

12

Line hardware

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- › Tongue Hook
- › Bow Shackle
- › D Shackle
- › Ball Eye Link
- › Ball Clevis
- › Ball Eye Extension Link
- › Ball Clevis Extension Link
- › Socket Clevis
- › Socket Clevis Extension Link
- › Socket Tongue
- › Socket Tongue Twisted
- › Clevis Tongue
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- › Turnbuckles
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- › Suspension/Support Units
- › Compression Fittings
- › Vibration Dampers
- › Conductor Spacers
- › Bolted Clamps
- › Typical String Assemblies

Ball Hooks & Tongue Hook

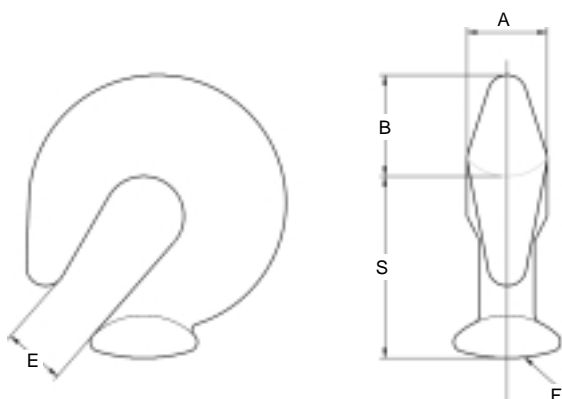


Fig. 1 Ball Hook Short Shank

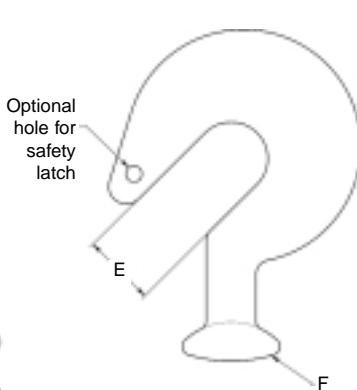


Fig. 2 Ball Hook Long Shank



Cat BHSS70

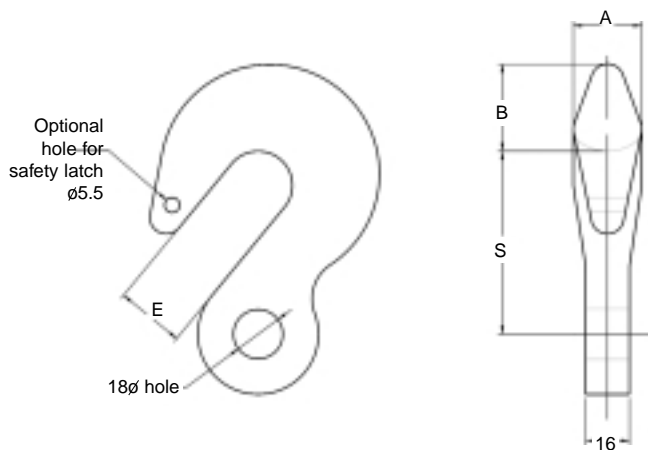


Fig. 3 Tongue Hook

Cat No.	Minimum Falling Load kN	Dimensions					Material	Fig. No.
		A	B	E	F (Ball)	S		
BHSS70	70	25	32	20	16	57	Forged Steel	1
BHLS70	70	25	32	25	16	82	Forged Steel	2
TH70	70	25	32	25	-	67	Forged Steel	3

Bow Shackle

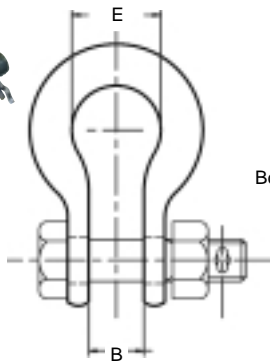


Fig. 1

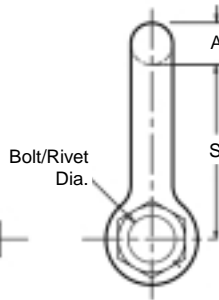


Fig. 2

Cat No.	Minimum Failing Load kN	Dimensions					Material	Fig. No.
		A	B	E	Bolt/Rivet Dia.	S		
S70A	70	16	22.50	34	16	67	Forged Steel	1
S70Q	70	16	22.50	34	16	67	Forged Steel	2
S120A	120	16	22.50	34	16	67	Forged Steel	1
S160A	160	20	24.50	40	20	76	Forged Steel	1

D Shackle

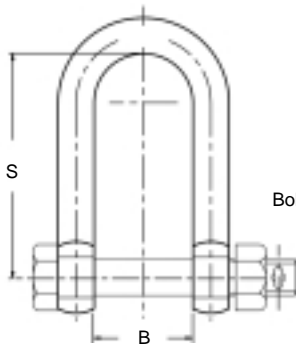


Fig. 1

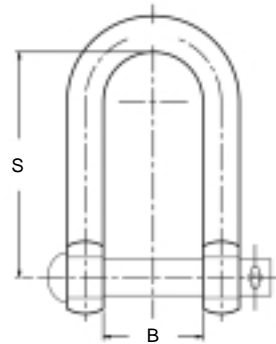
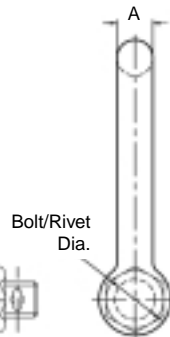
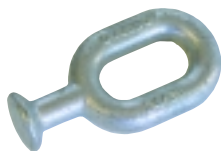


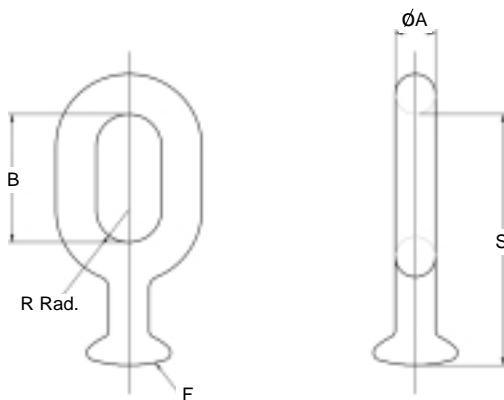
Fig. 2

Cat No.	Minimum Failing Load kN	Dimensions				Material	Fig. No.
		A	B	Bolt/Rivet Dia.	S		
SD70A	70	16	44	16	100	Forged Steel	1
SD70Q	70	16	44	16	100	Forged Steel	2

Ball Eye Link

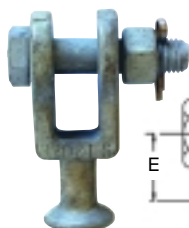


Cat BEL70



Cat No.	Minimum Failing Load kN	Dimensions					Material
		A	B	R	S	F (Ball)	
BEL70	70	16	50	13	100	16	Forged Steel
BEL120	120	16	50	13	100	16	Forged Steel
BEL160	160	20	64	16	128	20	Forged Steel

Ball Clevis



Cat BC120A

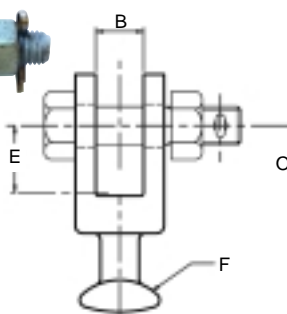


Fig. 1

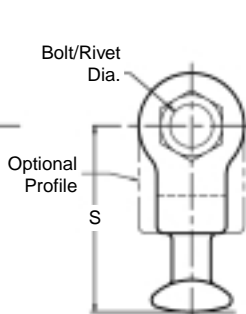
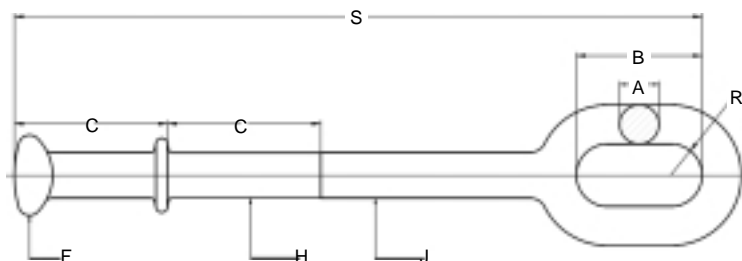
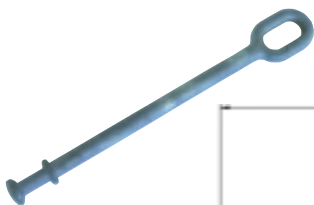


Fig. 2

Cat No.	Minimum Failing Load kN	Dimensions					Material	Fig. No.
		B	E	S	Bolt/Rivet Dia.	F (Ball)		
BC70A	70	20	28	78	16	16	Forged Steel	1
BC70Q	70	20	28	78	16	16	Forged Steel	2
BC120A	120	20	28	78	16	16	Forged Steel	1
BC160A	160	24	35	95	20	20	Forged Steel	1

