

CONTROL LINE TUBES

DATASHEET



EXPERIENCE

The Oil & Gas sector represents one of Fine Tubes principal markets for supply of a wide range of tubular product forms and materials. Our products have been successfully used in some of the most aggressive subsea and downhole conditions and we have a long proven track record of supplying products that meet the strict quality requirements of the Oil & Gas and geothermal energy sectors.

Improvements in the technology for the enhanced exploitation of oil and gas fields has increasingly required the use of long continuous lengths of stainless steel and nickel alloy tubulars for hydraulic control, instrumentation, chemical injection, umbilical and flowline control applications.

The benefits of this tubular technology have resulted in reduced operating costs, improved recovery methods and reduced capital expenditure by connecting downhole valves and chemical injection with remote and satellite wells to a fixed or floating central operating platform.

APPLICATIONS

Fine Tubes offers coiled control line in stainless steel and nickel alloys.

Our products are used in the following applications:

- Downhole hydraulic control lines.
- Downhole chemical control lines.
- Subsea control lines for hydraulic power and chemical injection.
- Smoothbore control lines used in fibre optic applications.



MANUFACTURING RANGE

Coiled tubing is available in a range of different product forms depending on the customer requirements. We manufacture seam welded and redrawn, seam welded and floating plug redrawn and seamless tube products. The standard grades are 316L, alloy 825 and alloy 625. Other grades of stainless steel in duplex and superduplex and nickel alloy are available on request. Tubing can be supplied in the annealed or cold worked condition.

- Welded and drawn tubing.
- Welded and floating plug drawn tubing.
- Diameter from 3mm (0.118") to 25.4mm (1.00") OD.
- Wall thickness from 0.5mm (0.020") to 3mm (0.118").
- OD tolerance +/- 0.005" (0.13mm) and +/- 10% wall thickness.

Other tolerances are available on request.

- Coil lengths up to 1500m (5,000ft) without orbital joints depending on product dimensions.
- Coil lengths up to 13,500m (45,000ft) with orbital joints.
- Encapsulated, PVC coated or bare line tubing.
- Available on wooden or steel drums.

PRODUCTION FACILITIES

- Cold pilger mills
- Cold draw benches
- Tube welding mills - In-line weld mills
- Controlled atmosphere heat treatment
- Pickling & passivation plant
- NDT ultrasonic & eddy current testing
- Hydrostatic testing
- Radiographic examination



CONTROL LINE PRODUCT FORMS

Types of tubing

Long coils of tubing can be manufactured in four main forms:

- **Seamless** – in which a billet of metal is extruded into a tube and drawn to final size.
- **Welded*** – made by forming a strip of material into a tube and welding the seam. Some local cold work on the weld may also be applied by calibrating rolls.
- **Welded & Sunk** – after being welded the tube is drawn through a die to homogenise the seam weld.
- **Welded & Floating Plug Drawn** – after being welded the tube is drawn through a die with a floating plug in the bore to rework the weld seam internally and externally.

* Fine Tubes do not supply welded tubes for control line applications.



QUALITY CONSIDERATIONS

When specifying the type of tubing for a particular environment several factors should be taken into account. The most important criteria influencing this decision will be pressure capability and risk of corrosion.

A seamless tube that has been cold worked and annealed has a completely homogeneous crystalline wrought structure. The strip material used to make a welded tube is of the same form but this becomes a cast structure at the weld, which could corrode preferentially to the surrounding tube. Through the combination of cold work and subsequent annealing the weld metal can be re-crystallised, transforming this area to a wrought structure resulting in a homogeneous cross-section with equal corrosion potential all around the tube similar to a seamless tube.

Sinking goes a long way to achieving this recrystallisation of the cast weld structure into a partially homogenised annealed structure. The extra work in the weld area imparted by a floating plug draw ensures full re-crystallisation.

In theory the pressure capability of tubing made by the welded and annealed method should be the same but it is common practice in design codes to down-rate welded tubing due to the risk of an imperfect weld leading to weakness. The strains involved in a following redrawing operation will establish the quality of the seam weld and any centre-line weakness will be exposed and detected by visual inspection and/or pressure testing. Therefore the seamless welded and sunk and welded & sunk/plug drawn tubes have the same pressure rating which is superior to that of welded tubing.

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QUALITY CONSIDERATIONS (CONTINUED)

Other considerations that can affect the type of tubing specified are surface roughness, compatibility with compression fittings, tolerances, concentricity, length and, of course, price.

Welded tubing has a smooth OD & ID finish except for the bead, which can be pronounced in the weld area. This can cause problems with compression fittings.

Welded & sunk tubing has a smooth OD surface making it suitable for use with compression fittings but a somewhat rougher bore condition due to sinking and a pronounced weld bead on the ID only.

Welded & plug drawn and seamless tubes have a smooth OD surface together with a uniform bore surface with no protruding weld bead. Tubes made by welding from strip are generally more concentric than seamless tubes, where the uniformity of wall thickness is dependent on the concentricity of the first extrusion into hollow form. However, seamless tubes will meet standard commercial tolerances such as those in ASTM A269.

Generally longer lengths can be made by seam welding from strip than can be obtained by drawing down from seamless hollows. These lengths can be further extended by sinking or plug drawing. Where very long lengths are required individual coils can be butt welded together using autogeneous orbital welding, each weld being radiographically examined to ensure that it is free of defects and the complete line is then subject to a pressure test.

Welded and redrawn type tubing will need far fewer joints than a seamless line of the same overall length, which leads to significant cost savings.



ADVANTAGES OF REDRAWING WELDED TUBE

Long lengths can be made by seam welding formed strip but such tubing has OD & ID discontinuity and may suffer from local problems of mechanical strength or corrosion.

A welded & sunk tube improves these aspects and has been proven reliable in service over several decades for offshore applications. Although more expensive than welded only tubing, the welded and redrawn tube is still relatively inexpensive compared to seamless.

Seamless tubing has cross sectional uniformity however, it is the most expensive method of manufacture and has a limitation in the continuous length that can be produced between joints.

For a slight premium over the welded & sunk price, tubing can be produced by the welded & floating plug drawn process which results in a product of similar appearance to seamless but with the significant advantage of much longer continuous lengths and greatly reduced costs.

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QUALITY ASSURANCE

Process and quality control of Fine Tubes products is critical in respect of consistently achieving the highest standards in critical Oil & Gas applications. Strict quality control is applied at every stage of the processing operations. Individual quality plans tailored to the customers' project requirements can also be incorporated into our product quality.

The control line is 100% dimensionally inspected and eddy current tested to international ASTM or DIN standards. All lines are 100% hydraulically pressure tested before being released and certified. Any orbital joints are also radiographically tested in a minimum of 3 planes to ensure the quality of the joint.

We have ISO 9001, ISO 14001 and ISO 45001 approvals as well as individual client approvals. Fine Tubes is approved to supply against the Pressure Equipment Directive 2014/68/EU and PESR, and can supply to NACE MR-0175/ISO 15156:3 for sour service.

