

*Nylon, Polyurethane,  
Polyester Reinforced PVC,  
Metal Braided Rubber, Copper,  
Double Wall Brazed Steel*

- 1 Available in a variety of different types to suit a wide range of applications
- 1 All tubing can be used with specific ranges of tube fittings
- 1 Nylon and polyurethane tube available in several colours for ease of identification

## Technical Data

Medium:

Compressed air  
(Consult our Technical Service for use with other fluids)

Operating Pressure:

Refer to specific tubing type on the following pages

Operating Temperature:

Refer to specific tubing type on the following pages

## Tube Sizes

Nylon: 4, 5, 6, 8, 10, 12, 14, 16, 22, 28 mm O/D

Polyurethane: 4, 5, 6, 8, 10, 12 O/D

Extraflexible Nylon: 8, 10, 12, 15 mm O/D

Polyester reinforced PVC hose: 3, 5, 6.3, 8, 10, 12.5,  
19, 25 mm I/D

Polyester reinforced PVC hose assemblies: 4, 5, 6, 8, 10,  
12, 16, 22, 28 O/D

Metal Braided: 4, 5, 6, 8, 10, 12, 28 mm

Copper – half hard and annealed: 4, 5, 6, 8, 10,  
12, 16, 22, 28 mm O/D

Double Wall Brazed Steel: 4, 6, 8, 10, 12 mm O/D

## Materials

Nylon tube: nylon (polyamide) type 11 or 12 fully plasticised

Polyurethane

Polyester reinforced PVC: high quality electrically non-conductive plasticised PVC hose, high tensile polyester fibre braiding, galvanised steel 'O' clips and brass tailpieces on assembled hoses

Metal braided hose: E90 nitrile rubber hose, galvanised steel braiding wire, brass ferrules, copper tailpieces

Copper tube: phosphorous de-oxidised non arsenical copper to BS6017 grade Cu-DHP

Double wall brazed steel: copper coated steel strip with plated external surface



## Ordering Information

To order, quote appropriate product number from the tables on the following pages. When ordering Polyester reinforced PVC hose state the length of hose required.



**General Information – Metric Nylon Tubing**  
To DIN Standards 73378 and 74324

O/D tube (mm)	I/D tube (mm)	Product number									
		Natural			Black			Blue			Brown
		15 m coil	25 m coil	100 m coil	15 m coil	25 m coil	100 m coil	15 m coil	25 m coil	100 m coil	100 m coil
4	2,5	PA0004015*	PA0004025*	PA0004100	PA0704015*	PA0704025*	PA0704100	PA0504015*	PA0504025*	PA0504100	PA0404100
5	3,0	PA0005015*	PA0005025*	PA0005100	PA0705015*	PA0705025*	PA0705100	PA0505015*	PA0505025*	PA0505100	PA0405100
6	4,0	PA0006015*	PA0006025*	PA0006100	PA0706015*	PA0706025*	PA0706100	PA0506015*	PA0506025*	PA0506100	PA0406100
8	6,0	PA0008015*	PA0008025*	PA0008100	PA0708015*	PA0708025*	PA0708100	PA0508015*	PA0508025*	PA0508100	-
10	7,5	PA0010015*	PA0010025*	PA0010100	PA0710015*	PA0710025*	PA0710100	PA0510015*	PA0510025*	PA0510100	-
12	9,0	PA0012015*	PA0012025*	PA0012100	PA0712015*	PA0712025*	PA0712100	PA0512015*	PA0512025*	PA0512100	-
14†	11,0	PA0014015	PA0014025	PA0014100	-	PA0714025	PA0714100	-	PA0514025	PA0514100	-
16	12,0	PA0016015	PA0016025	-	-	-	-	-	-	-	-
18	14	-	PA0018025	-	-	-	-	-	-	-	-
22†	17,0	PA0022015	PA0022025	-	-	-	-	-	-	-	-
28†	22	PA0028015	PA0028025	-	-	-	-	-	-	-	-

O/D tube (mm)	I/D tube (mm)	Product number									Corporate Red	Corporate Grey
		Red			Yellow			Green			25m coil	25m coil
		15 m coil	25 m coil	100 m coil	15 m coil	25 m coil	100 m coil	15 m coil	25 m coil	100 m coil	25m coil	25m coil
4	2,5	PA0104015*	PA0104025*	PA0104100	PA0304015*	PA0304025*	PA0304100	PA0204015*	PA0204025*	PA0204100	PA0804025	PA0604025
5	3,0	PA0105015*	PA0105025*	PA0105100	PA0305015*	PA0305025*	PA0305100	PA0205015*	PA0205025*	PA0205100	-	-
6	4,0	PA0106015*	PA0106025*	PA0106100	PA0306015*	PA0306025*	PA0306100	PA0206015*	PA0206025*	PA0206100	PA0806025	PA0606025
8	6,0	PA0108015*	PA0108025*	PA0108100	PA0308015*	PA0308025*	PA0308100	PA0208015*	PA0208025*	PA0208100	PA0808025	PA0608025
10	7,5	PA0110015*	PA0110025*	PA0110100	PA0310015*	PA0310025*	PA0310100	PA0210015*	PA0210025*	PA0210100	-	-
12	9,0	PA0112015*	PA0112025*	PA0112100	PA0312015*	PA0312025*	PA0312100	PA0212015*	PA0212025*	PA0212100	-	-
14†	11,0	-	PA0114025	PA0114100	-	PA0314025	PA0314100	-	PA0214025	PA0214100	-	-

Coils are supplied in polythene bags. Those coils marked \* can also be supplied in boxes at nominal extra cost, add 'C' to end of product number.

†Do not conform to above standards. 22 mm and 28 mm O/D tubing conforms to BS 5409 Part 1, Table 2.

Other colours can be supplied for orders of sufficient quantity.

This standard range of nylon tubing can be supplied in longer lengths to order, provided that a minimum economic production quantity is ordered.

**Maximum working pressures**

O/D tube (mm)	I/D tube (mm)	Maximum working pressure (bar) at -40°C to +20°C	Minimum bend radius (mm)
4	2,5	28	25
5	3,0	31	25
6	4,0	25	30
8	6	19	50
10	7,5	24	60
12	9,0	18	75
14	11,0	15	80
16	12,0	18	95
22	17,0	15	125
28	22,0	15	160

**Working pressure/temperature conversion factors**

Working temperature °C	Factor
-40°C to +20°C	1,00
+30°C	0,83
+40°C	0,75
+50°C	0,64
+60°C	0,57
+80°C	0,47

To calculate working pressures at various temperatures, multiply working pressure at -40°C to +20°C by factor given in table.

Maximum continuous working temperature +80°C.

**Extraflexible Nylon Tubing**

O/D tube (mm)	I/D tube (mm)	Maximum working Pressure (bar) at 20°C	Bend radius (mm)	Natural 25m coil
8	6	10	30	PS0008025
10	8	8	40	PS0010025
12	10	6	60	PS0012025
15	12,5	6	110	PS0015025

**Working pressure/temperature conversion factors**

Working temperature °C	Factor
-40°C to +20°C	1,00
+30°C	0,83
+40°C	0,75
+50°C	0,64
+60°C	0,57

To calculate working pressures at various temperatures, multiply working pressure at -40°C to +20°C by factor given in table.

Maximum continuous working temperature +60°C.

**Polyurethane Tubing**

O/D tube (mm)	I/D tube (mm)	Product number										
		Natural		Black		Blue		Red		Yellow		Green
		25 m coil	100 m coil	25 m coil	100 m coil	25 m coil	100 m coil	25 m coil	100 m coil	25 m coil	100 m coil	
4	2,5	PU0004025C	PU0004100C	PU0704025C	PU0704100C	PU0504025C	PU0504100C	PU0104025C	PU0104100C	PU0304025C	PU0304100C	
5	3,0	PU0005025C	PU0005100C	PU0705025C	PU0705100C	PU0505025C	PU0505100C	PU0105025C	PU0105100C	PU0305025C	PU0305100C	
6	4,0	PU0006025C	PU0006100C	PU0706025C	PU0706100C	PU0506025C	PU0506100C	PU0106025C	PU0106100C	PU0306025C	PU0306100C	PU0206100C
8	5,5	PU0008025C	PU0008100D	PU0708025C	PU0708100D	PU0508025C	PU0508100D	PU0108025C	PU0108100D	PU0308025C	PU0308100D	PU0208100D
10	7,0	PU0010025C	PU0010100D	PU0710025C	PU0710100D	PU0510025C	PU0510100D	PU0110025C	PU0110100D	PU0310025C	PU0310100D	PU0210100D
12	8,0	PU0012025C	PU0012100D	PU0712025C	PU0712100D	PU0512025C	PU0512100D	PU0112025C	PU0112100D	PU0312025C	PU0312100D	PU0212100D

All of these coils are supplied in boxes or on drums.