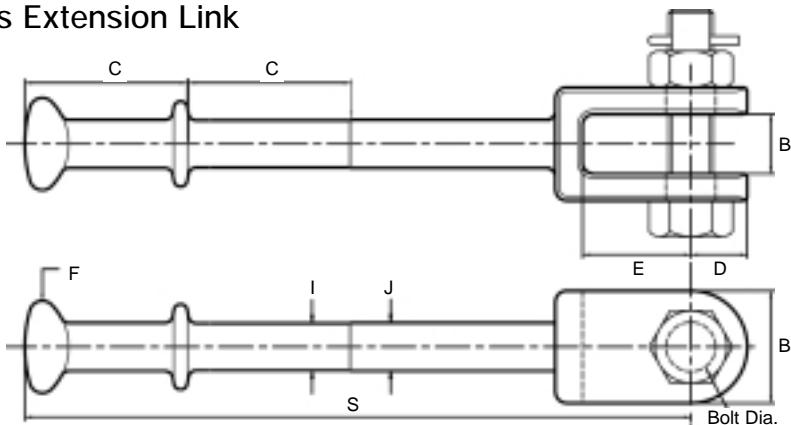
Ball Eye Extension Link



Cat No.	Minimum Failing Load kN	Dimensions								Material
		A	B	C	F	I	J	R	S	
BEEL160A	160	20	64	78	20	23	24	16	250	Forged Steel
BEEL160D	160	20	64	78	20	23	24	16	500	Forged Steel
BEEL160E	160	20	64	78	20	23	24	16	800	Forged Steel

Standard length S also available in 350, 1000 and 1330mm long

Ball Clevis Extension Link



Cat No.	Minimum Failing Load kN	Dimensions									Material
		B	C	D	E	F	Bolt Dia.	I Max	J	S	
BCEL160A	160	24	78	24	35	20	20	23	24	295	Forged Steel

Socket Clevis

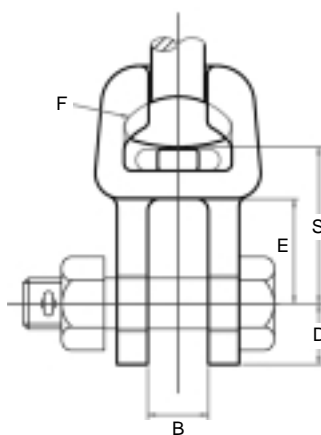


Fig. 1

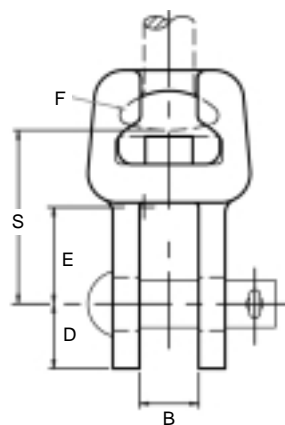
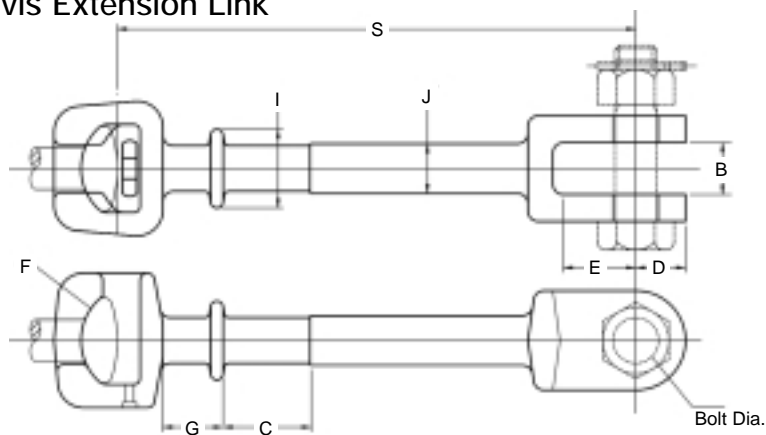


Fig. 2

Cat No.	Minimum Failing Load kN	Dimensions						Material	Fig. No.
		B	D	E	F (Ball)	Bolt/Rivet Dia.	S		
SC70A	70	20	22	28	16	16	59	Cast Iron	1
SC70Q	70	20	22	28	16	16	59	Cast Iron	2
SC120A	120	20	22	28	16	16	59	Forged Steel	1
SC160A	160	24	24	35	20	20	62	Forged Steel	1

Note: Standard fitting supplied with W clip; for R clip add suffix R

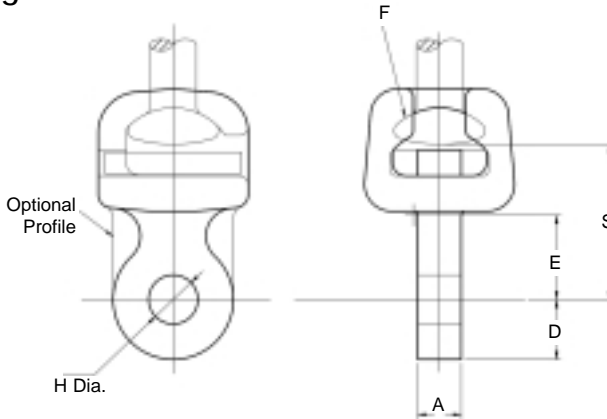
Socket Clevis Extension Link



Cat No.	Minimum Failing Load kN	Dimensions									
		B	C	D	E	F Socket	G	Bolt Dia.	I Max.	J	S
SCEL160A	160	24	78	24	35	20	25	20	23	24	250

Note: Standard fitting supplied with W clip; for R clip add suffix R

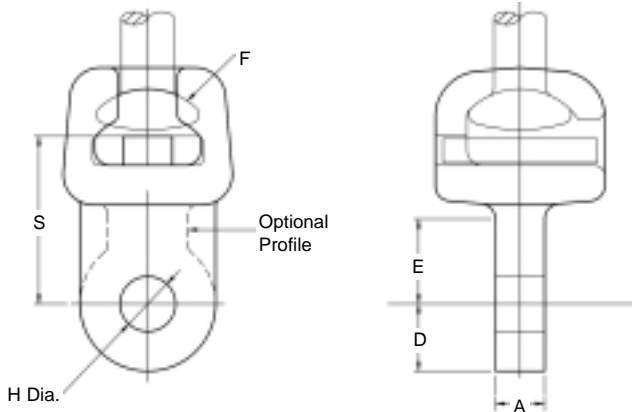
Socket Tongue



Cat No.	Minimum Failing Load kN	Dimensions						Material
		B	D	E	F (Ball)	H Dia.	S	
ST70	70	16	22	28	16	18	57	Cast Iron
ST120	120	16	22	28	16	18	57	Forged Steel
ST160	160	20	24	35	20	22	57	Forged Steel

Note: Standard fitting supplied with W clip; for R clip add suffix R

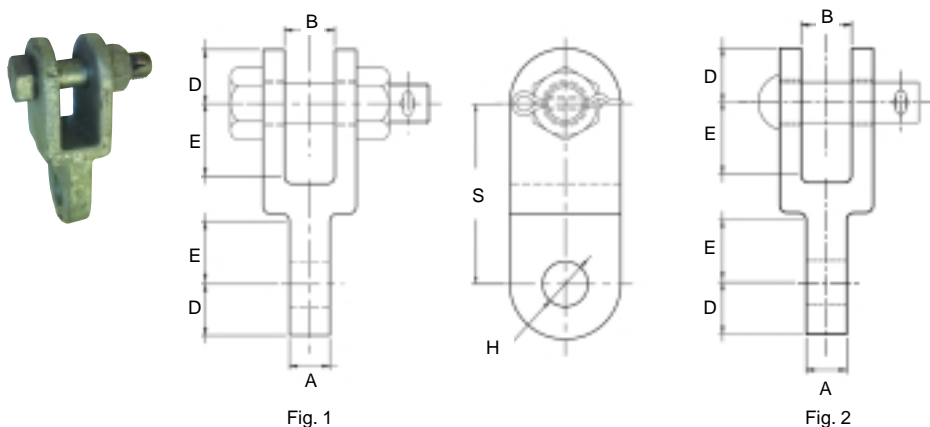
Socket Tongue Twisted



Cat No.	Minimum Failing Load kN	Dimensions						Material
		B	D	E	F (Ball)	H Dia.	S	
STT70	70	16	22	28	16	18	57	Cast Iron
STT120	120	16	22	28	16	18	57	Forged Steel
STT160	160	20	24	35	20	22	57	Forged Steel

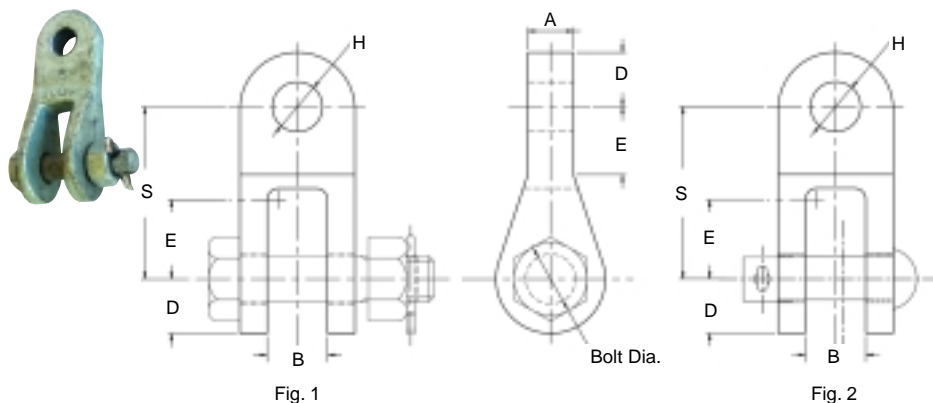
Note: Standard fitting supplied with W clip; for R clip add suffix R