CONTROL LINE PRESSURE CALCULATIONS

The working pressure for a tube depends on the operating conditions of each particular application and the factor of safety required. This can be determined only by the customer and is expressed as a proportion of either the yield pressure or the nominal burst pressure of the tubing.

These are the values that raise the stress to the theoretical yield point or the ultimate tensile strength for the material. Safe working pressures have traditionally been expressed as a proportion of either the tensile strength or yield point of a tube.

Different industries and pressure vessel codes have adopted different practices.

The working pressure calculations used for control line tubing are based upon Codes of practice for pipelines PD 8010-2 (Subsea pipelines):2004, and no account has been taken of stresses other than those induced by the internal hydrostatic/hydraulic pressure within the tube. The conditions are considered static, neutral and ambient temperature. A safety factor of 1.6 has been applied to the yield pressure for calculation of the working pressure. However, the safety factor is a function of the design calculation and various other values may be applied.

The Lamé formula has been used for calculation of the theoretical yield (0.2% proof strength) and burst pressures:

$$P = 2St (D-t) / (D^2 - 2Dt + 2t^2)$$

The formula used for calculation of the theoretical collapse pressure based on minimum 0.2% proof strength is:

$$P = 2St (D-t) / D^2$$

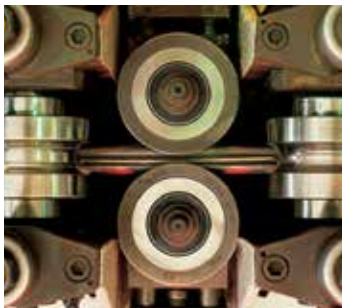
Where:

S = 0.2% Proof strength or tensile strength

P = pressure

D = outside diameter

t = wall thickness



SEAMWELDED & REDRAWN: IMPERIAL

SUMMARY OF CONTROL LINE PROPERTIES.

Product form: Seamwelded & Redrawn is autogenously welded and redrawn supplied in the annealed condition.

Alloy	Chemical comp.	Product Form	ASTM standard	Fine Tubes Part Number	OD	Wall thickness	Weight/ unit length	Min Yield Strength	Min Tensile Strength	Min Ductility	Max Hardness	Yield Pressure	Working Pressure*	Burst pressure**	Collapse pressure [^]
	UNS				inch	inch	lb/ft	ksi	ksi	%	HV	psi	psi	psi	psi
SS 316L	S31603	Seamweld & Redrawn	A269	G2182K1-0318X071-004	0.125	0.028	0.030	25	70	35	190	13,242	8,276	37,202	8,659
SS 316L	S31603	Seamweld & Redrawn	A269	G2182K1-0318X089-004	0.125	0.035	0.035	25	70	35	190	16,853	10,533	4,7311	10,051
SS 316L	S31603	Seamweld & Redrawn	A269	G2182K1-0635X089-004	0.250	0.035	0.084	25	70	35	190	7,919	4,949	22,249	6,019
SS 316L	S31603	Seamweld & Redrawn	A269	G2182K1-0635X124-004	0.250	0.049	0.110	25	70	35	190	11,429	7,143	32,111	7,847
SS 316L	S31603	Seamweld & Redrawn	A269	G2182K1-0635X165-004	0.250	0.065	0.134	25	70	35	190	15,592	9,745	43,787	9,602
SS 316L	S31603	Seamweld & Redrawn	A269	G2182K1-0952X089-004	0.375	0.035	0.133	25	70	35	190	5,091	3,182	14,301	4,235
SS 316L	S31603	Seamweld & Redrawn	A269	G2182K1-0952X124-004	0.375	0.049	0.178	25	70	35	190	7,310	4,569	20,523	5,656
SS 316L	S31603	Seamweld & Redrawn	A269	G2182K1-0952X165-004	0.375	0.065	0.225	25	70	35	190	10,022	6,264	28,137	7,150
SS 316L	S31603	Seamweld & Redrawn	A269	G2182K1-0952X203-004	0.375	0.080	0.263	25	70	35	190	12,604	7,878	35,375	8,369
SS 316L	S31603	Seamweld & Redrawn	A269	G2182K1-1270X124-004	0.500	0.049	0.246	25	70	35	190	5,337	3,336	14,982	4,395
SS 316L	S31603	Seamweld & Redrawn	A269	G2182K1-1270X165-004	0.500	0.065	0.316	25	70	35	190	7,281	4,551	20,465	5,642
SS 316L	S31603	Seamweld & Redrawn	A269	G2182K1-1270X203-004	0.500	0.080	0.376	25	70	35	190	9,166	5,729	25,730	6,701
SS 316L	S31603	Seamweld & Redrawn	A269	G2182K1-1588X124-004	0.625	0.049	0.315	25	70	35	190	4,192	2,620	11,777	3,597
SS 316L	S31603	Seamweld & Redrawn	A269	G2182K1-1588X165-004	0.625	0.065	0.407	25	70	35	190	5,714	3,571	16,027	4,641
A825	N08825	Seamweld & Redrawn	B704	G2182K1-0318X089-00C	0.125	0.035	0.036	35	85	30	209	23,598	14,749	57,392	14,083
A825	N08825	Seamweld & Redrawn	B704	G2182K1-0635X089-00C	0.250	0.035	0.086	35	85	30	209	11,095	6,934	26,992	8,427
A825	N08825	Seamweld & Redrawn	B704	G2182K1-0635X124-00C	0.250	0.049	0.112	35	85	30	209	16,027	10,017	38,957	10,979
A825	N08825	Seamweld & Redrawn	B704	G2182K1-0635X165-00C	0.250	0.065	0.137	35	85	30	209	21,843	13,652	53,127	13,445
A825	N08825	Seamweld & Redrawn	B704	G2182K1-0952X089-00C	0.375	0.035	0.136	35	85	30	209	7,136	4,460	17,347	5,918
A825	N08825	Seamweld & Redrawn	B704	G2182K1-0952X124-00C	0.375	0.049	0.182	35	85	30	209	10,240	6,400	24,903	7,919
A825	N08825	Seamweld & Redrawn	B704	G2182K1-0952X165-00C	0.375	0.065	0.230	35	85	30	209	14,040	8,775	34,142	10,022
A825	N08825	Seamweld & Redrawn	B704	G2182K1-0952X203-00C	0.375	0.080	0.270	35	85	30	209	17,651	11,032	42,917	11,734
A825	N08825	Seamweld & Redrawn	B704	G2182K1-1270X124-00C	0.500	0.049	0.252	35	85	30	209	7,484	4,678	18,173	6,164
A825	N08825	Seamweld & Redrawn	B704	G2182K1-1270X165-00C	0.500	0.065	0.323	35	85	30	209	10,211	6,382	24,831	7,905
A825	N08825	Seamweld & Redrawn	B704	G2182K1-1270X203-00C	0.500	0.080	0.384	35	85	30	209	12,836	8,023	31,212	9,384
A625	N06625	Seamweld & Redrawn	B704	G2182K1-0635X089-00G	0.250	0.035	0.089	60	120	30	266	19,072	11,920	38,087	14,475
A625	N06625	Seamweld & Redrawn	B704	G2182K1-0635X124-00G	0.250	0.049	0.116	60	120	30	266	27,528	17,205	54,969	18,869
A625	N06625	Seamweld & Redrawn	B704	G2182K1-0635X165-00G	0.250	0.065	0.143	60	120	30	266	37,536	23,460	74,970	23,090
A625	N06625	Seamweld & Redrawn	B704	G2182K1-0952X089-00G	0.375	0.035	0.141	60	120	30	266	12,256	7,660	24,482	10,182
A625	N06625	Seamweld & Redrawn	B704	G2182K1-0952X124-00G	0.375	0.049	0.189	60	120	30	266	17,593	10,996	35,143	13,605
A625	N06625	Seamweld & Redrawn	B704	G2182K1-0952X165-00G	0.375	0.065	0.238	60	120	30	266	24,120	15,075	48,182	17,202
A625	N06625	Seamweld & Redrawn	B704	G2182K1-0952X203-00G	0.375	0.080	0.279	60	120	30	266	30,327	18,954	60,568	20,146
A625	N06625	Seamweld & Redrawn	B704	G2182K1-1270X124-00G	0.500	0.049	0.261	60	120	30	266	12,850	8,031	25,657	10,588
A625	N06625	Seamweld & Redrawn	B704	G2182K1-1270X165-00G	0.500	0.065	0.335	60	120	30	266	17,535	10,959	35,041	13,576
A625	N06625	Seamweld & Redrawn	B704	G2182K1-1270X203-00G	0.500	0.080	0.398	60	120	30	266	22,046	13,779	44,048	16,128
A625	N06625	Seamweld & Redrawn	B704	G2182K1-1588X124-00G	0.625	0.049	0.333	60	120	30	266	10,095	6,309	20,175	8,644

