SECTION 9 – CONDUCTORS, CABLES, CONNECTORS AND ASSOCIATED FITTINGS

VERSION 2.2

SECTION 9 – CONDUCTORS, CABLES, CONNECTORS AND ASSOCIATED FITTINGS

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For details of Service Cables and associated fittings, refer to Section 1.

9.1 Conductor and Cable Data

9.1.1 Bare Mains – Metric Sizes

Material	Conductor Name	Stock Code / Item No	Strands No./Dia.	CSA	Nom. Diameter	Mass	Current Rating (A)		
	Name	Code / Item No	(mm)	(mm²)	(mm)	(kg/m)	Summer Day	Winter Night	
AAC (1350)	LEO		7/2.50	34.36	7.50	0.094	124	200	
	LIBRA		7/3.00	49.48	9.00	0.135	153	274	
	MARS		7/3.75	77.31	11.25	0.211	196	319	
	MERCURY	10.16.15 / 48A	7/4.50	111.30	13.50	0.304	239	441	
	NEPTUNE	10.16.21 / 48B	19/3.25	157.60	16.25	0.433	289	568	
AAAC (1120)	FLUORINE	10.16.10 / 49	7/3.00	49.48	9.00	0.135	150	186	
ACSR/GZ	ALMOND		6/1/2.50	34.36	7.50	0.119	115	251	
	APPLE		6/1/3.00	49.50	9.00	0.171	141	324	
	BANANA		6/1/3.75	77.31	11.30	0.268	181	448	
	CHERRY		6/4.75+7/1.60	120.40	14.30	0.402	235	56	
	RAISIN		3/4/2.50	34.36	7.50	0.195	90	111	
SC/GZ	1.31GPa min.	43.89.12	3/2.75	17.82	5.93	0.140	33	151	
	Stay Wire	43.89.20	19/2.00	59.70	10.0	0.473	70	210	
HDC			7/1.25	8.589	3.75	0.0769	104	269	
(Hard Drawn			7/1.75	16.84	5.25	0.151	122	297	
Copper)			7/2.00	21.99	6.00	0.197	184	413	
			19/1.75	45.70	8.75	0.413	214	529	
			19/2.00	59.70	10.00	0.538	305	200	
			19/2.75	112.90	13.80	1.020	124	274	

- Conductors other than current preferred sizes are included for reference purposes.
- Conductor data is generally in accordance with Australian Standards. Note that product from various manufacturers may differ slightly from the above data.
- Current ratings are based on:
 - a maximum conductor temperature of 50°C
 - a wind speed normal to the conductor of 1.0m/s (3.6km/h)
 - 30°C ambient for summer and 10°C ambient for winter
 - daytime solar intensity of $1000W/m^2$ summer, albedo (ground reflectance) coefficient of 0.2 bare conductor emissivity of 0.85, solar absorption coefficient of 0.85.

9.1.2 Bare Mains – Imperial Sizes

			Strands	(No./Dia.)		Nom.		Current F	Rating (A)
Material	Conductor Name	Stock Code	Metric (mm)	Imperial (in)	CSA (mm²)	Diameter (mm)	Mass (kg/m)	Summer Day	Winter Night
AAC (1350)	LOCUST ³		7/2.36	7/.093	30.71	7.08	0.0833	116	200
	GRUB		7/3.00	7/.118	49.42	8.99	0.1350	154	274
	FLY		7/3.40	7/.134	63.88	10.21	0.1741	176	319
	WASP		7/4.39	7/.173	106.19	13.18	0.2902	233	441
	HORNET		19/3.25	19/.128	157.74	16.26	0.4331	289	568
ACSR/GZ	GOPHER		6/1/2.36	6/1/.093	30.64	7.08	0.1061	107	186
	FERRET		6/1/3.00	6/1/.118	49.35	8.99	0.1711	141	251
	MINK		6/1/3.66	6/1/.144	73.54	10.97	0.2545	177	324
	DOG		6/4.72+7/1.57	6/.186+7/.062	118.70	14.17	0.3959	234	448
SC/GZ	85/95 TON		3/2.64	3/.104	16.45	5.69	0.1295	34	56
HDC			7/1.22	7/.048	8.07	3.66	0.0731	69	111
(Hard Drawn Copper)			7/1.63	7/.064	14.52	4.88	0.1295	91	151
			7/2.03	7/.080	22.71	6.10	0.2024	123	210
			7/2.46	7/.097	32.26	7.39	0.2986	155	269
			19/1.63	19/.064	38.39	7.92	0.3438	169	297
			19/2.11	19/.083	66.32	10.54	0.5953	226	413
			19/2.57	19/.101	98.19	12.83	0.8810	281	529

- Conductors other than current preferred sizes are included for reference purposes.
- 2. Conductor data is generally in accordance with Australian Standards. Note that product from various manufacturers may differ slightly from the above data.
- 3. Current ratings are based on:
 - a maximum conductor temperature of 50°C
 - a wind speed normal to the conductor of 1.0m/s (3.6km/h)
 - 30°C ambient for summer and 10°C ambient for winter
 - daytime solar intensity of 1000W/m² summer, albedo (ground reflectance) coefficient of 0.2
 - bare conductor emissivity of 0.85, solar absorption coefficient of 0.85.
- 4. The conductor designation 'Locust' is sometimes also used to refer to the AAC size 19/.211", i.e. 19/5.36.

9.1.3 LVABC Mains

No. of Cores	CSA of Cores (mm²)	Stock Code	Nom. Conductor Diameter	Nom. Core Diameter Over Insulation	Nom. Overall Cable Diameter	Nom. Breaking Load	Mass (kg/m)	Min. Bending Radius (installed) (mm) Core Cable		Current F	Rating (A)
			, ,	(mm)	(mm)					Summer Day	Winter Day
2	50	10.30.04	8.1	11.2	23.8	14.0	0.350	70	145	205	260
4	50	10.30.02	8.1	11.2	28.7	28.0	0.700	70	160	155	195
2	95	10.30.03	11.4	14.9	31.8	26.6	0.680	95	285	295	365
4	95	10.30.01	11.4	14.9	38.4	53.2	1.350	95 285		235	300
4	150	10.30.08	14.2	17.7	45.6	84.0	2.020	115 460		295	430

- Note that product from various manufacturers may differ slightly from the above data.

