

Tornado Cable Blowing Machine

Duct range 1 in.- 2.5 in. (25-63 mm)
 Cable range 0.25 in.-1.25 in. (6-32 mm)

General Description

The cable blowing machine (sometimes known as cable jetting), comprising an air box and cable pusher, has been designed to provide an effective and safe method of fibre optic cable installation. The Tornado Plus system installs fibre optic cable of .25 in. (6 mm) to 1.25 in. (32 mm) overall diameter, at speeds up to 300ft/min (90 M/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 fiber 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 hydraulic gasoline driven power pack provides power. The unit is CE approved.



Tornado Cable Blowing Machine



Fully labelled control panel containing:

- ▶ Power on/off button
- ▶ Emergency stop button
- ▶ Reset button
- ▶ Combined length counter recording in feet (meters) and cable speed read out in feet/min (meters/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 maneuverability
- ▶ 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



Hydraulic Power Pack

Air Box

- ▶ Manufactured in aluminium
- ▶ Range taking of cables from 0.25 in.-1.25 in. (6 mm – 32 mm) by means of interchangeable collets with double cable sealing arrangement
- ▶ Duct sealing at mouth of air box
- ▶ Duct gripping facility designed to avoid 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, molded
- ▶ 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

- ▶ 3 mm Allen Key
- ▶ 4 mm Allen Key
- ▶ 5 mm Allen Key
- ▶ 6 mm Allen Key
- ▶ 3 mm dia. Cord x 10.9 yards (10 M) long
- ▶ Silicone Grease
- ▶ Super Glue
- ▶ Metaflux 70-88 Chain Lubricant
- ▶ Pliers 6 in. (150 mm)
- ▶ Screwdriver (slot) 6 in. (150 mm)
- ▶ Knife
- ▶ 13-17 mm A/F Wrench

What is fiber blowing?

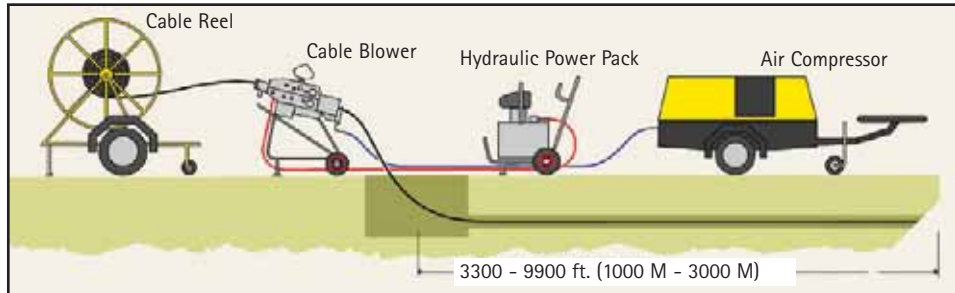
Fiber blowing is a technique pioneered by British Telecom for blowing small bundles of fibers into small tubes that can be placed around a building. Fibers can be easily blown into the tubes. Since these fibers can at any time be quickly blown out of the tubes if required, upgrading is easy. For example, an unknown multimode fiber is simple to upgrade an OM3

multimode or an OS1 single-mode fiber. This flexibility and opportunity for easy upgrading has made blown fiber installation the method of choice for many buildings. Blown fiber is also attractive for fiber-to-the-home, or FTTx, projects where the tube can be installed and allow easy fiber installation with minimal disruption at a later date.