This standard range of polyurethane tubing can be supplied in longer lengths to order, provided that a minimum economic production quantity is ordered.



### Maximum working pressures

O/D tube (mm)	I/D tube (mm)	Maximum working pressure (bar) at -40°C to +20°C	Minimum bend radius (mm)
4	2,5	10	6
5	3,0	11	7
6	4,0	9	9
8	5,5	9	16
10	7,0	9	17
12	8,0	9	25

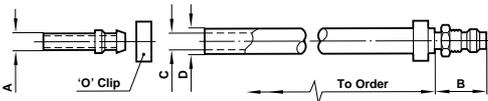
### Working pressure/temperature conversion factors

Working temperature °C	Factor
-40°C to +20°C	1,00
+30°C	0,85
+40°C	0,70
+50°C	0,60
+60°C	0,50

To calculate working pressures at various temperatures, multiply working pressure at -40°C to +20°C by factor given in table. Maximum continuous working temperature +60°C.

### Polyester reinforced PVC hose

Flexible hose assemblies



Product Number*	A O/D tailpiece	B	Max (bar) working pressure	Min bend radius	C hose I/D	D hose O/D
42 0200 00 000	4	19,0	10	28	3	8
42 0210 00 000	5	21,5	10	28	3	8
42 0220 00 000	6	23,0	10	31,5	6,3	12
42 0230 00 000	8	26,0	10	31,5	6,3	12
42 0240 00 000	10	28,0	10	48,5	10	16
42 0250 00 000	12	30,0	10	48,5	10	16
42 0260 00 000	16	34,8	9	50,5	12,5	19
42 0270 00 000	22	42,0	7	70	19	27
42 0280 00 000	28	51,0	6	225	25	33

Operating temperature: -20°C to +70°C.  
For use at temperatures above +70°C consult our Technical Service.  
\*State the length of hose required when ordering. Maximum length 30m.

### Polyester reinforced PVC hose

30m coils

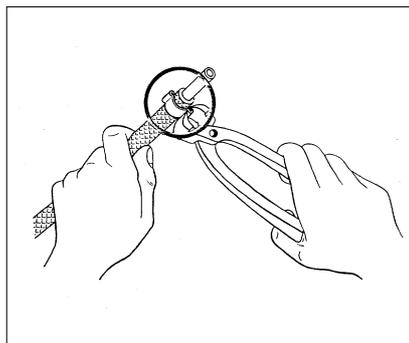
Product Number	Hose bore	Min. bend radius	Hose Ø O/D	Max (bar) working pressure	'O' clip product number
PV2008030	3	51,0	8	31	48 0168 02
PV2010030	5	63,0	10	20	48 0168 03
PV2012030	6,3	76,0	11,5	17	48 0168 04
PV2014030	8	102	13,5	16	48 0168 05
PV2016030	10	114	16	16	48 0168 06
PV2019030	12,5	140	18,5	14	48 0168 07
PV2027030	20	203	27	9	48 0168 11
PV2033030	25	229	33	6	48 0168 15

### Pincers

A special pair of pincers, product number **39 0014 00**, is available for crimping 'O' clips to hose.

#### Instructions

1. Cut off the desired length of hose
2. Insert reusable tailpieces
3. Slip on the 'O' clips
4. Clamp tightly with pincers

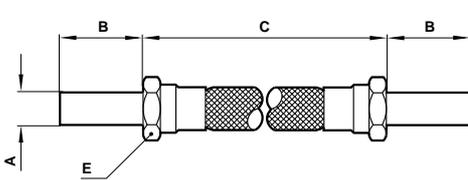




## Metal Braided Rubber Hose

Flexible hose assemblies

Metal braided rubber hoses are suitable for use with petrol, diesel fuel, paraffin and other liquids to pressures stated in the tables below. They are also suitable for use with compressed air up to a maximum working pressure of 10 bar. The maximum working pressures quoted in these tables have been taken under ideal conditions with non-pulsating pressures when used with compression tube fittings, see Section 9.6. Working temperature range -20°C to +100°C



Product Number	A O/D tube	B	C	E A/F	Min bend radius	Max (bar) working pressure
42 0020 00 000	4	19	*	13	34	69
42 0020 00 250	4	19	250	13	34	69
42 0020 00 300	4	19	300	13	34	69
42 0020 00 350	4	19	350	13	34	69
42 0020 00 400	4	19	400	13	34	69
42 0020 00 500	4	19	500	13	34	69
42 0020 00 600	4	19	600	13	34	69
42 0020 00 750	4	19	750	13	34	69
42 0020 01 000	4	19	1000	13	34	69
42 0030 00 000	5	21	*	13	34	69
42 0030 00 250	5	21	250	13	34	69
42 0030 00 300	5	21	300	13	34	69
42 0030 00 350	5	21	350	13	34	69
42 0030 00 400	5	21	400	13	34	69
42 0030 00 500	5	21	500	13	34	69
42 0030 00 600	5	21	600	13	34	69
42 0030 00 750	5	21	750	13	34	69
42 0030 01 000	5	21	1000	13	34	69
42 0040 00 000	6	23	*	14	35	69
42 0040 00 250	6	23	250	14	35	69
42 0040 00 300	6	23	300	14	35	69
42 0040 00 350	6	23	350	14	35	69
42 0040 00 400	6	23	400	14	35	69
42 0040 00 500	6	23	500	14	35	69
42 0040 00 600	6	23	600	14	35	69
42 0040 00 750	6	23	750	14	35	69
42 0040 01 000	6	23	1000	14	35	69

\*State length of hose required if ordering non-standard lengths. Minimum length 155mm.

When installing a flexible hose the following simple rules should be noted.

1. Flexible hose is weakened when installed in a twisted position.
2. Ample bend radius should be allowed to avoid collapsing the hose.
3. When hose is installed in a flexing application remember that metal end fittings are not part of the flexible portion.
4. Use elbows or adaptors to eliminate excess hose bends.

Product Number	A O/D tube	B	C	E A/F	Min bend radius	Max (bar) working pressure
42 0050 00 000	8	26	*	17	39	69
42 0050 00 250	8	26	250	17	39	69
42 0050 00 300	8	26	300	17	39	69
42 0050 00 350	8	26	350	17	39	69
42 0050 00 400	8	26	400	17	39	69
42 0050 00 500	8	26	500	17	39	69
42 0050 00 600	8	26	600	17	39	69
42 0050 00 750	8	26	750	17	39	69
42 0050 01 000	8	26	1000	17	39	69
42 0060 00 000	10	28	*	19	39	69
42 0060 00 250	10	28	250	19	39	69
42 0060 00 300	10	28	300	19	39	69
42 0060 00 350	10	28	350	19	39	69
42 0060 00 400	10	28	400	19	39	69
42 0060 00 500	10	28	500	19	39	69
42 0060 00 600	10	28	600	19	39	69
42 0060 00 750	10	28	750	19	39	69
42 0060 01 000	10	28	1000	19	39	69
42 0070 00 000	12	30	*	22	51	47
42 0070 00 250	12	30	250	22	51	47
42 0070 00 300	12	30	300	22	51	47
42 0070 00 350	12	30	350	22	51	47
42 0070 00 400	12	30	400	22	51	47
42 0070 00 500	12	30	500	22	51	47
42 0070 00 600	12	30	600	22	51	47
42 0070 00 750	12	30	750	22	51	47
42 0070 01 000	12	30	1000	22	51	47

## Double Wall Brazed Steel Tube

Double wall brazed steel tubing is constructed from copper coated steel strip which is rolled twice around laterally, then furnace brazed to produce a tube of double wall structure, with a clear, scale free coppered bore, a plated external surface and a consistently uniform wall thickness.

Product Number	O/D tube size	Inside diameter	Min bend radius (min)	Max working pressure (bar) at 20°C*
BU6304003	4	2,6	10	380
BU6306003	6	4,6	13	300
BU6308003	8	6,6	19	250
BU6310003	10	8,6	22	195
BU6312003	12	10,6	44	160

Tolerance on outside diameters is -0,07 mm to +0,05 mm.

\*Maximum working pressures stated are for tubes of straight length, with non-pulsating pressures when used with Enots compression tube fittings.



### Copper Tubing

The following technical information is valid for copper tube when used with compression fittings, see Section 9.5. For further information please consult our Technical Service.