 Current ratings assume a maximum conductor temperature of 75°C, wind speed normal to the conductor of 0.5m/s (1.8km/h), solar intensity of 1000W/m², summer ambient temperature of 30°C, winter ambient temperature of 10°C, solar absorption coefficient of 0.9 and emissivity coefficient of 0.95. Neutral core has ribs all around. Please cores have either 1, 2 or 3 ribs.

9.1.4 HVABC Mains

Туре	CSA		Stock Code	Nom. Conductor	Nom. Core	Nom. Overall	Nom. Catenary	Catenary	Catenary	Catenary	Overall Cable	Ben	in. ding dius	Current F	Rating (A)
Туре	of Cores (mm²)	Voltage		Diameter (mm)	Diameter (mm)	Cable Diameter ³	Diameter (mm)	Material	CSA (mm²)	Stranding No./Dia. (mm)	Mass (kg/m)		alled) ^{im)}	Summer Day	Winter Night
					(11111)	(111111)						Core	Cable		J
NMS	50	6.35/11		8.1	19	51.9	14.3	AAAC	124	7/4.75	1.41	285	795	160	210
Non-metallic Screened	35	12.7/22	10.30.50	6.9	23	58.3	14.3	AAAC	124	7/4.75	1.63	345	885	150	205
	150	6.35/11		14.2	26	67.4	17.5	AAAC	182	19/3.50	2.68	390	1035	370	430
	185	12.7/22	10.30.51	15.7	32	80.0	17.5	AAAC	182	19/3.50	3.64	480	1230	395	550
NMS	50	6.35/11		8.1	19	54.6	14.3	AAAC	124	7/4.75	1.53	300	550	147	192
Non-metallic Screened with 1.2mm	35	12.7/22	14.91.11	6.9	23	61.0	14.3	AAAC	124	7/4.75	1.78	350	610	135	184
HDPE	150	6.35/11		14.2	26	70.1	17.5	AAAC	182	19/3.50	2.84	390	700	331	384
Outer Sheath	185	12.7/22	14.91.12	15.7	32	81.7	17.5	AAAC	182	19/3.50	3.76	480	820	354	491
MS	35	6.35/11		6.9	23.5	57.1 (52.1)	10.0	SC/GZ	59.7	19/2.00	2.31	350	570	135	184
Metallic Screened	35	12.7/22		6.9	27.8	65.7 (60.7)	10.0	SC/GZ	59.7	19/2.00	2.76	420	660	135	184
	185	6.35/11		15.7	33.5	77.0 (72.0)	10.0	SC/GZ	59.7	19/2.00	4.96	500	770	354	491
	185	12.7/22		15.7	38.2	86.4 (81.4)	10.0	SC/GZ	59.7	19/2.00	5.64	570	860	354	491

- 1. All cables are 3-core with catenary. Cables other than current preferred sizes are included for reference purposes.
- 2. Note that product from various manufacturers may differ slightly from the above data.
- 3. Overall cable diameter figures shown in parentheses are projected diameter for wind loading.
- 4. NMSHVABC catenary 7/4.75 sometimes shown as 7/5.00 and 19/3.50 as 19/3.65.
- 5. Current ratings assume a wind speed normal to the conductor of 0.5m/s (1.8km/h), solar intensity of 1000W/m2, summer ambient temperature of 30°C, winter ambient temperature of 10°C, solar absorption coefficient of 0.9 and emissivity coefficient of 0.95. The rating is based on a core temperature of 90°C and maximum catenary temperature of 50°C.

9.1.5 Communications and Other Cables

Туре	Name/Code	Stock Code	Catenary/ Cable CSA (mm²)	Catenary Diameter (mm)	Nom. Overall Diameter	Nom. Breaking Load (kN)	Mass (kg/m)
ADSS (Optical Fibre)	ADSS 72SM		124		12.5	28.0	0.12
	ADSS 312		247.6		22.0	22.0	0.365
NBN Cable	RPX 144F ribbon		114.9		15.2	8.6	0.095
	SST 12F		31.5		8.1	4.0	0.031
	ROC 1F drop		12.4		5.4	3.0	0.0148
Telephone (PSTN) Cable	10 Pair		5.94	2.75	14.89	7.39	0.134
	30 Pair		8.59	3.31	25.95	10.69	0.435

- Cables other than current preferred sizes are included for reference purposes.
 Note that product from various manufacturers may differ slightly from the above data.
 Neutral core has ribs all around. Phase core have either 1,2 or 3 ribs.

9.2 Conductor Fittings Summary Table

9.2.1 Bare Mains – Current Conductors

Material	Conductor Name	Strands	Nominal	Tie, Rod, and Termination	Helical	Compre	ssion Sleeves	Armour	Armoured	Armoured	Vibration	Conductor	Compression
iviateriai	Metric (Imperial)	No./Dia (mm)	Diameter	Colour	Termination	Tension	Non-Tension	Rod	Top Tie	Side Tie	Damper	Conductor	Lug
AAC	Neptune (Hornet)	19/3.25	16.25	Orange	146440	146405	146265	145985	146509	146522	145483	101621	152491
AAC	Mercury (Wasp)	7/4.50 (4.39)	13.50 (13.18)	Green	146436	146403	146263	145982	146513	146550	145490	101615	152480
AAAC	Fluorine	7/3.00	9	Red	146471	146281	146280	146025	146508	146518	145482	101610	152471
SC/GZ	3/2.75 (3/12)	3/2.75 (2.64)	5.93 (5.69)	White	146261	148482	146261	148411	146530	146540	145480	438912	

Notes:

- 1. Conductors other than current preferred sizes are included for reference purposes.
- 2. Tension splices/sleeves shall not be used within 2.5m of crossarms.
- 3. Damaged strands (at the pole and mid-span) can be repaired with armour rods when the damage is to less than 50% of the strands (i.e. 3 of 7 or 9 of 19 strands)
- 4. Top ties are only to be used when line deviation is less than 10° across the pin
- 5. Helical fitting colour coding is to AS1154.3

9.2.2 LVABC

		Strain	Suspension
25mm	2 Core	145600	
25mm	4 Core	145600	145609
50mm	2 Core	145603	145609
50mm	4 Core	145602	145609
95mm	2 Core	145603	145609
95mm	4 Core	145607	145609
150mm	4 Core	145607	145608

9.2.3 Bare Mains – Legacy Conductors

Bare Mains - Legacy Conductors (Aluminium)