* Working pressure is calculated using the LAME formula under ambient, neutral and static conditions. A safety factor of 1.6 is used on the minimum yield pressure.
 ** The Theoretical burst pressure is calculated using the LAME formula under ambient, neutral and static conditions using the minimum tensile strength.
 ^ The Theoretical collapse pressure is calculated using the LAME formula and the minimum yield strength.

The General chemical and mechanical properties are applied to the coiled tube where appropriate. Note the part numbers used include the designation for including orbital weld joints. All joints are x-rayed in at least three planes. Control line may also be supplied without orbital joints. Certification to EN10204 3.1. Certified in accordance with NACE MR 0175/ISO15156:3 ASTM B444 & B423 as applicable to mechanical and chemical analysis to coil tube only

SEAMWELDED & REDRAWN: METRIC

SUMMARY OF CONTROL LINE PROPERTIES.

Product form: Seamwelded & Redrawn is autogenously welded and redrawn supplied in the annealed condition.

Alloy	Chemical comp.	Product Form	ASTM standard	Fine Tubes Part Number	OD	Wall thickness	Weight/ unit length	Min Yield Strength	Min Tensile Strength	Min Ductility	Max Hardness	Yield Pressure	Working Pressure*	Burst Pressure**	Collapse Pressure [^]
	UNS				mm	mm	kg/m	MPa	MPa	%	HV	bars	bars	bars	bars
SS 316L	S31603	Seamweld & Redrawn	A269	G2182K1-0318X071-004	3.18	0.71	0.044	172	483	35	190	913	571	2,565	597
SS 316L	S31603	Seamweld & Redrawn	A269	G2182K1-0318X089-004	3.18	0.89	0.051	172	483	35	190	1,162	726	3,262	693
SS 316L	S31603	Seamweld & Redrawn	A269	G2182K1-0635X089-004	6.35	0.89	0.121	172	483	35	190	546	341	1,534	415
SS 316L	S31603	Seamweld & Redrawn	A269	G2182K1-0635X124-004	6.35	1.24	0.158	172	483	35	190	788	493	2,214	541
SS 316L	S31603	Seamweld & Redrawn	A269	G2182K1-0635X165-004	6.35	1.65	0.194	172	483	35	190	1,075	672	3,019	662
SS 316L	S31603	Seamweld & Redrawn	A269	G2182K1-0952X089-004	9.52	0.89	0.192	172	483	35	190	351	219	986	292
SS 316L	S31603	Seamweld & Redrawn	A269	G2182K1-0952X124-004	9.52	1.24	0.257	172	483	35	190	504	315	1,415	390
SS 316L	S31603	Seamweld & Redrawn	A269	G2182K1-0952X165-004	9.52	1.65	0.325	172	483	35	190	691	432	1,940	493
SS 316L	S31603	Seamweld & Redrawn	A269	G2182K1-0952X203-004	9.52	2.03	0.380	172	483	35	190	869	543	2,439	577
SS 316L	S31603	Seamweld & Redrawn	A269	G2182K1-1270X124-004	12.70	1.24	0.355	172	483	35	190	368	230	1,033	303
SS 316L	S31603	Seamweld & Redrawn	A269	G2182K1-1270X165-004	12.70	1.65	0.456	172	483	35	190	502	314	1,411	389
SS 316L	S31603	Seamweld & Redrawn	A269	G2182K1-1270X203-004	12.70	2.03	0.542	172	483	35	190	632	395	1,774	462
SS 316L	S31603	Seamweld & Redrawn	A269	G2182K1-1588X124-004	15.88	1.24	0.454	172	483	35	190	289	181	812	248
SS 316L	S31603	Seamweld & Redrawn	A269	G2182K1-1588X165-004	15.88	1.65	0.587	172	483	35	190	394	246	1,105	320
A825	N08825	Seamweld & Redrawn	B704	G2182K1-0318X089-00C	3.18	0.89	0.052	241	586	30	209	1,627	1,017	3,957	971
A825	N08825	Seamweld & Redrawn	B704	G2182K1-0635X089-00C	6.35	0.89	0.124	241	586	30	209	765	478	1,861	581
A825	N08825	Seamweld & Redrawn	B704	G2182K1-0635X124-00C	6.35	1.24	0.162	241	586	30	209	1,105	691	2,686	757
A825	N08825	Seamweld & Redrawn	B704	G2182K1-0635X165-00C	6.35	1.65	0.198	241	586	30	209	1,506	941	3,663	927
A825	N08825	Seamweld & Redrawn	B704	G2182K1-0952X089-00C	9.52	0.89	0.196	241	586	30	209	492	308	1,196	408
A825	N08825	Seamweld & Redrawn	B704	G2182K1-0952X124-00C	9.52	1.24	0.263	241	586	30	209	706	441	1,717	546
A825	N08825	Seamweld & Redrawn	B704	G2182K1-0952X165-00C	9.52	1.65	0.332	241	586	30	209	968	605	2,354	691
A825	N08825	Seamweld & Redrawn	B704	G2182K1-0952X203-00C	9.52	2.03	0.389	241	586	30	209	1,217	761	2,959	809
A825	N08825	Seamweld & Redrawn	B704	G2182K1-1270X124-00C	12.70	1.24	0.363	241	586	30	209	516	323	1,253	425
A825	N08825	Seamweld & Redrawn	B704	G2182K1-1270X165-00C	12.70	1.65	0.466	241	586	30	209	704	440	1,712	545
A825	N08825	Seamweld & Redrawn	B704	G2182K1-1270X203-00C	12.70	2.03	0.554	241	586	30	209	885	553	2,152	647
A625	N06625	Seamweld & Redrawn	B704	G2182K1-0635X089-00G	6.35	0.89	0.129	414	827	30	266	1,315	822	2,626	998
A625	N06625	Seamweld & Redrawn	B704	G2182K1-0635X124-00G	6.35	1.24	0.168	414	827	30	266	1,898	1,186	3,790	1,301
A625	N06625	Seamweld & Redrawn	B704	G2182K1-0635X165-00G	6.35	1.65	0.206	414	827	30	266	2,588	1,618	5,169	1,592
A625	N06625	Seamweld & Redrawn	B704	G2182K1-0952X089-00G	9.52	0.89	0.204	414	827	30	266	845	528	1,688	702
A625	N06625	Seamweld & Redrawn	B704	G2182K1-0952X124-00G	9.52	1.24	0.272	414	827	30	266	1,213	758	2,423	938
A625	N06625	Seamweld & Redrawn	B704	G2182K1-0952X165-00G	9.52	1.65	0.344	414	827	30	266	1,663	1,039	3,322	1,186
A625	N06625	Seamweld & Redrawn	B704	G2182K1-0952X203-00G	9.52	2.03	0.403	414	827	30	266	2,091	1,307	4,176	1,389
A625	N06625	Seamweld & Redrawn	B704	G2182K1-1270X124-00G	12.70	1.24	0.377	414	827	30	266	886	554	1,769	730
A625	N06625	Seamweld & Redrawn	B704	G2182K1-1270X165-00G	12.70	1.65	0.484	414	827	30	266	1,209	756	2,416	936
A625	N06625	Seamweld & Redrawn	B704	G2182K1-1270X203-00G	12.70	2.03	0.574	414	827	30	266	1,520	950	3,037	1,112
A625	N06625	Seamweld & Redrawn	B704	G2182K1-1588X124-00G	15.88	1.24	0.481	414	827	30	266	696	435	1,391	596