#### Standard Duty: Annealed

Product Number 10m coils	O/D tube size	I/D tube size	Wall thickness	Min bend radius	Recommended safe working pressure (bar) -200°C to +50°C
CS6004010	4	2,8	0,6	12	128
CS6005010	5	3,4	0,8	15	138
CS6006010	6	4,4	0,8	19	112
CS6008010	8	6,4	0,8	24	81
CS6010010	10	8,4	0,8	30	64
<b>3m straight</b>					
CS6012003	12	9,6	1,2	40	81
CS6016003	16	13,6	1,2	48	59
CS6022003	22	19,0	1,5	67	53
CS6028003	28	25,0	1,5	86	41

Manufactured to BS 2871: Part 2 with dimensions generally to Table 4.  
Tolerances on O/D are +0,00mm to -0,08mm.

The recommended safe working pressures are calculated in accordance with BS1306 with a stress value of 41N/mm<sup>2</sup> and minimum tube wall thickness. For safe working pressures at temperatures other than -200°C to +50°C refer to Pressure De-rating Factor table below.

#### Standard Duty: Half Hard

Product Number 3m straight	O/D tube size	I/D tube size	Wall thickness	Min bend radius	Recommended safe working pressure (bar) -200°C to +50°C
CS7004003	4	2,8	0,6	12	193
CS7005003	5	3,4	0,8	15	208
CS7006003	6	4,0	1,0	19	218
CS7008003	8	6,0	1,0	24	157
CS7010003	10	7,6	1,2	30	150
CS7012003	12	9,6	1,2	40	122
CS7016003	16	13,6	1,2	48	89
CS7022003	22	19,0	1,5	67	81
CS7028003	28	25,0	1,5	86	62

Manufactured to BS 2871: Part 2 with dimensions generally to Table 4.  
Tolerances on O/D are +0,00mm to -0,08mm.

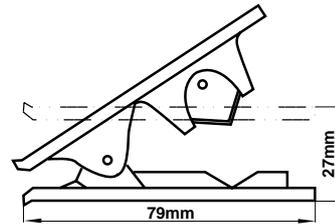
The recommended safe working pressures are calculated in accordance with BS1306 with a stress value of 62N/mm<sup>2</sup> and minimum tube wall thickness. For safe working pressures at temperatures other than -200°C to +50°C refer to Pressure De-rating Factor table below.

### Copper Tubing Pressure De-rating Factor For temperatures other than -200°C to +50°C

Tube	-200°C to +50°C	+50°C to +100°C	+100°C to +150°C	+150°C to +175°C	+175°C to +200°C
Annealed	1,0	0,97	0,82	0,63	0,43
Half-hard	1,0	0,95	0,88	0,54	0,29

To calculate the working pressure at temperatures other than -200°C to +50°C multiply the working pressure given in the appropriate table by the factor given in this table.e.g. Safe working pressure of standard duty half-hard copper tube, 8 mm O/D at +120°C = 157 x 0,88 = 138 bar.

### Tube Cutter - Plastic Tubing



Product Number	Description
M/3314	Tube cutter
39012061	Replacement blades

Suitable for providing clean square cuts through 3mm to 19mm plastic tubing. Cutter is provided with Norgren branding in corporate red colour.

### Warning

These products are intended for use in industrial compressed air systems only. Do not use these products where pressures and temperatures can exceed those listed under **Technical Data**. Before using these products with fluids other than those specified, for non-industrial applications, life-support systems, or other applications not within published specifications, consult Norgren. Through misuse, age, or malfunction, components used in fluid power systems can fail in various modes. The system designer is warned to consider the failure modes of all component parts used in fluid power systems and to provide adequate safeguards to prevent personal injury or damage to equipment in the event of such failure. **System designers must provide a warning to end users in the system instructional manual if protection against a failure mode cannot be adequately provided.** System designers and end users are cautioned to review specific warnings found in instruction sheets packed and shipped with these products where applicable.

- Available in a variety of colours in four tube sizes
- Outer cover protects against damage from weld spatter
- Designed to be used with WeldFit push-in fittings
- Good flexibility with tight bend radius capability
- Good chemical resistance
- Flame retardant outer cover

**Technical Data****Operating Medium:**

Compressed Air, Water  
(Consult our Technical Service for use with other fluids)

**Operating Pressure:**

Vacuum 10 bar

**Working Temperature:**

-30 °C to 70°C

**Tube Sizes:**

Inner tube 6, 8, 10, 12 mm O/D

**Materials:**

Inner tube:- Polyurethane, 95° shore A.  
Outer tube:- Flame retardant PVC

**Ordering Information**

To order, quote the appropriate product number from the tables on the following pages.



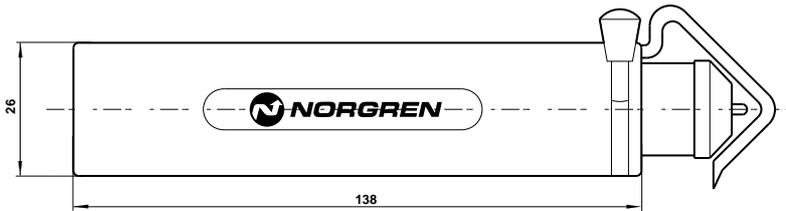
### General Information

O/D Outer tube mm	O/D Inner tube mm	I/D Inner tube mm	Working pressure bar	Burst pressure bar	Bend radius mm	Product number			
						Black	Red	Green	Blue
8	6	4	10	30	40	WT4706025	WT4106025	WT4206025	WT4506025
10	8	6	10	30	50	WT4708025	WT4108025	WT4208025	WT4508025
12,5	10	7	10	30	65	WT4710025	WT4110025	WT4210025	WT4510025
14,5	12	9	10	30	75	WT4712025	WT4112025	WT4212025	WT4512025

The colours are for the outer PVC cover  
 Tubing is supplied shrink-wrapped in 25m coils  
 Other colours can be supplied for orders of sufficient quantity  
 Tubing can also be supplied in longer lengths subject to economic order quantities

### Tube Stripper

This tube stripper ensures correct stripping of WeldTube



Product number	Description
39004100	Stripper
39004160	Spare blades (2)

To give full protection from weld spatter, the outer cover needs to be removed exposing the correct length of inner tube for insertion into the WeldFit fitting.  
 The outer cover then fits into the collet counterbore, thus protecting system from spatter.

#### Instructions for Use

1. Ensure tube is cut at 90° to the tube axis. This cut to be in the middle  $\times$  mark along tube.
2. Adjust cutting depth of stripper - adjust the cutting depth of the blade at the head screw and adjust to the outer cover thickness.
3. Lift the clip against the spring pressure and insert tube, lining up blade with the next  $\times$  mark from tube end (this ensures correct length is removed.) Release the clip.
4. To strip outer cover, turn the tool radially around the tube to make a circular cut.
5. Turn the blade (90°) up to the stop with the lever. Move tool along the tube to make longitudinal cut.
6. The outer cover can be levered off with the aid of the ground edge of the clip and removed.

### Warning

These products are intended for use in industrial compressed air systems only. Do not use these products where pressures and temperatures can exceed those listed under 'Technical Data'.  
 Before using these products with fluids other than those specified, for non-industrial applications, life-support systems, or other applications not within published specifications, consult Norgren.  
 Through misuse, age, or malfunction, components used in fluid power systems can fail in various modes. The system designer is warned to consider the failure modes of all component parts used in fluid power systems and to provide adequate safeguards to prevent personal injury or damage to equipment in the event of such failure.  
**System designers must provide a warning to end users in the system instructional manual if protection against a failure mode cannot be adequately provided.**  
 System designers and end users are cautioned to review specific warnings found in instruction sheets packed and shipped with these products where applicable.

- High mechanical strength
- Large thermal range
- Broad chemical resistance
- Good fatigue resistance
- Light weight
- Low permeability
- Heat and light stabilized
- Excellent abrasion resistance



OD x wall thickness (mm)	Black•		Red	Green	Yellow	Blue
	25m	100m	25m	25m	25m	25m
4 x 1.0	TP0704025	TP0704100	TP0104025	TP0204025	TP0304025	TP0504025
6 x 1.0*	TP0706025	TP0706100	TP0106025	TP0206025	TP0306025	TP0506025
8 x 1.0*	TP0708025	TP0708100	TP0108025	TP0208025	TP0308025	TP0508025
9 x 1.5	TP0709025	TP0709100	T00109024	TP0209025	TP0309025	TP0509025
10 x 1.25	TP0710025	TP0710100	TP0110025	TP0210025	TP0310025	TP0510025
10 x 1.5†	TN0710025	TN0710100	TN0110025	TN0210025	TN0310025	TN0510025
11 x 1.5	TP0711025	TP0711100	TP0111025	TP0211025	TP0311025	TP0511025
12 x 1.5*	TP0712025	TP0712100	TP0112025	TP0212025	TP0312025	TP0512025
15 x 1.5	TP0715025	TP0715100	TP0115025	TP0215025	TP0315025	TP0515025
16 x 1.5*	TP0716025	TP0716100	TP0116025	TP0216025	TP0316025	TP0516025

\* These products conform to DIN 74324, SAE J1394 and ISO 7628-1

† This product conforms to SAE J1394 not to DIN 74324 or 73378

- These products conform to DIN 74324

Other colours and sizes of metric nylon tubing can be supplied for orders of sufficient quantity.