Material	Conductor Name Metric (Imperial)	Strands No./Dia (mm)	Nominal Diameter	Tie, Rod, and Termination Colour	Helical Termination	Compr Slee Tension	ession eves Non Tension	Armour Rod	Armoured Top Tie	Armoured Side Tie	Vibration Damper	Conductor	Compression Lug
AAC	Leo (Locust)	7/2.5 (2.36)	7.50 (7.08)	Blue	146431	146401	146261	146017	146514	146551	145481	101805	
AAC	Libra (Grub)	7/3.00	9.00 (8.99)	Red	146471	146281	146280	146025	146508	146518	145482	101610 (Fluorine)	
AAC	Mars	7/3.75	11.25	Black	146435	146402	146262	148413	146515	146552	145482	101613	
AAC	Fly	7/3.4	10.21	Purple	146434	146402	146262	148412	146530 (unarmoured)	146540 (unarmoured	145482	101613 - Mars	
AAAC	Neon	19/3.75	18.8	White	802916	802917	146265	802915	802918	802919 (unarmoured)	145483	101637	

Bare Mains - Legacy Conductors (ACSR)

Matarial	Conductor Name	Strands	Nominal	Tie, Rod, and	Helical	Compr Slee	ession eves	Armour	Armoured	Armoured	Vibration	Conductor	Compression
Material	Metric (Imperial)	No./Dia (mm)	Diameter	Termination Colour	Termination	Tension	Non Tension	Rod	Top Tie	Side Tie	Damper	Conductor	Lug
ACSR	Almond (Gopher)	6/1/2.50 (2.39)	7.50 (7.08)	Blue	146470	146411	146261	146017	146514	146551	145481	802055	
ACSR	Raisin	3/4/2.5	7.5	Blue	146470	146411	146261	146017	146514	146551	145481	802025	
ACSR	Apple (Ferret)	6/1/3.00	9.00 (8.99)	Red	146472	146281	146280	146025	146508	146518	145482	802055	
ACSR	Banana (Mink)	6/1/3.75 (3.66)	11.30 (10.97)	Black	146473	146412	146262	148413	146515	146552	145482	101807	
ACSR	(Hyena)	7/4.39-7/1.93	14.57	Green	802158	146283	146265	801877	103512 (tie wire)	103512 (tie wire)	145483	802021	
ACSR	Cherry (Dog)	6/4.75 (4.72)- 7/1.6 (1.57)	14.30 (14.17)	Blue	146474	146283	146285	148414	146516	146553	145490	802022	

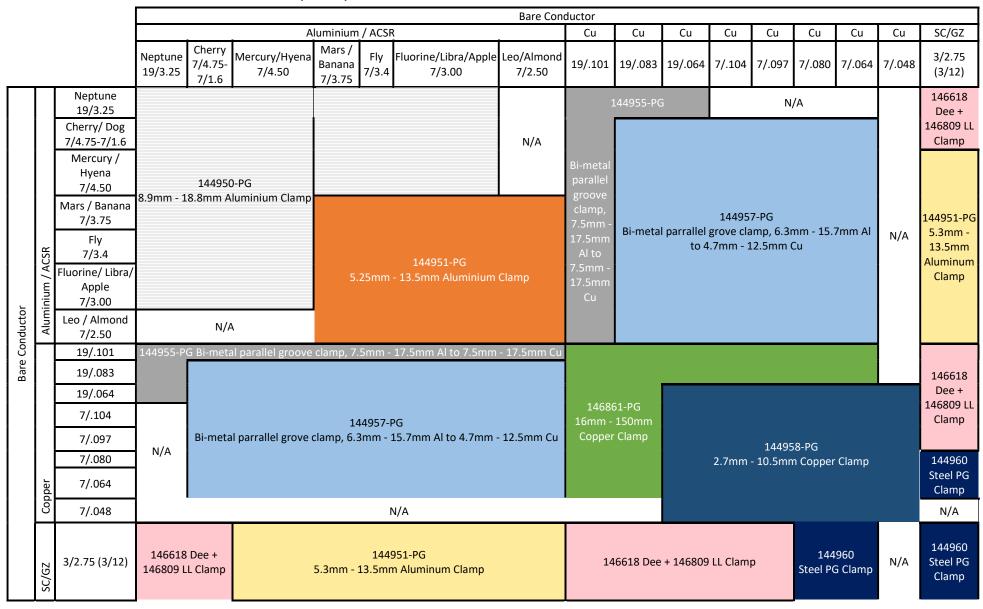
Bare Mains - Legacy Conductors (Copper)

Material	Conductor Name	Strands No./Dia	Nominal	Tie, Rod, and Termination	Helical	· ·	ression	Armour	Armoured		Vibration	Conductor	Compression
	Metric (Imperial)	(mm)	Diameter	Colour	Termination	Tension	Non Tension	Rod	Top Tie	Side Tie	Damper		Lug
Cu	19/1.63	19/.064	7.92	Purple	148238	146705	146705	148415	103610	103610	145481	802036	141369
				·					(tie wire)	(tie wire)			
Cu	19/2.11	19/.083	10.54	Yellow	148239	146708	146708	148416	103610	103610	145482	802037	141363
	13, 2.111	237.000		16	110200	210700	210700	110110	(tie wire)	(tie wire)	110102	002007	111000
	19/2.57	19/.101	12 02	Blue	148240	146707	146707	148417	103610	103610	145490	802040	141367
Cu	19/2.57	19/.101	12.83	Blue	146240	146/0/	146/0/	140417	(tie wire)	(tie wire)	145490	002040	141507
	7/4 60	7/064	4.00	D	4.40222	4.46702	4.46702	4.40.44.0	103613	103613	4.45.400	002252	4.44.200
Cu	7/1.63	7/.064	4.88	Purple	148232	146702	146702	148418	(tie wire)	(tie wire)	145480	802352	141299
	- /	-/							103613	103613			
Cu	7/2.03	7/.080	6.1	Yellow	148234	146704	146704	148419	(tie wire)	(tie wire)	145480	802353	
									103610	103610			
Cu	7/2.46	7/.097	7.39	Blue	148238	146703	146703	148415	(tie wire)	(tie wire)	145481	802034	
									-	<u> </u>			
Cu	7/2.75	7/.104	8.25	White	148238	146703	146703	148415	103610	103610	145481	802035	
		•							(tie wire)	(tie wire)			
Cu	7/1.25	7/.048	3.66	Green	148242	146701	146701	_	103613	103613		802354	
	,, 1.23	,,.516	2.00	Creen	1.0212	1.0701	1.0701		(tie wire)	(tie wire)		002001	

- Conductors other than current preferred sizes are included for reference purposes.
 Refer to section 9.4 for details of Aluminium Sleeves.

