

## **Tornado Plus**

### **Cable Blowing Machine**

Duct range 25-63mm, cable range 6-32mm

### **General Description**

The cable blowing machine, comprising an air box and cable pusher, has been designed to provide an effective and safe method of fibre optic cable installation. The system installs fibre optic cable of 6mm (0.25") to 32mm (1.25") overall diameter, at speeds up to 90m/min (300ft / min), into pre-installed ducts. The system operates on the viscous drag principle employing compressed air to install the cable, controlled and assisted by the belt drive system.

The cable is propelled by compressed air, fed into the duct via a venturi principle, while the hydraulically powered belt drive system controls the fibre optic cable. The electronic monitoring system provides read out of speed and distance, gives protection against duct obstructions and includes an emergency stop facility.

The system is mounted on an anti-corrosion treated, sturdy, height adjustable, wheeled, tubular steel trolley. This allows the unit to be wheeled around on site. The C-1203 hydraulic petrol driven power pack provides power. The unit is CE approved.

### **Features**

#### **Fully labelled control panel containing:**

- Power on/off button
- Emergency stop button
- Reset button
- Combined length counter recording in metres (feet) and cable speed read out in metres/min (feet/min)
- Hydraulic pressure read out dial
- Air pressure read out dial
- Hydraulic on/off control valve
- Adjustable speed control for drive belts
- Air supply control on/off with automatic exhaust function

### **Chassis**

- Front mounted wheels for ease of manoeuvrability
- Lightweight anti-corrosion treated tubular steel frame
- Adjustable frame allowing unit to be tilted up to 30°, reducing bending of duct and cable
- Adjustable rear legs for uneven terrain

### **Air Box**

- Manufactured in aluminium
- Range taking of cables from 6mm – 32mm (0.25"-1.25") by means of interchangeable collets with double cable sealing arrangement
- Duct sealing at mouth of air box
- Duct gripping facility designed to obviate duct crushing and distortion
- All seals, except cable seals, have a common diameter cord
- Upper section of air box is retained
- Air box aligned is adjustable for varying cable diameters
- No tools are required to split air box for insertion of cable and duct
- On/off air control valve with automatic air exhaust from duct when in "off" position

### **Storage Case**

Comprising

- Operating Manual
- Instructional Video

### **Cable Feeder**

- Manufactured in cast aluminium
- Hydraulically powered
- Unit lifts and splits to allow insertion of cable between drive belts
- Drive belts are profiled polyurethane, moulded
- Belt tension can be set by means of adjustable chain drive tensioners fitted to the side of the unit
- System relief valve fitted as standard

### **Tool Box**

- 3mm Allen Key
- 4mm Allen Key
- 5mm Allen Key
- 6mm Allen Key
- Long reach Allen Key
- 3mm dia. Cord x 2.5 metres long
- Silicone Grease
- Pliers 150mm
- Screwdriver 150mm (slot)
- Knife
- 13-17mm A/F Spanner
- 19mm Combination Spanner
- Battery Charger
- Battery Charge indicator



**NB: Please Specify Cable And Duct Diameters When Ordering**

**For Further Information**

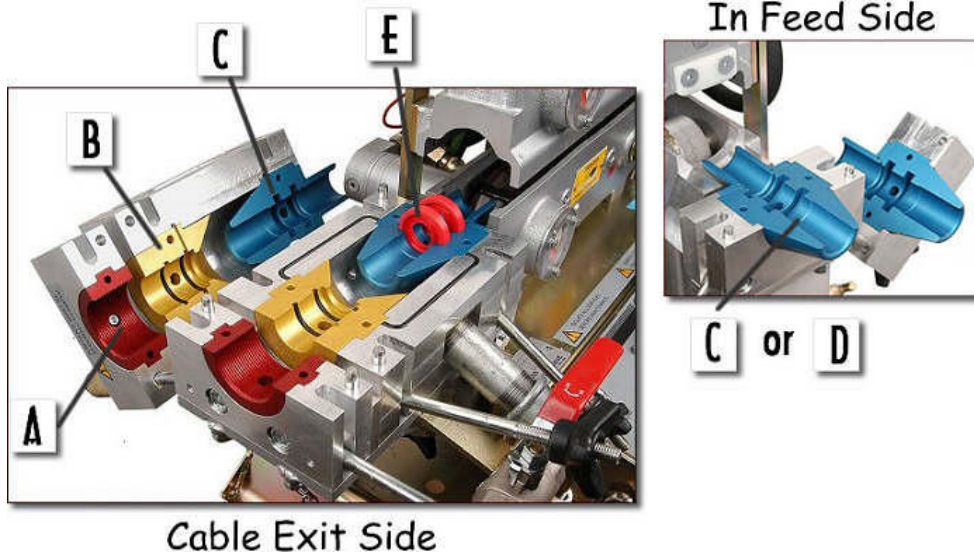
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## **TORNADO Configuration for Cable Blowing**

