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Metallic (Exd/Exe) adaptors and reducers – AD-U / RD-U Series

Technical specification

Redapt AD-U and RD-U series of explosion-proof metallic adaptors and reducers provide a method of matching electrical thread forms on hazardous area approved equipment whilst ensuring the integrity and Ex approval of the installation is maintained.

Manufactured from hexagon material to facilitate easy installation, they are also supplied complete with a captive O-ring seal. The O-ring is located within a recess on the face of the product, helping to protect the O-ring from the environmental damage and ensuring it is not displaced during installation.

Designed for hazardous area applications and the range is certified to protection concepts Exd "Flameproof" and Exe "Increased Safety" for use in Zone 1 and Zone 2 applications. Also certified Ex tb “dust tight” for use in Zone 21 & 22 applications.

Type AD-U

Type RD-U

Certifications and compliances

Code of protection categories

ATEX:	I M2/II 2 GD
IECEx:	Ex db I/IIC Mb/Gb, Ex eb I/IIC Mb/Gb, Ex tb IIIC Db (Aluminium not mining)
CSA:	RD-U Ex db / Ex eb IIC Gb IP66/67/68; Cl I Zn 1 AEx eb / AEx db IIC Gb IP54; Cl I Div1 Gr ABCD Cl II Gr EFG Cl III; Type 3
	AD-U Ex db / Ex eb IIC Gb IP66/67/68; Cl I Zn 1 AEx eb / AEx db IIC Gb IP54; Cl I Div1 Gr ABCD Cl II Gr EFG Cl III; Type 3

Compliance standards

ATEX:	EN 60079-0, EN 60079-1, EN 60079-7, EN 60079-31
IECEx:	IEC 60079-0, IEC 60079-1, IEC 60079-7, IEC 60079-31
CSA:	CAN/CSA C22.2 No. 60079-0, No. 60079-1, No. 60079-7, ANSI/UL 60079-0, 60079-1, 60079-7, UL1203

Certificate details

ATEX:	ITS16ATEX101339X
IECEx:	IECEx ITS 16.0013X
CSA:	CSA01CA1248014X
EAC:	RU C-GB.МЮ62.B.06225
CCoE:	P362565/1 (AD-U) ; P485509 (RD-U)
INMETRO:	NCC 18.0133 X

Ingress protection (IP):

IP64 when fitted without sealing washer. IP66/IP68 when fitted with O-ring or thread sealant according to manufacturer’s instructions.

Temperature

Temperature will depend on the type of O-ring used:

None: -60°C to ~ +200°C
Nitrile: -30°C to +80°C (supplied as standard)
EPDM: -50°C to +100°C
Neoprene: -40°C to +80°C
Viton: -20°C to +180°C
Silicone: -60°C to +180°C
Fluorosilicone: -60°C to +130°C
The maximum temperature is limited to +150°C for Group I applications

Plating options

Electroless nickel
Zinc
Chromated
Others on application

Threadforms

Metric
NPT
Pg
ISO Pipe (BSP)
ET

Note : stainless steel may not have the roll marking collar.

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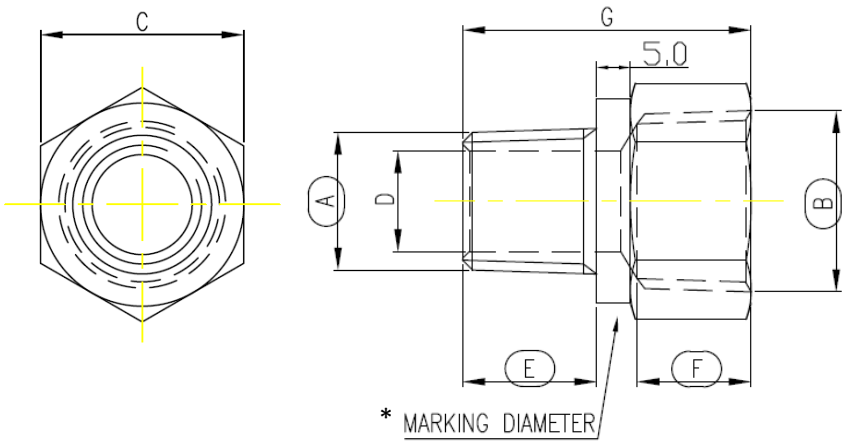
Metallic (Exd/Exe) adaptors and reducers - Dimensions

