

PETRONAS TECHNICAL STANDARDS

DESIGN AND ENGINEERING PRACTICE

MANUAL

PIPING CLASSES - EXPLORATION AND PRODUCTION

CLASS 600

PTS 31.38.01.15

January 2010



PREFACE

PETRONAS Technical Standards (PTS) publications reflect the views, at the time of publication, of PETRONAS OPUs/Divisions.

They are based on the experience acquired during the involvement with the design, construction, operation and maintenance of processing units and facilities. Where appropriate they are based on, or reference is made to, national and international standards and codes of practice.

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PIPING CLASSES - CLASS 600

The piping class files below are embedded MS-Word files.

To open a file, double-click on the desired piping class (if you are viewing the PDF version of this document, open the MS-Word version of this document and double-click on the desired piping class).

CLASS 63430
CLASS 61422
CLASS 61432
CLASS 61440
CLASS 61441
CLASS 61450
CLASS 61460
CLASS 61472
CLASS 61482
CLASS 61492
CLASS 61502
CLASS 61503
CLASS 63411
CLASS 63421
CLASS 61412
CLASS 63451
CLASS 63461
CLASS 63620
CLASS 63831
CLASS 63832
CLASS 63833
CLASS 63834
CLASS 66520
CLASS 66620

CLASS 61412

Design limits

	Temperature (°C)					
	0	50	75	100	125	150
Pressure (Bar ga)						
DN 15- 600	102.1	100.2	96.7	93.2	91.7	90.2

Notes

- Design limits acc. to ASME B16.5 flange rating mat. grp 1.1
- API 5L-B welded pipe (erw and saw) is normally the most economic choice
- For bending of pipe see PTS 31.38.01.31.
- For basis of design see PTS 31.38.01.10.
- The use of red. bore ball valves is considered most economical. Use full bore ball valves only when necessary for process/operating requirements
- Piston type check valves (DN 15-40) for horizontal mounting only
- The use of triple eccentric butterfly valves and dual plate check valves is considered most economical. Use gate valves and swing check valves only where fouling and abrasion are negatively affecting their functionality

Table of schedules

DN	Schedule
15	80
20	80
25	80
40	80
50	40
80	40
100	40
150	80
200	80
250	80
300	80
350	80
400	80
450	80
500	80
600	80

Branch connections 90 degrees

Run size	Branch Size															
	15	20	25	40	50	80	100	150	200	250	300	350	400	450	500	600
600	C	C	C	C	E	E	E	E	E	E	B	B	B	B	B	A
500	C	C	C	C	E	E	E	E	E	E	B	B	B	B	A	
450	C	C	C	C	E	E	E	E	E	E	B	B	B	A		
400	C	C	C	C	E	E	E	E	E	E	B	B	B	A		
350	C	C	C	C	E	E	E	E	B	B	B	A				
300	C	C	C	C	E	E	E	B	B	B	A					
250	C	C	C	C	E	E	B	B	B	A						
200	C	C	C	C	E	E	B	B	A							
150	C	C	C	C	E	B	B	A								
100	C	C	C	C	B	B	A									
80	C	C	C	C	B	A										
50	C	C	B	B	A											
40	C	B	B	A												
25	B	B	A													
20	B	A														
15	A															

Code	Explanation of characters
A	Equal tee
B	Reducing tee
C	Branch fitting
E	Branch outlet

Carbon steel		Plant
Class no.	61412	Consignee
ASME rating	CLASS 600	Engineered by
Corrosion allowance	1 mm	Principal
Revision letter	O	Contr. job no.
Revision date	01/2006	Project no.

COMPONENT MATERIAL DESCRIPTION

(For full material description see relevant MESG buying description.)

Pipe

PIPE	Pipe	DN 15-450	ASTM A106-B
PIPE	Pipe	DN 500-600	ASTM A333-6
PISM	Pipe (API 5L-B sml)	DN 15-350	API 5L-B (sml)
PIWE	Pipe (API 5L-B erw)	DN 150-200	API 5L-B (erw)
PIWS	Pipe (API 5L-B saw)	DN 400-450	API 5L-B (saw)

Flanges

BLFL	Blind flange	DN 15-600	ASTM A105
LJFL	Lap joint flange	---	ASTM A105
SBFL	Spectacle blind	DN 15-300	ASTM A516-60/65/70
SPFL	Spade	DN 15-600	ASTM A516-60/65/70
SPRT	Spacer ring	DN 15-600	ASTM A516-60/65/70
WNFL	Welding neck flange	DN 15-600	ASTM A105

Fittings

CAPB	Cap bw	DN 15-450	ASTM A234-WPB
CAPB	Cap bw	DN 500-600	ASTM A420-WPL6
E45B	Elbow 45 deg bw	DN 15-450	ASTM A234-WPB
E45B	Elbow 45 deg bw	DN 500-600	ASTM A420-WPL6
E90B	Elbow 90 deg bw	DN 15-450	ASTM A234-WPB
E90B	Elbow 90 deg bw	DN 500-600	ASTM A420-WPL6
TEEB	Tee equal bw	DN 15-450	ASTM A234-WPB
TEEB	Tee equal bw	DN 500-600	ASTM A420-WPL6

Reducing fittings

BNIF	Branch fitting flgd	DN 15-40	ASTM A105
BNIP	Branch fitting plain	DN 15-40	ASTM A105
BROB	Branch outlet bw	DN 150-600	ASTM A105
RECB	Reducer concentric bw	DN 20-450	ASTM A234-WPB
RECB	Reducer concentric bw	DN 500-600	ASTM A420-WPL6
REEB	Reducer eccentric bw	DN 20-450	ASTM A234-WPB
REEB	Reducer eccentric bw	DN 500-600	ASTM A420-WPL6
TERB	Tee reducing bw	DN 20-450	ASTM A234-WPB
TERB	Tee reducing bw	DN 500-600	ASTM A420-WPL6

Valves

BTFB	Ball valve 14313 FB flgd	DN 50-600	Body: ASTM A105/A216-WCB/WCC Trim: AISI 316, Devlon V
BTRF	Ball valve 14313 RB flgd	DN 50-600	Body: ASTM A105/A216-WCB/WCC Trim: AISI 316, Devlon V
BUTF	Butterfly valve triple ex flgd	DN 200-600	Body: ASTM A216-WCB/WCC Trim: CS, Duplex, Stellite
CHDF	Check valve dual plate flgd	DN 300-600	Body: ASTM A216-WCB/WCC Trim: AISI 410
CHVF	Check valve flgd	DN 15-40	Body: ASTM A105/A216-WCB/WCC Trim: AISI 316, Stellite 6
CHVF	Check valve flgd	DN 50-600	Body: ASTM A105/A216-WCB/WCC Trim: AISI 410
GAVF	Gate valve flgd	DN 15-40	Body: ASTM A105/A216-WCB/WCC Trim: AISI 316, Stellite 6
GAVF	Gate valve flgd	DN 50-600	Body: ASTM A105/A216-WCB/WCC Trim: AISI 410
GLVF	Globe valve flgd	DN 15-40	Body: ASTM A105/A216-WCB/WCC Trim: AISI 316, Stellite 6
GLVF	Globe valve flgd	DN 50-200	Body: ASTM A105/A216-WCB/WCC Trim: AISI 410
MSBF	Monofl single block ball	DN 15-50	Body: ASTM A350-LF2 Trim: AISI 316, Devlon V
VDBT	Valve ass doub block ball thrd	---	Body: ASTM A350-LF2 Trim: AISI 316, Devlon V

Instruments

TWND	Thermowell	DN 40-40	ASTM B564 UNS N04400
TWNL	Thermowell L=255 mm	---	ASTM B564 UNS N04400
TWNS	Thermowell L=230 mm	---	ASTM B564 UNS N04400

Miscellaneous

GKSW	Gasket spiral wound	DN 15-600	AISI 316, graphite filled CS centring-/SS inner ring
MTRR	Meterrun	DN 15-40	Alloy 400/ASTM A350-LF2 end flanges
ORFS	Orifice flange set	DN 50-600	ASTM A105
STBT	Studbolt with nuts	---	ASTM A193-B7/A194-2H



PIPING COMPONENTS

Item description	MESC	Nominal pipe size															
		15	20	25	40	50	80	100	150	200	250	300	350	400	450	500	600
Pipe																	
Pipe	743005	0181	0281	0381	0581	0691	1031	1491	2191	2551	2951	3411	3911	4451	4971		
Pipe	743017															2141	2461
Pipe (API 5L-B erw)	741314								2191	2551							
Pipe (API 5L-B saw)	741317													4451	4921		
Pipe (API 5L-B sml)	741312	0181	0281	0381	0581	0691	1031	1491	2191	2551	2951	3411	3911				
Flanges																	
Blind flange	766210	2081	2121	2161	2181	2201	2221	2241	2261	2281	2301	2321	2341	2361	2381	2401	2421
Spacer ring	768816	0821	0841	0861	0881	0901	0921	0941	0961	0981	1001	1021	1041	1061	1081	1101	1121
Spade	768813	0821	0841	0861	0881	0901	0921	0941	0961	0981	1001	1021	1041	1061	1081	1101	1121
Spectacle blind	768803	0821	0841	0861	0881	0901	0921	0941	0961	0981	1001	1021					
Welding neck flange	766279	7521	7541	7561	7581	7101	7121	7141	7661	7681	7701	7721	7741	7761	7781	7801	7841
Fittings																	
Cap bw	763019	0181	0241	0301	0381	0551	0751	0951	1181	1391	1601	1831	2021	2221	2441		
Cap bw	763118															3991	4101
Elbow 45 deg bw	763038	5681	5741	5801	5881	6051	6251	6451	6681	6891	7101	7331	7521	7721	7941		
Elbow 45 deg bw	763138															3991	4101
Elbow 90 deg bw	763040	5681	5741	5801	5881	6051	6251	6451	6681	6891	7101	7331	7521	7721	7941		
Elbow 90 deg bw	763139															3991	4101
Tee equal bw	763084	5681	5741	5801	5881	6051	6251	6451	6681	6891	7101	7331	7521	7721	7941		
Tee equal bw	763184															4001	4101
Valves																	
Ball valve 14313 FB flgd	770067					6081	6101	6121	6141	6151	6161	6171	6181	6191	6201	6211	6231
Ball valve 14313 RB flgd	770067					1081	1101	1121	1141	1151	1161	1171	1181	1191	1201	1211	1231
Butterfly valve triple ex flgd	774130									1151	1161	1171	1181	1191	1201	1211	1231
Check valve dual plate flgd	776711											1171	1181	1191	1201	1211	1231
Check valve flgd	771005	4031	4041	4051	4071												
Check valve flgd	771020					1081	1101	1121	1141	1151	1161	1171	1181	1191	1201	1211	1231
Gate valve flgd	772004	4031	4041	4051	4071												
Gate valve flgd	772020					1081	1101	1121	1141	1151	1161	1171	1181	1191	1201	1211	1231
Globe valve flgd	773005	4031	4041	4051	4071												
Globe valve flgd	773020					1081	1101	1121	1141	1151							
Monofl single block ball	770095	4431	4441	4451	4471	4481											
Miscellaneous																	
Gasket spiral wound	854136	4041	4061	4081	4121	4141	4181	4201	4241	4261	4281	4301	4321	4341	4361	4381	4421
Meterrun	766496	0721	0741	0761	0781												
Orifice flange set	766295					0811	0821	0831	1081	1091	1101	1111	1121	1131	1141	1151	1161

REDUCING/PIPING COMPONENTS

Run	x	Br	BROB	RECB	REEB	TERB
20	x	15		7630721371	7630731371	7630890351
25	x	15		7630721471	7630731471	7630890451
25	x	20		7630721571	7630731571	7630890551
40	x	15		7630721671	7630731671	
40	x	20		7630721771	7630731771	7630890751
40	x	25		7630721871	7630731871	7630890851
50	x	20		7629461921	7629611921	
50	x	25		7630721961	7630731961	7630891091
50	x	40		7630722061	7630732061	7630891181
80	x	40		7630722261	7630732261	
80	x	50		7630722351	7630732351	7630891321
100	x	40		7630722501	7630732501	
100	x	50		7630722651	7630732651	7630891531
100	x	80		7630722751	7630732751	7630891651
150	x	50	7679007161			
150	x	80		7630722981	7630732981	7630891821
150	x	100		7630723081	7630733081	7630891951
200	x	50	7679007171			
200	x	80	7679007291			
200	x	100		7630723231	7630733231	7630892131
200	x	150		7630723371	7630733371	7630892261
250	x	50	7679007181			
250	x	80	7679007301			
250	x	100		7629463461	7629613461	7630892611
250	x	150		7630723581	7630733581	7630892721
250	x	200		7630723681	7630733681	7630892931
300	x	50	7679007191			
300	x	80	7679007311			
300	x	100	7679007421			
300	x	150		7630723851	7630733851	7630893111
300	x	200		7630723981	7630733981	7630893301
300	x	250		7630724081	7630734081	7630893521
350	x	50	7679007201			
350	x	80	7679007321			
350	x	100	7679007431			
350	x	150	7679014381	7630724151	7630734151	
350	x	200		7630724241	7630734241	7630893921
350	x	250		7630724391	7630734391	7630894171
350	x	300		7630724491	7630734491	7630894431

Comp.name	Description
BNIF	Branch fitting flgd
BNIP	Branch fitting plain
BROB	Branch outlet bw
RECB	Reducer concentric bw
REEB	Reducer eccentric bw
TERB	Tee reducing bw

Run	x	Br	BROB	RECB	REEB	TERB
400	x	50	7679007211			
400	x	80	7679007331			
400	x	100	7679007441			
400	x	150	7679014401			
400	x	200	7679014581	7630724551	7630734551	
400	x	250		7630724641	7630734641	7630895071
400	x	300		7630724751	7630734751	7630895331
400	x	350		7630724891	7630734891	7630895581
450	x	50	7679007221			
450	x	80	7679007341			
450	x	100	7679007451			
450	x	150	7679014421			
450	x	200	7679014601			
450	x	250		7630725261	7630735261	7630896061
450	x	300		7630725561	7630735561	7630896301
450	x	350		7630725871	7630735871	7630896541
450	x	400		7630726171	7630736171	7630896781
500	x	50	7679007231			
500	x	80	7679007351			
500	x	100	7679007461			
500	x	150	7679014441			
500	x	200	7679014621			
500	x	250	7679014781			
500	x	300		7631706461	7631716461	7631857501
500	x	350		7631706771	7631716771	7631857741
500	x	400		7631707071	7631717071	7631857981
500	x	450		7631707371	7631717371	7631858221
600	x	50	7679007251			
600	x	80	7679007371			
600	x	100	7679007481			
600	x	150	7679014481			
600	x	200	7679014661			
600	x	250	7679014821			
600	x	300				7631858701
600	x	350				7631858941
600	x	400		7631708871	7631718871	7631859181
600	x	450		7631709171	7631719171	7631859421
600	x	500		7631709471	7631719471	7631859661

Branch	Run	pipe	BNIF	BNIP
15	40	- 40	7680372411	7680310361
15	50	- 50	7680372431	7680310371
15	80	- 200	7680372441	7680310381
15	250	- 600	7680372451	7680310391
20	50	- 50	7680372461	7680310401
20	80	- 100	7680372471	7680310411
20	150	- 300	7680372491	7680310431
20	350	- 600	7680372511	7680310441
25	80	- 80	7680372531	7680310451
25	100	- 100	7680372551	7680310461
25	150	- 250	7680372561	7680310471
25	300	- 600	7680372571	7680310491
40	80	- 80	7680372591	7680310511
40	100	- 100	7680372601	7680310521
40	150	- 150	7680372621	7680310531
40	200	- 300	7680372631	7680310551
40	350	- 600	7680372651	7680310571

Thermowell	
Length	MESC number
230	7683375111
255	7683375121
305	7683375131
355	7683375141
405	7683375151
455	7683375161

BOLTING

Boltset standard flange

DN	nr	inch	x	mm	MESC number
15	4	1/2	x	80	8138611571
20	4	5/8	x	90	8138612711
25	4	5/8	x	100	8138612731
40	4	3/4	x	110	8138613301
50	8	5/8	x	110	8138612741
80	8	3/4	x	130	8138613341
100	8	7/8	x	150	8138614061
150	12	1	x	180	8138614751
200	12	1 1/8	x	200	8138615251
250	16	1 1/4	x	220	8138615971
300	20	1 1/4	x	230	8138615981
350	20	1 3/8	x	240	8138616461
400	20	1 1/2	x	260	8138616901
450	20	1 5/8	x	280	8138617221
500	24	1 5/8	x	290	8138617241
600	24	1 7/8	x	330	8138617861

