTM A335 GR.P22,ASME B36.10,	PP34A1300	
PIPE		22 - 24	82.00 MM	BE IBR	SMLS,ASTM A335 GR.P22,ASME B36.10,	PP34A1300	
FLANGE							
LONG W.N.FLANGE		1/2 - 1 1/2	2500#	WN-RJ IBR	ASTM A182 F22,ASME B16.5,LONG WELD NECK	LN05W0806	
W.N.FLANGE		1/2 - 12	2500#	WN-RJ IBR	ASTM A182 F22,ASME B16.5,WELD NECK	WN05W0806	
SPACER AND BLIND		6 - 24	2500#	WN-RJ IBR	ASTM A182 F22,ASME B16.48,	RS05WPO06	
SPECL BLIND		1 - 4	2500#	WN-RJ IBR	ASTM A182 F22,ASME B16.48,	SP05WPO06	
BLIND FLANGE							
BLIND FLANGE		1/2 - 24	2500#	WN-RJ IBR	ASTM A182 F22,ASME B16.5,	BF05W0806	
GASKET							
GASKET		1/2 - 12	2500#	RJ OCT	ASTM A182 F5,ASME B16.20,	GSB340306	
STUD & NUTS							
STUD & 2NUTS HVY		-			ASTM A193 GR.B16/ASTM A194 GR.7.,	SNB100000	
HEX							
FITTING (BW)							
BRANCH WELD		2 - 20		BW IBR	ALLOY STEEL,ASME B31.3,	RWE3A1200	
BRANCH WELD WITH RP		2 - 24		BW IBR	ALLOY STEEL,ASME B31.3,	WBE3A1200	
CAP		1/2 - 1 1/2		BW IBR	ASTM A182 F22,ASME B16.9,	CP05A0900	
CAP		2 - 24		BW IBR	ASTM A234 WP22,ASME B16.9,	CPD2A0900	
ELBOW		1/2 - 1 1/2		BW IBR	ASTM A182 F22,ASME B16.9,	EL05A0900	
ELBOW		2 - 24		BW IBR	ASTM A234 WP22,ASME B16.9,	ELD2A0900	
REDUCER CONC.		2 - 24		BW IBR	ASTM A234 WP22,ASME B16.9,	RCD2A0900	
REDUCER CONC.		1/2 - 1 1/2		BW IBR	ASTM A182 F22,ASME B16.9,	RC05A0900	
REDUCER ECC.		2 - 24		BW IBR	ASTM A234 WP22,ASME B16.9,	RED2A0900	
REDUCER ECC.		1/2 - 1 1/2		BW IBR	ASTM A182 F22,ASME B16.9,	RE05A0900	
TEE		2 - 24		BW IBR	ASTM A234 WP22,ASME B16.9,	TED2A0900	
TEE		1/2 - 1 1/2		BW IBR	ASTM A182 F22,ASME B16.9,	TE05A0900	
WELDOLET		1/2 - 24		BW IBR	ASTM A182 F22,MSS SP 97,	WL05A3300	
VALVES							
GATE VALVE		1/2 - 1 1/2	2500#	BW IBR	CR-MO BODY ASTM A182 GR F22,GAV305S,	GAV305S	
GATE VALVE		1 1/2 - 16	2500#	BW IBR	CR-MO BODY ASTM A217 GR WC9,GAV326S,	GAV326S	
GLOBE VALVE		1/2 - 1 1/2	2500#	BW IBR	CR-MO BODY ASTM A182 GR F22,GLV305S,	GLV305S	
GLOBE VALVE		2 - 8	2500#	BW IBR	CR-MO BODY ASTM A217 GR WC9,GLV326S,	GLV326S	
CHECK VALVE		1/2 - 1 1/2	2500#	BW IBR	CR-MO BODY ASTM A182 GR F22,CHV305S,	CHV305S	
CHECK VALVE		2 - 18	2500#	BW IBR	CR-MO BODY ASTM A217 GR WC9,CHV326S,	CHV326S	
NEEDLE VALVE		1/2 - 1/2	2500#	BW IBR	SS BODY ASTM A182 GR F316,NEV503S,	NEV503S	



PIPING MATERIAL SPECIFICATION

CLIENT : M/S..TFL
 PROJECT : AMMONIA/UREA COAL BASED FERTILIZER PROJECT.
 LOCATION : TALCHER,ODISHA

Project :TFL
 DOC. No.TFL-PDS-600
 Rev.:1

Class: J36S

PROJECTS AND DEVELOPMENT INDIA LIMITED

SERVICE SH.SC (IBR)	TEMPERATURE LIMITS (Deg.C)			
	Ref.SI	Ref.SI		

RATING ASME 2500#RJ	CORROSION ALLOWANCE 1.5 MM(MIN.)	MATERIAL AS			
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ITEM	NOTES	SIZE (NPS)	SCH/ RAT	END	DESCRIPTION	COMM CODE	SPCL REV
SWAGE (CONC)		1/2 - 11/2		PLN-THD IBR	ASTM A234 WP22,MSS SP 95,	NCD2F4500	T
SWAGE (ECC)		1/2 - 11/2		PE IBR	ASTM A234 WP22,MSS SP 95,	NED2Q4500	P
SWAGE (ECC)		1/2 - 11/2		PLN-THD IBR	ASTM A234 WP22,MSS SP 95,	NED2F4500	T
VALVES							
GATE VALVE		1/2 - 1	2500#	SOCW IBR	CR-MO BODY ASTM A182 GR F22,GAV305S,	GAV305S	
GATE VALVE		11/2 - 11/2	2500#	SOCW IBR	CR-MO BODY ASTM A182 GR F22,GAV305S,	GAV305S	W
GATE VALVE		11/2 - 11/2	2500#	BW IBR	CR-MO BODY ASTM A217 GR WC9,GAV326S,	GAV326S	B
GATE VALVE		2 - 16	2500#	BW IBR	CR-MO BODY ASTM A217 GR WC9,GAV326S,	GAV326S	
GLOBE VALVE		1/2 - 11/2	2500#	SOCW IBR	CR-MO BODY ASTM A182 GR F22,GLV305S,	GLV305S	
GLOBE VALVE		2 - 8	2500#	BW IBR	CR-MO BODY ASTM A217 GR WC9,GLV326S,	GLV326S	
CHECK VALVE		1/2 - 11/2	2500#	SOCW IBR	CR-MO BODY ASTM A182 GR F22,CHV305S,	CHV305S	
CHECK VALVE		2 - 18	2500#	BW IBR	CR-MO BODY ASTM A217 GR WC9,CHV326S,	CHV326S	
NEEDLE VALVE		1/2 - 1/2	2500#	SOCW IBR	SS BODY ASTM A182 GR F316,NEV503S,	NEV503S	

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PROJECTS & DEVELOPMENT INDIA LTD

TFL-PDS-600

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DOCUMENT NO

REV

BRANCH TABLE : TABLE-A1

APPLICABLE PIPING MATERIAL SPECIFICATIONS: B14, D14, B20, B22IS, B24, D24, B24S, B24Z
PRESSURE RATING <= 300#

<-----B R A N C H S I Z E----->
 3 1 1 2 1 1 1 1 1 2 2 2 2 2 3 3 3 3 3 4 4 4 4 4 5 5 5 5 5
 M Q 1 Q M 2 M 3 4 6 8 0 2 4 6 8 0 2 4 6 8 0 2 4 6 8 0 2 4 6 8 0 2 4 6 8

M T
 3Q E T
 1 E E T
 1Q
 1M E E E T
 2 S S S E T
 2M S S S E E T
 3 S S S E E E T
 4 S S S S E E E T
 6 S S S S W W E E T
 8 S S S S W W W E E T
 10 S S S S W W W W E E T
 12 S S S S W W W W W E E T
 14 S S S S W W W W W W E E T
 16 S S S S W W W W W W P E E T
 18 S S S S W W W W W W P P E E T
 20 S S S S W W W W W W P P P E E T
 22 S S S S W W W W W W P P P P E E T
 24 S S S S W W W W W W P P P P P E E T
 26 S S S S P P P P P P P P P P P E E T
 28 S S S S P P P P P P P P P P P P E E T
 30 S S S S P P P P P P P P P P P P P E E T
 32 S S S S P P P P P P P P P P P P P P E E T
 34 S S S S P P P P P P P P P P P P P P P E E T
 36 S S S S P P P P P P P P P P P P P P P P E E T
 38 S S S S P P P P P P P P P P P P P P P P P E E T
 40 S S S S P P P P P P P P P P P P P P P P P P E E T
 42 S S S S P P P P P P P P P P P P P P P P P P P E E T
 44 S S S S P E E T
 46 S S S S P E E T
 48 S S S S P E E T
 50
 52
 54
 56
 58
 A-

E TE REDUCING TEE
 P WB BRANCH WELD WITH RP
 S SL SOCKOLET
 T TE EQUAL TEE
 W WL WELDOLET



BRANCH TABLE: TABLE-A2

**APPLICABLE PIPING MATERIAL SPECIFICATIONS: B40,B50,B52,D50,D52 .
PRESSURE RATING <=300#**

<-----B R A N C H S I Z E----->
 3 1 1 2 1 1 1 1 1 2 2 2 2 2 3 3 3 3 3 4 4 4 4 4 5 5 5 5 5
 M Q 1 Q M 2 M 3 4 6 8 0 2 4 6 8 0 2 4 6 8 0 2 4 6 8 0 2 4 6 8 0 2 4 6 8

M T
 3Q E T
 1 E E T
 1Q
 1M E E E T
 2 S S S E T
 2M
 3 S S S E E T
 4 S S S S E E T
 6 S S S S P E E T
 8 S S S S P P E E T
 10 S S S S P P P E E T
 12 S S S S P P P P E E T
 14 S S S S P P P P P E E T
 16 S S S S P P P P P P E E T
 18 S S S S P P P P P P P E E T
 20 S S S S P P P P P P P P E E T
 22 S S S S P P P P P P P P P E E T
 24 S S S S P P P P P P P P P P E E T
 26 S S S S P P P P P P P P P P P E E T
 28 S S S S P P P P P P P P P P P P E E T
 30 S S S S P P P P P P P P P P P P P E E T
 32 S S S S P P P P P P P P P P P P P P E E T
 34 S S S S P P P P P P P P P P P P P P P E E T
 36 S S S S P P P P P P P P P P P P P P P P E E T
 38 S S S S P P P P P P P P P P P P P P P P P E E T
 40 S S S S P P P P P P P P P P P P P P P P P P E E T
 42 S S S S P P P P P P P P P P P P P P P P P P P E E T
 44 S S S S P E E T
 46 S S S S P E E T
 48 S S S S P E E T
 50
 52
 54
 56
 58
 A-

E TE REDUCING TEE
 P WB BRANCH WELD WITH RP
 S SL SOCKOLET
 T TE EQUAL TEE

	PROJECTS & DEVELOPMENT INDIA LTD	TFL-PDS-600	1
		DOCUMENT NO	REV

BRANCH TABLE : TABLE-A3

APPLICABLE PIPING MATERIAL

SPECIFICATIONS: **F24, F24S, H24S, J36S**

<-----B R A N C H S I Z E----->

3 1 1 2 1 1 1 1 1 2 2 2 2 2 3 3 3 3 3 4 4 4 4 4 5 5 5 5 5

M Q 1 Q M 2 M 3 4 6 8 0 2 4 6 8 0 2 4 6 8 0 2 4 6 8 0 2 4 6 8 0 2 4 6 8

M T
3Q E T
1 E E T
1Q
1M E E E T
2 S S S E T
2M
3 S S S E E T
4 S S S S E E T
6 S S S S W E E T
8 S S S S W W E E T
10 S S S S W W W E E T
12 S S S S W W W W E E T
14 S S S S W W W W E E T
16 S S S S W W W W W E E T
18 S S S S W W W W W W E E T
20 S S S S W W W W W W W E E T
22 S S S S W W W W W W W W E E T
24 S S S S W W W W W W W W W E E T
26 S S S S W W W W W W W W W W E E T
28 S S S S W W W W W W W W W W W E E T
30 S S S S W W W W W W W W W W W W E E T
32 S S S S W W W W W W W W W W W W W E E T
34 S S S S W W W W W W W W W W W W W W E E T
36 S S S S W W W W W W W W W W W W W W W E E T
38
40
42
44
46
48
50
52
54
56
58
A-

E TE TEE
S SL SOCKOLET
T TE TEE
W WL WELDOLET

	PROJECTS & DEVELOPMENT INDIA LTD	TFL-PDS-600	0
		DOCUMENT NO	REV

BRANCH TABLE : TABLE-R1

**APPLICABLE PIPING MATERIAL SPECIFICATIONS :B22G,B22ISG,B24G,B24RL,B24FL.
PRESSURE RATING <= 300#**

<-----B R A N C H S I Z E----->
3 1 1 2 1 1
M Q 1 Q M 2 M 3 4 6 8 0 2

M
3Q
1 T
1Q
1M E T
2 E E T
2M
3 E E E T
4 E E E E T
6 E E E E E T
8 E E E E E E T
10 E E P P E E E T
12 E E P P P E E E T

A-

E TE REDUCING TEE
P WB BRANCH WELD WITH RP
T TE EQUAL TEE



PROJECTS & DEVELOPMENT INDIA LTD

TFL-PDS-600

0

DOCUMENT NO

REV

BRANCH TABLE : TABLE-R2

APPLICABLE PIPING MATERIAL SPECIFICATIONS: B24D, B24P.

PRESSURE RATING <= 300#

<-----B R A N C H S I Z E----->

	3	1	1	2				1	1
	M	Q	1	Q	M	2	M	3	4
	6	8	0	2					
M									
3Q									
1									
1Q									
1M									
2					T				
2M									
3					E	T			
4					E	E	T		
6					E	E	E	T	
8					E	E	E	E	T
10					E	E	E	E	E
12					E	E	E	E	E

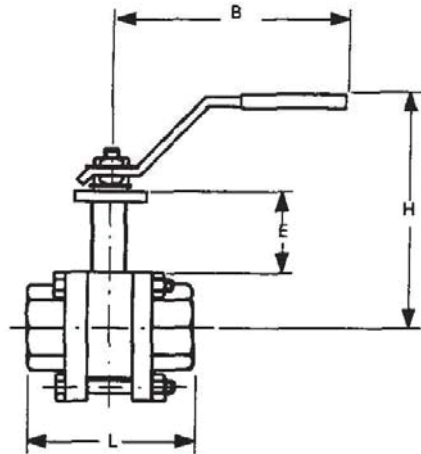
A-

E TE REDUCING TEE
T TE EQUAL TEE

	PROJECTS & DEVELOPMENT INDIA LTD	TFL-PDS-600	1
		DOCUMENT NO	REV

VALVE DATA SHEETS

BALL VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	BAV 101
PRESSURE RATING CLASS	800
FACE	SW
CONSTRUCTION	
BODY	THREE PIECES TYPE FULL BORE FLOATING BALL
EXTENDED STEM	YES b)
WRENCH OPERATED	YES
GEAR OPERATED	NO
FIRE SAFE	YES
NOMINAL SIZE	1/2" - 1 1/2"
MATERIALS	
BODY	A 350 Gr. LF2
BALL	AISI 316
BODY SEAT RING	PTFE
STEM PACKING	PTFE GRAPHITE
STEM	13 Cr.
DESIGN CONDITIONS	
PRESSURE RATING	API 602
FLUID	Kg/cm ² g °C

GENERAL

1. COPPER AND COPPER ALLOYS NDT PERMITTED
- 2.
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE

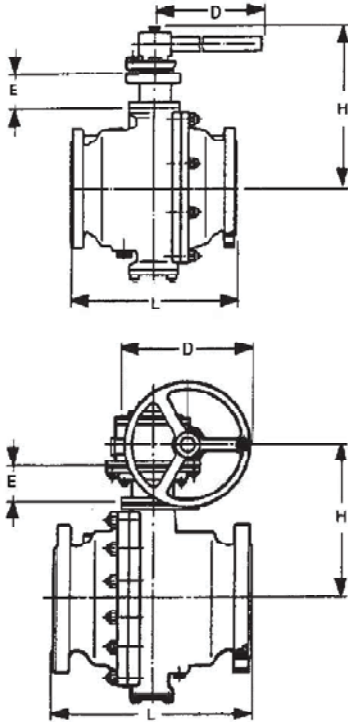
MANDATORY STANDARDS:

API 598, API 602, API 607, API 608, ANSI B16.11, ANSI B16.34

NOTES:

- a) SEAT RATING ACC. TO MANUFACTURER'S STANDARD
- b) STEM EXTENSION E = 120MM (FOR MAX. 70MM COLD INSULATION)

BALL VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	BAV 111	
PRESSURE RATING CLASS	300	
FACE	RF	
CONSTRUCTION		
BODY	SPLIT BODY, FULL BORE FLOATING BALL = < 4" TRUN. MOUNT BALL > 4" LONG PATTERN	
EXTENDED STEM	YES b)	
WRENCH OPERATED	1 1/2" - 6"	
GEAR OPERATED	8" - 14"	
FIRE SAFE	YES	
NOMINAL SIZE	1 1/2" - 14"	
MATERIALS		
BODY	A 352 Gr. LCB	
BALL	AISI 316 OR C.S. CHROMEPLATED	
BODY SEAT RING	PTFE	
STEM PACKING	PTFE GRAPHITE	
STEM	13 Cr.	
DESIGN CONDITIONS		
PRESSURE RATING	ANSI B16.34	
FLUID	Kg/cm ² g	°C

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
- 2.
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE

MANDATORY STANDARDS:

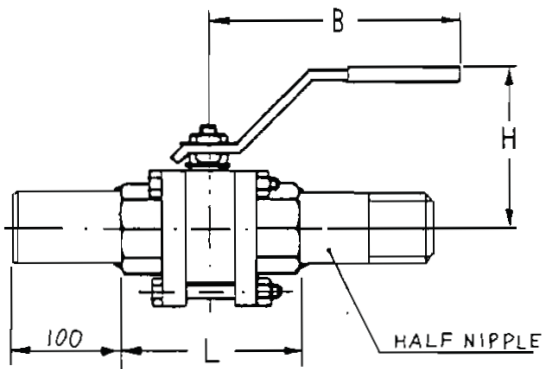
API 598, API 607, API 608, ANSI B16.10, ANSI B16.34, ANSI B16.5

NOTES:

- a) SEAT RATING ACC. TO MANUFACTURER'S STANDARD
- b) STEM EXTENSION E = 150mm (FOR MAX 100mm COLD INSULATION)



BALL VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	BAV 201
PRESSURE RATING CLASS	800
FACE	SW b)
CONSTRUCTION	
BODY	THREE PIECES TYPE FULL BORE FLOATING BALL
EXTENDED STEM	NO
WRENCH OPERATED	YES
GEAR OPERATED	NO
FIRE SAFE	YES
NOMINAL SIZE	1/2" - 1 1/2"
MATERIALS	
BODY	A 105
BALL	AISI 316
BODY SEAT RING	PTFE
STEM PACKING	PTFE GRAPHITE
STEM	13 Cr.
DESIGN CONDITIONS	
PRESSURE RATING	API 602

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. IF OTHERWISE STATED THE VALVES SHALL BE FULL BORE

MANDATORY STANDARDS:

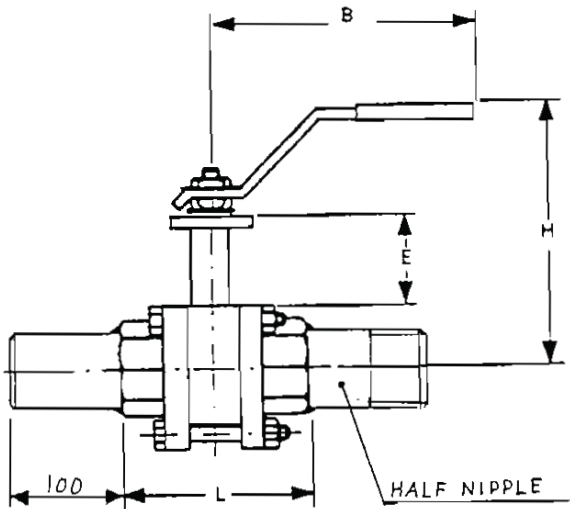
API 598, API 602, API 607, API 608, ANSI B16.11, ANSI B16.34

NOTES:

- a) SEAT RATING ACC. TO MANUFACTURER'S STANDARD
- b) VALVE PROVIDED WITH EXTENDED ENDS, 100mm LONG SCH 80/HALF NIPPLE



BALL VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	BAV 202
PRESSURE RATING CLASS	800
FACE	SW c)
CONSTRUCTION	
BODY	THREE PIECES TYPE FULL BORE FLOATING BALL
EXTENDED STEM	YES b)
WRENCH OPERATED	YES
GEAR OPERATED	NO
FIRE SAFE	YES
NOMINAL SIZE	1/2" - 1 1/2"
MATERIALS	
BODY	A 105
BALL	AISI 316
BODY SEAT RING	PTFE
STEM PACKING	PTFE GRAPHITE
STEM	13 Cr.
DESIGN CONDITIONS	
PRESSURE RATING	API 602

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. IF OTHERWISE STATED THE VALVES SHALL BE FULL BORE

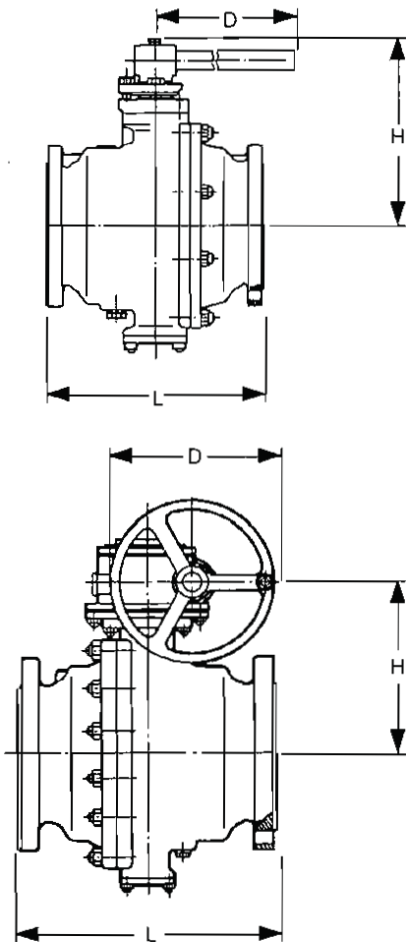
MANDATORY STANDARDS:

API 598, API 602, API 608, ANSI B16.11, ANSI B16.34

NOTES:

- a) SEAT RATING ACC. TO MANUFACTURER'S STANDARD
- b) STEM EXTENSION E= 120mm (FOR MAX. 70mm COLD INSULATION)
- c) VALVE PROVIDED WITH EXTENDED ENDS, 100mm LONG SCH 80/HALF NIPPLE

BALL VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	BAV 210	
PRESSURE RATING CLASS	150	
FACE	RF	
CONSTRUCTION		
BODY	SPLIT BODY, FULL BORE FLOATING BALL = < 4" TRUN. MOUNT BALL > 4" LONG PATTERN	
EXTENDED STEM	NO	
WRENCH OPERATED	2" - 6"	
GEAR OPERATED	8" - 24"	
FIRE SAFE	YES	
NOMINAL SIZE	2" - 24"	
MATERIALS		
BODY	A 216 Gr. WCB	
BALL	AISI 316 OR C.S. CHROMEPLATED	
BODY SEAT RING	PTFE	
STEM PACKING	PTFE GRAPHITE	
STEM	13 Cr.	
DESIGN CONDITIONS		
PRESSURE RATING	ANSI B16.34	
FLUID	Kg/cm ² g	°C

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE

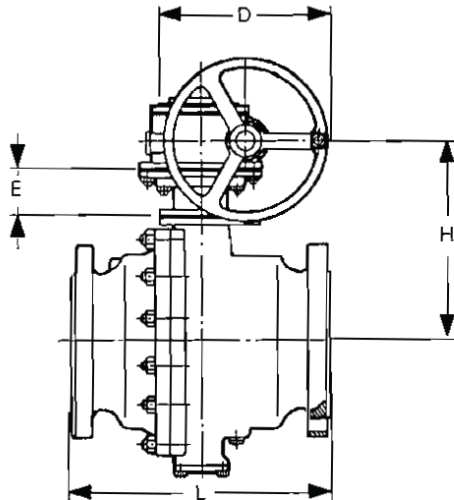
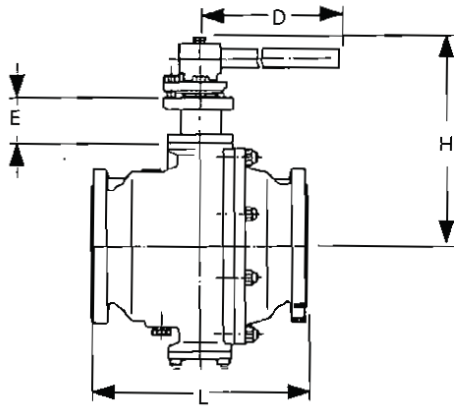
MANDATORY STANDARDS:

API 598, API 607, API 608, ANSI B16.10, ANSI B16.34, ANSI B16.5

NOTES:

- a) SEAT RATING ACC. TO MANUFACTURER'S STANDARD

BALL VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	BAV 211
PRESSURE RATING CLASS	300
FACE	RF
CONSTRUCTION	
BODY	SPLIT BODY, FULL BORE FLOATING BALL = < 4" TRUN. MOUNT BALL > 4" LONG PATTERN
EXTENDED STEM	YES b)
WRENCH OPERATED	2" - 6"
GEAR OPERATED	8" - 12"
FIRE SAFE	YES
NOMINAL SIZE	2" - 12"
MATERIALS	
BODY	A 216 Gr. WCB
BALL	AISI 316 OR C.S. CHROMEPLATED
BODY SEAT RING	PTFE
STEM PACKING	PTFE GRAPHITE
STEM	13 Cr.
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE

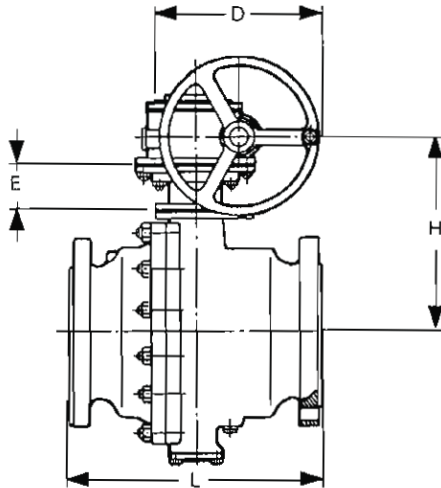
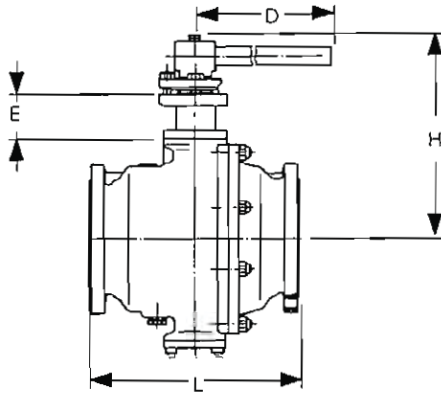
MANDATORY STANDARDS:

API 598, API 607, API 608, ANSI B16.10, ANSI B16.34, ANSI B16.5

NOTES:

- a) SEAT RATING ACC. TO MANUFACTURER'S STANDARD
- b) STEM EXTENSION E = 120mm (FOR MAX 70mm COLD INSULATION)

BALL VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	BAV 222	
PRESSURE RATING CLASS	600	
FACE	RF	
CONSTRUCTION		
BODY	SPLIT BODY FULL BORE TRUNNION MOUNTED BALL LONG PATTERN	
EXTENDED STEM	NO	
WRENCH OPERATED	NO	
GEAR OPERATED	YES	
FIRE SAFE	YES	
NOMINAL SIZE	8" - 24"	
MATERIALS		
BODY	A 216 Gr. WCB	
BALL	A 351 Gr. CF 8M OR CS CHROMEPLATED	
BODY SEAT RING	AISI 316 STELLITED	
STEM PACKING	PTFE GRAPHITE	
STEM	AISI 316	
DESIGN CONDITIONS		
PRESSURE RATING	ANSI B16.34	
FLUID	Kg/cm ² g	°C

rev.1

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
- 2.
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE

MANDATORY STANDARDS:

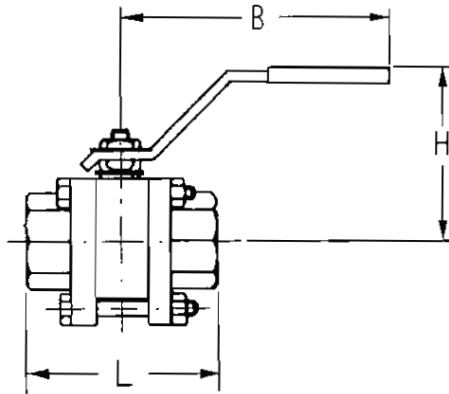
API 598, API 607, API 608, ANSI B16.10, ANSI B16.34, ANSI B16.5

NOTES:

- a) SEAT RATING ACC. TO MANUFACTURER'S STANDARD
- b) STEM EXTENSION E = 150 mm



BALL VALVE



ITEM NO	BAV 501
PRESSURE RATING CLASS	800
FACE	THREADED (NPT)
CONSTRUCTION	
BODY	THREE PIECES TYPE FULL BORE FLOATING BALL
EXTENDED STEM	NO
WRENCH OPERATED	YES
GEAR OPERATED	NO
FIRE SAFE	YES
NOMINAL SIZE	1/2" - 1 1/2"
MATERIALS	
BODY	AISI 316
BALL	AISI 316
BODY SEAT RING	PTFE
STEM PACKING	PTFE GRAPHITE
STEM	AISI 316
DESIGN CONDITIONS	
PRESSURE RATING	API 602

DESIGN (ILLUSTRATIVE ONLY)

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE

MANDATORY STANDARDS:

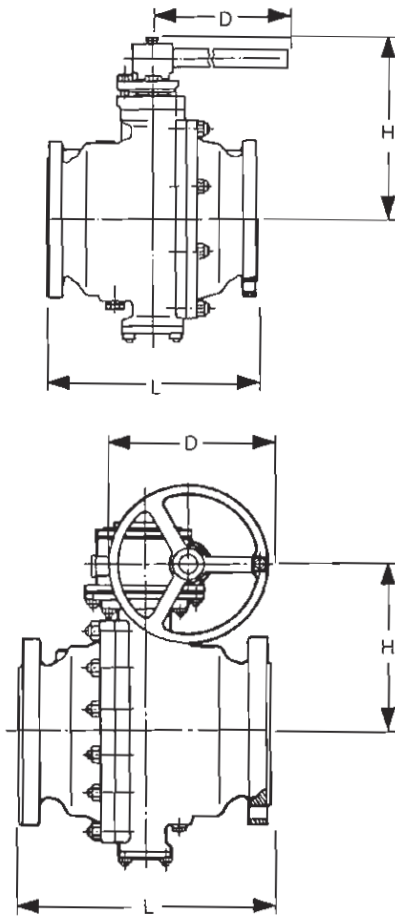
API 598, API 602, API 607, API 608, ANSI B16.11, ANSI B16.34

NOTES:

- a) SEAT RATING ACC. TO MANUFACTURER'S STANDARD
- b) BOTH ENDS FEMALE SCREWED



BALL VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	BAV 510
PRESSURE RATING CLASS	150
FACE	RF
CONSTRUCTION	
BODY	SPLIT BODY, FULL BORE, FLOATING BALL = < 4" TRUN. MOUNT BALL > 4" LONG PATTERN
EXTENDED STEM	NO
WRENCH OPERATED	2" - 6"
GEAR OPERATED	8" - 12"
FIRE SAFE	YES
NOMINAL SIZE	2" - 12"
MATERIALS	
BODY	A 351 Gr. CF 8M
BALL	AISI 316
BODY SEAT RING	PTFE
STEM PACKING	PTFE GRAPHITE
STEM	AISI 316
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE

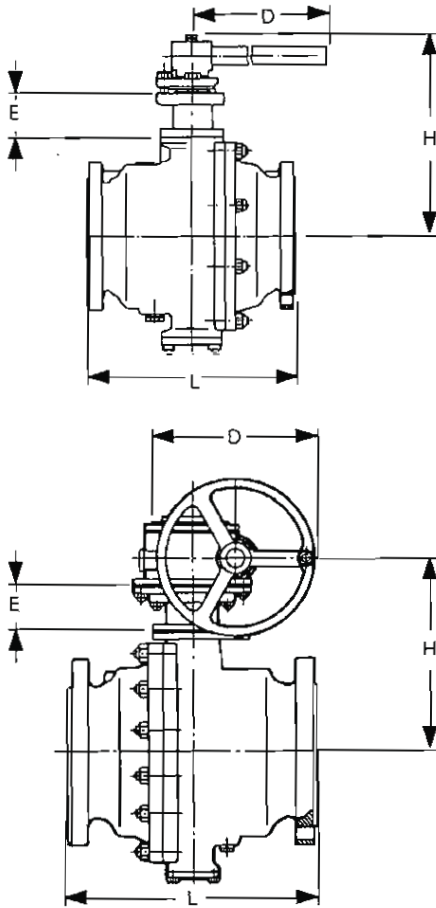
MANDATORY STANDARDS:

API 598, API 607, API 608, ANSI B16.10, ANSI B16.34, ANSI B16.5

NOTES:

- a) SEAT RATING ACC. TO MANUFACTURER'S STANDARD

BALL VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	BAV 520
PRESSURE RATING CLASS	150
FACE	RF
CONSTRUCTION	
BODY	SPLIT BODY FULL BORE TRUNNION MOUNTED BALL LONG PATTERN
EXTENDED STEM	NO
WRENCH OPERATED	NO
GEAR OPERATED	YES
FIRE SAFE	YES
NOMINAL SIZE	8" - 24"
MATERIALS	
BODY	A 351 Gr. CF 8M
BALL	A 351 Gr. CF 8M or CS Chromeplated
BODY SEAT RING	AISI 316 STELLITED
STEM PACKING	PTFE GRAPHITE
STEM	AISI 316
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE

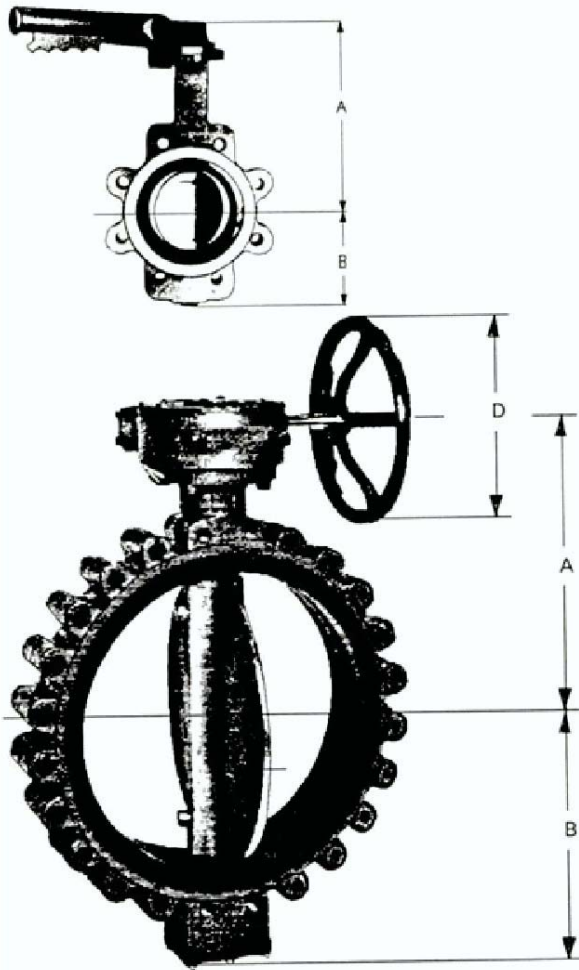
MANDATORY STANDARDS:

API 598, API 607, API 608, ANSI B16.10, ANSI B16.34, ANSI B16.5

NOTES:

- a) SEAT RATING ACC. TO MANUFACTURER'S STANDARD
- b) STEM EXTENSION E = 150mm

BUTTERFLY VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	BUV 101	
PRESSURE RATING CLASS	150	
FACE	RF	
CONSTRUCTION		
BODY	LUG TYPE WITH THREADED HOLES	
	METAL SEATED	
	CATEGORY "B"	
GEAR OPERATED	> = 8"	
NOMINAL SIZE	2" - 20"	
MATERIALS		
BODY	A 352 Gr. LCB	
BODY SEAT	A 182 F304	
DISC	AISI 304 STELLITED	
SHAFT	AISI 304	
SHAFT PACKING	GRAPHITE	
DESIGN CONDITIONS		
PRESSURE RATING	ANSI B16.34	
FLUID	Kg/cm2g	°C
LIQUID LPG/PROPANE/BUTANE	3.5	- 45

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. FACE-TO-FACE DIMENSIONS SHALL BE PER API 609

MANDATORY STANDARDS:

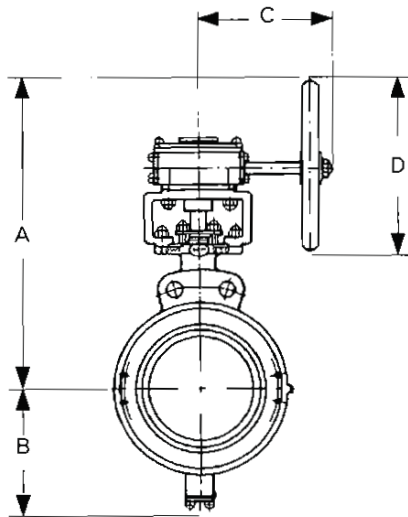
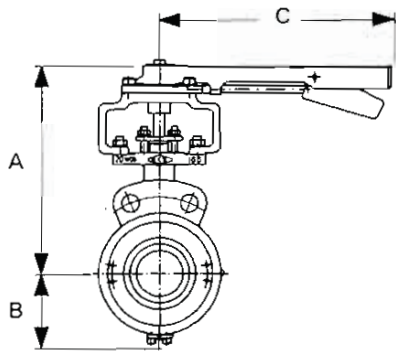
API 609, ANSI B16.34, ANSI B16.5

NOTES:

- a) EXTENDED SHAFT TO BE PROVIDED FOR VALVES WITH GEARBOX TO AVOID HEATING OF GEARBOX



BUTTERFLY VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	BUV 202
PRESSURE RATING CLASS	300
FACE	RF
CONSTRUCTION	
BODY	WAFER TYPE
	METAL SEATED
	CATEGORY "B"
GEAR OPERATED	> = 8"
NOMINAL SIZE	3" - 24"
MATERIALS	
BODY	A 216 Gr. WCB
BODY SEAT	A 182 Gr. F6a
DISC	A 216 Gr. WCB HARD FACED
SHAFT	13 Cr.
SHAFT PACKING	GRAFOIL
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. FACE-TO-FACE DIMENSIONS SHALL BE PER API 609

MANDATORY STANDARDS:

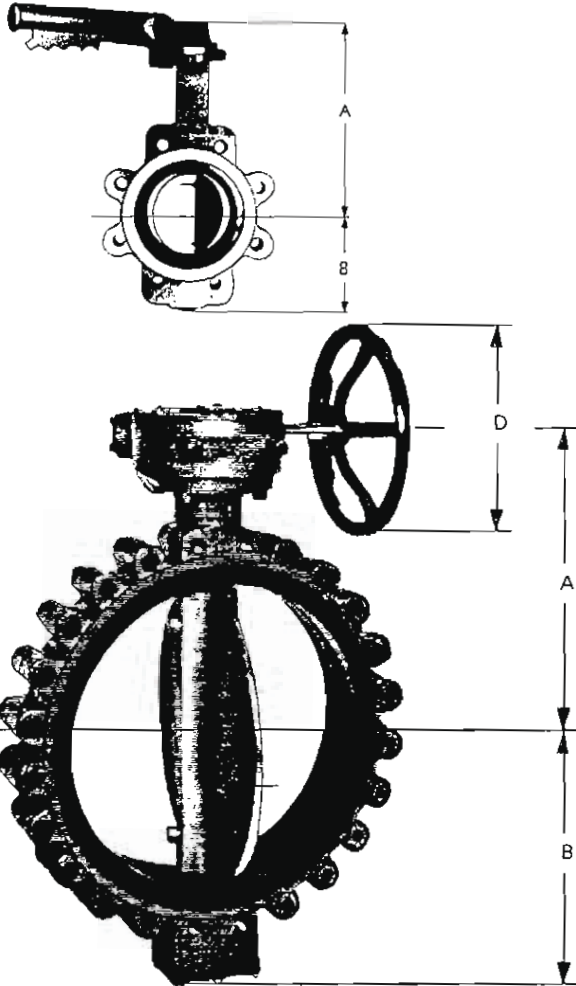
API 609, ANSI B16.34, ANSI B16.5

NOTES:

- a) EXTENDED SHAFT TO BE PROVIDED FOR VALVES WITH GEARBOX TO AVOID HEATING OF GEARBOX



BUTTERFLY VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	BUV 203
PRESSURE RATING CLASS	150
FACE	RF
CONSTRUCTION	
BODY	CAST
	LUG TYPE WITH
	THREADED HOLES
	RUBBER LINED
GEAR OPERATED	YES > = 8"
NOMINAL SIZE	2" - 24"
MATERIALS	
BODY	A 216 Gr. WCB
BODY LINING	ETHYLENE-PROPYLENE
DISC	A216 GR.WCB+
SHAFT	13 Cr
SHAFT PACKING	PTFE
DESIGN CONDITIONS	
PRESSURE RATING	API 609

rev.1

GENERAL

1. RUBBER LINING: THE WETTED SURFACES OF VALVE SHALL BE FULLY LINED AND THE LINING SHALL EXTEND OVER THE FLANGE SEALING FACE
2. LEVER OPERATORS SUITABLE FOR THROTTLING PURPOSES SHALL BE PROVIDED FOR VALVES 6" AND SMALLER
3. FACE-TO-FACE DIMENSIONS SHALL BE PER API 609
4. COPPER AND COPPER ALLOYS NOT PERMITTED

MANDATORY STANDARDS:

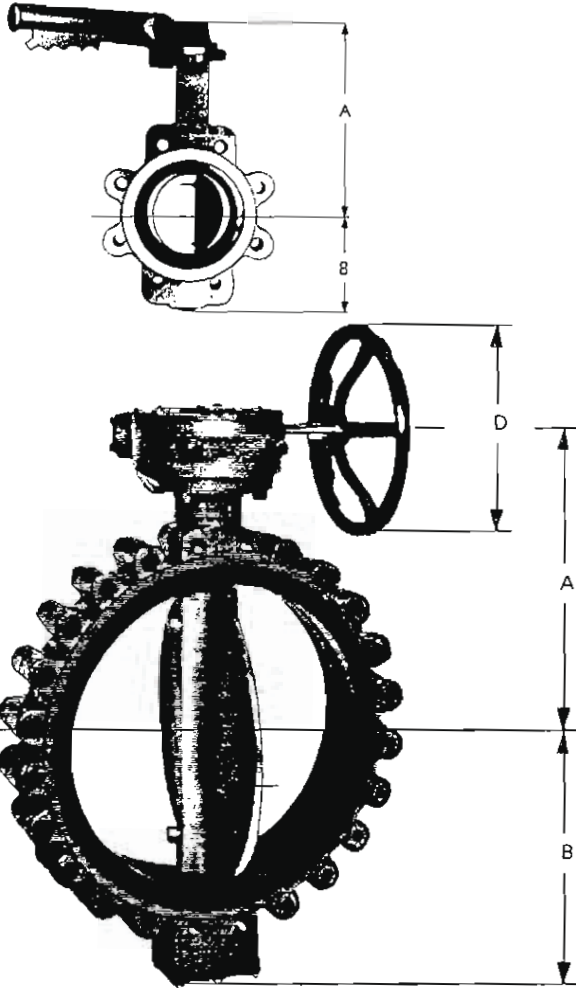
API 609, ANSI B16.5

NOTES:

- a) THE VALVE SHALL BE DESIGNED FOR CLOSURE IN DEAD-END-PIPING



BUTTERFLY VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	BUV 203 RL
PRESSURE RATING CLASS	150
FACE	RF
CONSTRUCTION	
BODY	CAST
	LUG TYPE WITH
	THREADED HOLES
	RUBBER LINED
GEAR OPERATED	YES > = 8"
NOMINAL SIZE	2" - 24"
MATERIALS	
BODY	A 216 Gr. WCB
BODY LINING	ETHYLENE-PROPYLENE
DISC	A216 GR.WCB+ RUBBER LINED
SHAFT	13 Cr
SHAFT PACKING	PTFE
DESIGN CONDITIONS	
PRESSURE RATING	API 609

rev.1

rev.1

GENERAL

1. RUBBER LINING: THE WETTED SURFACES OF VALVE SHALL BE FULLY LINED AND THE LINING SHALL EXTEND OVER THE FLANGE SEALING FACE
2. LEVER OPERATORS SUITABLE FOR THROTTLING PURPOSES SHALL BE PROVIDED FOR VALVES 6" AND SMALLER
3. FACE-TO-FACE DIMENSIONS SHALL BE PER API 609
4. COPPER AND COPPER ALLOYS NOT PERMITTED

MANDATORY STANDARDS:

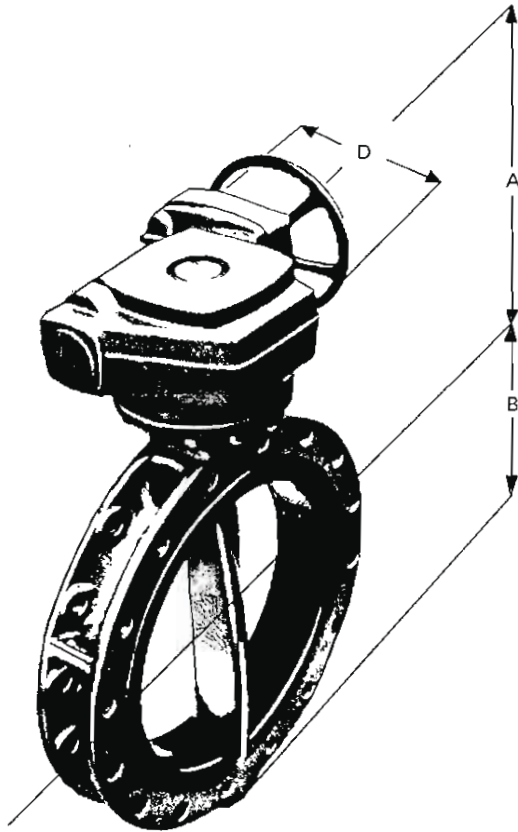
API 609, ANSI B16.5

NOTES:

- a) THE VALVE SHALL BE DESIGNED FOR CLOSURE IN DEAD-END-PIPING
- b) THIS VALVE SHALL BE RUBBERLINED FOR CORROSSIVE SERVICE.



BUTTERFLY VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	BUV 204
PRESSURE RATING CLASS	150
FACE	RF
CONSTRUCTION	
BODY	FLANGED SHORT BODY
	FULL-DRILLED
	BOLTHOLES IN FLANGES
	RUBBER LINED
GEAR OPERATED	YES
NOMINAL SIZE	26" - 64"
MATERIALS	
BODY	A 216 Gr. WCB
BODY LINING	ETHYLENE-PROPYLENE
DISC	A216 GR.WCB+ RUBBER LINED
SHAFT	13 Cr
SHAFT PACKING	PTFE
DESIGN CONDITIONS	
PRESSURE RATING	ASME B16.47

rev.1

rev.1

GENERAL

1. RUBBER LINING: THE WETTED SURFACES OF VALVE SHALL BE FULLY LINED AND LINING SHALL EXTEND OVER THE FLANGE SEALING FACE
2. FACE-TO-FACE DIMENSIONS SHALL BE PER AWWA C 504 SHORT-BODY
3. COPPER AND COPPER ALLOYS NOT PERMITTED

MANDATORY STANDARDS:

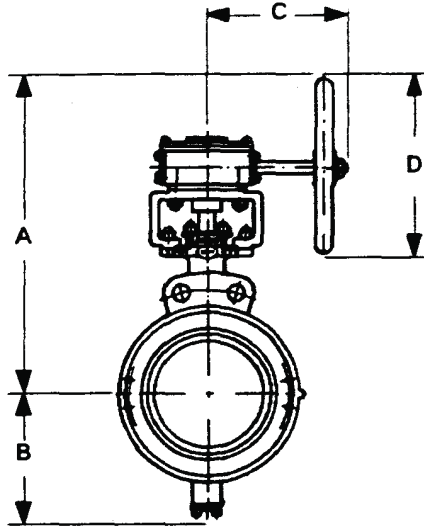
AWWA C 504, ASME B16.47

NOTES:

- a) THE VALVE SHALL BE DESIGNED FOR CLOSURE IN DEAD-END-PIPING
- b) FLANGES ACC. TO ASME B16.47 SERIES B



BUTTERFLY VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	BUY 410
PRESSURE RATING CLASS	150
FACE	RF
CONSTRUCTION	
BODY	WAFER TYPE
	CATEGORY "B"
GEAR OPERATED	> = 8"
NOMINAL SIZE	6" - 48"
MATERIALS	
BODY	A351 Gr.CF3M
BODY SEAT	REINFORCED PTFE a)
DISC	SS316L
SHAFT	A276 Gr.316L
SHAFT PACKING	PTFE
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. FACE-TO-FACE DIMENSIONS SHALL BE PER API 609

MANDATORY STANDARDS:

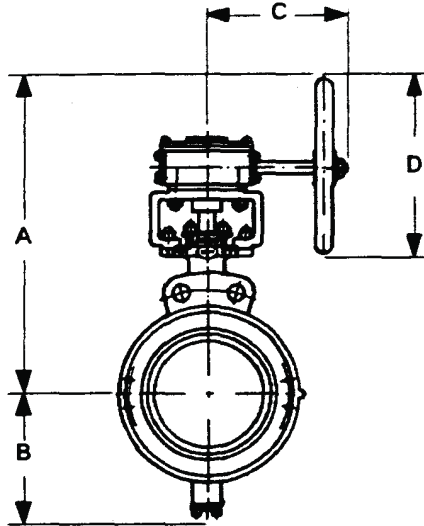
API 609, ANSI B16.34, ANSI B16.47, ANSI B16.5

NOTES:

- a) MANUFACTURER MAY RECOMMEND ALTERNATIVE SEAT MATERIAL AND SEAT RATING SUBJECT TO PURCHASER APPROVAL
- b) FLANGES > 24" ACC. TO ASME B16.47 SERIES B



BUTTERFLY VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	BUY 411
PRESSURE RATING CLASS	300
FACE	RF
CONSTRUCTION	
BODY	WAFER TYPE
	CATEGORY "B"
GEAR OPERATED	> = 8"
NOMINAL SIZE	6" - 48"
MATERIALS	
BODY	A351 Gr.CF3M
BODY SEAT	REINFORCED PTFE a)
DISC	SS316L
SHAFT	A276 Gr.316L
SHAFT PACKING	PTFE
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. FACE-TO-FACE DIMENSIONS SHALL BE PER API 609

MANDATORY STANDARDS:

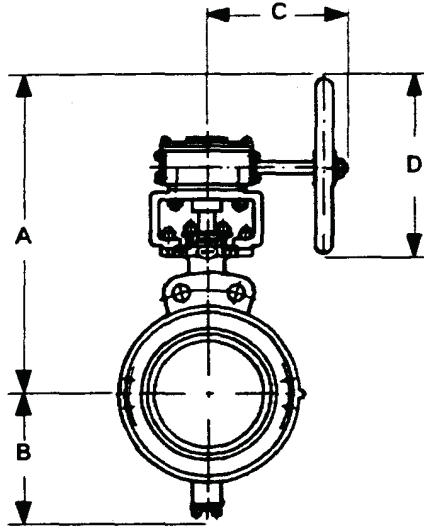
API 609, ANSI B16.34, ANSI B16.47, ANSI B16.5

NOTES:

- a) MANUFACTURER MAY RECOMMEND ALTERNATIVE SEAT MATERIAL AND SEAT RATING SUBJECT TO PURCHASER APPROVAL
- b) FLANGES > 24" ACC. TO ASME B16.47 SERIES B



BUTTERFLY VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	BUV 510
PRESSURE RATING CLASS	150
FACE	RF
CONSTRUCTION	
BODY	WAFER TYPE
	CATEGORY "B"
GEAR OPERATED	> = 8"
NOMINAL SIZE	6" - 48"
MATERIALS	
BODY	A 351 Gr. CF8
BODY SEAT	REINFORCED PTFE a)
DISC	STAINLESS TYPE 304
SHAFT	A 276 Gr. 304
SHAFT PACKING	PTFE
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. FACE-TO-FACE DIMENSIONS SHALL BE PER API 609

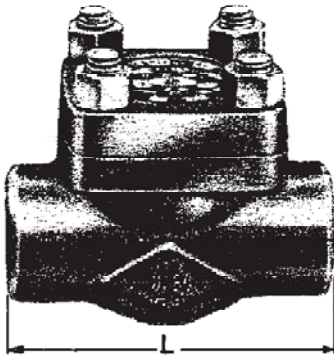
MANDATORY STANDARDS:

API 609, ANSI B16.34, ANSI B16.47, ANSI B16.5

NOTES:

- a) MANUFACTURER MAY RECOMMEND ALTERNATIVE SEAT MATERIAL AND SEAT RATING SUBJECT TO PURCHASER APPROVAL
- b) FLANGES > 24" ACC. TO ASME B16.47 SERIES B

CHECK VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	CHV 101	
PRESSURE RATING CLASS	800	
FACE	SW	
CONSTRUCTION		
BODY	FORGED	
BONNET TO BODY CONNECTION	BOLTED	
SEAT RING	RENEWABLE	
TYPE OF DISC	BALL	
NOMINAL SIZE	1/2" - 1 1/2"	
MATERIALS		
BODY	A 350 Gr. LF2	
BODY SEAT RING	AISI 304	
DISC	AISI 304	
DESIGN CONDITIONS		
PRESSURE RATING	API 602	
FLUID	Kg/cm ²	°C

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. IF NOT OTHERWISE STATED THE VALVE SHALL BE FULL BORE

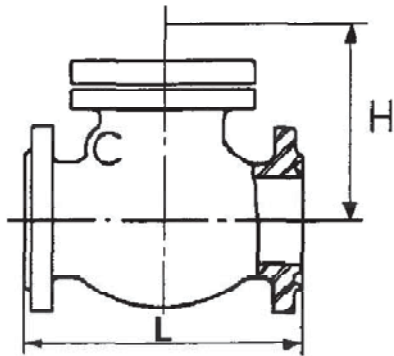
MANDATORY STANDARDS:

API 598, API 602, ANSI B16.11, ANSI B 16.34

NOTES:

- a) VALVE DESIGN SHALL GENERALLY COMPLY WITH API 602

CHECK VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	CHV 111	
PRESSURE RATING CLASS	300	
FACE	RF	
CONSTRUCTION		
BODY	CAST	
BONNET TO BODY CONNECTION	BOLTED	
SEAT RING	RENEWABLE	
TYPE OF DISC	SWING TYPE	
ACCESSORIES	NO	
BY-PASS	NO	
NOMINAL SIZE	2" - 24"	
MATERIALS		
BODY	A 352 Gr. LCB	
BODY SEAT RING	AISI 304	
DISC	AISI 304	
HINGE PIN	AISI 304	
DESIGN CONDITIONS		
PRESSURE RATING	ANSI B16.34	
FLUID	Kg/cm ² g	°C
AMMONIA GAS	30	50/33
AMMONIA LIQUID	40	50/33

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED

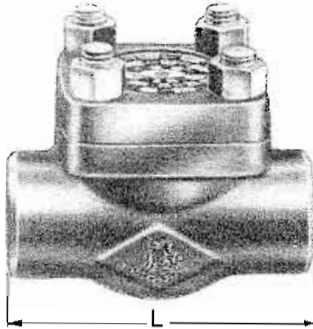
MANDATORY STANDARDS:

API 59B, API 600, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45

NOTES:



CHECK VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	CHV 201S
PRESSURE RATING CLASS	800
FACE	SW IBR
CONSTRUCTION	
BODY	FORGED
BONNET TO BODY CONNECTION	BOLTED
SEAT RING	RENEWABLE
TYPE OF DISC	BALL
NOMINAL SIZE	1/2" - 1 1/2"
MATERIALS	
BODY	A 105
BODY SEAT RING	A 182 Gr. F6a STELLITED
DISC	13 Cr Stellite.
DESIGN CONDITIONS	
PRESSURE RATING	API 602

rev.1

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. IF NOT OTHERWISE STATED THE VALVE SHALL BE FULL BORE

MANDATORY STANDARDS:

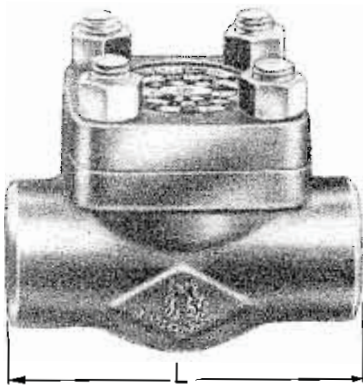
API 598, API 602, ANSI B16.11, ANSI B16.34

NOTES:

- a) VALVE DESIGN SHALL GENERALLY COMPLY WITH API 602
- b) VALVE TO BE SUPPLIED WITH IBR CERTIFICATION



CHECK VALVE



ITEM NO	CHV 201
PRESSURE RATING CLASS	800
FACE	SW
CONSTRUCTION	
BODY	FORGED
BONNET TO BODY CONNECTION	BOLTED
SEAT RING	RENEWABLE
TYPE OF DISC	BALL
NOMINAL SIZE	1/2" - 1 1/2"
MATERIALS	
BODY	A 105
BODY SEAT RING	A 182 Gr. F6a STELLITED
DISC	A 182 Gr. F6a
DESIGN CONDITIONS	
PRESSURE RATING	API 602

DESIGN (ILLUSTRATIVE ONLY)

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. IF NOT OTHERWISE STATED THE VALVE SHALL BE FULL BORE

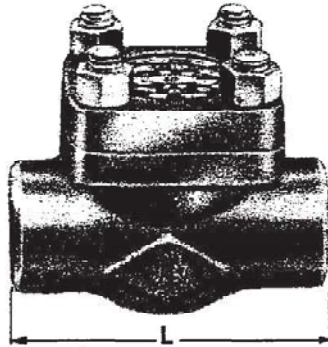
MANDATORY STANDARDS:

API 598, API 602, ANSI B16.11, ANSI B 16.34

NOTES:

- a) VALVE DESIGN SHALL GENERALLY COMPLY WITH API 602

CHECK VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	CHV 204S
PRESSURE RATING CLASS	1500
FACE	SW
CONSTRUCTION	
BODY	FORGED
BONNET TO BODY CONNECTION	BOLTED
SEAT RING	RENEWABLE
TYPE OF DISC	PISTON
NOMINAL SIZE	1/2" - 1"
MATERIALS	
BODY	A 105
BODY SEAT RING	A 182 Gr. F6a STELLITED
DISC	A 182 Gr. F6a STELLITED
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. IF NOT OTHERWISE STATED THE VALVE SHALL BE FULL BORE

MANDATORY STANDARDS:

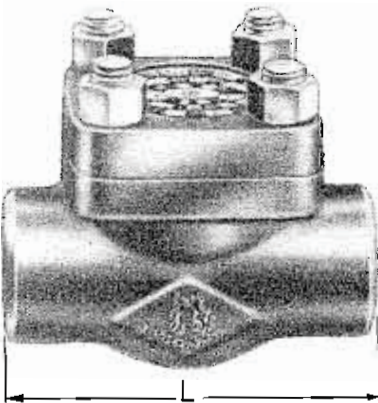
API 598, API 602, ANSI B16.11, ANSI B16.34

NOTES:

- a) VALVE DESIGN SHALL GENERALLY COMPLY WITH API 602
- b) VALVE TO BE SUPPLIED WITH IBR CERTIFICATION



CHECK VALVE



ITEM NO	CHV 207
PRESSURE RATING CLASS	800
FACE	THD
CONSTRUCTION	
BODY	FORGED
BONNET TO BODY CONNECTION	BOLTED
SEAT RING	RENEWABLE
TYPE OF DISC	BALL
NOMINAL SIZE	1/2" - 1 1/2"
MATERIALS	
BODY	A 105
BODY SEAT RING	A 182 Gr. F6a STELLITED
DISC	A 182 Gr. F6a
DESIGN CONDITIONS	
PRESSURE RATING	API 602

DESIGN (ILLUSTRATIVE ONLY)

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. IF NOT OTHERWISE STATED THE VALVE SHALL BE FULL BORE

MANDATORY STANDARDS:

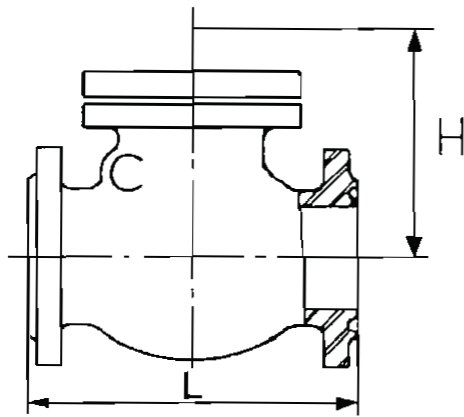
API 598, API 602, ANSI B16.11, ANSI B 16.34

NOTES:

- a) VALVE DESIGN SHALL GENERALLY COMPLY WITH API 602



CHECK VALVE



ITEM NO	CHV 210
PRESSURE RATING CLASS	150
FACE	RF
CONSTRUCTION	
BODY	CAST
BONNET TO BODY CONNECTION	BOLTED
SEAT RING	RENEWABLE
TYPE OF DISC	SWING TYPE
ACCESSORIES	NO
BY-PASS	NO
NOMINAL SIZE	2" - 24"
MATERIALS	
BODY	A 216 Gr. WCB
BODY SEAT RING	A 105 STELLITED
DISC	A 216 Gr. WCB 13Cr. FACED
HINGE PIN	13 Cr.
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

DESIGN (ILLUSTRATIVE ONLY)

GENERAL

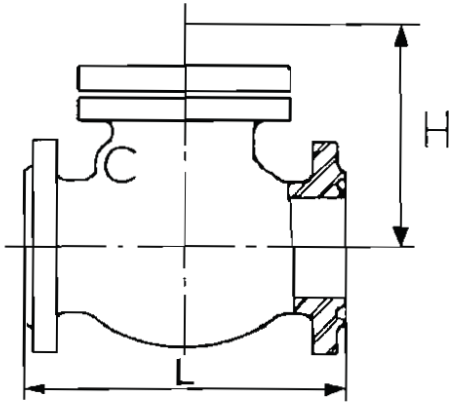
1. COPPER AND COPPER ALLOYS NOT PERMITTED

MANDATORY STANDARDS:

API 598, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45



CHECK VALVE



ITEM NO	CHV 210D
PRESSURE RATING CLASS	150
FACE	RF
CONSTRUCTION	
BODY	CAST
BONNET TO BODY CONNECTION	BOLTED
SEAT RING	RENEWABLE
TYPE OF DISC	SWING TYPE
ACCESSORIES	NO
BY-PASS	NO
NOMINAL SIZE	2" - 24"
MATERIALS	
BODY	A216 GR.WCB RUBBER LINED
BODY SEAT RING	A T05 STELLITED
DISC	A 216 Gr. WCB 13Cr. FACED SS316
HINGE PIN	13 Cr. SS316
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

DESIGN (ILLUSTRATIVE ONLY)

GENERAL

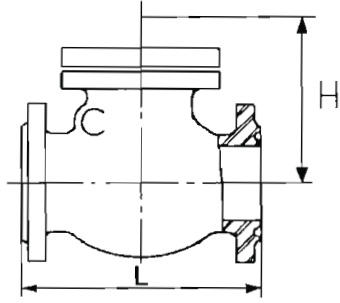
1. COPPER AND COPPER ALLOYS NOT PERMITTED

MANDATORY STANDARDS:

API 598, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45



CHECK VALVE



ITEM NO	CHV 210S	
PRESSURE RATING CLASS	150	
FACE	RF IBR	
CONSTRUCTION		
BODY	CAST	
BONNET TO BODY CONNECTION	BOLTED	
SEAT RING	RENEWABLE	
TYPE OF DISC	SWING TYPE	
ACCESSORIES	NO	
BY-PASS	NO	
NOMINAL SIZE	2" - 24"	
MATERIALS		
BODY	A 216 Gr. WCB	
BODY SEAT RING	A105 STELLITED	
DISC	A 216 Gr. WCB 13Cr. FACED	
HINGE PIN	13 Cr.	
DESIGN CONDITIONS		
PRESSURE RATING	ANSI B16.34	
FLUID	Kg/cm ² g	°C

rev.1

DESIGN (ILLUSTRATIVE ONLY)

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED

MANDATORY STANDARDS:

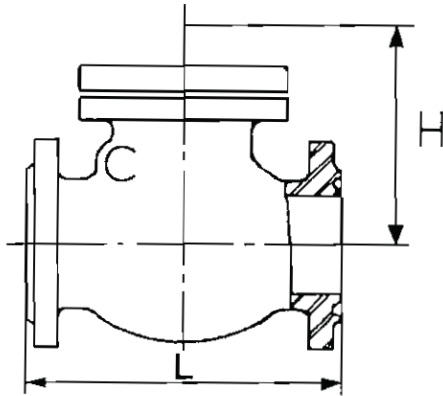
API 598, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45

NOTES:

- a) VALVE TO BE SUPPLIED WITH IBR CERTIFICATION



CHECK VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	CHV 211
PRESSURE RATING CLASS	300
FACE	RF
CONSTRUCTION	
BODY	CAST
BONNET TO BODY CONNECTION	BOLTED
SEAT RING	RENEWABLE
TYPE OF DISC	SWING TYPE
ACCESSORIES	NO
BY-PASS	NO
NOMINAL SIZE	2" - 24"
MATERIALS	
BODY	A 216 Gr. WCB
BODY SEAT RING	A 105 STELLITED
DISC	A 216 Gr. WCB 13 Cr. FACED
HINGE PIN	13 Cr.
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