- Tension splices/sleeves shall not be used within 2.5m of crossarms.
 Damaged strands (at the pole and mid-span) can be repaired with armour rods when the damage is to less than 50% of the strands.
 Helical fitting colour coding is to AS1154.3

9.3 Conductor Connectors Table (bare)



9.4 Conductor Connectors Table (LVABC)

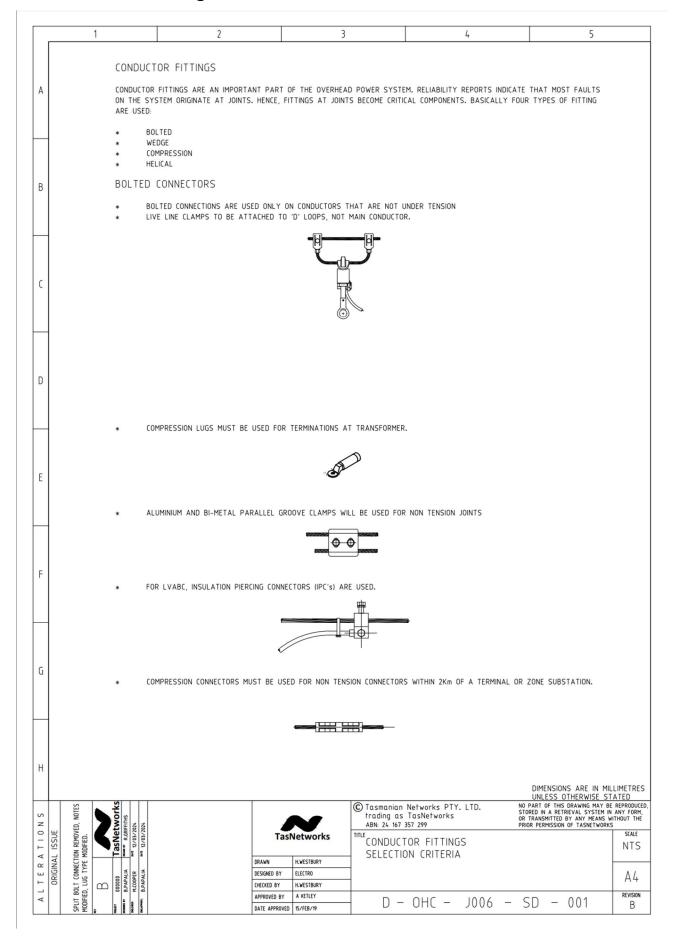
9.4.1 LVABC - LVABC

			ABC Cable							
			LVABC	LVABC	LVABC	LVABC	Insulated			
			25	50	95	150	16mm			
	LVABC	25mm	145	620-I	PC	N/A	145619-IPC 25-95mm2			
	LVABC	50mm	25-	95mn	n2		LVABC to 10-			
	LVABC	95mm	LVAI	BC - K	445		35mm2 Service - K441			
ABC Cable	LVABC	150mm	I N/Δ			145657-IPC m2 LVABC - K446	145659 35-150mm2 LVABC to 6- 35mm2 Service - K443			
	Insulated Cu	16mm	25- LVA 3.	6619-I 95mn BC to 5mm2 ice - K	n2 10- <u>2</u>	145659 35-150mm2 LVABC to 6-35mm2 Service - K443	145654 3-35mm2 to 4- 35mm2 - HSC435A			

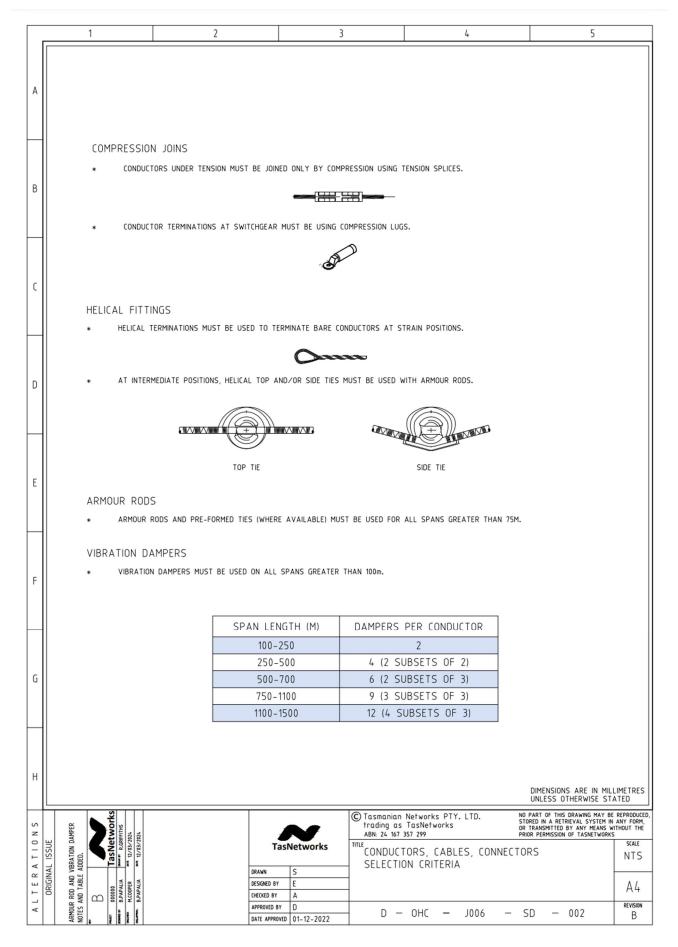
9.4.2 LVABC - Bare

		Bare Conductor														
			AL	AL	AL	AL	AL	AL	Cu	Cu	Cu	Cu	Cu	Cu	Cu	Cu
			Neptun e	Mercury / Hyena	Mars / Banana	Fly	Fluorin e / Libra / Apple	Leo / Almond	19/.10 1	19/.08 3	19/.06 4		7/.08 0	7/.09 7		7/.04 8
ABC Cable	LVABC	25mm	N/A	-												
	LVABC	50mm		7-120mm2	: nm2 LVAB	C - K473	145626-IPC 7-120mm2 bare Cu to 25-95mm2 LVABC - K472									
	LVABC	95mm														
	LVABC	150m m	50-240m	145630-IP nm2 bare Al to 35 K475		N/A	145666 50-240mm2 bare Cu to 35- 150mm2 LVABC - K474									
	Insulated Cu	16mm	N/A	N/A Al bare to 10-35mm2 Insula				CAW35	145655-IPC 5.5-135mm2 bare Cu to 6-35mm2 Insulated Cu							

