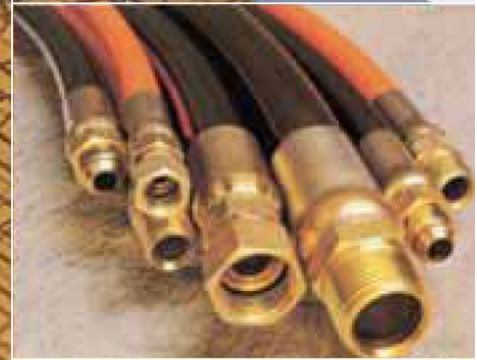


Hydraulic & Pneumatic Supplies



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Insulated U-Bolt



"We have set out to be the best specialist supplier of hydraulic tube, fittings, instrumentation and pipeline materials you will ever want to deal with."

Alan Wills · Managing Director



WITCHLINER Isolation Products

For Stainless Steel and Cupro-Nickel Pipes

Introduction

Carpenter & Paterson have successfully completed a substantial number of contracts for the Power Generation, Oil, Gas, Petrochemical, Process and Allied Industries. As part of our continuing product development we now offer an extended range of Pipe Supports that have been particularly designed for the Oil, Gas and Process Industries.

Our WITCHLINER range of products is to suit Stainless Steel, Duplex, Super Duplex and Cupro-Nickel Piping and incorporate moulded isolation/encasing materials thus:-

Neoprene (temp range -30 C to 100 C)

Silicone (temp range -70 C to 300 C)

Both materials offer extensive performance qualities, and can be utilised in a wide range of pipework installations.

Principal Benefits

Clamping damage restraint to thin wall pipes

Prevention of electrolytic erosion between dissimilar metals

Curtailment of noise and vibration

Cost effective and time saving

Large standard ranges available

Other special designs and models available to suit customer requirements

Properties and Isolating Material

The steel parts of both the U Bolts and Clamps are isolated from the pipe utilising either extruded 70/80 FR flame-retardant Neoprene (conforming to BS4255) or flame-retardant Silicone rubber elastomer.

70/80 FR Neoprene

Chloroprene, generally known under the Du Pont trade name of Neoprene, is probably the most commonly used synthetic rubber.

This material is strong, resilient, and achieves an extremely high performance in the reduction of noise and vibration in pipework. Neoprene also has an outstanding resistance to a wide range of chemicals, including acids, alkalis, fats, oils, greases and solvents. It has advantageous physical properties including tear and abrasion resistance, ozone and weathering.

Colour: Black

Working Temperature Range: -30 C to 100 C

Typical properties for 70/80 FR Neoprene:-

Specific Gravity 1.5

Hardness IRHD 76-85

Tensile Strength 10.5 min (Mpa)

Elongation at Break 150 min (%)

Compression Set 25% max

Accelerated Ageing

Hardness Change IRHD Plus 10 max

Change T/S% Minus 15% max

Change in E/B% Minus 40% max

Static Ozone Resistance - No Cracks

Low Temperature Hardness Change IRHD Plus 12 Max

HT/FR Silicone Rubber Elastomer

Silicone rubber is a chemically inert synthetic elastomer which differs from other synthetic and natural rubbers in that it is able to maintain excellent elasticity and resilience over a wide temperature range. It has excellent resistance to fire, very low toxicity, and can perform at temperatures up to 300 C (max) with minimum loss of characteristics.

The material has excellent resistance to ozone, weathering, and a wide range of chemicals, solvents, oils and greases.

Colour: Mid-Grey

Working Temperature Range: -70 C to 300 C

Typical properties for H.T.F.R. Silicone Rubber Elastomer:-

Shore Hardness 60 (A+5 deg)

Density 1.44 (gms/cubic cm)

Tensile Strength 7.8 (Mpa)

Elongation at Break 165 (%)

Tear Strength 10 (KN/M)

Compression Set 30% (70 hours @ 150 C)

Flame Resistance UL94 VO 2 mm

Oxygen Index 39% (norm NFT 5107 1)