Standard range of nylon tubing can be supplied in long length coils to order, providing that a minimum economic production quantity is ordered.

The automotive tubing range is suitable for commercial vehicle primary air braking and auxiliary air systems and can be used in conjunction with Norgren vehicle push-in fittings (FleetFit).

## Warning

These products are intended for use in industrial compressed air systems only. Do not use these products where *pressures* and *temperatures* can exceed those listed under '**Technical Data**'.

Before using these products with fluids other than those specified, for non-industrial applications, life-support systems, or other applications not within published specifications, consult Norgren.

Through misuse, age, or malfunction, components used in fluid power systems can fail in various modes. The system designer is warned to consider the failure modes of all component parts used in fluid power systems and to provide adequate safeguards to prevent personal injury or damage to equipment in the event of such failure.

**System designers must provide a warning to end users in the system instructional manual if protection against a failure mode cannot be adequately provided.**

System designers and end users are cautioned to review specific warnings found in instruction sheets packed and shipped with these products where applicable.

- PU Pneuflex coils are suitable for high mechanical deformations, machine tools, etc.
- Coils are supplied complete with swivel fittings at both ends
- High degree of flexibility
- Good resistance to abrasion and impact strength
- Very short diameter on windings

**Technical Data****Medium:**

Compressed air, water, inert gases, oils, hydrocarbons, solvents and any other fluid compatible with polyurethane

**Operating Pressure:**

See details overleaf

**Operating Temperature:**

-20°C to +50°C

See details overleaf

**Tube Sizes**

6, 8, 10, 12mm O/D

2, 4, 6, 8m maximum working lengths

**Thread Sizes:**

1/8, 1/4, 3/8 BSPT

**Materials:**

Tubing Coils: Polyurethane polyester based

Body and nut: brass nickel plated

Protection spring: steel, zinc plated

Seal: NBR

**Ordering Information**

To order, quote appropriate product numbers from the tables on the following page.



### General Information - PU Pneuflex Spring Coils

Product number	Diameter of tube D x d	A Length End A	B Length End B	Effective Working Length (m)	C Coil Length in neutral position (mm)	D Diameter on Windings	Max working pressure bar	E Thread
PU310600218	6 x 4	300	100	2	165	32	10	R <sup>1</sup> / <sub>8</sub>
PU310600418	6 x 4	300	100	4	350	32	10	R <sup>1</sup> / <sub>8</sub>
PU310600618	6 x 4	300	100	6	545	32	10	R <sup>1</sup> / <sub>8</sub>
PU310600818	6 x 4	300	100	8	720	32	10	R <sup>1</sup> / <sub>8</sub>
PU310800228	8 x 5	500	100	2	180	42	10	R <sup>1</sup> / <sub>4</sub>
PU310800428	8 x 5	500	100	4	400	42	10	R <sup>1</sup> / <sub>4</sub>
PU310800628	8 x 5	500	100	6	630	42	10	R <sup>1</sup> / <sub>4</sub>
PU310800828	8 x 5	500	100	8	800	42	10	R <sup>1</sup> / <sub>4</sub>
PU311000228	10 x 6,5	500	100	2	185	52	9	R <sup>1</sup> / <sub>4</sub>
PU311000428	10 x 6,5	500	100	4	400	52	9	R <sup>1</sup> / <sub>4</sub>
PU311000628	10 x 6,5	500	100	6	635	52	9	R <sup>1</sup> / <sub>4</sub>
PU311000828	10 x 6,5	500	100	8	800	52	9	R <sup>1</sup> / <sub>4</sub>
PU311200238	12 x 8	500	100	2	180	65	9	R <sup>3</sup> / <sub>8</sub>
PU311200438	12 x 8	500	100	4	390	65	9	R <sup>3</sup> / <sub>8</sub>
PU311200638	12 x 8	500	100	6	590	65	9	R <sup>3</sup> / <sub>8</sub>
PU311200838	12 x 8	500	100	8	780	65	9	R <sup>3</sup> / <sub>8</sub>

### Working Pressure/Temperature Conversion Factor

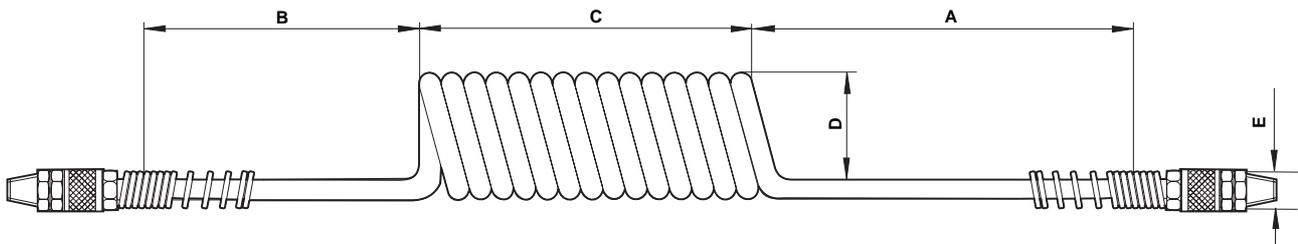
Working temperature °C	Factor
-20°C to +23°C	1,00
30c	0,85
40°C	0,70
50°C	0,60

To calculate working pressures at various temperatures, multiply working pressure by factor given in table.

### Mounting Method

Male thread and swivel fittings at both ends. PU Pneuflex Coils are coloured red.

### Dimensional Drawing



### Warning

These products are intended for use in industrial compressed air systems only. Do not use these products where pressures and temperatures can exceed those listed under 'Technical Data'.

Before using these products with fluids other than those specified, for non-industrial applications, life-support systems, or other applications not within published specifications, consult Norgren.

Through misuse, age, or malfunction, components used in fluid power systems can fail in various modes. The system designer is warned to consider the failure modes of all component parts used in fluid power systems and to provide adequate safeguards to prevent personal injury or damage to equipment in the event of such failure.

**System designers must provide a warning to end users in the system instructional manual if protection against a failure mode cannot be adequately provided.**

System designers and end users are cautioned to review specific warnings found in instruction sheets packed and shipped with these products where applicable.

- PA Pneuflex spring coils ideally suited for use with pneumatic tools, machine tools, industrial robots and many general applications
- Spring coils supplied complete with swivel fittings at both ends
- Good resistance to oils, hydrocarbons and solvents

**Technical Data****Medium:**

Compressed air, water, inert gases, oils and any other fluid compatible with PA11, nickel plated brass and NBR

**Tube Sizes:**

6, 8, 10, 12, 15 mm O/D

3, 3.75, 5, 7.5 and 15m maximum working lengths

**Operating Pressure:**

See details overleaf

**Operating Temperature:**

See details overleaf

**Materials**

Spring Coils: Nylon PA11, nickel plated brass fitting body, nitrile rubber seals, galvanised steel protection spring

**PA Pneuflex Threads**

BSPT thread  $\frac{1}{4}$ ,  $\frac{3}{8}$

BSPP thread  $\frac{1}{2}$

**Ordering Information**

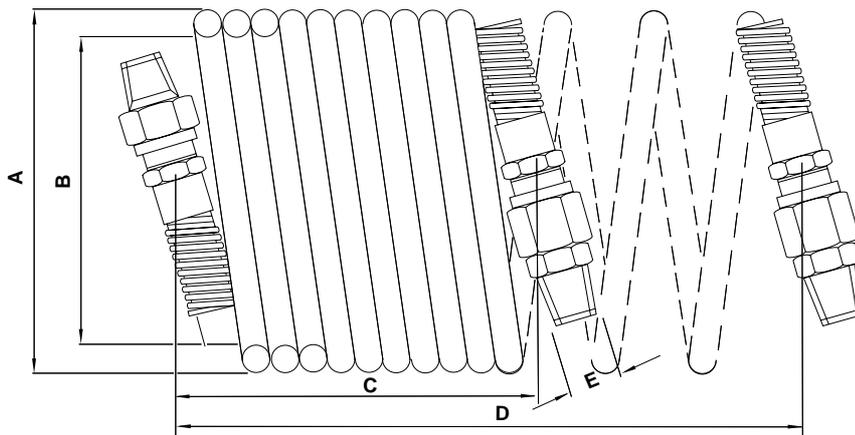
To order quote the appropriate product numbers from the tables on the following page.



