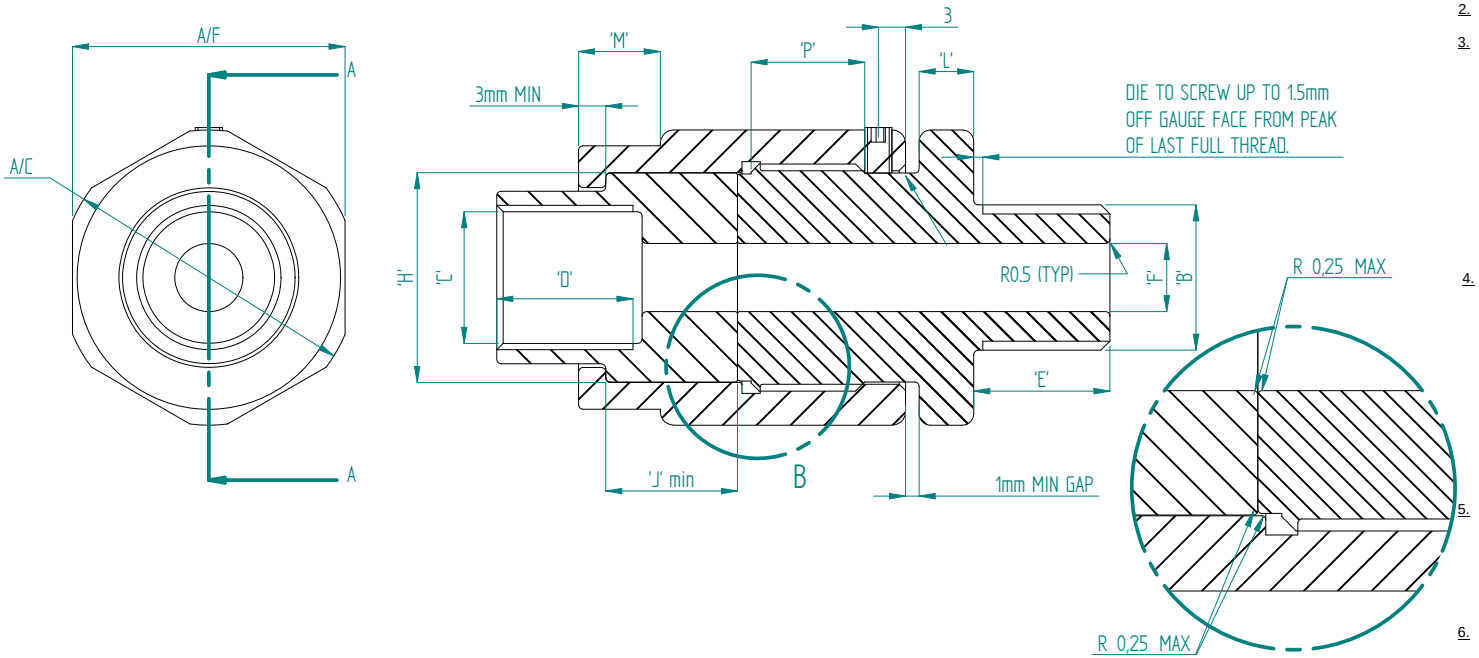
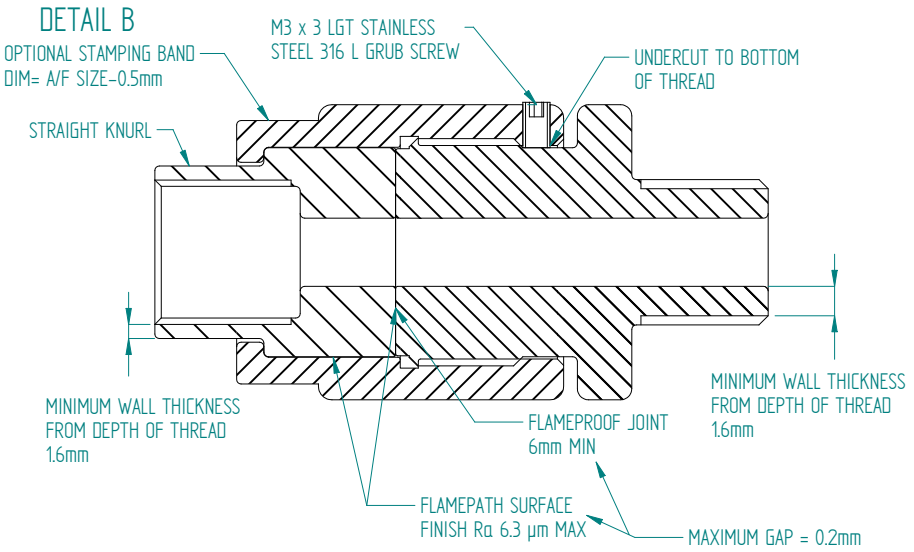