AD-U



A	B	C	D	E	F	G
Male	**Female**	**A/F**	**Bore**	**Thread length**	**Thread depth**	**Total length**
M16	M16	23.4	10.0	16.0	17.0	38.5
	M20	23.4	10.0	16.0	17.0	38.5
M20	M20	27.0	14.0	16.0	17.0	38.5
	M25	30.5	14.0	16.0	17.0	38.5
M25	M25	31.8	18.0	16.0	17.0	38.5
	M32	37.6	18.0	16.0	17.0	38.5
M32	M32	37.6	24.0	16.0	17.0	38.5
	M40	47.2	24.0	16.0	17.0	38.5
M40	M40	47.2	32.0	16.0	16.5	38.5
	M50	55.9	32.0	16.0	17.0	39.5
M50	M50	57.2	41.0	16.0	17.0	39.5
	M63	70.1	41.0	16.0	17.0	39.5
M63	M63	70.1	53.0	16.0	17.0	39.5
	M75	90.2	53.0	16.0	17.0	39.5
M75	M75	90.2	64.0	16.0	16.5	39.5
	M90	106.4	64.0	16.0	22.0	45.0
M90	M90	106.4	78.0	20.0	22.0	49.0
	M100	114.3	78.0	20.0	22.0	49.0
M100	M100	114.3	88.0	20.0	22.0	49.0

A	B	C	D	E	F	G
Male	**Female**	**A/F**	**Bore**	**Thread length**	**Thread depth**	**Total length**
1/2 NPT	1/2 NPT	23.4	15.0	20.0	20.0	46.0
	3/4 NPT	30.5	15.0	20.0	20.0	46.0
3/4 NPT	3/4 NPT	30.5	19.0	20.0	20.0	46.0
	1 NPT	37.6	19.0	20.0	25.0	51.0
1 NPT	1 NPT	37.6	25.0	25.0	25.0	56.0
	1.1/4 NPT	47.2	25.0	25.0	25.0	56.0
1.1/4 NPT	1.1/4 NPT	47.2	32.0	25.0	25.0	56.0
	1.1/2 NPT	55.9	32.0	25.0	25.0	57.0
1.1/2 NPT	1.1/2 NPT	55.9	38.0	25.0	25.0	57.0
	2 NPT	70.1	38.0	25.0	25.0	57.0
2 NPT	2 NPT	70.1	49.0	25.0	25.0	57.0
	2.1/2 NPT	80.0	49.0	25.0	35.0	67.0
2.1/2 NPT	2.1/2 NPT	80.0	60.0	35.0	35.0	77.0
	3 NPT	106.4	60.0	35.0	35.0	77.0
3 NPT	3 NPT	106.4	75.0	35.0	35.0	77.0
	3.1/2 NPT	114.3	75.0	35.0	35.0	78.0
	4 NPT	127.0	75.0	35.0	35.0	78.0
3.1/2 NPT	3.1/2 NPT	114.3	88.0	35.0	35.0	78.0
	4 NPT	127.0	88.0	35.0	35.0	78.0
4 NPT	4 NPT	127.0	100.0	35.0	35.0	78.0

* Note : stainless steel may not have the roll marking diameter.

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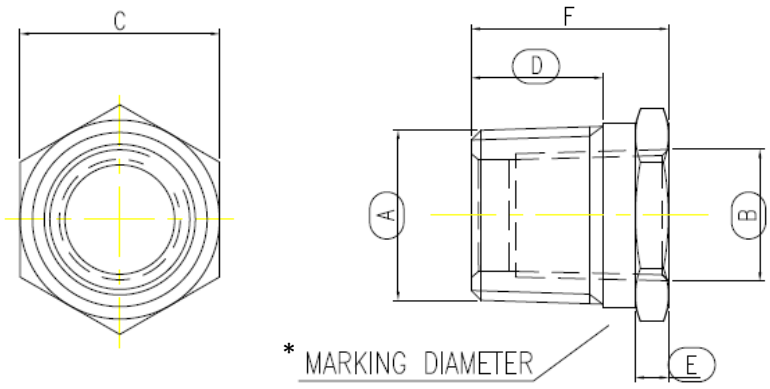
Metallic (Exd/Exe) adaptors and reducers - Dimensions