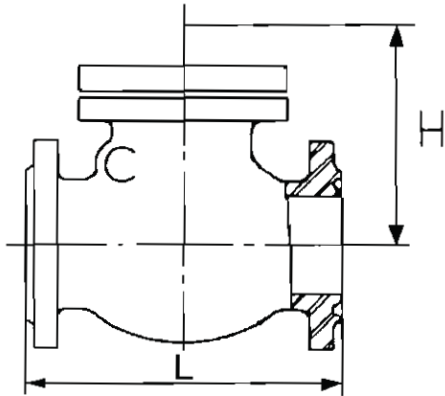
GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED

MANDATORY STANDARDS:

API 598, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45

CHECK VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	CHV 212	
PRESSURE RATING CLASS	600	
FACE	RF	
CONSTRUCTION		
BODY	CAST	
BONNET TO BODY CONNECTION	BOLTED	
SEAT RING	RENEWABLE	
TYPE OF DISC	SWING TYPE	
ACCESSORIES	NO	
BY-PASS	NO	
NOMINAL SIZE	2" - 16"	
MATERIALS		
BODY	A 216 Gr. WCB	
BODY SEAT RING	A 105 STELLITED	
DISC	A 216 Gr. WCB STELLITED	
HINGE PIN	13 Cr.	
DESIGN CONDITIONS		
PRESSURE RATING	ANSI B16.34	
FLUID	Kg/cm ² g	°C

GENERAL

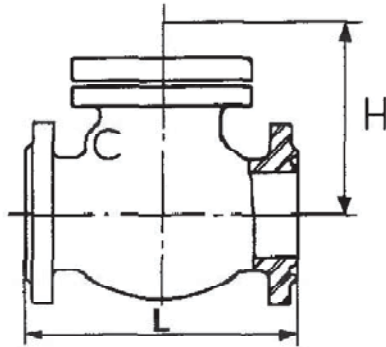
1. COPPER AND COPPER ALLOYS NOT PERMITTED

MANDATORY STANDARDS:

API 598, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45

NOTES:

CHECK VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	CHV 212S
PRESSURE RATING CLASS	600
FACE	RF
CONSTRUCTION	
BODY	CAST
BONNET TO BODY CONNECTION	BOLTED
SEAT RING	RENEWABLE
TYPE OF DISC	SWING TYPE
ACCESSORIES	NO
BY-PASS	NO
NOMINAL SIZE	2" - 16"
MATERIALS	
BODY	A 216 Gr. WCB
BODY SEAT RING	A 182 Gr. F6a STELLITED
DISC	A 182 Gr. F6a STELLITED
HINGE PIN	13 Cr.
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED

MANDATORY STANDARDS:

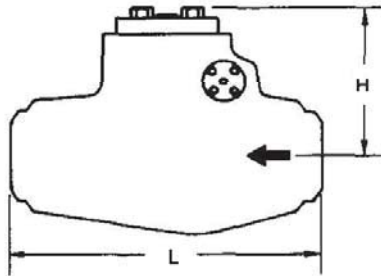
API 598, API 600, ANSI 816.10, ANSI B16.34, ANSI B16.5, MSS-SP 45

NOTES:

a) VALVE TO BE SUPPLIED WITH IBR CERTIFICATION



CHECK VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	CHV 216S
PRESSURE RATING CLASS	1500
FACE	BW
CONSTRUCTION	
BODY	CAST a)
BONNET TO BODY CONNECTION	PRESSURE SEAL
SEAT RING	WELDED
TYPE OF DISC	SWING TYPE
ACCESSORIES	NO
BY-PASS	NO
NOMINAL SIZE	1 1/2" - 24"
MATERIALS	
BODY	A 216 Gr. WCB
BODY SEAT RING	A 105 STELLITED
DISC	A 182 Gr. F6a STELLITED
HINGE PIN	13 Cr.
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED

MANDATORY STANDARDS:

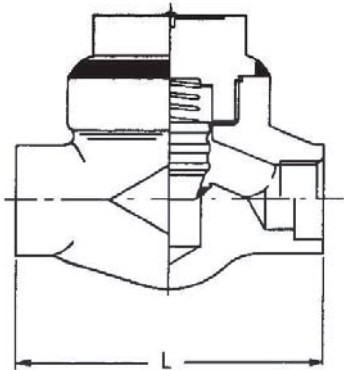
API 598, API 600, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45

NOTES:

- a) END TO END DIMENSIONS SHALL BE SHORT PATTERN
- b) VALVE TO BE SUPPLIED WITH IBR CERTIFICATION



CHECK VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	CHV 305S
PRESSURE RATING CLASS	2500
FACE	SW BW
CONSTRUCTION	
BODY	FORGED
BONNET TO BODY CONNECTION	WELDED
SEAT RING	INTEGRAL
TYPE OF DISC	PISTON
NOMINAL SIZE	1/2" - 1 1/2"
MATERIALS	
BODY	A 182 Gr. F22
BODY SEAT RING	STELLITED
DISC	A 182 Gr. F6a STELLITED
DESIGN CDNDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. IF NOT OTHERWISE STATED THE VALVE SHALL BE FULL BORE

MANDATDRY STANDARDS:

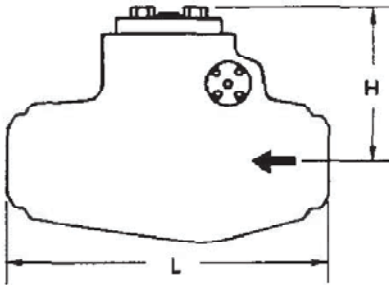
API 598, API 602, ANSI B16.11, ANSI B 16.34

NOTES:

- a) VALVE DESIGN SHALL GENERALLY COMPLY WITH API 602
- b) VALVE TO BE SUPPLIED WITH I8R CERTIFICATION



CHECK VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	CHV 326S
PRESSURE RATING CLASS	2600
FACE	BW
CONSTRUCTION	
BODY	CAST a)
BONNET TO BODY CONNECTION	PRESSURE SEAL
SEAT RING	WELDED
TYPE OF DISC	SWING TYPE
ACCESSORIES	NO
BY-PASS	NO
NOMINAL SIZE	2" - 18"
MATERIALS	
BODY	A 217 Gr. WC9
BODY SEAT RING	A 182 Gr. F22 STELLITED
DISC	A 182 Gr. F22 STELLITED
HINGE PIN	13 Cr.
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED

MANDATORY STANDARDS:

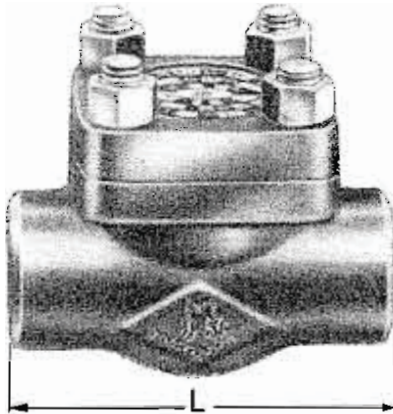
API 598, API 600, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45

NOTES:

- a) END TO END DIMENSIONS SHALL BE SHORT PATTERN
- b) VALVE TO BE SUPPLIED WITH IBR CERTIFICATION



CHECK VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	CHV401
PRESSURE RATING CLASS	800
FACE	SW
CONSTRUCTION	
BODY	FORGED
BONNET TO BODY CONNECTION	BOLTED
SEAT RING	RENEWABLE
TYPE OF DISC	BALL
NOMINAL SIZE	1/2" - 1 1/2"
MATERIALS	
BODY	A182 Gr.F316L
BODY SEAT RING	SS316L
DISC	SS316L
DESIGN CONDITIONS	
PRESSURE RATING	API 602

rev.1
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rev.1

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. IF NOT OTHERWISE STATED THE VALVE SHALL BE FULL BORE

MANDATORY STANDARDS:

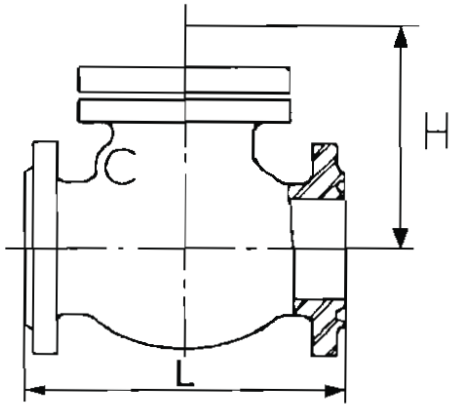
API 598, API 602, ANSI B16.11, ANSI B 16.34

NOTES:

- a) VALVE DESIGN SHALL GENERALLY COMPLY WITH API 602



CHECK VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	CHV410
PRESSURE RATING CLASS	150
FACE	RF
CONSTRUCTION	
BODY	CAST
BONNET TO BODY CONNECTION	BOLTED
SEAT RING	INTEGRAL
TYPE OF DISC	SWING TYPE
ACCESSORIES	NO
BY-PASS	NO
NOMINAL SIZE	2" - 24"
MATERIALS	
BODY	A351 Gr.CF3M
BODY SEAT RING	SS316L
DISC	SS316L
HINGE PIN	SS316L
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

rev.1
rev.1
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rev.1

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED

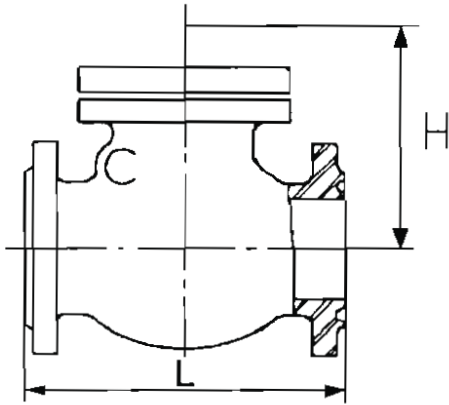
MANDATORY STANDARDS:

API 598, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45

NOTES:



CHECK VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	CHV411
PRESSURE RATING CLASS	300
FACE	RF
CONSTRUCTION	
BODY	CAST
BONNET TO BODY CONNECTION	BOLTED
SEAT RING	INTEGRAL
TYPE OF DISC	SWING TYPE
ACCESSORIES	NO
BY-PASS	NO
NOMINAL SIZE	2" - 24"
MATERIALS	
BODY	A351 Gr.CF3M
BODY SEAT RING	SS316L
DISC	SS316L
HINGE PIN	SS316L
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

rev.1
rev.1
rev.1
rev.1

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED

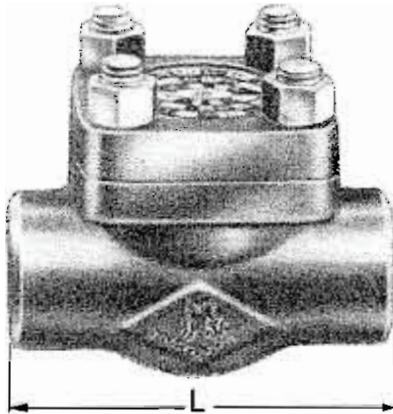
MANDATORY STANDARDS:

API 598, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45

NOTES:



CHECK VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	CHV 501
PRESSURE RATING CLASS	800
FACE	SW
CONSTRUCTION	
BODY	FORGED
BONNET TO BODY CONNECTION	BOLTED
SEAT RING	RENEWABLE
TYPE OF DISC	BALL
NOMINAL SIZE	1/2" - 1 1/2"
MATERIALS	
BODY	A 182 Gr. F304
BODY SEAT RING	AISI 304
DISC	AISI 304
DESIGN CONDITIONS	
PRESSURE RATING	API 602

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. IF NOT OTHERWISE STATED THE VALVE SHALL BE FULL BORE

MANDATORY STANDARDS:

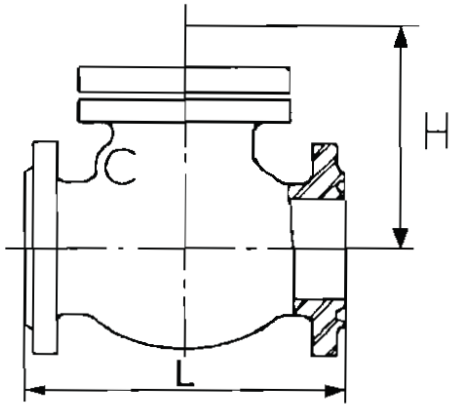
API 598, API 602, ANSI B16.11, ANSI B 16.34

NOTES:

- a) VALVE DESIGN SHALL GENERALLY COMPLY WITH API 602



CHECK VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	CHV 510
PRESSURE RATING CLASS	150
FACE	RF
CONSTRUCTION	
BODY	CAST
BONNET TO BODY CONNECTION	BOLTED
SEAT RING	INTEGRAL
TYPE OF DISC	SWING TYPE
ACCESSORIES	NO
BY-PASS	NO
NOMINAL SIZE	2" - 24"
MATERIALS	
BODY	A 351 Gr. CF8
BODY SEAT RING	A 182 Gr. F304 OR INTERGRAL
DISC	AISI 304
HINGE PIN	A 276 Gr. 304
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED

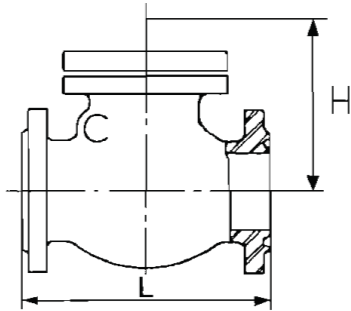
MANDATORY STANDARDS:

API 598, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45

NOTES:



CHECK VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	CHV 511F
PRESSURE RATING CLASS	150
FACE	RF
CONSTRUCTION	
BODY	CAST
BONNET TO BODY CONNECTION	BOLTED
SEAT RING	INTERGRAL
TYPE OF DISC	SWING TYPE
ACCESSORIES	NO
BY-PASS	NO
NOMINAL SIZE	2" - 24"
MATERIALS	
BODY	A 351 Gr. CF8M
BODY SEAT RING	INTEGRAL
DISC	AISI 316
HINGE PIN	A 276 Gr. 316
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED

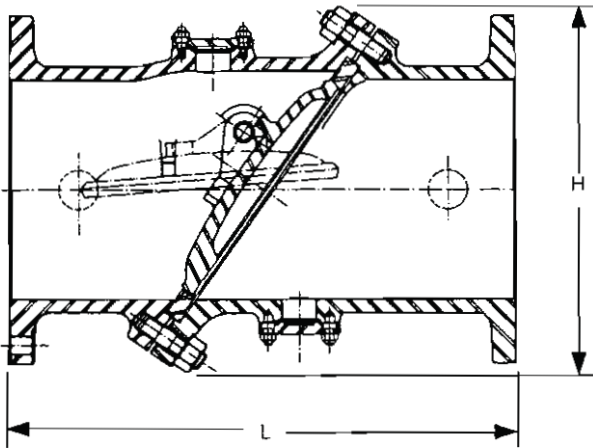
MANDATORY STANDARDS:

API 598, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45

NOTES:



CHECK VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	CHV 520
PRESSURE RATING CLASS	150
FACE	RF
CONSTRUCTION	
BODY	CAST
BODY CONNECTION	BOLTED
SEAT RING	RENEWABLE
TYPE OF DISC	TILTING DISC
ACCESSORIES	NO
BY-PASS	NO
NOMINAL SIZE	26" - 36"
MATERIALS	
BODY	A 351 Gr. CF8
BODY SEAT RING	A 182 Gr. F304
DISC	A 351 Gr. CF8
HINGE PIN	A 276 Gr. 304
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED

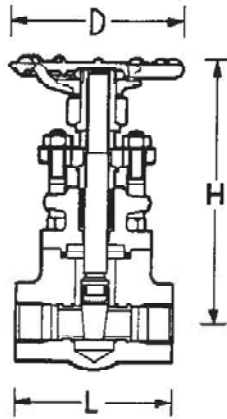
MANDATORY STANDARDS:

API 598, ANSI B16.10, ANSI B16.34, ASME B16.47 SERIES B

NOTES:

a) DIMENSIONS ACC. TO MANUFACTURERS STANDARD WITH REFERENCE TO ANSI B16.10

GATE VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	GAV 101
PRESSURE RATING CLASS	800
FACE	SW
CONSTRUCTION	
BODY	FORGED
BONNET TO BODY CONNECTION	BOLTED
HANDWHEEL	NON-RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
GATE TYPE	WSS
GEAR OPERATED	NO
BY-PASS VALVE	ND
NOMINAL SIZE	1/2" - 1 1/2"
MATERIALS	
BODY	A 350 Gr. LF2
BODY SEAT RING	AISI 304
GATE	AISI 304
STEM	AISI 304
STEM PACKING	Graphoil
TRIM NUMBER	2

GATE SYMBOLS	TYPE OF SEAT	TYPE OF GATE	TYPE OF BLOCKAGE	DESIGN CONDITIONS		
				PRESSURE RATING	API 602	
				FLUID	Kg/cm ² g	°C
WSS	WEDGE	SINGLE	SOLID WEB			
WSF			FLEX. SOLID WEB			
WDF	PARALLEL	DOUBLE	SLIP ON OR SPLIT			
PDF			FLEXIBLE			

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE

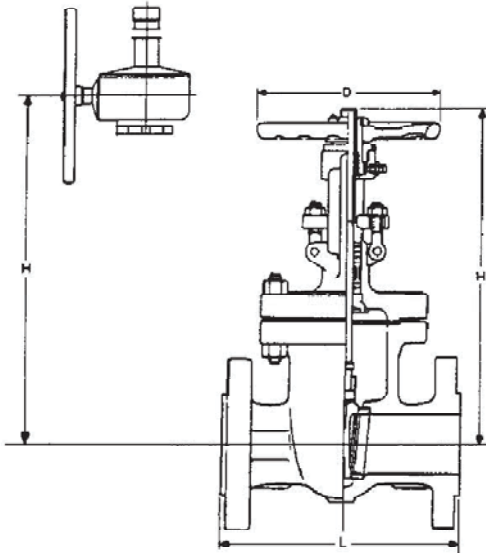
MANDATORY STANDARDS:

API 598, API 602, ANSI B16.11, ANSI B16.34

NOTES:

- a) LENGTH TO BE VERIFIED BY MANUFACTURER

GATE VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	GAV 111
PRESSURE RATING CLASS	300
FACE	RF
CONSTRUCTION	
BODY	CAST
BONNET TO BODY CONNECTION	BOLTED
HANDWHEEL	NON-RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
GATE TYPE	WSF OR WDF
GEAR OPERATED	YES > = 10"
BY-PASS VALVE	NO
NOMINAL SIZE	1 1/2" - 24"
MATERIALS	
BODY	A 352 Gr. LCB
BODY SEAT RING	AISI 304
GATE	AISI 304
STEM	AISI 304
STEM PACKING	Graphoil
TRIM NUMBER	2

GATE SYMBOLS	TYPE OF SEAT	TYPE OF GATE	TYPE OF BLOCKADE	DESIGN CONDITIONS	
				PRESSURE RATING	ANSI B16.34
				FLUID	Kg/cm2g °C
WSS	WEDGE	SINGLE	SOLID WEB		
WSF			FLEX. SOLID WEB		
WDF	PARALLEL	DOUBLE	SLIP ON OR SPLIT		
PDF			FLEXIBLE		

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE
4. VALVES > = 10" AND > = 600" RATING SHALL HAVE BOSSES FOR BY-PASS CONNECTION ACC. TO API 600 AND MSS-SP 46, LOCATION E-F

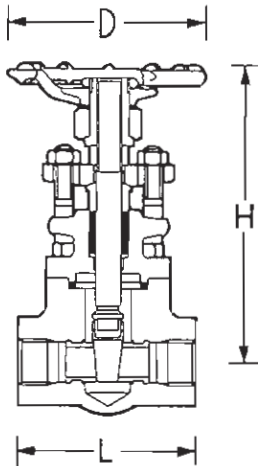
MANDATORY STANDARDS:

API 598, API 600, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45

NOTES:



GATE VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	GAV 201
PRESSURE RATING CLASS	800
FACE	SW
CONSTRUCTION	
BODY	FORGED
BONNET TO BODY CONNECTION	BOLTED
HANDWHEEL	NON-RISING
STEM (NO CASTING)	RISING
STEM AND YOKE TYPE	OS & Y
GATE TYPE	WSS
GEAR OPERATED	NO
BY-PASS VALVE	NO
NOMINAL SIZE	1/2" - 1 1/2"
MATERIALS	
BODY	A 105
BODY SEAT RING	A 182 Gr. F6a STELLITED
GATE	A 182 Gr. F6a
STEM	13 Cr.
STEM PACKING	GRAFOIL/GRAPHITE
TRIM NUMBER	8

GATE SYMBOLS	TYPE OF SEAT	TYPE OF GATE	TYPE OF BLOCKADE
WSS	WEDGE	SINGLE	SOLID WEB
WSF			FLEX. SOLID WEB
WDF	PARALLEL	DOUBLE	SLIP ON OR SPLIT
PDF			FLEXIBLE

DESIGN CONDITIONS	
PRESSURE RATING	API 602

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE

MANDATORY STANDARDS:

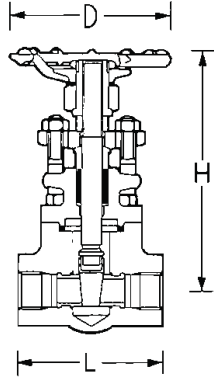
API 598, API 602, ANSI B16.11, ANSI B16.34

NOTES:

- a) LENGTH TO BE VERIFIED BY MANUFACTURER



GATE VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	GAV 201S
PRESSURE RATING CLASS	800
FACE	SW IBR
CONSTRUCTION	
BODY	FORGED
BONNET TO BODY CONNECTION	BOLTED
HANDWHEEL	NON-RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
GATE TYPE	WSS
GEAR OPERATED	NO
BY-PASS VALVE	NO
NOMINAL SIZE	1/2" - 1 1/2"
MATERIALS	
BODY	A 105
BODY SEAT RING	A 182 Gr. F6a STELLITED
GATE	A 182 Gr. F6a
STEM	13 Cr.
STEM PACKING	GRAPHITE
TRIM NUMBER	8

rev.1

GATE SYMBOLS	TYPE OF SEAT	TYPE OF GATE	TYPE OF BLOCKADE	DESIGN CONDITIONS	
				PRESSURE RATING	API 602
WSS	WEDGE	SINGLE	SOLID WEB		
WSF			FLEX. SOLID WEB		
WDF	PARALLEL	DOUBLE	SLIP ON OR SPLIT		
PDF			FLEXIBLE		

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE

MANDATORY STANDARDS:

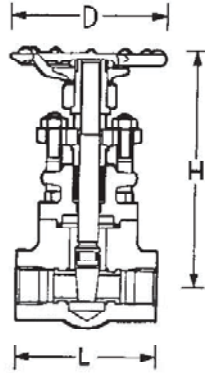
API 598, API 602, ANSI B16.11, ANSI B16.34

NOTES:

- a) LENGTH TO BE VERIFIED BY MANUFACTURER
- b) VALVE TO BE SUPPLIED WITH IBR CERTIFICATION



GATE VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	GAV 202S
PRESSURE RATING CLASS	800
FACE	SW
CONSTRUCTION	
BODY	FORGED
BONNET TO BODY CONNECTION	BOLTED
HANDWHEEL	NON-RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
GATE TYPE	WSS
GEAR OPERATED	NO
BY-PASS VALVE	NO
NOMINAL SIZE	1/2" - 1 1/2"
MATERIALS	
BODY	A 105
BODY SEAT RING	A 182 Gr. F6a STELLITED
GATE	A 182 Gr. F6a STELLITED
STEM	13 Cr.
STEM PACKING	GRAPHOIL
TRIM NUMBER	5

GATE SYMBOLS	TYPE OF SEAT	TYPE OF GATE	TYPE OF BLOCKADE
WSS	WEDGE	SINGLE	SOLID WEB
WSF			FLEX. SOLID WEB
WDF	PARALLEL	DOUBLE	SLIP ON OR SPLIT
PDF			FLEXIBLE

DESIGN CONDITIONS	
PRESSURE RATING	API 602

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE

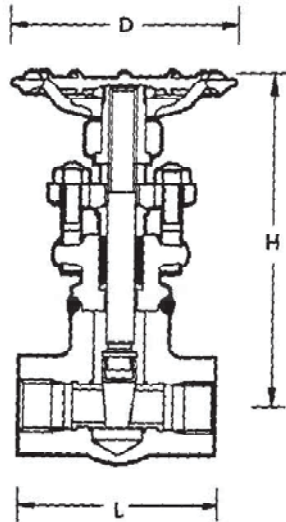
MANDATORY STANDARDS:

API 598, API 602, ANSI B16.11, ANSI B16.34

NOTES:

- a) LENGTH TO BE VERIFIED BY MANUFACTURER
- b) VALVE TO BE SUPPLIED WITH IBR CERTIFICATION

GATE VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	GAV 204S
PRESSURE RATING CLASS	1500
FACE	SW
CONSTRUCTION	
BODY	FORGED
BONNET TO BODY CONNECTION	WELDED
HANDWHEEL	NON-RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
GATE TYPE	WSS
GEAR OPERATED	NO
BY-PASS VALVE	NO
NOMINAL SIZE	1/2" - 1"
MATERIALS	
BODY	A 105
BODY SEAT RING	A 182 Gr. F6a STELLITED
GATE	A 182 Gr. F6a STELLITED
STEM	13 Cr.
STEM PACKING	GRAPHOIL
TRIM NUMBER	8

GATE SYMBOLS	TYPE OF SEAT	TYPE OF GATE	TYPE OF BLOCKADE	DESIGN CONDITIONS	
				PRESSURE RATING	ANSI B16.34
WSS	WEDGE	SINGLE	SOLID WEB		
WSF			FLEX. SOLID WEB		
WDF	PARALLEL	DOUBLE	SLIP ON OR SPLIT		
PDF			FLEXIBLE		

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE

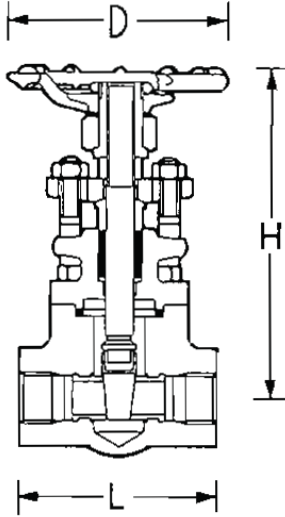
MANDATORY STANDARDS:

API 598, API 602, ANSI B16.11, ANSI B16.34

NOTES:

- a) LENGTH TO BE VERIFIED BY MANUFACTURER
- b) VALVE TO BE SUPPLIED WITH ISR CERTIFICATION

GATE VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	GAV 207
PRESSURE RATING CLASS	800
FACE	THD
CONSTRUCTION	
BODY	FORGED
BONNET TO BODY CONNECTION	BOLTED
HANDWHEEL	NON-RISING
STEM (NO CASTING)	RISING
STEM AND YOKE TYPE	OS & Y
GATE TYPE	WSS
GEAR OPERATED	NO
BY-PASS VALVE	NO
NOMINAL SIZE	1/2" - 1 1/2"
MATERIALS	
BODY	A 105
BODY SEAT RING	A 182 Gr. F6a STELLITED
GATE	A 182 Gr. F6a
STEM	13 Cr.
STEM PACKING	GRAFOIL /GRAPHITE
TRIM NUMBER	8

GATE SYMBOLS	TYPE OF SEAT	TYPE OF GATE	TYPE OF BLOCKADE
WSS	WEDGE	SINGLE	SOLID WEB
WSF			FLEX. SOLID WEB
WDF	PARALLEL	DOUBLE	SLIP ON OR SPLIT
PDF			FLEXIBLE

DESIGN CONDITIONS	
PRESSURE RATING	API 602

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE

MANDATORY STANDARDS:

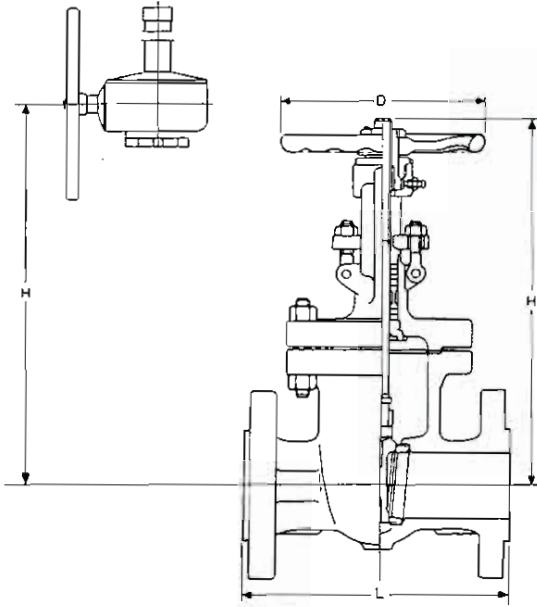
API 598, API 602, ANSI B16.11, ANSI B16.34

NOTES:

- a) LENGTH TO BE VERIFIED BY MANUFACTURER



GATE VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	GAV 210
PRESSURE RATING CLASS	150
FACE	RF
CONSTRUCTION	
BODY	CAST
BONNET TO BODY CONNECTION	BOLTED
HANDWHEEL	NON-RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
GATE TYPE	WSF OR WDF
GEAR OPERATED	YES $\geq 14"$
BY-PASS VALVE	NO
NOMINAL SIZE	2" - 48"
MATERIALS	
BODY	A 216 Gr. WCB
BODY SEAT RING	A 105 STELLITED
GATE	A 216 Gr. WCB 13 Cr. FACED
STEM (NO CASTING)	13 Cr.
STEM PACKING	GRAFOIL /GRAPHITE
TRIM NUMBER	8

GATE SYMBOLS	TYPE OF SEAT	TYPE OF GATE	TYPE OF BLOCKADE
WSS	WEDGE	SINGLE	SOLID WEB
WSF			FLEX. SOLID WEB
WDF	PARALLEL	DOUBLE	SLIP ON OR SPLIT
PDF			FLEXIBLE

DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE
4. VALVES $\geq 10"$ AND $\geq 600"$ RATING SHALL HAVE BOSSES FOR BY-PASS CONNECTION ACC. TO API 600 AND MSS-SP 45, LOCATION E-F

MANDATORY STANDARDS:

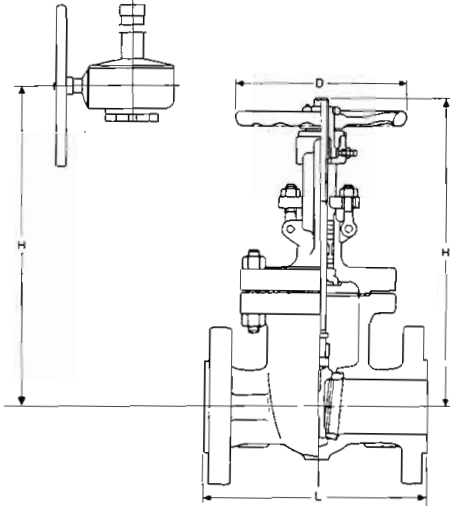
API 598, API 600, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45, ASME B16.47

NOTES:

- a) FLANGES $> 24"$ ACC. TO ASME B16.47 SERIES B



GATE VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	GAV 210S
PRESSURE RATING CLASS	150
FACE	RF IBR
CONSTRUCTION	
BODY	CAST
BONNET TO BODY CONNECTION	BOLTED
HANDWHEEL	NON-RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
GATE TYPE	WSF OR WDF c)
GEAR OPERATED	YES > = 14"
BY-PASS VALVE	NO
NOMINAL SIZE	1 1/2" - 48"
MATERIALS	
BODY	A 216 Gr. WCB
BODY SEAT RING	A 105 STELLITED
GATE	A 216 Gr. WCB 13 Cr. FACED
STEM	13 Cr.
STEM PACKING	GRAPHITE
TRIM NUMBER	8

rev.1

GATE SYMBOLS	TYPE OF SEAT	TYPE OF GATE	TYPE OF BLOCKADE
WSS	WEDGE	SINGLE	SOLID WEB
WSF			FLEX. SOLID WEB
WDF	PARALLEL	DOUBLE	SLIP ON OR SPLIT
PDF			FLEXIBLE

DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE
4. VALVES > = 10" AND > = 600" RATING SHALL HAVE BOSSES FOR BY-PASS CONNECTION ACC. TO API 600 AND MSS-SP 45, LOCATION E-F

MANDATORY STANDARDS:

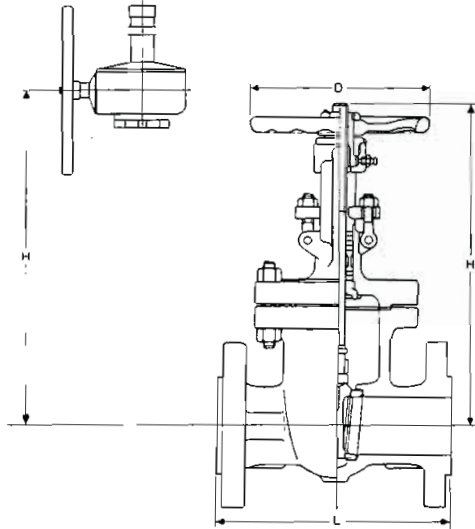
API 598, API 600, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45, ASME B16.47

NOTES:

- a) FLANGES > 24" ACC. TO ASME B16.47 SERIES B
- b) VALVE TO BE SUPPLIED WITH IBR CERTIFICATION
- c) WSF IS ACCEPTABLE FOR SIZES < = 12" ONLY