In order to customise your new "Tornado" to your application, we ask that you pick, one each from the list below, the Duct Clamp Collet (A), the Duct Seal Collet (B), the Cable Collet Assy (C) and the In Feed Cable Collet (D), the Cable Seals (E) and the Cable Seal Plug F).

When ordering, please have Tube and Cable dimensions available.



**A) Duct Clamp Collet**



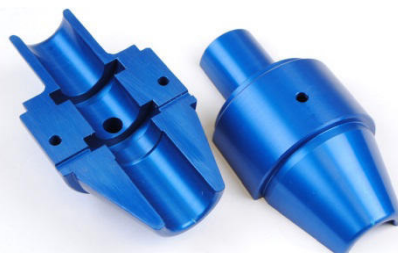
Duct O.D	Part No
25mm	C-1258-0200-25
32mm	C-1258-0200-32
38mm	C-1258-0200-38
40mm	C-1258-0200-40
50mm	C-1258-0200-50

**B) Duct Seal Collet**



Duct O.D	Part No
25mm	C-1257-0202-25
32mm	C-1257-0202-32
38mm	C-1257-0202-38
40mm	C-1257-0202-40
50mm	C-1257-0202-50

**C) Cable Collet Assembly & D) In-Feed Cable Collet**



Cable Diameter	Part No for Cable Collet Assy (C)	Part No for In-Feed Cable Collet (D)
6-9mm	C-1256-0103-06-09	C-1256-0104-06-09
9-12mm	C-1256-0103-09-12	C-1256-0104-09-12
12-16mm	C-1256-0103-12-16	C-1256-0103-12-16
16-20mm	C-1256-0103-16-20	C-1256-0103-16-20
20-24mm	C-1256-0103-20-24	C-1256-0103-20-24
24-28mm	C-1256-0103-24-28	C-1256-0103-24-28
28-32mm	C-1256-0103-28-32	C-1256-0103-28-32

## **TORNADO Configuration for Cable Blowing – Con't/d**

### **E) Cable Seals (Supplied in Packs of 10 Seals)**



<b>Cable Diameter</b>	<b>Part No</b>
6-7.5mm	C-1255-0208-06-07.5
7.5-9mm	C-1255-0208-07.5-09
9-10.5mm	C-1255-0208-09-10.5
10.5-12mm	C-1255-0208-10.5-12
12-14mm	C-1255-0208-12-14-F
14-16mm	C-1255-0208-14-16-F
16-18mm	C-1255-0208-16-18-F
18-20mm	C-1255-0208-18-20-F
20-22mm	C-1255-0208-20-22-F
22-24mm	C-1255-0208-22-24-F
24-26mm	C-1255-0208-24-26-F
26-28mm	C-1255-0208-26-28-F
28-30mm	C-1255-0208-28-30-F
30-32mm	C-1255-0208-30-32-F

### **F) Cable Seal Plugs**



<b>Cable Diameter</b>	<b>Part No</b>
6-7.5mm	C-1256-0206-07.5
7.5-9mm	C-1256-0206-09
9-10.5mm	C-1256-0206-10.5
10.5-12mm	C-1256-0206-12
12-14mm	C-1256-0206-14
14-16mm	C-1256-0206-16
16-18mm	C-1256-0206-18
18-20mm	C-1256-0206-20
20-22mm	C-1256-0206-22
22-24mm	C-1256-0206-24
24-26mm	C-1256-0206-26
26-28mm	C-1256-0206-28
28-30mm	C-1256-0206-30
30-32mm	C-1256-0206-32

**All imperial sizes are available on request**

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## **Hydraulic Power Pack**

A trolley mounted hydraulic power pack with pre-set internal system protection relief valve and quick release connectors.

The unit is powered by an air-cooled, 8hp Honda GX240 petrol engine, delivering 15 litres/min at a working pressure of 115 bar from the hydraulic circuit. The circuit is protected with return line and suction filters.

The unit is mounted on a robust, wheeled trolley.