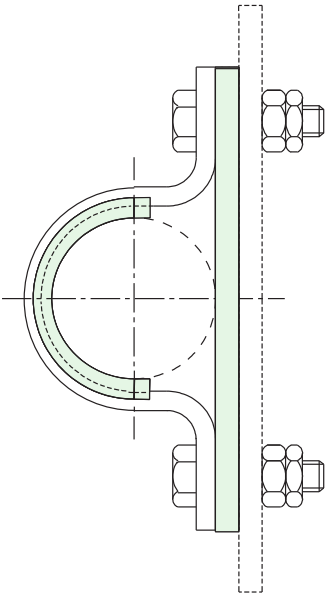
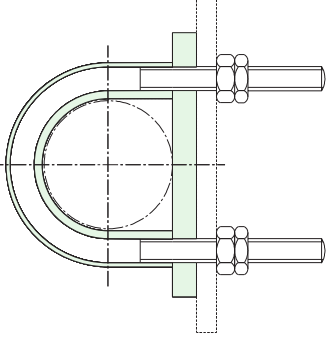
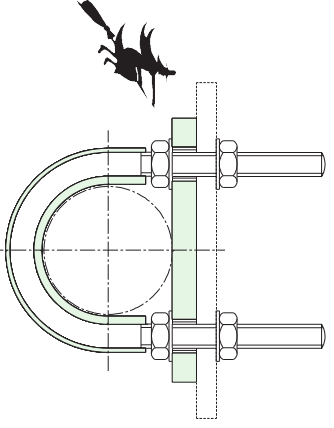
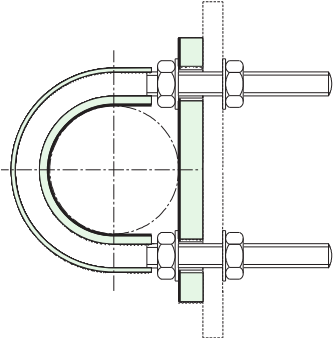
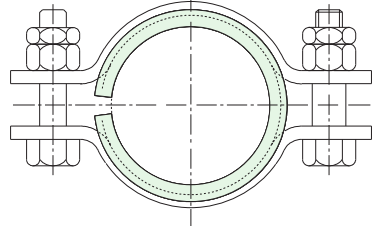
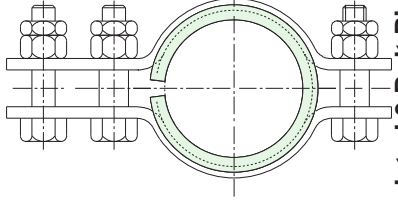
Smoke Toxicity to AFNOR norm NFX.70100 CT approx. 2.3 BS 6853 category 1

Surface Finish (Metallic Components)

The standard finish on the U Bolts is bright zinc plated and passivated, in accordance with BS 3382, whilst the surface finish on the clamps is hot dip galvanised in accordance with BS 729. Alternative surface coatings are available if required, such as cadmium plating or sheradizing.



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WITCHLINER Insulated Pipe Saddle

For Stainless Steel and Cupro-Nickel Pipes

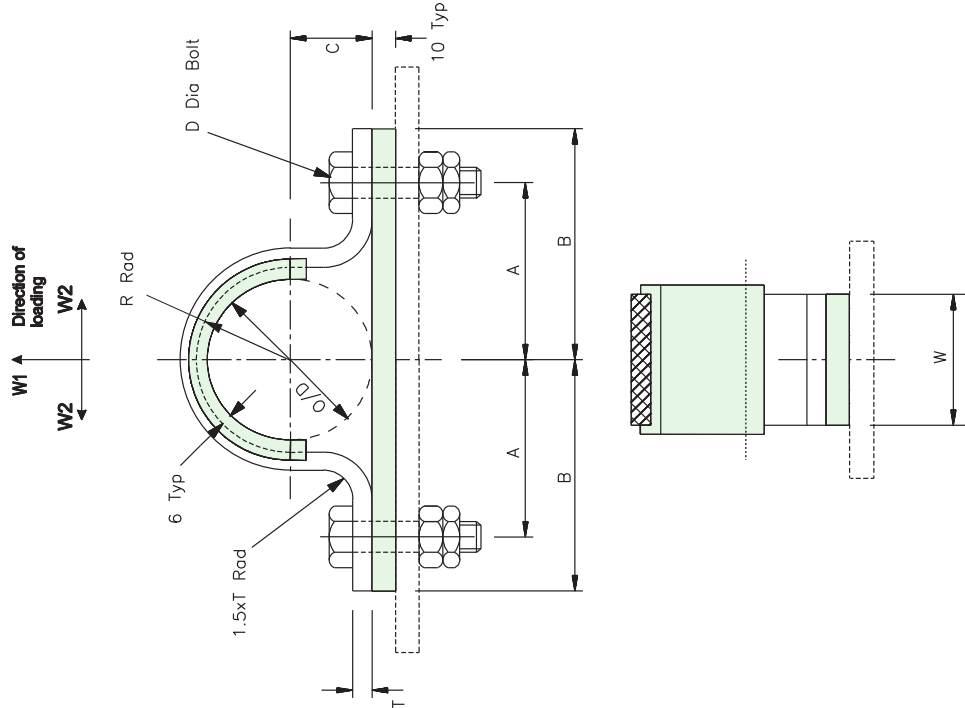
FIGS. 600 & 600A

FIG 600
STAINLESS STEEL PIPES

Part No.	Pipe Size		WxT	A	B	C	Dia D	R	Max Load Kg	
	NB	O/D							W ₁	W ₂
021	15	21.3	35x5	53	68	10	M10	16.5	170	270
027	20	26.9	35x5	55	70	13	M10	19.5	170	210
034	25	33.7	35x5	57	72	16	M10	23	170	175
043	32	42.4	35x8	64	82	20	M12	27	315	285
049	40	48.3	35x8	79	97	23	M12	30	315	250
061	50	60.3	35x8	81	99	29	M12	36	315	200
077	65	76.1	50x10	89	113	36	M16	44	465	330
089	80	88.9	50x10	99	123	43	M16	50.5	465	280
115	100	114.3	50x10	108	132	55	M16	63	990	220
168	150	168.3	60x15	160	190	82	M20	90	990	410
219	200	219.1	60x15	185	215	107	M20	115.5	990	315
273	250	273.0	60x15	215	245	135	M20	142.5	2060	280
324	300	323.9	60x15	240	270	160	M20	168	2060	280