GATE VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	GAV 211
PRESSURE RATING CLASS	300
FACE	RF
CONSTRUCTION	
BODY	CAST
BONNET TO BODY CONNECTION	BOLTED
HANDWHEEL	NON-RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
GATE TYPE	WSF OR WDF a)
GEAR OPERATED	YES $\geq 10"$
BY-PASS VALVE	NO
NOMINAL SIZE	2" - 24"
MATERIALS	
BODY	A 216 Gr. WCB
BODY SEAT RING	A 105 STELLITED
GATE	A 216 Gr. WCB 13 Cr. FACED
STEM (NO CASTING)	13 Cr.
STEM PACKING	GRAFOIL /GRAPHITE
TRIM NUMBER	8

GATE SYMBOLS	TYPE OF SEAT	TYPE OF GATE	TYPE OF BLOCKADE	DESIGN CONDITIONS	
				PRESSURE RATING	ANSI B16.34
WSS	WEDGE	SINGLE	SOLID WEB		
WSF			FLEX. SOLID WEB		
WDF		DOUBLE	SLIP ON OR SPLIT		
PDF	PARALLEL		FLEXIBLE		

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE
4. VALVES $\geq 10"$ AND $\geq 600"$ RATING SHALL HAVE BOSSES FOR BY-PASS CONNECTION ACC. TO API 600 AND MSS-SP 45, LOCATION E-F

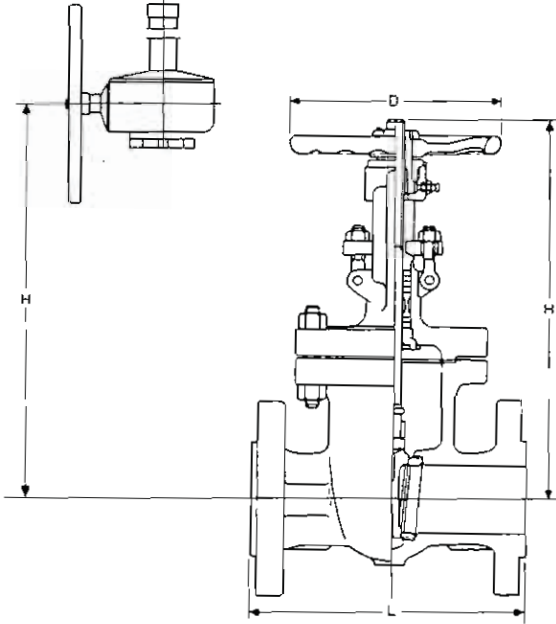
MANDATORY STANDARDS:

API 598, API 600, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45

NOTES:

a) WSF IS ACCEPTABLE FOR SIZES $\leq 12"$ ONLY

GATE VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	GAV 212
PRESSURE RATING CLASS	600
FACE	RF
CONSTRUCTION	
BODY	CAST
BONNET TO BODY CONNECTION	BOLTED
HANDWHEEL	NON-RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
GATE TYPE	WSF OR WDF a)
GEAR OPERATED	YES > = 8"
BY-PASS VALVE	NO, SEE GEN. NOTE 4
NOMINAL SIZE	1 1/2" - 24"
MATERIALS	
BODY	A 216 Gr. WCB
BODY SEAT RING	A 105 STELLITED
GATE	A 216 Gr. WCB
STEM	13 Cr.
STEM PACKING	GRAFOIL
TRIM NUMBER	8

GATE SYMBOLS	TYPE OF SEAT	TYPE OF GATE	TYPE OF BLOCKADE
WSS	WEDGE	SINGLE	SOLID WEB
WSF			FLEX. SOLID WEB
WDF		DOUBLE	SLIP ON OR SPLIT
PDF	PARALLEL		FLEXIBLE

DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE
4. VALVES > = 10" AND > = 600" RATING SHALL HAVE BOSSES FOR BY-PASS CONNECTION ACC. TO API 600 AND MSS-SP 45, LOCATION E-F

MANDATORY STANDARDS:

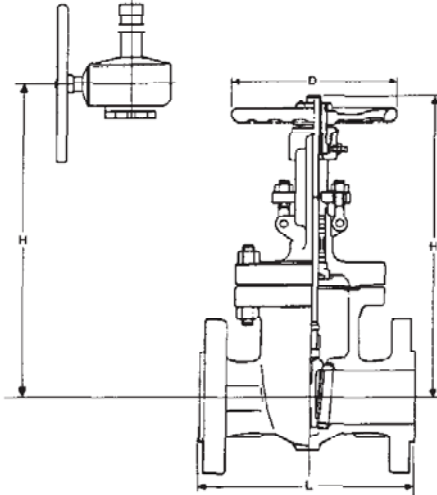
API 598, API 600, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45

NOTES:

a) WSF IS ACCEPYABLE FOR SIZES < = 6" ONLY



GATE VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	GAV 212S
PRESSURE RATING CLASS	600
FACE	RF
CONSTRUCTION	
BODY	CAST
BONNET TO BODY CONNECTION	BOLTED
HANDWHEEL	NON-RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
GATE TYPE	WSF OR WDF
GEAR OPERATED	YES > = 8"
BY-PASS VALVE	NO, SEE GEN. NOTE 4
NOMINAL SIZE	1 1/2" - 24"
MATERIALS	
BODY	A 216 Gr. WCB
BODY SEAT RING	A 182 Gr. F6a STELLITED
GATE	A 182 Gr. F6a STELLITED
STEM	13 Cr.
STEM PACKING	GRAPHOIL
TRIM NUMBER	5

GATE SYMBOLS	TYPE OF SEAT	TYPE OF GATE	TYPE OF BLOCKADE
WSS	WEDGE	SINGLE	SOLID WEB
WSF			FLEX. SOLID WEB
WDF	PARALLEL	DOUBLE	SLIP ON OR SPLIT
PDF			FLEXIBLE

DESIGN CONDITIONS	
PRESSURE RATING	ANSI 816.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE
4. VALVES > = 10" AND > = 600" RATING SHALL HAVE BOSSES FOR BY-PASS CONNECTION ACC. TO API 600 AND MSS SP 46, LOCATION E F

MANDATORY STANDARDS:

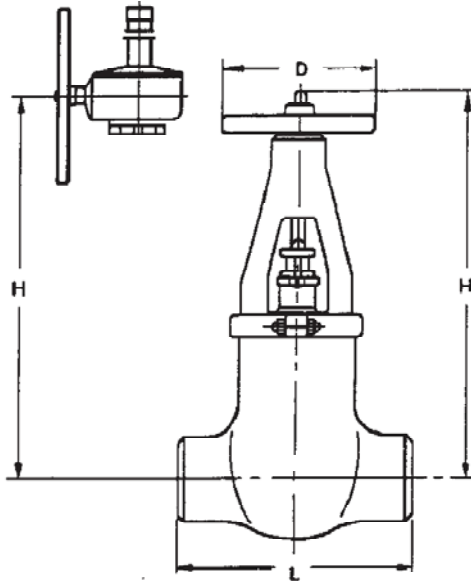
API 598, API 600, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45

NOTES:

- a) VALVE TO BE SUPPLIED WITH IBR CERTIFICATION



GATE VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	GAV 216S
PRESSURE RATING CLASS	1800
FACE	BW
CONSTRUCTION	
BODY	CAST OR FORGED a)
BONNET TO BODY CONNECTION	PRESSURE SEAL
HANDWHEEL	NON-RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
GATE TYPE	WSF OR WDF
GEAR OPERATED	YES > = 8"
BY-PASS VALVE	NO, SEE GEN. NOTE 4
NOMINAL SIZE	1 1/2" - 24"
MATERIALS	
BODY	A 216 Gr. WCB
BODY SEAT RING	A 182 Gr. F6a STELLITED
GATE	A 182 Gr. F6a STELLITED
STEM	13 Cr.
STEM PACKING	GRAPHOIL
TRIM NUMBER	8

GATE SYMBOLS	TYPE OF SEAT	TYPE OF GATE	TYPE OF BLOCKADE
WSS	WEDGE	SINGLE	SOLID WEB
WSF			FLEX. SOLID WEB
WOF			SLIP ON OR SPLIT
PDF	PARALLEL	DOUBLE	FLEXIBLE

DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE
4. VALVES > = 10" AND > = 600" RATING SHALL HAVE BOSSES FOR BY-PASS CONNECTION ACC. TO API 600 AND MSS-SP 45, LOCATION E-F

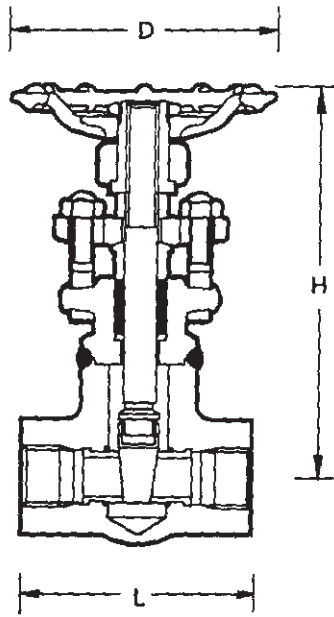
MANDATORY STANDARDS:

API 598, API 600, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45

NOTES:

- a) END TO END DIMENSION SHALL BE SHORT PATTERN
- b) VALVE TO BE SUPPLIED WITH IBR CERTIFICATION
- c) VALVES > = 6" SHALL HAVE YOKE BUSHING THRUST BEARINGS

GATE VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	GAV 305S
PRESSURE RATING CLASS	2500
FACE	BW
CONSTRUCTION	
BODY	FORGED
BONNET TO BODY CONNECTION	WELDED
HANDWHEEL	NON-RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
GATE TYPE	WSS
GEAR OPERATED	NO
BY-PASS VALVE	NO
NOMINAL SIZE	1/2" - 1 1/2"
MATERIALS	
BODY	A 182 Gr. F22
BODY SEAT RING	A 182 Gr. F6a STELLITED
GATE	A 182 Gr. F6a STELLITED
STEM	13 Cr.
STEM PACKING	GRAPHOIL
TRIM NUMBER	5

GATE SYMBOLS	TYPE OF SEAT	TYPE OF GATE	TYPE OF BLOCKADE
WSS	WEDGE	SINGLE	SOLID WEB
WSF			FLEX. SOLID WEB
WDF		DOUBLE	SLIP ON OR SPLIT
PDF	PARALLEL		FLEXIBLE

DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE

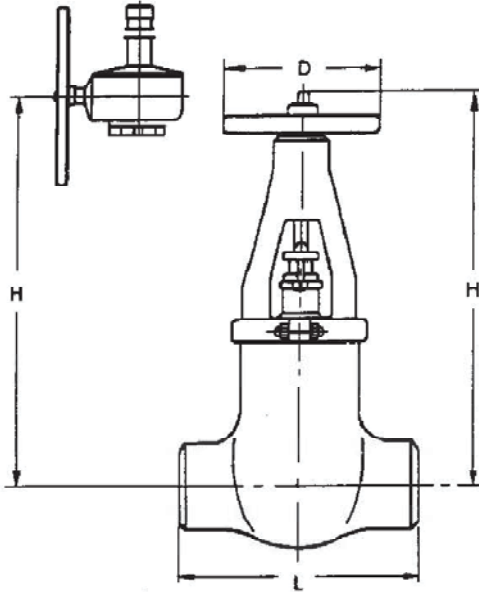
MANDATORY STANDARDS:

API 598, API 602, ANSI B16.11, ANSI B16.34

NOTES:

- a) LENGTH TO BE VERIFIED BY MANUFACTURER
- b) VALVE TO BE SUPPLIED WITH IBR CERTIFICATION

GATE VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO.	GAV 326S
PRESSURE RATING CLASS	2500
FACE	BW
CONSTRUCTION	
BODY	CAST OR FORGED a)
BONNET TO BODY CONNECTION	PRESSURE SEAL
HANDWHEEL	NON-RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
GATE TYPE	WSF OR WDF
GEAR OPERATED	YES > = 8"
BY-PASS VALVE	ND, SEE GEN. NOTE 4
NOMINAL SIZE	1 1/2" - 16"
MATERIALS	
BODY	A 217 Gr. WC9
BODY SEAT RING	A 182 Gr. F6a STELLITED
GATE	A 182 Gr. F6a STELLITED
STEM	13 Cr.
STEM PACKING	GRAPHOIL
TRIM NUMBER	5

GATE SYMBOLS	TYPE OF SEAT	TYPE OF GATE	TYPE OF BLDCKADE
WSS	WEDGE	SINGLE	SOLIO WEB
WSF			FLEX..SOLID WEB
WDF	PARALLEL	DOUBLE	SLIP ON OR SPLIT
PDF			FLEXIBLE

DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE
4. VALVES > = 10" AND > = 600" RATING SHALL HAVE BOSSES FOR BY-PASS CONNECTION ACC. TO API 600 AND MSS-SP 45, LOCATION E-F

MANDATORY STANDARDS:

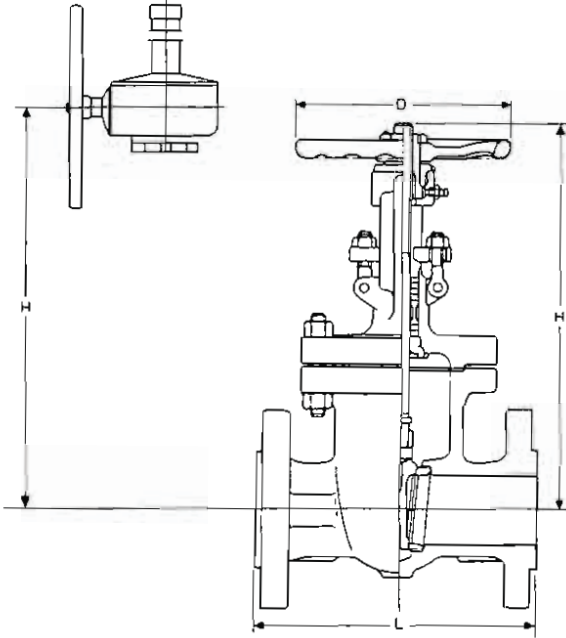
API 598, API 600, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45

NOTES:

- a) END TO END DIMENSION SHALL BE SHORT PATTERN
- b) VALVE TO BE SUPPLIED WITH IBR CERTIFICATION
- c) VALVES > = 6" SHALL HAVE YOKE BUSHING THRUST BEARINGS



GATE VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	GAV 410
PRESSURE RATING CLASS	150
FACE	RF
CONSTRUCTION	
BODY	CAST
BONNET TO BODY CONNECTION	BOLTED
HANDWHEEL	NON-RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
GATE TYPE	WSF OR WDF
GEAR OPERATED	YES $\geq 14"$
BY-PASS VALVE	NO
NOMINAL SIZE	2" - 24"
MATERIALS	
BODY	A351 Gr.CF3M
BODY SEAT RING	A182 Gr.F316L
GATE	SS 316L
STEM	SS 316L
STEM PACKING	GRAFOIL /GRAPHITE
TRIM NUMBER	2

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GATE SYMBOLS	TYPE OF SEAT	TYPE OF GATE	TYPE OF BLOCKADE
WSS	WEDGE	SINGLE	SOLID WEB
WSF			FLEX. SOLID WEB
WDF	PARALLEL	DOUBLE	SLIP ON OR SPLIT
PDF			FLEXIBLE

DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE
4. VALVES $\geq 10"$ AND $\geq 600"$ RATING SHALL HAVE BOSSES FOR BY-PASS CONNECTION ACC. TO API 600 AND MSS-SP 45, LOCATION E-F

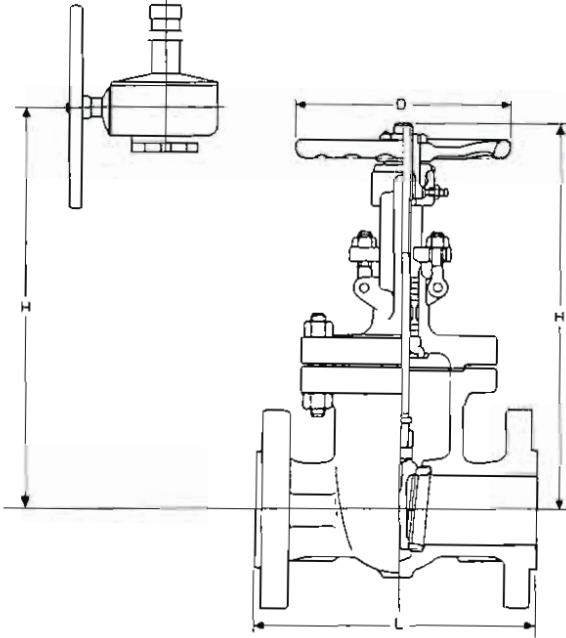
MANDATORY STANDARDS:

API 598, API 600, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45

NOTES:



GATE VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	GAV 411
PRESSURE RATING CLASS	300
FACE	RF
CONSTRUCTION	
BODY	CAST
BONNET TO BODY CONNECTION	BOLTED
HANDWHEEL	NON-RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
GATE TYPE	WSF OR WDF
GEAR OPERATED	YES $\geq 14"$
BY-PASS VALVE	NO
NOMINAL SIZE	2" - 24"
MATERIALS	
BODY	A351 Gr.CF3M
BODY SEAT RING	A182 Gr.F316L
GATE	SS 316L
STEM	SS 316L
STEM PACKING	GRAFOIL /GRAPHITE
TRIM NUMBER	2

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rev.1

GATE SYMBOLS	TYPE OF SEAT	TYPE OF GATE	TYPE OF BLOCKADE
WSS	WEDGE	SINGLE	SOLID WEB
WSF			FLEX. SOLID WEB
WDF	PARALLEL	DOUBLE	SLIP ON OR SPLIT
PDF			FLEXIBLE

DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

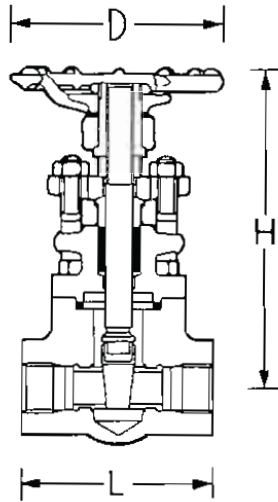
1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE
4. VALVES $\geq 10"$ AND $\geq 600"$ RATING SHALL HAVE BOSSES FOR BY-PASS CONNECTION ACC. TO API 600 AND MSS-SP 45, LOCATION E-F

MANDATORY STANDARDS:

API 598, API 600, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45

NOTES:

GATE VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	GAV 501
PRESSURE RATING CLASS	800
FACE	SW
CONSTRUCTION	
BODY	FORGED
BONNET TO BODY CONNECTION	BOLTED
HANDWHEEL	NON-RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
GATE TYPE	WSS
GEAR OPERATED	NO
BY-PASS VALVE	NO
NOMINAL SIZE	1/2" - 1 1/2"
MATERIALS	
BODY	A 182 Gr. F304
BODY SEAT RING	A 182 Gr. F304
GATE	A 182 Gr. F304
STEM	A 276 Gr. 304
STEM PACKING	GRAFOIL / GRAPHITE
TRIM NUMBER	2

GATE SYMBOLS	TYPE OF SEAT	TYPE OF GATE	TYPE OF BLOCKADE
WSS	WEDGE	SINGLE	SOLID WEB
WSF			FLEX. SOLID WEB
WDF	PARALLEL	DOUBLE	SLIP ON OR SPLIT
PDF			FLEXIBLE

DESIGN CONDITIONS	
PRESSURE RATING	API 602

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE

MANDATORY STANDARDS:

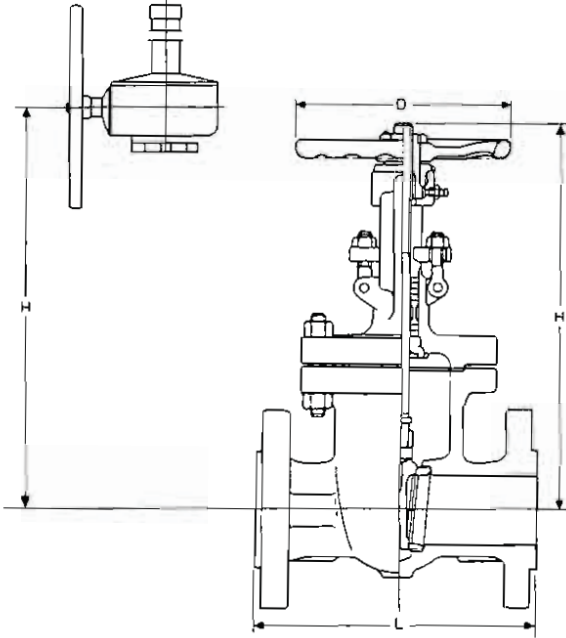
API 598, API 602, ANSI B16.11, ANSI B16.34

NOTES:

- a) LENGTH TO BE VERIFIED BY MANUFACTURER



GATE VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	GAV 510
PRESSURE RATING CLASS	150
FACE	RF
CONSTRUCTION	
BODY	CAST
BONNET TO BODY CONNECTION	BOLTED
HANDWHEEL	NON-RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
GATE TYPE	WSF OR WDF
GEAR OPERATED	YES $\geq 14"$
BY-PASS VALVE	NO
NOMINAL SIZE	$2" - 24"$
MATERIALS	
BODY	A 351 Gr. CF8
BODY SEAT RING	A 182 Gr. F304
GATE	AISI 304
STEM	A 276 Gr. 304
STEM PACKING	GRAFOIL /GRAPHITE
TRIM NUMBER	2

GATE SYMBOLS	TYPE OF SEAT	TYPE OF GATE	TYPE OF BLOCKADE
WSS	WEDGE	SINGLE	SOLID WEB
WSF			FLEX. SOLID WEB
WDF	PARALLEL	DOUBLE	SLIP ON OR SPLIT
PDF			FLEXIBLE

DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

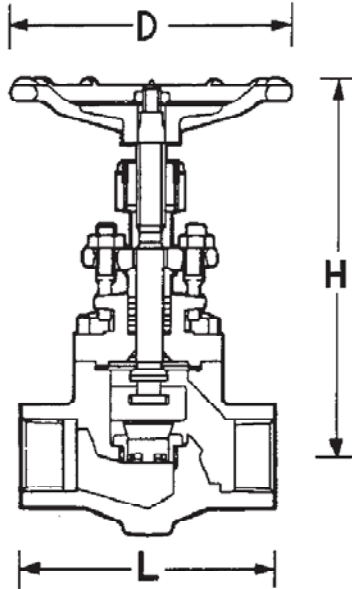
1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE
4. VALVES $\geq 10"$ AND $\geq 600"$ RATING SHALL HAVE BOSSES FOR BY-PASS CONNECTION ACC. TO API 600 AND MSS-SP 45, LOCATION E-F

MANDATORY STANDARDS:

API 598, API 600, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45

NOTES:

GLOBE VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	GLV 101
PRESSURE RATING CLASS	800
FACE	SW
CONSTRUCTION	
BODY	FORGED
BONNET TO BODY CONNECTION	BOLTED
HANDWHEEL	RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
DISC TYPE	SWIVEL PLUG
GEAR OPERATED	NO
BY-PASS VALVE	NO
NOMINAL SIZE	1/2" - 1 1/2"
MATERIALS	
BODY	A 350 Gr. LF2
BODY SEAT RING	AISI 304
DISC	AISI 304
STEM	AISI 304
STEM PACKING	GRAPHOIL
TRIM NUMBER	
DESIGN CONDITIONS	
PRESSURE RATING	API 602

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE

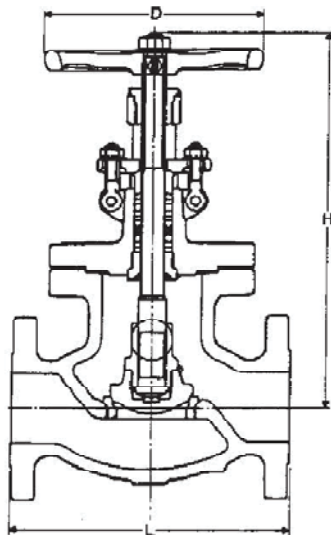
MANDATORY STANDARDS:

API 598, API 602, ANSI B16.11, ANSI B16.34

NOTES:

- a) VALVE DESIGN SHALL GENERALLY COMPLY WITH API 602
- b) LENGTH TO BE VERIFIED BY MANUFACTURER

GLOBE VALVE



DESIGN (ILLUSTRATIVE ONLY)

RATED Cv VALUES: (+-10%)

SIZE	2"	3"	4"	6"	8"	10"	12"
Cv	50	120	220	490	900	1400	2100

GENERAL

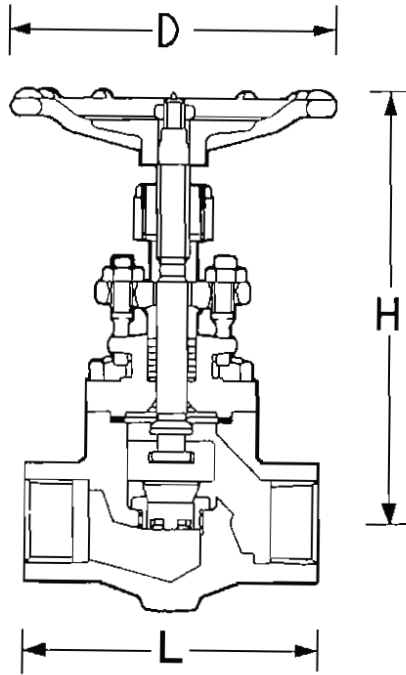
1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE
4. VALVES $\geq 10"$ AND $\geq 600"$ RATING SHALL HAVE BDSSES FOR BY-PASS CONNECTION ACC. TO ANSI B16.34 AND MSS-SP 45, LOCATION E-F

MANDATORY STANDARDS:

API 598, API 600, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45

ITEM NO	GLV 111
PRESSURE RATING CLASS	300
FACE	RF
CONSTRUCTION	
BODY	CAST
BONNET TO BODY CONNECTION	BOLTED
HANDWHEEL	RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
DISC TYPE	PARABOLIC
GEAR OPERATED	NO
BY-PASS VALVE	NO
NOMINAL SIZE	2" - 8"
MATERIALS	
BODY	A 352 Gr. LCB
BODY SEAT RING	AISI 304
DISC	AISI 304
STEM	AISI 304
STEM PACKING	GRAPHOIL
TRIM NUMBER	
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34
FLUID	Kg/cm ² g °C

GLOBE VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	GLV 201
PRESSURE RATING CLASS	800
FACE	SW
CONSTRUCTION	
BODY	FORGED
BONNET TO BODY CONNECTION	BOLTED
HANDWHEEL	RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
DISC TYPE	SWIVEL PLUG
GEAR OPERATED	NO
BY-PASS VALVE	NO
NOMINAL SIZE	1/2" - 1 1/2"
MATERIALS	
BODY	A 105
BODY SEAT RING	A 182 Gr. F6a STELLITED
DISC	A 182 Gr. F6a
STEM (NO CASTING)	13 Cr.
STEM PACKING	GRAFOIL/GRAPHITE
TRIM NUMBER	
DESIGN CONDITIONS	
PRESSURE RATING	API 602

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE

MANDATORY STANDARDS:

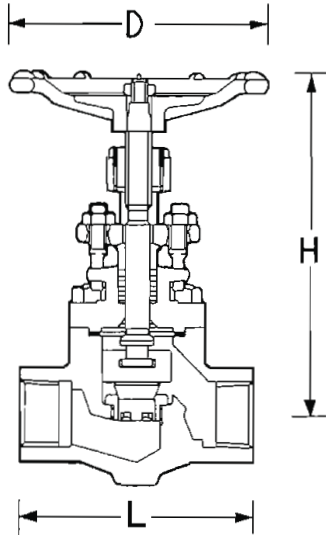
API 598, API 602, ANSI B16.11, ANSI B16.34

NOTES:

- a) VALVE DESIGN SHALL GENERALLY COMPLY WITH API 602
- b) LENGTH TO BE VERIFIED BY MANUFACTURER



GLOBE VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	GLV 201S
PRESSURE RATING CLASS	800
FACE	SW IBR
CONSTRUCTION	
BODY	FORGED
BONNET TO BODY CONNECTION	BOLTED
HANDWHEEL	RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
DISC TYPE	SWIVEL PLUG
GEAR OPERATED	NO
BY-PASS VALVE	NO
NOMINAL SIZE	1/2" - 1 1/2"
MATERIALS	
BODY	A 105
BODY SEAT RING	A 182 Gr. F6a STELLITED
DISC	A 182 Gr. F6a
STEM	13 Cr.
STEM PACKING	GRAPHITE
TRIM NUMBER	
DESIGN CONDITIONS	
PRESSURE RATING	API 602

rev.1

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE

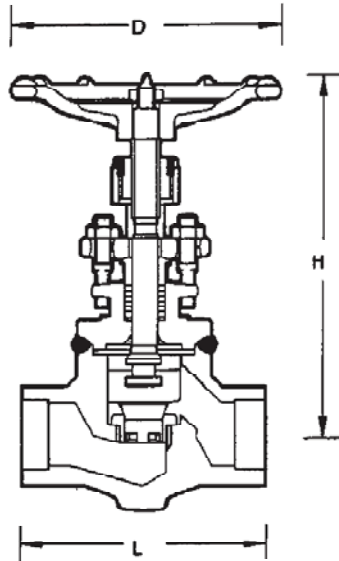
MANDATORY STANDARDS:

API 598, API 602, ANSI B16.11, ANSI B16.34

NOTES:

- a) VALVE DESIGN SHALL GENERALLY COMPLY WITH API 602
- b) LENGTH TO BE VERIFIED BY MANUFACTURER
- c) VALVE TO BE SUPPLIED WITH IBR CERTIFICATION

GLOBE VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	GLV 204S
PRESSURE RATING CLASS	1500
FACE	SW
CONSTRUCTION	
BODY	FORGED
BONNET TO BODY CONNECTION	WELDED
HANDWHEEL	RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
DISC TYPE	SWIVEL PLUG
GEAR OPERATED	NO
BY-PASS VALVE	NO
NOMINAL SIZE	1/2" - 1 1/2"
MATERIALS	
BODY	A 105
BODY SEAT RING	A 1B2 Gr. F6a STELLITED
DISC	A 1B2 Gr. F6a STELLITED
STEM	13 Cr.
STEM PACKING	GRAPHOIL
TRIM NUMBER	
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE

MANDATORY STANDARDS:

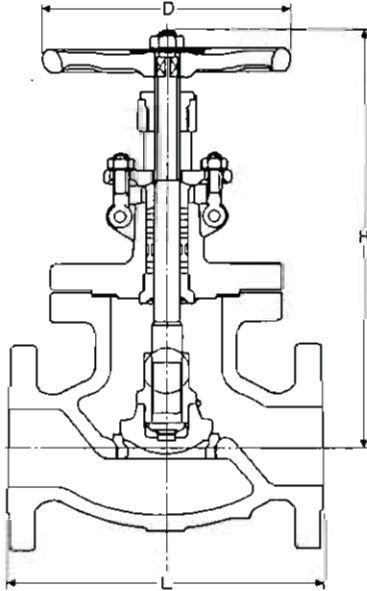
API 59B, API 602, ANSI B16.11, ANSI B16.34

NOTES:

- a) VALVE DESIGN SHALL GENERALLY COMPLY WITH API 602
- b) LENGTH TO BE VERIFIED BY MANUFACTURER
- c) VALVE TO BE SUPPLIED WITH IBR CERTIFICATION



GLOBE VALVE



DESIGN (ILLUSTRATIVE ONLY)

RATED Cv VALUES: (+ -10%)

SIZE	2"	3"	4"	6"	8"	10"	12"		
Cv	50	120	220	490	900	1400	2100		

ITEM NO	GLV 210
PRESSURE RATING CLASS	150
FACE	RF
CONSTRUCTION	
BODY	CAST
BONNET TO BODY CONNECTION	BOLTED
HANDWHEEL	RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
DISC TYPE	PARABOLIC
GEAR OPERATED	NO
BY-PASS VALVE	NO
NOMINAL SIZE	2" - 12"
MATERIALS	
BODY	A 216 Gr. WCB
BODY SEAT RING	A 105 STELLITED
DISC	A 216 Gr. WCB 13 Cr. FACING
STEM (NO CASTING)	13 Cr.
STEM PACKING	GRAFOIL/GRAPHITE
TRIM NUMBER	
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE
4. VALVES $\geq 10"$ AND $\geq 600"$ RATING SHALL HAVE BOSSES FOR BY-PASS CONNECTION ACC. TO ANSI B16.34 AND MSS-SP 45, LOCATION E-F

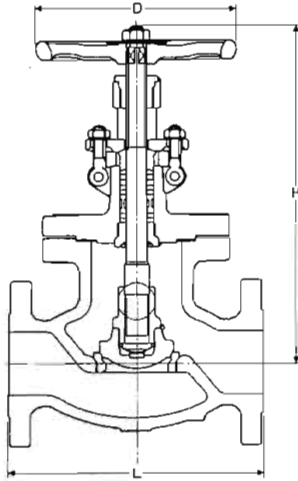
MANDATORY STANDARDS:

API 598, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45

NOTES:



GLOBE VALVE



DESIGN (ILLUSTRATIVE ONLY)

RATED Cv VALUES: (+/-10%)

SIZE	2"	3"	4"	6"	8"	10"	12"
Cv	50	120	220	490	900	1400	2100

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE
4. VALVES $\geq 10"$ AND $\geq 600"$ RATING SHALL HAVE BOSSES FOR BY-PASS CONNECTION ACC. TO ANSI B16.34 AND MSS-SP 45, LOCATION E-F