1. CERTIFICATION: These male to female type 481 union components meet the requirements of IECEx / ATEX for ExdIIC installations and are suitable for fitment into or onto suitably threaded entries in Exd equipment as part of the equipments overall apparatus certification.
2. TESTS: These male to female type 481 union components meet with the requirements of IEC / EN 60079-0 and IEC/EN 60079-I .
3. MATERIAL: The following materials may be used :

Material	Minimum Tensile Strength	Elongation on 5.65 So^1/2
	N/mm^2	%
Brass Copper content less than 60%	340	10
Steel	360	6
Stainless Steel	480	40
Aluminium	340	10

4. GAUGING & THREADS: The threads below may be used.
The threads can be of the same shape and form on each end of the adaptor or alternatively, the threads size and form may be different. In which case, the bore relating to the smallest male thread size shall apply and the hexagon size relating to the larger thread size applies. The difference in thread sizes shall be no more than one step size.
METRIC (THREAD ANGLE :- 60º) Thread Details - BS 3643 : Part 2 : Table 1 - Tolerance Class 6g, STEEL CONDUIT (THREAD ANGLE :- 55º) Thread details - BS 31 : 1940 : Table A - Tolerance Class 'B'. BSPP (THREAD ANGLE :- 55º) Thread details - BS 2779 : 1986 : Table 2 - Tolerance Class 'A'. PG (THREAD ANGLE :- 80º) Thread details - PG THREAD - Din 40430 - 1971 N.P.T. MALE (THREAD ANGLE :- 60º). Thread Details - B1.20.1 - 1983 NPT Male - Table 2, NPT female gauging flush to 2 turns large using an L1 plug gauge.
NPSM – ANSI/ASME – B1.20.1-1983 – Table 6 – Tolerance Class '2A'.
All parallel threads shall have a minimum length of 15mm and at least 8 full threads.
5. STAMPING: to be stamped on the components hexagon sections or optional stamping band.
HAWKE 481 / Thread types and sizes ExdIICGb Baseefa11ATEX0155U. IECEx BAS11.0077U
II2G Year of manufacture Temperature Rating OL7 0NA UK 1180
e.g. HAWKE 481 / M20 x 1.5 – M20 x 1.5 ExdIICGb Baseefa11ATEX0155U. IECEx BAS11.0077U
II2G Year of manufacture -60°C to + 80°C OL7 0NA UK 1180
Note:- EPL details may be applied to the packaging only if required.
The IECEX or the ATEX marking may be omitted to suit customer's requirements.
6. Additional sealing methods may be required to ensure the IP rating of the equipment is maintained when using these union components.

