

*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.

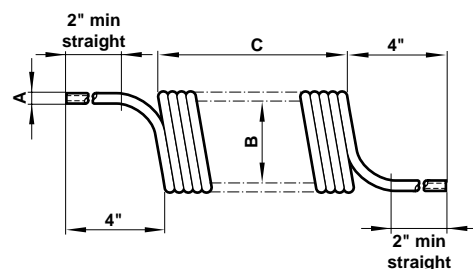
### Food Grade Tubing

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.

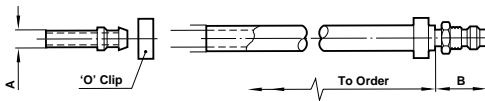
### Nylon (spring coils)



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"



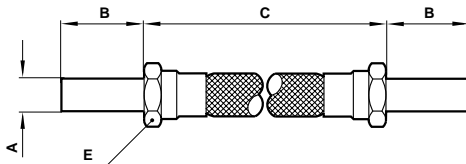
**Polyester reinforced**  
Flexible hose assemblies



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 0634 00 360	1/4"	1 1/8"	36"	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.