* Working pressure is calculated using the LAME formula under ambient, neutral and static conditions. A safety factor of 1.6 is used on the minimum yield pressure.

** The Theoretical burst pressure is calculated using the LAME formula under ambient, neutral and static conditions using the minimum tensile strength.

[^] The Theoretical collapse pressure is calculated using the LAME formula and the minimum yield strength.

The General chemical and mechanical properties are applied to the coiled tube where appropriate.

Note the part numbers used include the designation for including orbital weld joints.

All joints are x-rayed in at least three planes.

Control line may also be supplied without orbital joints.

Certification to EN10204 3.1. Certified in accordance with NACE MR 0175/ISO15156:3

ASTM B444 & B423 as applicable to mechanical and chemical analysis to coil tube only

SEAMWELDED & FLOATING PLUG: IMPERIAL

SUMMARY OF CONTROL LINE PROPERTIES.

Product form: Seamwelded & Floating plug redrawn is autogenously welded and redrawn using a floating internal plug to rework the tube OD and ID. Supplied in the annealed condition.

Alloy	Chemical comp.	Product Form	ASTM standard	Fine Tubes Part Number	OD	Wall thickness	Weight/ unit length	Min Yield Strength	Min Tensile Strength	Min Ductility	Max Hardness	Yield Pressure	Working Pressure*	Burst Pressure**	Collapse pressure [^]
	UNS				inch	inch	lb/ft	ksi	ksi	%	HV	psi	psi	psi	psi
SS 316L	S31603	Seamweld & Floating Plug Redrawn	A269	G2182E1-0318X071-004	0.125	0.028	0.030	25	70	35	190	13,242	8,276	37,202	8,659
SS 316L	S31603	Seamweld & Floating Plug Redrawn	A269	G2182E1-0318X089-004	0.125	0.035	0.040	25	70	35	190	16,853	10,533	47,311	10,051
SS 316L	S31603	Seamweld & Floating Plug Redrawn	A269	G2182E1-0635X089-004	0.250	0.035	0.080	25	70	35	190	7,919	4,949	22,249	6,019
SS 316L	S31603	Seamweld & Floating Plug Redrawn	A269	G2182E1-0635X124-004	0.250	0.049	0.110	25	70	35	190	11,429	7,143	32,111	7,847
SS 316L	S31603	Seamweld & Floating Plug Redrawn	A269	G2182E1-0635X165-004	0.250	0.065	0.130	25	70	35	190	15,592	9,745	43,787	9,602
SS 316L	S31603	Seamweld & Floating Plug Redrawn	A269	G2182E1-0952X089-004	0.375	0.035	0.130	25	70	35	190	5,091	3,182	14,301	4,235
SS 316L	S31603	Seamweld & Floating Plug Redrawn	A269	G2182E1-0952X124-004	0.375	0.049	0.180	25	70	35	190	7,310	4,569	20,523	5,656
SS 316L	S31603	Seamweld & Floating Plug Redrawn	A269	G2182E1-0952X165-004	0.375	0.065	0.230	25	70	35	190	10,022	6,264	28,137	7,150
SS 316L	S31603	Seamweld & Floating Plug Redrawn	A269	G2182E1-0952X203-004	0.375	0.080	0.260	25	70	35	190	12,604	7,878	35,375	8,369
SS 316L	S31603	Seamweld & Floating Plug Redrawn	A269	G2182E1-0952X246-004	0.375	0.097	0.300	25	70	35	190	15,505	9,691	43,540	9,558
SS 316L	S31603	Seamweld & Floating Plug Redrawn	A269	G2182E1-1270X124-004	0.500	0.049	0.250	25	70	35	190	5,337	3,336	14,982	4,395
SS 316L	S31603	Seamweld & Floating Plug Redrawn	A269	G2182E1-1270X165-004	0.500	0.065	0.320	25	70	35	190	7,281	4,551	20,465	5,642
A825	N08825	Seamweld & Floating Plug Redrawn	B704	G2182E1-0318X071-00C	0.125	0.028	0.030	35	85	30	209	18,565	11,603	45,136	12,125
A825	N08825	Seamweld & Floating Plug Redrawn	B704	G2182E1-0318X089-00C	0.125	0.035	0.040	35	85	30	209	23,598	14,749	57,392	14,083
A825	N08825	Seamweld & Floating Plug Redrawn	B704	G2182E1-0476X071-00C	0.187	0.028	0.050	35	85	30	209	11,893	7,433	28,906	8,876
A825	N08825	Seamweld & Floating Plug Redrawn	B704	G2182E1-0635X089-00C	0.250	0.035	0.090	35	85	30	209	11,095	6,934	26,992	8,427
A825	N08825	Seamweld & Floating Plug Redrawn	B704	G2182E1-0635X124-00C	0.250	0.049	0.110	35	85	30	209	16,027	10,017	38,957	10,979