Clevis Tongue



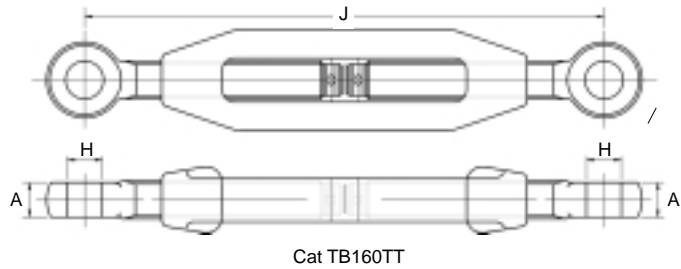
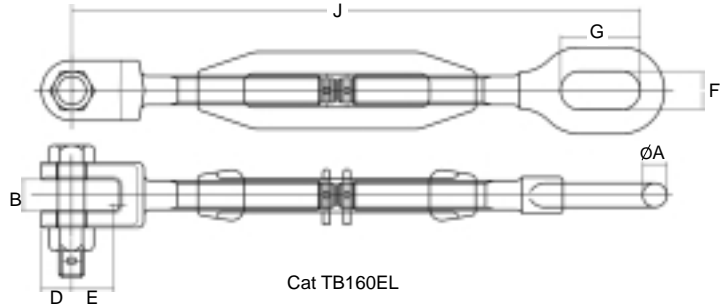
Cat No.	Minimum Failing Load kN	Dimensions							Material	Fig. No.
		A	B	D	E	H Dia.	Bolt/Rivet Dia.	S		
CT70A	70	16	20	22	28	18	16	72	Cast Iron	1
CT70Q	70	16	20	22	28	18	16	72	Cast Iron	2
CT120A	120	16	20	22	28	18	16	72	Forged Steel	1

Clevis Tongue Twisted



Cat No.	Minimum Failing Load kN	Dimensions							Material	Fig. No.
		A	B	D	E	H Dia.	Bolt/Rivet Dia.	S		
CTT70A	70	16	20	22	28	18	16	76	Forged Steel	1
CTT70Q	70	16	20	22	28	18	16	76	Forged Steel	2
CTT120A	120	16	20	22	28	18	16	76	Forged Steel	1
CTT160A	160	20	24	24	35	22	20	76	Forged Steel	1

Turnbuckles



Cat No.	Minimum Failing Load kN	Dimensions							Material
		A	B	D	E	F	G	Bolt Dia.	
TB160**	160	20	24	24	35	32	64	20	Forged Steel

**When ordering turnbuckles nominate suffix as follows:

TB160 followed by -

EE Nominating Eye/Eye

ET Nominating Eye/Tongue

EL Nominating Eye/Clevis

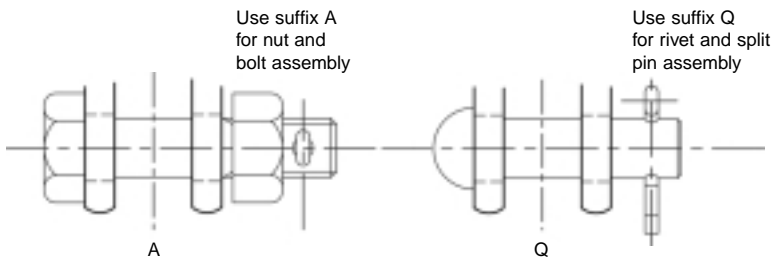
TL Nominating Tongue/Clevis

LL Nominating Clevis/Clevis

TT Nominating Tongue/Tongue

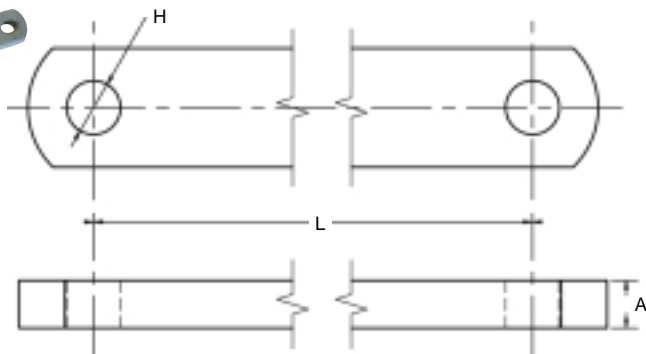
Other sizes may be available on request.

Sub Assembly ZZ



Bolt diameter 16mm for 70kN/120kN and 20mm for 160kN
Rivet diameter 16mm for 70kN

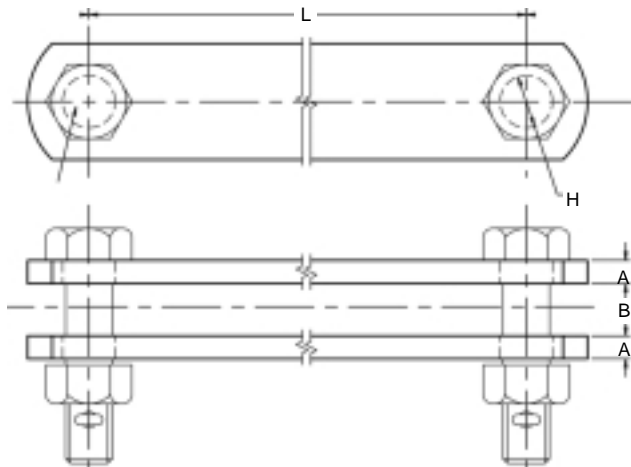
Single Plate Link



Cat No.	Minimum Failing Load kN	Dimensions			Material
		A	L	H Dia.	
SPL120__	120	16	As required	18	Galv Steel
SPL160__	160	16	As required	18	Galv Steel

Note: To above Cat No. add suffix to denote dimension 'L' e.g. SPL120150 (in 25mm steps)

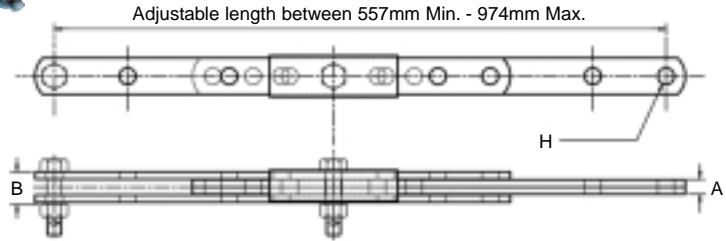
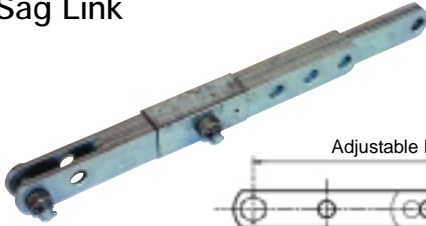
Double Plate Link



Cat No.	Minimum Failing Load kN	Dimensions				Material
		A	B	L	Bolt Dia.	
DPL70__	70	8	20	As required	16	Galv Steel
DPL120__	120	8	20	As required	16	Galv Steel
DPL160__	160	10	24	As required	20	Galv Steel

Note: To above Cat No. add suffix to denote dimension 'L' e.g. DPL70100 (in 25mm steps)

Sag Link

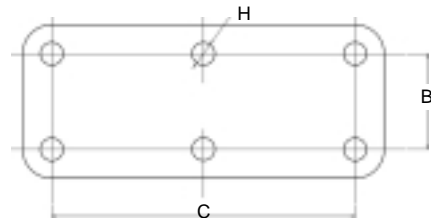
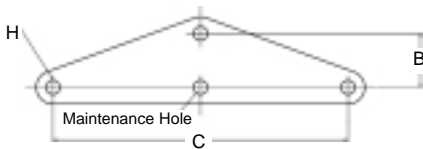


Cat No.	Minimum Failing Load kN	Dimensions				Material
		A	B	H Dia.	Bolt Dia.	
SL70	70	16 - 18	20	16	18	Galv Steel
SL120	120	16 - 18	20	16	18	Galv Steel
SL160**	160	20 - 22	24	20	22	Galv Steel

Note: Other variations available.

Yoke Plate - Triangular/Rectangular

Typical only, consult Dulmison for more details



Cat No. Triangular	Cat No. Rectangular	Minimum Failing Load kN	Dimensions				Material
			A	B	C	H Dia.	
YPT70	YPR70	70	16	76	380	18	Galv Steel
YPT120	YPR120	120	16	76	380	18	Galv Steel
YPT160	YPR160	160	20	76	380	22	Galv Steel

Note: Dimensions 'B' and 'C' are subject to customer requirements.

