Neonatal & Paediatric Catheters

Specialist Products for Newborns & Young Children

vygon@vygon.co.uk

www.vygon.co.uk

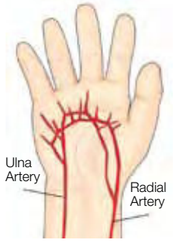
Introducer and Access Point Selection

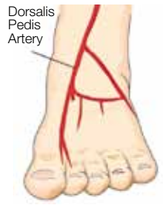
Table 1 - Introducer Method

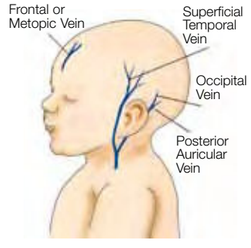
Introducer Method	Application	Advantage	Disadvantage
Cut-down	Umbilical catheters	Direct vision insertion	A surgical procedure
Microflash	Peripherally inserted catheter	Plastic through plastic insertion	Introducer is larger than the catheter
Breakaway Needle	Peripherally inserted catheter	Venepuncture hole is smaller than a cannula	Plastic through metal insertion
Removable Needle	Peripherally inserted catheter	Small venepuncture hole	Large needle, two part construction
Seldinger	Arterial or venous, peripheral or central insertion routes	The venepuncture hole is smaller than the catheter	Can be tricky with an uncooperative child

Table 2 - Primary Access Points

Preferred Venous Sites	Veins
Hand	Digital, metacarpal
Forearm	Supplementary cephalic, basilic, median antebrachial
Antecubital fossa (ACF)	Median basilic, median cephalic, median cubital
Upper arm (below axilla)	Basilic, cephalic
Foot (before walking age)	Greater saphenous, lesser saphenous
Scalp (before six months)	Occipital, metopic, temporal
Lower leg (before walking age)	Greater saphenous, lesser saphenous







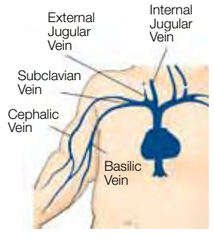


Table 3 - Secondary Access Points

Secondary Venous Sites	Potential Complications
Wrist	Superficial veins: infiltration in this area may result in pressure on the radial nerve
Abdomen	Superficial veins: rarely used, usually limited to neonates and chronically hospitalised patients; infiltration may result in damage to abdominal wall
Axilla	Axillary vein: usually limited to neonates; infiltration may cause pressure on structures in chest cavity
Knee	Popliteal vein: usually limited to neonates due to decreased mobility

Please Note: **Sites are listed in order of preference, but consider individual characteristics. Secondary sites should be considered only when preferred sites are not available.**

Product Selection Matrix

Now put together the information you have gathered and consult the matrix to find the recommended product to meet your requirements.

NEWBORN < 1kg

	Preferred Introducer Method	Preferred Access Point	Recommended Product
Central Venous	Cut-down	Umbilical	Umbilical Catheter (1270 Single, 1272 Double)
Central Venous	Breakable Needle	Scalp, ACF, lower leg, foot	28G Premicath (1261.21)
Central Venous	Microflash	Scalp, ACF, lower leg, foot	28G Premicath (1261.22/208)
Central Venous	Microflash	Scalp, ACF, lower leg, foot	24G Nutriline Twin-Flo (1252.235)
Arterial	Cut-down	Umbilical	Umbilical Catheter (1270 Single, 1272 Double)

NEWBORN > 1kg

	Preferred Introducer Method	Preferred Access Point	Recommended Product
Central Venous	Cut-down	Umbilical	Umbilical Catheter (1270 Single, 1272 Double)
Central Venous	Microflash	Forearm, ACF, lower leg, foot	24G Nutriline (1352)
Central Venous	Removable Butterfly Needle	Forearm, ACF, lower leg, foot	24G ECC (2184)
Central Venous	Microflash	Scalp, ACF, lower leg, foot	24G Nutriline Twin-Flo (1252.235)
Arterial	Cut-down	Umbilical	Umbilical Catheter (1270 Single, 1272 Double)
Arterial	Seldinger	Wrist, femoral, foot	22G Leaderflex (1212)

CHILD > 1yr

	Preferred Introducer Method	Preferred Access Point	Recommended Product
Central Venous	Seldinger	ACF, upper arm, femoral, forearm, jugular	22G Leaderflex (1212)
Central Venous	Peelable Cannula	ACF, upper arm, forearm	20G Nutriline (1353.302)
Arterial	Seldinger	Wrist, femoral, foot	22G Leaderflex (1212)

Complementary Products — Long Line Placement Pack (80.199.519)

Umbilical Catheters

The safest choice for short-term vascular access in neonates

NEWBORN < 1kg

NEWBORN > 1kg

A range of single and double lumen umbilical catheters for both venous and arterial use. Patient safety has been improved by the use of polyurethane, which, unlike traditional PVC catheters, remains inert for the life of the catheter.

The use of double lumen venous umbilical catheters in critically ill neonates is well tolerated and decreases the need for additional venous catheters.[1]

Features and Benefits

Polyurethane catheter
remains firm during insertion but softens at body temperature, minimising vessel trauma and enhancing stay time.

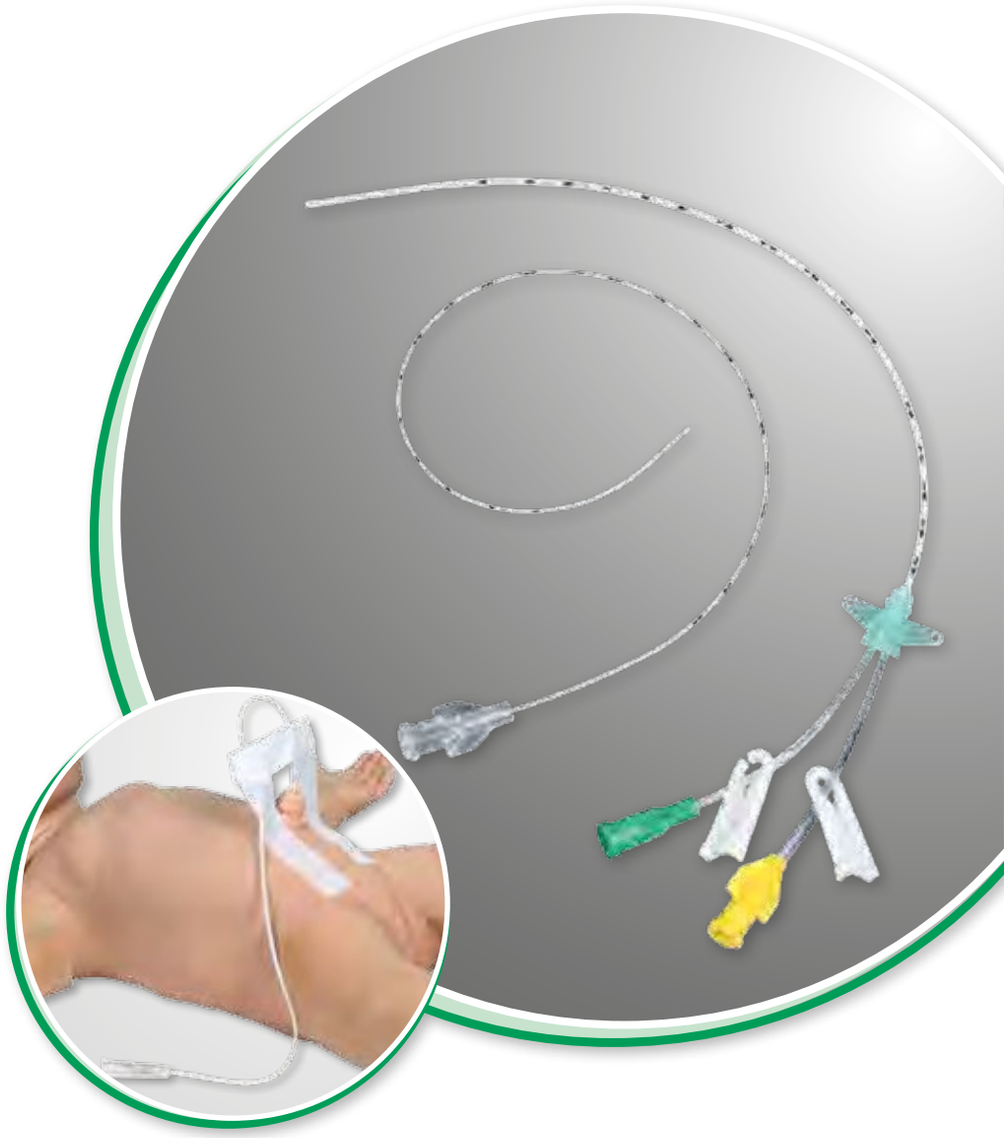
X-ray opaque
for accurate tip location without additional contrast medium.

Numerical graduations
aid accurate tip placement.

Atraumatic tip
reduces risk of vessel damage during insertion.

Double lumen venous catheter
decreases the need for additional IV access.

Slide clamps (on double lumen only)
for line management and safety.



Ordering Information

Product Codes		Description	Size (Fr)	Length (mm)	Priming Volume (ml)	Flow Rate (ml/min)*	Unit of Sale
Vygon	NHSSC						
1270.02	FSY023	Single lumen PUR catheter with three-way tap	2.5	300	-	2.0	8
1270.03	FSY024	Single lumen PUR catheter with three-way tap	3.5	400	-	10.0	8
1270.04	FSY025	Single lumen PUR catheter with three-way tap	4.0	400	-	10.0	20
1270.05	FSY026	Single lumen PUR catheter with three-way tap	5.0	400	-	20.0	20
1270.08	FSY027	Single lumen PUR catheter with three-way tap	8.0	400	-	70.0	20
1272.14	FSY028	Double equal lumen PUR catheter with three-way tap	4.0	200	0.26 / 0.26	15.0 / 15.0	10

*Tested to ISO 10555

Reference
1. Dr A. Soe and R. Buckle. Specialist Clinical Audit Programme for London, Kent, Surrey and Sussex. March 2004.