FIG 600A
CUPRO-NICKEL PIPES

Part No.	Pipe Size		WxT	A	B	C	Dia D	R	Max Load Kg	
	NB	O/D							W ₁	W ₂
016	16	35x5	53	68	8	M10	14	14	170	270
020	20	35x5	53	68	10	M10	16	16	170	210
025	25	35x5	55	70	12.5	M10	18.5	18.5	170	210
030	30	35x5	57	72	15	M10	21	21	170	210
038	38	35x8	64	82	19	M12	25	25	315	285
045	44.5	35x8	79	97	22	M12	28	28	315	285
057	57	35x8	81	99	28.5	M12	34.5	34.5	315	200
076	76.1	50x10	89	113	38	M16	44	44	465	330
089	88.9	50x10	99	123	44.5	M16	50.5	50.5	465	280
108	108	50x10	108	132	54	M16	60	60	465	220
133	133	60x15	136	166	66	M20	72.5	72.5	990	410
159	159	60x15	155	185	79.5	M20	85.5	85.5	990	410
193	193.7	60x15	175	205	97	M20	103	103	990	315
219	219.1	60x15	185	215	109.5	M20	115.5	115.5	990	315
267	267.0	60x15	215	245	133.5	M20	139.5	139.5	2060	280
324	323.9	60x15	240	270	162	M20	168	168	2060	280



When ordering specify:

- Figure No
 - Part No
 - Bolt Length
 - Design Temperature
- Example: Fig 600-049, Bolt Length 60, 200 C.

Material

- Saddle - Carbon Steel
- Isolator - HT/FR Silicone Rubber Elastomer (-70 to 300 C)
- Extruded 70/80 FR Neoprene (-30 to 100 C)

Surface Finish

- Saddle - Hot dip galvanised in accordance with BS EN ISO 1461
- Nuts & Bolts - Bright zinc-plated and passivated in accordance with BS3382

Larger sizes, alternative materials and other surface coatings are available on request.



WITCHLINER Insulated U-Bolt (to grip)

For Stainless Steel and Cupro-Nickel Pipes

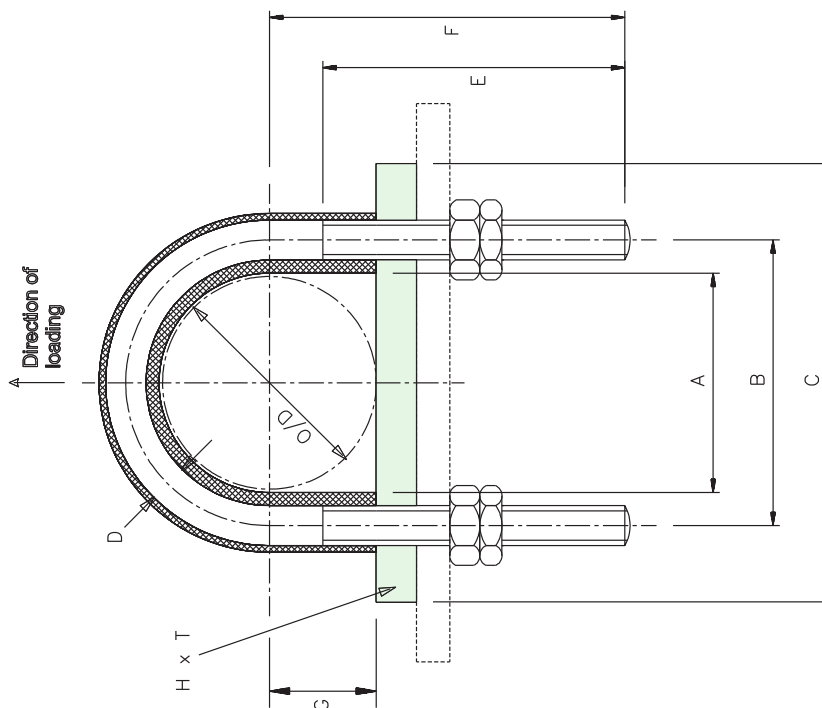
FIGS. 601 & 601A

FIG 601
STAINLESS STEEL PIPES

Part No.	Pipe Size		A	B	C	Dia D	E	F	G	HxT	Max Load kg
	NB	O/D									
021	15	21.3	21	37	60	M6	60	60	10.5	25x10	220
027	20	26.9	27	43	70	M6	60	65	13.5	25x10	220
034	25	33.7	34	50	75	M6	60	65	17	25x10	220
043	32	42.4	43	69	95	M10	70	80	21	25x10	545
049	40	48.3	49	75	100	M10	70	80	24.5	25x10	545
061	50	60.3	61	87	110	M10	75	90	30.5	25x10	1000
077	65	76.1	76	102	135	M12	75	95	38	30x10	1000
089	80	88.9	89	115	140	M12	75	100	44.5	30x10	1000
115	100	114.3	115	141	170	M12	75	110	57.5	30x10	1000
168	150	168.3	168	210	250	M16	120	180	84	50x10	1635
219	200	219.1	219	262	315	M16	120	200	109.5	50x10	1635
273	250	273.0	273	324	375	M20	120	235	136.5	50x10	3405
324	300	323.9	324	375	425	M20	120	265	162	50x10	3405