Boltset meter run

DN	nr	inch	x	mm	MESC number
15	4	1/2	x	120	8138611641
20	4	5/8	x	130	8138612781
25	4	5/8	x	130	8138612781
40	4	3/4	x	140	8138613351

Boltset orifice flange

DN	nr	inch	x	mm	MESC number
50	8	5/8	x	130	8138612781
80	8	3/4	x	140	8138613351
100	8	7/8	x	160	8138614071
150	12	1	x	190	8138614771
200	12	1 1/8	x	220	8138615401
250	16	1 1/4	x	240	8138616001
300	20	1 1/4	x	250	8138615861
350	20	1 3/8	x	270	8138616411
400	20	1 1/2	x	290	8138617121
450	20	1 5/8	x	320	8138617281
500	24	1 5/8	x	340	8138617321
600	24	1 7/8	x	390	8138617951

Boltset blind/spacer

DN	nr	inch	x	mm	MESC number
15	4	1/2	x	90	8138611591
20	4	5/8	x	100	8138612731
25	4	5/8	x	110	8138612741
40	4	3/4	x	120	8138613321
50	8	5/8	x	130	8138612781
80	8	3/4	x	150	8138613371
100	8	7/8	x	170	8138614091
150	12	1	x	200	8138614641
200	12	1 1/8	x	230	8138615411
250	16	1 1/4	x	260	8138616031
300	20	1 1/4	x	270	8138616051
350	20	1 3/8	x	290	8138616541
400	20	1 1/2	x	320	8138617001
450	20	1 5/8	x	340	8138617321
500	24	1 5/8	x	360	8138617361
600	24	1 7/8	x	420	8138618021

ASSEMBLIES

Drain/vent point DN 15 Fig.I DN15 - 15

Branch: according to branch table	
Blind flange	1 7662102081
Welding neck flange	1 7662797521
Gasket spiral wound	1 8541364041
Studbolt with nuts	4 8138611571

Drain/vent point DN 20 Fig.I DN20 - 40

Branch: according to branch table	
Blind flange	1 7662102121
Welding neck flange	1 7662797541
Gasket spiral wound	1 8541364061
Studbolt with nuts	4 8138612711

Drain/vent point DN 20 Fig.H DN50 - 50

Branch: branch nipple flanged	
Blind flange	1 7662102121
Gasket spiral wound	1 8541364061
Studbolt with nuts	4 8138612711

Drain/vent point DN 25 Fig.H DN80 - 300

Branch: branch nipple flanged	
Blind flange	1 7662102161
Gasket spiral wound	1 8541364081
Studbolt with nuts	4 8138612731

Drain/vent point DN 40 Fig.H DN350 - 600

Branch: branch nipple flanged	
Blind flange	1 7662102181
Gasket spiral wound	1 8541364121
Studbolt with nuts	4 8138613301

Meter run connection DN 15 Fig.AA DN15 - 40

Branch: not applicable	
Valve ass doub block ball thrd	2 7785470431
Gasket spiral wound	2 8541364041

Orifice connection DN 15 Fig.AB DN50 - 600

Branch: not applicable	
Valve ass doub block ball thrd	2 7785470431
Welding neck flange	2 7662797521
Gasket spiral wound	2 8541364041

PI on piping cl coup DN 15 Fig.CB DN15 - 40

Branch: according to branch table	
Valve ass doub block ball thrd	1 7785470431
Welding neck flange	1 7662797521
Gasket spiral wound	1 8541364041

PI on piping cl coup DN 15 Fig.CA DN50 - 600

Branch: branch nipple flanged	
Valve ass doub block ball thrd	1 7785470431
Gasket spiral wound	1 8541364041

PI on piping remote DN 15 Fig.AB DN15 - 40

Branch: according to branch table	
Valve ass doub block ball thrd	1 7785470431
Welding neck flange	1 7662797521
Gasket spiral wound	1 8541364041

PI on piping remote DN 15 Fig.AA DN50 - 600

Branch: branch nipple flanged	
Valve ass doub block ball thrd	1 7785470431
Gasket spiral wound	1 8541364041

Temperature instrum DN 40 Fig.NS DN80 - 100

Branch: branch nipple flanged	
Lap joint flange	1 7662204181
Gasket spiral wound	1 8541364121
Thermowell L=230 mm	1 7683375111
Studbolt with nuts	4 8138613321

Temperature instrum DN 40 Fig.NL DN150 - 600

Branch: branch nipple flanged	
Lap joint flange	1 7662204181
Gasket spiral wound	1 8541364121
Thermowell L=255 mm	1 7683375121
Studbolt with nuts	4 8138613321



CLASS 61422

Design limits

	Temperature (°C)					
	0	50	75	100	125	150
Pressure (Bar ga)						
DN 15- 600	99.6	99.6	96.4	93.2	91.7	90.2

Notes

- Design limits acc. to ASME B16.5 flange rating mat. grp 1.1, and limited by allowable stress of bolting material
- For bending of pipe see PTS 31.38.01.31.
- For basis of design see PTS 31.38.01.10.
- The use of red. bore ball valves is considered most economical. Use full bore ball valves only when necessary for process/operating requirements
- Piston type check valves (DN 15-40) for horizontal mounting only
- The use of triple eccentric butterfly valves and dual plate check valves is considered most economical. Use gate valves and swing check valves only where fouling and abrasion are negatively affecting their functionality

Table of schedules

DN	Schedule
15	80
20	80
25	80
40	80
50	40
80	40
100	40
150	80
200	80
250	80
300	80
350	80
400	80
450	80
500	80
600	80

Branch connections 90 degrees

Run size	Branch Size															
	15	20	25	40	50	80	100	150	200	250	300	350	400	450	500	600
600	C	C	C	C	E	E	E	E	E	E	B	B	B	B	B	A
500	C	C	C	C	E	E	E	E	E	E	B	B	B	B	A	
450	C	C	C	C	E	E	E	E	E	E	B	B	B	A		
400	C	C	C	C	E	E	E	E	E	E	B	B	B	A		
350	C	C	C	C	E	E	E	E	B	B	B	A				
300	C	C	C	C	E	E	E	B	B	B	A					
250	C	C	C	C	E	E	B	B	B	A						
200	C	C	C	C	E	E	B	B	A							
150	C	C	C	C	E	B	B	A								
100	C	C	C	C	B	B	A									
80	C	C	C	C	B	A										
50	C	C	B	B	A											
40	C	B	B	A												
25	B	B	A													
20	B	A														
15	A															

Code	Explanation of characters
A	Equal tee
B	Reducing tee
C	Branch fitting
E	Branch outlet

Carbon steel Sour		Plant
Class no.	61422	Consignee
ASME rating	CLASS 600	Engineered by
Corrosion allowance	1 mm	Principal
Revision letter	O	Contr. job no.
Revision date	01/2006	Project no.

COMPONENT MATERIAL DESCRIPTION
(For full material description see relevant MES C buying description.)

Pipe

PIPE	Pipe	DN 15-450	ASTM A106-B
PIPE	Pipe	DN 500-600	ASTM A333-6

Flanges

BLFL	Blind flange	DN 15-600	ASTM A105
LJFL	Lap joint flange	---	ASTM A105
SBFL	Spectacle blind	DN 15-300	ASTM A516-60/65/70
SPFL	Spade	DN 15-600	ASTM A516-60/65/70
SPRT	Spacer ring	DN 15-600	ASTM A516-60/65/70
WNFL	Welding neck flange	DN 15-600	ASTM A105

Fittings

CAPB	Cap bw	DN 15-450	ASTM A234-WPB
CAPB	Cap bw	DN 500-600	ASTM A420-WPL6
E45B	Elbow 45 deg bw	DN 15-450	ASTM A234-WPB
E45B	Elbow 45 deg bw	DN 500-600	ASTM A420-WPL6
E90B	Elbow 90 deg bw	DN 15-450	ASTM A234-WPB
E90B	Elbow 90 deg bw	DN 500-600	ASTM A420-WPL6
TEEB	Tee equal bw	DN 15-450	ASTM A234-WPB
TEEB	Tee equal bw	DN 500-600	ASTM A420-WPL6

Reducing fittings

BNIF	Branch fitting flgd	DN 15-40	ASTM A105
BNIP	Branch fitting plain	DN 15-40	ASTM A105
BROB	Branch outlet bw	DN 150-600	ASTM A105
RECB	Reducer concentric bw	DN 20-450	ASTM A234-WPB
RECB	Reducer concentric bw	DN 500-600	ASTM A420-WPL6
REEB	Reducer eccentric bw	DN 20-450	ASTM A234-WPB
REEB	Reducer eccentric bw	DN 500-600	ASTM A420-WPL6
TERB	Tee reducing bw	DN 20-450	ASTM A234-WPB
TERB	Tee reducing bw	DN 500-600	ASTM A420-WPL6

Valves

BTFB	Ball valve 14313 FB flgd	DN 50-600	Body: ASTM A105/A216-WCB/WCC Trim: AISI 316, Devlon V
BTRF	Ball valve 14313 RB flgd	DN 50-600	Body: ASTM A105/A216-WCB/WCC Trim: AISI 316, Devlon V
BUTF	Butterfly valve triple ex flgd	DN 200-600	Body: ASTM A216-WCB/WCC Trim: CS, Duplex, Stellite
CHDF	Check valve dual plate flgd	DN 300-600	Body: ASTM A216-WCB/WCC Trim: AISI 316, Stellite 6
CHVF	Check valve flgd	DN 15-600	Body: ASTM A105/A216-WCB/WCC Trim: AISI 316, Stellite 6
GAVF	Gate valve flgd	DN 15-600	Body: ASTM A105/A216-WCB/WCC Trim: AISI 316, Stellite 6
GLVF	Globe valve flgd	DN 15-200	Body: ASTM A105/A216-WCB/WCC Trim: AISI 316, Stellite 6
MSBF	Monofl single block ball	DN 15-50	Body: ASTM A350-LF2 Trim: AISI 316, Devlon V
VDBT	Valve ass doub block ball thrd	---	Body: ASTM A350-LF2 Trim: AISI 316, Devlon V

Instruments

TWND	Thermowell	DN 40-40	ASTM B564 UNS N04400
TWNL	Thermowell L=255 mm	---	ASTM B564 UNS N04400
TWNS	Thermowell L=230 mm	---	ASTM B564 UNS N04400

Miscellaneous

GKSW	Gasket spiral wound	DN 15-600	AISI 316, graphite filled CS centring-/SS inner ring
MTRR	Meterrun	DN 15-40	Alloy 400/ASTM A350-LF2 end flanges
ORFS	Orifice flange set	DN 50-600	ASTM A105
STBT	Studbolt with nuts	---	ASTM A193-B7M/A194-2HM

PIPING COMPONENTS

Item description	Nominal MESC	pipe size															
		15	20	25	40	50	80	100	150	200	250	300	350	400	450	500	600
Pipe																	
Pipe	743003	0181	0281	0381	0581	0691	1031	1491	2191	2551	2951	3411	3911	4451	4971		
Pipe	743016															2141	2441
Flanges																	
Blind flange	766210	2081	2121	2161	2181	2201	2221	2241	2261	2281	2301	2321	2341	2361	2381	2401	2421
Spacer ring	768846	0821	0841	0861	0881	0901	0921	0941	0961	0981	1001	1021	1041	1061	1081	1101	1121
Spade	768842	0821	0841	0861	0881	0901	0921	0941	0961	0981	1001	1021	1041	1061	1081	1101	1121
Spectacle blind	768837	0821	0841	0861	0881	0901	0921	0941	0961	0981	1001	1021					
Welding neck flange	766279	7521	7541	7561	7581	7101	7121	7141	7661	7681	7701	7721	7741	7761	7781	7801	7841
Fittings																	
Cap bw	763017	5681	5741	5801	5881	6051	6251	6451	6681	6891	7101	7331	7521	7721	7941		
Cap bw	763117															3981	4091
Elbow 45 deg bw	763034	5681	5741	5801	5881	6051	6251	6451	6681	6891	7101	7331	7521	7721	7941		
Elbow 45 deg bw	763134															3981	4081
Elbow 90 deg bw	763042	5681	5741	5801	5881	6051	6251	6451	6681	6891	7101	7331	7521	7721	7941		
Elbow 90 deg bw	763143															3981	4081
Tee equal bw	763081	5681	5741	5801	5881	6051	6251	6451	6681	6891	7101	7331	7521	7721	7941		
Tee equal bw	763180															3981	4081
Valves																	
Ball valve 14313 FB flgd	770067					6081	6101	6121	6141	6151	6161	6171	6181	6191	6201	6211	6231
Ball valve 14313 RB flgd	770067					1081	1101	1121	1141	1151	1161	1171	1181	1191	1201	1211	1231
Butterfly valve triple ex flgd	774131									1151	1161	1171	1181	1191	1201	1211	1231
Check valve dual plate flgd	776716											1171	1181	1191	1201	1211	1231
Check valve flgd	771005	4031	4041	4051	4071	1081	1101	1121	1141	1151	1161	1171	1181	1191	1201	1211	1231
Gate valve flgd	772004	4031	4041	4051	4071	1081	1101	1121	1141	1151	1161	1171	1181	1191	1201	1211	1231
Globe valve flgd	773005	4031	4041	4051	4071	1081	1101	1121	1141	1151							
Monofl single block ball	770095	4431	4441	4451	4471	4481											
Miscellaneous																	
Gasket spiral wound	854136	4041	4061	4081	4121	4141	4181	4201	4241	4261	4281	4301	4321	4341	4361	4381	4421
Meterrun	766496	0721	0741	0761	0781												
Orifice flange set	766295					0811	0821	0831	1081	1091	1101	1111	1121	1131	1141	1151	1161

REDUCING/PIPING COMPONENTS

Run	x	Br	BROB	RECB	REEB	TERB
20	x	15		7630661371	7630671371	7630880351
25	x	15		7630661471	7630671471	7630880451
25	x	20		7630661571	7630671571	7630880551
40	x	15		7630661671	7630671671	
40	x	20		7630661771	7630671771	7630880751
40	x	25		7630661871	7630671871	7630880851
50	x	20		7630661931	7629621931	
50	x	25		7630661961	7630671961	7630881091
50	x	40		7630662061	7630672061	7630881181
80	x	40		7630662261	7630672261	
80	x	50		7630662351	7630672351	7630881321
100	x	40		7630662501	7630672501	
100	x	50		7630662651	7630672651	7630881531
100	x	80		7630662751	7630672751	7630881651
150	x	50	7679007161			
150	x	80		7630662981	7630672981	7630881821
150	x	100		7630663081	7630673081	7630881951
200	x	50	7679007171			
200	x	80	7679007291			
200	x	100		7630663231	7630673231	7630882131
200	x	150		7630663371	7630673371	7630882261
250	x	50	7679007181			
250	x	80	7679007301			
250	x	100		7629473461	7629623461	7630882611
250	x	150		7630663581	7630673581	7630882721
250	x	200		7630663681	7630673681	7630882931
300	x	50	7679007191			
300	x	80	7679007311			
300	x	100	7679007421			
300	x	150		7630663851	7630673851	7630883111
300	x	200		7630663981	7630673981	7630883301
300	x	250		7630664081	7630674081	7630883521
350	x	50	7679007201			
350	x	80	7679007321			
350	x	100	7679007431			
350	x	150	7679014381	7630664151	7630674151	
350	x	200		7630664241	7630674241	7630883921
350	x	250		7630664391	7630674391	7630884171
350	x	300		7630664491	7630674491	7630884431

Comp.name	Description
BNIF	Branch fitting flgd
BNIP	Branch fitting plain
BROB	Branch outlet bw
RECB	Reducer concentric bw
REEB	Reducer eccentric bw
TERB	Tee reducing bw

Run	x	Br	BROB	RECB	REEB	TERB
400	x	50	7679007211			
400	x	80	7679007331			
400	x	100	7679007441			
400	x	150	7679014401			
400	x	200	7679014581	7630664551	7630674551	
400	x	250		7630664641	7630674641	7630885071
400	x	300		7630664751	7630674751	7630885331
400	x	350		7630664891	7630674891	7630885581
450	x	50	7679007221			
450	x	80	7679007341			
450	x	100	7679007451			
450	x	150	7679014421			
450	x	200	7679014601			
450	x	250		7630665261	7630675261	7630886061
450	x	300		7630665561	7630675561	7630886301
450	x	350		7630665871	7630675871	7630886541
450	x	400		7630666171	7630676171	7630886781
500	x	50	7679007231			
500	x	80	7679007351			
500	x	100	7679007461			
500	x	150	7679014441			
500	x	200	7679014621			
500	x	250	7679014781			
500	x	300		7631666461	7631756461	7631887501
500	x	350		7631666771	7631756771	7631887741
500	x	400		7631667071	7631757071	7631887981
500	x	450		7631667371	7631757371	7631888221
600	x	50	7679007251			
600	x	80	7679007371			
600	x	100	7679007481			
600	x	150	7679014481			
600	x	200	7679014661			
600	x	250	7679014821			
600	x	300				7631888701
600	x	350				7631888941
600	x	400		7631668871	7631758871	7631889181
600	x	450		7631669171	7631759171	7631889421
600	x	500		7631669571	7631759471	7631889661