## General Information – PA Pneuflex Spring Coils

Product number	O/D tube (mm)	I/D tube (mm)	A (mm)	B (mm)	Length of closed spiral (mm) C	Length of maximum extension (m) D	Operating pressure at +20°C (bar)	Adaptor (thread) E
PA330600328	6	4	64	52	200	3	31	1/4
PA330600428	6	4	64	52	250	3,75	31	1/4
PA330600528	6	4	64	52	333	5	31	1/4
PA330600828	6	4	64	52	500	7,50	31	1/4
PA330601528	6	4	64	52	1000	15	31	1/4
PA330800328	8	6	86	70	200	3	22	1/4
PA330800428	8	6	86	70	250	3,75	22	1/4
PA330800528	8	6	86	70	333	5	22	1/4
PA330800828	8	6	86	70	500	7,50	22	1/4
PA330801528	8	6	86	70	1000	15	22	1/4
PA331000328	10	8	105	85	210	3	17	1/4
PA331000428	10	8	105	85	262	3,75	17	1/4
PA331000528	10	8	105	85	350	5	17	1/4
PA331000828	10	8	105	85	525	7,50	17	1/4
PA331001528	10	8	105	85	1000	15	17	1/4
PA331200338	12	10	134	110	200	3	12	3/8
PA331200438	12	10	134	110	250	3,75	12	3/8
PA331200538	12	10	134	110	333	5	12	3/8
PA331200838	12	10	134	110	500	7,50	12	3/8
PA331201538	12	10	134	110	1000	15	12	3/8
PA331500348	15	12	190	160	166	3	17	1/2
PA331500448	15	12	190	160	207	3,75	17	1/2
PA331500548	15	12	190	160	277	5	17	1/2
PA331500848	15	12	190	160	415	7,50	17	1/2

Mounting Method: Male thread and swivel fitting at both ends. Pneuflex Spring Coils are coloured yellow. Coils of 4 and 5 mm tube are available special order.



### Working pressure/temperature conversion factors

Working temperature °C	Factor
-40°C to +20°C	1,00
+30°C	0,83
+40°C	0,72
+50°C	0,64
+60°C	0,57
+80°C	0,47

To calculate working pressures at various temperatures, multiply working pressure at -40°C to +20°C by factor given in table. Maximum continuous working temperature +80°C.

### Warning

These products are intended for use in industrial compressed air systems only. Do not use these products where pressures and temperatures can exceed those listed under 'Technical Data'.

Before using these products with fluids other than those specified, for non-industrial applications, life-support systems, or other applications not within published specifications, consult Norgren.

Through misuse, age, or malfunction, components used in fluid power systems can fail in various modes. The system designer is warned to consider the failure modes of all component parts used in fluid power systems and to provide adequate safeguards to prevent personal injury or damage to equipment in the event of such failure.

**System designers must provide a warning to end users in the system instructional manual if protection against a failure mode cannot be adequately provided.**

System designers and end users are cautioned to review specific warnings found in instruction sheets packed and shipped with these products where applicable.

*Nylon, Food Grade Nylon,  
Polyester Reinforced PVC,  
Metal Braided Rubber, Copper,  
Double Wall Brazed Steel*

- 1 Available in a variety of different types to suit a wide range of applications
- 1 All tubing can be used with specific ranges of tube fittings
- 1 Nylon tube available in several colours for ease of identification

## Technical Data

Medium:

Compressed air  
(Consult our Technical Service for use with other fluids)

Operating Pressure:

Refer to specific tubing type on the following pages

Operating Temperature:

Refer to specific tubing type on the following pages

## Tube Sizes

Nylon: 1/8", 5/32", 3/16", 1/4", 5/16", 3/8", 1/2", 5/8", 3/4" O/D

Nylon (food grade): 3/16", 1/4", 5/16", 3/8" O/D

Nylon (spring coils): 3/16", 1/4", 5/16", 3/8", 1/2"

Metal Braided: 3/16", 1/4", 5/16", 3/8", 1/2" O/D

Polyester reinforced PVC hose assemblies: 3/16", 1/4", 5/16", 3/8", 1/2", 3/4" O/D

Copper – half hard and annealed: 1/8", 3/16", 1/4", 5/16", 3/8", 1/2", 5/8", 3/4" O/D

Copper – heavy duty: 3/16", 1/4", 5/16", 3/8", 1/2", 5/8", 3/4" O/D

Double Wall Brazed Steel: 3/16", 1/4", 5/16", 3/8", 1/2" O/D

## Materials

Nylon tube: nylon (polyamide) type 11 or 12 fully plasticised

Nylon tube: (spring coils) type 11 or 12 fully plasticised

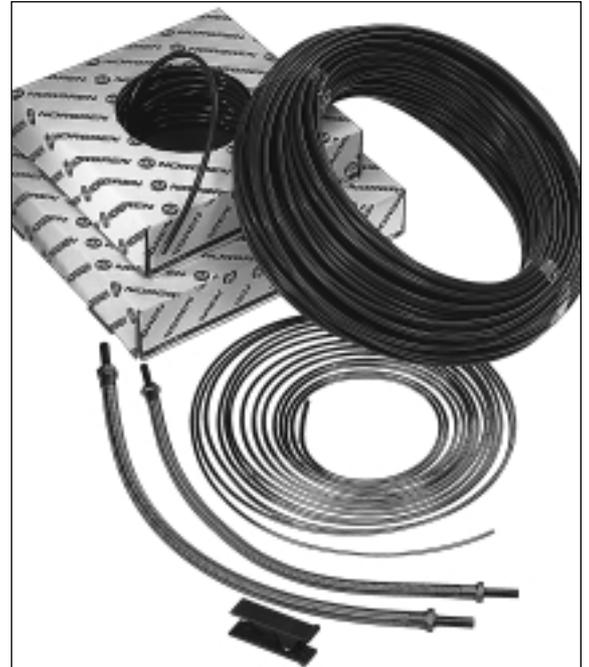
Nylon tube (food grade): nylon (polyamide) type 11 or 12 unplasticised

Polyester reinforced PVC hose: high quality electrically non-conductive plasticised PVC hose, high tensile polyester fibre braiding, galvanised steel 'O' clips and brass tailpieces on assembled hoses

Metal braided hose: E90 nitrile rubber hose, galvanised steel braiding wire, brass ferrules, copper tailpieces

Copper tube: phosphorous de-oxidised non arsenical copper to BS6017 grade Cu-DHP

Double wall brazed steel: copper coated steel strip with plated external surface



## Ordering Information

To order, quote appropriate product number from the tables on the following pages. When ordering Polyester reinforced PVC hose state the length of hose required.



General Information – Inch Nylon Tubing

O/D tube size	I/D tube size	Product number							
		Natural				Red		Black	
		50' coils	250' coils	500' coils	2000' coils	50' coils	250' coils	50' coils	250' coils
1/8"	0,065"	PA0051050C	PA0051250	–	–	–	–	PA0751050C	–
5/32"	0,100"	PA0052050C	PA0052250	–	–	PA0152050C	–	PA0752050C	–
3/16"	0,125"	PA0053050C	PA0053250	–	PA0053B00D	PA0153050C	–	PA0753050C	PA0753250
1/4"	0,175"	PA0054050C	PA0054250	PA0054500	PA0054B00D	PA0154050C	PA0154250	PA0754050C	PA0754250
5/16"	0,215"	PA0055050C	PA0055250	PA0055500	–	PA0155050C	PA0155250	PA0755050C	PA0755250
3/8"	0,260"	PA0056050C	PA0056250	PA0056500	–	PA0156050C	–	PA0756050C	–
1/2"	0,370"	PA0057050C	PA0057250	PA0057500	–	PA0157050C	–	PA0157050C	–
5/8"	0,470"	PA0058050	PA0058250	–	–	–	–	–	–
3/4"	0,590"	PA0059050	–	–	–	PA0159050	–	–	–

