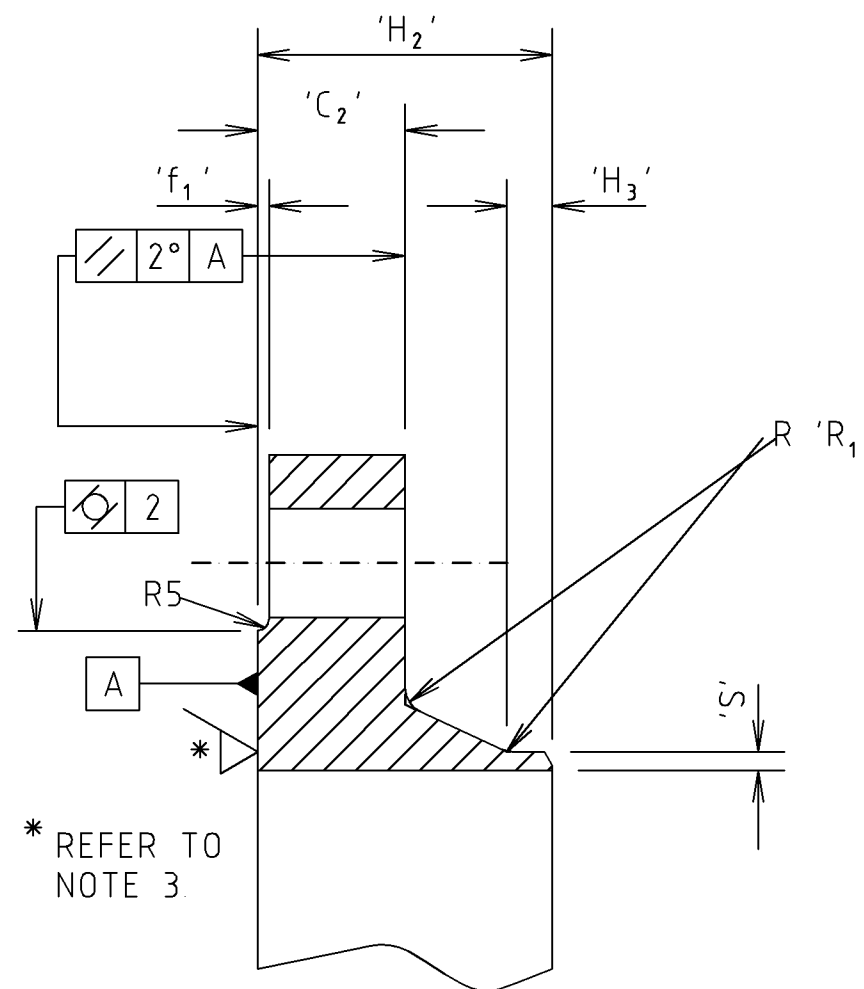