Branch	Run	pipe	BNIF	BNIP
15	40	- 40	7680372411	7680310361
15	50	- 50	7680372431	7680310371
15	80	- 200	7680372441	7680310381
15	250	- 600	7680372451	7680310391
20	50	- 50	7680372461	7680310401
20	80	- 100	7680372471	7680310411
20	150	- 300	7680372491	7680310431
20	350	- 600	7680372511	7680310441
25	80	- 80	7680372531	7680310451
25	100	- 100	7680372551	7680310461
25	150	- 250	7680372561	7680310471
25	300	- 600	7680372571	7680310491
40	80	- 80	7680372591	7680310511
40	100	- 100	7680372601	7680310521
40	150	- 150	7680372621	7680310531
40	200	- 300	7680372631	7680310551
40	350	- 600	7680372651	7680310571

Thermowell	
Length	MESC number
230	7683375111
255	7683375121
305	7683375131
355	7683375141
405	7683375151
455	7683375161

BOLTING

Boltset standard flange

DN	nr	inch	x mm	MESC number
15	4	1/2	x 80	8138661571
20	4	5/8	x 90	8138662711
25	4	5/8	x 100	8138662731
40	4	3/4	x 110	8138663301
50	8	5/8	x 110	8138662741
80	8	3/4	x 130	8138663341
100	8	7/8	x 150	8138664061
150	12	1	x 180	8138664751
200	12	1 1/8	x 200	8138665251
250	16	1 1/4	x 220	8138665971
300	20	1 1/4	x 230	8138665981
350	20	1 3/8	x 240	8138666461
400	20	1 1/2	x 260	8138666901
450	20	1 5/8	x 280	8138667221
500	24	1 5/8	x 290	8138667241
600	24	1 7/8	x 330	8138667861

Boltset meter run

DN	nr	inch	x mm	MESC number
15	4	1/2	x 120	8138661641
20	4	5/8	x 130	8138662781
25	4	5/8	x 130	8138662781
40	4	3/4	x 140	8138663351

Boltset orifice flange

DN	nr	inch	x mm	MESC number
50	8	5/8	x 130	8138662781
80	8	3/4	x 140	8138663351
100	8	7/8	x 160	8138664071
150	12	1	x 190	8138664771
200	12	1 1/8	x 220	8138665401
250	16	1 1/4	x 240	8138666001
300	20	1 1/4	x 250	8138666091
350	20	1 3/8	x 270	8138666621
400	20	1 1/2	x 290	8138666801
450	20	1 5/8	x 320	8138667281
500	24	1 5/8	x 340	8138667321
600	24	1 7/8	x 390	8138667951

Boltset blind/spacer

DN	nr	inch	x mm	MESC number
15	4	1/2	x 90	8138661591
20	4	5/8	x 100	8138662731
25	4	5/8	x 110	8138662741
40	4	3/4	x 120	8138663321
50	8	5/8	x 130	8138662781
80	8	3/4	x 150	8138663371
100	8	7/8	x 170	8138664091
150	12	1	x 200	8138664971
200	12	1 1/8	x 230	8138665411
250	16	1 1/4	x 260	8138666031
300	20	1 1/4	x 270	8138666051
350	20	1 3/8	x 290	8138666541
400	20	1 1/2	x 320	8138667001
450	20	1 5/8	x 340	8138667321
500	24	1 5/8	x 360	8138667361
600	24	1 7/8	x 420	8138668021

ASSEMBLIES

Drain/vent point DN 15 Fig.I DN15 - 15

Branch: according to branch table	
Blind flange	1 7662102081
Welding neck flange	1 7662797521
Gasket spiral wound	1 8541364041
Studbolt with nuts	4 8138661571

Drain/vent point DN 20 Fig.I DN20 - 40

Branch: according to branch table	
Blind flange	1 7662102121
Welding neck flange	1 7662797541
Gasket spiral wound	1 8541364061
Studbolt with nuts	4 8138662711

Drain/vent point DN 20 Fig.H DN50 - 50

Branch: branch nipple flanged	
Blind flange	1 7662102121
Gasket spiral wound	1 8541364061
Studbolt with nuts	4 8138662711

Drain/vent point DN 25 Fig.H DN80 - 300

Branch: branch nipple flanged	
Blind flange	1 7662102161
Gasket spiral wound	1 8541364081
Studbolt with nuts	4 8138662731

Drain/vent point DN 40 Fig.H DN350 - 600

Branch: branch nipple flanged	
Blind flange	1 7662102181
Gasket spiral wound	1 8541364121
Studbolt with nuts	4 8138663301

Meter run connection DN 15 Fig.AA DN15 - 40

Branch: not applicable	
Valve ass doub block ball thrd	2 7785470431
Gasket spiral wound	2 8541364041

Orifice connection DN 15 Fig.AB DN50 - 600

Branch: not applicable	
Valve ass doub block ball thrd	2 7785470431
Welding neck flange	2 7662797521
Gasket spiral wound	2 8541364041

PI on piping cl coup DN 15 Fig.CB DN15 - 40

Branch: according to branch table	
Valve ass doub block ball thrd	1 7785470431
Welding neck flange	1 7662797521
Gasket spiral wound	1 8541364041

PI on piping cl coup DN 15 Fig.CA DN50 - 600

Branch: branch nipple flanged	
Valve ass doub block ball thrd	1 7785470431
Gasket spiral wound	1 8541364041

PI on piping remote DN 15 Fig.AB DN15 - 40

Branch: according to branch table	
Valve ass doub block ball thrd	1 7785470431
Welding neck flange	1 7662797521
Gasket spiral wound	1 8541364041

PI on piping remote DN 15 Fig.AA DN50 - 600

Branch: branch nipple flanged	
Valve ass doub block ball thrd	1 7785470431
Gasket spiral wound	1 8541364041

Temperature instrum DN 40 Fig.NS DN80 - 100

Branch: branch nipple flanged	
Lap joint flange	1 7662204181
Gasket spiral wound	1 8541364121
Thermowell L=230 mm	1 7683375111
Studbolt with nuts	4 8138663321

Temperature instrum DN 40 Fig.NL DN150 - 600

Branch: branch nipple flanged	
Lap joint flange	1 7662204181
Gasket spiral wound	1 8541364121
Thermowell L=255 mm	1 7683375121
Studbolt with nuts	4 8138663321



CLASS 61432

Design limits

	Temperature (°C)					
	0	50	75	100	125	150
Pressure (Bar ga)						
DN 15- 600	102.1	100.2	96.7	93.2	91.7	90.2

Notes

- Design limits acc. to ASME B16.5 flange rating mat. grp 1.1
- For bending of pipe see PTS 31.38.01.31.
- For basis of design see PTS 31.38.01.10.
- The use of red. bore ball valves is considered most economical. Use full bore ball valves only when necessary for process/operating requirements
- Piston type check valves (DN 15-40) for horizontal mounting only
- The use of triple eccentric butterfly valves and dual plate check valves is considered most economical. Use gate valves and swing check valves only where fouling and abrasion are negatively affecting their functionality

Table of schedules

DN	Schedule
15	160
20	160
25	160
40	160
50	160
80	80
100	80
150	80
200	80
250	80
300	80
350	80
400	80
450	80
500	80
600	80

Branch connections 90 degrees

Run size	Branch Size														
	15	20	25	40	50	80	100	150	200	250	300	350	400	450	500
600	C	C	C	C	E	E	E	E	E	E	B	B	B	B	A
500	C	C	C	C	E	E	E	E	E	E	B	B	B	B	A
450	C	C	C	C	E	E	E	E	E	E	B	B	B	A	
400	C	C	C	C	E	E	E	E	E	E	B	B	B	A	
350	C	C	C	C	E	E	E	E	B	B	B	A			
300	C	C	C	C	E	E	E	B	B	B	A				
250	C	C	C	C	E	E	B	B	B	A					
200	C	C	C	C	E	E	B	B	A						
150	C	C	C	C	E	B	B	A							
100	C	C	C	C	B	B	A								
80	C	C	C	C	B	A									
50	C	C	B	B	A										
40	C	B	B	A											
25	B	B	A												
20	B	A													
15	A														

Code	Explanation of characters
A	Equal tee
B	Reducing tee
C	Branch fitting
E	Branch outlet

Carbon steel		Plant
Class no.	61432	Consignee
ASME rating	CLASS 600	Engineered by
Corrosion allowance	3 mm	Principal
Revision letter	O	Contr. job no.
Revision date	01/2006	Project no.

COMPONENT MATERIAL DESCRIPTION
(For full material description see relevant MESG buying description.)

Pipe

PIPE	Pipe	DN 15-450	ASTM A106-B
PIPE	Pipe	DN 500-600	ASTM A333-6
PISM	Pipe (API 5L-B sml)	DN 15-350	API 5L-B (sml)
PIWS	Pipe (API 5L-B saw)	DN 400-450	API 5L-B (saw)

Flanges

BLFL	Blind flange	DN 15-600	ASTM A105
LJFL	Lap joint flange	---	ASTM A105
SBFL	Spectacle blind	DN 15-300	ASTM A516-60/65/70
SPFL	Spade	DN 15-600	ASTM A516-60/65/70
SPRT	Spacer ring	DN 15-600	ASTM A516-60/65/70
WNFL	Welding neck flange	DN 15-600	ASTM A105

Fittings

CAPB	Cap bw	DN 15-450	ASTM A234-WPB
CAPB	Cap bw	DN 500-600	ASTM A420-WPL6
E45B	Elbow 45 deg bw	DN 15-450	ASTM A234-WPB
E45B	Elbow 45 deg bw	DN 500-600	ASTM A420-WPL6
E90B	Elbow 90 deg bw	DN 15-450	ASTM A234-WPB
E90B	Elbow 90 deg bw	DN 500-600	ASTM A420-WPL6
TEEB	Tee equal bw	DN 15-450	ASTM A234-WPB
TEEB	Tee equal bw	DN 500-600	ASTM A420-WPL6

Reducing fittings

BNIF	Branch fitting flgd	DN 15-40	ASTM A105
BNIP	Branch fitting plain	DN 15-40	ASTM A105
BROB	Branch outlet bw	DN 150-600	ASTM A105
RECB	Reducer concentric bw	DN 20-450	ASTM A234-WPB
RECB	Reducer concentric bw	DN 500-600	ASTM A420-WPL6
REEB	Reducer eccentric bw	DN 20-450	ASTM A234-WPB
REEB	Reducer eccentric bw	DN 500-600	ASTM A420-WPL6
TERB	Tee reducing bw	DN 20-450	ASTM A234-WPB
TERB	Tee reducing bw	DN 500-600	ASTM A420-WPL6

Valves

BTFB	Ball valve 14313 FB flgd	DN 50-600	Body: ASTM A105/A216-WCB/WCC Trim: AISI 316, Devlon V
BTRF	Ball valve 14313 RB flgd	DN 50-600	Body: ASTM A105/A216-WCB/WCC Trim: AISI 316, Devlon V
BUTF	Butterfly valve triple ex flgd	DN 200-600	Body: ASTM A216-WCB/WCC Trim: CS, Duplex, Stellite
CHDF	Check valve dual plate flgd	DN 300-600	Body: ASTM A216-WCB/WCC Trim: AISI 410
CHVF	Check valve flgd	DN 15-40	Body: ASTM A105/A216-WCB/WCC Trim: AISI 316, Stellite 6
CHVF	Check valve flgd	DN 50-600	Body: ASTM A105/A216-WCB/WCC Trim: AISI 410
GAVF	Gate valve flgd	DN 15-40	Body: ASTM A105/A216-WCB/WCC Trim: AISI 316, Stellite 6
GAVF	Gate valve flgd	DN 50-600	Body: ASTM A105/A216-WCB/WCC Trim: AISI 410
GLVF	Globe valve flgd	DN 15-40	Body: ASTM A105/A216-WCB/WCC Trim: AISI 316, Stellite 6
GLVF	Globe valve flgd	DN 50-200	Body: ASTM A105/A216-WCB/WCC Trim: AISI 410
MSBF	Monofl single block ball	DN 15-50	Body: ASTM A350-LF2 Trim: AISI 316, Devlon V
VDBT	Valve ass doub block ball thrd	---	Body: ASTM A350-LF2 Trim: AISI 316, Devlon V

Instruments

TWND	Thermowell	DN 40-40	ASTM B564 UNS N04400
TWNL	Thermowell L=255 mm	---	ASTM B564 UNS N04400
TWNS	Thermowell L=230 mm	---	ASTM B564 UNS N04400

Miscellaneous

GKSW	Gasket spiral wound	DN 15-600	AISI 316, graphite filled CS centring-/SS inner ring
MTRR	Meterrun	DN 15-40	Alloy 400/ASTM A350-LF2 end flanges
ORFS	Orifice flange set	DN 50-600	ASTM A105
STBT	Studbolt with nuts	---	ASTM A193-B7/A194-2H

PIPING COMPONENTS

Item description	MESC	Nominal pipe size															
		15	20	25	40	50	80	100	150	200	250	300	350	400	450	500	600
Pipe																	
Pipe	743005	0201	0301	0401	0601	0731	1091	1571	2191	2551	2951	3411	3911	4451	4971	2141	2461
Pipe	743017																
Pipe (API 5L-B saw)	741317													4451	4921		
Pipe (API 5L-B sml)	741312	0201	0301	0401	0601	0731	1091	1571	2191	2551	2951	3411	3911				
Flanges																	
Blind flange	766210	2081	2121	2161	2181	2201	2221	2241	2261	2281	2301	2321	2341	2361	2381	2401	2421
Spacer ring	768816	0821	0841	0861	0881	0901	0921	0941	0961	0981	1001	1021	1041	1061	1081	1101	1121
Spade	768813	0821	0841	0861	0881	0901	0921	0941	0961	0981	1001	1021	1041	1061	1081	1101	1121
Spectacle blind	768803	0821	0841	0861	0881	0901	0921	0941	0961	0981	1001	1021					
Welding neck flange	766279	8021	8041	8061	8081	8101	7621	7641	7661	7681	7701	7721	7741	7761	7781	7801	7841
Fittings																	
Cap bw	763019	0221	0281	0321	0421	0621	0781	0981	1181	1391	1601	1831	2021	2221	2441	3991	4101
Cap bw	763118																
Elbow 45 deg bw	763038	5721	5781	5821	5921	6121	6281	6481	6681	6891	7101	7331	7521	7721	7941	3991	4101
Elbow 45 deg bw	763138																
Elbow 90 deg bw	763040	5721	5781	5821	5921	6121	6281	6481	6681	6891	7101	7331	7521	7721	7941	3991	4101
Elbow 90 deg bw	763139																
Tee equal bw	763084	5721	5781	5821	5921	6121	6281	6481	6681	6891	7101	7331	7521	7721	7941	4001	4101
Tee equal bw	763184																
Valves																	
Ball valve 14313 FB flgd	770067					6081	6101	6121	6141	6151	6161	6171	6181	6191	6201	6211	6231
Ball valve 14313 RB flgd	770067					1081	1101	1121	1141	1151	1161	1171	1181	1191	1201	1211	1231
Butterfly valve triple ex flgd	774130									1151	1161	1171	1181	1191	1201	1211	1231
Check valve dual plate flgd	776711											1171	1181	1191	1201	1211	1231
Check valve flgd	771005	4031	4041	4051	4071												
Check valve flgd	771020					1081	1101	1121	1141	1151	1161	1171	1181	1191	1201	1211	1231
Gate valve flgd	772004	4031	4041	4051	4071												
Gate valve flgd	772020					1081	1101	1121	1141	1151	1161	1171	1181	1191	1201	1211	1231
Globe valve flgd	773005	4031	4041	4051	4071												
Globe valve flgd	773020					1081	1101	1121	1141	1151							
Monofl single block ball	770095	4431	4441	4451	4471	4481											
Miscellaneous																	
Gasket spiral wound	854136	4041	4061	4081	4121	4141	4181	4201	4241	4261	4281	4301	4321	4341	4361	4381	4421
Meterrun	766496	0721	0741	0761	0781												
Orifice flange set	766295					1421	1061	1071	1081	1091	1101	1111	1121	1131	1141	1151	1161