O/D tube size	I/D tube size	Product number							
		Blue		Brown		Green		Yellow	
		50' coils	250' coils	50' coils	250' coils	50' coils	250' coils	50' coils	250' coils
1/8"	0,065"	PA0551050C	–	–	–	PA0251050C	–	PA0351050C	–
5/32"	0,100"	PA0552050C	–	PA0452050C	–	PA0252050C	–	PA0352050C	–
3/16"	0,125"	PA0553050C	–	PA0453050C	–	PA0253050C	–	PA0353050C	–
1/4"	0,175"	PA0554050C	PA0554250	PA0454050C	PA0454250	PA0254050C	PA0254250	PA0354050C	PA0354250
5/16"	0,215"	PA0555050C	PA0555250	PA0455050C	PA0455250	PA0255050C	–	PA0355050C	–
3/8"	0,260"	PA0556050C	–	PA0456050C	–	PA0256050C	–	PA0356050C	–
1/2"	0,370"	PA0557050C	–	PA0457050C	–	PA0257050C	–	PA0257050C	–
5/8"	0,470"	–	–	–	–	–	–	–	–
3/4"	0,590"	–	–	–	–	–	–	–	–

Maximum working pressures

O/D tube size	I/D tube size	Maximum working pressure at -40° to +20°C (bar)	Bending radius centreline
1/8"	0,065"	28,0	0,80"
5/32"	0,100"	26,0	1,00"
3/16"	0,125"	21,8	1,50"
1/4"	0,175"	20,0	1,70"
5/16"	0,215"	19,3	2,00"
3/8"	0,260"	18,2	2,50"
1/2"	0,370"	14,5	3,00"
5/8"	0,470"	13,2	4,00"
3/4"	0,590"	10,8	6,00"

Working Pressure/Temperature Conversion Factors

Working temperature °C	Factor
-40°C to +20°	1,00
+30°	0,83
+40°	0,75
+50°	0,64
+60°	0,57
+80°	0,47

To calculate working pressures at various temperatures, multiply working pressure at -40° to +20°C by factor given in table.

Maximum continuous working temperature 80°C.

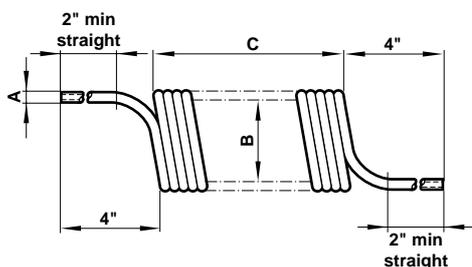
Food Grade Tubing

Product number	O/D tube size	Colour
PF1053100	3/16	Natural
PF1054100	1/4	Natural
PF1055100	5/16	Natural
PF1056100	3/8	Natural

A special grade of nylon tubing is available for all food industry applications. This tubing is entirely odourless and tasteless, and will not impart extraneous flavour or odour to susceptible foods or beverages.

Supplied in 100ft coils.

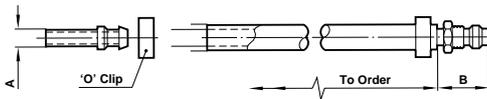
Nylon (spring coils)



Product Number	A nominal tube O/Dia	B nominal coil I/Dia	C nominal closed length
40007203	3/16"	2"	8"
40007204	1/4"	2"	10 1/2"
40007205	5/16"	2 3/4"	9 1/2"
40007206	3/8"	3 1/2"	9"
40007207	1/2"	3 1/2"	11 1/2"



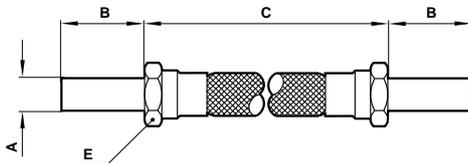
**Polyester reinforced**  
Flexible hose assemblies



Product Number*	A O/D tail-piece	B	Max working pressure	Min bend radius
41 0307 00 000	3/16"	1"	10	0,98"
41 0308 00 000	1/4"	1 1/8"	10	1,24"
41 0309 00 000	5/16"	1 1/4"	10	1,49"
41 0310 00 000	3/8"	1 3/8"	10	1,91"
41 0311 00 000	1/2"	1 1/2"	9	1,99"
41 0313 00 000	3/4"	1 3/4"	7	2,76"

Operating temperature: -20°C to +70°C.  
For use at temperatures above +20°C consult our Technical Service.  
\*State the length of hose required when ordering.  
Maximum length 100 ft.

**Metal Braided Rubber Hose - Inch**  
Flexible hose assemblies



Product Number	A O/D tube	B	C	E	Min bend radius	Max working pressure
41 0633 00 000	3/16"	1"	*	0,45"	1 3/4"	69
41 0633 00 100	3/16"	1"	10"	0,45"	1 3/4"	69
41 0633 00 120	3/16"	1"	12"	0,45"	1 3/4"	69
41 0633 00 140	3/16"	1"	14"	0,45"	1 3/4"	69
41 0633 00 160	3/16"	1"	16"	0,45"	1 3/4"	69
41 0633 00 180	3/16"	1"	18"	0,45"	1 3/4"	69
41 0633 00 200	3/16"	1"	20"	0,45"	1 3/4"	69
41 0633 00 240	3/16"	1"	24"	0,45"	1 3/4"	69
41 0633 00 300	3/16"	1"	30"	0,45"	1 3/4"	69
41 0633 00 360	3/16"	1"	36"	0,45"	1 3/4"	69
41 0634 00 000	1/4"	1 1/8"	*	0,53"	2"	69
41 0634 00 100	1/4"	1 1/8"	10"	0,53"	2"	69
41 0634 00 120	1/4"	1 1/8"	12"	0,53"	2"	69
41 0634 00 140	1/4"	1 1/8"	14"	0,53"	2"	69
41 0634 00 160	1/4"	1 1/8"	16"	0,53"	2"	69
41 0634 00 180	1/4"	1 1/8"	18"	0,53"	2"	69
41 0634 00 200	1/4"	1 1/8"	20"	0,53"	2"	69
41 0634 00 240	1/4"	1 1/8"	24"	0,53"	2"	69
41 0634 00 300	1/4"	1 1/8"	30"	0,53"	2"	69
41 0635 00 000	5/16"	1 1/4"	*	0,60"	2"	69
41 0635 00 100	5/16"	1 1/4"	10"	0,60"	2"	69
41 0635 00 120	5/16"	1 1/4"	12"	0,60"	2"	69
41 0635 00 140	5/16"	1 1/4"	14"	0,60"	2"	69
41 0635 00 160	5/16"	1 1/4"	16"	0,60"	2"	69

Product Number	A O/D tube	B	C	E	Min bend radius	Max working pressure
41 0635 00 180	5/16"	1 1/4"	18"	0,60"	2"	69
41 0635 00 200	5/16"	1 1/4"	20"	0,60"	2"	69
41 0635 00 240	5/16"	1 1/4"	24"	0,60"	2"	69
41 0635 00 300	5/16"	1 1/4"	30"	0,60"	2"	69
41 0635 00 360	5/16"	1 1/4"	36"	0,60"	2"	69
41 0636 00 000	3/8"	1 3/8"	*	0,71"	2 1/2"	69
41 0636 00 100	3/8"	1 3/8"	10"	0,71"	2 1/2"	69
41 0636 00 120	3/8"	1 3/8"	12"	0,71"	2 1/2"	69
41 0636 00 140	3/8"	1 3/8"	14"	0,71"	2 1/2"	69
41 0636 00 160	3/8"	1 3/8"	16"	0,71"	2 1/2"	69
41 0636 00 180	3/8"	1 3/8"	18"	0,71"	2 1/2"	69
41 0636 00 200	3/8"	1 3/8"	20"	0,71"	2 1/2"	69
41 0636 00 240	3/8"	1 3/8"	24"	0,71"	2 1/2"	69
41 0636 00 300	3/8"	1 3/8"	30"	0,71"	2 1/2"	69
41 0636 00 360	3/8"	1 3/8"	36"	0,71"	2 1/2"	69
41 0638 00 000	1/2"	1 1/2"	*	0,92"	3"	47
41 0638 00 100	1/2"	1 1/2"	10"	0,92"	3"	47
41 0638 00 120	1/2"	1 1/2"	12"	0,92"	3"	47
41 0638 00 140	1/2"	1 1/2"	14"	0,92"	3"	47
41 0638 00 160	1/2"	1 1/2"	16"	0,92"	3"	47
41 0638 00 180	1/2"	1 1/2"	18"	0,92"	3"	47
41 0638 00 200	1/2"	1 1/2"	20"	0,92"	3"	47
41 0638 00 240	1/2"	1 1/2"	24"	0,92"	3"	47
41 0638 00 300	1/2"	1 1/2"	30"	0,92"	3"	47
41 0638 00 360	1/2"	1 1/2"	36"	0,92"	3"	47

\*State length of hose required if ordering non-standard lengths. Minimum length 6".

When installing a flexible hose the following simple rules should be noted.