A825	N08825	Seamweld & Floating Plug Redrawn	B704	G2182E1-0635X165-00C	0.250	0.065	0.140	35	85	30	209	21,843	13,652	53,127	13,445
A825	N08825	Seamweld & Floating Plug Redrawn	B704	G2182E1-0952X089-00C	0.375	0.035	0.140	35	85	30	209	7,136	4,460	17,347	5,918
A825	N08825	Seamweld & Floating Plug Redrawn	B704	G2182E1-0952X124-00C	0.375	0.049	0.180	35	85	30	209	10,240	6,400	24,903	7,919
A825	N08825	Seamweld & Floating Plug Redrawn	B704	G2182E1-0952X165-00C	0.375	0.065	0.230	35	85	30	209	14,040	8,775	34,142	10,022
A825	N08825	Seamweld & Floating Plug Redrawn	B704	G2182E1-0952X203-00C	0.375	0.080	0.270	35	85	30	209	17,651	11,032	42,917	11,734
A825	N08825	Seamweld & Floating Plug Redrawn	B704	G2182E1-1270X124-00C	0.500	0.049	0.250	35	85	30	209	7,484	4,678	18,173	6,164
A825	N08825	Seamweld & Floating Plug Redrawn	B704	G2182E1-1270X165-00C	0.500	0.065	0.320	35	85	30	209	10,211	6,382	24,831	7,905
A825	N08825	Seamweld & Floating Plug Redrawn	B704	G2182E1-1270X203-00C	0.500	0.080	0.380	35	85	30	209	12,836	8,023	31,212	9,384
A825	N08825	Seamweld & Floating Plug Redrawn	B704	G2182E1-1588X124-00C	0.625	0.049	0.320	35	85	30	209	5,874	3,671	14,301	5,033
A825	N08825	Seamweld & Floating Plug Redrawn	B704	G2182E1-1588X165-00C	0.625	0.065	0.420	35	85	30	209	7,992	4,995	19,450	6,512
A625	N06625	Seamweld & Floating Plug Redrawn	B704	G2182E1-0318X102-00G	0.125	0.04	0.040	60	120	30	266	46,369	28,981	92,621	26,165
A625	N06625	Seamweld & Floating Plug Redrawn	B704	G2182E1-0635X089-00G	0.250	0.035	0.090	60	120	30	266	19,072	11,920	38,087	14,475
A625	N06625	Seamweld & Floating Plug Redrawn	B704	G2182E1-0635X124-00G	0.250	0.049	0.120	60	120	30	266	27,528	17,205	54,969	18,869
A625	N06625	Seamweld & Floating Plug Redrawn	B704	G2182E1-0635X165-00G	0.250	0.065	0.140	60	120	30	266	37,536	23,460	74,970	23,090
A625	N06625	Seamweld & Floating Plug Redrawn	B704	G2182E1-0952X124-00G	0.375	0.049	0.190	60	120	30	266	17,593	10,996	35,143	13,605
A625	N06625	Seamweld & Floating Plug Redrawn	B704	G2182E1-0952X165-00G	0.375	0.065	0.240	60	120	30	266	24,120	15,075	48,182	17,202
A625	N06625	Seamweld & Floating Plug Redrawn	B704	G2182E1-0952X203-00G	0.375	0.080	0.280	60	120	30	266	30,327	18,954	60,568	20,146
A625	N06625	Seamweld & Floating Plug Redrawn	B704	G2182E1-1270X124-00G	0.500	0.049	0.260	60	120	30	266	12,850	8,031	25,657	10,588
A625	N06625	Seamweld & Floating Plug Redrawn	B704	G2182E1-1270X165-00G	0.500	0.065	0.340	60	120	30	266	17,535	10,959	35,041	13,576
A625	N06625	Seamweld & Floating Plug Redrawn	B704	G2182E1-1270X203-00G	0.500	0.080	0.400	60	120	30	266	22,046	13,779	44,048	16,128

* Working pressure is calculated using the LAME formula under ambient, neutral and static conditions. A safety factor of 1.6 is used on the minimum yield pressure.

** The Theoretical burst pressure is calculated using the LAME formula under ambient, neutral and static conditions using the minimum tensile strength.

[^] The Theoretical collapse pressure is calculated using the LAME formula and the minimum yield strength.

The General chemical and mechanical properties are applied to the coiled tube where appropriate.

Note the part numbers used include the designation for including orbital weld joints.

All joints are x-rayed in at least three planes.

Control line may also be supplied without orbital joints.

Certification to EN10204 3.1. Certified in accordance with NACE MR 0175/ISO15156:3

ASTM B444 & B423 as applicable to mechanical and chemical analysis to coil tube only

SEAMWELDED & FLOATING PLUG: METRIC

SUMMARY OF CONTROL LINE PROPERTIES.

Product form: Seamwelded & Floating plug redrawn is autogenously welded and redrawn using a floating internal plug to rework the tube OD and ID. Supplied in the annealed condition.