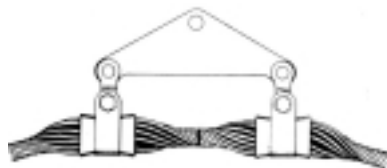
Heliformed® Suspension Units

Type HSU - Aluminium Alloy for AAC, AAAC & ACSR conductor

Type SHS - Galvanised Steel for SC/GZ conductor (Refer Dulmison Sales office for further information)

Type LHS - Aluminium Clad Steel for SC/AC conductor

Refer pages 7-31 and 7-32 for details.



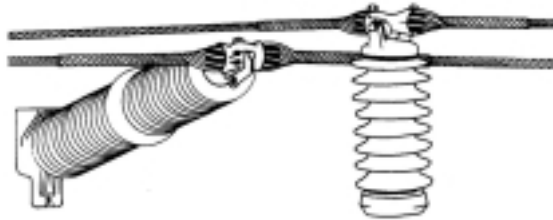
Cond. Type & Stranding		Dia. mm	Catalogue Number	Colour Code
AAC/AAAC	ACSR			
7/2.50	6/1+3/4/2.50	7.50	HSU0750	Blue
7/3.00	6/1+4/3/3.00	9.00	HSU0900	Red
7/3.75	6/1+4/3/3.75	11.25	HSU1125	Black
7/4.50	-	13.50	HSU1350	Green
7/4.75	6/4.75+7/1.60	14.30	HSU1430	Blue
19/3.25	-	16.25	HSU1625	Orange
-	30/7/2.50	17.50	HSU1750*	Blue
19/3.75	-	18.75	HSU1875*	Black
-	30/7/3.00	21.00	HSU2100*	Red
19/4.75	-	23.75	HSU2375*	Blue
-	30/7/3.75	24.50	HSU2450*	Purple
37/3.75	-	26.25	HSU2625*	Black
-	54/7/3.00	27.00	HSU2700*	Red
61/3.25	54/7/3.25	29.30	HSU2930*	Orange
-	54/7/3.50	31.50	HSU3150*	Purple
61/3.75	54/3.75+19/2.25	33.75	HSU3375*	Black

* Standard bolt size 16mm. Add suffix '2' for 20mm bolt.

Heliformed® Support Units

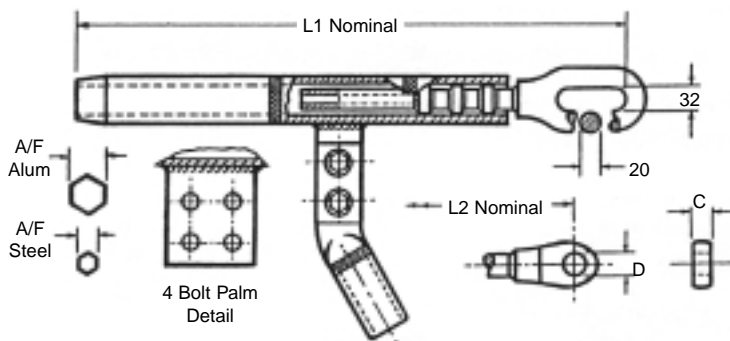
Type HSP - Aluminium Alloy for AAC, AAAC & ACSR conductor

Refer page 7-33 for details.



Cond. Type & Stranding		Dia. mm	Catalogue Number	Colour Code
AAC/AAAC	ACSR			
7/3.75	6/1+4/3/3.75	11.25	HSP1125	Black
7/4.50	-	13.50	HSP1350	Green
4/4.75	6/4.75+7/1.60	14.30	HSP1430	Blue
19/3.25	-	16.25	HSP1625	Orange
-	30/7/2.50	17.50	HSP1750	Blue
19/3.75	-	18.75	HSP1875	Black
-	30/7/3.00	21.00	HSP2100	Red
19/4.75	-	23.75	HSP2375	Blue
-	30/7/3.75	26.50	HSP2650	Purple
37/3.75	-	26.25	HSP2625	Black

Compression Deadends, Full Tension with Jumper Lugs using hexagonal Compression Dies



For ACSR conductors			Nom. Overall Cond. Dia.	Dimensions					
Cat No.	Code Name	Conductor Stranding		A/F1	A/F2	Eye Tail	Tongue Tail		
						L1	C	D	L2
HD507	ALMOND	6/1/2.50	7.50	14.00	6.80	350	12	18.0	320
HD512	APPLE	6/1/3.00	9.00	14.00	6.80	350	12	18.0	320
HD516	BANANA	6/1/3.75	11.30	18.00	9.50	370	12	18.0	340
HD521	CHERRY	6/4.75 +7/1.60	14.30	22.00	9.50	390	12	18.0	360
HD525	GRAPE	30/7/2.50	17.50	28.50	16.00	480	16	18.0	420
HD530	LEMON	30/7/3.00	21.00	34.50	17.00	540	20	22.0	490
HD532	LIME	30/7/3.50	24.50	40.00	19.00	560	20	22.0	510
HD535	MANGO	54/7/3.00	27.00	40.00	17.00	580	20	22.0	530
HD536	ORANGE	54/7/3.25	29.30	44.50	19.00	580	22	22.0	530
HD538	OLIVE	54/7/3.50	31.50	47.50	19.00	600	22	22.0	550
HD541	PAW PAW	54/3.75 +19/2.25	33.80	47.50	20.00	600	22	22.0	550

Note: Tongue tail arrangement preferred to eye tail arrangement for ranges Almond to Grape inclusive. To identify eye tail arrangement add suffix 'E'. For tongue tail arrangement add suffix 'T'.

Compression Deadends, Full Tension with Jumper Lugs using hexagonal Compression Dies

For AAC conductors			Nom. Overall Cond. Dia.	Dimensions				
Cat No.	Code Name	Cond. Stranding		A/F	Eye Tail	Tongue Tail		
					L1	C	D	L2
HD604	LEO	7/2.50	7.50	14.0	310	12	18	280
HD606	LIBRA	7/3.00	9.00	14.0	330	12	18	300
HD608	MARS	7/3.75	11.30	18.0	350	12	18	320
HD611	MERCURY	7/4.50	13.50	22.0	370	12	18	340
HD612	MOON	7/4.75	14.30	22.0	370	12	18	340
HD615	NEPTUNE	19/3.25	16.30	28.5	420	12	18	390
HD616	PLUTO	19/3.75	18.80	28.5	440	12	18	410
HD618	SATURN	37/3.00	21.00	34.5	460	12	18	430
HD620	TAURUS	19/4.75	23.80	40.0	500	16	18	480
HD621	TRITON	37/3.75	26.30	40.0	500	16	18	480
HD623	URANUS	61/3.25	29.30	44.5	580	20	20	530
HD624	VENUS	61/3.75	33.80	47.5	600	20	20	570

Note: Tongue tail arrangement preferred to eye tail arrangement for ranges Jupiter to Triton inclusive.

Eye tail arrangements for Uranus and larger should have centre palm arrangements.

To identify eye tail arrangement add suffix 'E'. For tongue tail arrangement add suffix 'T'.

For AAAC conductors				Nom. Overall Cond. Dia.	Dimensions				
Cat No.	Code Name		Cond. Stranding		A/F	Eye Tail	Tongue Tail		
	AAAC	AAAC/1120				L1	C	D	L2
HD702	DIAMOND	CHLORINE	7/2.50	7.50	14.0	310	12	18	280
HD703	EMERALD	FLUORINE	7/3.00	9.00	14.0	330	12	18	300
HD704	GARNET	HELIUM	7/3.75	11.30	18.0	350	12	18	320
HD705	JADE	HYDROGEN	7/4.50	13.50	22.0	370	12	18	340
HD706	JASPER	IODINE	7/4.75	14.30	22.0	370	12	18	340
HD707	OPAL	KRYPTON	19/3.25	16.30	28.5	420	12	18	380
HD708	PEARL	NEON	19/3.75	18.80	30.0	440	12	18	420
HD709	RUBY	NITROGEN	37/3.00	21.00	34.5	460	12	18	450
HD710	RUTILE	OXYGEN	19/4.75	23.80	40.0	500	20	22	490
HD711	SAPPHIRE	PHOSPHORUS	37/3.75	26.30	40.0	500	20	22	490
HD712	SPINEL	SELENIUM	61/3.25	29.30	44.5	580	22	22	530
HD713	TOPAZ	SULPHUR	61/3.75	33.80	47.5	600	22	22	570

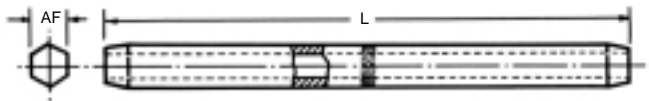
Note: Tongue tail arrangement preferred to eye tail arrangement for ranges Amethyst to Pearl inclusive.

Eye tail arrangements for Spinel and larger should have centre palm arrangements.

To identify eye tail arrangement add suffix 'E'. For tongue tail arrangement add suffix 'T'.

Compression Mid Span Joints - Full Tension

for Hexagonal Compression Dies in accordance with AS1154



Conductor type – AAC

AAC Full Tension Midspan Joints, are manufactured from an Aluminium extrusion, equivalent in strength to the conductor onto which the fitting is applied.