Insertion technique overleaf

Umbilical Catheters

The safest choice for short-term vascular access in neonates

NEWBORN < 1kg

NEWBORN > 1kg

Insertion Technique

General

1. Use strict aseptic technique and ensure maximum barrier precautions, such as using the umbilical placement pack (80.199.695), cleanse the anterior abdominal wall and cord stump.
2. Loosely tie a piece of ribbon gauze around the cord stump to control bleeding. Cut the umbilical cord at its base, tangentially to the abdomen, remove any clots which may obstruct the vessel lumen.
3. Arteries are small, thick-walled spiralling vessels, whilst the vein is larger and thin-walled (see diagram 1).
4. Prime the catheter, and if required dilate the vessel using iris forceps (see diagram 1).
5. Advance the catheter using short, smooth strokes.

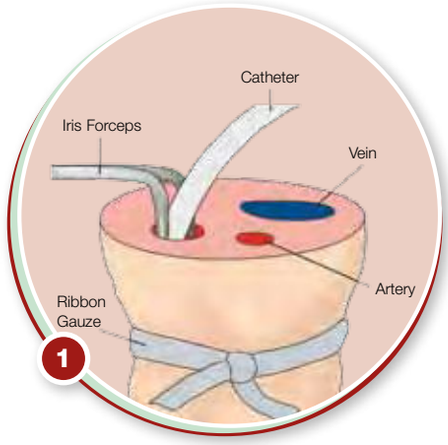


Diagram 1 - Catheter insertion

Arterial Catheterisation

1. Place the catheter tip either at the upper aorta above the diaphragm, X-ray T6-T10 (see table 1 and diagram 2) or in the lower aorta below the renal arteries, X-ray L4-L5 (see table 1 and diagram 2).
2. Check the legs and buttocks for pallor or blueness and palpate the femoral pulses.
3. Confirm catheter location by X-ray.
4. Fixate the catheter.

Venous Catheterisation

1. Locate the catheter tip into the inferior vena cava via the ductus venosus (see diagram 2).
2. Confirm catheter location by X-ray.
3. Fixate the catheter.

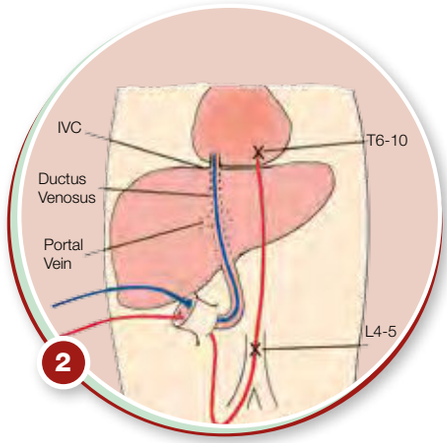


Diagram 2 - Catheter tip location

Please note: Any resistance to the advancement of the catheter must lead to immediate withdrawal of the catheter by 2-3cm before any new attempt is made. Do not cover the umbilicus with any dressing as the cord air dries in the incubator.

Catheter removal: Withdraw the catheter slowly and gently. If resistance is felt, stop and identify the cause before continuing.

Table 1

Umbilical Artery Catheter Positions		
Shoulder umbilicus length (cm)	**Umbilicus lower aorta length (cm)**	**Umbilicus upper aorta length (cm)**
8	4	10
10	5-6	12
12	6-7	15
14	8	18
16	10	20
18	10-11	22

Warnings: Avoid the use of alcohol or acetone to clean the catheter as this may result in catheter damage and premature removal.
Avoid the use of small syringes less than 10ml for bolus injections as they generate high pressures which may result in catheter damage.

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28G Premicath

Neonatal catheter (PUR) with choice of introducer

NEWBORN < 1kg

28G Premicath has been designed specifically for use with babies under 1kg who require the smallest catheters. As with our other polyurethane catheters Premicath utilises thin-wall technology to enable optimum flow rates to be achieved.

Clinicians have the choice of either a small breakaway needle introducer, which is ideal for use in the tiniest of veins, or the slightly larger Microflash peelable cannula which provides the added safety and security of advancing the catheter through plastic, and the ability to completely remove the cannula after line insertion.

Features and Benefits

Polyurethane catheter
remains firm during insertion but softens at body temperature, minimising vessel trauma and enhancing stay time.

X-ray opaque
for accurate tip location without additional contrast medium.

Catheter graduations every cm
aid accurate tip placement.

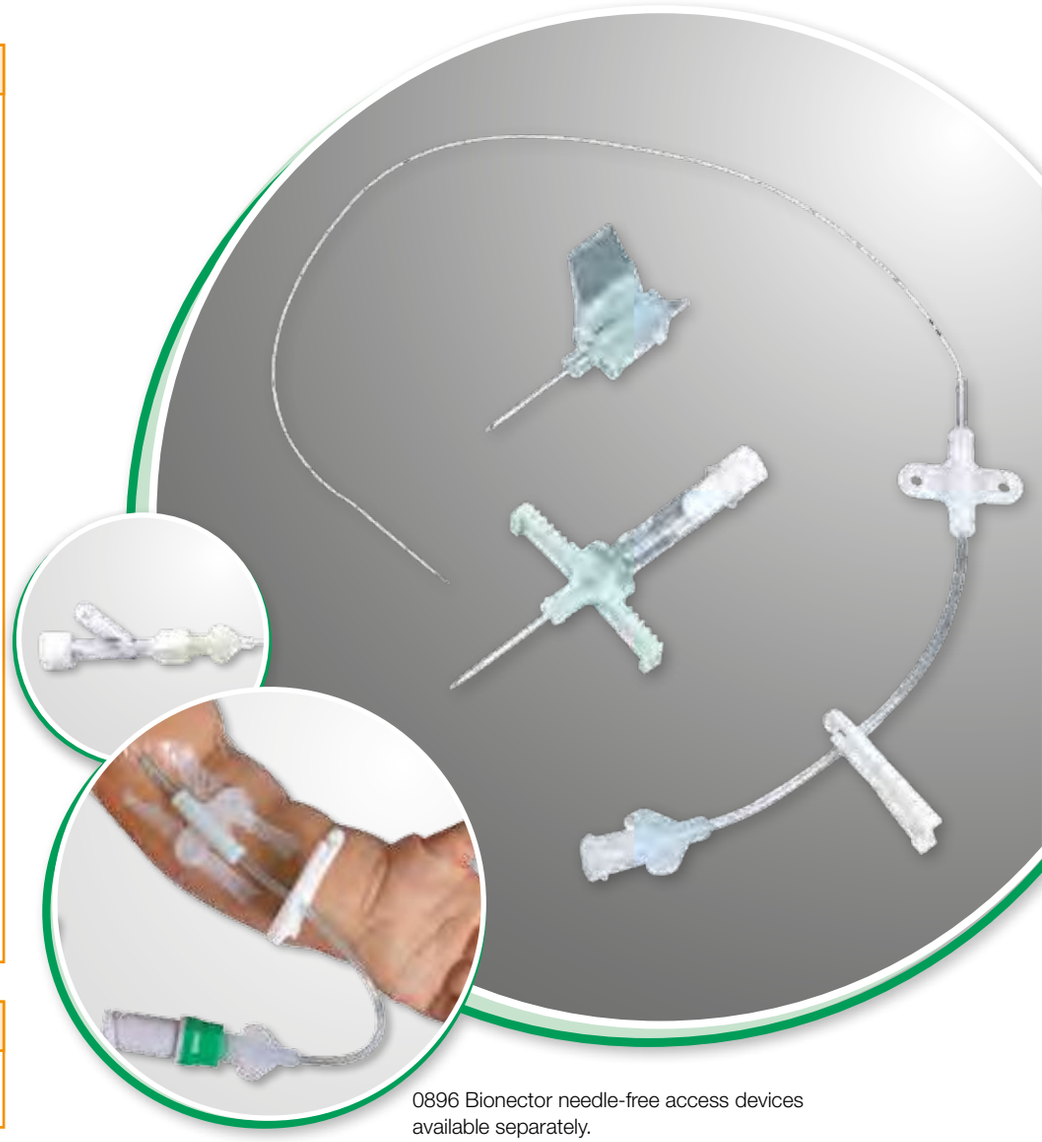
Small 28G catheter
for the smallest veins.

One-piece catheter construction
simplifies insertion.

Integral extension with wing
permits secure catheter fixation, reducing the risk of mechanical phlebitis.

Choice of introducer:

- **Microflash introducer**
  unique split cannula, allows easy removal from the PICC line, and eyelet gives rapid visibility of flashback.
- **Small 24G breakaway needle**
  for small veins.