Alloy	Chemical comp.	Product Form	ASTM standard	Fine Tubes Part Number	OD	Wall thickness	Weight/ unit length	Min Yield Strength	Min Tensile Strength	Min Ductility	Max Hardness	Yield Pressure	Working Pressure*	Burst pressure**	Collapse pressure [^]
	UNS				mm	mm	kg/m	MPa	MPa	%	HV	bars	bars	bars	bars
SS 316L	S31603	Seamweld & Floating Plug Redrawn	A269	G2182E1-0318X071-004	3.18	0.71	0.044	172	483	35	190	913	571	2,565	597
SS 316L	S31603	Seamweld & Floating Plug Redrawn	A269	G2182E1-0318X089-004	3.18	0.89	0.051	172	483	35	190	1,162	726	3,262	693
SS 316L	S31603	Seamweld & Floating Plug Redrawn	A269	G2182E1-0635X089-004	6.35	0.89	0.121	172	483	35	190	546	341	1,534	415
SS 316L	S31603	Seamweld & Floating Plug Redrawn	A269	G2182E1-0635X124-004	6.35	1.24	0.158	172	483	35	190	788	493	2,214	541
SS 316L	S31603	Seamweld & Floating Plug Redrawn	A269	G2182E1-0635X165-004	6.35	1.65	0.194	172	483	35	190	1,075	672	3,019	662
SS 316L	S31603	Seamweld & Floating Plug Redrawn	A269	G2182E1-0952X089-004	9.52	0.89	0.192	172	483	35	190	351	219	986	292
SS 316L	S31603	Seamweld & Floating Plug Redrawn	A269	G2182E1-0952X124-004	9.52	1.24	0.257	172	483	35	190	504	315	1,415	390
SS 316L	S31603	Seamweld & Floating Plug Redrawn	A269	G2182E1-0952X165-004	9.52	1.65	0.325	172	483	35	190	691	432	1,940	493
SS 316L	S31603	Seamweld & Floating Plug Redrawn	A269	G2182E1-0952X203-004	9.52	2.03	0.380	172	483	35	190	869	543	2,439	577
SS 316L	S31603	Seamweld & Floating Plug Redrawn	A269	G2182E1-0952X246-004	9.52	2.46	0.434	172	483	35	190	1,069	668	3,002	659
SS 316L	S31603	Seamweld & Floating Plug Redrawn	A269	G2182E1-1270X124-004	12.70	1.24	0.355	172	483	35	190	368	230	1,033	303
SS 316L	S31603	Seamweld & Floating Plug Redrawn	A269	G2182E1-1270X165-004	12.70	1.65	0.456	172	483	35	190	502	314	1,411	389
A825	N08825	Seamweld & Floating Plug Redrawn	B704	G2182E1-0318X071-00C	3.18	0.71	0.045	241	586	30	209	1,280	800	3,112	836
A825	N08825	Seamweld & Floating Plug Redrawn	B704	G2182E1-0318X089-00C	3.18	0.89	0.052	241	586	30	209	1,627	1,017	3,957	971
A825	N08825	Seamweld & Floating Plug Redrawn	B704	G2182E1-0476X071-00C	4.76	0.71	0.074	241	586	30	209	820	513	1,993	612
A825	N08825	Seamweld & Floating Plug Redrawn	B704	G2182E1-0635X089-00C	6.35	0.89	0.124	241	586	30	209	765	478	1,861	581
A825	N08825	Seamweld & Floating Plug Redrawn	B704	G2182E1-0635X124-00C	6.35	1.24	0.162	241	586	30	209	1,105	691	2,686	757
A825	N08825	Seamweld & Floating Plug Redrawn	B704	G2182E1-0635X165-00C	6.35	1.65	0.198	241	586	30	209	1,506	941	3,663	927
A825	N08825	Seamweld & Floating Plug Redrawn	B704	G2182E1-0952X089-00C	9.52	0.89	0.196	241	586	30	209	492	308	1,196	408
A825	N08825	Seamweld & Floating Plug Redrawn	B704	G2182E1-0952X124-00C	9.52	1.24	0.263	241	586	30	209	706	441	1,717	546
A825	N08825	Seamweld & Floating Plug Redrawn	B704	G2182E1-0952X165-00C	9.52	1.65	0.332	241	586	30	209	968	605	2,354	691
A825	N08825	Seamweld & Floating Plug Redrawn	B704	G2182E1-0952X203-00C	9.52	2.03	0.389	241	586	30	209	1,217	761	2,959	809
A825	N08825	Seamweld & Floating Plug Redrawn	B704	G2182E1-1270X124-00C	12.70	1.24	0.363	241	586	30	209	516	323	1,253	425
A825	N08825	Seamweld & Floating Plug Redrawn	B704	G2182E1-1270X165-00C	12.70	1.65	0.466	241	586	30	209	704	440	1,712	545
A825	N08825	Seamweld & Floating Plug Redrawn	B704	G2182E1-1270X203-00C	12.70	2.03	0.554	241	586	30	209	885	553	2,152	647
A825	N08825	Seamweld & Floating Plug Redrawn	B704	G2182E1-1588X124-00C	15.88	1.24	0.464	241	586	30	209	405	253	986	347
A825	N08825	Seamweld & Floating Plug Redrawn	B704	G2182E1-1588X165-00C	15.88	1.65	0.600	241	586	30	209	551	344	1,341	449
A625	N06625	Seamweld & Floating Plug Redrawn	B704	G2182E1-0318X102-00G	3.18	1.02	0.058	414	827	30	266	3,197	1,998	6,386	1,804
A625	N06625	Seamweld & Floating Plug Redrawn	B704	G2182E1-0635X089-00G	6.35	0.89	0.129	414	827	30	266	1,315	822	2,626	998
A625	N06625	Seamweld & Floating Plug Redrawn	B704	G2182E1-0635X124-00G	6.35	1.24	0.168	414	827	30	266	1,898	1,186	3,790	1,301
A625	N06625	Seamweld & Floating Plug Redrawn	B704	G2182E1-0635X165-00G	6.35	1.65	0.206	414	827	30	266	2,588	1,618	5,169	1,592
A625	N06625	Seamweld & Floating Plug Redrawn	B704	G2182E1-0952X124-00G	9.52	1.24	0.272	414	827	30	266	1,213	758	2,423	938
A625	N06625	Seamweld & Floating Plug Redrawn	B704	G2182E1-0952X165-00G	9.52	1.65	0.344	414	827	30	266	1,663	1,039	3,322	1,186
A625	N06625	Seamweld & Floating Plug Redrawn	B704	G2182E1-0952X203-00G	9.52	2.03	0.403	414	827	30	266	2,091	1,307	4,176	1,389
A625	N06625	Seamweld & Floating Plug Redrawn	B704	G2182E1-1270X124-00G	12.70	1.24	0.377	414	827	30	266	886	554	1,769	730
A625	N06625	Seamweld & Floating Plug Redrawn	B704	G2182E1-1270X165-00G	12.70	1.65	0.484	414	827	30	266	1,209	756	2,416	936
A625	N06625	Seamweld & Floating Plug Redrawn	B704	G2182E1-1270X203-00G	12.70	2.03	0.574	414	827	30	266	1,520	950	3,037	1,112

* Working pressure is calculated using the LAME formula under ambient, neutral and static conditions. A safety factor of 1.6 is used on the minimum yield pressure.

** The Theoretical burst pressure is calculated using the LAME formula under ambient, neutral and static conditions using the minimum tensile strength.

[^] The theoretical collapse pressure is calculated using the LAME formula and the minimum yield strength.

The General chemical and mechanical properties are applied to the coiled tube where appropriate.

Note the part numbers used include the designation for including orbital weld joints.

All joints are x-rayed in at least three planes.

Control line may also be supplied without orbital joints.

Certification to EN10204 3.1. Certified in accordance with NACE MR 0175/ISO15156:3

ASTM B444 & B423 as applicable to mechanical and chemical analysis to coil tube only

SUMMARY OF CONTROL LINE PROPERTIES.

Product form: Seamless tubing is manufactured from extrusions. Supplied in the annealed condition.