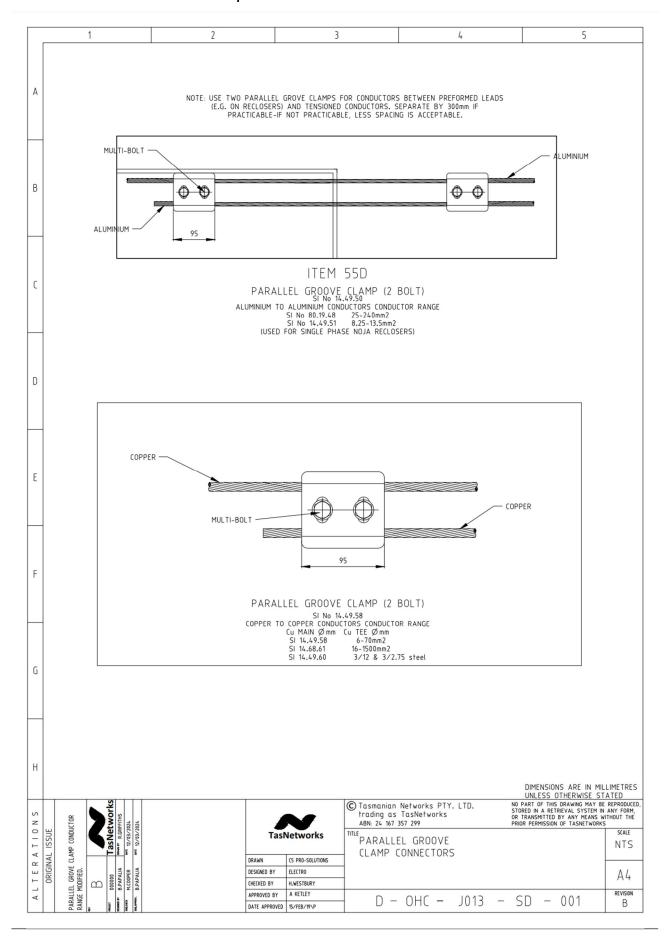
9.5 Conductor Fittings – Selection Criteria