## **Specification**

Height:	615mm
Length:	720mm
Width:	530mm
Weight:	66kg
Hyd Oil Capacity:	5 Litres



## **Product No**

C-1203-F

## **Description**

Hyd power pack c/w 7m hoses & electric lead

## **Universalube**

Universalube is a water-based preparation based on wax and silicone polymers. It is easily applied and exhibits excellent coverage.

It is non-toxic, non-flammable and has no physical or chemical effects on cable sheath or sub duct. It can be used on cable blowing, cable pulling or duct pushing.

## **Typical Properties**

<b>Appearance:</b>	Milky Mobile Liquid
<b>SG:</b>	Approx 1
<b>Viscosity:</b>	2500 – 4000 cst
<b>PH:</b>	6 – 8



## **Product No**

C-LUBE-02-F

## **Description**

Universalube Lubricant – 20 Lts

For Further Information

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## Compressors

All compressors are fitted with air coolers, condensation separator and air filtration and come mounted on a two-wheel trailer.

The compressors feature clearly visible instruments, as well as individual fault indicators, such as battery pilot lamp and warming-up button. The panel uses a robust relay switching system with plug-in relays in a closed circuit system to fully protect the complete unit. The instrument panel is protected against vandalism by a strong lockable steel enclosure.



## Specification

Duct Inner Bore	Model	Make	Output at 12 Bar (174 psi)	Weight	Length over towbar	Width	Height
25-32mm	C-COMP-C85-12-F (EU unit)	CompAir	300 cfm (8.5m <sup>3</sup> /min)	1980kg	4.5m	1.8m	1.8m
32-40mm	C-COMP-C115-12-F (Non EU unit)	CompAir	406 cfm (11.5m <sup>3</sup> /min)	1995kg	4.5m	1.8m	1.8m
32-40mm	C-COMP-C115-12-01-F (EU unit)	CompAir	406 cfm (11.5m <sup>3</sup> /min)	1995kg	4.5m	1.8m	1.8m

**Note:** Above are the minimum requirements based on duct diameter. Always select the compressor size to suit the largest duct diameter. For larger duct sizes consult CBS Products Ltd.

## Compressed Air Cooler

The Compressor Aftercooler has been designed to cool compressed air and remove water droplets prior to entering a CBS Tornado Cable Blowing Machine. The cooler unit is mounted on a tubular steel frame and is complete with pneumatic wheels and transit handle for easy manoeuvrability.

An air driven motor impeller forces cooling air through the Compressor Aftercooler and reduces the temperature of the compressed air by approximately 10° centigrade. The air motor is driven by compressed air taken from the down stream side of the water separator and passes through a filter-regulator-lubricator assembly prior to entering the air motor.

The Compressor Aftercooler is fitted with cam action quick release air hose couplings for easy fitting to interconnection air hoses normally supplied by CBS Products with a Tornado Cable Blowing Machine.

Waste oil/water mixtures are collected in a frame mounted drain can for environmentally acceptable disposal.

The water separator protector bar doubles as a carry handle to assist with moving over soft terrain or loading into a vehicle.

## Specification

**Length:** 1135mm  
**Width:** 640mm  
**Height:** 1000mm  
**Weight:** 74kg

**Max Working Pressure:** 12Bar  
**Max Air Compressor Flow Rate:** 12M<sup>3</sup>/Min  
**Max Air Inlet Temperature:** 65° C  
**Max Air Outlet Temperature:** 50° C  
**Max Ambient Air Temperature:** 45° C

**Air Hose Connections Type:** 1½" Cam and groove quick couplings



## Product No

C-1227-01

## Description

Trolley Mounted Aftercooler Unit c/w 15m Hose



C-1250-AS1015-1

Air Hose CBM/COOLER c/w securing clips.

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## **Cable Floating Water Pump**

The CBS C-1240 Cable Floating Water Pump has been designed to work in conjunction with the Tornado cable blowing machine to install fibre cables using water instead of air.

This robust, efficient and ergonomic system features stepless water pressure adjustment and easily connects to the Cable Blowing machine.

## **Specification**

<b>Fuel:</b>	Petrol
<b>Power:</b>	8 Hp
<b>Maximum water pressure:</b>	20 bar
<b>Flow/min:</b>	107 L
<b>Length:</b>	900 mm
<b>Width:</b>	790 mm
<b>Height:</b>	662 mm
<b>Weight:</b>	110 kg



## **Product No**

C-1240 -03

## **Description**

Cable Floating Water Pump

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## **Cable Fleeter**

The Fleeter replaces the manual method of "figure of eighting" cable, and provides protection and security for the cable.