FIG 601A
CUPRO-NICKEL PIPES

Part No.	Pipe Size		A	B	C	Dia D	E	F	G	HxT	Max Load kg
	O/D	NB									
016	16	16	32	60	60	M6	60	60	8	25x10	220
020	20	20	36	70	70	M6	65	65	10	25x10	220
025	25	25	41	75	75	M6	60	65	12.5	25x10	220
030	30	30	46	85	85	M6	65	75	15	25x10	220
038	38	38	64	95	95	M10	70	80	19	25x10	545
045	44.5	44.5	71	100	100	M10	70	80	22.5	25x10	545
057	57	57	83	110	110	M10	75	90	28.5	25x10	545
076	76.1	76.1	102	135	135	M12	75	95	38	30x10	1000
089	88.9	88.9	115	140	140	M12	75	100	44.5	30x10	1000
108	108	108	134	170	170	M12	75	110	54	30x10	1000
159	159	159	201	250	250	M16	120	180	79.5	50x10	1635
219	219.1	219.1	262	315	315	M16	120	200	109.5	50x10	1635
267	267.0	267.0	318	370	370	M20	120	235	133.5	50x10	3405
324	323.9	323.9	324	375	425	M20	120	265	162	50x10	3405



Material
U-Bolt
Isolator

- Carbon Steel
- HT/FR Silicone Rubber Elastomer (-70 to 300 C)
- Extruded 70/80 FR Neoprene (-30 to 100 C)

Surface Finish

U-Bolts & Nuts - Bright zinc-plated and passivated in accordance with BS3382

Larger sizes, alternative materials and other surface coatings are available on request.

When ordering specify:

- Figure No
 - Part No
 - Design Temperature
- Example: Fig 601-089, 200 C.





WITCHLINER Insulated U-Bolt (not to grip)

For Stainless Steel and Cupro-Nickel Pipes

FIGS. 602 & 602A

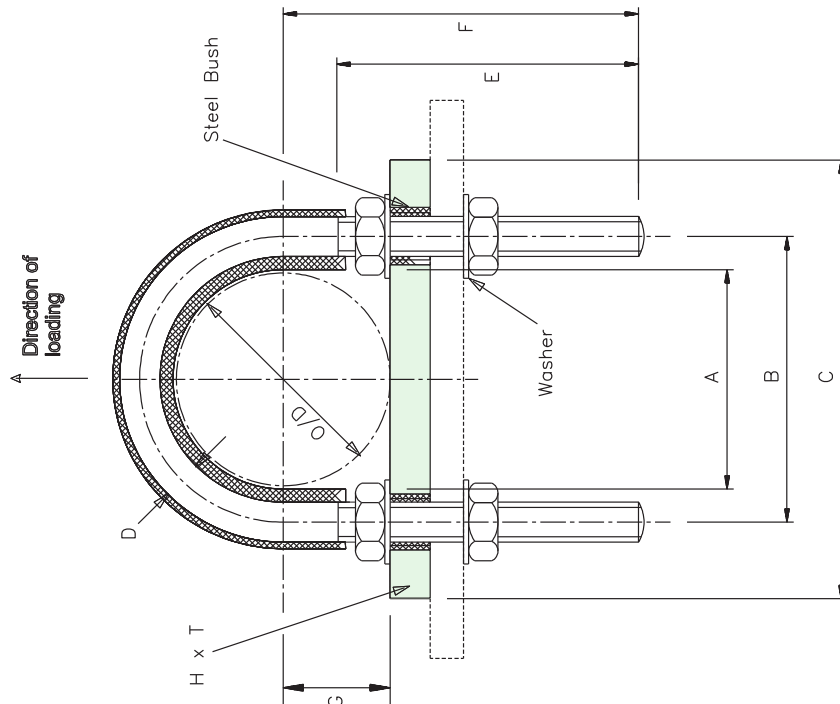


**FIG 602
STAINLESS STEEL PIPES**

Part No.	Pipe Size		A	B	C	Dia D	E	F	G	HxT	Max Load kg
	NB	O/D									
021	15	21.3	23	37	60	M6	60	60	11.5	25x10	220
027	20	26.9	29	43	70	M6	60	65	14.5	25x10	
034	25	33.7	36	50	75	M6	60	65	18	25x10	
043	32	42.4	45	69	95	M10	70	80	22.5	25x10	545
049	40	48.3	52	75	100	M10	70	80	26	25x10	
061	50	60.3	64	87	110	M10	75	90	32	25x10	
077	65	76.1	79	102	135	M12	75	95	39.5	30x10	1000
089	80	88.9	92	115	140	M12	75	100	46	30x10	
115	100	114.3	118	141	170	M12	75	110	59	30x10	
168	150	168.3	172	210	250	M16	120	180	86	50x10	1635
219	200	219.1	224	262	315	M16	120	200	112	50x10	
273	250	273.0	278	324	375	M20	130	235	139	50x10	
324	300	323.9	329	375	425	M20	130	265	164.5	50x10	3405