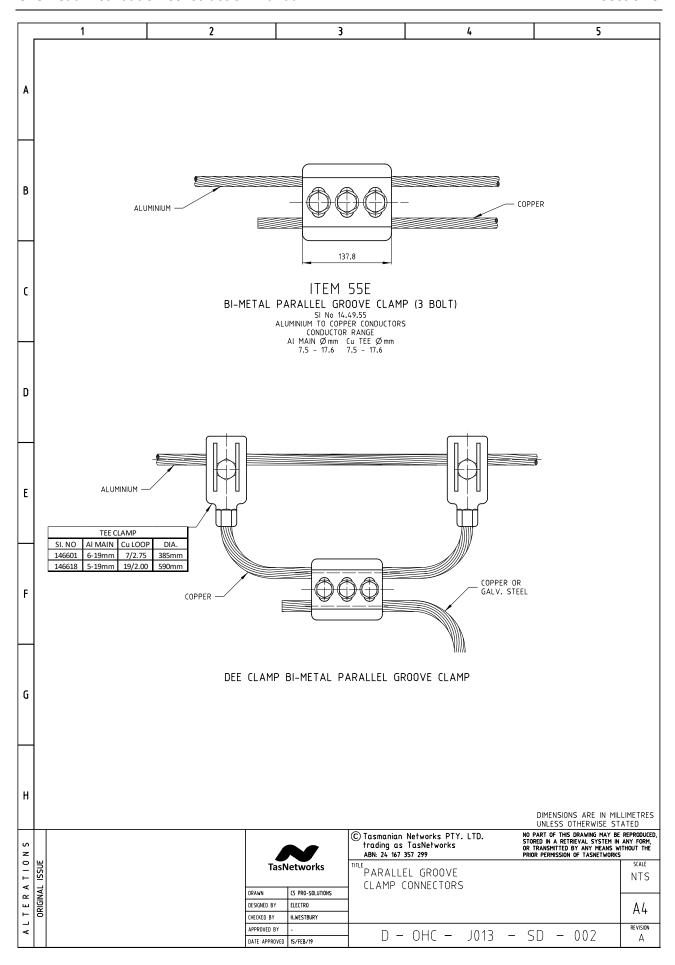


Conductor Fittings - Selection Criteria



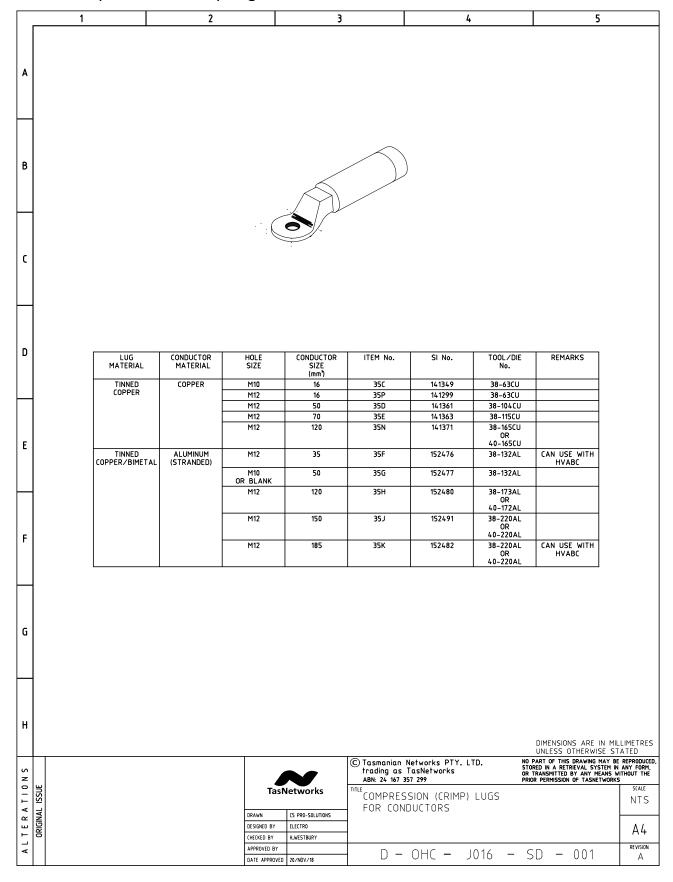
9.6 Parallel Groove Clamp Connectors



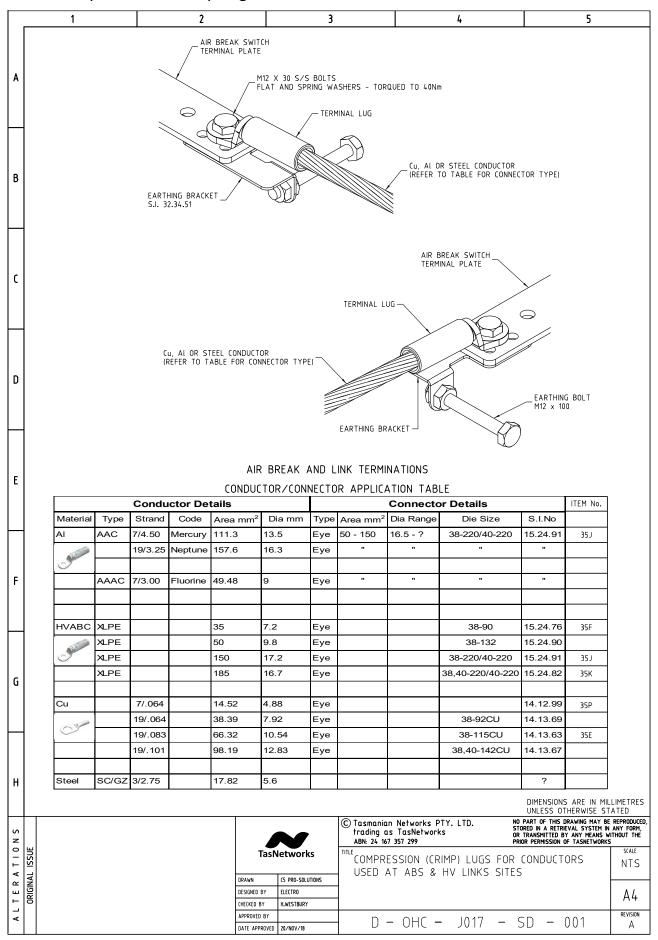


9.7 Compression (Crimp) Lugs

9.7.1 Compression – Crimp Lugs

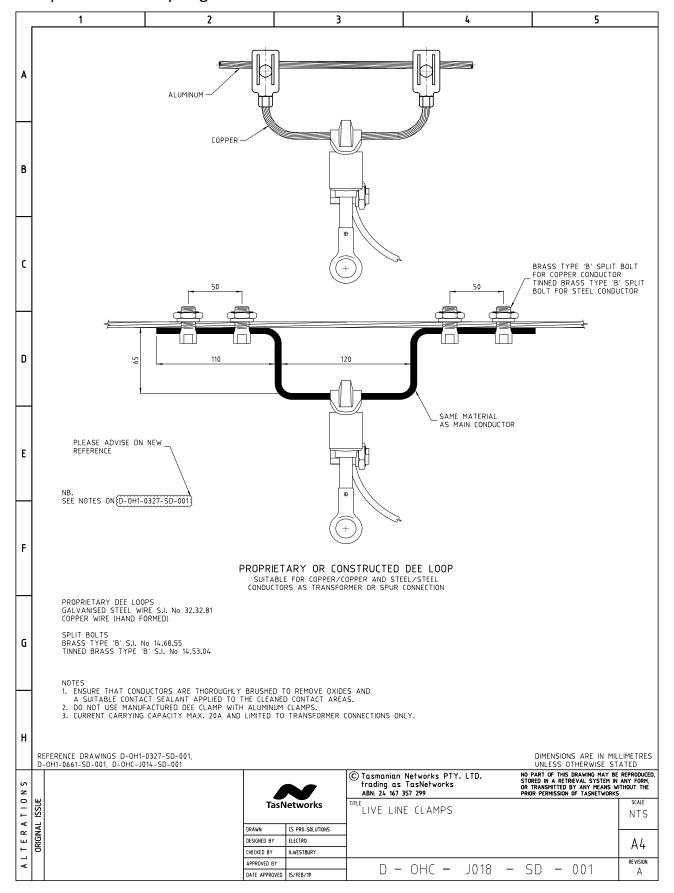


9.7.2 Compression – Crimp Lugs Used for conductors Used at ABS & HV Link Sites



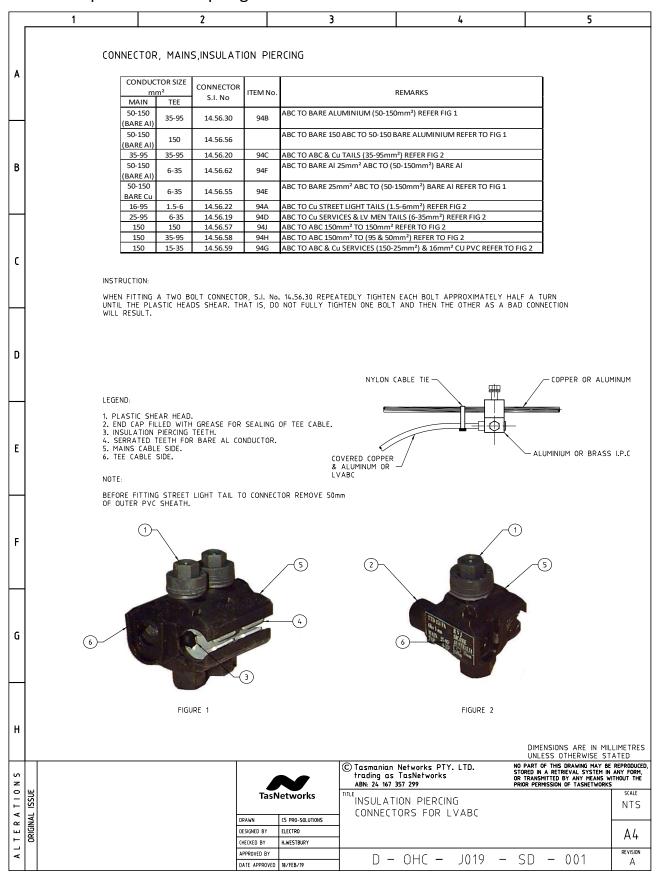