RD-U



A	B	C	D	E	F
Male	**Female**	**A/F**	**Thread length**	**Hexagon length**	**Total length**
M20	M16 & below	27.0	16.0	5.0	26.0
M25	M20 & below	31.8	16.0	5.0	26.0
M32	M25 & below	37.6	16.0	5.0	26.0
M40	M32 & below	47.2	16.0	5.0	26.0
M50	M40 & below	57.2	16.0	6.0	27.0
M63	M50 & below	70.1	16.0	6.0	27.0
M75	M63 & below	90.2	16.0	6.0	27.0
M80	M75 & below	90.2	20.0	6.0	31.0
M85	M75 & below	106.4	20.0	6.0	31.0
M90	M80 & below	106.4	20.0	6.0	31.0
M100	M90 & below	114.3	20.0	6.0	31.0
M110	M90 & below	120.7	20.0	7.0	32.0

A	B	C	D	E	F
Male	**Female**	**A/F**	**Thread length**	**Hexagon length**	**Total length**
3/4 NPT	1/2 NPT & below	27.9	20.0	5.0	30.0
1 NPT	3/4 NPT & below	34.9	25.0	5.0	35.0
1.1/4 NPT	1 NPT & below	44.5	25.0	5.0	35.0
1.1/2 NPT	1.1/4 NPT & below	52.1	25.0	5.0	35.0
2 NPT	1.1/2 NPT & below	61.2	25.0	6.0	36.0
2.1/2 NPT	2 NPT & below	80.0	35.0	6.0	46.0
3 NPT	2.1/2 NPT & below	90.2	35.0	6.0	46.0
3.1/2 NPT	3 NPT & below	106.4	35.0	6.0	46.0
4 NPT	3.1/2 NPT & below	120.7	35.0	7.0	47.0

*Note : stainless steel may not have the roll marking diameter.

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Metallic (Exd/Exe) adaptors and reducers - Product coding

Product	DIGITS 1 & 2
Exd/Exe ADAPTOR	AD
Exd/Exe REDUCER	RD

Certification	DIGIT 3
U	Exd I and IIC & Exe I and IIC

Material	DIGIT 4
1	Brass
2	Mild steel
3	Stainless steel
5	Aluminium

Plating	DIGIT 5
0	Unplated
1	Electroless nickel
2	Zinc
6	Chromated

DIGITS 6 & 7 Male thread ; DIGITS 8 & 9 Female thread

Metric	ET imperial conduit	NPT	NPSM	ISO pipe parallel (BSPP)	ISO pipe taper (BSPT)	PG
02 M12						
03 M16	17 5/8" ET	29 1/2" NPT	42 1/2" NPSM	55 1/2" BSPP	68 1/2" BSPT	79 PG7
04 M20	18 3/4" ET	30 3/4" NPT	43 3/4" NPSM	56 3/4" BSPP	69 3/4" BSPT	80 PG9
05 M25	19 1" ET	31 1" NPT	44 1" NPSM	57 1" BSPP	70 1" BSPT	81 PG11
06 M32	20 1 1/4" ET	32 1 1/4" NPT	45 1 1/4" NPSM	58 1 1/4" BSPP	71 1 1/4" BSPT	82 PG13.5
07 M40	21 1 1/2" ET	33 1 1/2" NPT	46 1 1/2" NPSM	59 1 1/2" BSPP	72 1 1/2" BSPT	83 PG16
08 M50	22 2" ET	34 2" NPT	47 2" NPSM	60 2" BSPP	73 2" BSPT	84 PG21
09 M63	23 2 1/2" ET	35 2 1/2" NPT	48 2 1/2" NPSM	61 2 1/2" BSPP	74 2 1/2" BSPT	85 PG29
10 M75	24 3" ET	36 3" NPT	49 3" NPSM	62 3" BSPP	75 3" BSPT	86 PG36
11 M80 x 2.0	ET Special	37 3 1/2" NPT	50 3 1/2" NPSM	63 3 1/2" BSPP	76 3 1/2" BSPT	87 PG42
12 M85 x 2.0		38 4" NPT	51 4" NPSM	64 4" BSPP	77 4" BSPT	88 PG48
13 M90 x 2.0		NT Special	NS Special	BP Special	BT Special	PG Special
14 M100 x 2.0						
15 M110 x 2.0						
BZ M120 x 2.0						