**FIG 602A
CUPRO-NICKEL PIPES**

Part No.	Pipe Size		A	B	C	Dia D	E	F	G	HxT	Max Load kg
	O/D	NB									
016	16	18	32	60	60	M6	60	60	9	25x10	220
020	20	23	36	70	65	M6	65	65	11.5	25x10	
025	25	28	41	75	66	M6	60	65	14	25x10	
030	30	33	48	85	70	M6	70	75	16.5	25x10	545
038	38	41	64	95	75	M10	75	80	20.5	25x10	
045	44.5	48	71	100	70	M10	70	80	24	25x10	
057	57	60	83	110	75	M10	75	90	30	25x10	1000
076	76.1	79	102	135	75	M12	75	95	39.5	30x10	
089	88.9	92	115	140	75	M12	75	100	46	30x10	
108	108	112	134	170	75	M12	75	110	56	30x10	1635
159	159	163	201	250	120	M16	120	180	81.5	50x10	
219	219.1	224	262	315	120	M16	120	200	112	50x10	
267	267.0	272	318	370	130	M20	130	235	136	50x10	3405
324	323.9	329	375	425	130	M20	130	265	164.5	50x10	



Material
U-Bolt
Isolator

- Carbon Steel
- HT/FR Silicone Rubber Elastomer (-70 to 300 C)
- Extruded 70/80 FR Neoprene (-30 to 100 C)

Surface Finish

U-Bolts & Nuts - Bright zinc-plated and passivated in accordance with BS3382

Larger sizes, alternative materials and other surface coatings are available on request.

When ordering specify:
Figure No
Part No
Design Temperature
Example: Fig 602-021, 200 C.



WITCHLINER Insulated U-Bolt with PTFE (not to grip)

For Stainless Steel and Cupro-Nickel Pipes

FIGS. 603 & 603A

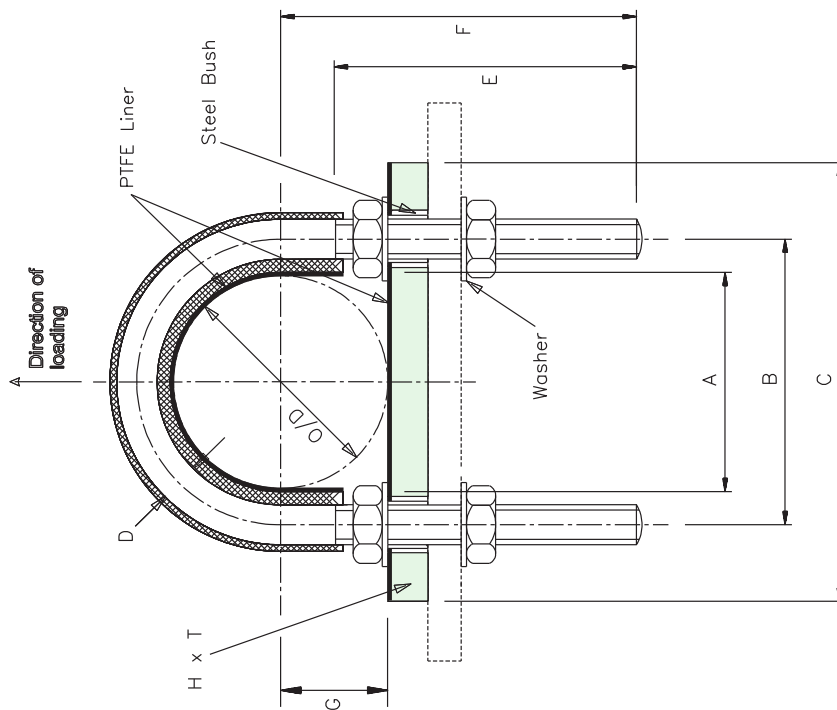
(-30 C to 100 C)

**FIG 603
STAINLESS STEEL PIPES**

Part No.	Pipe Size		A	B	C	Dia D	E	F	G	HxT	Max Load kg
	NB	O/D									
021	15	21.3	21	37	60	M6	60	60	10.5	25x10	220
027	20	26.9	27	43	70	M6	60	60	13.5	25x10	220
034	25	33.7	34	50	75	M6	60	60	17	25x10	220
043	32	42.4	42	69	95	M10	75	80	21	25x10	545
049	40	48.3	49	75	100	M10	70	80	24.5	25x10	545
061	50	60.3	61	87	110	M10	75	90	30.5	25x10	1000
077	65	76.1	76	102	135	M12	75	95	38	30x10	1000
089	80	88.9	89	115	140	M12	75	100	44.5	30x10	1000
115	100	114.3	115	141	170	M12	75	110	57.5	30x10	1635
168	150	168.3	168	210	250	M16	120	180	84	50x10	1635
219	200	219.1	219	262	315	M16	120	200	109.5	50x10	1635
273	250	273.0	273	324	375	M20	130	235	136.5	50x10	3405
324	300	323.9	324	375	425	M20	130	265	162	50x10	3405