REDUCING/PIPING COMPONENTS

Run	x	Br	BROB	RECB	REEB	TERB
20	x	15		7630721411	7630731411	7630890391
25	x	15		7630721511	7630731511	7630890491
25	x	20		7630721611	7630731611	7630890591
40	x	15		7630721711	7630731711	
40	x	20		7630721811	7630731811	7630890791
40	x	25		7630721911	7630731911	7630890891
50	x	20		7630721951	7630731951	
50	x	25		7630722011	7630732011	7630891071
50	x	40		7630722111	7630732111	7630891161
80	x	40		7630722291	7630732291	
80	x	50		7630722381	7630732381	7630891381
100	x	40		7630722531	7630732531	
100	x	50		7630722681	7630732681	7630891591
100	x	80		7630722771	7630732771	7630891661
150	x	50	7679021841			
150	x	80		7630722971	7630732971	7630891781
150	x	100		7630723071	7630733071	7630891901
200	x	50	7679021861			
200	x	80	7679013901			
200	x	100		7630723271	7630733271	7630892061
200	x	150		7630723371	7630733371	7630892261
250	x	50	7679021881			
250	x	80	7679013921			
250	x	100		7630723451	7630733451	7630892541
250	x	150		7630723581	7630733581	7630892721
250	x	200		7630723681	7630733681	7630892931
300	x	50	7679021901			
300	x	80	7679013941			
300	x	100	7679014161			
300	x	150		7630723851	7630733851	7630893111
300	x	200		7630723981	7630733981	7630893301
300	x	250		7630724081	7630734081	7630893521
350	x	50	7679021921			
350	x	80	7679013961			
350	x	100	7679014181			
350	x	150	7679014381	7630724151	7630734151	
350	x	200		7630724241	7630734241	7630893921
350	x	250		7630724391	7630734391	7630894171
350	x	300		7630724491	7630734491	7630894431

Comp.name Description

BNIF	Branch fitting flgd
BNIP	Branch fitting plain
BROB	Branch outlet bw
RECB	Reducer concentric bw
REEB	Reducer eccentric bw
TERB	Tee reducing bw

Run	x	Br	BROB	RECB	REEB	TERB
400	x	50	7679021941			
400	x	80	7679013981			
400	x	100	7679014201			
400	x	150	7679014401			
400	x	200	7679014581	7630724551	7630734551	
400	x	250		7630724641	7630734641	7630895071
400	x	300		7630724751	7630734751	7630895331
400	x	350		7630724891	7630734891	7630895581
450	x	50	7679021961			
450	x	80	7679014001			
450	x	100	7679014221			
450	x	150	7679014421			
450	x	200	7679014601			
450	x	250		7630725261	7630735261	7630896061
450	x	300		7630725561	7630735561	7630896301
450	x	350		7630725871	7630735871	7630896541
450	x	400		7630726171	7630736171	7630896781
500	x	50	7679021981			
500	x	80	7679014021			
500	x	100	7679014241			
500	x	150	7679014441			
500	x	200	7679014621			
500	x	250	7679014781			
500	x	300		7631706461	7631716461	7631857501
500	x	350		7631706771	7631716771	7631857741
500	x	400		7631707071	7631717071	7631857981
500	x	450		7631707371	7631717371	7631858221
600	x	50	7679022001			
600	x	80	7679014061			
600	x	100	7679014281			
600	x	150	7679014481			
600	x	200	7679014661			
600	x	250	7679014821			
600	x	300				7631858701
600	x	350				7631858941
600	x	400		7631708871	7631718871	7631859181
600	x	450		7631709171	7631719171	7631859421
600	x	500		7631709471	7631719471	7631859661

Branch	Run	pipe	BNIF	BNIP
15	40	- 600	7680372211	7680310161
20	50	- 50	7680372221	7680310171
20	80	- 150	7680372241	7680310191
20	200	- 600	7680372271	7680310211
25	80	- 250	7680372281	7680310221
25	300	- 600	7680372291	7680310231
40	80	- 80	7680372321	7680310251
40	100	- 200	7680372331	7680310271
40	250	- 500	7680372341	7680310291
40	600	- 600	7680372351	7680310301

Thermowell

Length	MESC number
230	7683375111
255	7683375121
305	7683375131
355	7683375141
405	7683375151
455	7683375161

BOLTING

Boltset standard flange

DN	nr	inch	x	mm	MESC number
15	4	1/2	x	80	8138611571
20	4	5/8	x	90	8138612711
25	4	5/8	x	100	8138612731
40	4	3/4	x	110	8138613301
50	8	5/8	x	110	8138612741
80	8	3/4	x	130	8138613341
100	8	7/8	x	150	8138614061
150	12	1	x	180	8138614751
200	12	1 1/8	x	200	8138615251
250	16	1 1/4	x	220	8138615971
300	20	1 1/4	x	230	8138615981
350	20	1 3/8	x	240	8138616461
400	20	1 1/2	x	260	8138616901
450	20	1 5/8	x	280	8138617221
500	24	1 5/8	x	290	8138617241
600	24	1 7/8	x	330	8138617861

Boltset meter run

DN	nr	inch	x	mm	MESC number
15	4	1/2	x	120	8138611641
20	4	5/8	x	130	8138612781
25	4	5/8	x	130	8138612781
40	4	3/4	x	140	8138613351

Boltset orifice flange

DN	nr	inch	x	mm	MESC number
50	8	5/8	x	130	8138612781
80	8	3/4	x	140	8138613351
100	8	7/8	x	160	8138614071
150	12	1	x	190	8138614771
200	12	1 1/8	x	220	8138615401
250	16	1 1/4	x	240	8138616001
300	20	1 1/4	x	250	8138615861
350	20	1 3/8	x	270	8138616411
400	20	1 1/2	x	290	8138617121
450	20	1 5/8	x	320	8138617281
500	24	1 5/8	x	340	8138617321
600	24	1 7/8	x	390	8138617951

Boltset blind/spacer

DN	nr	inch	x	mm	MESC number
15	4	1/2	x	90	8138611591
20	4	5/8	x	100	8138612731
25	4	5/8	x	110	8138612741
40	4	3/4	x	120	8138613321
50	8	5/8	x	130	8138612781
80	8	3/4	x	150	8138613371
100	8	7/8	x	170	8138614091
150	12	1	x	200	8138614641
200	12	1 1/8	x	230	8138615411
250	16	1 1/4	x	260	8138616031
300	20	1 1/4	x	270	8138616051
350	20	1 3/8	x	290	8138616541
400	20	1 1/2	x	320	8138617001
450	20	1 5/8	x	340	8138617321
500	24	1 5/8	x	360	8138617361
600	24	1 7/8	x	420	8138618021

ASSEMBLIES

Drain/vent point DN 15 Fig.I DN15 - 15

Branch: according to branch table	
Blind flange	1 7662102081
Welding neck flange	1 7662798021
Gasket spiral wound	1 8541364041
Studbolt with nuts	4 8138611571

Drain/vent point DN 20 Fig.I DN20 - 40

Branch: according to branch table	
Blind flange	1 7662102121
Welding neck flange	1 7662798041
Gasket spiral wound	1 8541364061
Studbolt with nuts	4 8138612711

Drain/vent point DN 20 Fig.H DN50 - 50

Branch: branch nipple flanged	
Blind flange	1 7662102121
Gasket spiral wound	1 8541364061
Studbolt with nuts	4 8138612711

Drain/vent point DN 25 Fig.H DN80 - 300

Branch: branch nipple flanged	
Blind flange	1 7662102161
Gasket spiral wound	1 8541364081
Studbolt with nuts	4 8138612731

Drain/vent point DN 40 Fig.H DN350 - 600

Branch: branch nipple flanged	
Blind flange	1 7662102181
Gasket spiral wound	1 8541364121
Studbolt with nuts	4 8138613301

Meter run connection DN 15 Fig.AA DN15 - 40

Branch: not applicable	
Valve ass doub block ball thrd	2 7785470431
Gasket spiral wound	2 8541364041

Orifice connection DN 15 Fig.AB DN50 - 600

Branch: not applicable	
Valve ass doub block ball thrd	2 7785470431
Welding neck flange	2 7662798021
Gasket spiral wound	2 8541364041

PI on piping cl coup DN 15 Fig.CB DN15 - 40

Branch: according to branch table	
Valve ass doub block ball thrd	1 7785470431
Welding neck flange	1 7662798021
Gasket spiral wound	1 8541364041

PI on piping cl coup DN 15 Fig.CA DN50 - 600

Branch: branch nipple flanged	
Valve ass doub block ball thrd	1 7785470431
Gasket spiral wound	1 8541364041

PI on piping remote DN 15 Fig.AB DN15 - 40

Branch: according to branch table	
Valve ass doub block ball thrd	1 7785470431
Welding neck flange	1 7662798021
Gasket spiral wound	1 8541364041

PI on piping remote DN 15 Fig.AA DN50 - 600

Branch: branch nipple flanged	
Valve ass doub block ball thrd	1 7785470431
Gasket spiral wound	1 8541364041

Temperature instrum DN 40 Fig.NS DN80 - 100

Branch: branch nipple flanged	
Lap joint flange	1 7662204181
Gasket spiral wound	1 8541364121
Thermowell L=230 mm	1 7683375111
Studbolt with nuts	4 8138613321

Temperature instrum DN 40 Fig.NL DN150 - 600

Branch: branch nipple flanged	
Lap joint flange	1 7662204181
Gasket spiral wound	1 8541364121
Thermowell L=255 mm	1 7683375121
Studbolt with nuts	4 8138613321



CLASS 61440

Design limits

	Temperature (°C)					
	0	50	75	100	125	150
Pressure (Bar ga)						
DN 15- 600	99.6	99.6	96.4	93.2	91.7	90.2

Notes

- Design limits acc. to ASME B16.5 flange rating mat. grp 1.1, and limited by allowable stress of bolting material
- For bending of pipe see PTS 31.38.01.31.
- For basis of design see PTS 31.38.01.10.
- The use of red. bore ball valves is considered most economical. Use full bore ball valves only when necessary for process/operating requirements
- Piston type check valves (DN 15-40) for horizontal mounting only
- The use of triple eccentric butterfly valves and dual plate check valves is considered most economical. Use gate valves and swing check valves only where fouling and abrasion are negatively affecting their functionality

Table of schedules

DN	Schedule
15	160
20	160
25	160
40	160
50	160
80	80
100	80
150	80
200	80
250	80
300	80
350	80
400	80
450	80
500	80
600	80

Branch connections 90 degrees

Run size	Branch Size															
	15	20	25	40	50	80	100	150	200	250	300	350	400	450	500	600
600	C	C	C	C	E	E	E	E	E	E	B	B	B	B	B	A
500	C	C	C	C	E	E	E	E	E	E	B	B	B	B	A	
450	C	C	C	C	E	E	E	E	E	E	B	B	B	A		
400	C	C	C	C	E	E	E	E	E	E	B	B	B	A		
350	C	C	C	C	E	E	E	E	B	B	B	A				
300	C	C	C	C	E	E	E	B	B	B	A					
250	C	C	C	C	E	E	B	B	B	A						
200	C	C	C	C	E	E	B	B	A							
150	C	C	C	C	E	B	B	A								
100	C	C	C	C	B	B	A									
80	C	C	C	C	B	A										
50	C	C	B	B	A											
40	C	B	B	A												
25	B	B	A													
20	B	A														
15	A															

Code	Explanation of characters
A	Equal tee
B	Reducing tee
C	Branch fitting
E	Branch outlet

Carbon steel Sour		Plant
Class no.	61440	Consignee
ASME rating	CLASS 600	Engineered by
Corrosion allowance	3 mm	Principal
Revision letter	D	Contr. job no.
Revision date	01/2006	Project no.

COMPONENT MATERIAL DESCRIPTION

(For full material description see relevant MES C buying description.)

Pipe

PIPE	Pipe	DN 15-450	ASTM A106-B
PIPE	Pipe	DN 500-600	ASTM A333-6

Flanges

BLFL	Blind flange	DN 15-600	ASTM A105
LJFL	Lap joint flange	---	ASTM A105
SBFL	Spectacle blind	DN 15-300	ASTM A516-60/65/70
SPFL	Spade	DN 15-600	ASTM A516-60/65/70
SPRT	Spacer ring	DN 15-600	ASTM A516-60/65/70
WNFL	Welding neck flange	DN 15-600	ASTM A105

Fittings

CAPB	Cap bw	DN 15-450	ASTM A234-WPB
CAPB	Cap bw	DN 500-600	ASTM A420-WPL6
E45B	Elbow 45 deg bw	DN 15-450	ASTM A234-WPB
E45B	Elbow 45 deg bw	DN 500-600	ASTM A420-WPL6
E90B	Elbow 90 deg bw	DN 15-450	ASTM A234-WPB
E90B	Elbow 90 deg bw	DN 500-600	ASTM A420-WPL6
TEEB	Tee equal bw	DN 15-450	ASTM A234-WPB
TEEB	Tee equal bw	DN 500-600	ASTM A420-WPL6

Reducing fittings

BNIF	Branch fitting flgd	DN 15-40	ASTM A105
BNIP	Branch fitting plain	DN 15-40	ASTM A105
BROB	Branch outlet bw	DN 150-600	ASTM A105
RECB	Reducer concentric bw	DN 20-450	ASTM A234-WPB
RECB	Reducer concentric bw	DN 500-600	ASTM A420-WPL6
REEB	Reducer eccentric bw	DN 20-450	ASTM A234-WPB
REEB	Reducer eccentric bw	DN 500-600	ASTM A420-WPL6
TERB	Tee reducing bw	DN 20-450	ASTM A234-WPB
TERB	Tee reducing bw	DN 500-600	ASTM A420-WPL6

Valves

BTFB	Ball valve 14313 FB flgd	DN 50-600	Body: ASTM A105/A216-WCB/WCC Trim: AISI 316, Devlon V
BTRF	Ball valve 14313 RB flgd	DN 50-600	Body: ASTM A105/A216-WCB/WCC Trim: AISI 316, Devlon V
BUTF	Butterfly valve triple ex flgd	DN 200-600	Body: ASTM A216-WCB/WCC Trim: CS, Duplex, Stellite
CHDF	Check valve dual plate flgd	DN 300-600	Body: ASTM A216-WCB/WCC Trim: AISI 316, Stellite 6
CHVF	Check valve flgd	DN 15-600	Body: ASTM A105/A216-WCB/WCC Trim: AISI 316, Stellite 6
GAVF	Gate valve flgd	DN 15-600	Body: ASTM A105/A216-WCB/WCC Trim: AISI 316, Stellite 6
GLVF	Globe valve flgd	DN 15-200	Body: ASTM A105/A216-WCB/WCC Trim: AISI 316, Stellite 6
MSBF	Monofl single block ball	DN 15-50	Body: ASTM A350-LF2 Trim: AISI 316, Devlon V
VDBT	Valve ass doub block ball thrd	---	Body: ASTM A350-LF2 Trim: AISI 316, Devlon V

Instruments

TWND	Thermowell	DN 40-40	ASTM B564 UNS N04400
TWNL	Thermowell L=255 mm	---	ASTM B564 UNS N04400
TWNS	Thermowell L=230 mm	---	ASTM B564 UNS N04400

Miscellaneous

GKSW	Gasket spiral wound	DN 15-600	AISI 316, graphite filled CS centring-/SS inner ring
MTRR	Meterrun	DN 15-40	Alloy 400/ASTM A350-LF2 end flanges
ORFS	Orifice flange set	DN 50-600	ASTM A105
STBT	Studbolt with nuts	---	ASTM A193-B7M/A194-2HM



