

*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				
		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		
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

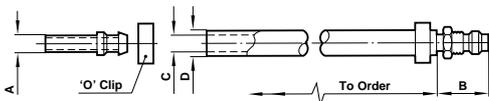
Working pressure/temperature conversion factors

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

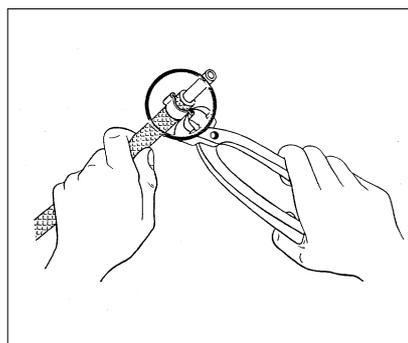
Product Number	Hose bore	Min. bend radius	Hose Ø O/D	Max (bar) working pressure	'O' clip product number
PV2008030	3	51,0	8	31	48 0168 02
PV2010030	5	63,0	10	20	48 0168 03
PV2012030	6,3	76,0	11,5	17	48 0168 04
PV2014030	8	102	13,5	16	48 0168 05
PV2016030	10	114	16	16	48 0168 06
PV2019030	12,5	140	18,5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

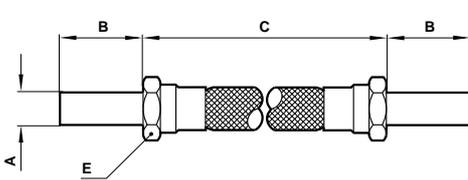




Metal Braided Rubber Hose

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
3m straight					
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/mm² 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.

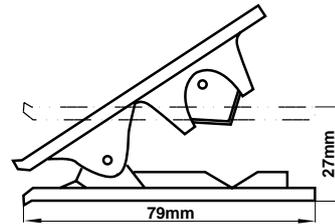
The recommended safe working pressures are calculated in accordance with BS1306 with a stress value of 62N/mm² and minimum tube wall thickness. For safe working pressures at temperatures other than -200°C to +50°C refer to Pressure De-rating Factor table below.

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.

*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

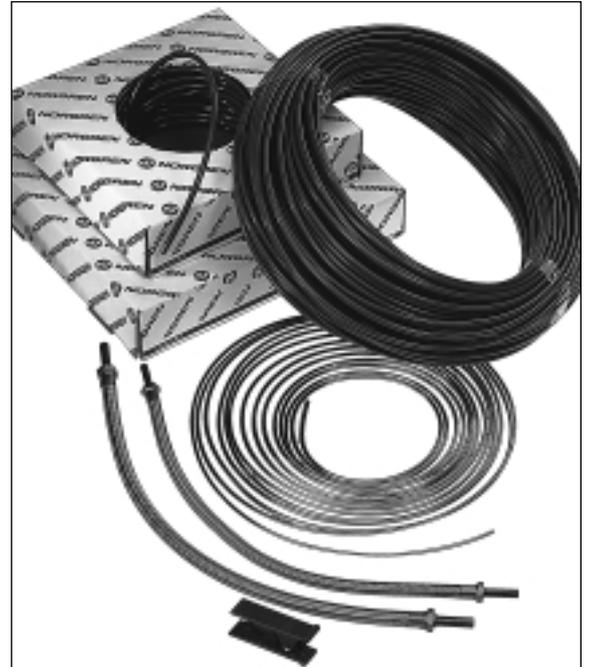
Nylon tube (food grade): nylon (polyamide) type 11 or 12 unplasticised

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.

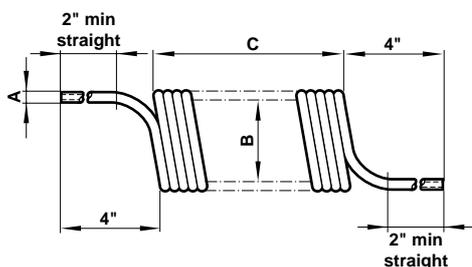
Food Grade Tubing

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.

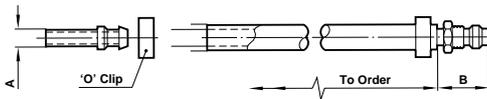
Nylon (spring coils)



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"



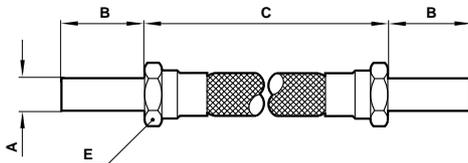
Polyester reinforced
Flexible hose assemblies



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
3m straight (10ft)					
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/mm² (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.