Alloy	Chemical comp.	Product Form	ASTM standard	Fine Tubes Part Number	OD	Wall thickness	Weight/ unit length	Min Yield Strength	Min Tensile Strength	Min Ductility	Max Hardness	Yield Pressure	Working Pressure*	Burst Pressure**	Collapse Pressure [^]
	UNS				inch	inch	lb/ft	ksi	ksi	%	HV	psi	psi	psi	psi
SS 316L	S31603	Seamless	A269	G2182F1-0318X071-004	0.125	0.028	0.030	25	70	35	190	13,242	8276	37,202	8,659
SS 316L	S31603	Seamless	A269	G2182F1-0318X089-004	0.125	0.035	0.040	25	70	35	190	16,853	10,533	47,311	10,051
SS 316L	S31603	Seamless	A269	G2182F1-0635X089-004	0.250	0.035	0.080	25	70	35	190	7,919	4,949	22,249	6,019
SS 316L	S31603	Seamless	A269	G2182F1-0635X124-004	0.250	0.049	0.110	25	70	35	190	11,429	7,143	32,111	7,847
SS 316L	S31603	Seamless	A269	G2182F1-0635X165-004	0.250	0.065	0.130	25	70	35	190	15,592	9,745	43,787	9,602
SS 316L	S31603	Seamless	A269	G2182F1-0952X089-004	0.375	0.035	0.130	25	70	35	190	5,091	3,182	14,301	4,235
SS 316L	S31603	Seamless	A269	G2182F1-0952X124-004	0.375	0.049	0.180	25	70	35	190	7,310	4,569	20,523	5,656
SS 316L	S31603	Seamless	A269	G2182F1-0952X165-004	0.375	0.065	0.230	25	70	35	190	10,022	6,264	28,137	7,150
SS 316L	S31603	Seamless	A269	G2182F1-0952X203-004	0.375	0.080	0.260	25	70	35	190	12,604	7,878	35,375	8,369
SS 316L	S31603	Seamless	A269	G2182F1-1270X124-004	0.500	0.049	0.300	25	70	35	190	5,337	3,336	14,982	4,395
SS 316L	S31603	Seamless	A269	G2182F1-1270X165-004	0.500	0.065	0.250	25	70	35	190	7,281	4,551	20,465	5,642
SS 316L	S31603	Seamless	A269	G2182F1-1270X203-004	0.500	0.080	0.320	25	70	35	190	9,166	5,729	25,730	6,701
SS 316L	S31603	Seamless	A269	G2182F1-1588X124-004	0.625	0.049	0.030	25	70	35	190	4,192	2,620	11,777	3,597
SS 316L	S31603	Seamless	A269	G2182F1-1588X165-004	0.625	0.065	0.040	25	70	35	190	5,714	3,571	16,027	4,641
A825	N08825	Seamless	B423	G2182F1-0318X089-00C	0.125	0.035	0.050	35	85	30	209	23,598	14,749	57,392	14,083
A825	N08825	Seamless	B423	G2182F1-0635X089-00C	0.250	0.035	0.090	35	85	30	209	11,095	6,934	26,992	8,427
A825	N08825	Seamless	B423	G2182F1-0635X124-00C	0.250	0.049	0.110	35	85	30	209	16,027	10,017	38,957	10,979
A825	N08825	Seamless	B423	G2182F1-0635X165-00C	0.250	0.065	0.140	35	85	30	209	21,843	13,652	53,127	13,445
A825	N08825	Seamless	B423	G2182F1-0952X089-00C	0.375	0.035	0.140	35	85	30	209	7,136	4,460	17,347	5,918
A825	N08825	Seamless	B423	G2182F1-0952X124-00C	0.375	0.049	0.180	35	85	30	209	10,240	6,400	24,903	7,919
A825	N08825	Seamless	B423	G2182F1-0952X165-00C	0.375	0.065	0.230	35	85	30	209	14,040	8,775	34,142	10,022
A825	N08825	Seamless	B423	G2182F1-0952X203-00C	0.375	0.080	0.270	35	85	30	209	17,651	11,032	42,917	11,734
A825	N08825	Seamless	B423	G2182F1-1270X124-00C	0.500	0.049	0.250	35	85	30	209	7,484	4,678	18,173	6,164
A825	N08825	Seamless	B423	G2182F1-1270X165-00C	0.500	0.065	0.320	35	85	30	209	10,211	6,382	24,831	7,905
A825	N08825	Seamless	B423	G2182F1-1270X203-00C	0.500	0.080	0.380	35	85	30	209	12,836	8,023	31,212	9,384
A625	N06625	Seamless	B444	G2182F1-0635X089-00G	0.250	0.035	0.320	60	120	30	266	19,072	11,920	38,087	14,475
A625	N06625	Seamless	B444	G2182F1-0635X124-00G	0.250	0.049	0.420	60	120	30	266	27,528	17,205	54,969	18,869
A625	N06625	Seamless	B444	G2182F1-0635X165-00G	0.250	0.065	0.040	60	120	30	266	37,536	23,460	74,970	23,090
A625	N06625	Seamless	B444	G2182F1-0635X203-00G	0.250	0.08	0.090	60	120	30	266	46,224	28,890	92,331	26,121
A625	N06625	Seamless	B444	G2182F1-0952X124-00G	0.375	0.049	0.120	60	120	30	266	17,593	10,996	35,143	13,605
A625	N06625	Seamless	B444	G2182F1-0952X165-00G	0.375	0.065	0.140	60	120	30	266	24,120	15,075	48,182	17,202
A625	N06625	Seamless	B444	G2182F1-0952X203-00G	0.375	0.080	0.190	60	120	30	266	30,327	18,954	60,568	20,146
A625	N06625	Seamless	B444	G2182F1-1270X124-00G	0.500	0.049	0.240	60	120	30	266	12,850	8,031	25,657	10,588
A625	N06625	Seamless	B444	G2182F1-1270X165-00G	0.500	0.065	0.280	60	120	30	266	17,535	10,959	35,041	13,576
A625	N06625	Seamless	B444	G2182F1-1270X203-00G	0.500	0.080	0.260	60	120	30	266	22,046	13,779	44,048	16,128

* Working pressure is calculated using the LAME formula under ambient, neutral and static conditions. A safety factor of 1.6 is used on the minimum yield pressure.

** The Theoretical burst pressure is calculated using the LAME formula under ambient, neutral and static conditions using the minimum tensile strength.

[^] The Theoretical collapse pressure is calculated using the LAME formula and the minimum yield strength.

The General chemical and mechanical properties are applied to the coiled tube where appropriate. Note the part numbers used include the designation for including orbital weld joints. All joints are x-rayed in at least three planes. Control line may also be supplied without orbital joints. Certification to EN10204 3.1. Certified in accordance with NACE MR 0175/ISO15156:3 ASTM B444 & B423 as applicable to mechanical and chemical analysis to coil tube only

The pressure calculation information is provided for guidance only and is not intended for design.

SUMMARY OF CONTROL LINE PROPERTIES.

Product form: Seamless tubing is manufactured from extrusions. Supplied in the annealed condition.