Example

Digits 1& 2	Digit 3	Digit 4	Digit 5	Digits 6& 7	Digits 8& 9
AD -	U -	1 -	1 -	29 -	04
Adaptor	Exd/e certified	Brass	Nickel-plated	1/2" NPT (male)	M20 (female)

Always quote male thread first.

Note: threadform codes below to be used for both male and female threads.

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Adaptors and reducers series - selection guide

STEP 1 – To obtain the correct reference number, select the male size from the left hand column, then refer horizontally across the page to the female size (i.e. M32 (male) x M40 (female) = 208). Reference numbers in blue are adaptors; other references are reducers.

Female Size

	Metric														NPT										PG									
Male	M16	M20	M25	M32	M40	M50	M63	M75	M80	M85	M90	M100	M110	M120	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"	PG7&9	PG11	PG13.	5	PG16	PG21	PG29	PG36	PG42	PG48
M16	201	201													216										201	201	201							
M20	301	202	203												217	218									301	202	202	202	204					
M25	303	303	257	206											303	219	221								303	303	303	257	204					
M32	305	305	305	206	208										305	305	221	223							305	305	305	305	207	258				
M40	307	307	307	307	208	209									307	307	307	223	224						307	307	307	307	307	208	209			
M50	309	309	309	309	309	259	211								309	309	309	309	225	226					309	309	309	309	309	309	210	210	211	
M63	310	310	310	310	310	310	211	212							310	310	310	310	310	226	227				310	310	310	310	310	310	310	310	211	
M75	311	311	311	311	311	311	311	212	261	213	213				311	311	311	311	311	311	360	228			311	311	311	311	311	311	311	311	311	
M80	311	311	311	311	311	311	311	261	261	214	214																							
M85	312	312	312	312	312	312	312	214	214	214	214																							
M90	312	312	312	312	312	312	312	312	214	214	214	215			312	312	312	312	312	312	312	229	230	231										
M100	313	313	313	313	313	313	313	313	313	313	215	215	262	263	313	313	313	313	313	313	313	313	230	231										
M110	325	325	325	325	325	325	325	325	325	325	325	262	262	263																				
M120	326	326	326	326	326	326	326	326	326	326	326	326	263	263																				

	Metric										NPT											PG									
NPT	M16	M20	M25	M32	M40	M50	M63	M75	M90	M100	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"	5"	PG7&9	PG11	PG13.	5	PG16	PG21	PG29	PG36	PG42	PG48
1/2"	314	232	234								245	246										314	232	232	232	265					
3/4"	315	315	234	235							315	246	247									315	315	315	234	235					
1"	316	316	316	236	237						316	316	248	249								316	316	316	316	236	237				
1 1/4"	317	317	317	317	237	238					317	317	317	249	250							317	317	317	317	317	237	238			
1 1/2"	318	318	318	318	318	238	240				318	318	318	318	250	251						318	318	318	318	318	318	238	239	240	
2"	319	319	319	319	319	319	240	241			319	319	319	319	319	251	252					319	319	319	319	319	319	319	319	240	
2 1/2"	320	320	320	320	320	320	320	242	243		320	320	320	320	320	320	253	254				320	320	320	320	320	320	320	320	320	
3"	321	321	321	321	321	321	321	321	243	244	321	321	321	321	321	321	321	254	255			321	321	321	321	321	321	321	321	321	
3 1/2"	322	322	322	322	322	322	322	322	322	244	322	322	322	322	322	322	322	322	255	256		322	322	322	322	322	322	322	322	322	
4"	323	323	323	323	323	323	323	323	323	323	323	323	323	323	323	323	323	323	323	256	264	323	323	323	323	323	323	323	323	323	
5"	–	–	–	–	–	–	–	–	–	–	327	327	327	327	327	327	327	327	327	327	–	–	–	–	–	–	–	–	–	–	–