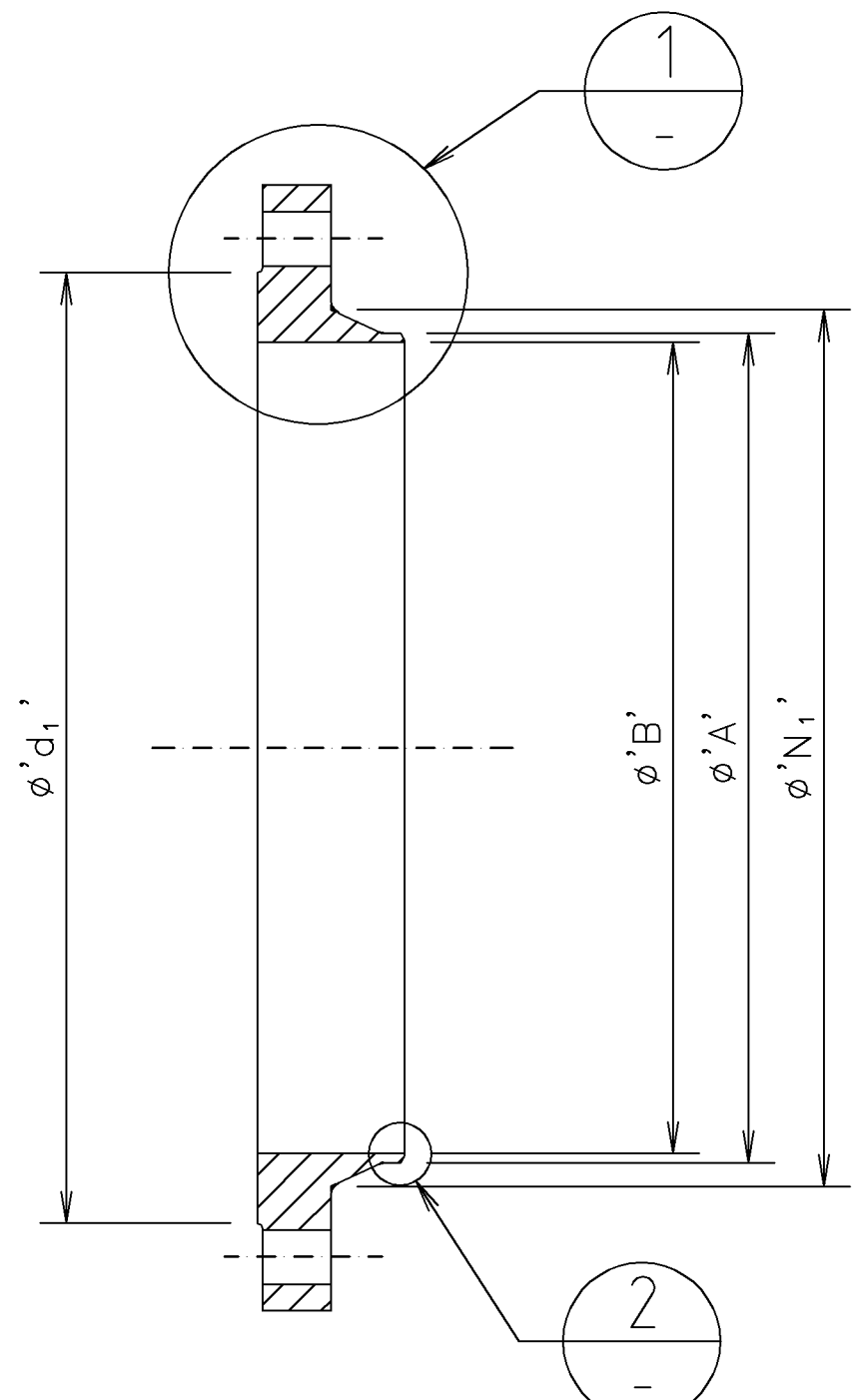
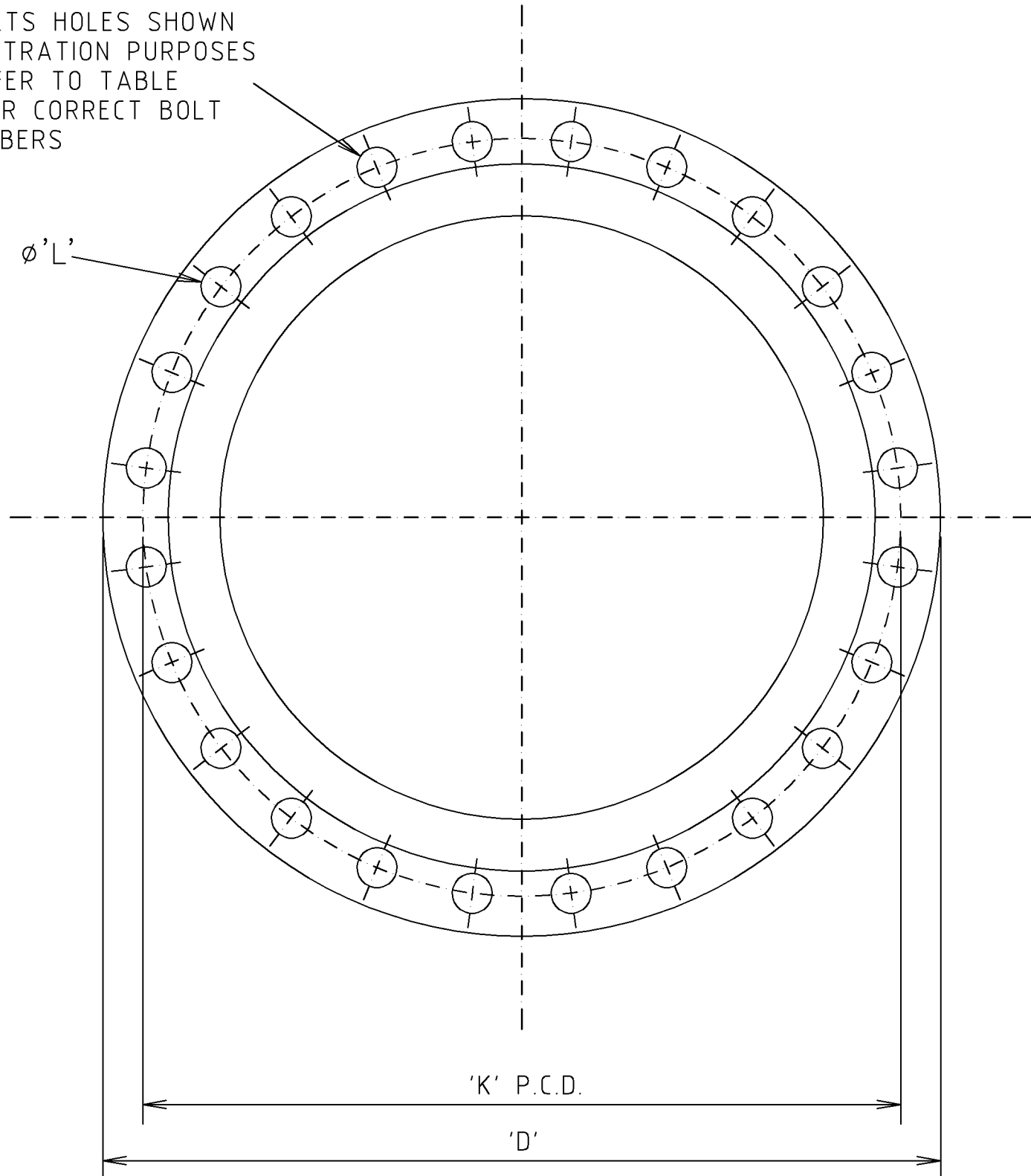
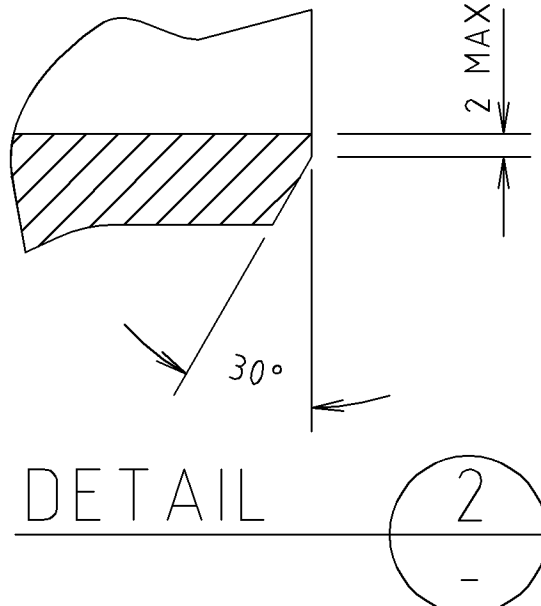