1. Flexible hose is weakened when installed in a twisted position.
2. Ample bend radius should be allowed to avoid collapsing the hose.
3. When hose is installed in a flexing application remember that metal end fittings are not part of the flexible portion.
4. Use elbows or adaptors to eliminate excess hose bends.

**Double Wall Brazed Steel Tube**

Double wall brazed steel tubing is constructed from copper coated steel strip which is rolled twice around laterally, then furnace brazed to produce a tube of double wall structure, with a clear, scale free coppered bore, a plated external surface and a consistently uniform wall thickness.

Product Number	O/D tube size	Inside diameter	Min bend radius	Max working pressure (bar) at 20°C*
BU6352010	5/32"	0,100"	3/8"	380
BU6353010	3/16"	0,131"	3/8"	340
BU6354010	1/4"	0,194"	1/2"	300
BU6355010	5/16"	0,256"	3/4"	250
BU6356010	3/8"	0,319"	7/8"	195
BU6357010	1/2"	0,444"	1 1/4"	160

Tolerance on outside diameters are -0,003" to +0,002".



### Copper Tubing

The following technical information is valid for copper tube when used with compression fittings, see Section 9.5. For further information please consult our Technical Service.

#### Standard Duty: Annealed

Product Number 10m coils (33ft)	O/D tube size	I/D tube size	Wall thickness (SWG)	Min bend radius	Recommended safe working pressure (bar) -200°C to +50°C
CS6051033	1/8"	0,069	22	3/8"	205
CS6052033	5/32"	0,100	22	15/32"	156
CS6053033	3/16"	0,131	22	9/16"	126
CS6054033	1/4"	0,178	20	3/4"	120
CS6055033	5/16"	0,240	20	15/16"	94
CS6056033	3/8"	0,303	20	1 1/8"	77
<b>3m straight (10ft)</b>					
CS6057010	1/2"	0,404	18	1 1/2"	77
CS6058010	5/8"	0,529	18	1 7/8"	60
CS6059010	3/4"	0,622	16	2 1/4"	68
CS6060010	7/8"	0,747	16	2 5/8"	57
CS6062010	1 1/8"	0,997	16	3 3/8"	44

Manufactured to BS 2017: 1963 with dimensions generally to Table 1.  
Tolerances on O/D are +0,000" to -0,003".

The recommended safe working pressures are calculated in accordance with BS1306 with a stress value of 41N/mm<sup>2</sup> (62 for half hard) and minimum tube wall thickness. For safe working pressures at temperatures other than -200°C to +50°C refer to Pressure De-rating Factor table below.

#### Standard Duty: Half Hard

Product Number 3m straight (10ft)	O/D tube size	I/D tube size	Wall thickness (SWG)	Min bend radius	Recommended safe working pressure (bar) -200°C to +50°C
CS7053010	3/16"	0,131	22	9/16"	192
CS7054010	1/4"	0,178	20	3/4"	184
CS7055010	5/16"	0,240	20	1 5/16"	143
CS7056010	3/8"	0,303	20	1 1/8"	117
CS7057010	1/2"	0,404	18	1 1/2"	117
CS7058010	5/8"	0,529	18	1 7/8"	92
CS7059010	3/4"	0,622	16	2 1/4"	103
CS7060010	7/8"	0,747	16	2 5/8"	87
CS7051010	1/8"	0,069	22	3/8"	313
CS7052010	5/32"	0,100	22	15/32"	238

Manufactured to BS 2017: 1963 with dimensions generally to Table 1.  
Tolerances on O/D are +0,000" to -0,003".

### Pressure De-rating Factor For temperatures other than -200°C to +50°C

Tube	-200°C to +50°C	+50°C to +100°C	+100°C to +150°C	+150°C to +175°C	+175°C to +200°C
Annealed	1,0	0,97	0,82	0,63	0,43
Half-hard	1,0	0,95	0,88	0,54	0,29

To calculate the working pressure at temperatures other than -200°C to +50°C multiply the working pressure given in the appropriate table by the factor given in this table. e.g. Safe working pressure of standard duty half-hard copper tube, 5/16" O/D at +120°C = 143 x 0,88 = 126 bar.

### Heavy Duty

Product Number 3m straight (10ft)	O/D tube	Inside diameter	Min bend radius centreline	Max working pressure
CH6053010	3/16"	0,115"	9/16"	
CH6054010	1/4"	0,154"	3/4"	
CH6055010	5/16"	0,216"	1 5/16"	See
CH6056010	3/8"	0,279"	1 1/8"	Note †
CH6057010	1/2"	0,372"	1 1/2"	
CH6058010	5/8"	0,497"	1 7/8"	
CH6059010	3/4"	0,590"	2 1/4"	
CH6060010	7/8"	0,715"	2 5/8"	

† When used with compression tube fittings the maximum working pressure for heavy duty tubing should be regarded as being the same as for our standard duty for safety reasons. For other applications the heavy duty range will withstand higher pressures. For further and more precise details please consult our Technical Service.

### Warning

These products are intended for use in industrial compressed air systems only. Do not use these products where pressures and temperatures can exceed those listed under 'Technical Data'.

Before using these products with fluids other than those specified, for non-industrial applications, life-support systems, or other applications not within published specifications, consult Norgren.

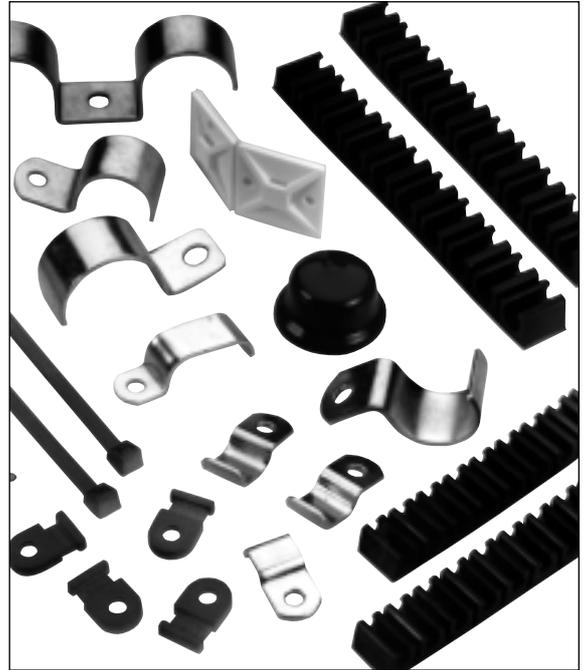
Through misuse, age, or malfunction, components used in fluid power systems can fail in various modes. The system designer is warned to consider the failure modes of all component parts used in fluid power systems and to provide adequate safeguards to prevent personal injury or damage to equipment in the event of such failure.

**System designers must provide a warning to end users in the system instructional manual if protection against a failure mode cannot be adequately provided.**

System designers and end users are cautioned to review specific warnings found in instruction sheets packed and shipped with these products where applicable.

**Tubing Ties & Tubing Clips**

- 1 **Low cost items for neat and secure fixing of tubing**
- 1 **Metallic clips are strong and resilient**
- 1 **Nylon ties available in releasable or permanent locking types**

**Technical Data**

Tubing Ties

Operating Temperature:  
-50°C\* to +85°C

Minimum Tensile Strength:

- 13.61 kg - locking type
- 27.21 kg - releasable type

Manufacturing Specification:

to American Military Specification 23190 - Drawing No. 3367

**Materials**

Tubing Ties and Mountings - Nylon Type 66, natural colour

Tubing Clips - Zinc plated mild steel

Tubing Ties –

Releasable:

50, 81 mm maximum bundle diameter

Lockable:

35, 50, 75 mm maximum bundle diameter

Tubing Clips–

Single sided:

4, 5, 6, 8, 10, 12, 16, 22, 28 mm O/D tube  
 $\frac{3}{16}$ ,  $\frac{1}{4}$ ,  $\frac{5}{16}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{5}{8}$ ,  $\frac{3}{4}$  O/D tube

Double sided:

16, 22, 28 mm O/D tube  
 $\frac{5}{8}$ ,  $\frac{3}{4}$  O/D tube

Tubing Channels–

Acommodate 5, 6, 8 and 12mm O/D tube

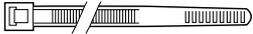
**Ordering Information**

To order, quote appropriate product number from the tables on the following pages.



## Nylon Tube Ties

### Releasable ties

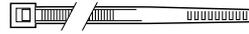


Product number	Length	Width	Maximum Bundle ø
34 0380 11	200	4,7	50
34 0380 12	300	4,7	81

Remain securely locked until intentionally released by operating finger catch.