	Metric								NPT							PG															
PG	M16	M20	M25	M32	M40	M50	M63	M75	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	PG7&9	PG11	PG13.	5	PG16	PG21	PG2	9	PG3	6	PG4	2	PG4	8
7&9	201	201							216							201	201	201											
11	202	202	203						217	218						301/202	202	202	202										
13.5	301	202	203						217	218						301	202	202	202	204									
16	302	203	203						218	218	221					302	302	203	203	204									
21	304	304	205	206	206				304	220	221					304	304	304	304	205	258								
29	306	306	306	306	208	209			306	306	223	223	224			306	306	306	306	208	209								
36	308	308	308	308	308	209	211		308	308	308	224	224			308	308	308	308	308	209	210	211						
42	324	324	324	324	324	210	211		324	324	324	324	324	226		324	324	324	324	324	324	210	211						
48	310	310	310	310	310	310	211	211	310	310	310	310	310	226	227	310	310	310	310	310	310	310	211						

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Adaptors and reducers series - selection guide

STEP 2 – Having obtained the reference number, go to the relevant column within the dimension tables to obtain the adaptor or reducer's dimensions. Please note that these dimensions refer to metallic products only.

Adaptors

Metric x metric, metric x PG, PG x metric, PG x PG																			
Reference numbers	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	257	258	259
Hex across flats	23.4	27.0	30.5	33.0	36.0	37.6	37.6	47.2	55.9	61.2	70.1	90.2	106.4	106.4	114.3	23.4	31.8	41.3	57.2
Hex across corners	26.8	31.0	35.0	38.0	41.5	43.2	43.2	53.4	64.3	70.4	81.8	103.7	122.4	122.4	131.4	26.8	36.1	47.7	66.0
Male thread length	16	16	16	16	16	16	16	16	16	16	16	16	16	20	20	15	16	16	16
Female thread length	17	17	17	17	17	17	17	17	17	17	17	17	22	22	22	20	17	17	17
Total length	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	39.5	39.5	39.5	39.5	45.0	49.0	49.0	42.0	38.5	38.5	39.5

Metric x NPT, PG x NPT																			
Reference numbers	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	261	262	263	-
Hex across flats	27.0	30.5	32.0	37.6	37.6	41.3	47.2	55.9	57.2	70.1	80.0	106.4	106.4	114.3	127.0	90.2	120.7	139.7	-
Hex across corners	31.0	35.0	36.7	43.2	43.2	47.5	53.4	64.3	66.0	81.8	92.0	122.4	122.4	131.4	147.0	104.1	139.4	161.3	-
Male thread length	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	20	20	-
Female thread length	20	20	20	20	25	25	26	26	26	27	40	35	42	42	44	22	22	22	-
Total length	42	42	42	42	47	47	47	48	48	48	58	58	62	62	62	48	48	49	-

NPT x metric, NPT x PG																			
Reference numbers	232	233	234	235	236	237	238	239	240	241	242	243	244	260	265	-	-	-	-
Hex across flats	23.4	28.6	30.5	37.6	37.6	44.5	55.9	70.1	70.1	90.2	90.2	106.4	114.3	90.2	33.0	-	-	-	-
Hex across corners	26.8	32.9	35.0	43.2	43.2	51.1	64.3	70.4	81.8	103.7	103.7	122.4	131.4	103.7	38.0	-	-	-	-
Male thread length	20	20	20	20	25	25	25	25	25	25	35	35	35	16	20				
Female thread length	17	17	17	17	17	17	17	17	17	17	17	22	22	35	77	-	-	-	-
Total length	43	43	43	43	48	48	49	49	49	49	59	64	64	58	43	-	-	-	-

NPT x NPT																			
Reference numbers	245	246	247	248	249	250	251	252	253	254	255	256	264	-	-	-	-	-	-
Hex across flats	23.4	30.5	37.6	37.6	47.2	55.9	70.1	80.0	80.0	106.4	114.3	127.0	158.8	-	-	-	-	-	-
Hex across corners	26.8	35.0	43.2	43.2	53.4	64.3	81.8	92.0	92.0	122.4	131.4	146.0	183.3	-	-	-	-	-	-
Male thread length	20	20	20	25	25	25	25	25	35	35	35	35	35	-	-	-	-	-	-
Female thread length	20	20	25	25	25	25	25	35	35	35	35	35	47	-	-	-	-	-	-
Total length	46	46	51	56	56	57	57	67	77	77	78	78	81	-	-	-	-	-	-