Kit Contents

1 x Catheter

1 x Microflash introducer or breakaway needle

0896 Bionector needle-free access devices available separately.

Ordering Information

Product Codes		Description	Size (G)	Length (mm)	Priming Volume (ml)	Flow Rate (ml/min)*	Introducer Information		Unit of Sale
Vygon	NHSSC						Type	Size (OD-L-G)	
1261.21	FSU221	X-ray opaque graduated catheter	28	200	0.07	1.0	Breakaway needle	0.7-18-24	10
1261.22	FSU220	X-ray opaque graduated catheter	28	200	0.07	1.0	Microflash	1.1-18-20	10
1261.203	-	X-ray opaque graduated PUR catheter with stylet	28	200	0.07	1.0	Breakaway needle	0.7-18-24	10
1261.208	FSU263	X-ray opaque graduated PUR catheter with stylet	28	200	0.07	1.0	Microflash	1.1-18-20	10
7366.510	FTR438	Breakaway needle only	24	18	-	-	Breakaway needle	0.7-18-24	25
7370.19	FSP244	Microflash introducer only	20	18	-	-	Microflash	1.1-18-20	25

*Tested at 1bar/14.5psi

Insertion technique overleaf

28G Premicath

Neonatal catheter (PUR) with choice of introducer

NEWBORN
< 1kg

Insertion Technique

Preparation for Catheter Insertion

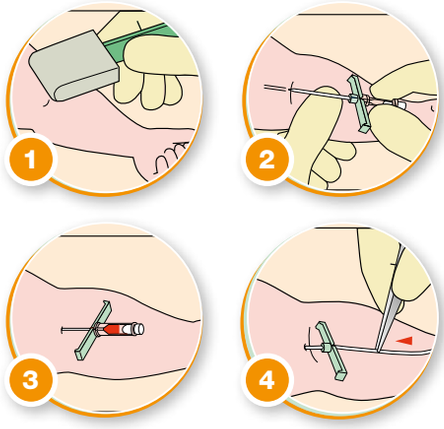
Open using aseptic technique. Add any sterile supplementary equipment needed. Ensure maximum barrier precautions, such as using the long line placement pack (80.199.519). Put on sterile gloves and prepare tray contents ready for catheter insertion:

1. Draw-up saline and heparin flushes using a filter needle or straw to remove particulate material.
2. Flush catheter prior to insertion.

Microflash Cannula Insertion Technique

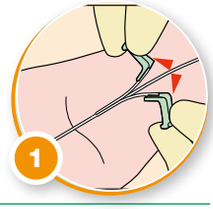
1. Select, prepare, clean (see diagram 1) and drape site of venepuncture. Apply tourniquet.
2. Perform venepuncture with the peelable cannula provided (see diagram 2).
3. Advance cannula until venepuncture is confirmed by free flowing blood into the flashback chamber (see diagram 3). **Please note:** With Microflash, you may see flashback from the needle eyelet. The cannula can also be syringe-mounted if preferred.
4. Release tourniquet, advance cannula off the introducer needle and advance gently into vessel. **Please note:** To avoid excessive bleeding or possible air aspiration place a gloved finger over the cannula opening following needle withdrawal. Insert catheter through cannula using non-toothed forceps and short, steady strokes (see diagram 4).

Should catheter advancement become difficult, infuse a little fluid whilst simultaneously advancing the catheter. This has the effect of dilating the vessel distal to the catheter tip.



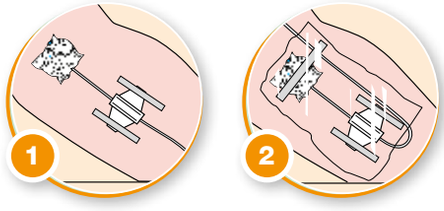
Premicath Peelable Cannula Removal

1. Secure the catheter by applying light finger pressure on the catheter beyond the cannula, and slowly withdraw the cannula. Carefully peel the cannula apart whilst maintaining forward pressure on the catheter, taking care not to dislodge the catheter from the vein. Finally advance the catheter to the desired position (see diagram 1).



Premicath Catheter Fixation

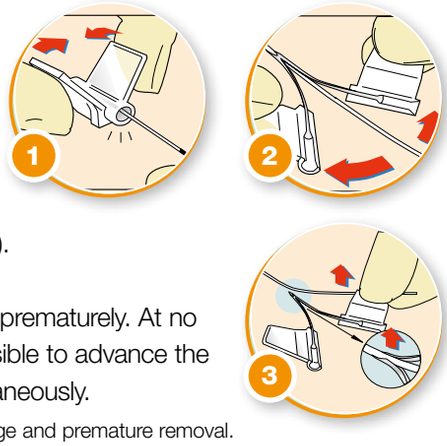
1. Anchor the catheter using adhesive skin strips. Clean the insertion site with gauze swab. Place small swab over insertion site (see diagram 1).
2. Loop the extension tube back beside this gauze and apply a transparent dressing (see diagram 2). Light pressure over the insertion site should be maintained for 24 hours. Change as per hospital protocol.



Premicath Breakaway Needle Removal

1. Follow the general guidelines as per the peelable cannula insertion technique. Following venepuncture advance the catheter through the breakaway needle and withdraw the needle from the vein. Pinch needle wings firmly together to initiate breaking of the needle (see diagram 1).
2. Peel needle smoothly until the needle halves are held together only at the tip. It is not necessary to entirely separate both halves of the needle (see diagram 2).
3. Lift catheter carefully out of needle lumen (see diagram 3).

Caution: Do not grip the needle wings tightly as this may cause the needle to break prematurely. At no time should the catheter be withdrawn back through the needle. If it becomes impossible to advance the catheter to a satisfactory position, the needle and catheter must be withdrawn simultaneously.



Warnings: Avoid the use of alcohol or acetone to clean the catheter as this may result in catheter damage and premature removal.
Avoid the use of small syringes less than 10ml for bolus injections as they generate high pressures which may result in catheter damage.

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24G Nutriline Twin-Flo

Neonatal dual lumen catheter with Microflash introducer

NEWBORN < 1kg

NEWBORN > 1kg

24G Nutriline Twin-Flo has been designed specifically for use with babies who require multiple infusions. As with our other polyurethane catheters Nutriline utilises thin-wall technology to enable optimum flow rates to be achieved.

The Nutriline Twin-Flo dual lumen design offers enhanced fluid management.

The kit for catheter insertion includes Vygon's Microflash introducer. This provides additional safety and security of advancing the catheter through plastic and the ability to completely remove the cannula after line insertion.

Features and Benefits

Polyurethane catheter
remains firm during insertion but softens at body temperature, minimising vessel trauma and enhancing stay time.

X-ray opaque
for accurate tip location without additional contrast medium.

Catheter graduations every cm
aid accurate catheter placement.

Dual lumen to tip
avoids incompatible drugs mixing.

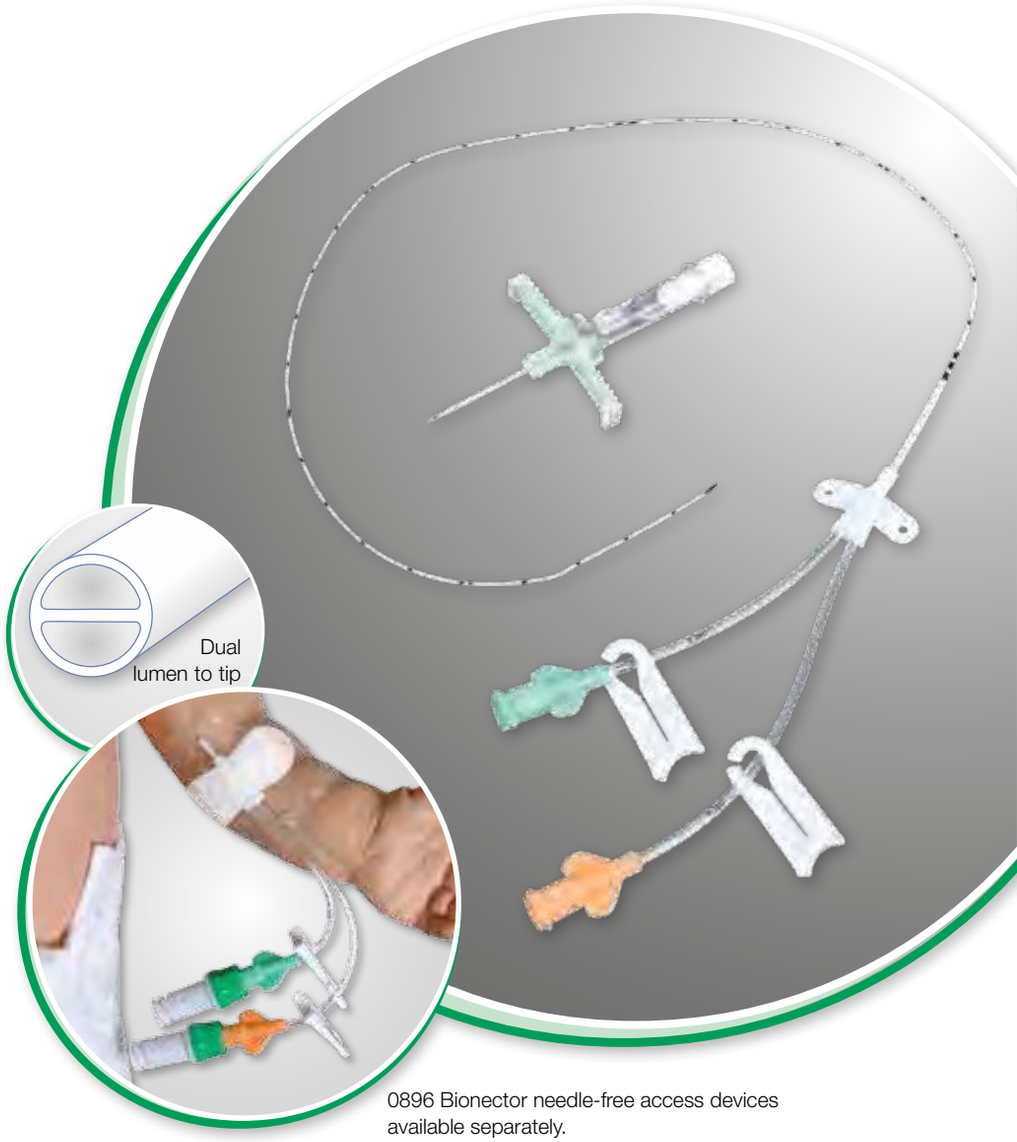
One-piece construction
simplifies insertion.