PIPING COMPONENTS

Item description	Nominal MESC	pipe size															
		15	20	25	40	50	80	100	150	200	250	300	350	400	450	500	600
Pipe																	
Pipe	743003	0201	0301	0401	0601	0731	1091	1571	2191	2551	2951	3411	3911	4451	4971		
Pipe	743016															2141	2441
Flanges																	
Blind flange	766210	2081	2121	2161	2181	2201	2221	2241	2261	2281	2301	2321	2341	2361	2381	2401	2421
Spacer ring	768846	0821	0841	0861	0881	0901	0921	0941	0961	0981	1001	1021	1041	1061	1081	1101	1121
Spade	768842	0821	0841	0861	0881	0901	0921	0941	0961	0981	1001	1021	1041	1061	1081	1101	1121
Spectacle blind	768837	0821	0841	0861	0881	0901	0921	0941	0961	0981	1001	1021					
Welding neck flange	766279	8021	8041	8061	8081	8101	7621	7641	7661	7681	7701	7721	7741	7761	7781	7801	7841
Fittings																	
Cap bw	763017	5721	5781	5821	5921	6121	6281	6481	6681	6891	7101	7331	7521	7721	7941		
Cap bw	763117															3981	4091
Elbow 45 deg bw	763034	5721	5781	5821	5921	6121	6281	6481	6681	6891	7101	7331	7521	7721	7941		
Elbow 45 deg bw	763134															3981	4081
Elbow 90 deg bw	763042	5721	5781	5821	5921	6121	6281	6481	6681	6891	7101	7331	7521	7721	7941		
Elbow 90 deg bw	763143															3981	4081
Tee equal bw	763081	5721	5781	5821	5921	6121	6281	6481	6681	6891	7101	7331	7521	7721	7941		
Tee equal bw	763180															3981	4081
Valves																	
Ball valve 14313 FB flgd	770067					6081	6101	6121	6141	6151	6161	6171	6181	6191	6201	6211	6231
Ball valve 14313 RB flgd	770067					1081	1101	1121	1141	1151	1161	1171	1181	1191	1201	1211	1231
Butterfly valve triple ex flgd	774131									1151	1161	1171	1181	1191	1201	1211	1231
Check valve dual plate flgd	776716											1171	1181	1191	1201	1211	1231
Check valve flgd	771005	4031	4041	4051	4071	1081	1101	1121	1141	1151	1161	1171	1181	1191	1201	1211	1231
Gate valve flgd	772004	4031	4041	4051	4071	1081	1101	1121	1141	1151	1161	1171	1181	1191	1201	1211	1231
Globe valve flgd	773005	4031	4041	4051	4071	1081	1101	1121	1141	1151							
Monofl single block ball	770095	4431	4441	4451	4471	4481											
Miscellaneous																	
Gasket spiral wound	854136	4041	4061	4081	4121	4141	4181	4201	4241	4261	4281	4301	4321	4341	4361	4381	4421
Meterrun	766496	0721	0741	0761	0781												
Orifice flange set	766295					1421	1061	1071	1081	1091	1101	1111	1121	1131	1141	1151	1161

REDUCING/PIPING COMPONENTS

Run	x	Br	BROB	RECB	REEB	TERB
20	x	15		7630661411	7630671411	7630880391
25	x	15		7630661511	7630671511	7630880491
25	x	20		7630661611	7630671611	7630880591
40	x	15		7630661711	7630671711	
40	x	20		7630661811	7630671811	7630880791
40	x	25		7630661911	7630671911	7630880891
50	x	20		7630661951	7630671951	
50	x	25		7630662011	7630672011	7630881071
50	x	40		7630662111	7630672111	7630881161
80	x	40		7630662291	7630672291	
80	x	50		7630662381	7630672381	7630881381
100	x	40		7630662531	7630672531	
100	x	50		7630662681	7630672681	7630881591
100	x	80		7630662771	7630672771	7630881661
150	x	50	7679021841			
150	x	80		7630662971	7630672971	7630881781
150	x	100		7630663071	7630673071	7630881901
200	x	50	7679021861			
200	x	80	7679013901			
200	x	100		7630663271	7630673271	7630882061
200	x	150		7630663371	7630673371	7630882261
250	x	50	7679021881			
250	x	80	7679013921			
250	x	100		7630663451	7630673451	7630882541
250	x	150		7630663581	7630673581	7630882721
250	x	200		7630663681	7630673681	7630882931
300	x	50	7679021901			
300	x	80	7679013941			
300	x	100	7679014161			
300	x	150		7630663851	7630673851	7630883111
300	x	200		7630663981	7630673981	7630883301
300	x	250		7630664081	7630674081	7630883521
350	x	50	7679021921			
350	x	80	7679013961			
350	x	100	7679014181			
350	x	150	7679014381	7630664151	7630674151	
350	x	200		7630664241	7630674241	7630883921
350	x	250		7630664391	7630674391	7630884171
350	x	300		7630664491	7630674491	7630884431

Comp.name Description

BNIF	Branch fitting flgd
BNIP	Branch fitting plain
BROB	Branch outlet bw
RECB	Reducer concentric bw
REEB	Reducer eccentric bw
TERB	Tee reducing bw

Run	x	Br	BROB	RECB	REEB	TERB
400	x	50	7679021941			
400	x	80	7679013981			
400	x	100	7679014201			
400	x	150	7679014401			
400	x	200	7679014581	7630664551	7630674551	
400	x	250		7630664641	7630674641	7630885071
400	x	300		7630664751	7630674751	7630885331
400	x	350		7630664891	7630674891	7630885581
450	x	50	7679021961			
450	x	80	7679014001			
450	x	100	7679014221			
450	x	150	7679014421			
450	x	200	7679014601			
450	x	250		7630665261	7630675261	7630886061
450	x	300		7630665561	7630675561	7630886301
450	x	350		7630665871	7630675871	7630886541
450	x	400		7630666171	7630676171	7630886781
500	x	50	7679021981			
500	x	80	7679014021			
500	x	100	7679014241			
500	x	150	7679014441			
500	x	200	7679014621			
500	x	250	7679014781			
500	x	300		7631666461	7631756461	7631887501
500	x	350		7631666771	7631756771	7631887741
500	x	400		7631667071	7631757071	7631887981
500	x	450		7631667371	7631757371	7631888221
600	x	50	7679022001			
600	x	80	7679014061			
600	x	100	7679014281			
600	x	150	7679014481			
600	x	200	7679014661			
600	x	250	7679014821			
600	x	300				7631888701
600	x	350				7631888941
600	x	400		7631668871	7631758871	7631889181
600	x	450		7631669171	7631759171	7631889421
600	x	500		7631669571	7631759471	7631889661

Branch	Run	pipe	BNIF	BNIP
15	40	- 600	7680372211	7680310161
20	50	- 50	7680372221	7680310171
20	80	- 150	7680372241	7680310191
20	200	- 600	7680372271	7680310211
25	80	- 250	7680372281	7680310221
25	300	- 600	7680372291	7680310231
40	80	- 80	7680372321	7680310251
40	100	- 200	7680372331	7680310271
40	250	- 500	7680372341	7680310291
40	600	- 600	7680372351	7680310301

Thermowell

Length	MESC number
230	7683375111
255	7683375121
305	7683375131
355	7683375141
405	7683375151
455	7683375161

BOLTING

Boltset standard flange

DN	nr	inch	x mm	MESC number
15	4	1/2	x 80	8138661571
20	4	5/8	x 90	8138662711
25	4	5/8	x 100	8138662731
40	4	3/4	x 110	8138663301
50	8	5/8	x 110	8138662741
80	8	3/4	x 130	8138663341
100	8	7/8	x 150	8138664061
150	12	1	x 180	8138664751
200	12	1 1/8	x 200	8138665251
250	16	1 1/4	x 220	8138665971
300	20	1 1/4	x 230	8138665981
350	20	1 3/8	x 240	8138666461
400	20	1 1/2	x 260	8138666901
450	20	1 5/8	x 280	8138667221
500	24	1 5/8	x 290	8138667241
600	24	1 7/8	x 330	8138667861

Boltset meter run

DN	nr	inch	x mm	MESC number
15	4	1/2	x 120	8138661641
20	4	5/8	x 130	8138662781
25	4	5/8	x 130	8138662781
40	4	3/4	x 140	8138663351

Boltset orifice flange

DN	nr	inch	x mm	MESC number
50	8	5/8	x 130	8138662781
80	8	3/4	x 140	8138663351
100	8	7/8	x 160	8138664071
150	12	1	x 190	8138664771
200	12	1 1/8	x 220	8138665401
250	16	1 1/4	x 240	8138666001
300	20	1 1/4	x 250	8138666091
350	20	1 3/8	x 270	8138666621
400	20	1 1/2	x 290	8138666801
450	20	1 5/8	x 320	8138667281
500	24	1 5/8	x 340	8138667321
600	24	1 7/8	x 390	8138667951

Boltset blind/spacer

DN	nr	inch	x mm	MESC number
15	4	1/2	x 90	8138661591
20	4	5/8	x 100	8138662731
25	4	5/8	x 110	8138662741
40	4	3/4	x 120	8138663321
50	8	5/8	x 130	8138662781
80	8	3/4	x 150	8138663371
100	8	7/8	x 170	8138664091
150	12	1	x 200	8138664971
200	12	1 1/8	x 230	8138665411
250	16	1 1/4	x 260	8138666031
300	20	1 1/4	x 270	8138666051
350	20	1 3/8	x 290	8138666541
400	20	1 1/2	x 320	8138667001
450	20	1 5/8	x 340	8138667321
500	24	1 5/8	x 360	8138667361
600	24	1 7/8	x 420	8138668021

ASSEMBLIES

Drain/vent point DN 15 Fig.I DN15 - 15

Branch: according to branch table	
Blind flange	1 7662102081
Welding neck flange	1 7662798021
Gasket spiral wound	1 8541364041
Studbolt with nuts	4 8138661571

Drain/vent point DN 20 Fig.I DN20 - 40

Branch: according to branch table	
Blind flange	1 7662102121
Welding neck flange	1 7662798041
Gasket spiral wound	1 8541364061
Studbolt with nuts	4 8138662711

Drain/vent point DN 20 Fig.H DN50 - 50

Branch: branch nipple flanged	
Blind flange	1 7662102121
Gasket spiral wound	1 8541364061
Studbolt with nuts	4 8138662711

Drain/vent point DN 25 Fig.H DN80 - 300

Branch: branch nipple flanged	
Blind flange	1 7662102161
Gasket spiral wound	1 8541364081
Studbolt with nuts	4 8138662731

Drain/vent point DN 40 Fig.H DN350 - 600

Branch: branch nipple flanged	
Blind flange	1 7662102181
Gasket spiral wound	1 8541364121
Studbolt with nuts	4 8138663301

Meter run connection DN 15 Fig.AA DN15 - 40

Branch: not applicable	
Valve ass doub block ball thrd	2 7785470431
Gasket spiral wound	2 8541364041

Orifice connection DN 15 Fig.AB DN50 - 600

Branch: not applicable	
Valve ass doub block ball thrd	2 7785470431
Welding neck flange	2 7662798021
Gasket spiral wound	2 8541364041

PI on piping cl coup DN 15 Fig.CB DN15 - 40

Branch: according to branch table	
Valve ass doub block ball thrd	1 7785470431
Welding neck flange	1 7662798021
Gasket spiral wound	1 8541364041

PI on piping cl coup DN 15 Fig.CA DN50 - 600

Branch: branch nipple flanged	
Valve ass doub block ball thrd	1 7785470431
Gasket spiral wound	1 8541364041

PI on piping remote DN 15 Fig.AB DN15 - 40

Branch: according to branch table	
Valve ass doub block ball thrd	1 7785470431
Welding neck flange	1 7662798021
Gasket spiral wound	1 8541364041

PI on piping remote DN 15 Fig.AA DN50 - 600

Branch: branch nipple flanged	
Valve ass doub block ball thrd	1 7785470431
Gasket spiral wound	1 8541364041

Temperature instrum DN 40 Fig.NS DN80 - 100

Branch: branch nipple flanged	
Lap joint flange	1 7662204181
Gasket spiral wound	1 8541364121
Thermowell L=230 mm	1 7683375111
Studbolt with nuts	4 8138663321

Temperature instrum DN 40 Fig.NL DN150 - 600

Branch: branch nipple flanged	
Lap joint flange	1 7662204181
Gasket spiral wound	1 8541364121
Thermowell L=255 mm	1 7683375121
Studbolt with nuts	4 8138663321



Design limits

	Temperature (°C)					
	0	50	75	100	125	150
Pressure (Bar ga)						
DN 15- 600	99.6	99.6	96.4	93.2	91.7	90.2

Notes

- Design limits acc. to ASME B16.5 flange rating mat. grp 1.1, and limited by allowable stress of bolting material
- For bending of pipe see PTS 31.38.01.31.
- For basis of design see PTS 31.38.01.10.
- The use of red. bore ball valves is considered most economical. Use full bore ball valves only when necessary for process/operating requirements
- Piston type check valves (DN 15-40) for horizontal mounting only
- The use of triple eccentric butterfly valves and dual plate check valves is considered most economical. Use gate valves and swing check valves only where fouling and abrasion are negatively affecting their functionality

Table of schedules

DN	Schedule
15	160
20	160
25	160
40	160
50	160
80	80
100	80
150	80
200	80
250	80
300	80
350	80
400	80
450	80
500	80
600	80

Branch connections 90 degrees

Run size	Branch Size															
	15	20	25	40	50	80	100	150	200	250	300	350	400	450	500	600
600	C	C	C	C	E	E	E	E	E	E	B	B	B	B	B	A
500	C	C	C	C	E	E	E	E	E	E	B	B	B	B	A	
450	C	C	C	C	E	E	E	E	E	B	B	B	B	A		
400	C	C	C	C	E	E	E	E	E	B	B	B	B	A		
350	C	C	C	C	E	E	E	E	B	B	B	A				
300	C	C	C	C	E	E	E	B	B	B	A					
250	C	C	C	C	E	E	B	B	B	A						
200	C	C	C	C	E	E	B	B	A							
150	C	C	C	C	E	B	B	A								
100	C	C	C	C	B	B	A									
80	C	C	C	C	B	A										
50	C	C	B	B	A											
40	C	B	B	A												
25	B	B	A													
20	B	A														
15	A															

Code	Explanation of characters
A	Equal tee
B	Reducing tee
C	Branch fitting
E	Branch outlet

Carbon steel Sour		Plant
Class no.	61441	Consignee
ASME rating	CLASS 600	Engineered by
Corrosion allowance	3 mm	Principal
Revision letter	C	Contr. job no.
Revision date	01/2006	Project no.

COMPONENT MATERIAL DESCRIPTION
(For full material description see relevant MES C buying description.)

Pipe

PIPE	Pipe	DN 15-450	ASTM A106-B
PIPE	Pipe	DN 500-600	ASTM A333-6

Flanges

BLFL	Blind flange	DN 15-600	ASTM A105
LJFL	Lap joint flange	---	ASTM A105
SBFL	Spectacle blind	DN 15-300	ASTM A516-60/65/70
SPFL	Spade	DN 15-600	ASTM A516-60/65/70
SPRT	Spacer ring	DN 15-600	ASTM A516-60/65/70
WNFL	Welding neck flange	DN 15-600	ASTM A105

Fittings

CAPB	Cap bw	DN 15-450	ASTM A234-WPB
CAPB	Cap bw	DN 500-600	ASTM A420-WPL6
E45B	Elbow 45 deg bw	DN 15-450	ASTM A234-WPB
E45B	Elbow 45 deg bw	DN 500-600	ASTM A420-WPL6
E90B	Elbow 90 deg bw	DN 15-450	ASTM A234-WPB
E90B	Elbow 90 deg bw	DN 500-600	ASTM A420-WPL6
TEEB	Tee equal bw	DN 15-450	ASTM A234-WPB
TEEB	Tee equal bw	DN 500-600	ASTM A420-WPL6

Reducing fittings

BNIF	Branch fitting flgd	DN 15-40	ASTM A105
BNIP	Branch fitting plain	DN 15-40	ASTM A105
BROB	Branch outlet bw	DN 150-600	ASTM A105
RECB	Reducer concentric bw	DN 20-450	ASTM A234-WPB
RECB	Reducer concentric bw	DN 500-600	ASTM A420-WPL6
REEB	Reducer eccentric bw	DN 20-450	ASTM A234-WPB
REEB	Reducer eccentric bw	DN 500-600	ASTM A420-WPL6
TERB	Tee reducing bw	DN 20-450	ASTM A234-WPB
TERB	Tee reducing bw	DN 500-600	ASTM A420-WPL6

Valves

BTFB	Ball valve 14313 FB flgd	DN 50-600	Body: ASTM A105/A216-WCB/WCC Trim: Alloy 825, Devlon V
BTRF	Ball valve 14313 RB flgd	DN 50-600	Body: ASTM A105/A216-WCB/WCC Trim: Alloy 825, Devlon V
BUTF	Butterfly valve triple ex flgd	DN 200-600	Body: ASTM A216-WCB/WCC Trim: CS, Alloy 625, Stellite
CHDF	Check valve dual plate flgd	DN 300-600	Body: ASTM A216-WCB/WCC Trim: Alloy 825
CHVF	Check valve flgd	DN 15-600	Body: ASTM A105/A216-WCB/WCC Trim: Alloy 825, Stellite 6
GAVF	Gate valve flgd	DN 15-600	Body: ASTM A105/A216-WCB/WCC Trim: Alloy 825, Stellite 6
GLVF	Globe valve flgd	DN 15-200	Body: ASTM A105/A216-WCB/WCC Trim: Alloy 825, Stellite 6
MSBF	Monofl single block ball	DN 15-50	Body: ASTM A350-LF2 Trim: Alloy 825, Devlon V
VDBT	Valve ass doub block ball thrd	---	Body: ASTM A350-LF2 Trim: Alloy 825, Devlon V