MANDATORY STANDARDS:

API 598, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45

NOTES:

- a) VALVE TO BE SUPPLIED WITH IBR CERTIFICATION

ITEM NO	GLV 210S
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PRESSURE RATING CLASS	150
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FACE	RF IBR
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CONSTRUCTION

BODY	CAST
BONNET TO BODY CONNECTION	BOLTED
HANDWHEEL	RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
DISC TYPE	PARABOLIC
GEAR OPERATED	NO
BY-PASS VALVE	NO

NOMINAL SIZE	2" - 12"
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MATERIALS

BODY	A 216 Gr. WCB
BODY SEAT RING	A 105 STELLITED
DISC	A 216 Gr. WCB 13 Cr. FACING
STEM	13 Cr.
STEM PACKING	GRAPHITE

TRIM NUMBER	
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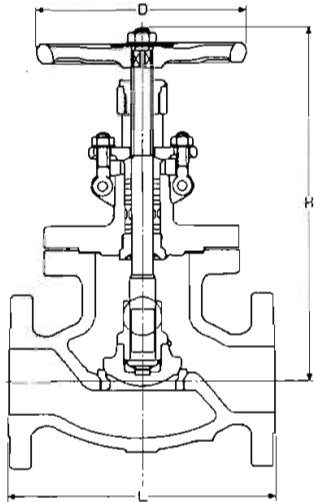
DESIGN CONDITIONS

PRESSURE RATING	ANSI B16.34
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rev.1



GLOBE VALVE



DESIGN (ILLUSTRATIVE ONLY)

RATED Cv VALUES: (+-10%)

SIZE	2"	3"	4"	6"	8"	10"	12"		
Cv	50	120	220	490	900	1400	2100		

ITEM NO	GLV 211
PRESSURE RATING CLASS	300
FACE	RF
CONSTRUCTION	
BODY	CAST
BONNET TO BODY CONNECTION	BOLTED
HANDWHEEL	RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
DISC TYPE	PARABOLIC
GEAR OPERATED	NO
BY-PASS VALVE	NO
NOMINAL SIZE	2" - 12"
MATERIALS	
BODY	A 216 Gr. WCB
BODY SEAT RING	A 105 STELLITED
DISC	A 216 Gr. WCB 13 Cr. FACING
STEM (NO CASTING)	13 Cr.
STEM PACKING	GRAFOIL
TRIM NUMBER	
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

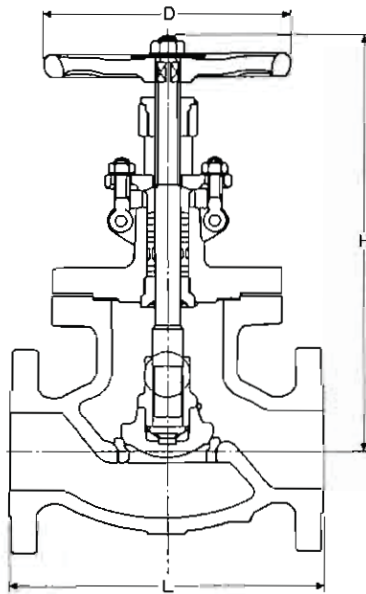
1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE
4. VALVES > = 10" AND > = 600" RATING SHALL HAVE BOSSES FOR BY-PASS CONNECTION ACC. TO ANSI B16.34 AND MSS-SP 45, LOCATION E-F

MANDATORY STANDARDS:

API 598, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45

NOTES:

GLOBE VALVE



DESIGN (ILLUSTRATIVE ONLY)

RATED Cv VALUES: (+/-10%)

SIZE	2"	3"	4"	6"	8"	10"	12"
Cv	50	120	220	490	900	1400	2100

ITEM NO	GLV 212
PRESSURE RATING CLASS	600
FACE	RF
CONSTRUCTION	
BODY	CAST
BONNET TO BODY CONNECTION	BOLTED
HANDWHEEL	RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
DISC TYPE	PARABOLIC
GEAR OPERATED	NO
BY-PASS VALVE	NO
NOMINAL SIZE	2" - 8"
MATERIALS	
BODY	A 216 Gr. WCB
BODY SEAT RING	A 105 STELLITED
DISC	A 216 Gr. WCB 13 Cr. FACING
STEM	13 Cr.
STEM PACKING	Grafoil
TRIM NUMBER	
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE
4. VALVES $\geq 10"$ AND $\geq 600"$ RATING SHALL HAVE BOSSES FOR BY-PASS CONNECTION ACC. TO ANSI B16.34 AND MSS-SP 45, LOCATION E-F

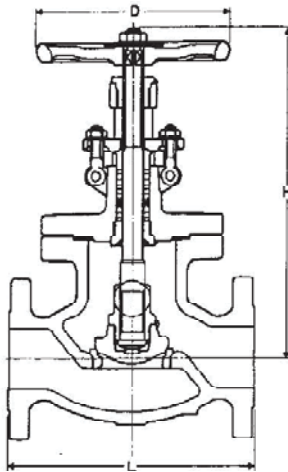
MANDATORY STANDARDS:

API 598, API 600, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45

NOTES:



GLOBE VALVE



DESIGN (ILLUSTRATIVE ONLY)

RATED Cv VALUES: (+/-10%)

SIZE	2"	3"	4"	6"	8"	10"	12"
Cv	50	120	220	490	900	1400	2100

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE
4. VALVES > - 10" AND > - 600" RATING SHALL HAVE BOSSES FOR BY-PASS CONNECTION ACC. TO ANSI B16.34 AND MSS-SP 45, LOCATION E-F

MANDATORY STANDARDS:

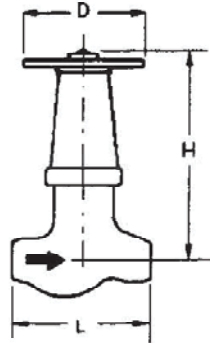
API 598, API 600, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45

NOTES:

- a) VALVE TO BE SUPPLIED WITH IBR CERTIFICATION

ITEM NO	GLV 212S
PRESSURE RATING CLASS	600
FACE	RF
CONSTRUCTION	
BODY	CAST
BONNET TO BODY CONNECTION	BOLTED
HANDWHEEL	RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
DISC TYPE	PARABOLIC
GEAR OPERATED	NO
BY-PASS VALVE	NO
NOMINAL SIZE	2" - 8"
MATERIALS	
BODY	A 216 Gr. WCB
BOOY SEAT RING	A 182 Gr. F6a STELLITED
DISC	A 182 Gr. F6a STELLITED
STEM	13 Cr.
STEM PACKING	GRAPHOIL
TRIM NUMBER	
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GLOBE VALVE



DESIGN (ILLUSTRATIVE ONLY)

RATED Cv VALUES: (+-10%)

SIZE	2"	3"	4"	6"	8"	10"	12"	14"	16"
Cv	50	120	220	490	900		30		

ITEM NO	GLV 216S
PRESSURE RATING CLASS	1500
FACE	BW
CONSTRUCTION	
BODY	CAST OR FORGED a)
BONNET TO BODY CONNECTION	PRESSURE SEAL c)
HANDWHEEL	NON-RISING c)
STEM	RISING
STEM AND YOKE TYPE	OS & Y
DISC TYPE	PARABOLIC
GEAR OPERATED	YES > = 8"
BY-PASS VALVE	NO
NOMINAL SIZE	1 1/2" - 8"
MATERIALS	
BODY	A 216 Gr. WCB
BODY SEAT RING	INTEGRAL STELLITED
DISC	A 182 Gr. F6a STELLITED
STEM	13 Cr.
STEM PACKING	GRAPHOIL
TRIM NUMBER	
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE
4. VALVES > = 10" AND > = 600" RATING SHALL HAVE BOSSES FOR BY-PASS CONNECTION ACC. TO ANSI B16.34 AND MSS-SP 45, LOCATION E-F

MANDATORY STANDARDS:

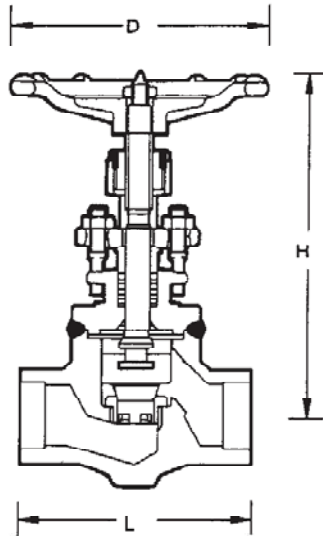
API 598, API 600, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45

NOTES:

- a) END TO END DIMENSION SHALL BE SHORT PATTERN
- b) VALVE TO BE SUPPLIED WITH IBR CERTIFICATION
- c) WELDED BONNET AND RISING STEM ARE ACCEPTABLE FOR SIZE 1 1/2"
- d) VALVES > = 6" SHALL HAVE YOKE BUSHING THRUST BEARINGS



GLOBE VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	GLV 305S
PRESSURE RATING CLASS	2500
FACE	BW
CONSTRUCTION	
BODY	FORGED
BONNET TO BODY CONNECTION	WELDED
HANDWHEEL	RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
DISC TYPE	SWIVEL PLUG
GEAR OPERATED	NO
BY-PASS VALVE	NO
NOMINAL SIZE	1/2" - 1 1/2"
MATERIALS	
BODY	A 182 Gr. F22
BODY SEAT RING	A 182 Gr. F6a STELLITED
DISC	A 182 Gr. F6a STELLITED
STEM	13 Cr.
STEM PACKING	GRAPHOIL
TRIM NUMBER	
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE

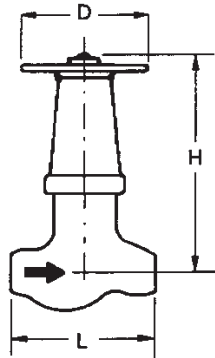
MANDATORY STANDARDS:

API 598, API 602, ANSI B16.11, ANSI B16.34

NOTES:

- a) VALVE DESIGN SHALL GENERALLY COMPLY WITH API 602
- b) LENGTH TO BE VERIFIED BY MANUFACTURER
- c) VALVE TO BE SUPPLIED WITH IBR CERTIFICATION

GLOBE VALVE



DESIGN (ILLUSTRATIVE ONLY)

RATED Cv VALUES: (+-10%)

SIZE	2"	3"	4"	6"	8"				
Cv	50	120	220	490	900				

ITEM NO	GLV 326S
PRESSURE RATING CLASS	2500
FACE	BW
CONSTRUCTION	
BODY	CAST OR FORGED a)
BDNNET TO BODY CONNECTION	PRESSURE SEAL
HANDWHEEL	NON-RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
DISC TYPE	PARABOLIC
GEAR OPERATED	NO
BY-PASS VALVE	NO
NOMINAL SIZE	2" - 4"
MATERIALS	
BODY	A 217 Gr. WC9
BODY SEAT RING	INTEGRAL STELLITED
DISC	A 182 Gr. F6a STELLITED
STEM	13 Cr.
STEM PACKING	GRAPHOIL
TRIM NUMBER	
DESIGN CDNDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE
4. VALVES > = 10" AND > = 600" RATING SHALL HAVE BOSSES FOR BY-PASS CONNECTION ACC. TO ANSI B16.34 AND MSS-SP 45, LOCATION E-F

MANDATORY STANDARDS:

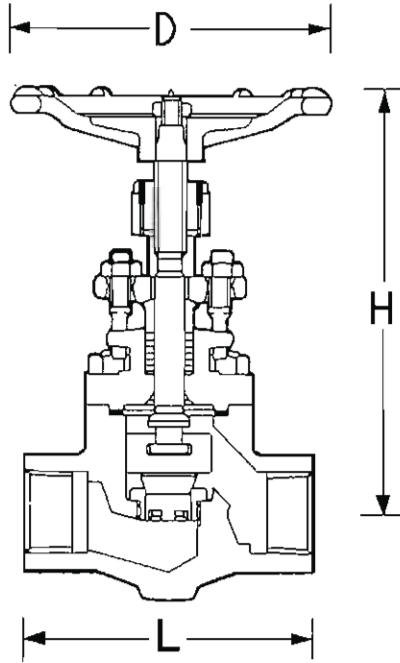
API 598, API 600, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45

NOTES:

- a) END TO END DIMENSION SHALL BE SHORT PATTERN
- b) VALVE TO BE SUPPLIED WITH IBR CERTIFICATION



GLOBE VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	GLV 401
PRESSURE RATING CLASS	800
FACE	SW
CONSTRUCTION	
BODY	FORGED
BONNET TO BODY CONNECTION	BOLTED
HANDWHEEL	RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
DISC TYPE	SWIVEL PLUG
GEAR OPERATED	NO
BY-PASS VALVE	NO
NOMINAL SIZE	1/2" - 1 1/2"
MATERIALS	
BODY	A182 GR.F316L
BODY SEAT RING	A182 GR.F316L
DISC	A182 GR.F316L
STEM	SS316L
STEM PACKING	GRAFOIL
TRIM NUMBER	
DESIGN CONDITIONS	
PRESSURE RATING	API 602

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rev.1
rev.1

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE

MANDATORY STANDARDS:

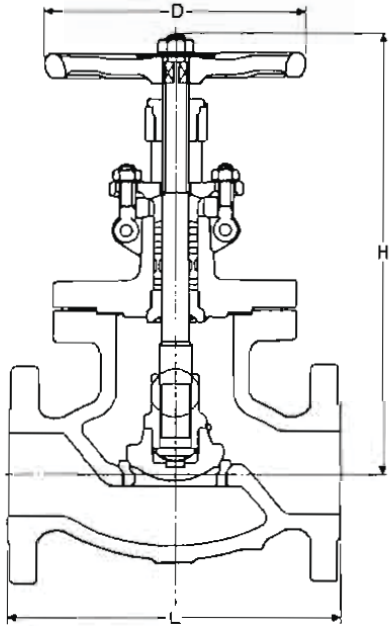
API 598, API 602, ANSI B16.11, ANSI B16.34

NOTES:

- a) VALVE DESIGN SHALL GENERALLY COMPLY WITH API 602
- b) LENGTH TO BE VERIFIED BY MANUFACTURER



GLOBE VALVE



DESIGN (ILLUSTRATIVE ONLY)

RATED Cv VALUES: (+-10%)

SIZE	2"	3"	4"	6"	8"	10"	12"		
Cv	50	120	220	490	900	1400	2100		

ITEM NO	GLV 410
PRESSURE RATING CLASS	150
FACE	RF
CONSTRUCTION	
BODY	CAST
BONNET TO BODY CONNECTION	BOLTED
HANDWHEEL	RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
DISC TYPE	PARABOLIC
GEAR OPERATED	NO
BY-PASS VALVE	NO
NOMINAL SIZE	2"-24"
MATERIALS	
BODY	A 351 GR.CF3M
BODY SEAT RING	A182 GR.F316L
DISC	AISI 316L
STEM	AISI 316L
STEM PACKING	GRAFOIL
TRIM NUMBER	
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

rev.1
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rev.1
rev.1

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE
4. VALVES $\geq 10"$ AND $\geq 600"$ RATING SHALL HAVE BOSSES FOR BY-PASS CONNECTION ACC. TO ANSI B16.34 AND MSS-SP 45, LOCATION E-F

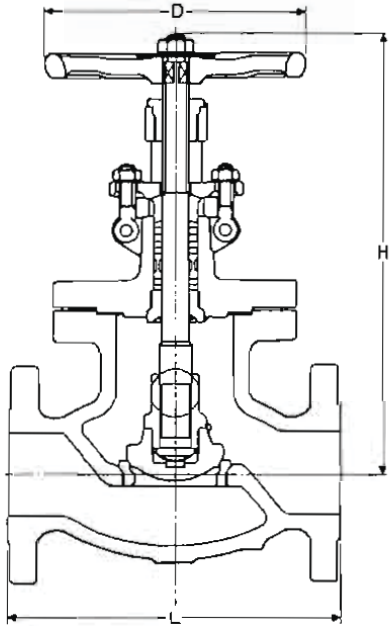
MANDATORY STANDARDS:

API 598, API 600, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45

NOTES:



GLOBE VALVE



DESIGN (ILLUSTRATIVE ONLY)

RATED Cv VALUES: (+-10%)

SIZE	2"	3"	4"	6"	8"	10"	12"		
Cv	50	120	220	490	900	1400	2100		

ITEM NO	GLV411
PRESSURE RATING CLASS	300
FACE	RF
CONSTRUCTION	
BODY	CAST
BONNET TO BODY CONNECTION	BOLTED
HANDWHEEL	RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
DISC TYPE	PARABOLIC
GEAR OPERATED	NO
BY-PASS VALVE	NO
NOMINAL SIZE	2"-24"
MATERIALS	
BODY	A 351 GR.CF3M
BODY SEAT RING	A182 GR.F316L
DISC	AISI 316L
STEM	AISI 316L
STEM PACKING	GRAFOIL
TRIM NUMBER	
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

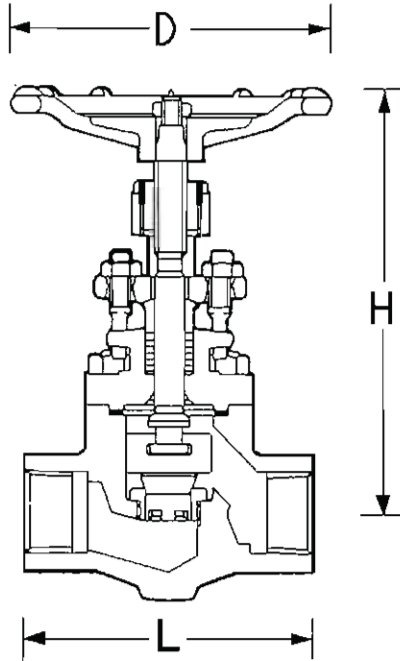
1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE
4. VALVES $\geq 10"$ AND $\geq 600"$ RATING SHALL HAVE BOSSES FOR BY-PASS CONNECTION ACC. TO ANSI B16.34 AND MSS-SP 45, LOCATION E-F

MANDATORY STANDARDS:

API 598, API 600, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45

NOTES:

GLOBE VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	GLV 501
PRESSURE RATING CLASS	800
FACE	SW
CONSTRUCTION	
BODY	FORGED
BONNET TO BODY CONNECTION	BOLTED
HANDWHEEL	RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
DISC TYPE	SWIVEL PLUG
GEAR OPERATED	NO
BY-PASS VALVE	NO
NOMINAL SIZE	1/2" - 1 1/2"
MATERIALS	
BODY	A 182 Gr. F304
BODY SEAT RING	A 182 Gr. F304
DISC	A 182 Gr. F304
STEM	A 276 Gr. 304
STEM PACKING	GRAFOIL
TRIM NUMBER	
DESIGN CONDITIONS	
PRESSURE RATING	API 602

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE

MANDATORY STANDARDS:

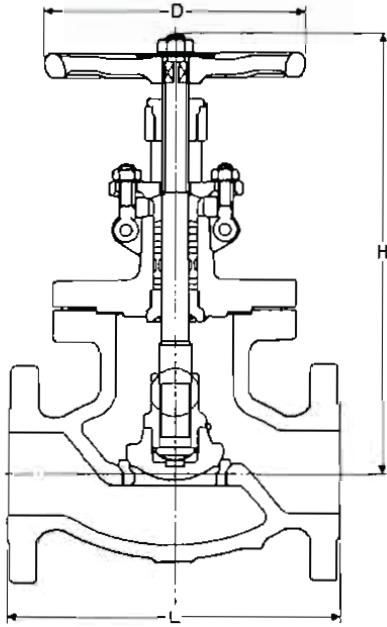
API 598, API 602, ANSI B16.11, ANSI B16.34

NOTES:

- a) VALVE DESIGN SHALL GENERALLY COMPLY WITH API 602
- b) LENGTH TO BE VERIFIED BY MANUFACTURER



GLOBE VALVE



DESIGN (ILLUSTRATIVE ONLY)

RATED Cv VALUES: (+-10%)

SIZE	2"	3"	4"	6"	8"	10"	12"		
Cv	50	120	220	490	900	1400	2100		

ITEM NO	GLV 510
PRESSURE RATING CLASS	150
FACE	RF
CONSTRUCTION	
BODY	CAST
BONNET TO BODY CONNECTION	BOLTED
HANDWHEEL	RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
DISC TYPE	PARABOLIC
GEAR OPERATED	NO
BY-PASS VALVE	NO
NOMINAL SIZE	2" - 8"
MATERIALS	
BODY	A 351 Gr. CF8
BODY SEAT RING	A 182 Gr. F304
DISC	AISI 304
STEM	A 276 Gr. 304
STEM PACKING	GRAFOIL
TRIM NUMBER	
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

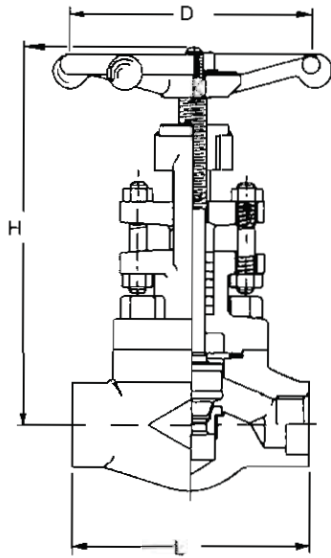
1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE
4. VALVES $\geq 10"$ AND $\geq 600"$ RATING SHALL HAVE BOSSES FOR BY-PASS CONNECTION ACC. TO ANSI B16.34 AND MSS-SP 45, LOCATION E-F

MANDATORY STANDARDS:

API 598, API 600, ANSI B16.10, ANSI B16.34, ANSI B16.5, MSS-SP 45

NOTES:

NEEDLE VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	NEV 501	
PRESSURE RATING CLASS	800	
FACE	SW	
CONSTRUCTION		
BODY	FORGED b)	
BONNET TO BODY CONNECTION	BOLTED	
HANDWHEEL	RISING	
STEM	RISING	
STEM AND YOKE TYPE	OS & Y	
DISC TYPE	SWIVEL NEEDLE	
GEAR OPERATED	NO	
BY-PASS VALVE	NO	
NOMINAL SIZE	1/2" - 1 1/2"	
MATERIALS		
BODY	A 182 Gr. F316	
BODY SEAT RING	INTEGRAL STELLITED	
DISC	A 182 Gr. F316 STELLITED	
STEM	A 276 Gr. 316	
STEM PACKING	GRAFOIL	
TRIM NUMBER		
DESIGN CONDITIONS		
PRESSURE RATING	API 602	
FLUID	Kg/cm ² g	°C

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE

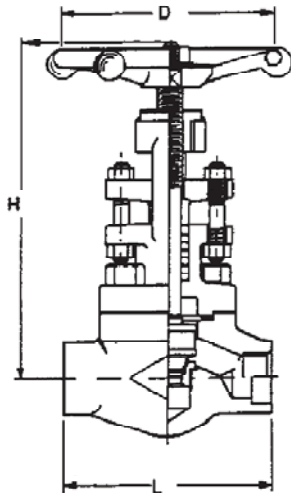
MANDATORY STANDARDS:

API 598, API 602, ANSI B16.11, ANSI B16.34

NOTES:

- a) VALVE DESIGN SHALL GENERALLY COMPLY WITH API 602
- b) REDUCED BORE (LOW VOLUME TYPE)

NEEDLE VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	NEV 501S
PRESSURE RATING CLASS	800
FACE	SW
CONSTRUCTION	
BODY	FORGED b)
BONNET TO BODY CONNECTION	BOLTED
HANDWHEEL	RISING
STEM	RISING
STEM AND YOKE TYPE	DS & Y
DISC TYPE	SWIVEL NEEDLE
GEAR OPERATED	NO
BY-PASS VALVE	NO
NOMINAL SIZE	1/2" - 1 1/2"
MATERIALS	
BODY	A 182 Gr. F316
BODY SEAT RING	INTEGRAL STELLITED
DISC	A 182 Gr. F316 STELLITED
STEM	A 276 Gr. 316
STEM PACKING	GRAPHOIL
TRIM NUMBER	
DESIGN CONDITIONS	
PRESSURE RATING	API 602

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE

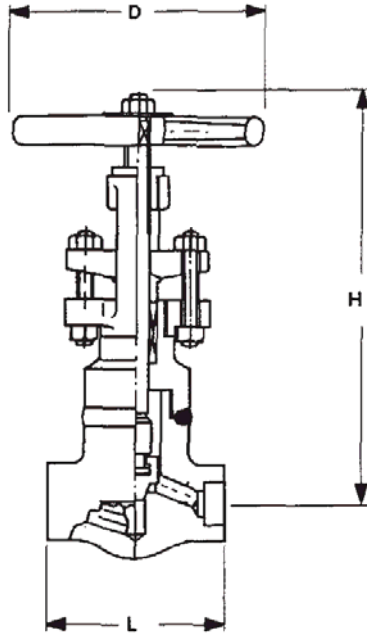
MANDATORY STANDARDS:

API 598, API 602, ANSI B16.11, ANSI B16.34

NOTES:

- a) VALVE DESIGN SHALL GENERALLY COMPLY WITH API 602
- b) REDUCED BORE (LOW VOLUME TYPE)
- c) VALVE TO BE SUPPLIED WITH IBR CERTIFICATION

NEEDLE VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	NEV 502S
PRESSURE RATING CLASS	1500
FACE	SW
CONSTRUCTION	
BODY	FORGED b)
BONNET TO BODY CONNECTION	WELDED
HANDWHEEL	RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
DISC TYPE	SWIVEL NEEDLE
GEAR OPERATED	NO
BY-PASS VALVE	NO
NOMINAL SIZE	1/2" - 1 1/2"
MATERIALS	
BODY	A 182 Gr. F316
BODY SEAT RING	INTEGRAL STELLITED
DISC	A 182 Gr. F316 STELLITED
STEM	A 276 Gr. 316
STEM PACKING	GRAPHOIL
TRIM NUMBER	
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE

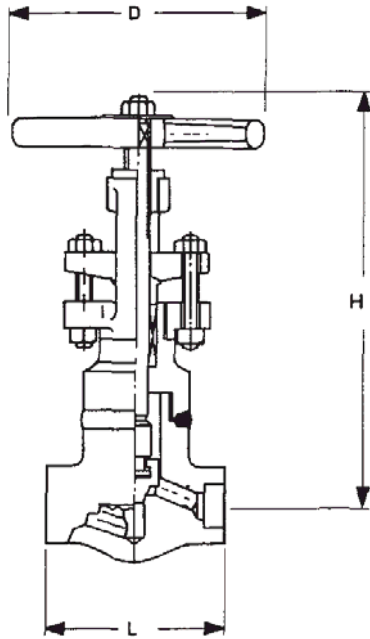
MANDATORY STANDARDS:

API 598, API 602, ANSI B16.11, ANSI B16.34

NOTES:

- a) VALVE DESIGN SHALL GENERALLY COMPLY WITH API 602
- b) REDUCED BORE (LOW VOLUME TYPE)
- c) VALVE TO BE SUPPLIED WITH IBR CERTIFICATION

NEEDLE VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	NEV 503S
PRESSURE RATING CLASS	2500
FACE	SW
CONSTRUCTION	
BODY	FORGED b)
BONNET TO BODY CONNECTION	WELDED
HANDWHEEL	RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
DISC TYPE	SWIVEL NEEDLE
GEAR OPERATED	NO
BY-PASS VALVE	NO
NOMINAL SIZE	1/2" - 1 1/2"
MATERIALS	
BODY	A 182 Gr. F316
BODY SEAT RING	INTEGRAL STELLITED
DISC	A 182 Gr. F316 STELLITED
STEM	A 276 Gr. 316
STEM PACKING	GRAPHOIL
TRIM NUMBER	
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE

MANDATORY STANDARDS:

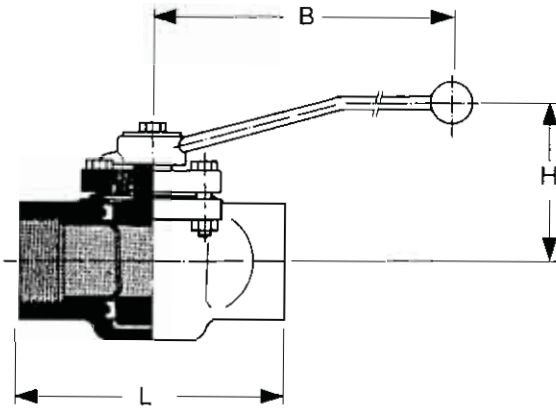
API 598, API 602, ANSI B16.11, ANSI B16.34

NOTES:

- a) VALVE DESIGN SHALL GENERALLY COMPLY WITH API 602
- b) REDUCED BORE (LOW VOLUME TYPE)
- c) VALVE TO BE SUPPLIED WITH IBR CERTIFICATION



PLUG VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	PLV 201
PRESSURE RATING CLASS	600
FACE	TREADED (NPT)
CONSTRUCTION	
BODY	FULL BORE NON-LUBRICATED
PLUG	TAPER PLUG
WRENCH OPERATED	YES
GEAR OPERATED	NO
FIRE SAFE	NO
NOMINAL SIZE	1/2" - 1"
MATERIALS	
BODY	A 105 a)
PLUG	A 105 CHROMEPLATED a)
BODY SEAT RING	REINFORCED PTFE
STEM PACKING	PTFE
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED

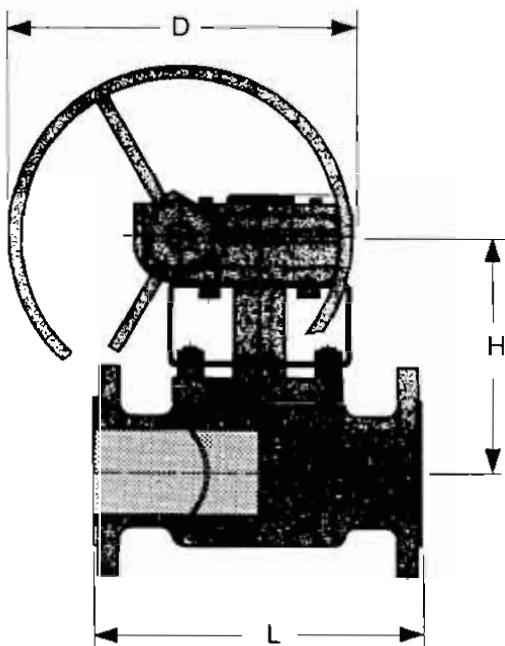
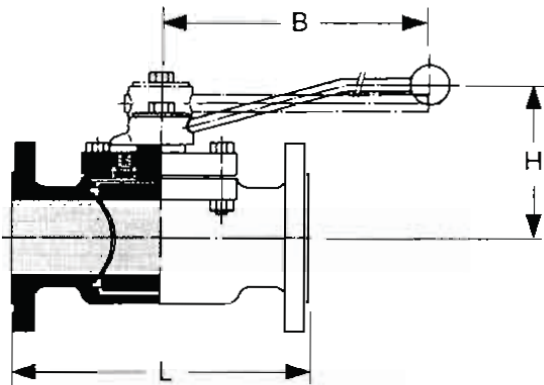
MANDATORY STANDARDS:

API 598, API 6D, ANSI B16.11, ANSI B16.34

NOTES:

a) EQUIVALENT CAST MATERIAL IS ACCEPTABLE

PLUG VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	PLV 202
PRESSURE RATING CLASS	150
FACE	RF
CONSTRUCTION	
BODY	NON-LUBRICATED FULL BORE
PLUG	TAPER PLUG
WRENCH OPERATED	1 1/2" - 4"
GEAR OPERATED	6"
FIRE SAFE	NO
NOMINAL SIZE	1 1/2" - 6"
MATERIALS	
BODY	A 216 Gr. WCB
PLUG	A 105 CHROMEPLATED a)
BODY SEAT RING	REINFORCED PTFE
STEM PACKING	PTFE
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED

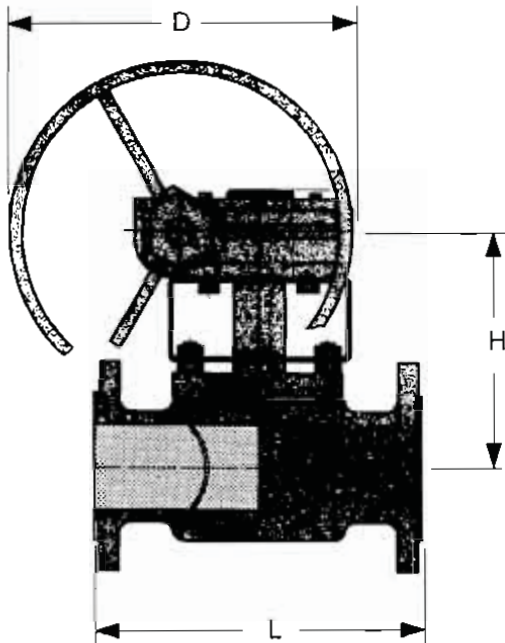
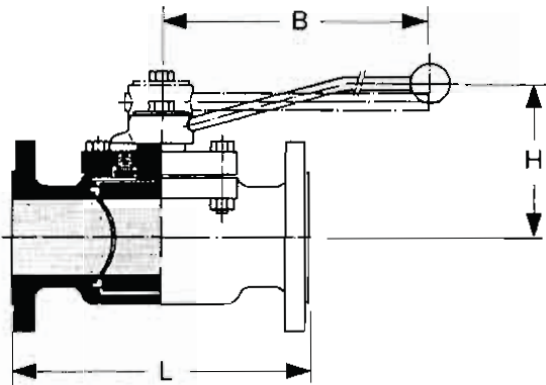
MANDATORY STANDARDS:

API 598, API 599, ANSI B16.10, ANSI B16.5

NOTES:

a) EQUIVALENT CAST MATERIAL IS ACCEPTABLE

PLUG VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	PLV 205
PRESSURE RATING CLASS	300
FACE	RF
CONSTRUCTION	
BODY	NON-LUBRICATED FULL BORE
PLUG	TAPER PLUG
WRENCH OPERATED	1 1/2" - 4"
GEAR OPERATED	6"
FIRE SAFE	NO
NOMINAL SIZE	1 1/2" - 6"
MATERIALS	
BODY	A 216 Gr. WCB
PLUG	A 105 CHROMEPLATED a)
BODY SEAT RING	REINFORCED PTFE
STEM PACKING	PTFE
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED

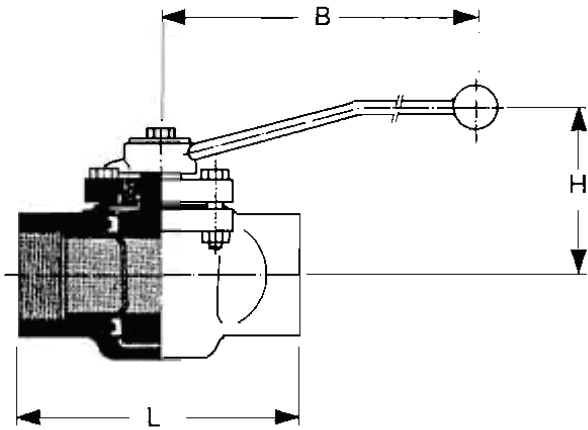
MANDATORY STANDARDS:

API 598, API 599, ANSI B16.10, ANSI B16.5

NOTES:

a) EQUIVALENT CAST MATERIAL IS ACCEPTABLE

PLUG VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	PLV 501
PRESSURE RATING CLASS	600
FACE	TREADED (NPT)
CONSTRUCTION	
BODY	FULL BORE NON-LUBRICATED
PLUG	TAPER PLUG
WRENCH OPERATED	YES
GEAR OPERATED	NO
FIRE SAFE	NO
NOMINAL SIZE	1/2" - 1"
MATERIALS	
BODY	AISI 316
PLUG	AISI 316
BODY SEAT RING	REINFORCED PTFE
STEM PACKING	PTFE
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

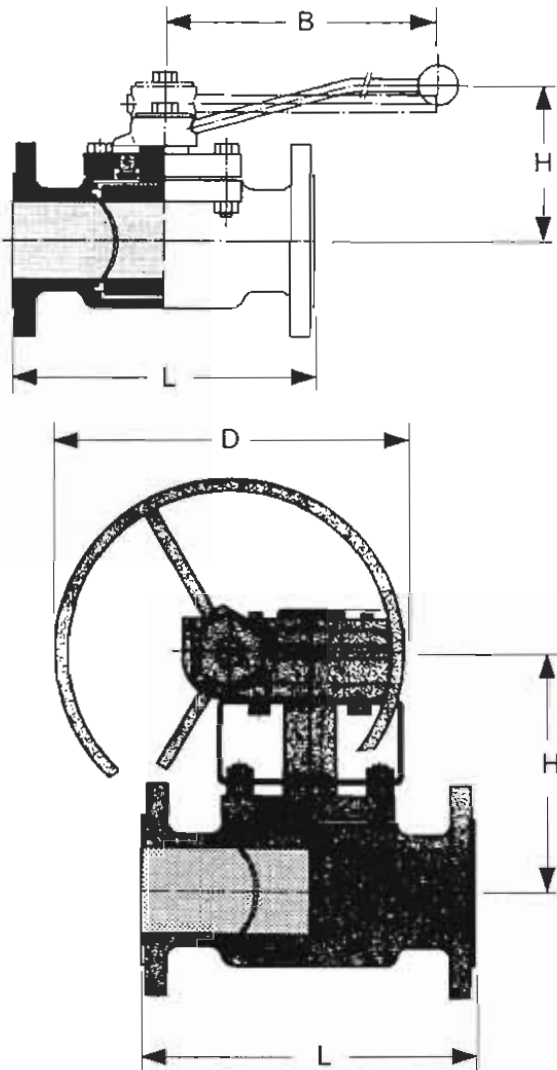
1. COPPER AND COPPER ALLOYS NOT PERMITTED

MANDATORY STANDARDS:

API 598, API 6D, ANSI B16.11, ANSI B16.34

NOTES:

PLUG VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	PLV 510
PRESSURE RATING CLASS	150
FACE	RF
CONSTRUCTION	
BODY	NON-LUBRICATED FULL BORE
PLUG	TAPER PLUG
WRENCH OPERATED	1 1/2" - 4"
GEAR OPERATED	6"
FIRE SAFE	NO
NOMINAL SIZE	1 1/2" - 6"
MATERIALS	
BODY	A 351 Gr. CF8M
PLUG	A 182 Gr. F316 a)
BODY SEAT RING	REINFORCED PTFE
STEM PACKING	PTFE
DESIGN CONDITIONS	
PRESSURE RATING	ANSI B16.34

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED

MANDATORY STANDARDS:

API 598, API 599, ANSI B16.10, ANSI B16.5

NOTES:

a) EQUIVALENT CAST MATERIAL IS ACCEPTABLE



GAV500C :FLANGED GATE VALVE ; 150# ;CPVC BODY(ASTM F441);POLY PROPYLENE PLUG; EPDM SEALS ;TAPERED CYLINDRICAL PLUG DESIGN; BOLTED BONNET; FLAT FACE; FLANGE DIMENSION AS PER ASME B16.1 .

CHV500C :SOCKET WELD CHECK VALVE ; 150# ; H OR V ; UNION OR BOLTED COVER ; BALL TYPE CPVC BODY(ASTM F441);TRIM AS PER BODY MATERIAL ; SOCKET WELD ENDS AS PER ASME B16.11 MANUFACTURER'S STANDARD CONSTRUCTION .

BAV500C :SOCKET WELD BALL VALVE ; 150# ; FLOATING BALL;FULL PORT ;WRENCH OPERATED ; CPVC BODY(ASTM F441);CPVC BALL;VITON O RING SEALS; SOCKET WELD ENDS AS PER ASME B16.11 MANUFACTURER'S STANDARD CONSTRUCTION .

BAV501C : FLANGED BALL VALVE ; 150# ; FLOATING BALL;FULL PORT ;WRENCH OPERATED ; CPVC BODY(ASTM F441);CPVC BALL;VITON O RING SEALS; FLAT FACE; FLANGE DIMENSION AS PER ASME B16.1 ;MANUFACTURER'S STANDARD CONSTRUCTION .

DPV500 : DIAPHRAGM VALVE :150#; RUBBER DIAPHRAGM; FLANGED END; BODY ASTM A216GR.WCB RUBBER LINED ; BONNET ASTM A216 GR.WCB ; STEM/COMPRESSOR 13% CR. ; MANUFACTURER'S STANDARD CONSTRUCTION.

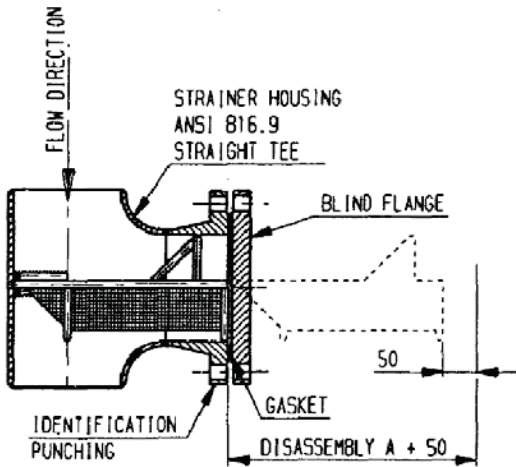
rev.1

DPV501 : DIAPHRAGM VALVE :150#; RUBBER DIAPHRAGM; FLANGED END; BODY AUSTENITIC SS 304 ; BONNET SS304 ; STEM/COMPRESSOR SS304 ; MANUFACTURER'S STANDARD CONSTRUCTION.

rev.1



T -TYPE STRAINER



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	T TS 210	
PRESSURE RATING CLASS	150	
FACE	RF	
CONSTRUCTION		
BODY	CAST	
BODY TO BONNET CONNECTION	BOLTED	
STRAINER	PERFORATED PLATE	
STRAINER HOLES, SIZE	Ø 1,5 MM	
NOS STRAINER HOLES / SQ.CM	18	
BLOW OFF CONNECTION	NOTE 1	
NOMINAL SIZE	2" - 24"	
MATERIALS		
BODY	A 216 Gr. WCB	
STRAINER	AISI 304	
DESIGN CONDITIONS		
PRESSURE RATING	ASME 816.34	
FLUID	Kg/cm ² g	°C

GENERAL

1. STRAINER MUST BE REMOVABLE
2. COPPER AND COPPER ALLOYS NOT PERMITTED

MANDATORY STANDARDS:

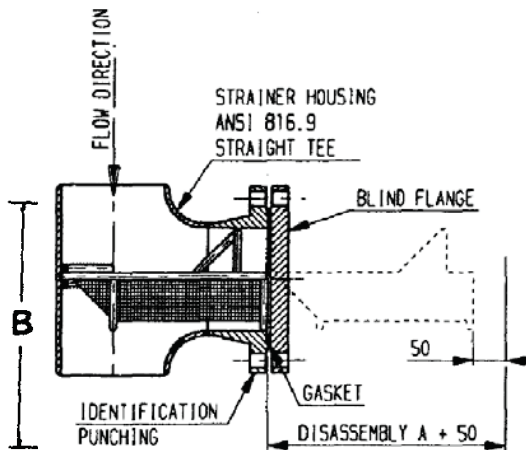
ASME B16.34, ASME B16.5, MSS-SP 45

NOTES:

1. STRAINER SIZE	BLOW OFF CONNECTION
2" - 4"	3/4" NPT PLUG
6" - 8"	1" NPT PLUG
10"	1 1/4" NPT PLUG
12" - 24"	1 1/2" NPT PLUG



T-TYPE STRAINER



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	TTS 510	
PRESSURE RATING CLASS	150	
FACE	RF	
CONSTRUCTION		
BODY	CAST	
BODY TO BONNET CONNECTION	BOLTED	
STRAINER	PERFORATED PLATE	
STRAINER HOLES, SIZE	Ø 1.5 MM	
NOS STRAINER HOLES / SQ. CM	18	
BLOW OFF CONNECTION	NOTE 1	
NOMINAL SIZE	2" - 24"	
MATERIALS		
BODY	A 351 Gr. CF8	
STRAINER	AISI 304	
DESIGN CONDITIONS		
PRESSURE RATING	ASME B16.34	
FLUID	Kg/cm ² g	°C

GENERAL

1. STRAINER MUST BE REMOVABLE
2. COPPER AND COPPER ALLOYS NOT PERMITTED

MANDATORY STANDARDS:

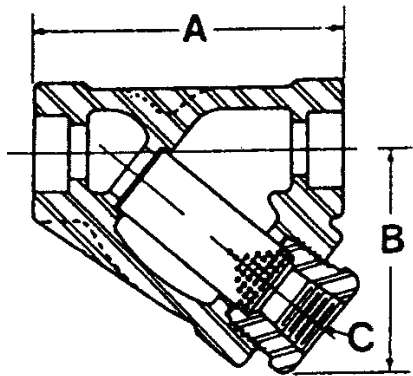
ASME B16.34, ASME B16.5, MSS-SP 45

NOTES:

1. STRAINER SIZE	BLOW OFF CONNECTION
2" - 4"	3/4" NPT PLUG
6" - 8"	1" NPT PLUG
10"	1 1/4" NPT PLUG
12" - 24"	1 1/2" NPT PLUG



Y-TYPE STRAINER



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	YTS 201	
PRESSURE RATING CLASS	600	
FACE	SW	
CONSTRUCTION		
BODY	FORGED	
BODY TO BONNET CONNECTION	SCREWED	
STRAINER	PERFORATED PLATE	
STRAINER HOLES, SIZE	Ø 0.8 MM	
NOS STRAINER HOLES / SQ.CM	40	
BLOW OFF CONNECTION	NOTE 1	
NOMINAL SIZE	1/2" - 1 1/2"	
MATERIALS		
BODY	A 105	
STRAINER	AISI 304	
DESIGN CONDITIONS		
PRESSURE RATING	ASME B16.34	
FLUID	Kg/cm ² g	°C

GENERAL

1. STRAINER MUST BE REMOVABLE
2. COPPER AND COPPER ALLOYS NOT PERMITTED

MANDATORY STANDARDS:

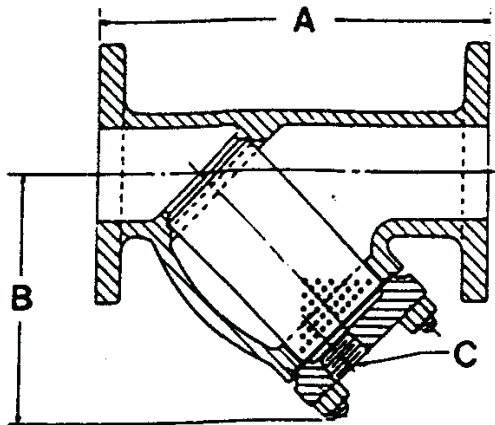
ASME B16.11, ASME B16.34

NOTES:

- | | |
|------------------|---------------------|
| 1. STRAINER SIZE | BLOW OFF CONNECTION |
| 1/2" - 3/4" | 1/4" NPT PLUG |
| 1" - 1 1/2" | 3/4" NPT PLUG |



Y-TYPE STRAINER



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	YTS 210	
PRESSURE RATING CLASS	150	
FACE	RF	
CONSTRUCTION		
BODY	CAST	
BODY TO BONNET CONNECTION	BOLTED	
STRAINER	PERFORATED PLATE	
STRAINER HOLES, SIZE	Ø 1,5 MM	
NOS STRAINER HOLES / SQ.CM	18	
BLOW OFF CONNECTION	NOTE 1	
NOMINAL SIZE	2" - 24"	
MATERIALS		
BODY	A 216 Gr. WCB	
STRAINER	AISI 304	
DESIGN CONDITIONS		
PRESSURE RATING	ASME B16.34	
FLUID	Kg/cm2g	°C

GENERAL

1. STRAINER MUST BE REMOVABLE
2. COPPER AND COPPER ALLOYS NOT PERMITTED

MANDATORY STANDARDS:

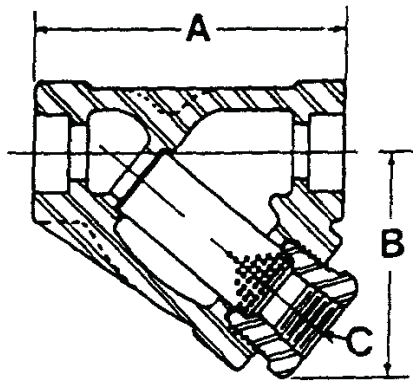
ASME B16.34, ASME B16.5, MSS-SP 45

NOTES:

1. STRAINER SIZE	BLOW OFF CONNECTION
2" - 4"	3/4" NPT PLUG
6" - 8"	1" NPT PLUG
10"	1 1/4" NPT PLUG
12" - 24"	1 1/2" NPT PLUG



Y-TYPE STRAINER



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	YTS 501	
PRESSURE RATING CLASS	600	
FACE	SW	
CONSTRUCTION		
BODY	FORGED	
BODY TO BONNET CONNECTION	SCREWED	
STRAINER	PERFORATED PLATE	
STRAINER HOLES, SIZE	Ø 0.8 MM	
NOS STRAINER HOLES / SQ.CM	40	
BLOW OFF CONNECTION	NOTE 1	
NOMINAL SIZE	1/2" - 1 1/2"	
MATERIALS		
BODY	A 182 Gr. F304	
STRAINER	AISI 304	
DESIGN CONDITIONS		
PRESSURE RATING	ASME B16.34	
FLUID	Kg/cm ² g	°C

GENERAL

1. STRAINER MUST BE REMOVABLE
2. COPPER AND COPPER ALLOYS NOT PERMITTED

MANDATORY STANDARDS:

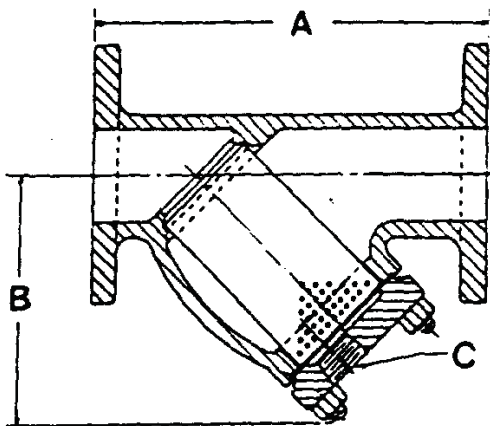
ASME B16.11, ASME B16.34

NOTES:

- | | |
|------------------|---------------------|
| 1. STRAINER SIZE | BLOW OFF CONNECTION |
| 1/2" - 3/4" | 1/4" NPT PLUG |
| 1" - 1 1/2" | 3/4" NPT PLUG |



Y-TYPE STRAINER



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	YTS 510	
PRESSURE RATING CLASS	150	
FACE	RF	
CONSTRUCTION		
BODY	CAST	
BODY TO BONNET CONNECTION	BOLTED	
STRAINER	PERFORATED PLATE	
STRAINER HOLES, SIZE	Ø 1,5 MM	
NOS STRAINER HOLES / SQ.CM	18	
BLOW OFF CONNECTION	NOTE 1	
NOMINAL SIZE	2" - 24"	
MATERIALS		
BODY	A 351 Gr. CF8	
STRAINER	AISI 304	
DESIGN CONDITIONS		
PRESSURE RATING	ASME B16.34	
FLUID	Kg/cm2g	°C

GENERAL

1. STRAINER MUST BE REMOVABLE
2. COPPER AND COPPER ALLOYS NOT PERMITTED

MANDATORY STANDARDS:

ASME B16.34, ASME B16.5, MSS-SP 45

NOTES:

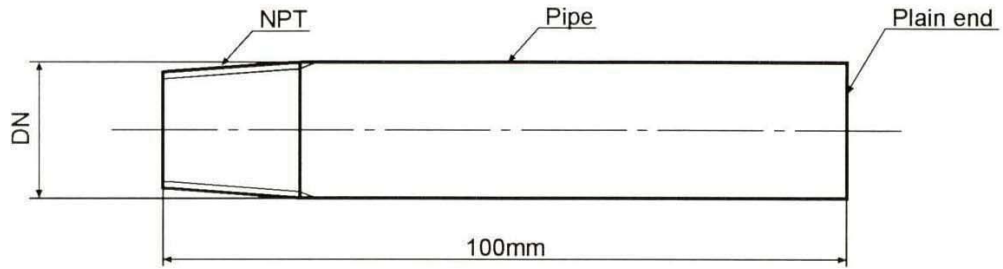
1.	STRAINER SIZE	BLOW OFF CONNECTION
	2" - 4"	3/4" NPT PLUG
	6" - 8"	1" NPT PLUG
	10"	1 1/4" NPT PLUG
	12" - 24"	1 1/2" NPT PLUG

 PROJECTS & DEVELOPMENT INDIA LTD	TFL-PDS-600	0
	DOCUMENT NO	REV

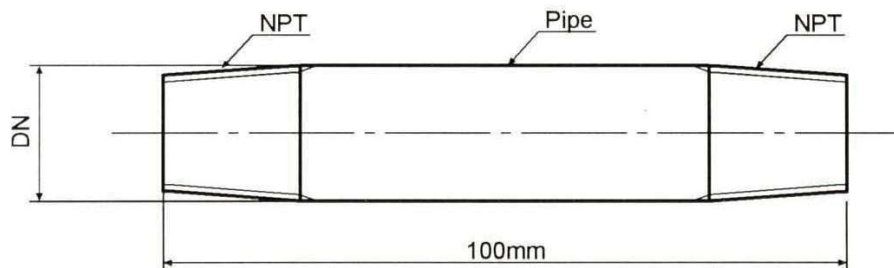
OTHER STANDARDS/DATASHEETS

NIPPLES

1) Half nipple (1/2-nipple)



2) Nipple

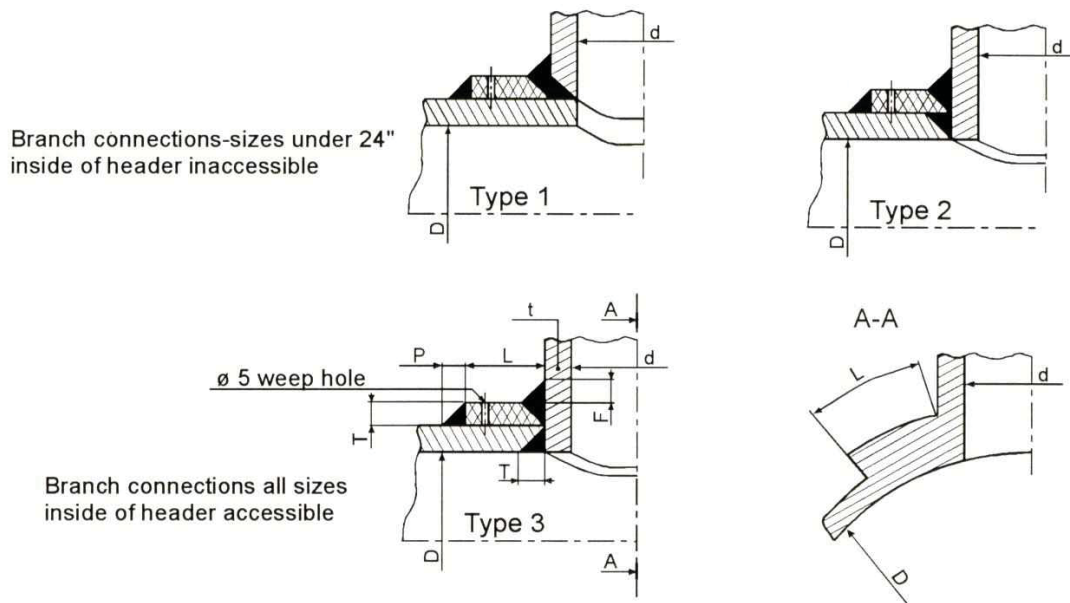


DN = 1/2", 3/4", 1" or 1 1/2"

Schedule and material of pipe acc. to piping class specification

Threading acc. to ANSI B 1.20.1-1983

REINFORCING RINGS



1. Reinforcing of branch connections shall be in accordance with limitations given in the General Piping Specification.
"Reinforcing rings" shall conform to the requirements of this specification.
2. All welds are to be continuous. Fillet welds to have concave contour.
3. Backchipping or gouging to sound metal before welding reverse side is required.
4. The periphery of the cut hole should be examined for laminations when using type 1.
5. Weld details for inclined nozzles are to be similar to the details shown for 90 degree nozzles.
- 6: The type must be determined by the fabricator.

Legend

T - Thickness of reinforcing ring, to be of the same thickness as header and of equal or better material. Preferably cut from header.

P - Fillet weld leg dimension, equal to T.

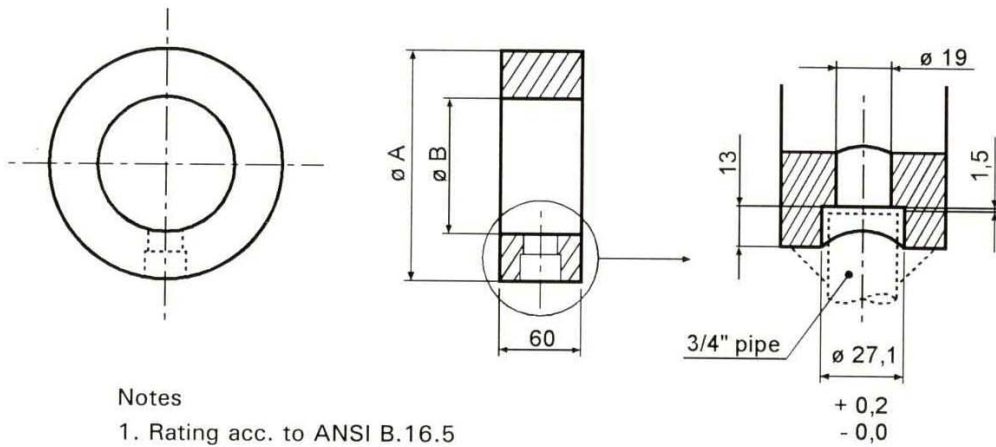
F - Fillet weld leg dimension equal to t.

L - Width of reinforcing ring, see table. For branch sizes > 36" L = d/2

Reinforcing ring table

Nom. Branch size "d" inch.	2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	26"	28"	30"	32"	34"	36"
Ring width "L" mm	30	45	55	80	105	130	150	170	190	215	240	290	310	330	360	380	405	430

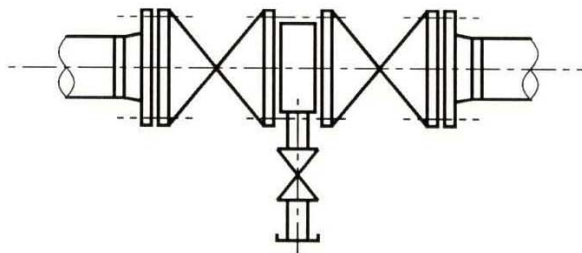
DRIP RING



Notes

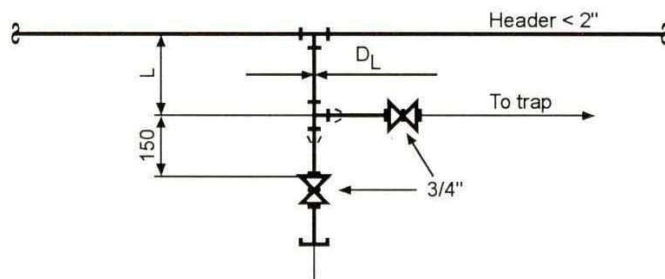
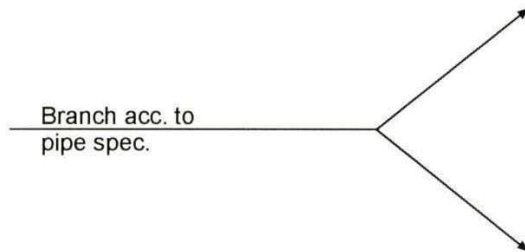
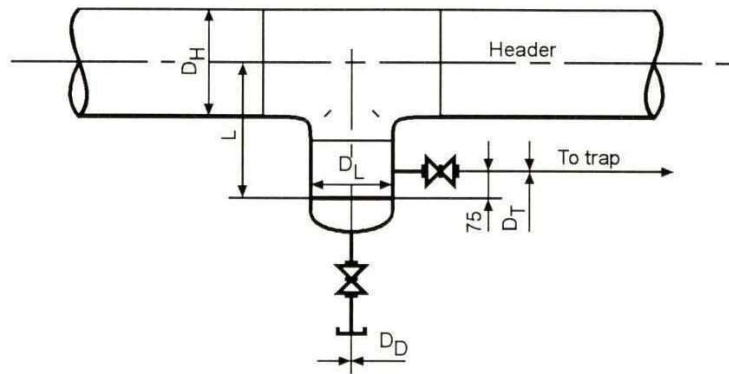
1. Rating acc. to ANSI B.16.5
2. Material in accordance with piping class
3. Faces to be machined parallel and finish to be in accordance with ANSI B.16.5
4. Nom. dia., rating and material to be engraved on edge in letters min. 5mm high e.g. 3"-CL. 600-A 182 Gr. F1

DN Inch.	Class 150 RF		Class 300 RF		Class 600 RF	
	A mm	B mm	A mm	B mm	A mm	B mm
2"	100	52	107	52	107	52
3"	132	78	145	78	145	78
4"	170	102	177	102	190	102
6"	220	154	247	154	263	154
8"	276	206	304	205	317	198
10"	336	260	358	254	396	247
12"	406	311	418	303	453	295
14"	447	343	480	334	487	317
16"	510	394	535	381	560	363
18"	545	445	592	429	608	409
20"	602	495	650	478	678	455
24"	713	590	770	575	786	547



Only where no alternative installation is possible, driprings shall be used.

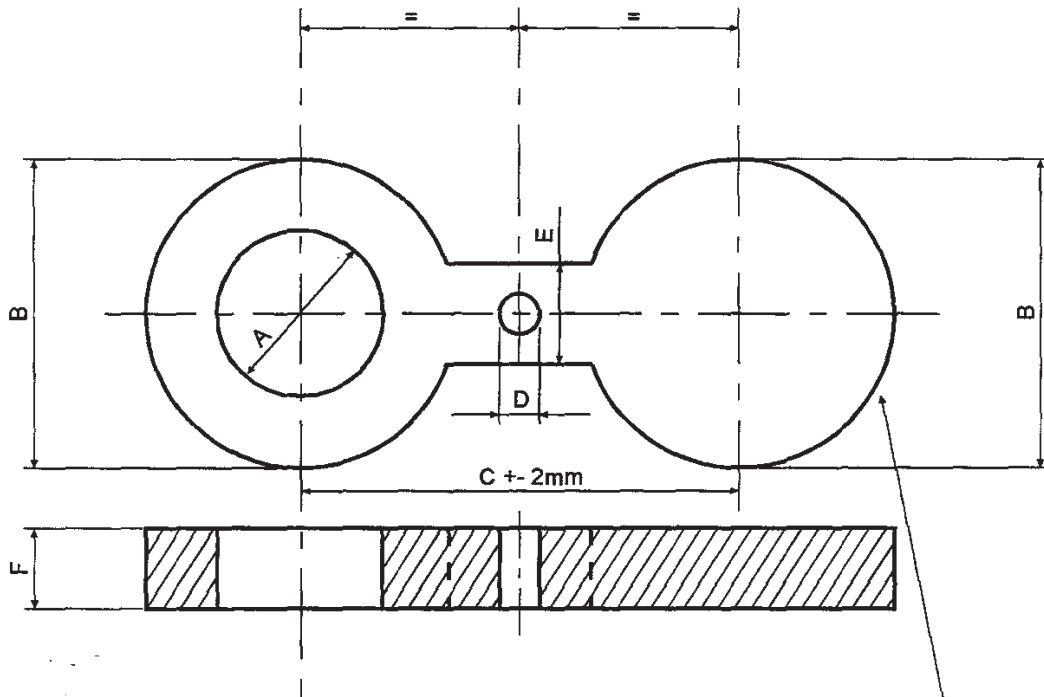
DRIP LEG ON STEAM HEADERS



*) D_L = Header size

D_H	= < 2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
D_L	*)	3"	4"	6"	6"	8"	8"	10"	12"	12"	12"	12"
L	250	300	300	350	350	400	400	450	500	525	550	600
D_D	3/4"	3/4"	3/4"	1"	1"	1"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"
D_T	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	1"	1"	1"	1"	1"	1"

SPECTACLE PLATE CLASS 150 RF

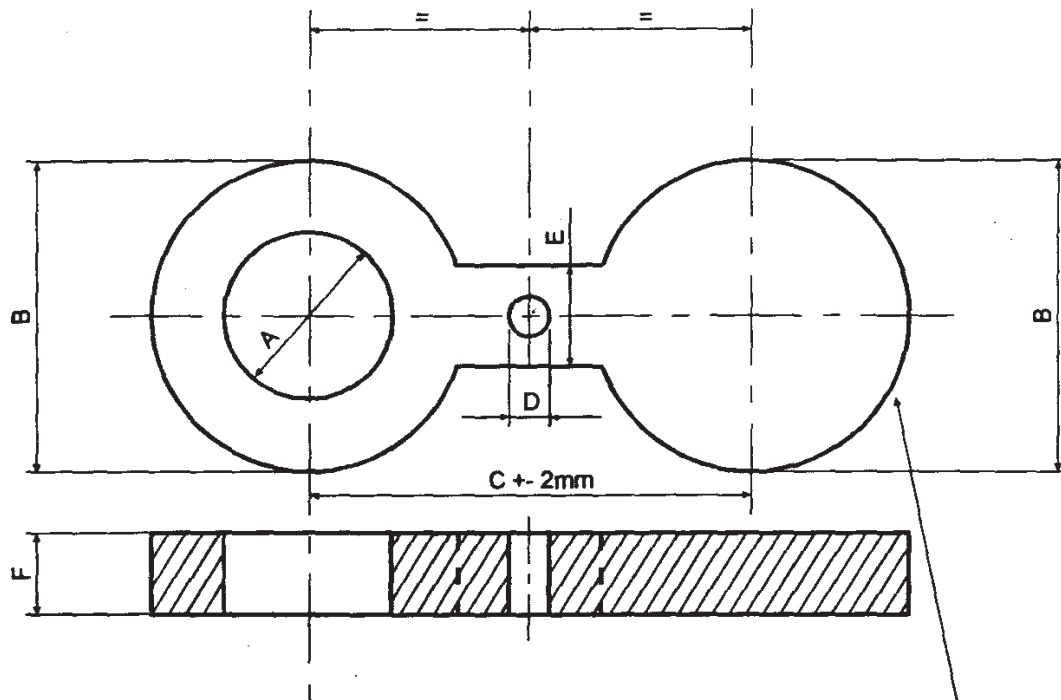


Spectacle plate suitable for flanges acc. to ANSI B16.5.
Material as for flanges acc. to piping class.