Alloy	Chemical comp.	Product Form	ASTM standard	Fine Tubes Part Number	OD	Wall thickness	Weight/ unit length	Min Yield Strength	Min Tensile Strength	Min Ductility	Max Hardness	Yield Pressure	Working Pressure*	Burst Pressure**	Collapse Pressure [^]
	UNS				mm	mm	kg/m	MPa	MPa	%	HV	bars	bars	bars	bars
SS 316L	S31603	Seamless	A269	G2182F1-0318X071-004	3.18	0.71	0.044	172	483	35	190	913	571	2,565	597
SS 316L	S31603	Seamless	A269	G2182F1-0318X089-004	3.18	0.89	0.051	172	483	35	190	1,162	726	3,262	693
SS 316L	S31603	Seamless	A269	G2182F1-0635X089-004	6.35	0.89	0.121	172	483	35	190	546	341	1,534	415
SS 316L	S31603	Seamless	A269	G2182F1-0635X124-004	6.35	1.24	0.158	172	483	35	190	788	493	2,214	541
SS 316L	S31603	Seamless	A269	G2182F1-0635X165-004	6.35	1.65	0.194	172	483	35	190	1,075	672	3,019	662
SS 316L	S31603	Seamless	A269	G2182F1-0952X089-004	9.52	0.89	0.192	172	483	35	190	351	219	986	292
SS 316L	S31603	Seamless	A269	G2182F1-0952X124-004	9.52	1.24	0.257	172	483	35	190	504	315	1,415	390
SS 316L	S31603	Seamless	A269	G2182F1-0952X165-004	9.52	1.65	0.325	172	483	35	190	691	432	1,940	493
SS 316L	S31603	Seamless	A269	G2182F1-0952X203-004	9.52	2.03	0.380	172	483	35	190	869	543	2,439	577
SS 316L	S31603	Seamless	A269	G2182F1-1270X124-004	12.70	1.24	0.355	172	483	35	190	368	230	1,033	303
SS 316L	S31603	Seamless	A269	G2182F1-1270X165-004	12.70	1.65	0.456	172	483	35	190	502	314	1,411	389
SS 316L	S31603	Seamless	A269	G2182F1-1270X203-004	12.70	2.03	0.542	172	483	35	190	632	395	1,774	462
SS 316L	S31603	Seamless	A269	G2182F1-1588X124-004	15.88	1.24	0.454	172	483	35	190	289	181	812	248
SS 316L	S31603	Seamless	A269	G2182F1-1588X165-004	15.88	1.65	0.587	172	483	35	190	394	246	1,105	320
A825	N08825	Seamless	B423	G2182F1-0318X089-00C	3.18	0.89	0.052	241	586	30	209	1,627	1,017	3,957	971
A825	N08825	Seamless	B423	G2182F1-0635X089-00C	6.35	0.89	0.124	241	586	30	209	765	478	1,861	581
A825	N08825	Seamless	B423	G2182F1-0635X124-00C	6.35	1.24	0.162	241	586	30	209	1,105	691	2,686	757
A825	N08825	Seamless	B423	G2182F1-0635X165-00C	6.35	1.65	0.198	241	586	30	209	1,506	941	3,663	927
A825	N08825	Seamless	B423	G2182F1-0952X089-00C	9.52	0.89	0.196	241	586	30	209	492	308	1,196	408
A825	N08825	Seamless	B423	G2182F1-0952X124-00C	9.52	1.24	0.263	241	586	30	209	706	441	1,717	546
A825	N08825	Seamless	B423	G2182F1-0952X165-00C	9.52	1.65	0.332	241	586	30	209	968	605	2,354	691
A825	N08825	Seamless	B423	G2182F1-0952X203-00C	9.52	2.03	0.389	241	586	30	209	1,217	761	2,959	809
A825	N08825	Seamless	B423	G2182F1-1270X124-00C	12.70	1.24	0.363	241	586	30	209	516	323	1,253	425
A825	N08825	Seamless	B423	G2182F1-1270X165-00C	12.70	1.65	0.466	241	586	30	209	704	440	1,712	545
A825	N08825	Seamless	B423	G2182F1-1270X203-00C	12.70	2.03	0.554	241	586	30	209	885	553	2,152	647
A625	N06625	Seamless	B444	G2182F1-0635X089-00G	6.35	0.89	0.129	414	827	30	266	1,315	822	2,626	998
A625	N06625	Seamless	B444	G2182F1-0635X124-00G	6.35	1.24	0.168	414	827	30	266	1,898	1,186	3,790	1,301
A625	N06625	Seamless	B444	G2182F1-0635X165-00G	6.35	1.65	0.206	414	827	30	266	2,588	1,618	5,169	1,592
A625	N06625	Seamless	B444	G2182F1-0635X203-00G	6.35	2.03	0.233	414	827	30	266	3,187	1,992	6,366	1,801
A625	N06625	Seamless	B444	G2182F1-0952X124-00G	9.52	1.24	0.272	414	827	30	266	1,213	758	2,423	938
A625	N06625	Seamless	B444	G2182F1-0952X165-00G	9.52	1.65	0.344	414	827	30	266	1,663	1,039	3,322	1,186
A625	N06625	Seamless	B444	G2182F1-0952X203-00G	9.52	2.03	0.403	414	827	30	266	2,091	1,307	4,176	1,389
A625	N06625	Seamless	B444	G2182F1-1270X124-00G	12.70	1.24	0.377	414	827	30	266	886	554	1,769	730
A625	N06625	Seamless	B444	G2182F1-1270X165-00G	12.70	1.65	0.484	414	827	30	266	1,209	756	2,416	936
A625	N06625	Seamless	B444	G2182F1-1270X203-00G	12.70	2.03	0.574	414	827	30	266	1,520	950	3,037	1,112

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[^] The Theoretical collapse pressure is calculated using the LAME formula and the minimum yield strength.

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Note the part numbers used include the designation for including orbital weld joints.

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Control line may also be supplied without orbital joints.

Certification to EN10204 3.1. Certified in accordance with NACE MR 0175/ISO15156:3

ASTM B444 & B423 as applicable to mechanical and chemical analysis to coil tube only

The pressure calculation information is provided for guidance only and is not intended for design.

CONTROL LINE TUBES

DATASHEET



ABOUT AMETEK SPECIALTY METAL PRODUCTS

AMETEK Specialty Metal Products (SMP) is a business unit of AMETEK, Inc. a leading global manufacturer of electronic instruments and electromechanical devices with annualized sales of approximately \$5.5 billion.

The Specialty Metals business unit consists of five brands and operating facilities in the United States and the United Kingdom. All are proven experts in the manufacture of advanced metallurgical products including precision metal strip, ultra-thin foil, specialty shaped wire, engineered components, thermal management materials, water atomized powders, precision tube and roll-bonded clad plate.

These high performance metal products are used around the world for critical applications in a range of industries including aerospace, automotive, defense, electronics, industrial, medical, nuclear, and oil and gas.



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