Male Thread size	Female thread	Minimum Female entry thread length	Male entry thread length Metric	Minimum Male entry thread length NPT	Max Bore Diameter	Flameproof spigot diameter:- Male tolerance + 0.05- 0 Female tolerance + 0.05 - 0	Flameproof spigot length Min	Minimum Hexagon A/F size	A/C Size	Hexagon width	Optional stamping band width	Minimum Thread length	Minimum Threads engaged
B	C	D	E	E	F	H	J	K	Z	L	M	P	P
M16 x1.5	M16 x1.5	16	15		7.5	23	19	30	32.5	6	9	15	8 x 1.5 PITCH
1/2NPT		16		20.5	7.5	23	19	30	32.5	6	9	15	8 x 1.5 PITCH
M20 x 1.5	M20 x 1.5	16	15		13.3	28.3	19	36	39.5	6	9	15	8 x 1.5 PITCH
3/4NPT		16		20.8	13.3	28.3	19	36	39.5	6	9	15	8 x 1.5 PITCH
M25 x 1.5	M25 x 1.5	16	15		16	35	19	46	50.5	6	9	15	8 x 1.5 PITCH
1NPT		16		25.65	16	35	19	46	50.5	6	9	15	8 x 1.5 PITCH
M32 x 1.5	M32 x 1.5	16	15		23	37	19	46	50.5	6	9	15	8 x 1.5 PITCH
11/4NPT		16		26.27	23	38	19	46	50.5	6	9	15	8 x 1.5 PITCH
M40 x 1.5	M40 x 1.5	16	15		33	48	19	55	60.5	6	9	15	8 x 1.5 PITCH
11/2 NPT		16		26.69	33	48	19	55	60.5	6	9	15	8 x 1.5 PITCH
M50 x 1.5	M50 x 1.5	16	15		44.5	58.5	19	80	88	6	9	15	8 x 1.5 PITCH
2NPT		16		27.53	44.5	58.5	19	80	88	6	9	15	8 x 1.5 PITCH
M63 x 1.5	M63 x 1.5	16	15		55	70.3	19	80	88	6	9	15	8 x 1.5 PITCH
21/2 NPT		16		40.56	55	70.3	19	80	88	6	9	15	8 x 1.5 PITCH
M75 x 1.5	M75 x 1.5	16	15		64	82.9	19	95	104	6	9	15	8 x 1.5 PITCH
3 NPT		16		42.15	64	82.9	19	95	104	6	9	15	8 x 1.5 PITCH



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REMOVE ALL BURRS AND SHARP EDGES USING MINIMUM CHAMFER OR RADIUS. PARTICULARLY REMOVE ALL BURRS FROM START AND FINISH OF THREADS

3RD ANGLE PROJECTION

DO NOT SCALE IF IN DOUBT ASK

GENERAL TOLERANCES
LINEAR ± 0.15mm
ANGULAR ± 0°30'

UNLESS OTHERWISE STATED

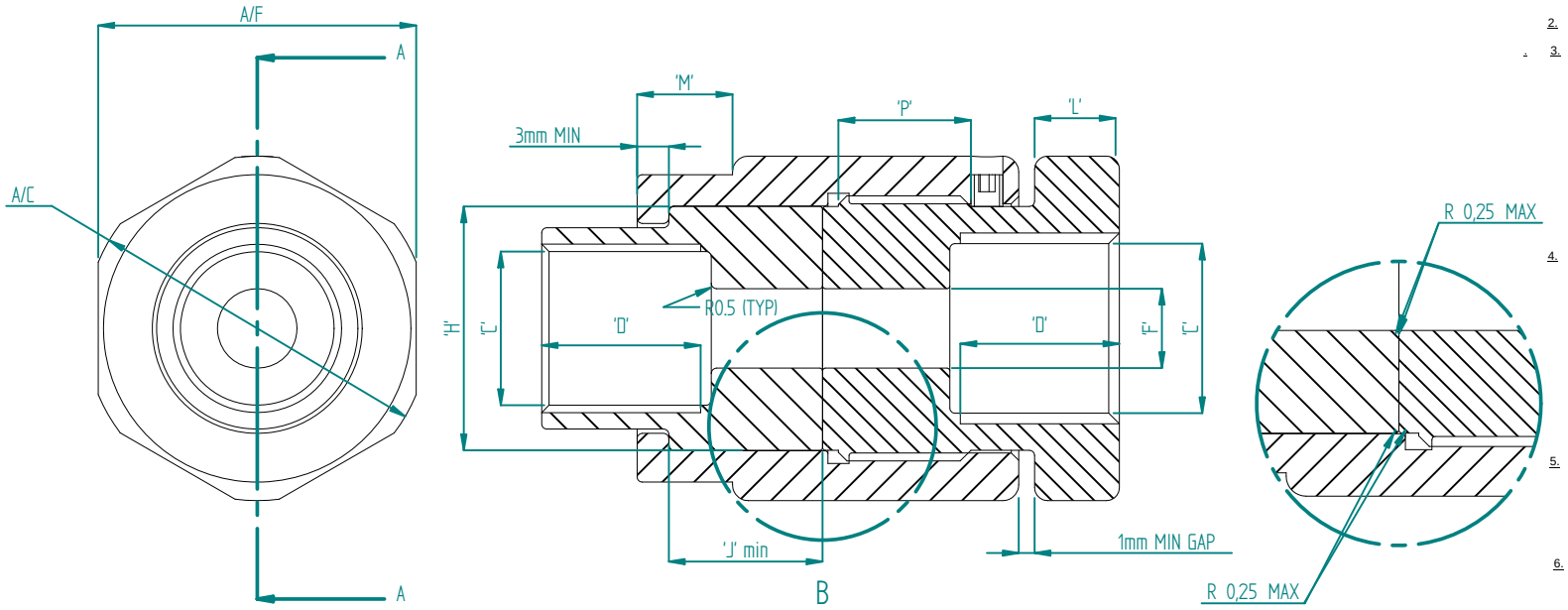
MODIFICATION	DATE/SIG	DCN	ISSUE
COLUMNS J,M,AND P ALTERED. DRAWING VIEW UPDATED. FLAME PATH FACE CHANGED TO 6mm. COLUMN N REMOVED.	31/01/13 AD	HCG13/022	B
FIRST ISSUE	09/01/11		A