**FIG 603A
CUPRO-NICKEL PIPES**

Part No.	Pipe Size O/D		A	B	C	Dia D	E	F	G	HxT	Max Load kg
	16	20									
016	16	20	32	60	60	M6	60	60	8	25x10	220
020	20	25	36	70	70	M6	65	65	10	25x10	220
025	25	30	41	75	75	M6	65	65	12.5	25x10	220
030	30	38	48	85	85	M6	70	75	15	25x10	545
038	38	44.5	64	95	95	M10	75	80	19	25x10	545
045	44.5	57	71	100	100	M10	70	80	22.5	25x10	545
057	57	76.1	83	110	110	M10	75	90	28.5	25x10	1000
076	76.1	88.9	101	135	135	M12	75	95	38	30x10	1000
089	88.9	108	115	140	140	M12	75	100	44.5	30x10	1000
108	108	159	134	170	170	M12	75	110	54	30x10	1635
159	159	219.1	201	250	250	M16	120	180	79.5	50x10	1635
219	219.1	267.0	262	315	315	M16	120	200	109.5	50x10	1635
267	267.0	323.9	318	370	370	M20	130	235	133.5	50x10	3405
324	323.9		324	375	425	M20	130	265	162	50x10	3405



Material
U-Bolt
Isolator

- Carbon Steel
- Extruded 70/80 FR Neoprene

Surface Finish

U-Bolts and Nuts - Bright zinc plated and passivated in accordance with BS3382

Larger sizes, alternative materials and other surface coatings are available on request.

When ordering specify:
Figure No
Part No
Example: Fig 603A-076



WITCHLINER Insulated 2-Bolt Pipe Clamp

For Stainless Steel and Cupro-Nickel Pipes

FIGS. 604 & 604A

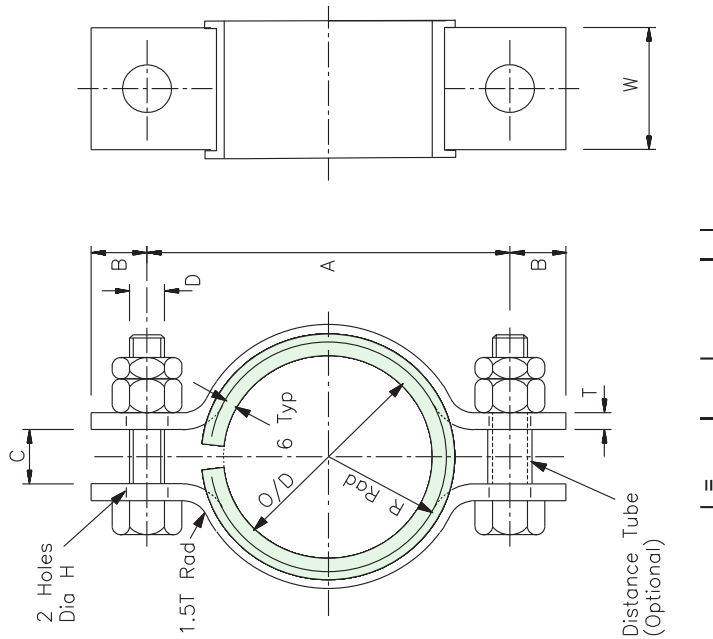
(-70°C to 300°C)

**FIG 604
STAINLESS STEEL PIPES**

Part No.	Pipe Size		R	WxT	A	B Min	C	*L	Dia D	Dist Tube	Dia H	Max Load Kg
	NB	O/D										
021	15	21.3	16.5	35x5	100	15	10	85	M10x40	10NE	12	280
027	20	26.9	19.5	35x5	105	15	10	91	M10x40	10NE	12	280
034	25	33.7	23	35x5	110	15	10	112	M10x40	10NE	12	280
043	32	42.4	27	35x5	120	18	12	139	M12x45	15NE	15	280
049	40	48.3	30	35x5	125	18	12	158	M12x45	15NE	15	280
061	50	60.3	36	35x5	140	18	12	196	M12x45	15NE	15	280
077	65	76.1	44	35x5	155	18	12	245	M12x45	15NE	15	280
089	80	88.9	50.5	35x5	170	18	12	286	M12x45	15NE	15	280
115	100	114.3	63	35x5	195	18	12	365	M12x45	15NE	15	280
168	150	168.3	90	35x8	255	24	16	535	M16x55	20NE	19	450
219	200	219.1	115.5	35x8	325	24	16	695	M16x60	20NE	19	450
273	250	273.0	142.5	35x8	380	24	16	875	M16x60	20NE	19	450
324	300	323.9	168	50x10	450	30	20	1030	M20x75	20NE	24	900

**FIG 604A
CUPRO-NICKEL PIPES**

Part No.	Pipe Size O/D	R	WxT	A	B Min	C	*L	Dia D	Dist Tube	Dia H	Max Load Kg
020	20	16	35x5	95	15	10	85	M10x40	10NE	12	280
025	25	18.5	35x5	100	15	10	91	M10x40	10NE	12	280
030	30	21	35x5	105	15	10	109	M10x40	10NE	12	280
038	38	25	35x5	120	18	12	134	M12x45	15NE	15	280
045	44.5	28	35x5	120	18	12	151	M12x45	15NE	15	280
057	57	34.5	35x5	140	18	12	190	M12x45	15NE	15	280
076	76.1	44	35x5	155	18	12	245	M12x45	15NE	15	280
089	88.9	50.5	35x5	170	18	12	286	M12x45	15NE	15	280
108	108	60	35x5	190	18	12	355	M12x45	15NE	15	280
159	159	86	35x8	240	24	16	515	M16x55	20NE	19	450
219	219.1	118	35x8	325	24	16	695	M16x60	20NE	19	450
267	267.0	140	35x8	375	24	16	855	M16x60	20NE	19	450
324	323.9	168	50x10	450	30	20	1030	M20x75	20NE	24	900