Slide clamps
for easier line management and safety.

Integral extension with wing
permits secure catheter fixation, reducing the risk of mechanical phlebitis.

Microflash introducer
unique split cannula, allows easy removal from the PICC line, and eyelet gives rapid visibility of flashback.

Colour coded hubs
for easy identification of the lumens.



0896 Bionector needle-free access devices available separately.

Kit Contents

1 x Catheter
1 x Microflash introducer
1 x Neonatal Grip-Lok™
1 x Tape measure

Ordering Information

Product Codes		Description	Size (G)	Length (mm)	Priming Volume (ml)	Flow Rate (ml/min)*	Introducer Information		Unit of Sale
Vygon	NHSSC						Type	Size (OD-L-G)	
1252.235	FSU252	X-ray opaque graduated dual lumen PUR catheter	24	300	0.2 / 0.2	1.45 / 1.45	Microflash	1.1-18-20	10
7370.19	FSP244	Microflash introducer	20	18	-	-	Microflash	1.1-18-20	25

*Tested at 1 bar/14.5psi

Insertion technique overleaf

24G Nutriline Twin-Flo

Neonatal dual lumen catheter with Microflash introducer

NEWBORN < 1kg

NEWBORN > 1kg

Insertion Technique

Preparation for Catheter Insertion

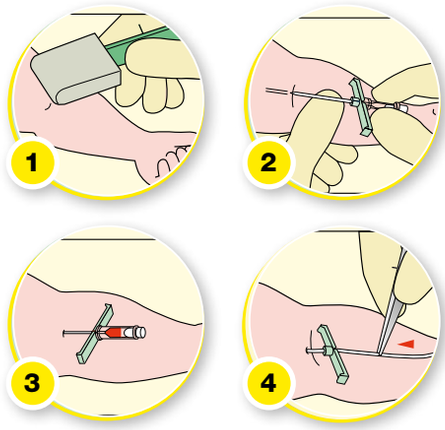
Open using aseptic technique. Add any sterile supplementary equipment needed. Ensure maximum barrier precautions, such as using the long line placement pack (80.199.519). Put on sterile gloves and prepare tray contents ready for catheter insertion:

1. Draw-up saline and heparin flushes using a filter needle or straw to remove particulate material.
2. Flush catheter prior to insertion.

Microflash Peelable Cannula Insertion Technique

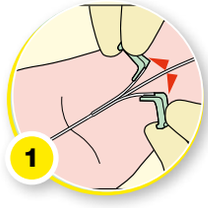
1. Select, prepare, clean (see diagram 1) and drape site of venepuncture. Apply tourniquet.
2. Perform venepuncture with the peelable cannula provided (see diagram 2).
3. Advance cannula until venepuncture is confirmed by free flowing blood into the flashback chamber (see diagram 3). **Please note:** With Microflash you may see flashback from the needle eyelet. The cannula can also be syringe-mounted if preferred.
4. Release tourniquet, advance cannula off the introducer needle and advance gently into vessel. **Please note:** To avoid excessive bleeding or possible air aspiration place a gloved finger over the cannula opening, following needle withdrawal. Insert catheter through cannula using non-toothed forceps and short, steady strokes (see diagram 4).

Should catheter advancement become difficult, infuse a little fluid whilst simultaneously advancing the catheter. This has the effect of dilating the vessel distal to the catheter tip.



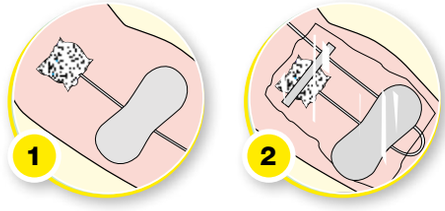
Nutriline Twin-Flo Peelable Cannula Removal

1. Secure the catheter by applying light finger pressure on the catheter beyond the cannula and slowly withdraw the cannula. Carefully peel the cannula apart whilst maintaining forward pressure on the catheter, taking care not to dislodge the catheter from the vein. Finally advance the catheter to the desired position (see diagram 1).



Nutriline Twin-Flo Catheter Fixation

1. Anchor the catheter using adhesive neonatal Grip-Lok™. Clean the insertion site with gauze swab. Place small swab over insertion site if necessary (see diagram 1).
2. Loop the extension tube back beside this gauze and apply a transparent dressing (see diagram 2). Light pressure over the insertion site should be maintained for 24 hours. Change as per hospital protocol.



Warnings: Avoid the use of alcohol or acetone to clean the catheter as this may result in catheter damage and premature removal.
Avoid the use of small syringes less than 10ml for bolus injections as they generate high pressures which may result in catheter damage.

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24G Nutriline

Peripherally inserted catheter with Microflash introducer

NEWBORN > 1kg

CHILD > 1yr

24G Nutriline's one-piece catheter construction provides clinicians with a high degree of safety. The peelable introducer cannula enables the catheter to be safely advanced through plastic. Additional security is provided by a small primary wing to help minimise the risk of catheter movement and kinking.

As with our other polyurethane catheters Nutriline utilises thin-wall technology to enable optimum flow rates to be achieved.

Clinicians have a choice of different catheter lengths to ensure accurate tip placement for most IV access sites.

Therapy areas include long-term IV antibiotics and TPN.

Features and Benefits

Polyurethane catheter
remains firm during insertion but softens at body temperature, minimising vessel trauma and enhancing stay time.

X-ray opaque
for accurate tip location without additional contrast medium.

Catheter graduations every cm
aid accurate placement of catheter.

One-piece construction
simplifies insertion.

Integral extension with wing
permits secure catheter fixation, reducing the risk of mechanical phlebitis.

Slide clamp
for line management and safety.

Microflash introducer
unique split cannula, allows easy removal from the PICC line, and eyelet gives rapid visibility of flashback.

0896 Bionector needle-free access devices available separately.

Kit Contents

- 2 x Ball swabs
- 1 x Gallipot
- 1 x Sponge stick
- 1 x Microflash introducer
- 1 x Injection membrane
- 1 x 10ml syringe
- 1 x Filter straw 5µm
- 1 x Sterile field/outer wrap
- 1 x Fenestrated drape

Ordering Information

Product Codes		Description	Size (G)	Length (mm)	Priming Volume (ml)	Flow Rate (ml/min)*	ID-OD (mm)	Introducer Size (OD-L-G)	Unit of Sale
Vygon	NHSSC								
1352.152	FSQ337	X-ray opaque graduated polyurethane catheter	24	150	0.18	9.0	0.3-0.6	1.1-18-20	10
1352.302	FSQ338	X-ray opaque graduated polyurethane catheter	24	300	0.12	5.0	0.3-0.6	1.1-18-20	10
7370.19	FSP244	Microflash introducer	20	18				1.1-18-20	25

*Tested at 1 bar/14.5psi

Insertion technique overleaf

24G Nutriline

Peripherally inserted catheter with Microflash introducer

NEWBORN > 1kg

CHILD > 1yr

Insertion Technique

Preparation for Catheter Insertion

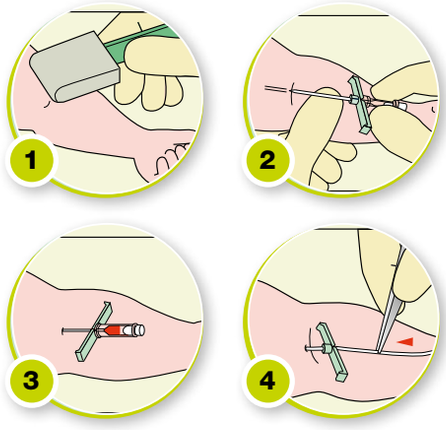
Open using aseptic technique. Add any sterile supplementary equipment needed. Ensure you are using maximum barrier precautions. Put on sterile gloves, prepare tray contents ready for catheter insertion:

1. Draw-up saline and heparin flushes using a filter needle or straw to remove particulate material..
2. Flush catheter prior to insertion.

Microflash Cannula Insertion Technique

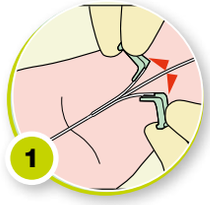
1. Select, prepare, clean (see diagram 1) and drape site of venepuncture. Apply tourniquet.
2. Perform venepuncture with the peelable cannula provided (see diagram 2).
3. Advance cannula until venepuncture is confirmed by free flowing blood into the flashback chamber (see diagram 3). **Please note:** With Microflash you may see flashback from the needle eyelet. The cannula can also be syringe-mounted if preferred.
4. Release tourniquet, advance cannula off the introducer needle and advance gently into vessel. **Please note:** To avoid excessive bleeding or possible air aspiration place a gloved finger over the cannula opening following needle withdrawal. Insert catheter through cannula using non-toothed forceps and short, steady strokes (see diagram 4).

Should catheter advancement become difficult, infuse a little fluid whilst simultaneously advancing the catheter. This has the effect of dilating the vessel distal to the catheter tip.



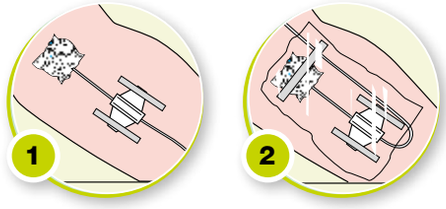
Nutriline Peelable Cannula Removal

1. Secure the catheter by applying light digital finger pressure on the catheter beyond the cannula, and slowly withdraw the cannula. Carefully peel the cannula apart whilst maintaining forward pressure on the catheter, taking care not to dislodge the catheter from the vein. Finally advance the catheter to the desired position (see diagram 1).