NOTE: BOLTS HOLES SHOWN FOR ILLUSTRATION PURPOSES ONLY REFER TO TABLE BELOW FOR CORRECT BOLT HOLE NUMBERS



DETAIL 1



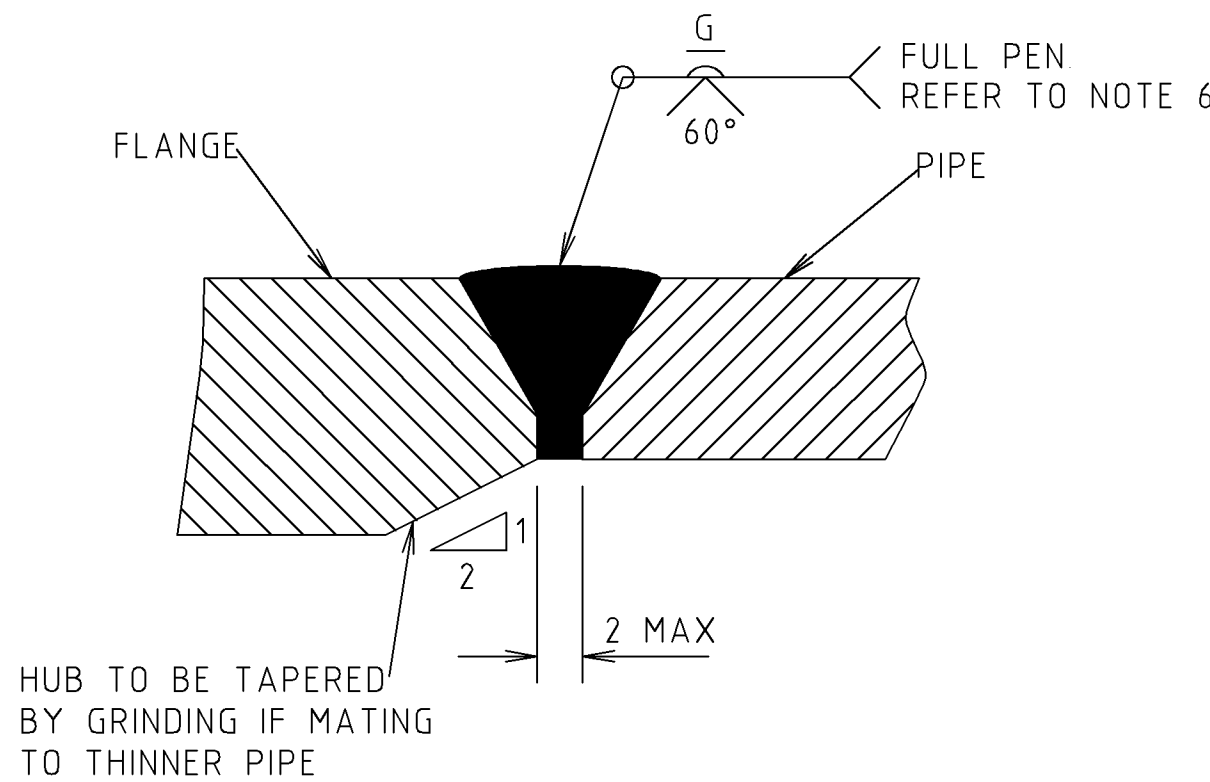
DETAIL 2

PN40 FLANGE DIMENSIONS (TYPE 11 - "WELD NECK")

DN	MATING DIMENSIONS					'A'	'B'	'N ₁ '	'd ₁ '	'H ₂ '	'C ₂ '	'f ₁ '	'H ₃ '	'R ₁ '	'S'	APPROX. WEIGHT (KG)	MINIMUM ALLOWABLE PIPE THICKNESS**	MIN REQUIRED BOLT-UP TORQUE (Nm)
	'D'	'K'	'L'	NUMBER	SIZE													
700	995	900	48	24	M45	711	697	785	840	144	64	5	20	12	7	210	7	2800
800	1140	1030	56	24	M52	813	797	887	960	159	77	5	22	12	8	310	8	4290
900	1250	1140	56	28	M52	914	896	984	1070	171	87	5	24	12	9	400	9	4600
1000	1360	1250	56	28	M52	1016	996	1096	1180	183	94	5	24	16	10	500	10	5570
1200	1575	1460	62	32	M56	1219	1195	1295	1380	210	111	5	24	16	12	710	12	6830
1400	1795	1680	62	36	M56	1422	1390	1498	1600	229	130	5	24	16	16	1010	16	8210

*IF ONLY FRONT FACE IS MACHINED TOLERANCE TO BE +0.7.

**PIPE THICKNESS BASED ON AS3678 Gr300 PIPE IN ACCORDANCE WITH AS1579



FLANGE TO PIPE WELD DETAIL

GENERAL NOTES

1 INSPECTION AND TESTING
INSPECTION AND TESTING OF THE FORGED MATERIAL SHALL BE CARRIED OUT IN ACCORDANCE WITH THE APPROPRIATE STANDARD
IE ASTM A105 OR AS1448
IN ADDITION, MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A788 SUPPLEMENTARY REQUIREMENT S20, CARRIED OUT IN ACCORDANCE WITH STANDARD PRACTICES ASTM A 388 & A939
ACCEPTANCE LEVEL BR FOR LONGITUDINAL WAVE EXAMINATION AND ACCEPTANCE LEVEL S FOR SHEAR WAVE EXAMINATION

2 DATA SHEETS & MATERIAL TEST CERTIFICATES ARE TO BE SUPPLIED WITH ALL FLANGES.

3 GASKET FACE SURFACE TO BE MACHINED TO EN1092-1.2007 AS FOLLOWS:

METHOD OF MACHINING	RADIUS OF TOOL NOSE mm	R _a * µm		R _z * µm	
		MIN	MAX	MIN	MAX
TURNING	10	3.2	12.5	12.5	50

*ROUGHNESS AVERAGE R_a IS THE ARITHMETIC AVERAGE OF THE ABSOLUTE VALUES OF THE ROUGHNESS PROFILE ORDINATES

MEAN ROUGHNESS DEPTH R_z IS THE ARITHMETIC MEAN VALUE OF THE SINGLE ROUGHNESS DEPTHS R_{zi} OF CONSECUTIVE SAMPLING LENGTHS.