Instruments

TWND	Thermowell	DN 40-40	ASTM B564 UNS N04400
TWNL	Thermowell L=255 mm	---	ASTM B564 UNS N04400
TWNS	Thermowell L=230 mm	---	ASTM B564 UNS N04400

Miscellaneous

GKSW	Gasket spiral wound	DN 15-600	AISI 316, graphite filled CS centring-/SS inner ring
MTRR	Meterrun	DN 15-40	Alloy 400/ASTM A350-LF2 end flanges
ORFS	Orifice flange set	DN 50-600	ASTM A105
STBT	Studbolt with nuts	---	ASTM A193-B7M/A194-2HM



PIPING COMPONENTS

Item description	Nominal MESC	pipe size															
		15	20	25	40	50	80	100	150	200	250	300	350	400	450	500	600
Pipe																	
Pipe	743003	0201	0301	0401	0601	0731	1091	1571	2191	2551	2951	3411	3911	4451	4971		
Pipe	743016															2141	2441
Flanges																	
Blind flange	766210	2081	2121	2161	2181	2201	2221	2241	2261	2281	2301	2321	2341	2361	2381	2401	2421
Spacer ring	768846	0821	0841	0861	0881	0901	0921	0941	0961	0981	1001	1021	1041	1061	1081	1101	1121
Spade	768842	0821	0841	0861	0881	0901	0921	0941	0961	0981	1001	1021	1041	1061	1081	1101	1121
Spectacle blind	768837	0821	0841	0861	0881	0901	0921	0941	0961	0981	1001	1021					
Welding neck flange	766279	8021	8041	8061	8081	8101	7621	7641	7661	7681	7701	7721	7741	7761	7781	7801	7841
Fittings																	
Cap bw	763017	5721	5781	5821	5921	6121	6281	6481	6681	6891	7101	7331	7521	7721	7941		
Cap bw	763117															3981	4091
Elbow 45 deg bw	763034	5721	5781	5821	5921	6121	6281	6481	6681	6891	7101	7331	7521	7721	7941		
Elbow 45 deg bw	763134															3981	4081
Elbow 90 deg bw	763042	5721	5781	5821	5921	6121	6281	6481	6681	6891	7101	7331	7521	7721	7941		
Elbow 90 deg bw	763143															3981	4081
Tee equal bw	763081	5721	5781	5821	5921	6121	6281	6481	6681	6891	7101	7331	7521	7721	7941		
Tee equal bw	763180															3981	4081
Valves																	
Ball valve 14313 FB flgd	770091					6081	6101	6121	6141	6151	6161	6171	6181	6191	6201	6211	6231
Ball valve 14313 RB flgd	770091					1081	1101	1121	1141	1151	1161	1171	1181	1191	1201	1211	1231
Butterfly valve triple ex flgd	774142									1151	1161	1171	1181	1191	1201	1211	1231
Check valve dual plate flgd	776714											1171	1181	1191	1201	1211	1231
Check valve flgd	771043	4031	4041	4051	4071	1081	1101	1121	1141	1151	1161	1171	1181	1191	1201	1211	1231
Gate valve flgd	772053	4031	4041	4051	4071	1081	1101	1121	1141	1151	1161	1171	1181	1191	1201	1211	1231
Globe valve flgd	773053	4031	4041	4051	4071	1081	1101	1121	1141	1151							
Monofl single block ball	770097	4431	4441	4451	4471	4481											
Miscellaneous																	
Gasket spiral wound	854136	4041	4061	4081	4121	4141	4181	4201	4241	4261	4281	4301	4321	4341	4361	4381	4421
Meterrun	766496	0721	0741	0761	0781												
Orifice flange set	766295					1421	1061	1071	1081	1091	1101	1111	1121	1131	1141	1151	1161

REDUCING/PIPING COMPONENTS

Run	x	Br	BROB	RECB	REEB	TERB	Run	x	Br	BROB	RECB	REEB	TERB	Branch	Run	pipe	BNIF	BNIP
20	x	15		7630661411	7630671411	7630880391	400	x	50	7679021941				15	40	- 600	7680372211	7680310161
25	x	15		7630661511	7630671511	7630880491	400	x	80	7679013981				20	50	- 50	7680372221	7680310171
25	x	20		7630661611	7630671611	7630880591	400	x	100	7679014201				20	80	- 150	7680372241	7680310191
40	x	15		7630661711	7630671711		400	x	150	7679014401				20	200	- 600	7680372271	7680310211
40	x	20		7630661811	7630671811	7630880791	400	x	200	7679014581	7630664551	7630674551		25	80	- 250	7680372281	7680310221
40	x	25		7630661911	7630671911	7630880891	400	x	250		7630664641	7630674641	7630885071	25	300	- 600	7680372291	7680310231
50	x	20		7630661951	7630671951		400	x	300		7630664751	7630674751	7630885331	40	80	- 80	7680372321	7680310251
50	x	25		7630662011	7630672011	7630881071	400	x	350		7630664891	7630674891	7630885581	40	100	- 200	7680372331	7680310271
50	x	40		7630662111	7630672111	7630881161	450	x	50	7679021961				40	250	- 500	7680372341	7680310291
80	x	40		7630662291	7630672291		450	x	80	7679014001				40	600	- 600	7680372351	7680310301
80	x	50		7630662381	7630672381	7630881381	450	x	100	7679014221				Thermowell Length MESC number				
100	x	40		7630662531	7630672531		450	x	150	7679014421								
100	x	50		7630662681	7630672681	7630881591	450	x	200	7679014601				230			7683375111	
100	x	80		7630662771	7630672771	7630881661	450	x	250		7630665261	7630675261	7630886061	255			7683375121	
150	x	50	7679021841				450	x	300		7630665561	7630675561	7630886301	305			7683375131	
150	x	80		7630662971	7630672971	7630881781	450	x	350		7630665871	7630675871	7630886541	355			7683375141	
150	x	100		7630663071	7630673071	7630881901	450	x	400		7630666171	7630676171	7630886781	405			7683375151	
200	x	50	7679021861				500	x	50	7679021981				455			7683375161	
200	x	80	7679013901				500	x	80	7679014021								
200	x	100		7630663271	7630673271	7630882061	500	x	100	7679014241								
200	x	150		7630663371	7630673371	7630882261	500	x	150	7679014441								
250	x	50	7679021881				500	x	200	7679014621								
250	x	80	7679013921				500	x	250	7679014781								
250	x	100		7630663451	7630673451	7630882541	500	x	300		7631666461	7631756461	7631887501					
250	x	150		7630663581	7630673581	7630882721	500	x	350		7631666771	7631756771	7631887741					
250	x	200		7630663681	7630673681	7630882931	500	x	400		7631667071	7631757071	7631887981					
300	x	50	7679021901				500	x	450		7631667371	7631757371	7631888221					
300	x	80	7679013941				600	x	50	7679022001								
300	x	100	7679014161				600	x	80	7679014061								
300	x	150		7630663851	7630673851	7630883111	600	x	100	7679014281								
300	x	200		7630663981	7630673981	7630883301	600	x	150	7679014481								
300	x	250		7630664081	7630674081	7630883521	600	x	200	7679014661								
350	x	50	7679021921				600	x	250	7679014821								
350	x	80	7679013961				600	x	300									
350	x	100	7679014181				600	x	350									
350	x	150	7679014381	7630664151	7630674151		600	x	400		7631668871	7631758871	7631889181					
350	x	200		7630664241	7630674241	7630883921	600	x	450		7631669171	7631759171	7631889421					
350	x	250		7630664391	7630674391	7630884171	600	x	500		7631669571	7631759471	7631889661					
350	x	300		7630664491	7630674491	7630884431												

Comp.name Description

BNIF	Branch fitting flgd
BNIP	Branch fitting plain
BROB	Branch outlet bw
RECB	Reducer concentric bw
REEB	Reducer eccentric bw
TERB	Tee reducing bw

BOLTING

Boltset standard flange

DN	nr	inch	x mm	MESC number
15	4	1/2	x 80	8138661571
20	4	5/8	x 90	8138662711
25	4	5/8	x 100	8138662731
40	4	3/4	x 110	8138663301
50	8	5/8	x 110	8138662741
80	8	3/4	x 130	8138663341
100	8	7/8	x 150	8138664061
150	12	1	x 180	8138664751
200	12	1 1/8	x 200	8138665251
250	16	1 1/4	x 220	8138665971
300	20	1 1/4	x 230	8138665981
350	20	1 3/8	x 240	8138666461
400	20	1 1/2	x 260	8138666901
450	20	1 5/8	x 280	8138667221
500	24	1 5/8	x 290	8138667241
600	24	1 7/8	x 330	8138667861

Boltset meter run

DN	nr	inch	x mm	MESC number
15	4	1/2	x 120	8138661641
20	4	5/8	x 130	8138662781
25	4	5/8	x 130	8138662781
40	4	3/4	x 140	8138663351

Boltset orifice flange

DN	nr	inch	x mm	MESC number
50	8	5/8	x 130	8138662781
80	8	3/4	x 140	8138663351
100	8	7/8	x 160	8138664071
150	12	1	x 190	8138664771
200	12	1 1/8	x 220	8138665401
250	16	1 1/4	x 240	8138666001
300	20	1 1/4	x 250	8138666091
350	20	1 3/8	x 270	8138666621
400	20	1 1/2	x 290	8138666801
450	20	1 5/8	x 320	8138667281
500	24	1 5/8	x 340	8138667321
600	24	1 7/8	x 390	8138667951

Boltset blind/spacer

DN	nr	inch	x mm	MESC number
15	4	1/2	x 90	8138661591
20	4	5/8	x 100	8138662731
25	4	5/8	x 110	8138662741
40	4	3/4	x 120	8138663321
50	8	5/8	x 130	8138662781
80	8	3/4	x 150	8138663371
100	8	7/8	x 170	8138664091
150	12	1	x 200	8138664971
200	12	1 1/8	x 230	8138665411
250	16	1 1/4	x 260	8138666031
300	20	1 1/4	x 270	8138666051
350	20	1 3/8	x 290	8138666541
400	20	1 1/2	x 320	8138667001
450	20	1 5/8	x 340	8138667321
500	24	1 5/8	x 360	8138667361
600	24	1 7/8	x 420	8138668021

ASSEMBLIES

Drain/vent point DN 15 Fig.I DN15 - 15

Branch: according to branch table	
Blind flange	1 7662102081
Welding neck flange	1 7662798021
Gasket spiral wound	1 8541364041
Studbolt with nuts	4 8138661571

Drain/vent point DN 20 Fig.I DN20 - 40

Branch: according to branch table	
Blind flange	1 7662102121
Welding neck flange	1 7662798041
Gasket spiral wound	1 8541364061
Studbolt with nuts	4 8138662711

Drain/vent point DN 20 Fig.H DN50 - 50

Branch: branch nipple flanged	
Blind flange	1 7662102121
Gasket spiral wound	1 8541364061
Studbolt with nuts	4 8138662711

Drain/vent point DN 25 Fig.H DN80 - 300

Branch: branch nipple flanged	
Blind flange	1 7662102161
Gasket spiral wound	1 8541364081
Studbolt with nuts	4 8138662731

Drain/vent point DN 40 Fig.H DN350 - 600

Branch: branch nipple flanged	
Blind flange	1 7662102181
Gasket spiral wound	1 8541364121
Studbolt with nuts	4 8138663301

Meter run connection DN 15 Fig.AA DN15 - 40

Branch: not applicable	
Valve ass doub block ball thrd	2 7785473431
Gasket spiral wound	2 8541364041

Orifice connection DN 15 Fig.AB DN50 - 600

Branch: not applicable	
Valve ass doub block ball thrd	2 7785473431
Welding neck flange	2 7662798021
Gasket spiral wound	2 8541364041

PI on piping cl coup DN 15 Fig.CB DN15 - 40

Branch: according to branch table	
Valve ass doub block ball thrd	1 7785473431
Welding neck flange	1 7662798021
Gasket spiral wound	1 8541364041

PI on piping cl coup DN 15 Fig.CA DN50 - 600

Branch: branch nipple flanged	
Valve ass doub block ball thrd	1 7785473431
Gasket spiral wound	1 8541364041

PI on piping remote DN 15 Fig.AB DN15 - 40

Branch: according to branch table	
Valve ass doub block ball thrd	1 7785473431
Welding neck flange	1 7662798021
Gasket spiral wound	1 8541364041

PI on piping remote DN 15 Fig.AA DN50 - 600

Branch: branch nipple flanged	
Valve ass doub block ball thrd	1 7785473431
Gasket spiral wound	1 8541364041

Temperature instrum DN 40 Fig.NS DN80 - 100

Branch: branch nipple flanged	
Lap joint flange	1 7662204181
Gasket spiral wound	1 8541364121
Thermowell L=230 mm	1 7683375111
Studbolt with nuts	4 8138663321

Temperature instrum DN 40 Fig.NL DN150 - 600

Branch: branch nipple flanged	
Lap joint flange	1 7662204181
Gasket spiral wound	1 8541364121
Thermowell L=255 mm	1 7683375121
Studbolt with nuts	4 8138663321



CLASS 61450

Design limits

	Temperature (°C)							
	0	50	75	100	125	150	175	200
Pressure (Bar ga)								
DN 15- 600	102.1	100.2	96.7	93.2	91.7	90.2	88.9	87.6

Notes

- Design limits acc. to ASME B16.5 flange rating mat. grp 1.1
- API 5L-B welded pipe (erw and saw) is normally the most economic choice
- For bending of pipe see PTS 31.38.01.31.
- For basis of design see PTS 31.38.01.10.
- Piston type check valves (DN 15-40) for horizontal mounting only
- The use of triple eccentric butterfly valves and dual plate check valves is considered most economical. Use gate valves and swing check valves only where fouling and abrasion are negatively affecting their functionality

Table of schedules

DN	Schedule
15	80
20	80
25	80
40	80
50	40
80	40
100	40
150	80
200	80
250	80
300	80
350	80
400	80
450	80
500	80
600	80

Branch connections 90 degrees

Run size	Branch Size															
	15	20	25	40	50	80	100	150	200	250	300	350	400	450	500	600
600	C	C	C	C	E	E	E	E	E	E	B	B	B	B	B	A
500	C	C	C	C	E	E	E	E	E	E	B	B	B	B	A	
450	C	C	C	C	E	E	E	E	E	E	B	B	B	A		
400	C	C	C	C	E	E	E	E	E	E	B	B	B	A		
350	C	C	C	C	E	E	E	E	B	B	B	A				
300	C	C	C	C	E	E	E	B	B	B	A					
250	C	C	C	C	E	E	B	B	B	A						
200	C	C	C	C	E	E	B	B	A							
150	C	C	C	C	E	B	B	A								
100	C	C	C	C	B	B	A									
80	C	C	C	C	B	A										
50	C	C	B	B	A											
40	C	B	B	A												
25	B	B	A													
20	B	A														
15	A															

Code	Explanation of characters
A	Equal tee
B	Reducing tee
C	Branch fitting
E	Branch outlet

Carbon steel		Plant
Class no.	61450	Consignee
ASME rating	CLASS 600	Engineered by
Corrosion allowance	1 mm	Principal
Revision letter	D	Contr. job no.
Revision date	01/2006	Project no.

COMPONENT MATERIAL DESCRIPTION
(For full material description see relevant MESD buying description.)