When ordering specify:
Figure No
Part No
 Example: Fig 604-115

Material
 Clamp - Carbon Steel
 Distance Tube - BS1387 Medium
 Isolator - HT/FR Silicone Rubber Elastom

Surface Finish
 Clamp and Tube - Hot dip galvanised in accordance with BS EN ISO 1461
 Nuts and Bolts - Bright zinc plated and passivated in accordance with BS3382

Larger sizes, alternative materials and other surface coatings are available on request.

Hydraulic & Offshore Supplies

WITCHLINER Insulated 3-Bolt Pipe Clamp

For Stainless Steel and Cupro-Nickel Pipes

FIGS. 605 & 605A

(-70°C to 300°C)

FIG 605
STAINLESS STEEL PIPES

Part No.	Pipe Size		R	WxT	A	B Min	C	*L	Dia D	E	Dist Tube	Dia H	Max Load kg
	NB	O/D											
021	15	21.3	16.5	35x5	100	15	13	85	M10x45	70	10NE	12	280
027	20	26.9	19.5	35x5	105	15	13	91	M10x45	70	10NE	12	280
034	25	33.7	23	35x5	110	15	13	112	M10x45	70	10NE	12	280
043	32	42.4	27	35x5	120	18	15	139	M12x60	70	15NE	15	280
049	40	48.3	30	35x5	125	18	15	158	M12x60	85	15NE	15	280
061	50	60.3	36	35x5	140	18	15	196	M12x60	80	15NE	15	280
077	65	76.1	44	35x5	155	18	15	245	M12x60	105	15NE	15	280
089	80	88.9	50	35x5	170	18	15	286	M12x60	105	15NE	15	280
115	100	114.3	63	35x5	195	18	15	365	M12x60	105	15NE	15	280
168	150	168.3	90	35x8	255	24	19	535	M16x70	95	20NE	19	450
219	200	219.1	115.5	35x8	325	24	19	695	M16x70	100	20NE	19	450
273	250	273.0	142.5	50x10	380	24	19	875	M16x70	105	20NE	19	450
324	300	323.0	168	60x15	450	30	23	1030	M20x90	115	20NE	24	900

FIG 605A
CUPRO-NICKEL PIPES

Part No.	Pipe Size O/D	R	WxT	A	B Min	C	*L	Dia D	E	Dist Tube	Dia H	Max Load kg
020	20	16	35x5	95	15	13	85	M10x45	70	10NE	12	280
025	25	18.5	35x5	100	15	13	91	M10x45	70	10NE	12	280
030	30	21	35x5	105	15	13	109	M10x45	70	10NE	12	280
038	38	25	35x5	120	18	15	134	M12x60	70	15NE	15	280
045	44.5	28	35x5	120	18	15	151	M12x60	85	15NE	15	280
057	57	34.5	35x5	140	18	15	190	M12x60	80	15NE	15	280
076	76.1	44	35x5	155	18	15	245	M12x60	105	15NE	15	280
089	88.9	50.5	35x5	170	18	15	286	M12x60	105	15NE	15	280
108	108	60	35x5	190	18	15	355	M12x60	105	15NE	15	280
159	159	85.5	35x8	240	24	19	515	M16x70	95	20NE	19	450
219	219.1	115.5	35x8	325	24	19	695	M16x70	100	20NE	19	450
267	267.0	140	50x10	375	24	19	855	M16x70	105	20NE	19	450
324	323.9	168	60x15	450	30	23	1030	M20x90	95	20NE	24	900

Technical drawing of the 3-bolt pipe clamp. The drawing shows a side view and a top view. Dimensions are labeled as follows: A (total length), B (distance from end to bolt center), C (bolt spacing), D (bolt diameter), E (bolt length), L (total length including bolts), W (width of the clamp), Dia H (hole diameter), and Dia D (clamp diameter). The drawing also shows 3 holes and a 1.5T Rod.

When ordering specify:
Figure No
Part No
Example: Fig 605-219

Material
Clamp - Carbon Steel
Distance Tube - BS1387 Medium
Isolator - HT/FR Silicone Rubber Elastom

Surface Finish
Clamp and Tube - Hot dip galvanised in accordance with BS EN ISO 1461
Nuts and Bolts - Bright zinc plated and passivated in accordance with BS3382

Larger sizes, alternative materials and other surface coatings are available on request.