Nutriline Catheter Fixation

1. Anchor the catheter using adhesive skin strips. Clean the insertion site with gauze swab. Place small swab over insertion site if necessary (see diagram 1).
2. Loop the extension tube back beside this gauze and apply a transparent dressing (see diagram 2). Light pressure over the insertion site should be maintained for 24 hours. Change as per hospital protocol.



Warnings: Avoid the use of alcohol or acetone to clean the catheter as this may result in catheter damage and premature removal.
Avoid the use of small syringes less than 10ml for bolus injections as they generate high pressures which may result in catheter damage.

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24G ECC

Manufactured from soft traditional silicone

NEWBORN > 1kg

CHILD > 1yr

24G ECC was Vygon's first purpose-designed neonatal PICC line. The soft silicone catheter has depth graduations to aid insertion, and sits comfortably in the vessel during use. Its two-part design allows the use and safe removal of the introducer winged needle.

The ECC catheter is probably the most well recognised paediatric catheter in the world today, enjoying over 25 years of unrivalled success.

Features and Benefits

Soft biocompatible silicone
enhances stay time.

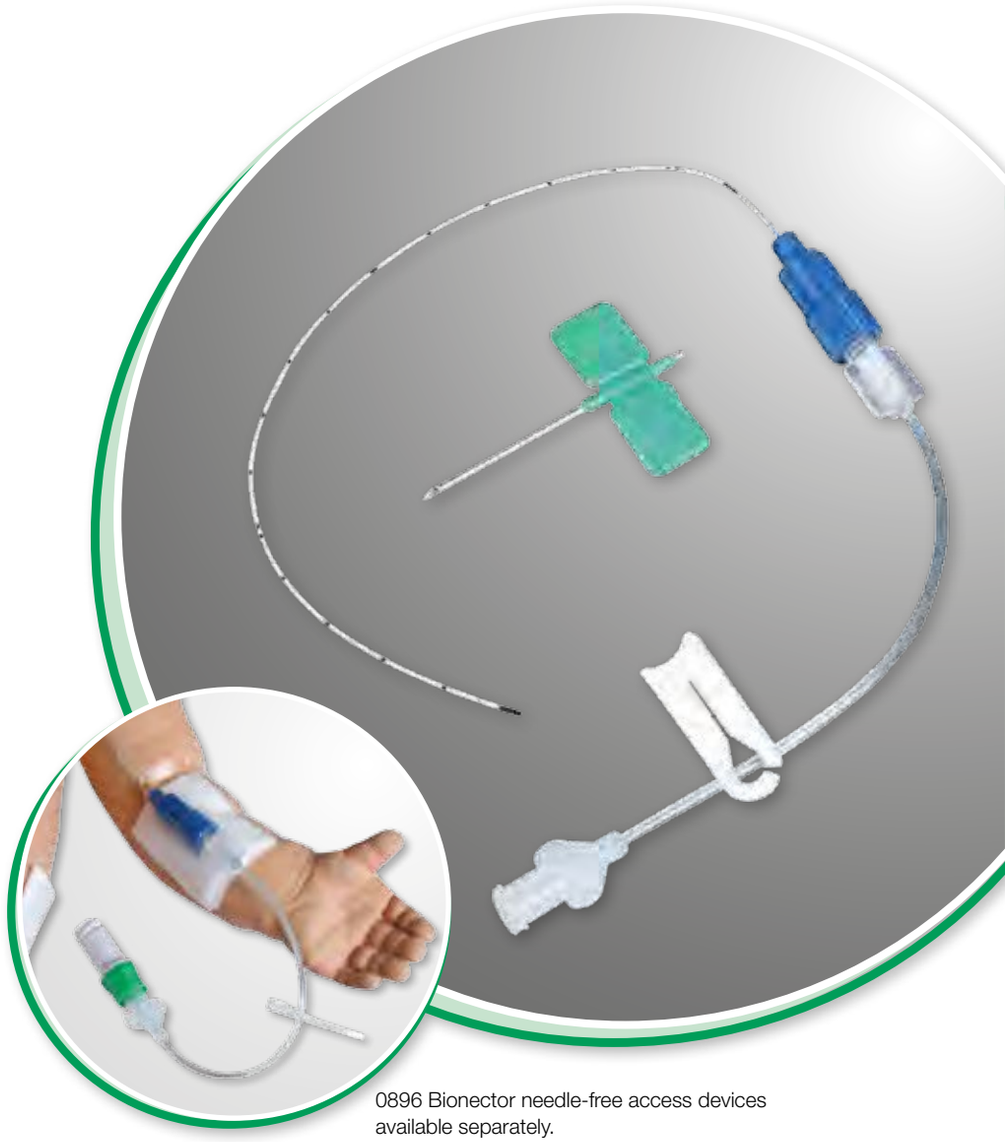
X-ray opaque
for accurate tip location without additional contrast medium.

Catheter graduations every cm
aid accurate catheter placement.

Integral extension
limits catheter movement, reducing the risk of mechanical phlebitis.

Detachable hub
allows complete removal of introducing needle.

Different length catheters
ensure accurate tip placement.



0896 Bionector needle-free access devices available separately.

Kit Contents

1 x Catheter

1 x Winged needle

Ordering Information

Product Codes		Description	Size (G)	Needle Size (G)	Length (mm)	Priming Volume (ml)	Flow Rate (ml/min)*	Flow Rate (ml/min)**	Unit of Sale
Vygon	NHSSC								
2184.015	FSY090	X-ray opaque graduated silicone catheter	24	19	150	0.10	0.7	5.8	30
2184.00	FSY088	X-ray opaque graduated silicone catheter	24	19	300	0.12	0.6	5.0	30
2184.005	FSY089	X-ray opaque graduated silicone catheter	24	19	500	0.16	0.5	4.0	30
0812.000		Spare extension and compression hub							25

*Tested to ISO 10555 **Tested at 14.5psi

Insertion technique overleaf

24G ECC

Manufactured from soft traditional silicone

NEWBORN > 1kg

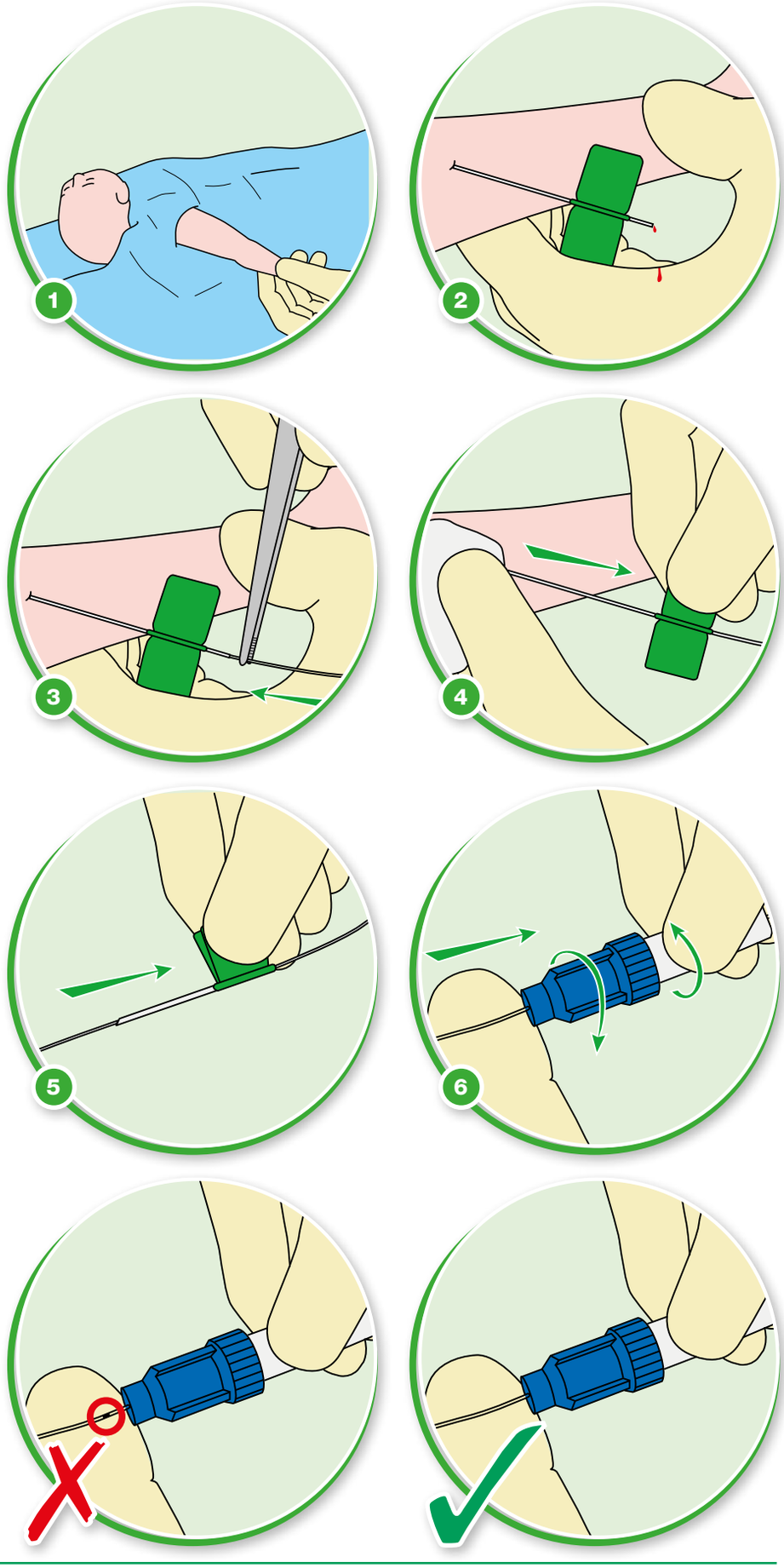
CHILD > 1yr

Insertion Technique

Note: Only use needle supplied. Check catheter patency by flushing. Unscrew compression hub **(do not separate)** and remove catheter ready for use.