Pipe

PIPE	Pipe	DN 15-450	ASTM A106-B
PIPE	Pipe	DN 500-600	ASTM A333-6
PISM	Pipe (API 5L-B sml)	DN 15-350	API 5L-B (sml)
PIWE	Pipe (API 5L-B erw)	DN 150-200	API 5L-B (erw)
PIWS	Pipe (API 5L-B saw)	DN 400-450	API 5L-B (saw)

Flanges

BLFL	Blind flange	DN 15-600	ASTM A105
LJFL	Lap joint flange	---	ASTM A105
SBFL	Spectacle blind	DN 15-300	ASTM A516-60/65/70
SPFL	Spade	DN 15-600	ASTM A516-60/65/70
SPRT	Spacer ring	DN 15-600	ASTM A516-60/65/70
WNFL	Welding neck flange	DN 15-600	ASTM A105

Fittings

CAPB	Cap bw	DN 15-450	ASTM A234-WPB
CAPB	Cap bw	DN 500-600	ASTM A420-WPL6
E45B	Elbow 45 deg bw	DN 15-450	ASTM A234-WPB
E45B	Elbow 45 deg bw	DN 500-600	ASTM A420-WPL6
E90B	Elbow 90 deg bw	DN 15-450	ASTM A234-WPB
E90B	Elbow 90 deg bw	DN 500-600	ASTM A420-WPL6
TEEB	Tee equal bw	DN 15-450	ASTM A234-WPB
TEEB	Tee equal bw	DN 500-600	ASTM A420-WPL6

Reducing fittings

BNIF	Branch fitting flgd	DN 15-40	ASTM A105
BNIP	Branch fitting plain	DN 15-40	ASTM A105
BROB	Branch outlet bw	DN 150-600	ASTM A105
RECB	Reducer concentric bw	DN 20-450	ASTM A234-WPB
RECB	Reducer concentric bw	DN 500-600	ASTM A420-WPL6
REEB	Reducer eccentric bw	DN 20-450	ASTM A234-WPB
REEB	Reducer eccentric bw	DN 500-600	ASTM A420-WPL6
TERB	Tee reducing bw	DN 20-450	ASTM A234-WPB
TERB	Tee reducing bw	DN 500-600	ASTM A420-WPL6

Valves

BUTF	Butterfly valve triple ex flgd	DN 200-600	Body: ASTM A216-WCB/WCC Trim: CS, Duplex, Stellite
CHDF	Check valve dual plate flgd	DN 300-600	Body: ASTM A216-WCB/WCC Trim: AISI 410
CHVF	Check valve flgd	DN 15-40	Body: ASTM A105/A216-WCB/WCC Trim: AISI 316, Stellite 6
CHVF	Check valve flgd	DN 50-600	Body: ASTM A105/A216-WCB/WCC Trim: AISI 410
GAVF	Gate valve flgd	DN 15-40	Body: ASTM A105/A216-WCB/WCC Trim: AISI 316, Stellite 6
GAVF	Gate valve flgd	DN 50-600	Body: ASTM A105/A216-WCB/WCC Trim: AISI 410
GLVF	Globe valve flgd	DN 15-40	Body: ASTM A105/A216-WCB/WCC Trim: AISI 316, Stellite 6
GLVF	Globe valve flgd	DN 50-200	Body: ASTM A105/A216-WCB/WCC Trim: AISI 410

Instruments

TWND	Thermowell	DN 40-40	ASTM B564 UNS N04400
TWNL	Thermowell L=255 mm	---	ASTM B564 UNS N04400
TWNS	Thermowell L=230 mm	---	ASTM B564 UNS N04400

Miscellaneous

GKSW	Gasket spiral wound	DN 15-600	AISI 316, graphite filled CS centring-/SS inner ring
MTRR	Meterrun	DN 15-40	Alloy 400/ASTM A350-LF2 end flanges
ORFS	Orifice flange set	DN 50-600	ASTM A105
STBT	Studbolt with nuts	---	ASTM A193-B7/A194-2H



PIPING COMPONENTS

Item description	MESC	Nominal pipe size															
		15	20	25	40	50	80	100	150	200	250	300	350	400	450	500	600
Pipe																	
Pipe	743005	0181	0281	0381	0581	0691	1031	1491	2191	2551	2951	3411	3911	4451	4971		
Pipe	743017															2141	2461
Pipe (API 5L-B erw)	741314								2191	2551							
Pipe (API 5L-B saw)	741317													4451	4921		
Pipe (API 5L-B sml)	741312	0181	0281	0381	0581	0691	1031	1491	2191	2551	2951	3411	3911				
Flanges																	
Blind flange	766210	2081	2121	2161	2181	2201	2221	2241	2261	2281	2301	2321	2341	2361	2381	2401	2421
Spacer ring	768816	0821	0841	0861	0881	0901	0921	0941	0961	0981	1001	1021	1041	1061	1081	1101	1121
Spade	768813	0821	0841	0861	0881	0901	0921	0941	0961	0981	1001	1021	1041	1061	1081	1101	1121
Spectacle blind	768803	0821	0841	0861	0881	0901	0921	0941	0961	0981	1001	1021					
Welding neck flange	766279	7521	7541	7561	7581	7101	7121	7141	7661	7681	7701	7721	7741	7761	7781	7801	7841
Fittings																	
Cap bw	763019	0181	0241	0301	0381	0551	0751	0951	1181	1391	1601	1831	2021	2221	2441		
Cap bw	763118															3991	4101
Elbow 45 deg bw	763038	5681	5741	5801	5881	6051	6251	6451	6681	6891	7101	7331	7521	7721	7941		
Elbow 45 deg bw	763138															3991	4101
Elbow 90 deg bw	763040	5681	5741	5801	5881	6051	6251	6451	6681	6891	7101	7331	7521	7721	7941		
Elbow 90 deg bw	763139															3991	4101
Tee equal bw	763084	5681	5741	5801	5881	6051	6251	6451	6681	6891	7101	7331	7521	7721	7941		
Tee equal bw	763184															4001	4101
Valves																	
Butterfly valve triple ex flgd	774130									1151	1161	1171	1181	1191	1201	1211	1231
Check valve dual plate flgd	776711											1171	1181	1191	1201	1211	1231
Check valve flgd	771005	4031	4041	4051	4071												
Check valve flgd	771020					1081	1101	1121	1141	1151	1161	1171	1181	1191	1201	1211	1231
Gate valve flgd	772004	4031	4041	4051	4071												
Gate valve flgd	772020					1081	1101	1121	1141	1151	1161	1171	1181	1191	1201	1211	1231
Globe valve flgd	773005	4031	4041	4051	4071												
Globe valve flgd	773020					1081	1101	1121	1141	1151							
Miscellaneous																	
Gasket spiral wound	854136	4041	4061	4081	4121	4141	4181	4201	4241	4261	4281	4301	4321	4341	4361	4381	4421
Meterrun	766496	0721	0741	0761	0781												
Orifice flange set	766295					0811	0821	0831	1081	1091	1101	1111	1121	1131	1141	1151	1161

REDUCING/PIPING COMPONENTS

Run	x	Br	BROB	RECB	REEB	TERB
20	x	15		7630721371	7630731371	7630890351
25	x	15		7630721471	7630731471	7630890451
25	x	20		7630721571	7630731571	7630890551
40	x	15		7630721671	7630731671	
40	x	20		7630721771	7630731771	7630890751
40	x	25		7630721871	7630731871	7630890851
50	x	20		7629461921	7629611921	
50	x	25		7630721961	7630731961	7630891091
50	x	40		7630722061	7630732061	7630891181
80	x	40		7630722261	7630732261	
80	x	50		7630722351	7630732351	7630891321
100	x	40		7630722501	7630732501	
100	x	50		7630722651	7630732651	7630891531
100	x	80		7630722751	7630732751	7630891651
150	x	50	7679007161			
150	x	80		7630722981	7630732981	7630891821
150	x	100		7630723081	7630733081	7630891951
200	x	50	7679007171			
200	x	80	7679007291			
200	x	100		7630723231	7630733231	7630892131
200	x	150		7630723371	7630733371	7630892261
250	x	50	7679007181			
250	x	80	7679007301			
250	x	100		7629463461	7629613461	7630892611
250	x	150		7630723581	7630733581	7630892721
250	x	200		7630723681	7630733681	7630892931
300	x	50	7679007191			
300	x	80	7679007311			
300	x	100	7679007421			
300	x	150		7630723851	7630733851	7630893111
300	x	200		7630723981	7630733981	7630893301
300	x	250		7630724081	7630734081	7630893521
350	x	50	7679007201			
350	x	80	7679007321			
350	x	100	7679007431			
350	x	150	7679014381	7630724151	7630734151	
350	x	200		7630724241	7630734241	7630893921
350	x	250		7630724391	7630734391	7630894171
350	x	300		7630724491	7630734491	7630894431

Comp.name Description

BNIF	Branch fitting flgd
BNIP	Branch fitting plain
BROB	Branch outlet bw
RECB	Reducer concentric bw
REEB	Reducer eccentric bw
TERB	Tee reducing bw

Run	x	Br	BROB	RECB	REEB	TERB
400	x	50	7679007211			
400	x	80	7679007331			
400	x	100	7679007441			
400	x	150	7679014401			
400	x	200	7679014581	7630724551	7630734551	
400	x	250		7630724641	7630734641	7630895071
400	x	300		7630724751	7630734751	7630895331
400	x	350		7630724891	7630734891	7630895581
450	x	50	7679007221			
450	x	80	7679007341			
450	x	100	7679007451			
450	x	150	7679014421			
450	x	200	7679014601			
450	x	250		7630725261	7630735261	7630896061
450	x	300		7630725561	7630735561	7630896301
450	x	350		7630725871	7630735871	7630896541
450	x	400		7630726171	7630736171	7630896781
500	x	50	7679007231			
500	x	80	7679007351			
500	x	100	7679007461			
500	x	150	7679014441			
500	x	200	7679014621			
500	x	250	7679014781			
500	x	300		7631706461	7631716461	7631857501
500	x	350		7631706771	7631716771	7631857741
500	x	400		7631707071	7631717071	7631857981
500	x	450		7631707371	7631717371	7631858221
600	x	50	7679007251			
600	x	80	7679007371			
600	x	100	7679007481			
600	x	150	7679014481			
600	x	200	7679014661			
600	x	250	7679014821			
600	x	300				7631858701
600	x	350				7631858941
600	x	400		7631708871	7631718871	7631859181
600	x	450		7631709171	7631719171	7631859421
600	x	500		7631709471	7631719471	7631859661

Branch	Run	pipe	BNIF	BNIP
15	40	- 40	7680372411	7680310361
15	50	- 50	7680372431	7680310371
15	80	- 200	7680372441	7680310381
15	250	- 600	7680372451	7680310391
20	50	- 50	7680372461	7680310401
20	80	- 100	7680372471	7680310411
20	150	- 300	7680372491	7680310431
20	350	- 600	7680372511	7680310441
25	80	- 80	7680372531	7680310451
25	100	- 100	7680372551	7680310461
25	150	- 250	7680372561	7680310471
25	300	- 600	7680372571	7680310491
40	80	- 80	7680372591	7680310511
40	100	- 100	7680372601	7680310521
40	150	- 150	7680372621	7680310531
40	200	- 300	7680372631	7680310551
40	350	- 600	7680372651	7680310571

Thermowell

Length	MESC number
230	7683375111
255	7683375121
305	7683375131
355	7683375141
405	7683375151
455	7683375161

BOLTING

Boltset standard flange

DN	nr	inch	x	mm	MESC number
15	4	1/2	x	80	8138611571
20	4	5/8	x	90	8138612711
25	4	5/8	x	100	8138612731
40	4	3/4	x	110	8138613301
50	8	5/8	x	110	8138612741
80	8	3/4	x	130	8138613341
100	8	7/8	x	150	8138614061
150	12	1	x	180	8138614751
200	12	1 1/8	x	200	8138615251
250	16	1 1/4	x	220	8138615971
300	20	1 1/4	x	230	8138615981
350	20	1 3/8	x	240	8138616461
400	20	1 1/2	x	260	8138616901
450	20	1 5/8	x	280	8138617221
500	24	1 5/8	x	290	8138617241
600	24	1 7/8	x	330	8138617861

Boltset meter run

DN	nr	inch	x	mm	MESC number
15	4	1/2	x	120	8138611641
20	4	5/8	x	130	8138612781
25	4	5/8	x	130	8138612781
40	4	3/4	x	140	8138613351

Boltset orifice flange

DN	nr	inch	x	mm	MESC number
50	8	5/8	x	130	8138612781
80	8	3/4	x	140	8138613351
100	8	7/8	x	160	8138614071
150	12	1	x	190	8138614771
200	12	1 1/8	x	220	8138615401
250	16	1 1/4	x	240	8138616001
300	20	1 1/4	x	250	8138615861
350	20	1 3/8	x	270	8138616411
400	20	1 1/2	x	290	8138617121
450	20	1 5/8	x	320	8138617281
500	24	1 5/8	x	340	8138617321
600	24	1 7/8	x	390	8138617951

Boltset blind/spacer

DN	nr	inch	x	mm	MESC number
15	4	1/2	x	90	8138611591
20	4	5/8	x	100	8138612731
25	4	5/8	x	110	8138612741
40	4	3/4	x	120	8138613321
50	8	5/8	x	130	8138612781
80	8	3/4	x	150	8138613371
100	8	7/8	x	170	8138614091
150	12	1	x	200	8138614641
200	12	1 1/8	x	230	8138615411
250	16	1 1/4	x	260	8138616031
300	20	1 1/4	x	270	8138616051
350	20	1 3/8	x	290	8138616541
400	20	1 1/2	x	320	8138617001
450	20	1 5/8	x	340	8138617321
500	24	1 5/8	x	360	8138617361
600	24	1 7/8	x	420	8138618021

ASSEMBLIES

Drain/vent point DN 15 Fig.I DN15 - 15

Branch: according to branch table	
Blind flange	1 7662102081
Welding neck flange	1 7662797521
Gasket spiral wound	1 8541364041
Studbolt with nuts	4 8138611571

Drain/vent point DN 20 Fig.I DN20 - 40

Branch: according to branch table	
Blind flange	1 7662102121
Welding neck flange	1 7662797541
Gasket spiral wound	1 8541364061
Studbolt with nuts	4 8138612711

Drain/vent point DN 20 Fig.H DN50 - 50

Branch: branch nipple flanged	
Blind flange	1 7662102121
Gasket spiral wound	1 8541364061
Studbolt with nuts	4 8138612711

Drain/vent point DN 25 Fig.H DN80 - 300

Branch: branch nipple flanged	
Blind flange	1 7662102161
Gasket spiral wound	1 8541364081
Studbolt with nuts	4 8138612731

Drain/vent point DN 40 Fig.H DN350 - 600

Branch: branch nipple flanged	
Blind flange	1 7662102181
Gasket spiral wound	1 8541364121
Studbolt with nuts	4 8138613301

Meter run connection DN 15 Fig.OH DN15 - 40

Branch: not applicable	
Gate valve flgd	2 7720044031
Lap joint flange	2 7662203081
Gasket spiral wound	4 8541364041
Studbolt with nuts	8 8138611571
Studbolt with nuts	8 8138611571

Orifice connection DN 15 Fig.OI DN50 - 600

Branch: not applicable	
Gate valve flgd	2 7720044031
Lap joint flange	2 7662203081
Welding neck flange	2 7662797521
Gasket spiral wound	4 8541364041
Studbolt with nuts	8 8138611571
Studbolt with nuts	8 8138611571

Pressure instrument DN 15 Fig.OJ DN15 - 25

Branch: according to branch table	
Gate valve flgd	1 7720044031
Lap joint flange	1 7662203081
Pipe	1 7430050181
Welding neck flange	1 7662797521
Gasket spiral wound	2 8541364041
Studbolt with nuts	4 8138611571
Studbolt with nuts	4 8138611571

Pressure instrument DN 15 Fig.OH DN40 - 600

Branch: branch nipple flanged	
Gate valve flgd	1 7720044031
Lap joint flange	1 7662203081
Gasket spiral wound	2 8541364041
Studbolt with nuts	4 8138611571
Studbolt with nuts	4 8138611571

Temperature instrum DN 40 Fig.NS DN80 - 100

Branch: branch nipple flanged	
Lap joint flange	1 7662204181
Gasket spiral wound	1 8541364121
Thermowell L=230 mm	1 7683375111
Studbolt with nuts	4 8138613321

Temperature instrum DN 40 Fig.NL DN150 - 600

Branch: branch nipple flanged	
Lap joint flange	1 7662204181
Gasket spiral wound	1 8541364121
Thermowell L=255 mm	1 7683375121
Studbolt with nuts	4 8138613321



CLASS 61460

Design limits

	Temperature (°C)							
	0	50	75	100	125	150	175	200
Pressure (Bar ga)								
DN 15- 600	99.6	99.6	96.4	93.2	91.7	90.2	88.9	87.6

Notes

- Design limits acc. to ASME B16.5 flange rating mat. grp 1.1, and limited by allowable stress of bolting material
- For bending of pipe see PTS 31.38.01.31.
- For basis of design see PTS 31.38.01.10.
- Piston type check valves (DN 15-40) for horizontal mounting only
- The use of triple eccentric butterfly valves and dual plate check valves is considered most economical. Use gate valves and swing check valves only where fouling and abrasion are negatively affecting their functionality

Table of schedules

DN	Schedule
15	80
20	80
25	80
40	80
50	40
80	40
100	40
150	80
200	80
250	80
300	80
350	80
400	80
450	80
500	80
600	80

Branch connections 90 degrees

Run size	Branch Size															
	15	20	25	40	50	80	100	150	200	250	300	350	400	450	500	600
600	C	C	C	C	E	E	E	E	E	E	B	B	B	B	B	A
500	C	C	C	C	E	E	E	E	E	E	B	B	B	B	A	
450	C	C	C	C	E	E	E	E	E	E	B	B	B	A		
400	C	C	C	C	E	E	E	E	E	E	B	B	B	A		
350	C	C	C	C	E	E	E	E	B	B	B	A				
300	C	C	C	C	E	E	E	B	B	B	A					
250	C	C	C	C	E	E	B	B	B	A						
200	C	C	C	C	E	E	B	B	A							
150	C	C	C	C	E	B	B	A								
100	C	C	C	C	B	B	A									
80	C	C	C	C	B	A										
50	C	C	B	B	A											
40	C	B	B	A												
25	B	B	A													
20	B	A														
15	A															

Code	Explanation of characters
A	Equal tee
B	Reducing tee
C	Branch fitting
E	Branch outlet

Carbon steel Sour		Plant
Class no.	61460	Consignee
ASME rating	CLASS 600	Engineered by
Corrosion allowance	1 mm	Principal
Revision letter	D	Contr. job no.
Revision date	01/2006	Project no.