DRN	JC
CHD	
DATE	09/01/11
UNITS	mm

TITLE
Exd UNION MALE TO FEMALE

DRG. No.
481

SCALE ??? SHEET 1 OF 1



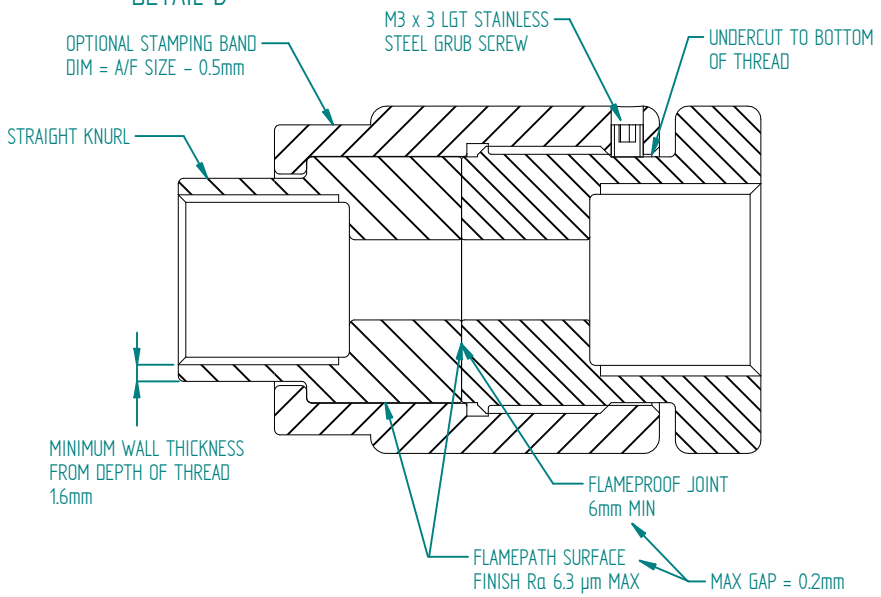
1. CERTIFICATION: These female to female type 482 union components meet the requirements of IECEx / ATEX for ExdIIC installations and are suitable for fitment into or onto suitably threaded entries in Exd equipment as part of the equipments overall apparatus certification.
2. TESTS: These female to female type 482 union components meet with the requirements of IEC / EN 60079-0 and IEC/EN 60079-I .
3. MATERIAL: The following materials may be used :

Material	Minimum Tensile Strength	Elongation on 5.65 So^1/2
	N/mm^2	%
Brass Copper content less than 60%	340	10
Steel	360	6
Stainless Steel	480	40
Aluminium	340	10