## Nylon Tube Ties

### Lockable ties

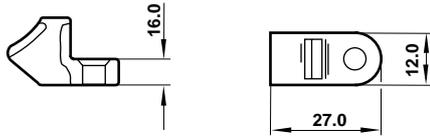


Product number	Length	Width	Maximum Bundle ø
34 0380 01	150	3,5	35
34 0380 02	200	3,5	50
34 0380 03	300	3,5	75

Non-return cam action provides permanent fixing.

## Nylon Tube Tie Mountings

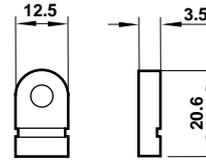
### Mounting cradle



Product Number: 34 0380 21

Very neat fixing: body of cradle encapsulates head of tie. Fixing hole for M6 bolt.

## Mounting Base

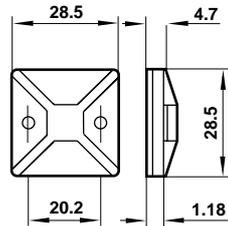


Product Number: 34 0380 22

For use where space is restricted. Tie is slipped through slot in mounting. Fixing hole for M5 bolt.

## Mounting Base

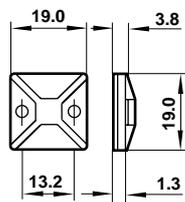
### For releasable ties



Product Number: 34 0380 24

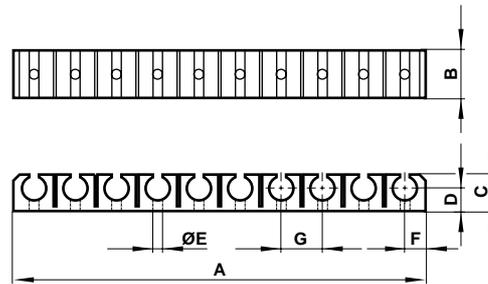
Tie can be inserted from any of 4 sides. Fixing adhesive backing. Both bases have additional fixing holes for use as required.

### For locking ties



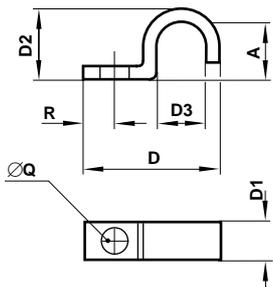
Product Number: 34 0380 23

## Tubing Channels



Product number	No. of channels	A	B	C	D	E Ø	F	G
100HA0500	10	96,0	13,5	9,0	6,0	2,5	4,3	9,7
100HA0600	10	105,0	13,5	9,0	5,5	3,0	5,2	10,5
100HA0800	10	135,0	15,5	12,0	7,5	3,0	6,8	13,5
100H61200	6	118,0	17,5	16,5	10,0	3,4	10,5	

## Tubing Clips - single sided



### Metric - single tube

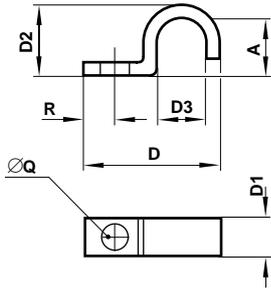
Product number tube	A O/D	D	D1	D2	D3	Q	R
34 0218 02	4	20,3	12,7	5,3	4,2	5,1	6,4
34 0218 03	5	20,3	12,7	6,1	5,0	5,1	6,4
34 0218 04	6	21,8	12,7	7,6	6,6	5,1	6,4
34 0218 05	8	23,4	12,7	9,4	8,2	5,1	6,4
34 0218 06	10	24,4	12,7	10,5	9,7	5,1	6,4
34 0218 07	12	27,9	12,7	13,7	13,0	5,1	6,4
34 0215 08	16	34,3	19,1	16,0	15,8	7,1	7,1
36 0001 10	22	44,2	19,1	22,7	22,2	7,1	7,1
34 0215 11	28	51,6	19,1	28,6	28,6	7,1	7,1

### Inch - single tube

Product number	A O/D tube	D	D1	D2	D3	Q	R
34 0218 03	3/16"	0,80"	0,5"	0,24"	0,20"	0,20"	0,25"
34 0218 04	1/4"	0,86"	0,5"	0,30"	0,26"	0,20"	0,25"
34 0218 05	5/16"	0,92"	0,5"	0,37"	0,32"	0,20"	0,25"
34 0218 06	3/8"	0,96"	0,5"	0,41"	0,38"	0,20"	0,25"
34 0218 07	1/2"	1,10"	0,5"	0,54"	0,51"	0,20"	0,25"
34 0215 08	5/8"	1,35"	0,75"	0,63"	0,62"	0,28"	0,28"
34 0215 09	3/4"	1,53"	0,75"	0,75"	0,75"	0,28"	0,28"



### Tubing Clips - single sided



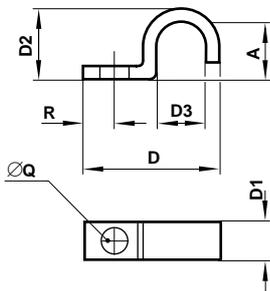
#### Metric - double tube

Product number tube	A O/D	D	D1	D2	D3	Q	R
34 0219 02	4	25,6	12,7	5,3	8,2	5,1	6,4
34 0219 03	5	27,9	12,7	6,1	9,7	5,1	6,4
34 0219 04	6	32,0	12,7	7,6	13,0	5,1	6,4
34 0219 05	8	36,0	12,7	9,4	16,1	5,1	6,4
34 0219 06	10	39,9	12,7	10,5	19,3	5,1	6,4
34 0219 07	12	48,0	12,7	12,7	25,6	5,1	6,4

#### Inch - double tube

Product number	A O/D tube	D	D1	D2	D3	Q	R
34 0219 03	3/16"	1,10"	0,5"	0,24"	0,38"	0,20"	0,25"
34 0219 04	1/4"	1,26"	0,5"	0,30"	0,51"	0,20"	0,25"
34 0219 05	5/16"	1,42"	0,5"	0,37"	0,63"	0,20"	0,25"
34 0219 06	3/8"	1,57"	0,5"	0,41"	0,76"	0,20"	0,25"
34 0219 07	1/2"	1,89"	0,5"	0,54"	1,01"	0,20"	0,25"

### Tubing Clips - single sided



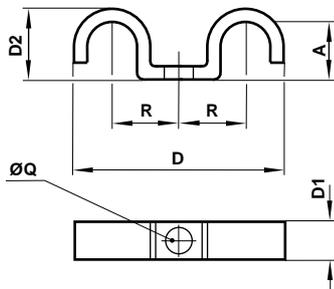
#### Metric - triple tube

Product number tube	A O/D	D	D1	D2	D3	Q	R
34 0220 02	4	29,6	12,7	5,3	12,1	5,1	6,4
34 0220 03	5	32,0	12,7	6,1	14,5	5,1	6,4
34 0220 04	6	40,0	12,7	7,6	19,3	5,1	6,4
34 0220 05	8	47,9	12,7	9,4	24,0	5,1	6,4
34 0220 06	10	55,6	12,7	10,4	28,8	5,1	6,4
34 0220 07	12	60,6	12,7	13,7	38,4	5,1	6,4

#### Inch - triple tube

Product number	A O/D tube	D	D1	D2	D3	Q	R
34 0220 03	3/16"	1,26"	0,5"	0,24"	0,57"	0,20"	0,25"
34 0220 04	1/4"	1,57"	0,5"	0,30"	0,76"	0,20"	0,25"
34 0220 05	5/16"	1,88"	0,5"	0,37"	0,95"	0,20"	0,25"
34 0220 06	3/8"	2,20"	0,5"	0,41"	1,13"	0,20"	0,25"
34 0220 07	1/2"	2,39"	0,5"	0,54"	1,51"	0,20"	0,25"

### Tubing Clips - double sided



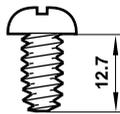
#### Metric

Product number	A O/D tube	D	D1	D2	D3	Q	R
34 0216 08	16	57,2	19,1	16,0	7,1	19,1	
36 0003 10	22	76,3	19,1	22,7	7,1	22,2	
34 0216 11	28	89,0	19,1	28,6	7,1	28,6	

#### Inch

Product number	A O/D tube	D	D1	D2	D3	Q	R
34 0216 08	5/8"	2,25"	0,75"	0,63"	0,28"	0,75"	
34 0216 09	3/4"	2,63"	0,75"	0,75"	0,28"	0,875"	

### Self-tapping screw



Product number	Pack	Drilling required
48 0034 24	200	Cast iron - 4,5mm dia. drill Solid metal - 4,4mm dia. drill Sheet metal - 4mm dia. drill

This screw is suitable for clips on tubes up to and including 1/2" O/D and 12mm O/D. For larger sizes use a 1/4" or 6mm bolt.

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