Norm. dia., rating and material to be engraved on edge in letters min. 5 mm high for example thus:
3"-class 150 -A105

Nominal diameter inches	Min. reqd. overlength bolt	A	B	C	D	E	F
1"	8	33	64	79	16	38	6
1 1/2"	8	48	83	99	16	38	6
2"	8	60	102	121	20	51	6
3"	8	89	133	152	20	64	6
4"	8	114	171	191	20	64	6
6"	12	168	218	241	22	76	10
8"	15	219	277	299	22	76	13
10"	18	273	337	362	26	102	16
12"	24	324	407	432	26	102	22
14"	27	356	447	476	30	108	25
16"	27	406	511	540	30	108	25
18"	27	457	546	578	33	114	25
20"	31	508	603	635	33	121	29
24"	37	610	714	749	36	140	35

SPECTACLE PLATE CLASS 300 RF

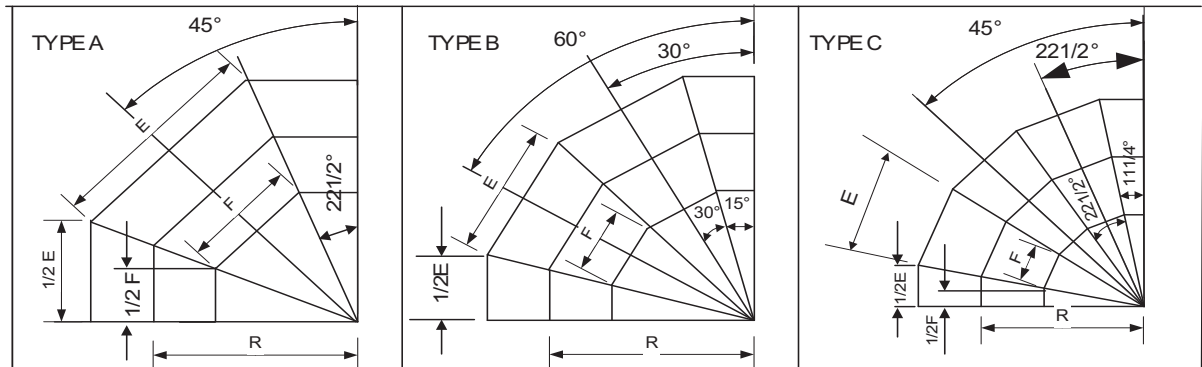


Spectacle plate suitable for flanges acc. to ANSI B16.5.
Material as for flanges acc. to piping class.

Nom. dia., rating and material to be engraved on edge in letters min. 5 mm high for example thus:
3"-class 300 -A105

Nominal diameter inches	Min. reqd. overlength bolt	A	B	C	D	E	F
1"	8	33	70	89	20	38	6
1 1/2"	8	48	92	114	22	51	6
2"	8	60	108	127	20	51	6
3"	12	89	146	168	22	64	10
4"	15	114	178	200	22	64	13
6"	18	168	248	270	22	76	16
8"	21	219	305	330	26	89	19
10"	27	273	358	387	30	102	25
12"	31	324	419	451	33	102	29
14"	34	356	482	514	33	121	32
16"	39	405	537	572	36	124	37
18"	43	457	594	629	36	114	41
20"	46	508	651	686	36	121	44
24"	56	610	772	813	42	140	54

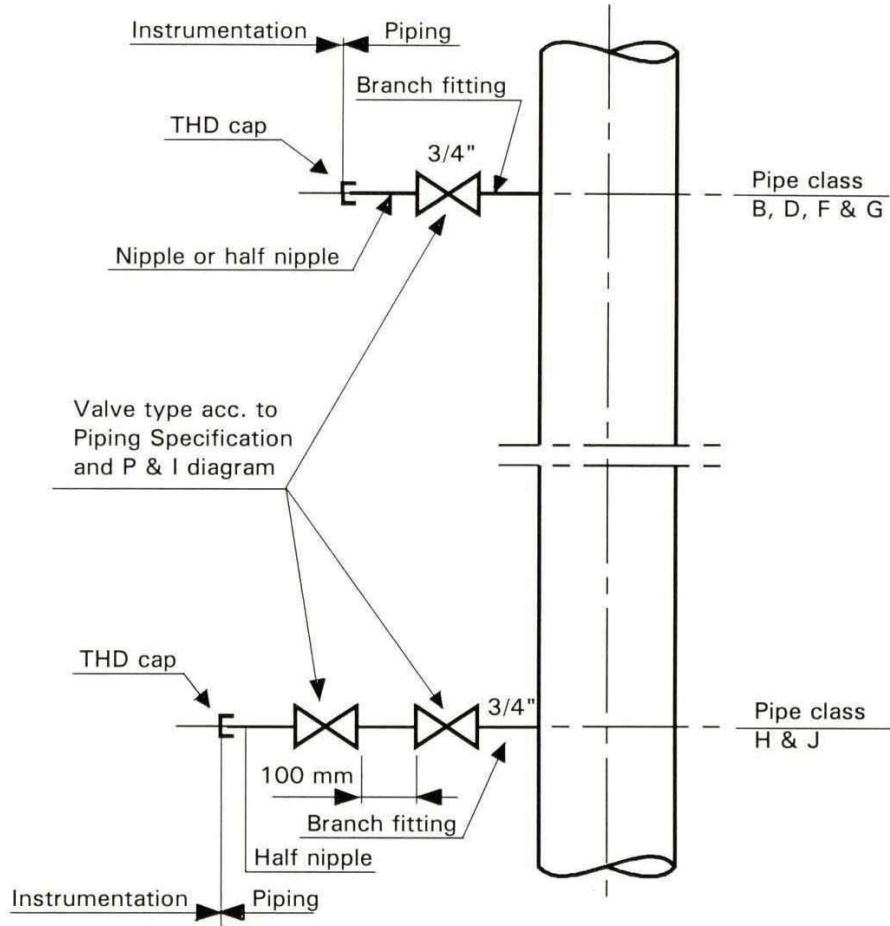
MITRE BENDS



NOM SIZE INCH	OUTSIDE DIAM D mm	R =1.5D mm	30° 60°	45°	90°	22 1/2°	DIMENSION					
							TYPE A		TYPE B		TYPE C	
							E mm	F mm	E mm	F mm	E mm	F mm
2	60.3	76	B	A	A	C	88	38	57	24	42	18
3	88.9	114	B	A	A	C	131	58	85	37	63	28
4	114.3	152	B	A	A	C	173	79	112	51	83	38
6	168.3	229	B	A	A	C	259	120	168	78	125	58
8	219.1	305	B	A	B	C	343	162	222	105	165	78
10	273.1	381	B	A	B	C	429	203	277	131	206	97
12	323.9	457	B	A	B	C	513	244	332	158	246	117
14	355.6	533	B	C	B	C			381	190	283	141
16	406.4	610	B	C	B	C			436	218	323	162
18	457	686	B	C	B	C			490	245	364	182
20	508	762	B	C	B	C			544	272	404	202
22	559	838	B	C	B	C			599	300	445	222
24	610	914	B	C	B	C			654	327	485	243
26	660	991	B	C	C	C			707	354	525	263
28	711	1,067	B	C	C	C			762	381	566	283
30	762	1,143	B	C	C	C			817	408	606	303
32	813	1,219	B	C	C	C			871	436	647	323
34	864	1,295	B	C	C	C			926	463	687	344
36	914	1,372	B	C	C	C			980	490	727	364
38	965	1,448	B	C	C	C			1,034	517	768	384
40	1,016	1,524	B	C	C	C			1,089	544	808	404
42	1,067	1,600	B	C	C	C			1,144	572	849	424
44	1,118	1,677	B	C	C	C			1,198	599	890	445
46	1,168	1,752	B	C	C	C			1,252	626	929	465
48	1,219	1,829	B	C	C	C			1,307	653	970	485
52	1,321	1,982	B	C	C	C			1,416	708	1,051	526
56	1,422	2,134	B	C	C	C			1,524	762	1,131	566
60	1,524	2,286	B	C	C	C			1,633	817	1,213	606
64	1,626	2,439	B	C	C	C			1,743	871	1,294	647
68	1,727	2,591	B	C	C	C			1,851	925	1,374	687
72	1,829	2,743	B	C	C	C			1,960	980	1,455	728
76	1,931	2,897	B	C	C	C			-	-	1536	768

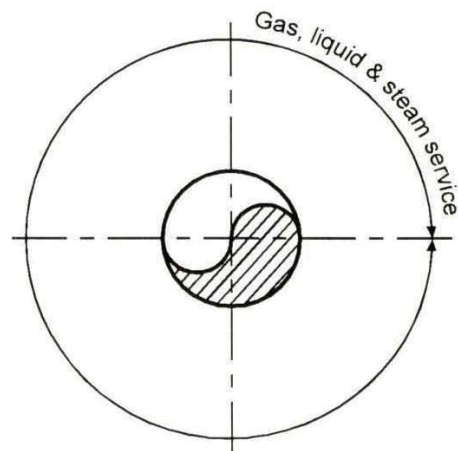
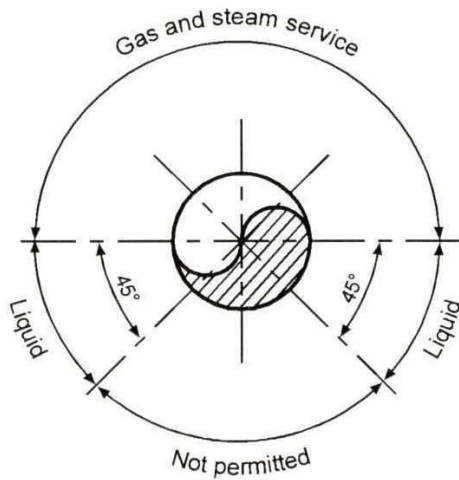
P1	27.12.2017		FOR REVIEW/COMMENT	NAZ	NS	GL/HOD
P	21.10.2017		FOR REVIEW/COMMENT	NAZ	NS	DM
REV	REV DATE	EFFDATE	PURPOSE	PREPD	REVWD	APPD

BRANCH FOR ANALYSIS - AND PRESSURE CONNECTIONS ON PIPING
 (FOR ANALYSIS CONNECTIONS WITH PROBE SEE SPECIAL DRAWINGS)



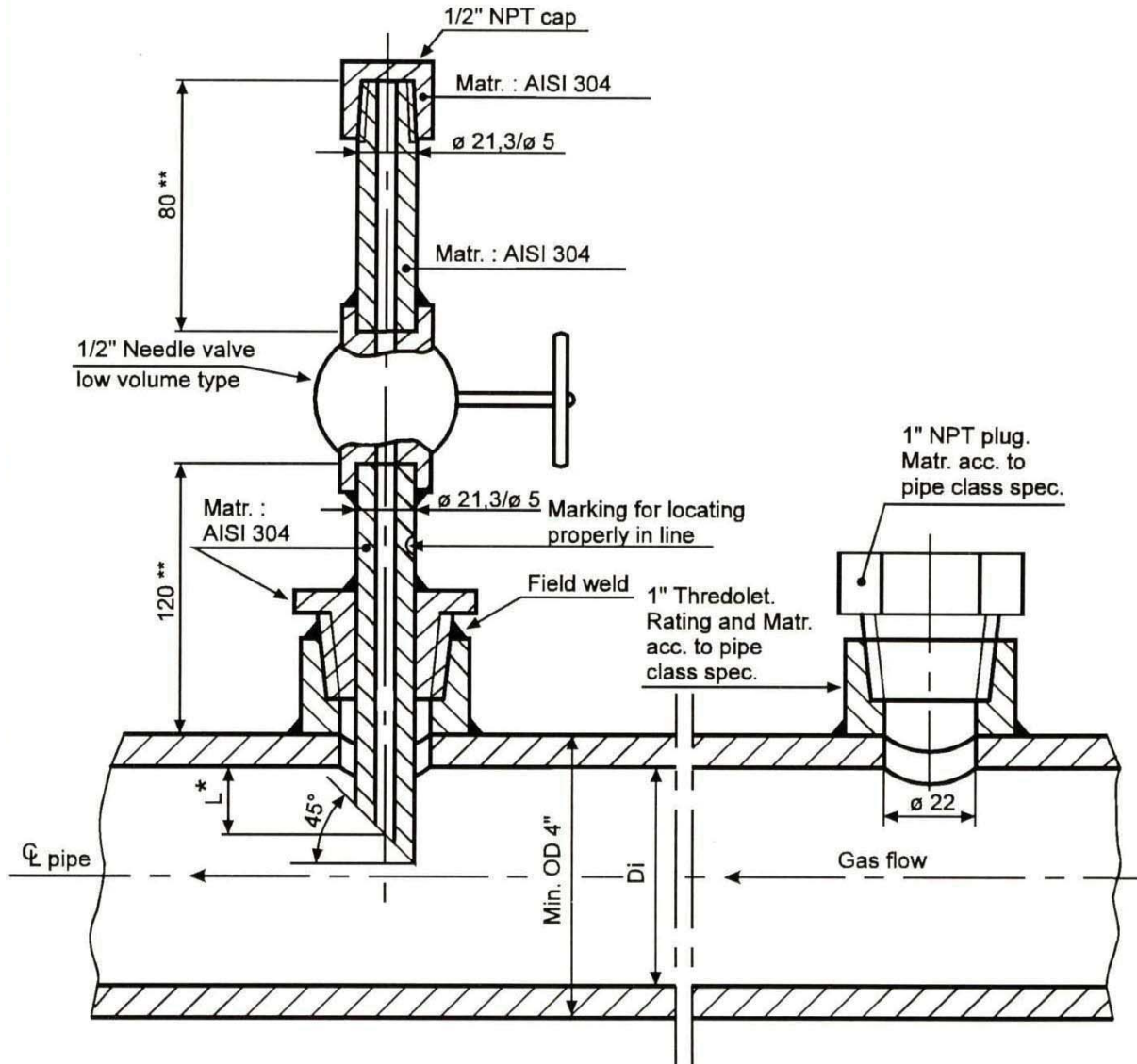
Location of branch in horizontal line

Location of branch in vertical line



All branch fittings and valves to be specified acc. to pipe class.

**ANALYSIS CONNECTION WITH PROBE ON PIPE
FOR RATINGS <= CLASS 900**

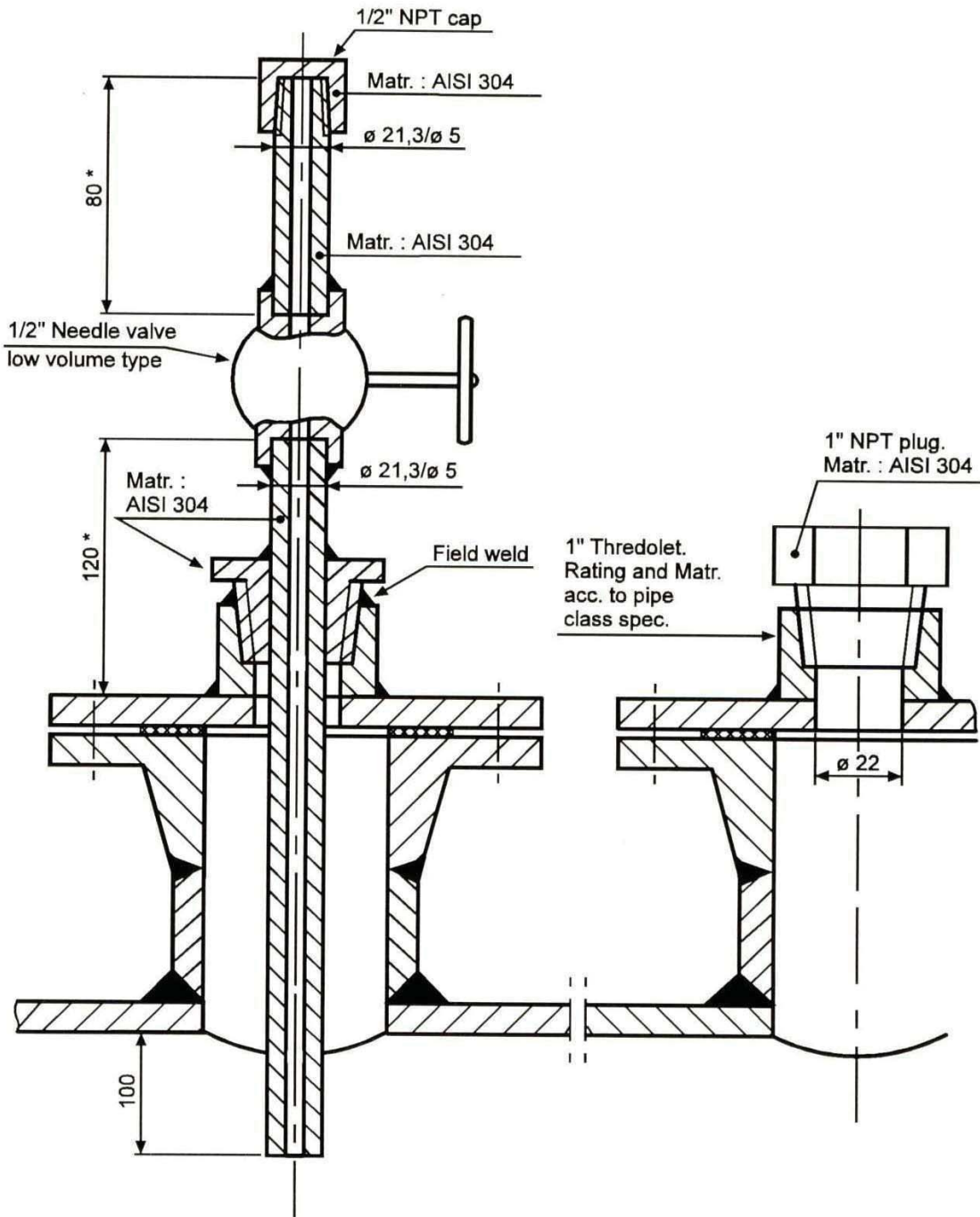


**Final execution
Instrumentation supply**

**During pressure test and cleaning
Piping supply**

- * For $D_i > 6"$, $L = 1/3 D_i \pm 1/6 D_i$
- For $D_i \leq 6"$, $L = 1/2 D_i \pm 1/6 D_i$
- ** Shortest possible

**ANALYSIS CONNECTION WITH PROBE ON EQUIPMENT
FOR RATINGS <= CLASS 900**

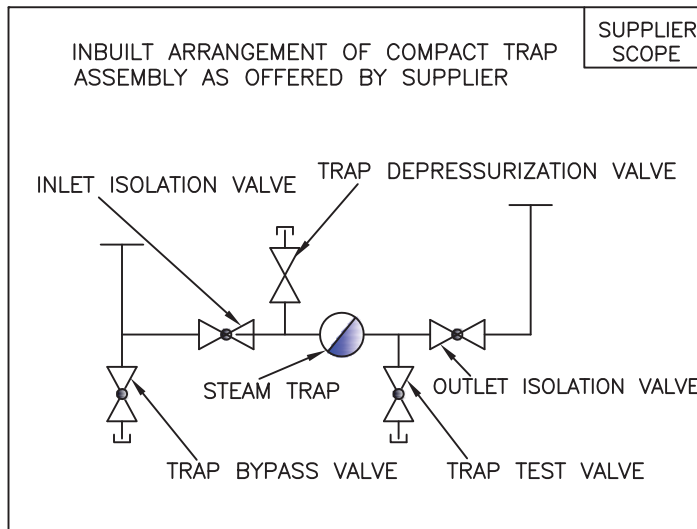
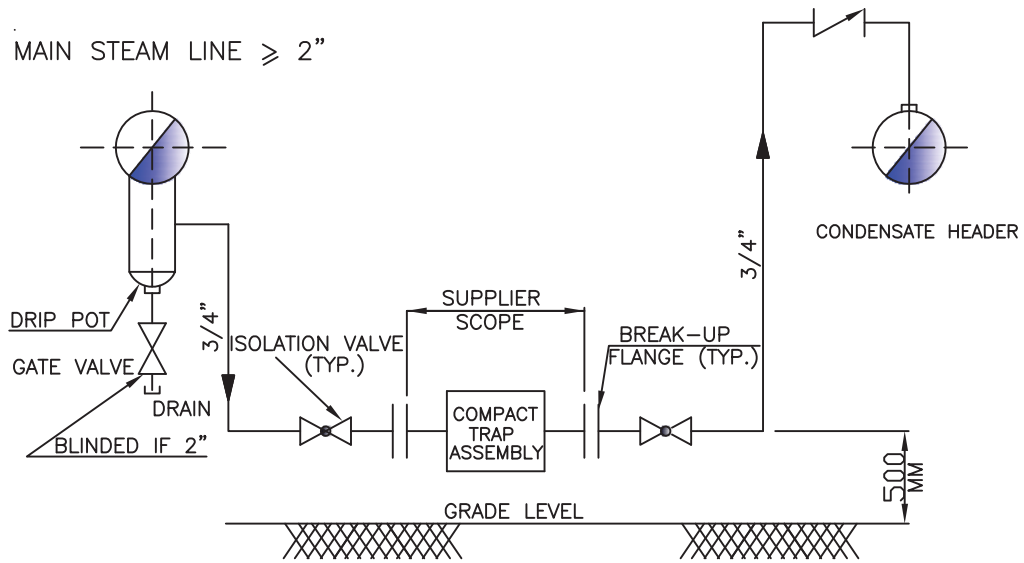


**Final execution
Instrumentation supply**

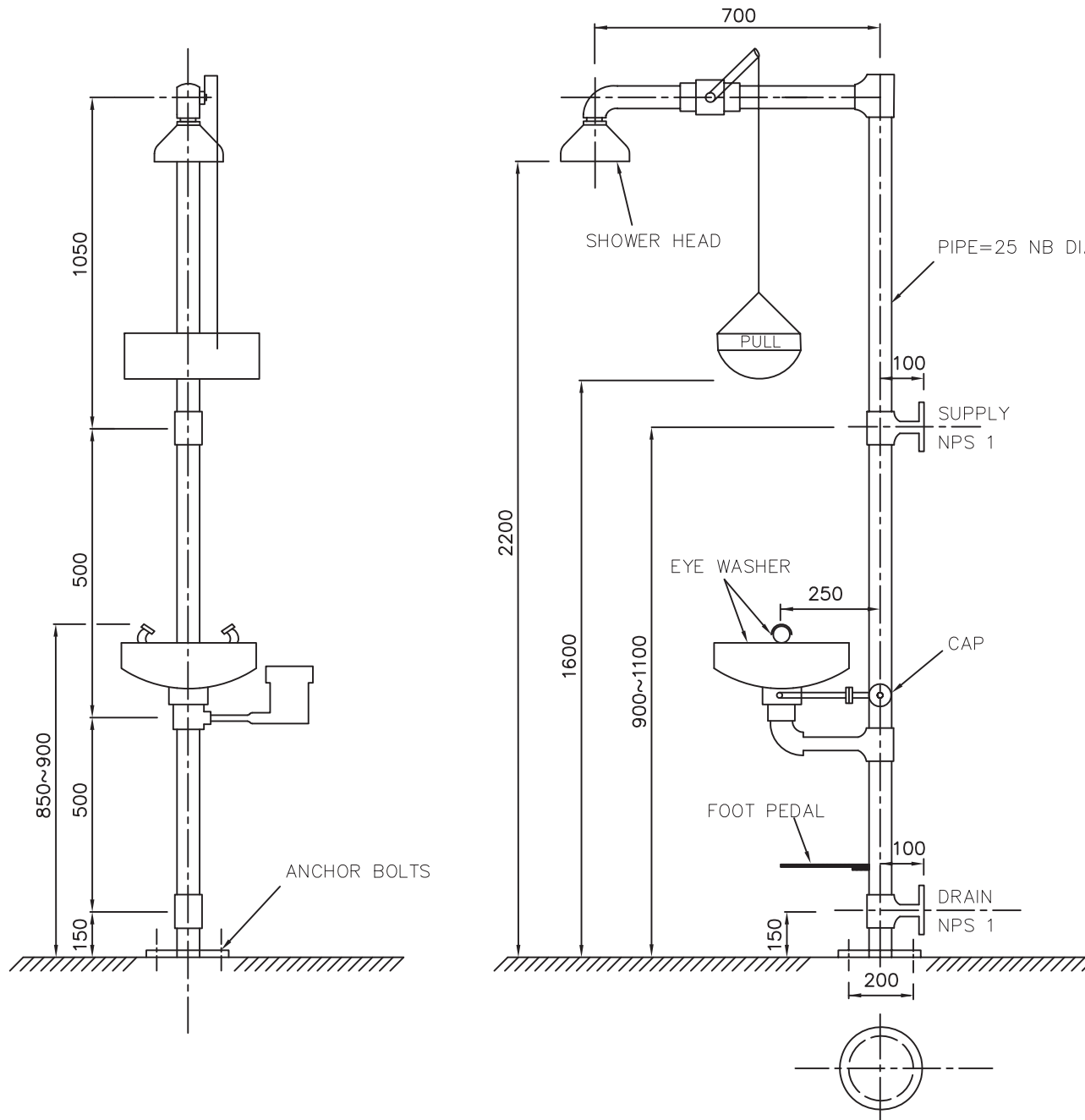
**During pressure
test and cleaning
Piping supply**

* Shortest possible

TYPICAL ARRANGEMENT OF DRAIN FOR STEAM LINES AND STEAM TRAP



DATASHEET FOR SAFETY SHOWER AND EYE WASH UNIT (COMBINED)



SUPPLY WATER CONDITIONS

- | | |
|-----------------------|---------------------------|
| 1) SUPPLY WATER | : POTABLE WATER |
| 2) DESIGN PRESS. | : 7 kg/cm ² g |
| 3) DESIGN TEMP. | : 70 °C |
| 4) HYDRO. TEST PRESS. | : 1.5 times of Design Pr. |
| 5) MINIMUM FLOW. | |
| a) SAFETY SHOWER | : 110 Lit/min. |
| b) EYE WASH | : 12 Lit/min. |

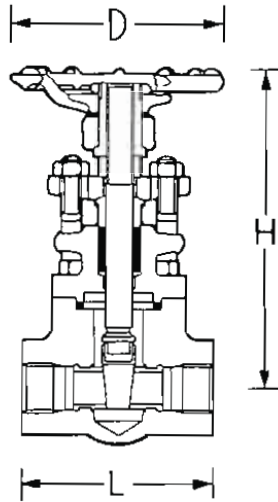
MATERIAL

- | | |
|---------------------|------------|
| 1) PIPE | : SS304 |
| 2) FITTING | : SS304 |
| 3) FLANGE | : SS304 |
| 4) VALVES/STRAINER | : SS304 |
| 5) BOWL FOR EYEWASH | : SS304 |
| 6) EYE WASH NOZZLE | : SS304 |
| 7) SHOWER HEAD | : SS304 |
| 8) PULL CHAIN | : SS304 |
| 9) FOOT PEDAL | : SS304 |
| 10) SPRING | : SS304 |
| CODE/STANDARD | : IS 10592 |

NOTES:

- 1) THE GIVEN DIMENSIONS ARE ONLY FOR REFERENCE; THE MANUFACTURER'S STANDARD DIMENSIONS MAY BE APPLIED, SUBJECT TO APPROVAL .
- 2) THE COMBINED UNIT OF SAFETY SHOWER & EYE WASH SHALL BE PULL ROD AND FOOT PEDAL OPERATED AND PROVIDED WITH DUST COVER & FILTER.
- 3) ALL SAFETY SHOWER & EYE WASH UNIT SHALL BE PAINTED WITH FLOURESCENT PAINT SO THAT IT CAN BE VISIBLE IN NIGHT. NAME PLATE TO BE PROVIDED ON EACH SAFETY SHOWER & EYE WASH UNIT.
- 4) SAFETY SHOWER & EYE WASH UNIT SHOULD BE ISI MARKED.
- 5) THE COMBINED UNIT OF SAFETY & EYE WASH SHOULD BE CAPABLE TO PROVIDE A CUIPOUS FLOW OF WATER FOR ATLEAST 15 MINUTES.
- 6) ALL DIMENSIONS ARE IN MILLIMETERS.
- 7) OTHER SIZES BY VENDOR.
- 8) The spray nozzles shall be so designed as to deliver a spray of rinse water without harsh jets or misting. The water cone shall have vortex angle of 45°.

GATE VALVE



DESIGN (ILLUSTRATIVE ONLY)

ITEM NO	GAV 401
PRESSURE RATING CLASS	800
FACE	SW
CONSTRUCTION	
BODY	FORGED
BONNET TO BODY CONNECTION	BOLTED
HANDWHEEL	NON-RISING
STEM	RISING
STEM AND YOKE TYPE	OS & Y
GATE TYPE	WSS
GEAR OPERATED	NO
BY-PASS VALVE	NO
NOMINAL SIZE	1/2" - 1 1/2"
MATERIALS	
BODY	A182 GR.F316L
BODY SEAT RING	A182 GR.F316L
GATE	A182 GR.F316L
STEM	A182 GR.F316L
STEM PACKING	GRAFOIL /GRAPHITE
TRIM NUMBER	2

GATE SYMBOLS	TYPE OF SEAT	TYPE OF GATE	TYPE OF BLOCKADE
WSS	WEDGE	SINGLE	SOLID WEB
WSF			FLEX. SOLID WEB
WDF	PARALLEL	DOUBLE	SLIP ON OR SPLIT
PDF			FLEXIBLE

DESIGN CONDITIONS	
PRESSURE RATING	API 602

GENERAL

1. COPPER AND COPPER ALLOYS NOT PERMITTED
2. GLAND SHALL BE SUITABLE FOR REPACKING UNDER PRESSURE WHEN VALVE IS FULLY OPEN
3. IF NOT OTHERWISE STATED THE VALVES SHALL BE FULL BORE

MANDATORY STANDARDS:

API 598, API 602, ANSI B16.11, ANSI B16.34

NOTES:

- a) LENGTH TO BE VERIFIED BY MANUFACTURER

rev.1
 rev.1
 rev.1
 rev.1

SL. NO.	SERVICE	TYPE CODE	TAG NO.	FLOW RATE (KG/HR)	OPERATING CONDITION		DESIGN CONDITION		BACK PRESS. (Kg/cm2g)	SAFETY FACTOR	SIZE / RATING / ENDS	TOTAL QTY. (NOS.)
					TEMP (DEG C)	PRESS. (Kg/cm2g)	TEMP (DEG C)	PRESS. (Kg/cm2g)				
1	HP STEAM LINE HPS-J36S	B-227	ST-HSD	100	520	110.5	540	130	Atm.	2.0	1"/ 2500# / FLG	3
2	HP STEAM SHP-H24S	B-136	ST-HSD	100	323	120	342	133	Atm.	2.0	3/4"/ 300# / FLG	16
3	LP STEAM LS-B24S	B-131	ST-LSD	200	180	4.0	250	6.0	Atm.	2.0	3/4"/ 150# / FLG	32

TRAP TYPE CODE SYSTEM

Alphabet - Trap Type
 First Number - Body Material
 Second Number - Trim Material
 Third Number - Trap Rating

TRAP TYPE

A = Thermodynamic with insulation cover and air-venting disc
 B = Thermodynamic with air-venting disc
 C = Thermodynamic balanced pressure type
 D = Ball Float type with Thermostatic air-vent and steam lock release
 E = Thermostatic

BODY MATERIAL

1 = C.S
 2 = 2.25 Cr- 1Mo
 3 = S.S (304)

TRIM MATERIAL


1 = C.S.
 2 = 2.25 Cr- 1 Mo.
 3 = SS 304
 4 = SS 304H

TRAP RATING

1 = 150# 6 = 1500#
 2 = 300# 7 = 2500#
 3 = 600#
 4 = 800#
 5 = 900#

Note:


- Vendor to check & confirm the adequacy of Trap size with the given Flow Rate and Differential Pressure.
- All the Traps shall be of compact assembly type with thermodynamic trap with In-built strainer, In-built piston valve for trap by-pass, trap vent, trap test, inlet isolation and outlet isolation valve.
- I.B.R Certificate shall be supplied by vendor for all the Traps.