COMPONENT MATERIAL DESCRIPTION

(For full material description see relevant MES C buying description.)

Pipe

PIPE	Pipe	DN 15-450	ASTM A106-B
PIPE	Pipe	DN 500-600	ASTM A333-6

Flanges

BLFL	Blind flange	DN 15-600	ASTM A105
LJFL	Lap joint flange	---	ASTM A105
SBFL	Spectacle blind	DN 15-300	ASTM A516-60/65/70
SPFL	Spade	DN 15-600	ASTM A516-60/65/70
SPRT	Spacer ring	DN 15-600	ASTM A516-60/65/70
WNFL	Welding neck flange	DN 15-600	ASTM A105

Fittings

CAPB	Cap bw	DN 15-450	ASTM A234-WPB
CAPB	Cap bw	DN 500-600	ASTM A420-WPL6
E45B	Elbow 45 deg bw	DN 15-450	ASTM A234-WPB
E45B	Elbow 45 deg bw	DN 500-600	ASTM A420-WPL6
E90B	Elbow 90 deg bw	DN 15-450	ASTM A234-WPB
E90B	Elbow 90 deg bw	DN 500-600	ASTM A420-WPL6
TEEB	Tee equal bw	DN 15-450	ASTM A234-WPB
TEEB	Tee equal bw	DN 500-600	ASTM A420-WPL6

Reducing fittings

BNIF	Branch fitting flgd	DN 15-40	ASTM A105
BNIP	Branch fitting plain	DN 15-40	ASTM A105
BROB	Branch outlet bw	DN 150-600	ASTM A105
RECB	Reducer concentric bw	DN 20-450	ASTM A234-WPB
RECB	Reducer concentric bw	DN 500-600	ASTM A420-WPL6
REEB	Reducer eccentric bw	DN 20-450	ASTM A234-WPB
REEB	Reducer eccentric bw	DN 500-600	ASTM A420-WPL6
TERB	Tee reducing bw	DN 20-450	ASTM A234-WPB
TERB	Tee reducing bw	DN 500-600	ASTM A420-WPL6

Valves

BUTF	Butterfly valve triple ex flgd	DN 200-600	Body: ASTM A216-WCB/WCC Trim: CS, Duplex, Stellite
CHDF	Check valve dual plate flgd	DN 300-600	Body: ASTM A216-WCB/WCC Trim: AISI 316, Stellite 6
CHVF	Check valve flgd	DN 15-600	Body: ASTM A105/A216-WCB/WCC Trim: AISI 316, Stellite 6
GAVF	Gate valve flgd	DN 15-600	Body: ASTM A105/A216-WCB/WCC Trim: AISI 316, Stellite 6
GLVF	Globe valve flgd	DN 15-200	Body: ASTM A105/A216-WCB/WCC Trim: AISI 316, Stellite 6

Instruments

TWND	Thermowell	DN 40-40	ASTM B564 UNS N04400
TWNL	Thermowell L=255 mm	---	ASTM B564 UNS N04400
TWNS	Thermowell L=230 mm	---	ASTM B564 UNS N04400

Miscellaneous

GKSW	Gasket spiral wound	DN 15-600	AISI 316, graphite filled CS centring-/SS inner ring
MTRR	Meterrun	DN 15-40	Alloy 400/ASTM A350-LF2 end flanges
ORFS	Orifice flange set	DN 50-600	ASTM A105
STBT	Studbolt with nuts	---	ASTM A193-B7M/A194-2HM



PIPING COMPONENTS

Item description	MESC	Nominal pipe size															
		15	20	25	40	50	80	100	150	200	250	300	350	400	450	500	600
Pipe																	
Pipe	743003	0181	0281	0381	0581	0691	1031	1491	2191	2551	2951	3411	3911	4451	4971		
Pipe	743016															2141	2441
Flanges																	
Blind flange	766210	2081	2121	2161	2181	2201	2221	2241	2261	2281	2301	2321	2341	2361	2381	2401	2421
Spacer ring	768846	0821	0841	0861	0881	0901	0921	0941	0961	0981	1001	1021	1041	1061	1081	1101	1121
Spade	768842	0821	0841	0861	0881	0901	0921	0941	0961	0981	1001	1021	1041	1061	1081	1101	1121
Spectacle blind	768837	0821	0841	0861	0881	0901	0921	0941	0961	0981	1001	1021					
Welding neck flange	766279	7521	7541	7561	7581	7101	7121	7141	7661	7681	7701	7721	7741	7761	7781	7801	7841
Fittings																	
Cap bw	763017	5681	5741	5801	5881	6051	6251	6451	6681	6891	7101	7331	7521	7721	7941		
Cap bw	763117															3981	4091
Elbow 45 deg bw	763034	5681	5741	5801	5881	6051	6251	6451	6681	6891	7101	7331	7521	7721	7941		
Elbow 45 deg bw	763134															3981	4081
Elbow 90 deg bw	763042	5681	5741	5801	5881	6051	6251	6451	6681	6891	7101	7331	7521	7721	7941		
Elbow 90 deg bw	763143															3981	4081
Tee equal bw	763081	5681	5741	5801	5881	6051	6251	6451	6681	6891	7101	7331	7521	7721	7941		
Tee equal bw	763180															3981	4081
Valves																	
Butterfly valve triple ex flgd	774131									1151	1161	1171	1181	1191	1201	1211	1231
Check valve dual plate flgd	776716											1171	1181	1191	1201	1211	1231
Check valve flgd	771005	4031	4041	4051	4071	1081	1101	1121	1141	1151	1161	1171	1181	1191	1201	1211	1231
Gate valve flgd	772004	4031	4041	4051	4071	1081	1101	1121	1141	1151	1161	1171	1181	1191	1201	1211	1231
Globe valve flgd	773005	4031	4041	4051	4071	1081	1101	1121	1141	1151							
Miscellaneous																	
Gasket spiral wound	854136	4041	4061	4081	4121	4141	4181	4201	4241	4261	4281	4301	4321	4341	4361	4381	4421
Meterrun	766496	0721	0741	0761	0781												
Orifice flange set	766295					0811	0821	0831	1081	1091	1101	1111	1121	1131	1141	1151	1161

REDUCING/PIPING COMPONENTS

Run	x	Br	BROB	RECB	REEB	TERB
20	x	15		7630661371	7630671371	7630880351
25	x	15		7630661471	7630671471	7630880451
25	x	20		7630661571	7630671571	7630880551
40	x	15		7630661671	7630671671	
40	x	20		7630661771	7630671771	7630880751
40	x	25		7630661871	7630671871	7630880851
50	x	20		7630661931	7629621931	
50	x	25		7630661961	7630671961	7630881091
50	x	40		7630662061	7630672061	7630881181
80	x	40		7630662261	7630672261	
80	x	50		7630662351	7630672351	7630881321
100	x	40		7630662501	7630672501	
100	x	50		7630662651	7630672651	7630881531
100	x	80		7630662751	7630672751	7630881651
150	x	50	7679007161			
150	x	80		7630662981	7630672981	7630881821
150	x	100		7630663081	7630673081	7630881951
200	x	50	7679007171			
200	x	80	7679007291			
200	x	100		7630663231	7630673231	7630882131
200	x	150		7630663371	7630673371	7630882261
250	x	50	7679007181			
250	x	80	7679007301			
250	x	100		7629473461	7629623461	7630882611
250	x	150		7630663581	7630673581	7630882721
250	x	200		7630663681	7630673681	7630882931
300	x	50	7679007191			
300	x	80	7679007311			
300	x	100	7679007421			
300	x	150		7630663851	7630673851	7630883111
300	x	200		7630663981	7630673981	7630883301
300	x	250		7630664081	7630674081	7630883521
350	x	50	7679007201			
350	x	80	7679007321			
350	x	100	7679007431			
350	x	150	7679014381	7630664151	7630674151	
350	x	200		7630664241	7630674241	7630883921
350	x	250		7630664391	7630674391	7630884171
350	x	300		7630664491	7630674491	7630884431

Comp.name Description

BNIF	Branch fitting flgd
BNIP	Branch fitting plain
BROB	Branch outlet bw
RECB	Reducer concentric bw
REEB	Reducer eccentric bw
TERB	Tee reducing bw

Run	x	Br	BROB	RECB	REEB	TERB
400	x	50	7679007211			
400	x	80	7679007331			
400	x	100	7679007441			
400	x	150	7679014401			
400	x	200	7679014581	7630664551	7630674551	
400	x	250		7630664641	7630674641	7630885071
400	x	300		7630664751	7630674751	7630885331
400	x	350		7630664891	7630674891	7630885581
450	x	50	7679007221			
450	x	80	7679007341			
450	x	100	7679007451			
450	x	150	7679014421			
450	x	200	7679014601			
450	x	250		7630665261	7630675261	7630886061
450	x	300		7630665561	7630675561	7630886301
450	x	350		7630665871	7630675871	7630886541
450	x	400		7630666171	7630676171	7630886781
500	x	50	7679007231			
500	x	80	7679007351			
500	x	100	7679007461			
500	x	150	7679014441			
500	x	200	7679014621			
500	x	250	7679014781			
500	x	300		7631666461	7631756461	7631887501
500	x	350		7631666771	7631756771	7631887741
500	x	400		7631667071	7631757071	7631887981
500	x	450		7631667371	7631757371	7631888221
600	x	50	7679007251			
600	x	80	7679007371			
600	x	100	7679007481			
600	x	150	7679014481			
600	x	200	7679014661			
600	x	250	7679014821			
600	x	300				7631888701
600	x	350				7631888941
600	x	400		7631668871	7631758871	7631889181
600	x	450		7631669171	7631759171	7631889421
600	x	500		7631669571	7631759471	7631889661

Branch	Run	pipe	BNIF	BNIP
15	40	- 40	7680372411	7680310361
15	50	- 50	7680372431	7680310371
15	80	- 200	7680372441	7680310381
15	250	- 600	7680372451	7680310391
20	50	- 50	7680372461	7680310401
20	80	- 100	7680372471	7680310411
20	150	- 300	7680372491	7680310431
20	350	- 600	7680372511	7680310441
25	80	- 80	7680372531	7680310451
25	100	- 100	7680372551	7680310461
25	150	- 250	7680372561	7680310471
25	300	- 600	7680372571	7680310491
40	80	- 80	7680372591	7680310511
40	100	- 100	7680372601	7680310521
40	150	- 150	7680372621	7680310531
40	200	- 300	7680372631	7680310551
40	350	- 600	7680372651	7680310571

Thermowell

Length	MESC number
230	7683375111
255	7683375121
305	7683375131
355	7683375141
405	7683375151
455	7683375161

BOLTING

Boltset standard flange

DN	nr	inch	x mm	MESC number
15	4	1/2	x 80	8138661571
20	4	5/8	x 90	8138662711
25	4	5/8	x 100	8138662731
40	4	3/4	x 110	8138663301
50	8	5/8	x 110	8138662741
80	8	3/4	x 130	8138663341
100	8	7/8	x 150	8138664061
150	12	1	x 180	8138664751
200	12	1 1/8	x 200	8138665251
250	16	1 1/4	x 220	8138665971
300	20	1 1/4	x 230	8138665981
350	20	1 3/8	x 240	8138666461
400	20	1 1/2	x 260	8138666901
450	20	1 5/8	x 280	8138667221
500	24	1 5/8	x 290	8138667241
600	24	1 7/8	x 330	8138667861

Boltset meter run

DN	nr	inch	x mm	MESC number
15	4	1/2	x 120	8138661641
20	4	5/8	x 130	8138662781
25	4	5/8	x 130	8138662781
40	4	3/4	x 140	8138663351

Boltset orifice flange

DN	nr	inch	x mm	MESC number
50	8	5/8	x 130	8138662781
80	8	3/4	x 140	8138663351
100	8	7/8	x 160	8138664071
150	12	1	x 190	8138664771
200	12	1 1/8	x 220	8138665401
250	16	1 1/4	x 240	8138666001
300	20	1 1/4	x 250	8138666091
350	20	1 3/8	x 270	8138666621
400	20	1 1/2	x 290	8138666801
450	20	1 5/8	x 320	8138667281
500	24	1 5/8	x 340	8138667321
600	24	1 7/8	x 390	8138667951

Boltset blind/spacer

DN	nr	inch	x mm	MESC number
15	4	1/2	x 90	8138661591
20	4	5/8	x 100	8138662731
25	4	5/8	x 110	8138662741
40	4	3/4	x 120	8138663321
50	8	5/8	x 130	8138662781
80	8	3/4	x 150	8138663371
100	8	7/8	x 170	8138664091
150	12	1	x 200	8138664971
200	12	1 1/8	x 230	8138665411
250	16	1 1/4	x 260	8138666031
300	20	1 1/4	x 270	8138666051
350	20	1 3/8	x 290	8138666541
400	20	1 1/2	x 320	8138667001
450	20	1 5/8	x 340	8138667321
500	24	1 5/8	x 360	8138667361
600	24	1 7/8	x 420	8138668021

ASSEMBLIES

Drain/vent point DN 15 Fig.I DN15 - 15

Branch: according to branch table	
Blind flange	1 7662102081
Welding neck flange	1 7662797521
Gasket spiral wound	1 8541364041
Studbolt with nuts	4 8138661571

Drain/vent point DN 20 Fig.I DN20 - 40

Branch: according to branch table	
Blind flange	1 7662102121
Welding neck flange	1 7662797541
Gasket spiral wound	1 8541364061
Studbolt with nuts	4 8138662711

Drain/vent point DN 20 Fig.H DN50 - 50

Branch: branch nipple flanged	
Blind flange	1 7662102121
Gasket spiral wound	1 8541364061
Studbolt with nuts	4 8138662711

Drain/vent point DN 25 Fig.H DN80 - 300

Branch: branch nipple flanged	
Blind flange	1 7662102161
Gasket spiral wound	1 8541364081
Studbolt with nuts	4 8138662731

Drain/vent point DN 40 Fig.H DN350 - 600

Branch: branch nipple flanged	
Blind flange	1 7662102181
Gasket spiral wound	1 8541364121
Studbolt with nuts	4 8138663301

Meter run connection DN 15 Fig.OH DN15 - 40

Branch: not applicable	
Gate valve flgd	2 7720044031
Lap joint flange	2 7662203081
Gasket spiral wound	4 8541364041
Studbolt with nuts	8 8138661571
Studbolt with nuts	8 8138661571

Orifice connection DN 15 Fig.OI DN50 - 600

Branch: not applicable	
Gate valve flgd	2 7720044031
Lap joint flange	2 7662203081
Welding neck flange	2 7662797521
Gasket spiral wound	4 8541364041
Studbolt with nuts	8 8138661571
Studbolt with nuts	8 8138661571

Pressure instrument DN 15 Fig.OJ DN15 - 25

Branch: according to branch table	
Gate valve flgd	1 7720044031
Lap joint flange	1 7662203081
Pipe	1 7430030181
Welding neck flange	1 7662797521
Gasket spiral wound	2 8541364041
Studbolt with nuts	4 8138661571
Studbolt with nuts	4 8138661571

Pressure instrument DN 15 Fig.OH DN40 - 600

Branch: branch nipple flanged	
Gate valve flgd	1 7720044031
Lap joint flange	1 7662203081
Gasket spiral wound	2 8541364041
Studbolt with nuts	4 8138661571
Studbolt with nuts	4 8138661571

Temperature instrum DN 40 Fig.NS DN80 - 100

Branch: branch nipple flanged	
Lap joint flange	1 7662204181
Gasket spiral wound	1 8541364121
Thermowell L=230 mm	1 7683375111
Studbolt with nuts	4 8138663321

Temperature instrum DN 40 Fig.NL DN150 - 600

Branch: branch nipple flanged	
Lap joint flange	1 7662204181
Gasket spiral wound	1 8541364121
Thermowell L=255 mm	1 7683375121
Studbolt with nuts	4 8138663321