Each fitting is manufactured with internal and external tapers, to eliminate stresses associated with compression, and reduce corona discharge.

Each fitting is clearly marked with the compression length, the applicable conductor stranding, and the appropriate compression die size. All design parameters for the items in this section are in accordance with AS1154.

Cat. No.	AAC Code Name	Conductor Stranding	Nom. Overall Cond. Dia.	Dimensions mm		Die
				A/F	L	
HM603	Jupiter	7/2.25	6.75	11.0	240	38-110AL
HM604	Leo	7/2.50	7.50	14.0	240	38-140AL
HM606	Libra	7/3.00	9.00	14.0	280	38-140AL
HM608	Mars	7/3.75	11.25	18.0	320	38-180AL
HM611	Mercury	7/4.50	13.50	22.0	360	38-220AL
HM612	Moon	7/4.75	14.25	22.0	360	38-220AL
HM615	Neptune	19/3.25	16.25	28.5	400	40-285AL
HM616	Pluto	19/3.75	18.75	28.5	440	40-285AL
HM618	Saturn	37/3.00	21.00	34.5	480	40-345AL
HM620	Taurus	19/4.75	23.75	40.0	560	40-400AL
HM621	Triton	37/3.75	26.25	40.0	560	40-400AL
HM623	Uranus	61/3.25	29.25	44.5	640	40-445AL
HM624	Venus	61/3.75	33.75	47.5	780	40-475AL

Compression Mid Span Joints - Full Tension

for Hexagonal Compression Dies in accordance with AS1154



Conductor type AAAC/6201 & AAAC/1120

AAAC Full Tension Compression Midspan Joints, are manufactured from an Aluminium extrusion, equivalent in strength to the conductor onto which the fitting is applied.

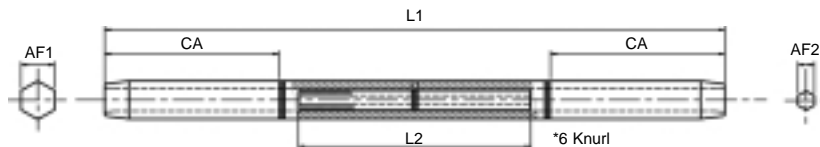
Each fitting is manufactured with internal and external tapers, to eliminate stresses associated with compression, and reduce corona discharge.

Each fitting is clearly marked with the compression length, the applicable conductor stranding, and the appropriate compression die size. All design parameters for the items in this section are in accordance with AS1154.

Cat. No.	AAAC/6201 Code Name	AAAC/1120 Code Name	Conductor Stranding	Nom. Overall Cond. Dia.	Dimensions mm		Die
					A/F	L	
HM702	Diamond	Chlorine	7/2.50	7.50	14.0	240	38-140AL
HM703	Emerald	Fluorine	7/3.00	9.00	14.0	280	38-140AL
HM704	Garnet	Helium	7/3.75	11.25	18.0	320	38-180AL
HM705	Jade	Hydrogen	7/4.50	13.50	22.0	360	38-220AL
HM706	Jasper	Iodine	7/4.75	14.25	22.0	360	38-220AL
HM707	Opal	Krypton	19/3.25	16.25	28.5	400	40-285AL
HM708	Pearl	Neon	19/3.75	18.75	30.0	440	40-300AL
HM709	Ruby	Nitrogen	37/3.00	21.00	34.5	480	40-345AL
HM710	Rutile	Oxygen	19/4.75	23.75	40.0	560	40-400AL
HM711	Sapphire	Phosphorous	37/3.75	26.25	40.0	560	40-400AL
HM712	Spinel	Selenium	61/3.25	29.25	44.5	640	40-445AL
HM713	Topaz	Sulphur	61/3.75	33.75	47.5	780	40-475AL

Compression Mid Span Joints - Full Tension

for Hexagonal Compression Dies in accordance with AS1154



Conductor type – ACSR

ACSR Full Tension Compression Midspan Joints, are manufactured from an Aluminium outer extrusion, and an inner steel tubular core. The two piece design ensures a design strength equivalent to the conductor onto which the fitting is applied.

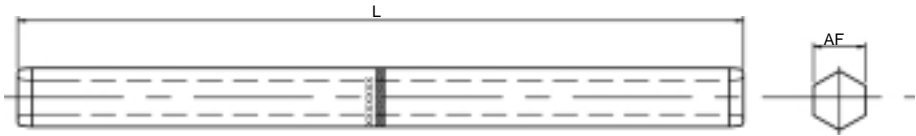
Each fitting is manufactured with internal and external tapers, to eliminate stresses associated with compression, and reduce corona discharge.

Each fitting is clearly marked with the compression length, the applicable conductor stranding, and the appropriate compression die size. All design parameters for the items in this section are in accordance with AS1154.

ACSR		Conductor Stranding	Nom. Overall Cond. Dia.	Aluminium				Steel		
				Dimensions						
Cat. No.	Code Name			A/F1	Die	L1 Nom.	CA	A/F2	Die	L2 Nom.
HM507	Almond	6/1/2.50	7.50	14.0	38-140AL	400	100	6.8	38-68ST14	160
HM512	Apple	6/1/3.00	9.00	14.0	38-140AL	400	100	6.8	38-68ST14	160
HM516	Banana	6/1/3.75	11.25	18.0	38-180AL	440	120	9.5	38-95ST	160
HM521	Cherry	6/4.75+7/1.60	14.30	22.0	38-220AL	480	140	9.5	38-95ST	160
HM525	Grape	30/7/2.50	17.50	28.5	40-285AL	600	180	16.0	38-160ST	200
HM530	Lemon	30/7/3.00	21.00	34.5	40-345AL	640	180	17.0	40-170ST	240
HM532	Lime	30/7/3.50	24.50	40.0	40-400AL	680	200	19.0	40-190ST	240
HM535	Mango	54/7/3.00	27.00	40.0	40-400AL	720	220	17.0	40-170ST	240
HM536	Orange	54/7/3.25	29.25	44.5	40-445AL	720	220	19.0	40-190ST	240
HM538	Olive	54/7/3.50	31.50	47.5	40-475AL	760	240	19.0	40-190ST	240

Compression Mid Span Joints - Non Tension

for Hexagonal compression Dies in accordance with AS1154



Conductor type – AAC

Non Tension Compression Mid Span Joints are manufactured from an Aluminium extrusion.

As these joints are installed at low tension values, one fitting can be used for all cable types of the same size (OD).

Cat. No.	AAC Code Name	Conductor Stranding	Nom. Overall Cond. Dia.	Dimensions mm		Die
				A/F	L	
HN603	Jupiter	7/2.25	6.75	11.0	160	38-110AL
HN604	Leo	7/2.50	7.50	14.0	180	38-140AL
HN606	Libra	7/3.00	9.00	14.0	180	38-140AL
HN608	Mars	7/3.75	11.25	18.0	220	38-180AL
HN611	Mercury	7/4.50	13.50	22.0	240	38-220AL
HN612	Moon	7/4.75	14.25	22.0	260	38-220AL
HN615	Neptune	19/3.25	16.25	28.5	260	40-285AL
HN616	Pluto	19/3.75	18.75	28.5	260	40-285AL
HN618	Saturn	37/3.00	21.00	34.5	280	40-345AL
HN620	Taurus	19/4.75	23.75	40.0	280	40-400AL
HN621	Triton	37/3.75	26.25	40.0	300	40-400AL
HN623	Uranus	61/3.25	29.25	44.5	320	40-445AL
HN624	Venus	61/3.75	33.75	47.5	380	40-475AL

Compression Mid Span Joints - Non Tension

for Hexagonal Compression Dies in accordance with AS1154



Conductor type - AAAC/6201 & AAAC/1120

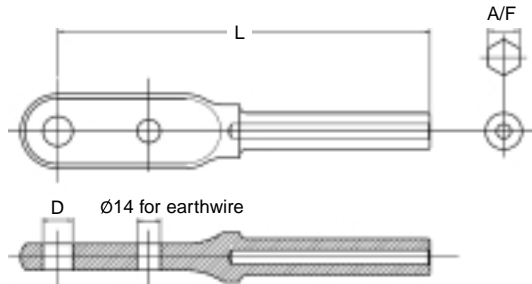
Cat. No.	AAAC/6201 Code Name	AAAC/1120 Code Name	Conductor Stranding	Nom. Overall Cond. Dia.	Dimensions mm		Die
					A/F	L	
HN604	Diamond	Chlorine	7/2.50	7.50	14.0	180	38-140AL
HN606	Emerald	Fluorine	7/3.00	9.00	14.0	180	38-140AL
HN608	Garnet	Helium	7/3.75	11.25	18.0	220	38-180AL
HN611	Jade	Hydrogen	7/4.50	13.50	22.0	240	38-220AL
HN612	Jasper	Iodine	7/4.75	14.25	22.0	260	38-220AL
HN615	Opal	Krypton	19/3.25	16.25	28.5	260	40-285AL
HN616	Pearl	Neon	19/3.75	18.75	28.5	260	40-285AL
HN618	Ruby	Nitrogen	37/3.00	21.00	34.5	280	40-345AL
HN620	Rutile	Oxygen	19/4.75	23.75	40.0	280	40-400AL
HN621	Sapphire	Phosphorous	37/3.75	26.25	40.0	300	40-400AL
HN623	Spinel	Selenium	61/3.25	29.25	44.5	320	40-445AL
HN624	Topaz	Sulphur	61/3.75	33.75	47.5	380	40-475AL