Reducers

Metric and PG																			
Reference numbers	301	302	303	304	305	306	307	308	309	310	311	312	313	324	325	326	-	-	-
Hex across flats	27.0	30.5	31.8	36.0	37.6	44.5	47.2	55.9	57.2	70.1	90.2	106.4	114.3	61.2	120.7	127.0	-	-	-
Hex across corners	31.0	35.0	36.7	41.5	43.2	51.1	53.4	64.3	66.0	81.8	103.7	122.4	131.0	70.7	139.4	146.6	-	-	-
Male thread length	16	16	16	16	16	16	16	16	16	16	16	20	20	16	16	16	-	-	-
Total length	26	26	26	26	26	26	26	27	27	27	27	31	31	27	28	28	-	-	-

NPT																			
Reference numbers	314	315	316	317	318	319	320	321	322	323	327	-	-	-	-	-	-	-	-
Hex across flats	23.4	27.9	34.9	44.5	52.1	61.2	80.0	90.2	106.4	120.7	146.0	-	-	-	-	-	-	-	-
Hex across corners	26.8	32.1	40.2	51.1	59.9	70.4	92.0	103.7	122.4	138.8	168.6	-	-	-	-	-	-	-	-
Male thread length	20	20	25	25	25	25	35	35	35	35	35	-	-	-	-	-	-	-	-
Total length	30	30	35	35	35	36	46	46	46	47	47	-	-	-	-	-	-	-	-

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Thread dimension chart

ISO metric

BS 3643 1.5mm pitch

Size	Major dia.	TPI
M12	11.97	16.93
M16	15.97	16.93
M20	19.97	16.93
M25	24.97	16.93
M32	31.97	16.93
M40	39.97	16.93
M50	49.97	16.93
M63	62.97	16.93
M75	74.97	16.93
2.0mm pitch		
M80	79.97	12.70
M85	84.97	12.70
M90	89.97	12.70
M100	99.97	12.70
M110	109.97	12.70
M120	119.97	12.70

NPT

ANSI.ASME B1.20.1

Size	Pipe dia.	TPI
½"	21.34	14.00
¾"	26.67	14.00
1"	33.40	11.50
1¼"	42.16	11.50
1½"	48.26	11.50
2"	60.33	11.50
2½"	73.03	8.00
3"	88.90	8.00
3½"	101.60	8.00
4"	114.30	8.00

PG

DIN 40430

Size	Major dia.	TPI
PG7	12.50	20.00
PG9	15.20	18.00
PG11	18.60	18.00
PG13.5	20.40	18.00
PG16	22.50	18.00
PG21	28.30	16.00
PG29	37.00	16.00
PG36	47.00	16.00
PG42	54.00	16.00
PG48	59.30	16.00

Alternate ISO pipe thread designations

UK	**BSP** Parallel or **T**aper BS2279 (BS21)
Europe	**G** (Parallel) **GK** (Taper) **R** (Parallel) **RK** (Taper)
Japan	**PF** (Parallel) JIS B 303
CIS	**K mpy** (Taper)

BSP ISO pipe thread

ISO R/7; UNI 6125

Size	Pipe Dia.	TPI
⅜"	16.66	19.00
½"	20.96	14.00
¾"	26.44	14.00
1"	33.25	11.00
1¼"	41.91	11.00
1½"	47.80	11.00
2"	59.61	11.00
2½"	75.18	11.00
3"	87.88	11.00

ET imperial conduit

BS31

Size	Major dia.	TPI
⅝"	15.88	18.00
¾"	19.05	16.00
1"	25.40	16.00
1¼"	31.75	16.00
1½"	38.10	14.00
2"	50.80	14.00
2½"	63.50	14.00
3"	76.20	14.00