4 SURFACE FINISHES TO BE TO EN1092-1.2007 AS FOLLOWS:

OUTER DIAMETER µm		CENTRE BORE DIAMETER µm		SPOT FACING
R _a MAX.	R _z MAX.	R _a MAX.	R _z MAX.	
25	160	25	160	YES*

*REFER TO NOTE 5

5 ANY SPOT FACING OR BACK FACING SHALL NOT REDUCE THE FLANGE THICKNESS TO LESS THAN THE FLANGE THICKNESS SPECIFIED WHEN SPOT FACING IS USED, THE DIAMETER SHALL BE LARGE ENOUGH TO ACCOMMODATE THE OUTSIDE DIAMETER OF THE EQUIVALENT NORMAL SERIES OF WASHERS IN ACCORDANCE WITH EN ISO 887 (IDENTICAL TO AS1237) FOR THE BOLT SIZE BEING FITTED THE BEARING SURFACES FOR THE BOLTING SHALL BE PARALLEL TO THE FLANGE FACE WITHIN THE LIMITS SPECIFIED IN DETAIL 1 WHEN THE FLANGE IS FACED BACK A MINIMUM FILLET RADIUS OF 3.2mm SHALL BE MAINTAINED

6 BUTT WELD MADE BEFORE WELDING OTHER SIDE

7 WELD INSPECTION AS PER EN13445.5 GROUP 1,2,3 & 4

8 FLANGES TO BE COATED WITH SILICONE BASED WATER REPELLENT AS PER WATER CORPORATIONS STANDARD DS 60 GASKET FACE COATING TO BE REMOVED PRIOR TO FLANGE ASSEMBLY.

9 FLANGE JOINTS SHALL BE SQUARE TO PIPE WITHIN 0.25° OR 2mm WHICHEVER IS THE LESSER AND THE LAYBACK SHALL BE WITHIN THE RANGE OF 0 - 0.75° (LAYBACK AS PER AS1579 IS "THE ANGULAR DISTORTION OF A FLANGE FROM IT'S ORIGINAL PLANE DUE TO WELDING THE FLANGE ONTO A PIPE OF FITTING")

DESIGN DATA

DESIGN STANDARD.	EN1591-1.2001
DIMENSIONAL SPECIFICATIONS.	EN1092-1.2007
FLANGE PRESSURE RATING.	PN40
SERVICE.	WATER
DESIGN PRESSURE.	4000 kPa
MAXIMUM HYDROTEST PRESSURE.	5720 kPa
DESIGN TEMPERATURE.	50°C
FLANGE MATERIAL.	ASTM A350 LF3 (CARBON STEEL FORGING) AS1448 GrK5 (EQUIVALENT)

FASTENER SPECIFICATIONS

BOLT DIMENSIONAL SPECIFICATION.	AS1110.1
NUT DIMENSIONAL SPECIFICATION.	AS1112.1
BOLT & NUT MECHANICAL PROPERTIES	AS4291.1.2000 - GRADE 8.8 (HOT-DIP GALVANISED)
WASHER TOLERANCES & MECHANICAL PROPERTIES	AS1237
GALVANISING.	AS1214
FLANGE BOLTING PROCEDURE.	WATER CORP. DS 38-03

GASKET SPECIFICATIONS

SPECIFICATION.	EN1591 & EN13445
GASKET TYPE.	NON-METALLIC FLAT
GASKET MATERIAL.	NON-ASBESTOS COMPRESSED FIBRE
GASKET PROPERTIES:	
"E ₀ "	500MPa
"K ₁ "	20
"m"	1.6
"g _c OR P _{QR} "	0.9
"Q _{0 min} "	35MPa
"Q _{max} "	70MPa
"Q _{smin} "	10MPa
"Q _{smax} "	120MPa

HATCH REFERENCE NUMBER
H333468-0000-50-035-0001

HATCH

C	10/2012		TITLE LINE 3 AMENDED	AC	MC	MC
B	03/2010		REDRAWN IN AUTOCAD	AC	GC	MC
ISSUE	DATE	GRID	REVISION	DRN	REC	APPD

DESIGN SURVEY NONE	VERTICAL DATUM NONE	DES CALC D. HEATON	NORTH POINT
	COORDINATE SYS NONE	DES CHD M. CALLARD	
ASCON SURVEY NONE	DES REF	DRN L. ZUIDEMA	
		Q.C. CHD M. KEATING	

HATCH

RECOMMENDED	01/12/2009
M.L.HOLMES	
ENGINEERING CONSULTANT	
APPROVED	01/12/2009
S.W.EVANS	
PROJECT MECHANICAL ENGINEER	



MECHANICAL STANDARD DRAWING
MECHANICAL DESIGN STANDARD DS 38-03
PN40 RAISED FACE WELD NECK FLANGES

FILE	PLAN	CAD	ISSUE	ORIGINAL SHEET SIZE
PROJECT	JZ39-91-9	C	MF	A1