Following installation of the cable in the first leg of the duct route the balance of the cable is removed from the drum and fed into the "Fleeter", thereby releasing the cable end ready for blowing into the second leg.

The Fleeter provides a smooth and simple system whilst ensuring cable protection from pedestrians or vehicles and prevents contamination from mud, soil or dust.

The Fleeter is designed to work in conjunction with the Cable Blowing Machine, which provides the cable feed in and out of the "Fleeter".

The unit accepts 3,000 metres of 13mm cable, allowing drum lengths of 6,000 metres to be utilized.

The Fleeter consists of a road going trailer chassis upon which is mounted a cable storage cassette, rotating cable guide quadrant and duct clamp assembly.



### **Product No**

C-1265-20-01-R5

### **Description**

Cable Fleeting Device

## **Specification**

**Dimensions:** 3.42m long x 2.3m wide x 2.33m high

**Tyre Size:** 145R 10

**Brakes:** Interia type brakes with auto reverse

**Cassette:** 2m x 0.85m high

**Rear Corner Steadies:** 2 off

**Spirit Level Mounted:** 1 off

**Towing Hitch:** Eye – 30mm, 40mm,  
Ball Type – 50mm  
*Specify at time of ordering*

**Weight:** 325kg

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## Duct Checking Equipment

Direct buried ducts can suffer from compaction, reduction or other obstructions, therefore, before cable installation begins, CBS recommends that each length of duct is checked for continuity and freedom from obstruction. Various items of hardware are available for checking the ducts.

A precision locator supplied with an appropriate duct Sonde(s), allows the duct route to be checked for continuity. The Sonde transmitter is blown along the route length, stopping at any blockage. The blockage is found by locating the Sonde with the locator.

Please state the duct inside dimensions when ordering.



Each Sonde is supplied with a Stocking, which is fitted over the end of the Duct to catch the Sonde upon exit.



### Product No

### Description

C-RD-CAT-F

Precision Locator



### Product No

### Description

C-R-SONDE-24  
C-R-SONDE-29  
C-R-SONDE-33  
C-R-SONDE-38  
C-R-SONDE-40  
C-R-SONDE-45  
C-R-SONDE-50

Missile Sonde – 24mm  
Missile Sonde – 29mm  
Missile Sonde – 33mm  
Missile Sonde – 38mm  
Missile Sonde – 40mm  
Missile Sonde – 45mm  
Missile Sonde – 50mm

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## **Plastic Duct Cutter**

Quick and easy to use the adjustable die cast circumferential cutter provides a clean cut of plastic ducts

### **Product No**

### **Description**

D-291-12-43-F

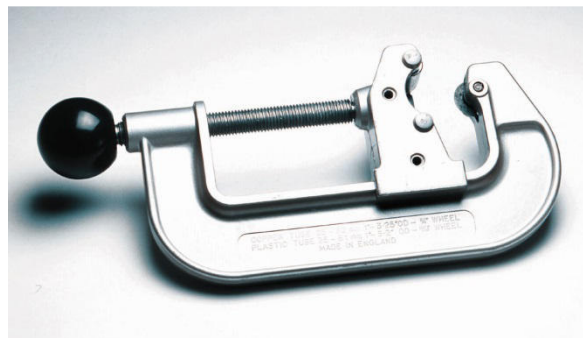
Duct Cutter 12-43mm

D-291-25-81-F

Duct Cutter 25-81mm

D-291-01-F

Spare Cutter Wheel



## **Plastic Duct Slitter**

Tool for longitudinal cutting of duct, and removal of spare duct from installed cable

### **Product No**

### **Description**

D-290-F

Plastic Duct Slitter

D-290-01-F

Spare Blade



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## **Pressurisation Kit**

The CBS Duct Pressurisation Kit has been designed to test the integrity of the duct by checking that the duct has no leaks. This will confirm that the duct holds air pressure, prior to cable blowing.

The kit comprises of a pressure regulator with gauge and valves. The system connects to the compressor and the duct for pressurising. Once up to pressure the air in the duct is locked in and the pressure monitored.