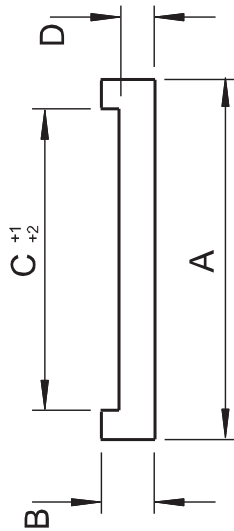
Tel: +44 (0)191 549 7335 Fax: +44 (0)191 516 0004 Email: hos@hos.co.uk Website: www.hos.co.uk



WITCHLINER (Clamp Strip)

For Stainless Steel and Cupro-Nickel Pipes

FIG. 606 (-70°C to 300°C)



Part No. (Clip Width)	Dimensions (mm)			
	A	B	C	D
20	30	5	20	3
30	45	7.5	30	5
35	51	8.5	35	6
40	57	8.5	40	6
50	67	8.5	50	6
60	77	8.5	60	6
70	85	8.5	70	6
90	105	14.5	90	9.5
110	125	14.5	110	9.5
130	145	14.5	130	9.5
150	165	17.5	150	12.5
200	215	17.5	200	12.5
250	265	17.5	250	12.5
300	315	17.5	300	12.5

FIG 606

PIPE O/D	Part No. (Clip Width) Recommended Length (mm)															
	20	30	35	40	50	60	70	90	110	130	150	200	250	300		
26.9	88	90	91	91	91	91	94	94	94	98						
33.7	109	111	112	112	112	112	116	116	116	119						
42.4	136	138	139	139	139	139	143	143	143	146						
48.3	155	157	158	158	158	158	162	162	162	165						
60.3	193	195	196	196	196	196	199	199	199	203						
76.1	242	244	245	245	245	245	249	249	249	252						
88.9	282	285	286	286	286	286	289	289	289	292						
114.3	362	364	365	365	365	365	369	369	369	372						
139.7	442	444	445	445	445	445	449	449	449	452						
168.3	532	534	535	535	535	535	539	539	539	542						
219.1	691	694	695	695	695	695	698	698	698	701						
244.5	771	773	774	774	774	774	778	778	778	781						
273.0	861	863	864	864	864	864	868	868	868	871						
323.9	1021	1023	1024	1024	1024	1024	1028	1028	1028	1031						
355.6	1120	1122	1123	1123	1123	1123	1127	1127	1127	1130						
406.4	1280	1282	1283	1283	1283	1283	1287	1287	1287	1290						
457.0	1439	1441	1442	1442	1442	1442	1446	1446	1446	1449						
508.0	1599	1601	1602	1602	1602	1602	1606	1606	1606	1609						
610.0	1920	1922	1923	1923	1923	1923	1926	1926	1926	1929						
762.0	2397	2399	2400	2400	2400	2400	2404	2404	2404	2407						
914.0	2875	2877	2878	2878	2878	2878	2881	2881	2881	2885						

Note
Pipe O/D Refers to Carbon Steel/stainless Steel Only

Material
HTFR Silicone Rubber Elastomer

When ordering specify:
Figure No
Pipe Size
Part No
Example: Fig 606-219-70



WITCHLINER (Isolation Pad)

For Stainless Steel and Cupro-Nickel Pipes

FIGS. 607 & 607A

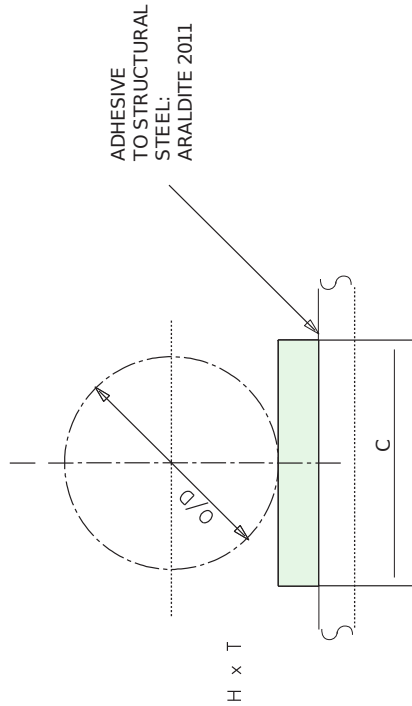
**FIG 607
STAINLESS STEEL PIPES**

Part No.	Pipe Size		C	HxT
	NB	O/D		
021	15	21.3	60	25x10
027	20	26.9	70	
034	25	33.7	75	25x10
043	32	42.4	95	
049	40	48.3	100	25x10
061	50	60.3	110	
077	65	76.1	135	30x10
089	80	88.9	140	
115	100	114.3	170	30x10
168	150	168.3	250	
219	200	219.1	315	50x10
273	250	273.0	375	
324	300	323.9	425	

**FIG 607A
CUPRO-NICKEL PIPES**

Part No.	Pipe Size O/D		C	HxT
	NB	O/D		
016	16	16	60	25x10
020	20	20	60	
025	25	25	70	25x10
030	30	30	75	
038	38	38	95	25x10
045	44.5	44.5	100	
057	57	57	110	30x10
076	76.1	76.1	135	
089	88.9	88.9	140	30x10
108	108	108	170	
159	159	159	250	50x10
219	219	219	315	
267	267	267	375	50x10
324	323.9	323.9	425	

When ordering specify:
Figure No
Part No
Design Temperature
Example: Fig 607-089, 90 C.



Material
Isolator - Extruded 70/80 FR Neoprene (-30 to 100 C)