1. Place child in comfortable and convenient position. Prepare insertion site. Drape as required.
2. Perform venepuncture using 19G needle provided.
3. Using fine non-toothed forceps, introduce catheter through needle.
   (Note graduations)

4. Apply finger pressure on catheter beyond needle tip and carefully remove needle from vessel.
5. Keeping catheter straight, carefully remove needle from catheter.
6. Insert proximal end of catheter into compression hub until black marker is fully out of sight. Whilst maintaining catheter in this position, tighten compression hub.
   Do not separate compression hub.



Please note: Black marking ring must be within hub and out of view. Catheter is secured by tightening compression hub.

Warnings: Avoid the use of alcohol or acetone to clean the catheter as this may result in catheter damage and premature removal. Avoid the use of small syringes less than 10ml for bolus injections as they generate high pressures which may result in catheter damage.

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22G Leaderflex

Arterial and venous applications

NEWBORN > 1kg

CHILD > 1yr

The Leaderflex range of 22G Seldinger catheters are for use in a variety of venous and arterial applications. Leaderflex is manufactured from polyurethane, which offers excellent insertion and indwell characteristics. Safety features include: a slide clamp for safe line changes; a clear integral extension to reduce phlebitis; and reinforcement of the catheter/wing junction to help minimise the risk of catheter kinking. Line management is also enhanced by moving hub manipulation away from the insertion site, reducing the risk of mechanical phlebitis, which can result in premature catheter failure.

Features and Benefits

Polyurethane catheter
remains firm during insertion but softens at body temperature, minimising vessel trauma and enhancing stay time.

X-ray opaque
for accurate tip location without additional contrast medium.

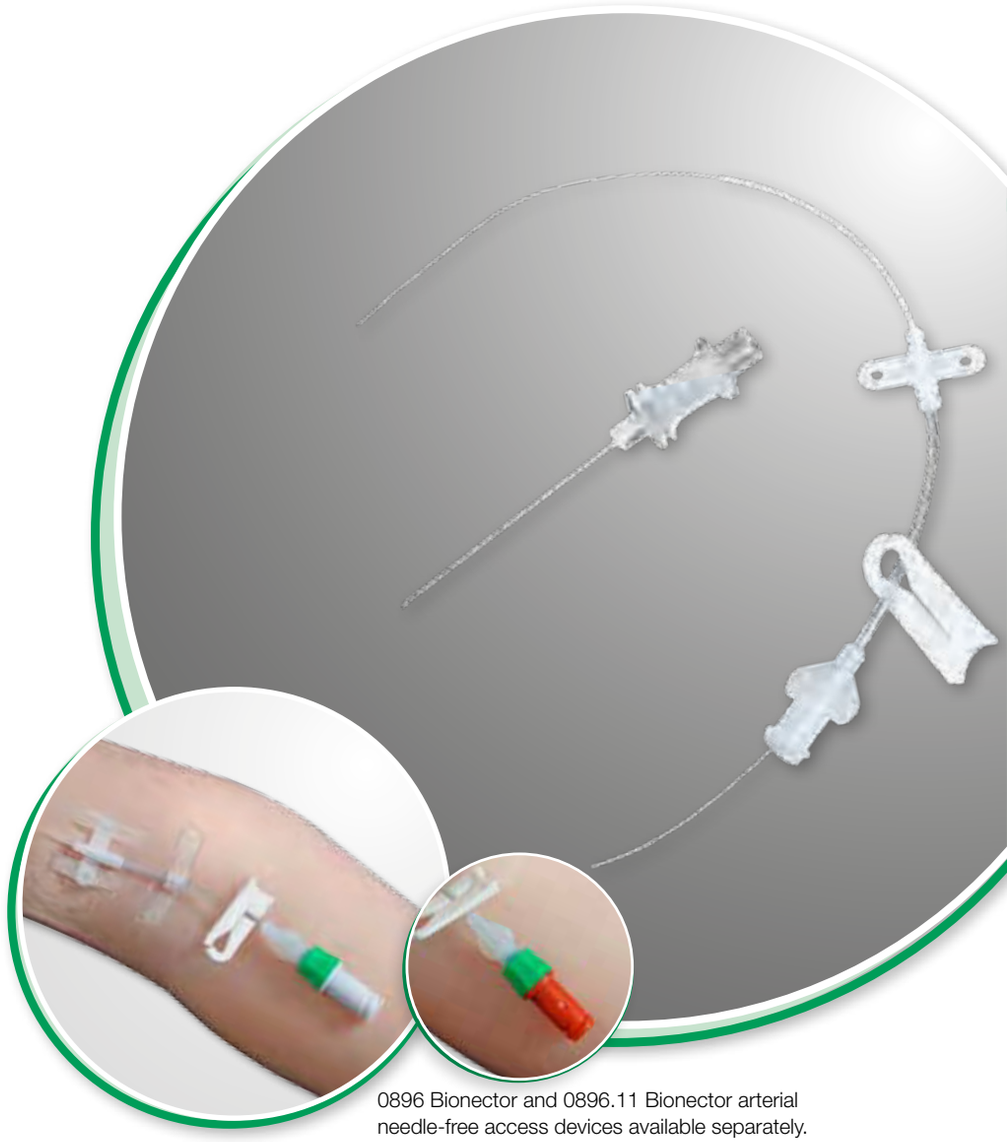
One-piece catheter construction
simplifies insertion.

4, 6 and 8cm lengths
to suit all sizes of patients.

Integral extension with wing
permits secure catheter fixation, reducing the risk of mechanical phlebitis.

Slide clamp
for line management and safety.

Flexible guidewire with soft tip
to reduce vessel trauma and aid successful line placement



0896 Bionector and 0896.11 Bionector arterial needle-free access devices available separately.

Kit Contents

1 x Catheter
1 x Needle
1 x Guidewire
1 x Outer wrap

Ordering Information

Product Codes		Description	Size (G)	Length (mm)	Flow Rate (ml/min)*	ID-OD (mm)	Guidewire Length (mm)	Extension Length (mm)	Unit of Sale
Vygon	NHSSC								
1212.04	FSQ326	Polyurethane catheter with integral extension	22	40	17	0.5 - 0.7	230	45	20
1212.06	FSQ327	Polyurethane catheter with integral extension	22	60	15	0.5 - 0.7	230	45	20
1212.08	FSQ328	Polyurethane catheter with integral extension	22	80	12	0.5 - 0.7	260	45	20

*Tested to ISO 10555

Insertion technique overleaf

22G Leaderflex

Arterial and venous applications

NEWBORN > 1kg

CHILD > 1yr

Insertion Technique

The Idea

"I had the polyethylene catheter, the needle and the guidewire, and suddenly in a split second, there came an attack of common sense. The sequence in which these three items ought to be used suddenly became obvious."

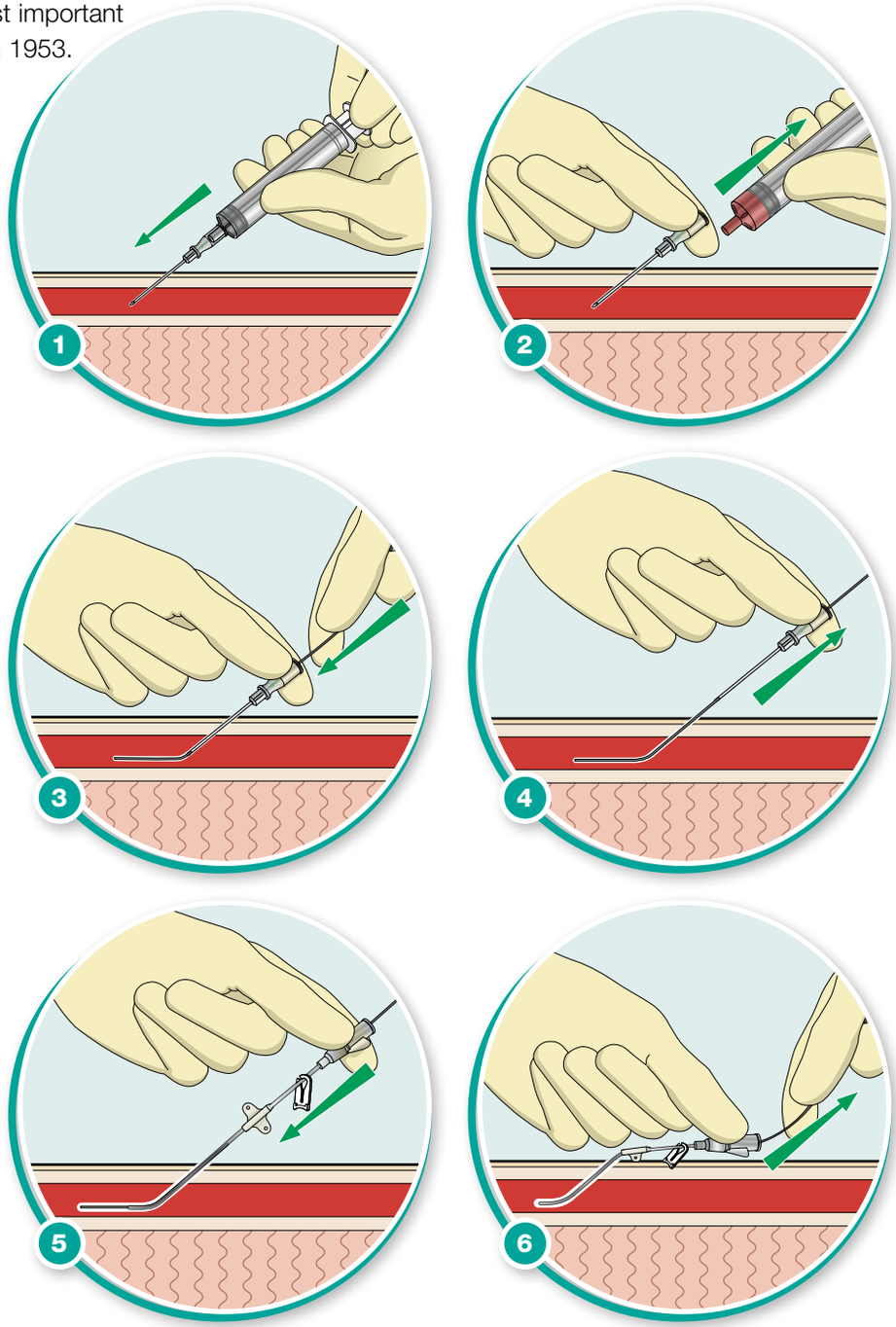
Sven-Ivar Seldinger was born in Mora, Sweden in 1921. After studying medicine at the Karolinska Institute in Stockholm he began his diagnostic radiology training at the Karolinska Sjukhuset in 1950.