### **Product No**

### **Description**

C-1262	Pressurisation Kit
C-1262-50	50mm Duct Connector c/w End Plug
C-1262-40	40mm Duct Connector c/w End Plug
C-1262-32	32mm Duct Connector c/w End Plug
C-1262-25	25mm Duct Connector c/w End Plug

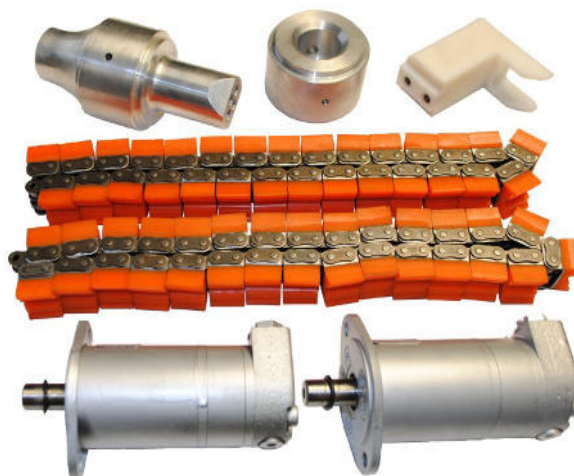
Other sizes of duct connector are available, please consult.

## **Tube Blowing Conversion Kits**

The tube blowing conversion kits are initially used to convert an existing Tornado Cable Blowing Machine into a Tube Blowing Machine for installing micro tubes into ducts. If additional Tube Bundle Configurations were required, additional Tube Kits would be needed.

### **Each Conversion Kit Contains:-**

- 2 off – Hydraulic Motors
- 2 off – Drive Chassis (upper & lower)
- 1 off – Tube Guide Collet
- 1 off – Tube Guide & Screws
- 1 off – Venturi Collet



## **Tube Conversion Kits**

### **Tube Bundle Configurations**

### **Tube Kit Codes**

2 x 12mm	C-1250-CON-2x12
3 x 12mm	C-1250-CON-3x12
4 x 12mm	C-1250-CON-4x12
6 x 12mm	C-1250-CON-6x12
7 x 10mm	C-1250-CON-7x10
5 x 10mm	C-1250-CON-5x10
4 x 10mm	C-1250-CON-4x10
3 x 10mm	C-1250-CON-3x10
2 x 10mm	C-1250-CON-2x10
10 x 7mm	C-1250-CON-10x7
7 x 7mm	C-1250-CON-7x7
6 x 7mm	C-1250-CON-6x7

**Other Tube Bundle Configurations available on request (please consult)**

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## **C-1253 CABLE OVERBLOWING JUNCTION BOX**

The CBS Cable Overblowing Junction Box has been designed to install a new cable or duct-tubes into an existing occupied sub-duct (subject to space being available).

The Cable Overblowing Junction Box comprises of a robust aluminium base and lid that form a pressurised air chamber into which one end of an existing occupied sub-duct can be attached. The existing cable can exit the Cable Overblowing Junction Box through an opening that has 3 cable seal slots, one of which will house the seal to suit the size of the existing cable. The third branch is then connected to a CBS Cable Blowing Machine via a short slave length of sub-duct for the installation of the extra cable or tube(s)

A range of Overblowing junction boxes are available to suit the outside diameter of the sub-duct.



### **Specification**

#### **Cable Diameters**

The maximum diameter of new cable/tubes for installation is dependent on the diameter of the existing cable and the duct size.

It is the responsibility of the operator to ensure that the cable/tubes to be installed are compatible with the existing sub-duct and installed cable configuration

**Cable Range Limit:** 9 – 20mm O.D.

**Duct Range** (Note: one duct O.D. size per unit)

**Minimum** 25mm O.D.

**Maximum** 50mm O.D

### **INSTALLATION PRINCIPLE**

Viscous Drag

### **PNEUMATIC SYSTEM**

**Max Operating Pressure:** 12 Bar

For ducts with an inner diameter of : Minimum Flow Acceptance

0 up to 25mm	4m <sup>3</sup> /min	150 cfm
26 up to 30mm	5m <sup>3</sup> /min	185 cfm
31 up to 35mm	7m <sup>3</sup> /min	250 cfm
36 up to 40mm	10m <sup>3</sup> /min	375 cfm
41 up to 44mm	12m <sup>3</sup> /min	450 cfm

### **DIMENSIONS**

**Length:** 295mm

**Width:** 74mm

**Height:** 170mm

**Weight:** 4KG

### **Product No**

### **Description**

C-1253-32	32mm Duct O.D.
C-1253-40	40mm Duct O.D.
C-1253-50	50mm Duct O.D.

Other sizes available on request.

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