 PROJECT: PC183-YARD PIPING CLIENT: TFL	ANNEXURE-I	PC183-6802	0	24.04.23	VN	NS	PK
	STEAM TRAPS	DOCUMENT NO	REV	REV DT	PREPD	REVWD	APPD

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S.NO	COMPACT STEAM SUPPLY MANIFOLD TAG NO	SERVICE	COMPACT STEAM SUPPLY MANIFOLD SIZE (INCH)	PIPE RATING	MANIFOLD OPERATING CONDITION		MANIFOLD DESIGN CONDITION		QUANTITY FOR PROCUREMENT	NOZZLE SIZE(SIZE OF TRACER CONNECTION GLANDLESS PISTON VALVE) (NPS)	WORKING CONNECTION PER MANIFOLD (Nos)	MANDATORY SPARE CONNECTION PER MANIFOLD (Nos)	TOTAL CONNECTION PER MANIFOLD (Nos)
					TEMP (DEG C)	PRESS. (Kg/cm2g)	TEMP (DEG C)	PRESS. (Kg/cm2g)					
1	SM-01	LP STEAM	2"	150#	180	4	250	6	12	1/2 " & 3/4"	4	2	6


COMPACT STEAM SUPPLY MANIFOLD WITH INBUILT GLANDLESS PISTON VALVES				
PART	SIZE (NPS)	END CONNECTIONS	MATERIAL	REMARKS
COMPACT STEAM SUPPLY MANIFOLD	2 "	FLG , 150#, ASME B16.5	ASTM A105 (IBR)	
GLANDLESS PISTON VALVES (INBUILT WITH MANIFIOLD)	1/2 " & 3/4"	SOCKET WELD , CL 3000, ASME B16.11	ASTM A105 , CL 800, 13CR STEM & PISTON WITH RENEWALBE UPPER AND LOWER SEALING RINGS. (IBR)	

	PROJECT: PC 183 CLIENT: TFL	ANNEXURE-I		PC183 - 6803	0	01-05-2023	VN	NS	HOD
		STEAM MANIFOLD		DOCUMENT NO	REV	REV DT	PREPD	REVWD	APPD



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S.NO	COMPACT CONDENSATE RETURN MANIFOLD TAG NO	SERVICE	COMPACT CONDENSATE RETURN MANIFOLD SIZE (INCH)	PIPE RATING	MANIFOLD OPERATING CONDITION		MANIFOLD DESIGN CONDITION		QUANTITY FOR PROCUREMENT	NOZZLE SIZE(SIZE OF TRACER CONNECTION GLANDLESS PISTON VALVE) (NPS)	WORKING CONNECTION PER MANIFOLD (Nos)	MANDATORY SPARE CONNECTION PER MANIFOLD (Nos)	TOTAL CONNECTION PER MANIFOLD (Nos)
					TEMP (DEG C)	PRESS. (Kg/cm2g)	TEMP (DEG C)	PRESS. (Kg/cm2g)					
1	CM-01	LP CONDENSATE	2"	150#	140	3.5	250	6	12	1/2 " & 3/4"	4	2	6

COMPACT CONDENSATE RETURN MANIFOLD WITH IN BUILT GLANDLESS PISTON VALVES, COMPACT STEAM TRAP ASSEMBLY				
PART	SIZE (NPS)	END CONNECTIONS	MATERIAL	REMARKS
COMPACT CONDENSATE RETURN MANIFOLD	2 "	FLG , 150#, ASME B16.5	ASTM A105 (IBR)	
GLANDLESS PISTON VALVES (INBUILT WITH MANIFOLD)	1/2 " & 3/4"	SOCKET WELD , CL 3000, ASME B16.11	ASTM A105 , CL 800, 13CR STEM & PISTON WITH RENEWALBE UPPER AND LOWER SEALING RINGS. (IBR)	
COMPACT STEAM TRAP ASSEMBLY WITH THERMOSTATIC STEAM TRAP , INBULT GLANDLESS PISTON VALVE FOR TRAP BYPASS, TRAP VENT & TRAP TEST				
PART	SIZE (NPS)	END CONNECTIONS	MATERIAL	REMARKS
MAIN BODY	2 "	FLG , 150#, ASME B16.5	ASTM A105	
TRAP LP STEAM VALVE (INBUILT WITH MAIN BODY)	1/2 " & 3/4"	SOCKET WELD , CL 3000, ASME B16.11	ASTM A105 , CL 800, 13CR STEM & PISTON WITH RENEWALBE UPPER AND LOWER SEALING RINGS. (IBR)	
GLANDLESS PISTON VALVE FOR TRAP BY PASS, TRAP VENT & TRAP TEST	1/2 " & 3/4"	SOCKET WELD , CL 3000, ASME B16.11	ASTM A105 , CL 800, 13CR STEM & PISTON WITH RENEWALBE UPPER AND LOWER SEALING RINGS. (IBR)	
THERMOSTATIC STEAM TRAP	1/2 " & 3/4"	SOCKET WELD , CL 3000, ASME B16.11	BODY ASTM A105 , CL 800 , TRIM SS 304 (IBR)	



	PROJECT: PC 183 CLIENT: TFL	ANNEXURE-I		PC183 - 6804	0	01-05-2023	VN	NS	HOD
		CONDENSATE MAINFOLD		DOCUMENT NO	REV	REV DT	PREPD	REVWD	APPD

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	COMPOSITE SUPPLY CUM ERECTION OF MECHANICAL PIPING WORKS (OSBL) AT TFL TALCHER, ODISHA	PC-183-E-601_AMENDMENT	0	
		DOCUMENT NO.	REV	
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SPECIFICATION OF FITTINGS & FLANGES:

ITEMNAME	SIZE1	SIZE2	STD	RATING	THICKNESS	REMARK	MATNAME	END
COUPLING	1/2		ASME B16.11	3000#			CS ASTM A105	SOCW
COUPLING	3/4		ASME B16.11	3000#			CS ASTM A105	SOCW
COUPLING	3/4		ASME B16.11	3000#			CS ASTM A105	SOCW IBR
COUPLING	3/4		ASME B16.11	6000#			CS ASTM A105	SOCW IBR
COUPLING	1 1/2		ASME B16.11	3000#			CS ASTM A105	SOCW
COUPLING	1		ASME B16.11	3000#			ASTM A105 HOT DIP GALV.	THD
COUPLING	2		ASME B16.11	3000#			ASTM A105 HOT DIP GALV.	THD
COUPLING	3		ASME B16.11	3000#			ASTM A105 HOT DIP GALV.	THD
COUPLING	4		ASME B16.11	3000#			ASTM A105 HOT DIP GALV.	THD
CAP	3/4		ASME B16.11	3000#			CS ASTM A105	THD
CAP	3/4		ASME B16.11	3000#			CS ASTM A105	THD IBR
CAP	3/4		ASME B16.11	6000#			CS ASTM A105	THD IBR
CAP	1		ASME B16.11	3000#			CS ASTM A105	THD IBR
CAP	1		ASME B16.11	6000#			CS ASTM A105	THD IBR
CAP	3/4		ASME B16.9				ASTM A182 F22	BW IBR
CAP	1 1/2		ASME B16.9				ASTM A182 F22	BW IBR
CAP	3/4		ASME B16.11	3000#			ASTM A182 F304	THD
CAP	3/4		ASME B16.11	3000#			ASTM A350 LF2 CL.1	THD
CAP	2		ASME B16.9	SCH 40			ASTM A234 WPB-SMLS	BW IBR
CAP	8		ASME B16.9	SCH 20			ASTM A234 WPB-SMLS	BW IBR
CAP	8		ASME B16.9	SCH120			ASTM A234 WPB-SMLS	BW IBR
CAP	3/4		ASME B16.11	3000#			ASTM A182 F304L	THD

	COMPOSITE SUPPLY CUM ERECTION OF MECHANICAL PIPING WORKS (OSBL) AT TFL TALCHER, ODISHA	PC-183-E-601_AMENDMENT	0	
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SPECIFICATION OF FITTINGS & FLANGES:

CAP	3/4		ASME B16.11	3000#			ASTM A182 F316L	SOCW
CAP	12		ASME B16.9	44.00 MM			ASTM A234 WP22	BW IBR
CAP	3/4		ASME B16.11	3000#			ASTM A105 HOT DIP GALV.	THD
CAP	1		ASME B16.11	3000#			ASTM A105 HOT DIP GALV.	THD
CAP	2		ASME B16.11	3000#			ASTM A105 HOT DIP GALV.	THD
CAP	3		ASME B16.11	3000#			ASTM A105 HOT DIP GALV.	THD
CAP	4		ASME B16.11	3000#			ASTM A105 HOT DIP GALV.	THD
HALF COUPLING		3/4	ASME B16.11	3000#			CS ASTM A105	SOCW IBR
HALF COUPLING		1	ASME B16.11	3000#			CS ASTM A105	SOCW IBR
HALF COUPLING		1	ASME B16.11	6000#			CS ASTM A105	SOCW IBR
NIPPLE	3/4		ASME B36.10	SCH160			SMLS,ASTM A106 GR.B	PLN-PLN IBR
NIPPLE	3/4		ASME B36.10	SCH160		NPT	SMLS,ASTM A106 GR.B	PLN-THD IBR
NIPPLE	3/4		ASME B36.10	SCHXXS		NPT	SMLS,ASTM A106 GR.B	PLN-THD IBR
NIPPLE	1		ASME B36.10	SCH160			SMLS,ASTM A106 GR.B	PLN-PLN IBR
NIPPLE	1		ASME B36.10	SCH160		NPT	SMLS,ASTM A106 GR.B	PLN-THD IBR
NIPPLE	1		ASME B36.10	SCHXXS			SMLS,ASTM A106 GR.B	PLN-PLN IBR
NIPPLE	1		ASME B36.10	SCHXXS		NPT	SMLS,ASTM A106 GR.B	PLN-THD IBR
NIPPLE	3/4		ASME B36.19	SCH80S			SMLS,ASTM A312 TP304L	PLN-PLN
NIPPLE	3/4		ASME B36.19	SCH80S		NPT	SMLS,ASTM A312 TP304L	PLN-THD
NIPPLE	3/4		ASME B36.19	SCH80S			SMLS,ASTM A312 TP316L	PLN-PLN
NIPPLE	3/4		ASME B36.19	SCH80S			SMLS,ASTM A312 TP316L	PLN-THD
NIPPLE	3/4		ASME B36.10	SCH160			SMLS,API 5L GR.B	PLN-PLN
NIPPLE	3/4		ASME B36.10	SCH160		NPT	SMLS,API 5L GR.B	PLN-THD

	COMPOSITE SUPPLY CUM ERECTION OF MECHANICAL PIPING WORKS (OSBL) AT TFL TALCHER, ODISHA	PC-183-E-601_AMENDMENT	0	
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SPECIFICATION OF FITTINGS & FLANGES:

NIPPLE	3/4		ASME B36.10	SCHXXS		NPT	SMLS,ASTM A106 GR.B,HOT DIP GALV.	THD
NIPPLE	3/4		ASME B36.10	SCH160			SMLS,ASTM A333 GR.6	PLN-PLN
NIPPLE	3/4		ASME B36.10	SCH160		NPT	SMLS,ASTM A333 GR.6	PLN-THD
NIPPLE	3/4		ASME B36.19	SCH80S			SMLS,ASTM A312 TP304	PLN-PLN
NIPPLE	3/4		ASME B36.19	SCH80S		NPT	SMLS,ASTM A312 TP304	PLN-THD
REDUCER ECC.	2	11/2	ASME B16.9	SCH 40	SCH 80		ASTM A234 WPB-SMLS	BW
REDUCER ECC.	3	2	ASME B16.9	SCH 40	SCH 40		ASTM A234 WPB-SMLS	BW
REDUCER ECC.	4	3	ASME B16.9	SCH 40	SCH 40		ASTM A234 WPB-SMLS	BW
REDUCER ECC.	4	2	ASME B16.9	SCH 40	SCH 40		ASTM A234 WPB-SMLS	BW
REDUCER ECC.	6	4	ASME B16.9	SCHSTD	SCHSTD		ASTM A234 WPB-SMLS	BW
REDUCER ECC.	6	4	ASME B16.9	SCH 40	SCH 40		ASTM A234 WPB-SMLS	BW
REDUCER ECC.	10	8	ASME B16.9	SCH 20	SCH 20		ASTM A234 WPB-SMLS	BW IBR
REDUCER ECC.	24	20	ASME B16.9	SCH 40	SCH XS		ASTM A234 WPB-SMLS	BW
REDUCER ECC.	14	12	ASME B16.9	SCH10S	SCH10S		ASTM A403 WP316L-WLDD	BW
REDUCER ECC.	24	20	ASME B16.9	82.00 MM	68.00 MM		ASTM A234 WP22	BW IBR
REDUCER ECC.	4	3	ASME B16.11	SCHSTD	SCHSTD		ASTM A105 HOT DIP GALV.	THD
REDUCER ECC.	8	6	ASME B16.9	SCH 20	SCH 40		ASTM A234 WPB-WLDD	BW
REDUCER ECC.	10	3	ASME B16.9	SCH 20	SCH 40		ASTM A234 WPB-WLDD	BW
REDUCER ECC.	12	10	ASME B16.9	SCH 20	SCH 20		ASTM A234 WPB-WLDD	BW
REDUCER ECC.	24	20	ASME B16.9	SCHSTD	SCHSTD		ASTM A234 WPB-WLDD	BW
REDUCER ECC.	24	18	ASME B16.9	SCHSTD	SCH 10		ASTM A234 WPB-WLDD	BW
REDUCER ECC.	6	4	ASME B16.9	SCHSTD	SCHSTD		ASTM A234 WPB-SMLS,HOT DIP GALV.	BW
REDUCER ECC.	8	4	ASME B16.9	SCH10S	SCH10S		ASTM A403 WP304-WLDD	BW

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SPECIFICATION OF FITTINGS & FLANGES:

REDUCER ECC.	16	14	ASME B16.9	SCH10S	SCH10S		ASTM A403 WP304-WLDD	BW
REDUCER ECC.	18	16	ASME B16.9	SCH10S	SCH10S		ASTM A403 WP304-WLDD	BW
TEE	2	2	ASME B16.9	SCH 40	SCH 40		ASTM A234 WPB-SMLS	BW IBR
TEE	4	4	ASME B16.9	SCH 40	SCH 40		ASTM A234 WPB-SMLS	BW
TEE	8	8	ASME B16.9	SCH 20	SCH 20		ASTM A234 WPB-SMLS	BW IBR
TEE	1	1	ASME B16.11	3000#			ASTM A105 HOT DIP GALV.	THD
TEE	2	2	ASME B16.11	3000#	SCH XS		ASTM A105 HOT DIP GALV.	THD
TEE	3	3	ASME B16.11	3000#	SCHSTD		ASTM A105 HOT DIP GALV.	THD
TEE	4	4	ASME B16.11	3000#	SCHSTD		ASTM A105 HOT DIP GALV.	THD
TEE	8	8	ASME B16.9	SCH 20	SCH 20		ASTM A234 WPB-WLDD	BW
TEE	10	10	ASME B16.9	SCH 20	SCH 20		ASTM A234 WPB-WLDD	BW
TEE	24	24	ASME B16.9	SCHSTD	SCHSTD		ASTM A234 WPB-WLDD	BW
TEE	30	30	ASME B16.9	SCHSTD	SCHSTD		ASTM A234 WPB-WLDD	BW
TEE	6	6	ASME B16.9	SCHSTD	SCHSTD		ASTM A234 WPB-SMLS,HOT DIP GALV.	BW
TEE	8	8	ASME B16.9	SCH10S	SCH10S		ASTM A403 WP304-WLDD	BW
TEE	4	2	ASME B16.9	SCH 40	SCH 40		ASTM A234 WPB-SMLS	BW
TEE	10	8	ASME B16.9	SCH 20	SCH 20		ASTM A234 WPB-SMLS	BW IBR
TEE	10	8	ASME B16.9	SCH140	SCH120		ASTM A234 WPB-SMLS	BW IBR
TEE	24	20	ASME B16.9	82.00 MM	68.00 MM		ASTM A234 WP22	BW IBR
TEE	2	1	ASME B16.11	3000#	SCH XS		ASTM A105 HOT DIP GALV.	THD
TEE	3	2	ASME B16.11	3000#	SCH XS		ASTM A105 HOT DIP GALV.	THD
TEE	3	1	ASME B16.11	3000#	SCH XS		ASTM A105 HOT DIP GALV.	THD
TEE	4	3	ASME B16.11	3000#	SCHSTD		ASTM A105 HOT DIP GALV.	THD

	COMPOSITE SUPPLY CUM ERECTION OF MECHANICAL PIPING WORKS (OSBL) AT TFL TALCHER, ODISHA				PC-183-E-601_AMENDMENT	0		
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SPECIFICATION OF FITTINGS & FLANGES:

TEE	4	2	ASME B16.11	3000#	SCH XS		ASTM A105 HOT DIP GALV.	THD
TEE	4	3/4	ASME B16.11	3000#	SCH XS		ASTM A105 HOT DIP GALV.	THD
TEE	10	8	ASME B16.9	SCH 20	SCH 20		ASTM A234 WPB-WLDD	BW
TEE	6	4	ASME B16.9	SCHSTD	SCHSTD		ASTM A234 WPB-SMLS,HOT DIP GALV.	BW
TEE	6	3	ASME B16.9	SCHSTD	SCHSTD		ASTM A234 WPB-SMLS,HOT DIP GALV.	BW
TEE	3	2	ASME B16.9	SCH10S	SCH10S		ASTM A403 WP304-WLDD	BW
TEE	4	2	ASME B16.9	SCH10S	SCH10S		ASTM A403 WP304-WLDD	BW
TEE	8	4	ASME B16.9	SCH10S	SCH10S		ASTM A403 WP304-WLDD	BW
TEE	18	14	ASME B16.9	SCH10S	SCH10S		ASTM A403 WP304-WLDD	BW
WELDOLET	8	3	MSS SP 97	SCH 20	SCH 40		CS ASTM A105	BW
WELDOLET	8	2	MSS SP 97	SCH 20	SCH 40		CS ASTM A105	BW
WELDOLET	8	2	MSS SP 97	SCH 20	SCH 40		CS ASTM A105	BW IBR
WELDOLET	10	4	MSS SP 97	SCH 20	SCH 40		CS ASTM A105	BW
WELDOLET	10	3	MSS SP 97	SCH 20	SCH 40		CS ASTM A105	BW
WELDOLET	10	3	MSS SP 97	SCH 20	SCH 40		CS ASTM A105	BW IBR
WELDOLET	10	2	MSS SP 97	SCH 20	SCH 40		CS ASTM A105	BW
WELDOLET	10	2	MSS SP 97	SCH 20	SCH 40		CS ASTM A105	BW IBR
WELDOLET	24	6	MSS SP 97	SCHSTD	SCH 40		CS ASTM A105	BW
WELDOLET	24	2	MSS SP 97	SCHSTD	SCH 40		CS ASTM A105	BW
WELDOLET	12	1	MSS SP 97	44.00 MM	SCHXXS		ASTM A182 F22	BW IBR
WELDOLET	20	12	MSS SP 97	68.00 MM	44.00 MM		ASTM A182 F22	BW IBR
WELDOLET	20	3/4	MSS SP 97	68.00 MM	SCHXXS		ASTM A182 F22	BW IBR
WELDOLET	24	12	MSS SP 97	82.00 MM	44.00 MM		ASTM A182 F22	BW IBR
WELDOLET	24	3/4	MSS SP 97	82.00 MM	SCHXXS		ASTM A182 F22	BW IBR
WELDOLET	28	3	MSS SP 97	SCHSTD	SCH 40		ASTM A350 LF2 CL.1	BW
WELDOLET	6	2	MSS SP 97	SCHSTD	SCH XS		ASTM A105 HOT DIP GALV.	BW

	COMPOSITE SUPPLY CUM ERECTION OF MECHANICAL PIPING WORKS (OSBL) AT TFL TALCHER, ODISHA	PC-183-E-601_AMENDMENT	0	
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SPECIFICATION OF FITTINGS & FLANGES:

ITEMNAME	SIZE1	SIZE2	STD	RATING	THICKNESS	REMARK	MATNAME	END
W.N.FLANGE	30		ASME B16.47 SR.B	150#	SCHSTD	WELD NECK	CS ASTM A105	WN-RF 125 AARH
W.N.FLANGE	44		ASME B16.47 SR.B	150#	SCH XS	WELD NECK	CS ASTM A105	WN-RF 125 AARH
W.N.FLANGE	48		ASME B16.47 SR.B	150#	SCH XS	WELD NECK	CS ASTM A105	WN-RF 125 AARH
W.N.FLANGE	2		ASME B16.5	150#	SCH10S	WELD NECK	ASTM A182 F304	WN-RF 125 AARH
W.N.FLANGE	3		ASME B16.5	150#	SCH10S	WELD NECK	ASTM A182 F304	WN-RF 125 AARH
W.N.FLANGE	4		ASME B16.5	150#	SCH10S	WELD NECK	ASTM A182 F304	WN-RF 125 AARH
W.N.FLANGE	8		ASME B16.5	150#	SCH10S	WELD NECK	ASTM A182 F304	WN-RF 125 AARH
W.N.FLANGE	16		ASME B16.5	150#	SCH10S	WELD NECK	ASTM A182 F304	WN-RF 125 AARH
W.N.FLANGE	18		ASME B16.5	150#	SCH10S	WELD NECK	ASTM A182 F304	WN-RF 125 AARH
W.N.FLANGE	28		ASME B16.47 SR.B	150#	SCHSTD	WELD NECK	ASTM A350 LF2 CL.1	WN-RF 125 AARH
W.N.FLANGE	42		ASME B16.47 SR.B	150#	SCH XS	WELD NECK	ASTM A350 LF2 CL.1	WN-RF 125 AARH
W.N.FLANGE	32		ASME B16.47 SR.B	150#	SCH 10	WELD NECK	ASTM A182 F304L	WN-RF 125 AARH
W.N.FLANGE	12		ASME B16.5	150#	SCH10S	WELD NECK	ASTM A182 F316L	WN-RF 125 AARH
W.N.FLANGE	6		ASME B16.5	150#	SCHSTD		ASTM A105 HOT DIP GALV.	WN-RF 125 AARH

**VENDOR LIST**

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**ELECTRICAL/ CATHODIC PROTECTION EQUIPMENT**

Wall Mounting Type Distribution Boards		
1.	Anand Power Limited	India
2.	Associated Switchgears & Projects Ltd.	India
3.	Cosmic Power Systems Pvt. Ltd.	India
4.	Elecmech Corporation	India
5.	Intrelec	India
6.	Lotus Powergear Pvt Ltd	India
7.	Spaceage Switchgears Limited	India
8.	Tricolite Electrical Industries Pvt. Ltd.	India
9.	Trident Switchgears Pvt. Ltd. (Upto 3200 A)	India
10.	United Electric Co. (Delhi) Pvt. Ltd	India
11.	Venus Controls & Switchgear (P) Ltd.	India
Moulded Case Circuit Breakers (MCCB)		
1.	Crompton Greaves Ltd.	India
2.	GE Power Controls India Pvt. Ltd.	India
3.	Larsen & Toubro Ltd.(EI.Products Divn)	India
4.	Siemens Ltd.	India
5.	ABB	India
6.	Schneider Electric	India
Miniature Circuit Breakers (MCB) / RCBO		
1.	Indo Asian Fusegear Ltd	India
2.	Legrand India Ltd	India
3.	S & S Power Switchgear Ltd	India
4.	Standard Electricals Limited	India
5.	Siemens Ltd.	India
6.	ABB	India
7.	Schneider Electric	India
ELCB		
1.	GE Power Controls India Pvt. Ltd.	India
2.	Havells India Ltd.	India
3.	Indo Asian Fusegear Ltd	India
4.	Legrand India Ltd	India
5.	S & S Power Switchgear Ltd	India
6.	Siemens Ltd.	India
7.	Standard Electricals Limited	India
8.	ABB	India



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9.	Schneider Electric	India
Current Transformers (415V)		
1.	Alstom Limited (Areva T & D)	
2.	Anant Powertech	India
3.	Indcoil Transformers Pvt. Ltd.	India
4.	Kappa Electricals	India
5.	Mehru Electricals (Formerly Automatic Electric Limited)	India
6.	Perfect Sales Corporation	India
7.	Siemens Ltd.	India
8.	Silkans	India
9.	Pragati	India
10.	Automatic Electric	India
11.	Rishabh	India
Potential Transformers (415V)		
1.	Alstom Limited (Areva T & D)	India
2.	Indcoil Transformers Pvt. Ltd.	India
3.	Kalpa Electrical Private Limited	India
4.	Kappa Electricals	India
5.	Larsen & Toubro Ltd.(El. Products Divn)	India
6.	Mehru Electricals (Formerly Automatic Electric Limited)	India
7.	Perfect Sales Corporation	India
8.	Siemens Ltd.	India
Meters		
1.	Alstom Limited (Areva T & D)	India
2.	IMP Power Ltd.	India
3.	M.B. Control & Systems Pvt. Ltd. (Only For Multifunctional Meter)	India
4.	Meco Instruments	India
5.	Mehru Electricals (Formerly Automatic Electric Limited)	India
6.	Rishabh Instruments Pvt. Ltd.	India
7.	Seahorse Industries Ltd.	India
Multi Function Meter (MFM)		
1	Secure meter Limited	India
2	SEMS	India
3	Larsen & Toubro Ltd.	India
4	SATEC	India
5	Alstom Limited (Areva T & D)	India
6	Siemens Ltd.	India
7	Asea Brown Boveri Ltd.	India

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8	Schneider Electric	India
LT Power Cables		
1.	Cable Corpn. of India Limited	India
2.	Cords Cable Industries Ltd	India
3.	Delton Cables Ltd	India
4.	Finolex Cables Ltd	India
5.	KEC International Ltd. (Formerly RPG Cables Limited)	India
6.	KEI Industries Limited	India
7.	Plaza Cable Industries Limited	India
8.	Ravin Cables Limited	India
9.	Torrent Cables Ltd	India
10.	Universal Cables Ltd.	India
11.	Polycab	India
LT Control Cables (1.1 kV)		
1.	Cable Corpn. of India Limited	India
2.	Cords Cable Industries Ltd	India
3.	Delton Cables Ltd	India
4.	Finolex Cables Ltd	India
5.	KEC International Ltd. (Formerly RPG Cables Limited)	India
6.	KEI Industries Limited	India
7.	Plaza Cable Industries Limited	India
8.	Radiant Cables Pvt. Limited	
9.	Ravin Cables Limited	India
10.	Torrent Cables Ltd	India
11.	Universal Cables Ltd.	India
12.	Miracle cables	India
13.	Polycab	India
Cables For Earthing		
1.	Advance Cable Technologies (P) Ltd.	India
2.	Delton Cables Ltd	India
3.	Finolex Cables Ltd	India
4.	Gupta Electric & Machinery Stores (GEMSCAB)	India
5.	J K Cables Limited	India
6.	Netco Cable Industries (Pvt.) Ltd.	India
7.	Prestige Cable Industries	India
8.	Shyam Cables Industries	India
9.	Special Cables Pvt. Ltd.	India
10.	T C Communication Pvt Ltd	India
11.	Universal Cables Ltd.	India

Pre-Fabricated G.I. Cable Trays		
1.	Globe Electrical Industries	India
2.	Indiana Engg Works Pvt Ltd	India
3.	Jamna Metal Company	India
4.	Maheshwari Electrical Mfrs. (P) Ltd.	India
5.	Premier Power Products (Calcutta) Pvt. Ltd.	India
6.	Rukmani Electricals & Components Pvt Ltd	India
Earthing & Lightning Protection Material – (GI) Wire/Strip		
1.	Anand Electric Trading Co.	India
2.	Controls & Switchgear Co. Ltd.	India
3.	Jayant Metal Mfg. Co.	India
4.	Indmark Formtech Pvt. Ltd.	India
5.	Premier Power Products (Calcutta) Pvt. Ltd.	India
6.	Jamna Metal Co.	India
7.	Mahavir Industrial Corporation	India
8.	Metropolitan Industries	India
9.	Sai Galvanisers & Fabricators Pvt Ltd	India
10.	Bharti Exports	India
11.	Metalite Industries	India
12.	Rukmani Electricals & Components Pvt Ltd	India
13.	Sadhana Engineering Corporation	India
14.	Stealite Engg Co	India
GI Pipes & Conduits		
1.	Bharti Exports	India
2.	Indian Tube Co. (Tata Div. of Tubes & Pipes)	India
3.	Jindal Pipes Ltd.	India
4.	Meghjyot Enterprises	India
5.	Rukmani Electricals & Components Pvt Ltd	India
6.	Steelcraft	India
Industrial Cable Gland		
1.	Baliga Lighting Equipments Limited	India
2.	Comet Brass Products	India
3.	Comet Industries	India
4.	Dowell's Electricals	India
5.	Electromac Industries	India
6.	FCG Flameproof Control Gears Pvt. Ltd. (Formerly CEAG Flame)	India
7.	Gland-Mech. Industries	India
8.	Industrial products Equipment	India
9.	Power Engg Co	India
10.	Quality & Precision Indl. Equipment	India
11.	S J Metal Industries (Jainson)	India

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Cable Lugs		
1.	Dowell's Electricals	India
2.	Forward Engg Industries	India
3.	KSE Electrical Pvt. Ltd.	India
4.	MG Electrica	Indai
5.	Power Engg Co	India
6.	S J Metal Industries (Jainson)	India
7.	Usha Martin Industries Ltd. (Ismal Divn)	India

Fuse		
1.	Larsen & Toubro Ltd. (El. Products Divn.)	India
2.	Siemens Ltd.	India
3.	Alstom Power	India
4.	Havells India Ltd.	India

Contactor / Relay /		
1.	Larsen & Toubro Ltd. (El. Products Divn.)	India
2.	Siemens Ltd.	India

Timer		
1.	ABB	India
2.	Alstom Power	India
3.	Bhartia Cutler Hammer	India
4.	Siemens Ltd	India

Control Switches		
1.	Alstom Power	India
2.	Siemens Ltd.	India
3.	Kaycee	India
4.	Larsen & Toubro Ltd. (El. Products Divn.)	India

Push Buttons		
1.	Alstom Power	India
2.	Larsen & Toubro Ltd. (El. Products Divn.)	India
3.	Siemens Ltd.	India
4.	Tecnik	India
5.	Tulsi	India

Signal Lamps		
1.	Alstom Power	India
2.	Binoy	India
3.	Larsen & Toubro Ltd. (El. Products Divn.)	India
4.	Siemens Ltd.	India
5.	Tulsi	India

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Terminal Blocks		
1.	Connectwell	India
2.	Elmex	India
3.	Larsen & Toubro Ltd. (El. Products Divn.)	India
4.	Siemens Ltd.	India

Transfer Rectifier unit		
1.	Advance Electronic Systems	India
2.	Raychem	India
3.	Canara Eelctricals	India
4.	Corrpro Systems	India
5.	Kristons Systems	India

Test Stations/ Anode Junction Box/ Cathode Junction Box / Surge Arrestor Junction Box/ Reference Electrode Junction Box (REJB) / Earthing Junction Box (EJB)		
1.	Corrpro Systems	India
2.	Advance Electronic Systems	India
3.	Baliga Lighting Equipments Ltd.	India
4.	FCG Flameproof Control Gears Pvt. Ltd.(Formerly CEAG Flame)	India
5.	Flameproof Equipments Pvt. Ltd.	India
6.	Flexpro Electricals Pvt. Ltd.	India

Permanent Reference Electrode		
1.	Advance Electronic Systems	India
2.	Borin,	USA
3.	M C Miller	USA
4.	Cer Anode	USA
5.	Harco	USA
6.	Advance Electronic Systems	USA

Surge Diverter for MIJS		
1.	Advance Electronic Systems	India
2.	DEHN	Germany
3.	Hockway	Germany
4.	OBO Betterman	Germany

Monolithic Isolating Joints		
1.	Advance Electronic Systems	India
2.	Alfa Engineering	India
3.	SRL	Italy
4.	Zunt Italy	Italy
5.	RMA Italy	Italy
6.	Advance Products,	USA

Calcined Petroleum Coke Breeze		
1.	Goa Carbon	India
2.	India Carbon (Calcutta)	India
3.	Petro Carbon & Chem. Company	India

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4.	LORESCO SC-2	
Zinc Grounding Electrode/ Cell/ Zinc Ribbon Anode Magnesium Anodes (For TCP)		
1.	Sargam Metals Chennai	India
2.	Advance Electronic Systems	India
3.	Corrpro Systems	India
4.	Scientific Metals Karaikudi	India
5.	Corrtech Metals	India
Mixed Metal Oxide Wire Anode		
1.	Mactor	USA
2.	Covalence	USA
3.	Tyco Adhesive	USA
4.	Berry Plastic	USA
Mixed Metal Oxide Tubular Anode		
1.	Titanor Components Ltd.	India
2.	Oranzio De Nora,	Italy
3.	Magnetochemie	Holland
4.	Actel Ltd.	U.K.
5.	Eltech Systems Corporation	USA
6.	Ceranode	USA
7.	Mactor	USA
8.	De Nora India Ltd	
Permanent reference Electrodes		
1.	Borin	USA
2.	Mc-Miller	USA
3.	Harco	USA
4.		
DC clip-on meter		
1.	HCK	Germany
2.	Kyoritsu Elect	Japan
Reference Electrode (Zinc) / Zinc Reference Cell		
1.	Scientific Metal Engineers	India
2.	Karaikudi	India
3.	Sargam Metal Chennai	India
Solid-State type Polarization cells		
1.	Dairy Land,	USA
2.	Rustrol	USA
3.	Advanced Electronics Systems	India
4.	Kirk	USA
5.	Corrpro	USA
Insulating Flange Gasket Kit Joints		
1.	ALFA	Italy
2.	ZUNT	Italy



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3.	IGP	India
Monitoring Junction Box (MJB) Remote Monitoring Unit		
1.	Raychem	India
2.	Advanced Electronics Systems	India
Heat Shrink Cap Anode Cable Joint:		
1.	Raychem	USA
2.	MATCOR	USA

Optical Fiber Cable		
1.	Finolex	India
2.	DLink	India
3.	Molex	India
4.	Lucent	India
5.	Ericson	India
6.	Sterlite	India
7.	HFCL	India
8.	OPTEL	India

HDPE Pipe		
1.	Astral	India
2.	Reliance Industries 'RELPIPE	India
3.	APOLLO	India
4.	Cliamx Synthesis	India