9.8 Live Line Clamps

Compression – Crimp Lugs Used for conductors Used at ABS & HV Link Sites

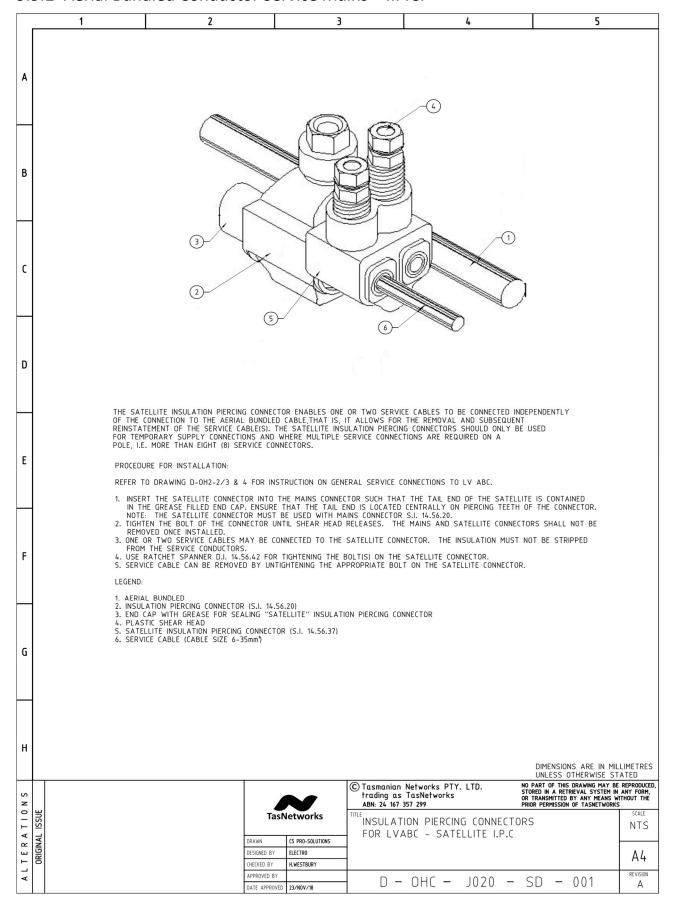


9.9 IPC (Insulation Piercing Connectors) for LVABC

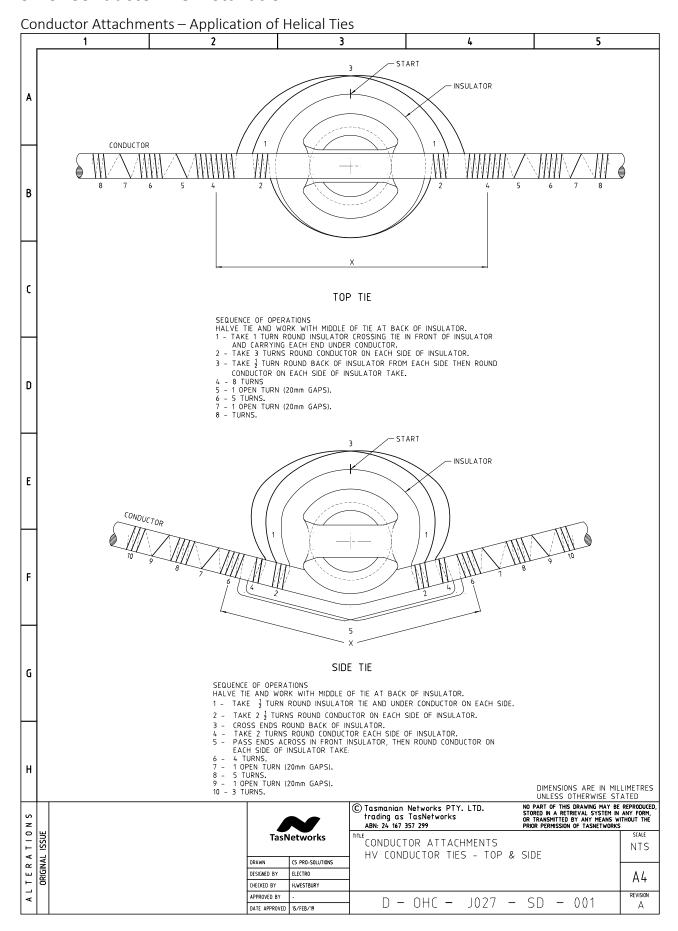
9.9.1 Compression – Crimp Lugs Used for conductors Used at ABS & HV Link Sites



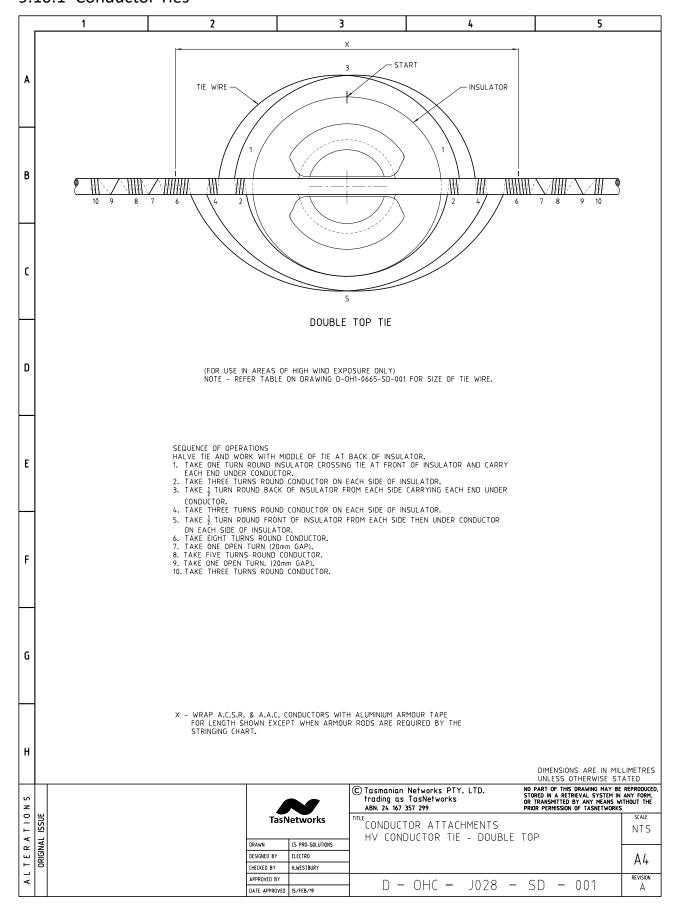
9.9.2 Aerial Bundled Conductor Service Mains – I.P.C.