Thread dimension substitution chart

Metric	NPT (or NPS)	PG	BSP ISO Pipe	ET
M16	–	7, 9	–	⅝"
M20	½"	11, 13.5	½"	¾"
M25	¾"	16	¾"	1"
M32	1"	21	1"	1¼"
M40	1¼"	29	1¼"	1½"
M50	1½"	36	1½"	2"
M63	2"	42, 48	2"	2½"
M75	2½"	–	2½"	3"
M90 x 2.0	3"	–	3"	–
M100 x 2.0	3½"	–	–	–
M110 x 2.0	–	–	–	–
M120 x 2.0	–	–	–	–

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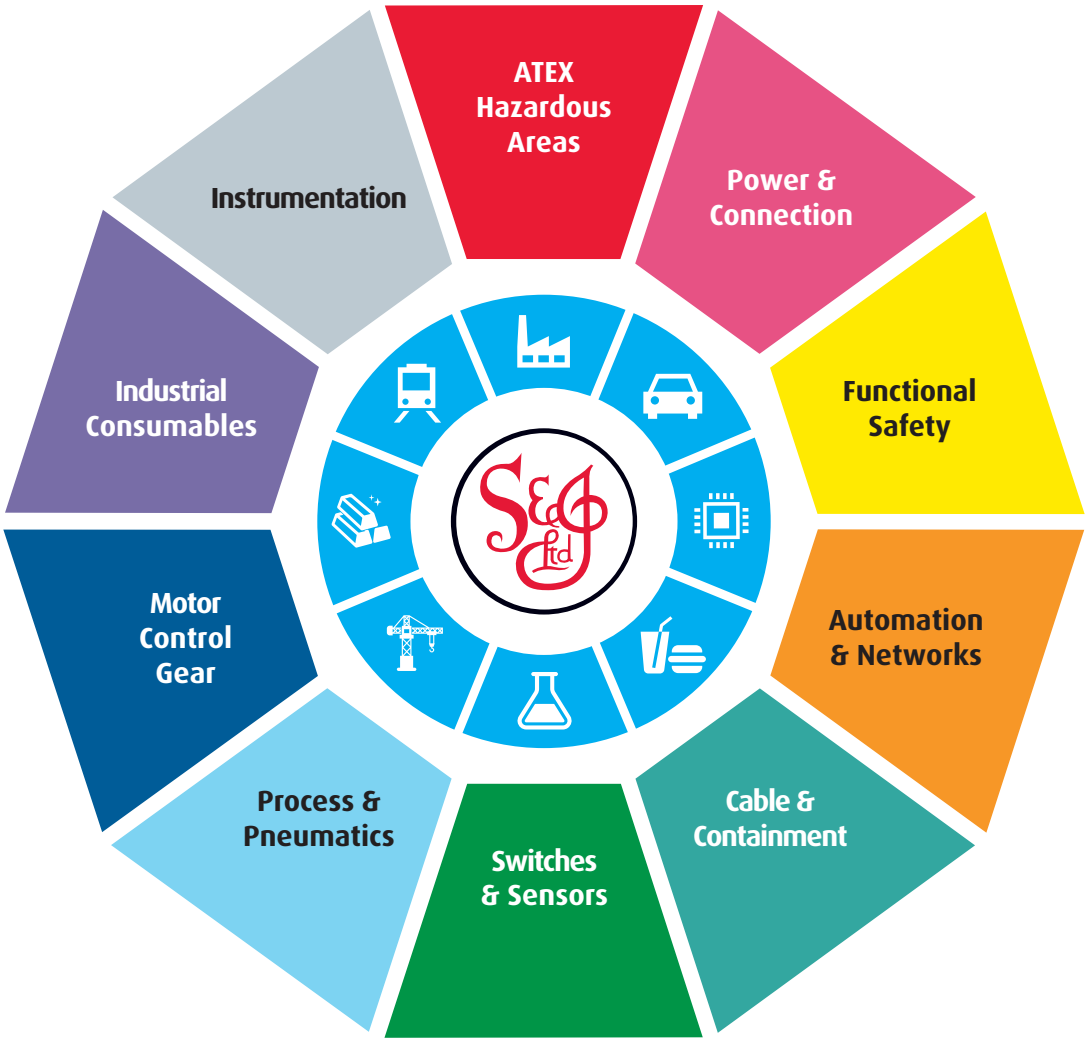

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