Conductor type - ACSR

Cat. No.	ACSR Code Name	Conductor Stranding	Nom. Overall Cond. Dia.	Dimensions mm		Die
				A/F	L Nom.	
HN604	Almond	6/1/2.50	7.50	14.0	180	38-140AL
HN606	Apple	6/1/3.00	9.00	14.0	180	38-140AL
HN608	Banana	6/1/3.75	11.25	18.0	220	38-180AL
HN521	Cherry	6/4.75+7/1.60	14.30	22.0	260	38-220AL
HN634	Grape	30/7/2.50	17.50	28.5	260	40-285AL
HN618	Lemon	30/7/3.00	21.00	34.5	280	40-345AL
HN532	Lime	30/7/3.50	24.50	40.0	300	40-400AL
HN631	Mango	54/7/3.00	27.00	40.0	320	40-400AL
HN623	Orange	54/7/3.25	29.25	44.5	320	40-445AL
HN635	Olive	54/7/3.50	31.50	47.5	350	40-475AL

Compression Deadend - for Earthwire

using Hexagonal Compression Dies



Material: Stainless Steel

Cat No.	Conductor Stranding SC/GZ (AC)	Nom. Overall Cond. Dia.	Dimensions		
			A/F	L	D
HD806T	7/2.75	8.25	17.0	225	18
HD807T	7/3.25	9.75	17.0	225	18
HD808T	19/2.00	10.00	19.0	225	18
HD809T	7/3.75	11.25	19.0	225	18
HD811T	19/2.75	13.75	26.0	240	18
HD812T	19/3.25	16.25	26.0	260	18

Compression Midspan Joint - for Earthwire

using Hexagonal Compression Dies



Material: Stainless Steel

Cat No.	Conductor Stranding SC/GZ (AC)	Nom. Overall Cond. Dia.	Dimensions	
			A/F	L
HM804	3/2.75	5.90	11.0	160
HM807	7/3.25	9.75	17.0	240
HM808	19/2.00	10.00	19.0	240
HM809	7/3.75	11.25	19.0	250
HM811	19/2.75	13.75	26.0	260
HM812	19/3.25	16.25	26.0	300

Dogbone Vibration Damper

Materials:

- Clamp - cast of high strength aluminium alloy.
- Bolt - stainless steel bolt
- Flat Washer - stainless steel
- Spring Washer - stainless steel
- Messenger - exclusive Heliformed® 19 strand EHS galvanised steel.
- Masses - high grade zinc.

General Recommendations:

Dogbone Dampers are designed to eliminate conductor fatigue damage and line maintenance costs by effectively diminishing aeolian vibration, thereby allowing increased line tensions. The messenger cable and unique dogbone shape of the masses are designed to achieve optimal energy dissipation for minimal clamp movement. The messenger cable and dogbone weights are matched to give additional resonant modes and wider effective frequency response. The mechanical impedance of the damper is matched to the conductor to optimise performance. The offset dogbone shaped masses introduces a torsional mode of vibration damping not present in conventional Stockbridge type dampers.



The range of Dogbone Vibration Dampers is a development resulting from our extensive experience and research in the field of conductor vibration control. The Dogbone concept is based on the known and proven principles of the Stockbridge Damper but embodies improvements which increase both power dissipation and range of frequency response beyond those of a Stockbridge Damper. The performance of the Dogbone Damper has been further improved using the latest CIGRE and IEEE recommended methods including I.S.W.R. Power Dissipation and Mechanical Impedance Testing.

Radio Interference Voltage (RIV):

Dogbone Dampers are designed to be corona free at all operating voltages.

Placement:

Due to the many parameters involved and the exhaustive tests conducted by Dulmison for optimum damper placement and performance, it is recommended that Dulmison be consulted for exact damper requirements.

Option:

Armour Rods can be supplied for added protection to OPGW Cable. See page 7-16 for details.

See overleaf for table of catalogue numbers and conductor suitability.

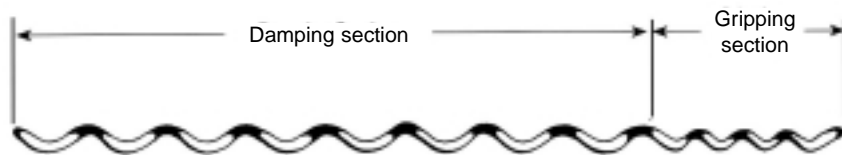
Dogbone Vibration Damper

Cont'd

Cat No.	Clamp Diameter Range	Conductor Type			
		AAC	AAAC	ACSR	SC/GZ
DB05B07SS	7.1-10.0				7/2.75 7/3.25
DB05B10SS	10.1-12.0			BANANA	7/3.75 7/4.00
DB05B12SS	12.1-15.0	MERCURY MOON	HYDROGEN IODINE JADE JASPER	CHERRY	19/2.75
DB05B15SS	15.1-18.0	NEPTUNE	KRYPTON OPAL	GRAPE	19/3.25
DB05B18SS	18.1-21.0	PLUTO	NEON PEARL		
DB05B21SS	21.1-24.0	Only used for OPGW			
DB05B24SS	24.1-27.0	Only used for OPGW			
DB1B18SS	18.1-21.0	SATURN	NITROGEN RUBY	LEMON	
DB1B21SS	21.1-24.0	TAURUS	OXYGEN RUTILE		
DB2B21SS	21.1-24.0				
DB2B24SS	24.1-27.0	TRITON	PHOSPHORUS SAPPHIRE	LIME MANGO	
DB2B27SS	27.1-31.0	URANUS	SPINEL SELENIUM	ORANGE	
DB3B31SS	31.1-34.0	VENUS	SULPHUR SILICON TOPAZ	OLIVE PAW PAW	

Heliformed® Spiral Vibration Damper

Type SVD, for standard metric conductors 4.42mm to 19.30mm O.D.



Dulmison Spiral Vibration Dampers are designed for use on conductors and guy wires ranging from 4.42mm to 19.30mm. They are designed to reduce aeolian vibration by acting as an interference device for the aeolian vibration pattern, and are generally the most effective devices for use on small diameter conductors and earthwires. Dulmison Spiral Vibration Dampers are manufactured from UV stable, high impact PVC and are suitable for use in ambient temperatures ranging from -40°C to 70°C. Further information is shown on page 7-30 of this catalogue.

Conductor Dia. Range mm	Catalogue Number	Std. Pack	Colour Code
4.41 - 6.34	SVD 0441	25	Red
6.35 - 8.29	SVD 0635	25	Blue
8.30 - 11.72	SVD 0830	25	Black
11.73 - 14.31	SVD 1173	25	Yellow
14.32 - 19.30	SVD 1432	8	Green

Posilok Twin Spacer

with Elastomeric Conductor Bushes



Materials:

Spacer, body, keeper, and Posilok clamp fastener - high strength aluminium alloy.

Clamp liner - an elastomer compound specially formulated for resistance to ozone, ultraviolet, weathering, high and low temperature variations and compression set. The conductor range and part number is moulded into the inside of each liner.

Posilok Twin Spacer Dampers are available for conductor sizes ranging from 18mm to 35mm and for spacing ranging from 200mm to 520mm. Dulmison Posilok Twin Spacers have been successfully used for over 25 years in Australia, USA, UK and many other countries. Posilok Twin Spacers feature an elastomer lined clamp that minimises damaging static compressive stresses on the conductor while providing high slip strength. The clamp action of the Posilok makes this spacer easy to use with the clamp being fastened by the action of the locking pin. This method of clamping ensures that the clamp is always properly fastened, with a controlled amount of force exerted through the rubber onto the conductor.

General Recommendations:

Posilok Spacers are designed to maintain specified subconductor spacing. Furthermore they are designed to withstand the forces and movements caused by transient conditions such as short circuit differential icing and wind loading, without either causing damage to the subconductors or sustaining damage themselves. Dulmison's exclusive Posilok fastener maintains a clamping force, independent of the installing lineman. The Posilok clamp design was developed specifically to eliminate the variables involved with other types of fasteners. When properly installed it exerts a positive vibration proof grip on the conductor. Correct installation is easily verified from the ground.

The Posilok spacer is flexible enough to allow some longitudinal movement between subconductors, and yet rigid enough to restrain the subconductors under adverse conditions. They provide a smooth, unitised construction which minimises corona and presents a low level of RIV. The range of Posilok spacers are designed to accommodate all conductor sizes, all EHV voltages, and all bundle configurations.

Radio Interference Voltage (RIV) and Corona:

Posilok spacers are designed to have satisfactory performance commensurate with the operating voltage of the transmission line.