Many sensed the great potential of angiography and although methods for introducing a catheter into an artery or vein were available, they were traumatic and involved considerable blood loss. This was the problem that Dr Seldinger set out to solve. He submitted his initial and most important paper on percutaneous catheterisation in 1953.

Dr Seldinger's medical milestone seems simple now. A needle is introduced, a guidewire is passed into the needle lumen and the needle is removed. The catheter is then fed over the wire, the wire is then removed.

The Seldinger technique was, because of its simplicity, adopted worldwide and since its conception has served millions, permitting safe, simple catheterisation of virtually every important vessel in the body.

Vygon is proud to produce Leaderflex, a refined product utilising the Seldinger technique and today's technologies. A fitting tribute to Dr Seldinger.



The Technique

1. Vessel puncture is performed.
2. Effective venepuncture is confirmed by free aspiration of blood.
3. The syringe is removed and the guidewire, soft tip first, is introduced through the needle.
4. The needle is then removed.
5. The flexible catheter is passed forward over the guidewire.
6. The guidewire is removed.

Warnings: Avoid the use of alcohol or acetone to clean the catheter as this may result in catheter damage and premature removal.
Avoid the use of small syringes less than 10ml for bolus injections as they generate high pressures which may result in catheter damage.

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20G Nutriline

Peripherally inserted catheter with peelable cannula

CHILD
> 1yr

Designed for children and young adults, Nutriline's one piece catheter construction provides clinicians with a high degree of safety. The peelable cannula enables the catheter to be safely advanced through plastic. Additional security is provided by a small primary wing to help minimise the risk of catheter movement and kinking.

As with our other polyurethane catheters Nutriline utilises thin-wall technology to enable optimum flow rates to be achieved without compromising the safety of the catheter.

Features and Benefits

Polyurethane catheter
remains firm during insertion but softens at body temperature, minimising vessel trauma and enhancing stay time.

X-ray opaque
for accurate tip location without additional contrast medium.

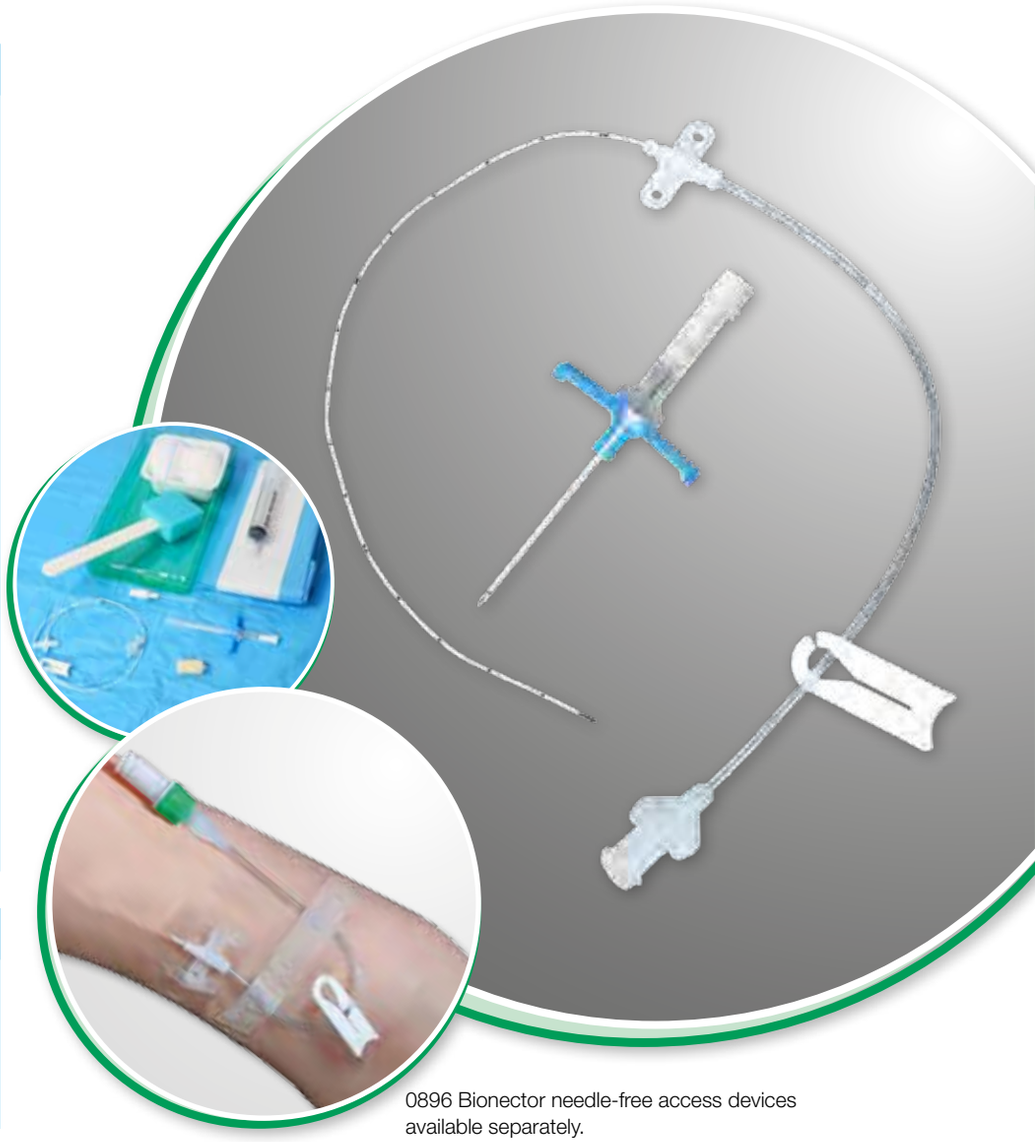
Catheter graduations every cm
aid accurate placement of catheter.

One-piece construction
simplifies insertion.

Integral extension with wing
permits secure catheter fixation, reducing the risk of mechanical phlebitis.

Slide clamp
for line management and safety.

Peelable cannula
unique split cannula, provides the additional safety and security of advancing the catheter through plastic.



Kit Contents

- 2 x Ball swabs
- 1 x Gallipot
- 1 x Sponge stick
- 1 x Peelable cannula
- 1 x Injection membrane
- 1 x 10ml syringe
- 1 x Filter straw 5µm
- 1 x Sterile field/outer wrap
- 1 x Fenestrated drape

0896 Bionector needle-free access devices available separately.

Ordering Information

Product Codes		Description	Size (G)	Length (mm)	Priming Volume (ml)	Flow Rate (ml/min)*	ID-OD (mm)	Introducer Size (OD-L-G)	Unit of Sale
Vygon	NHSSC								
1353.302	FSQ340	X-ray opaque graduated polyurethane catheter	20	300	0.16	2.8	0.5-1.0	1.5-45-17	10
7370.17	FSP243	Spare peelable cannula	17	-	-	-	-	-	25

*Tested to ISO 10555

Insertion technique overleaf

20G Nutriline

Peripherally inserted catheter with peelable cannula

CHILD
> 1yr

Insertion Technique

Preparation for Catheter Insertion

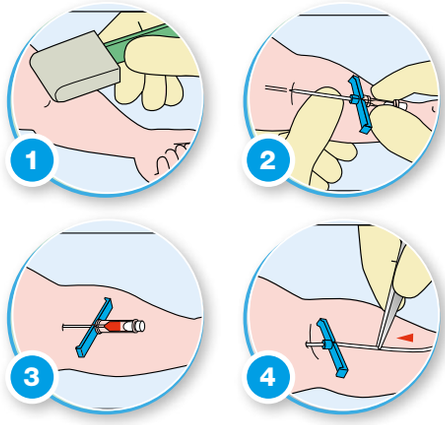
Open using aseptic technique. Add any sterile supplementary equipment needed. Ensure you are using maximum barrier precautions. Put on sterile gloves and prepare tray contents ready for catheter insertion:

1. Draw-up saline and heparin flushes using a filter needle or straw to remove particulate material.
2. Flush catheter prior to insertion.