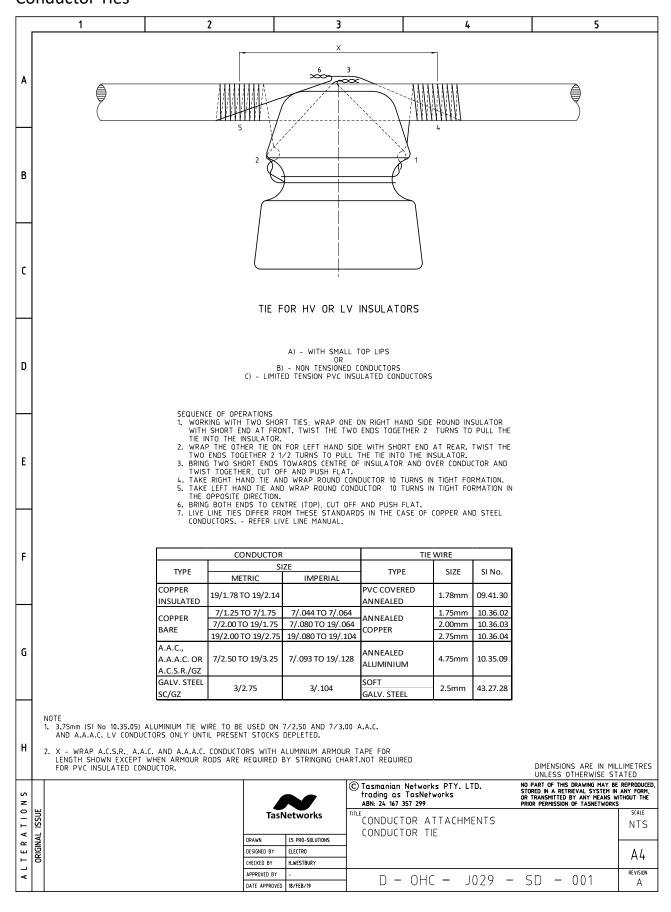
9.10 Conductor Tie Installation



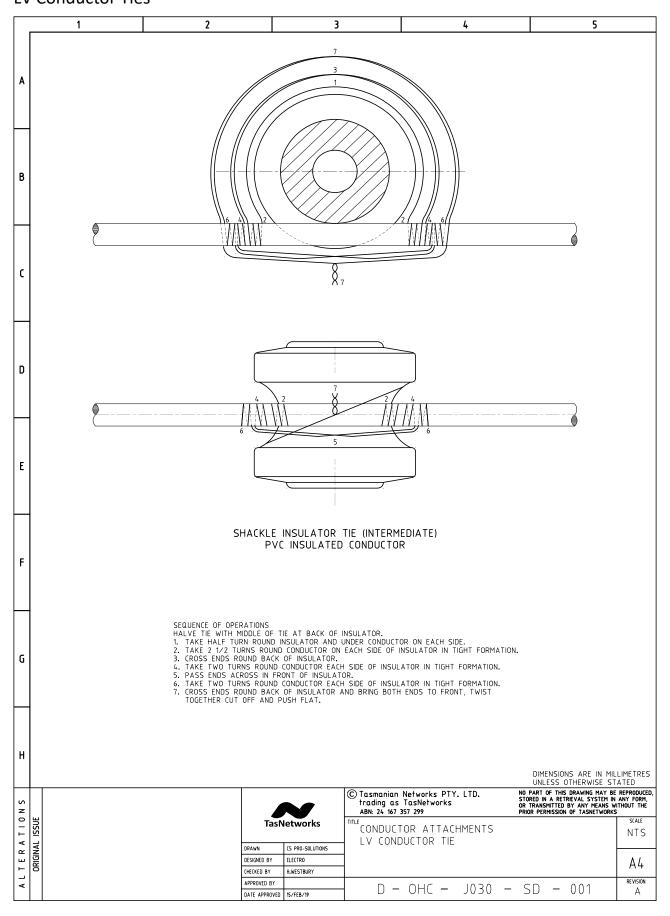
9.10.1 Conductor Ties



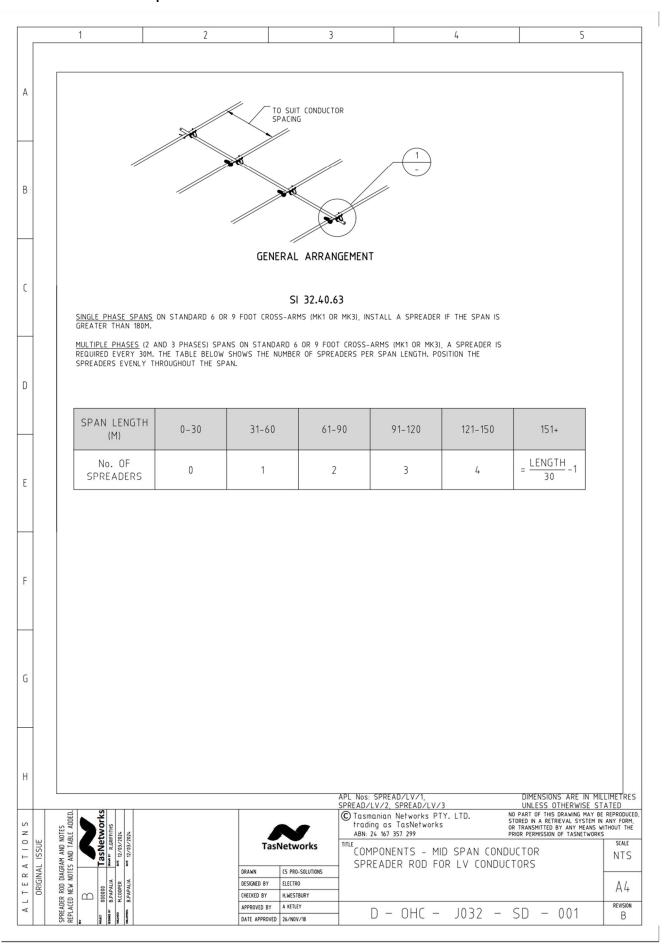
Conductor Ties



LV Conductor Ties



9.11 Conductor Spreaders



9.12 Cable Drum Sizes