Vibration:

Although the elastomer cushioned housing is designed to minimise conductor damage, vibration dampers must be used on lines subjected to aeolian vibration.

Bolted Option (Cast Bar Spacer):

Cast bar spacers are available to suit most Australian standard conductors in twin, triple and four conductor configurations with spacings from 70mm to 520mm. Cast bar spacers are used in varying applications in substations such as overhead strung bus bars and down droppers. They can also be used in transmission line applications for jumper (pilot) strings.



Spacer Dampers

Materials:

Frame - High strength aluminium alloy

Posilok Arm - (xSDP)

Bolted Arm - (xSDB)

Elastomer Liners - used only with the Posilok Keeper

especially compounded for resistance to ozone, weathering, extreme high and low temperatures and compression set. The conductor range is moulded into the inside of each insert.

General Recommendations:

Spacer Dampers are recommended for multi-conductor bundles with industry standard spacing. The Spacer Damper is designed to withstand the forces and movements caused by transient conditions such as short circuit, differential icing and wind loading, without either causing damage to the subconductors or sustaining damage themselves. The design accommodates both longitudinal movement of the subconductors, vertical sag differences, as well as compressive and tensile forces. When the Spacer Damper is installed in accordance with Dulmison's recommendations for subspan lengths, it constitutes a system which replaces conventional spacers and vibration dampers. Spacer Dampers will control both aeolian vibration and subconductor oscillation to levels recognised as acceptable within the industry and to the customers expressed needs. Dulmison will tailor the recommendations to terrain and design parameters.

Corona and RIV:

Spacer Dampers are designed to have a satisfactory performance commensurate with the operating voltage of the transmission line.

Fault Currents:

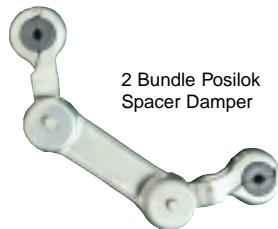
All of Dulmison's Spacer Dampers are designed for a minimum compressive withstand load between clamps of 1130kg and a minimum tensile to withstand load of 560kg.

Placement:

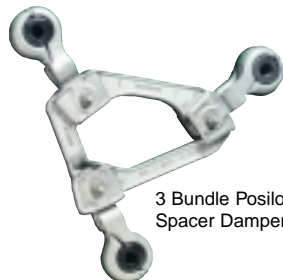
Due to the many factors involved in designing an effective spacer damper system, it is recommended that Dulmison be consulted for specific recommendations on both the choice of Spacer Dampers and placement.

Damping:

Spacer Dampers can accommodate torsional clamp arm movement of plus or minus 13 degrees, conical clamp arm movement of plus or minus 8 degrees, and longitudinal movement of plus or minus 38mm. These are possible because of the properties of our elastomeric damping elements. There are two per arm, one on each side. They are especially compounded to give long life under conditions of ozone, ultra violet light, anticipated temperature extremes, and continual conductor motion. Their ability to dampen over many years has been well established throughout the world in all types of climates.



2 Bundle Posilok
Spacer Damper



3 Bundle Posilok
Spacer Damper



4 Bundle Posilok
Spacer Damper

Clevis Suspension Clamps for Aluminium Based Conductors

Materials: Aluminium alloy body

Hardware: Galvanised steel

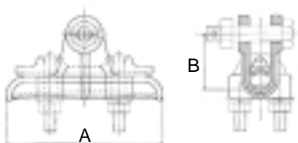


Fig. 1

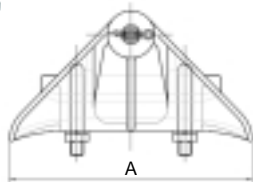


Fig. 2

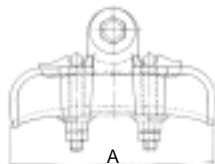


Fig. 3

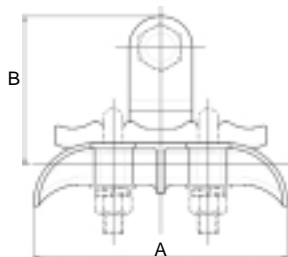
Cat No.	Minimum Failing Load kN	Dimensions		Conductor Diameter Range mm	Hardware	Fig.
		A	B			
ACC0721H	44	152	62	7-21	Hex Pin	1
ACC0721A	44	152	62	7-21	Bolt	1
ACC0721Q	44	152	62	7-21	Rivet	1
ACC1723A	40	200	76	12-28	Bolt	3
ACC2032A	70	230	84	20-32	Bolt	2
ACC2032H	70	230	84	20-32	Hex Pin	2

Note: Diameter allowance should be made for Heliformed® rods if required.
Other sizes also available

Clevis Suspension Clamps for Steel or Copper Conductors

Materials: Cast iron body, hot dipped galvanised

Hardware: Galvanised steel



Cat No.	Minimum Failing Load kN	Dimensions		Conductor Diameter Range mm	Hardware	Fig.
		A	B			
SCC0615H	24	152	71	6 - 15	Hex Pin	1
SCC0615A	24	152	71	6 - 15	Bolt	1
SCC0615Q	24	152	71	6 - 15	Rivet	1

Trunnion Suspension Clamps for Aluminium Based Conductors

Materials: Aluminium alloy body

Hardware: Galvanised steel

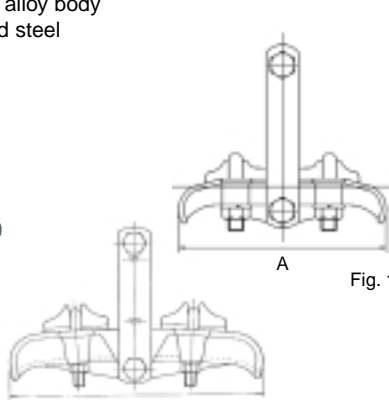


Fig. 1

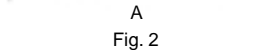


Fig. 2

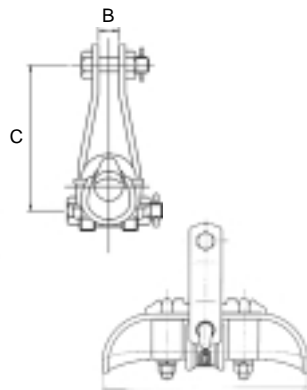


Fig. 3

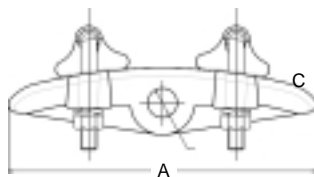
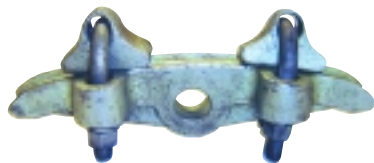
Cat No.	Minimum Failing Load kN	Dimensions			Conductor Diameter Range mm	Hardware	Fig.
		A	B	C			
ATC1221A	44	152	20	95	12 - 21	Bolt	1
ATC2127A	44	203	20	120	21 - 27	Bolt	1
ATC2736A	44	229	20	140	27 - 36	Bolt	1
ATC3646A	44	250	23	150	36 - 44	Bolt	2
ATC4652A	44	300	20	175	46 - 52	Bolt	2
ATC4565A	44	327	47	140	45 - 65	Bolt	3

Note: Diameter allowance should be made for Heliformed® rods if required.

Suspension Clamp for Steel or Copper Conductors

Materials: Galvanised cast iron

Hardware: Galvanised steel

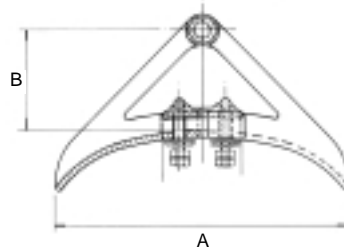


Cat No.	Minimum Failing Load kN	Dimensions			Conductor Diameter Range mm
		A	B	C	
SCC0244	70	230	22	20	6.5 - 16
SCC0818M	70	230	41.5	23	8 - 19

Aluminium Angle Clamp for Aluminium Based Conductors

Materials: Aluminium alloy body

Hardware: Galvanised steel



Cat No.	Minimum Failing Load kN	Dimensions		Conductor Diameter Range mm	Hardware
		A	B		
AAC0616A	34	280	103	6 - 16	Bolt
AAC1025A	34	330	130	16 - 25	Bolt
AAC1025H	34	330	130	16 - 25	Hex Pin

Line Hardware

Strain Clamp

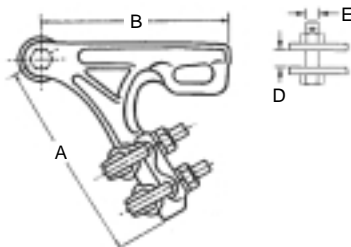
Materials: Refer table**Hardware:** Galvanised steel