4. GAUGING & THREADS: The threads shown below may be used.
The threads can be of the same shape and form on each end of the adaptor or alternatively, the threads size and form may be different. In which case, the bore relating to the smallest male thread size shall apply and the hexagon size relating to the larger thread size applies. The difference in thread sizes shall be no more than one step size.
METRIC (THREAD ANGLE :- 60º) Thread Details - BS 3643 : Part 2 : Table 1 - Tolerance Class 6g, STEEL CONDUIT (THREAD ANGLE :- 55º) Thread details - BS 31 : 1940 : Table A - Tolerance Class 'B'. BSPP (THREAD ANGLE :- 55º) Thread details - BS 2779 : 1986 : Table 2 - Tolerance Class 'A'. PG (THREAD ANGLE :- 80º) Thread details - PG THREAD - Din 40430 - 1971 N.P.T. MALE (THREAD ANGLE :- 60º). Thread Details - B1.20.1 - 1983 NPT Male - Table 2, NPT female gauging flush to 2 turns large using an L1 plug gauge.
NPSM – ANSI/ASME – B1.20.1-1983 – Table 6 – Tolerance Class '2A'.
Any other thread conforming to Table 3 of EN/IEC 60079-1
All parallel threads shall have a minimum length of 15mm and at least 8 full threads.
5. STAMPING: to be stamped on the components hexagon sections or optional stamping band.
HAWKE 482 / Thread types and sizes ExdIICGb Baseefa11ATEX0155U. IECEx BAS11.0077U
II2G Year of manufacture Temperature Rating OL7 0NA UK 1180
e.g. HAWKE 482 / M20 x 1.5 – M20 x 1.5 ExdIICGb Baseefa11ATEX0155U. IECEx BAS11.0077U
II2G Year of manufacture -60°C to + 80°C OL7 0NA UK 1180
Note:- EPL details may be applied to the packaging only if required.
The IECEX or the ATEX marking may be omitted to suit customer's requirements.
6. Additional sealing methods may be required to ensure the IP rating of the equipment is maintained when using these union components.

Thread size	Minimum Female entry thread length	Minimum Female entry thread length	Max Bore Diameter	Flameproof spigot diameter:- Male and Female tolerance +0.05 - 0	Flameproof spigot length Min	Minimum Hexagon A/F size	A/C Size	Hexagon width	Optional stamping band width	Minimum Thread length	Minimum Threads engaged
C	D	D	F	H	J	K	Z	L	M	P	P
M16 x1.5	16	16	7.5	23	19	30	32.5	7	9	15	8 x 1.5 PITCH
1/2 NPT	16	16	7.5	23	19	30	32.5	7	9	15	8 x 1.5 PITCH
M20 x1.5	16	16	13.3	28.3	19	36	39.5	7	9	15	8 x 1.5 PITCH
3/4 NPT	16	16	13.3	28.3	19	36	39.5	7	9	15	8 x 1.5 PITCH
M25 x1.5	16	16	16	35	19	46	50.5	7	9	15	8 x 1.5 PITCH
1 NPT	16	16	16	35	19	46	50.5	7	9	15	8 x 1.5 PITCH
M32 x1.5	16	16	23	38	19	46	50.5	7	9	15	8 x 1.5 PITCH
1 1/4 NPT	16	16	23	38	19	46	50.5	7	9	15	8 x 1.5 PITCH
M40 x1.5	16	16	33	48	19	55	60.5	7	9	15	8 x 1.5 PITCH
1 1/2 NPT	16	16	33	48	19	55	60.5	7	9	15	8 x 1.5 PITCH
M50 x1.5	16	16	44.5	58.5	19	80	88	7	9	15	8 x 1.5 PITCH
2 NPT	16	16	44.5	58.5	19	80	88	7	9	15	8 x 1.5 PITCH
M63 x1.5	16	16	55	70.3	19	80	88	7	9	15	8 x 1.5 PITCH
2 1/2 NPT	16	16	55	70.3	19	80	88	7	9	15	8 x 1.5 PITCH
M75 x1.5	16	16	64	82.9	19	95	104	7	9	15	8 x 1.5 PITCH
3 NPT	16	16	64	82.9	19	95	104	7	9	15	8 x 1.5 PITCH

DETAIL B



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LINEAR ± 0.15mm
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COLUMNS J,M AND P ALTERED, NPT DATA ADDED. DRAWING VIEW UPDATED. FLAME PATH FACE CHANGED TO 6mm. COLUMN N REMOVED	31/01/13 AD	HCG13/022	B
FIRST ISSUE	10/01/11		A
MODIFICATION	DATE/SIG	DCN	ISSUE

DRN
CHD
DATE 10/01/11
UNITS mm

TITLE
Exd UNION FEMALE TO FEMALE

DRG. No.
482

SCALE ???
SHEET 1 OF 1