Nutriline Peelable Cannula Insertion Technique

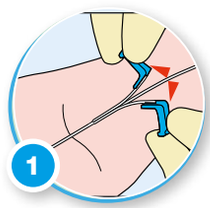
1. Select, prepare, clean (see diagram 1) and drape site of venepuncture. Apply tourniquet.
2. Perform venepuncture with the peelable cannula provided (see diagram 2).
3. Advance cannula until venepuncture is confirmed by free flowing blood into the flashback chamber (see diagram 3). The cannula can be syringe-mounted if preferred.
4. Release tourniquet, advance cannula off the introducer needle and advance gently into vessel. Insert catheter through cannula using non-toothed forceps and short, steady strokes (see diagram 4). **Please note:** To avoid excessive bleeding or possible air aspiration place a gloved finger over the cannula opening following needle withdrawal.

Should catheter advancement become difficult, infuse a little fluid whilst simultaneously advancing the catheter. This has the effect of dilating the vessel distal to the catheter tip.



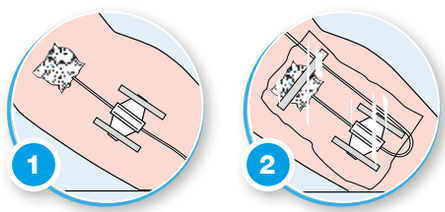
Nutriline Peelable Cannula Removal

1. Secure the catheter by applying light finger pressure on the catheter beyond the cannula, and slowly withdraw the cannula. Carefully peel the cannula apart whilst maintaining forward pressure on the catheter, taking care not to dislodge the catheter from the vein. Finally advance the catheter to the desired position (see diagram 1).



Nutriline Catheter Fixation

1. Anchor the catheter using adhesive skin strips. Clean the insertion site with gauze swab. Place small swab over insertion site if necessary (see diagram 1).
2. Loop the extension tube back beside this gauze and apply a transparent dressing (see diagram 2). Light pressure over the insertion site should be maintained for 24 hours. Then change as per hospital protocol.



Warnings: Avoid the use of alcohol or acetone to clean the catheter as this may result in catheter damage and premature removal.
Avoid the use of small syringes less than 10ml for bolus injections as they generate high pressures which may result in catheter damage.

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Long Line Placement Pack

NEWBORN < 1kg | NEWBORN > 1kg | CHILD > 1yr

Setting the standard, the long line placement pack provides clinicians with equipment to minimise the risk of line sepsis during insertion. The components of the pack have been specifically designed for neonates/paediatrics and selected by those who insert IV lines on a daily basis.

Sepsis has been sited as one of the most common complications for percutaneous long lines.[2] Having all of the required components in one pack makes it easier for clinicians inserting the catheter to use maximum barrier precautions, thereby increasing the likelihood that the highest standard of asepsis is maintained by all clinicians.

33% of long line complications are due to line infection.[2]

Features and Benefits

Fenestrated transparent drape
provides a maximum barrier to infection whilst allowing you to see and monitor the baby during insertion. Also keeps the baby warm during the line placement and the easy peel allows for easy removal.

Choice of neonatal forceps
straight and curved non-toothed forceps to aid the insertion of your long line.

Neonatal tourniquet
purpose-designed tourniquet to minimise damage to delicate skin.

Reduced set-up time
all your items available in one pack.

Kit Contents

- 1 x Opaque tray
- 1 x Prep forceps, blue
- 1 x Pack of Steri-Strips™
- 2 x Tape measures
- 2 x Tegaderm™ dressings 4 x 4cm
- 1 x Luer-slip syringe 10ml
- 1 x Neonatal tourniquet
- 4 x Ball swabs
- 2 x Drape 45 x 75cm
- 2 x Gallipot 60ml
- 2 x Hand towels
- 1 x Outer wrap 75 x 90cm
- 1 x Fenestrated transparent drape with easy peel 50 x 50cm
- 1 x Pair of neonatal scissors 9cm
- 1 x Iris forceps straight, non-toothed 10cm
- 1 x Iris forceps curved, non-toothed 10cm
- 5 x Swabs 7.5 x 7.5cm, 8ply, white

Fenestrated transparent drape with easy peel.

Ordering Information

Product Codes		Product Description	Unit of Sale
Vygon	NHSSC		
80.199.519	FSU369	Long line placement pack	25

Reference
2. Dr A. Soe and R. Buckle. Specialist Clinical Audit Programme for London, Kent, Surrey and Sussex. March 2004.

Umbilical placement pack overleaf

Umbilical Placement Pack

NEWBORN < 1kg

NEWBORN > 1kg

The umbilical placement pack provides clinicians with high quality equipment to minimise the risk of line sepsis and provides convenience during insertion. The components of the pack have been specifically designed for neonates and selected by those who insert umbilical lines on a daily basis.

Sepsis has been sited as one of the most frequent complications for umbilical catheters.[3] Having all of the required components in one pack makes it easier for clinicians inserting the catheter to use maximum barrier precautions, thereby increasing the likelihood that the highest standard of asepsis is maintained by all clinicians.

Features and Benefits

Fenestrated transparent drape
provides a maximum barrier to infection whilst allowing you to see and monitor the baby during insertion. Also keeps the the baby warm during the line placement and the easy peel allows for easy removal.

Choice of neonatal forceps
straight and curved non-toothed forceps to aid the insertion of your long line.

Reduced set-up time
all your items available in one pack.

Kit Contents

- 1 x Opaque tray
- 1 x Outer wrap 75 x 90cm
- 1 x Hypodermic needle 18G 1/2"
- 1 x Hypodermic needle 20G 1/2"
- 1 x Retractable scalpel N° 11
- 2 x Drapes 45 x 75cm
- 1 x Fenstrated drape with easy peel 50 x 50cm
- 2 x Hand towels
- 1 x Pair of suture scissors 11cm
- 10 x Swabs 10 x 10cm, 4ply
- 6 x Swabs 5 x 5cm, 4ply
- 1 x Red gallipot 60ml
- 1 x Transparent gallipot 60ml
- 1 x Silk suture with curved cutting needle 3.0
- 1 x Umbilical cotton
- 1 x Tape measure
- 2 x Mosquito forceps curved 13cm
- 1 x Mosquito forceps straight 13cm
- 1 x Iris forceps curved 10.5cm
- 1 x Iris forceps curved 10cm
- 1 x Iris forceps straight 10cm
- 1 x Iris forceps straight with teeth 10.5cm
- 1 x Needle holder 14cm
- 1 x Luer-slip syringe 1ml
- 2 x Luer-lock syringes 3ml
- 2 x Luer-lock syringes 5ml
- 1 x Vessel dilator probe 14cm
- 1 x Adhesive fixation strips

Ordering Information

Product Codes		Product Description	Unit of Sale
Vygon	NHSSC		
80.199.695	FSU377	Umbilical placement pack	20

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Reference
3. Dr A. Soe and R. Buckle. Specialist Clinical Audit Programme for London, Kent, Surrey and Sussex. March 2004.

Education and Training

NEWBORN < 1kg | NEWBORN > 1kg | CHILD > 1yr

As part of our ongoing commitment to education and training we can offer you the following:

Product Specific Workshops

Vygon's bespoke Neonatal line placement workshops can be based in the classroom or within the clinical environment. They combine theory and practical training opportunities, using training manikins to practice catheter insertion and care and maintenance skills. A product selection matrix is provided to assist in choosing the most appropriate device for the patient.

Hands-on Training Aids

These aids enable clinicians to practice catheter care and maintenance skills and are available for workshops or short-term loan.

Training DVDs

These have been made by clinicians for clinicians and have been designed to guide the new user through the essential elements of insertion, care and maintenance of our products.

Neonatal PowerPoint Presentation

Chapters in this presentation include:

- Why use long lines?
- Complications.
- Insertion and removal techniques.

For further information on any of the above please contact us on **01793 748800** or email us at **vygon@vygon.co.uk**

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Summary and Measures to Prevent, Detect and Treat Complications of Central Lines for Neonates

NEWBORN < 1kg

NEWBORN > 1kg

Potential Problems	Possible Causes	Practice Recommendations
Difficulty in successfully flushing catheter	• Clamped or kinked line.	• Secure and tape the line carefully after the insertion. • Check integrity of catheter prior to use.
	• Occluded line.	• Identify incompatible solutions or blood clot. • Clear clotted or sluggish lines in accordance with hospital policy for catheter maintenance.
Catheter damage	• Flushing with a small syringe against resistance.	• Use 10ml syringes only in order to avoid excessive pressure. However use the volume of flush in accordance with hospital policy.
	• Heat from storage causing degradation of catheter material.	• Store in accordance with manufacturer's recommendations.
	• Accidental damage e.g. stretching or during taping.	• Handle catheter carefully when fixing or taping.
Sepsis	• Insertion site infection. • Line sepsis.	• Use a strict aseptic technique during placement. • If dressing changes are needed use a strict aseptic technique. • Limit access to line.
	• Poor site care.	• Observe the catheter insertion site for signs of inflammation, phlebitis, erythema, induration. • Treat in accordance with hospital policy.
Malposition pericardial tamponade	• The catheter may migrate either inwardly or outwards.	• Confirmation of correct tip positioning into superior vena cava, (upper portion of the distal third) or inferior vena cava prior to use. • An X-ray or ultrasound may be used in accordance with hospital policy, to diagnose the problem before treatment. • Treat in accordance with hospital policy.
Extravasation	• Catheter tip is not in central position after placement.	• Extravasation treatment in accordance with local guideline.
	• Damaged catheter. • Thrombosis blocking flow and adding pressure at the terminal tip. • Phlebitis with swelling, creating added pressure.	• Remove the line or treat in accordance with hospital policy.
Difficulty in removing catheter	• Venospasm.	• Remove slowly and do not apply pressure to the vein wall. • The use of a warm compress may help.

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