Fig. 1

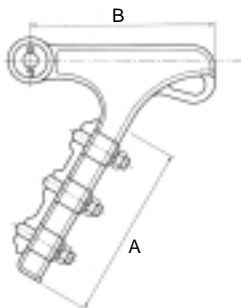


Fig. 2

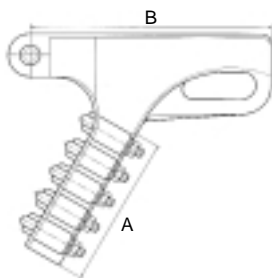


Fig. 3

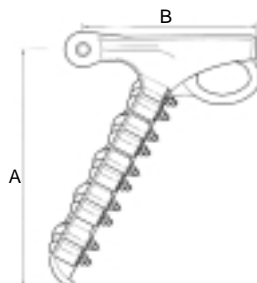
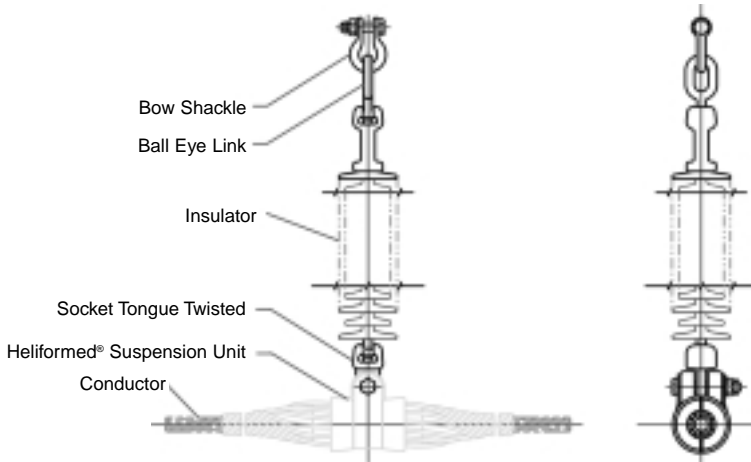


Fig. 4

Cat No.	Material	Dimensions				Conductor Diameter Range mm	Hardware	Fig.
		A	B	D	E			
ASC0614A	Al. Alloy	193	175	17.5	16	8.0 - 11.0	Bolt	1
SCK3A12-19.5	Al. Alloy	187	200	21	16	12.0 - 19.5	Rivet	2
SCL5A29	Al. Alloy	210	330	30	16	13.0 - 30.0	Rivet	3
SCL5A31	Al. Alloy	489	350	38	16	17.5 - 31.0	Rivet	4
SCL5A46	Al. Alloy	489	350	47	16	28.5 - 47.0	Rivet	4
STC5-15-4749T	Galv. Iron	187	200	19	16	5.0 - 15.0	Rivet	2

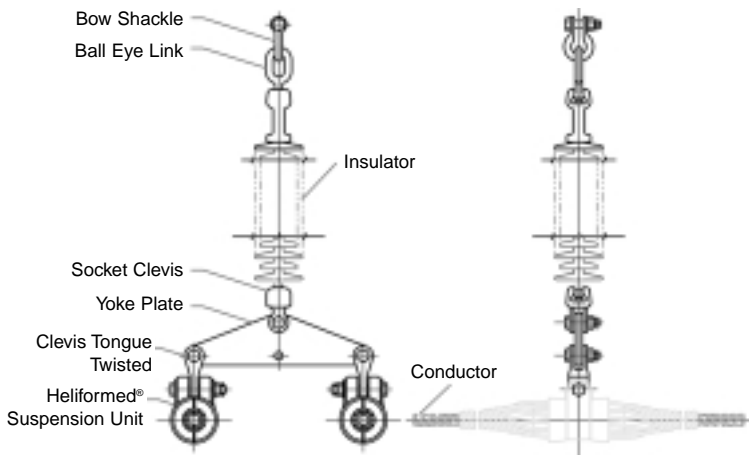
Typical String Assemblies

Single Conductor Single Insulator Suspension Assembly



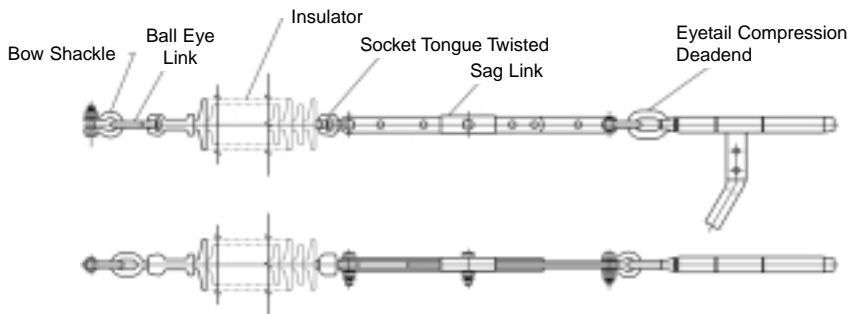
Typical String Assemblies

Twin Conductor Single Insulator Suspension Assembly



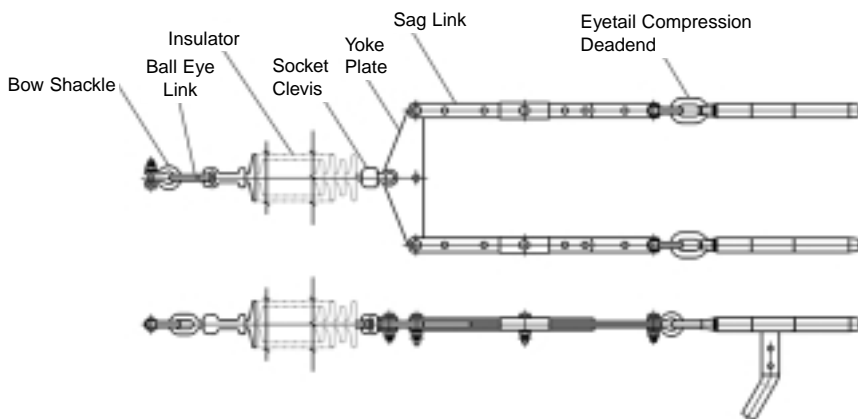
Typical String Assemblies

Single Conductor Single Insulator Tension Assembly



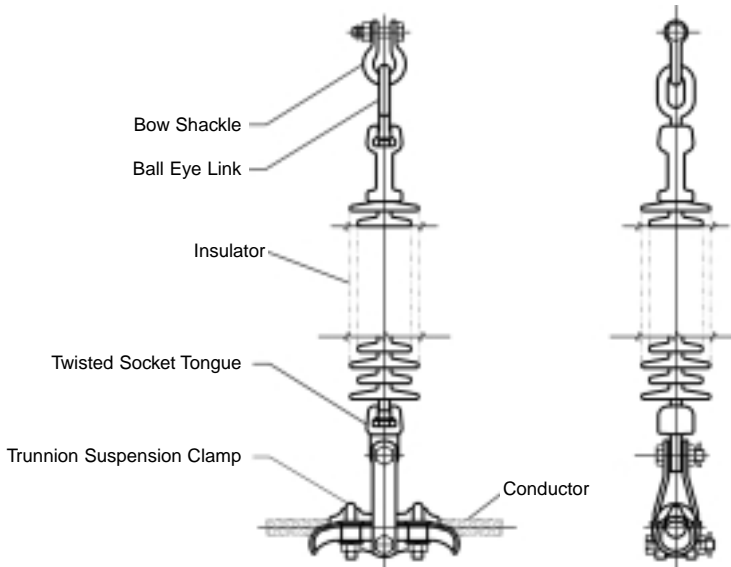
Typical String Assemblies

Twin Conductor Single Insulator Tension Assembly



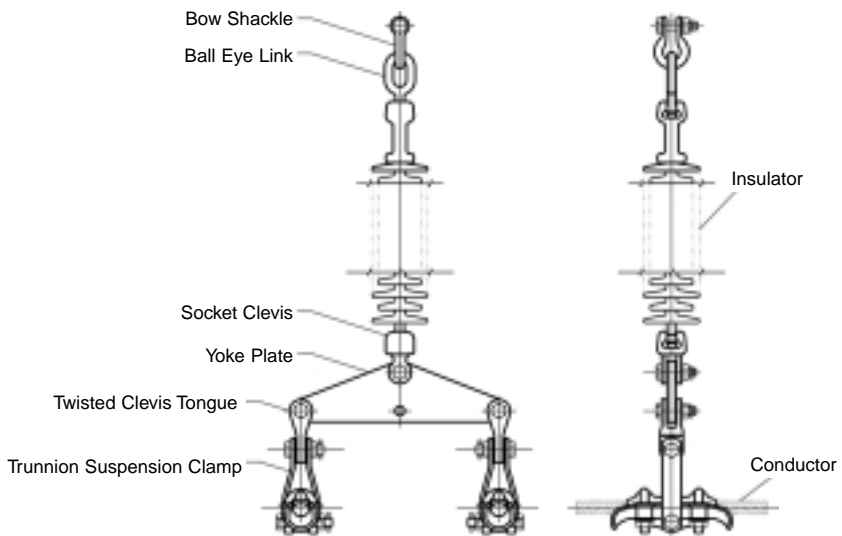
Typical String Assemblies

Single Conductor Single Insulator Jumper (Pilot) Assembly



Typical String Assemblies

Twin Conductor Single Insulator Jumper (Pilot) Assembly



Typical String Assemblies

Single Conductor Single Insulator Flying Angle Assembly