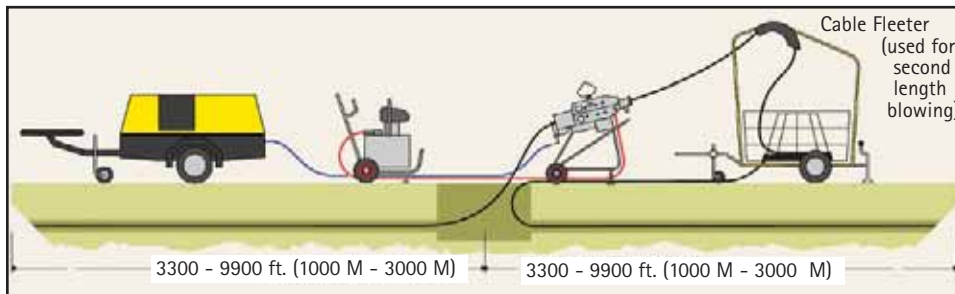
Ordering Information

P/N	Description	Weight
89000	Tornado Cable Blowing Machine with Hydraulic Power Pack	202 lbs. (92 kgs)
89006	Hydraulic Power Pack Only	154 lbs. (70 kgs)
89008	Junction Box Adapter	57 lbs. (26 kgs)
89015	Tornado Compressor	4152 lbs. (1883 kgs)
89174	10/8 mm Micro Duct Conversion Kit	24 lbs. (11 kgs)
89175	12/10 mm Micro Duct Conversion Kit	24 lbs. (11 kgs)

Single Length Cable Blowing



Mid-Point Cable Blowing with Fleeter



Tornado Compressor

This reliable and efficient rotary screw compressor, powered by a diesel engine, provides a maximum working pressure of 175 psi. The air output is filtered and conditioned to optimize the performance of our Tornado Fiber Blower. The maximum free air delivery is 370 cubic feet/minute. The unit is mounted on a two wheeled trailer with brakes and an adjustable towbar.

P/N 89015 Weight 4152 lbs. (1882 kgs.)



For Optimum performance, observe these minimum acceptable air flows

Duct ID	Airflow	
0-1 in. (0-25mm)	4m ³ /min	150 cfm
1-1 1/8 in. (26-30mm)	5m ³ /min	185 cfm
1 1/8-1 3/8 in. (31-35mm)	7m ³ /min	250 cfm
1 3/8-1 5/8 in. (36-40mm)	10m ³ /min	375 cfm
1 5/8-1 3/4 in. (41-44mm)	12m ³ /min	450 cfm

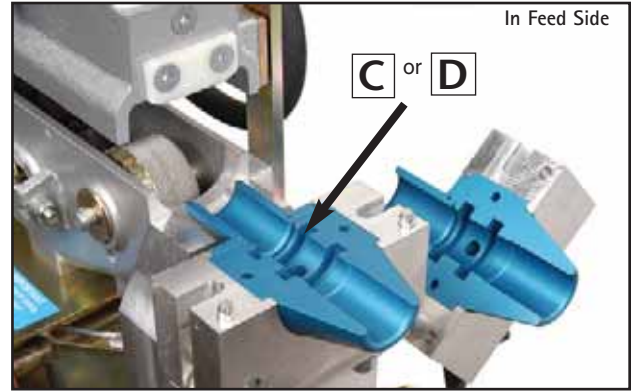
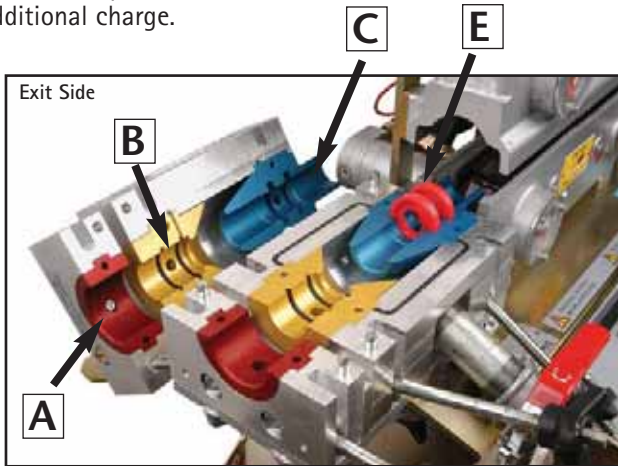


GMP Tornado Configuration for Cable Blowing

Let our "Cable Blowing Experts" tailor your configuration. Please don't hesitate to call our Hotline at 1-800-345-6009 for any questions you may have.

In order to configure your Tornado to work with your specific cable requirements you must select items below that match your duct and cable size at additional charge.

Table	Description	Qty Needed
A	Duct Clamp	1 (2 halves)
B	Duct Seal	1 (2 halves)
C	Cable Collet	1 or 2 (2 halves) see note 3
D	Cable Guide	0 or 1 (2 halves) see note 3
E	Cable Seals	1 (pkg of 10)
Not Illustrated	Cable Seal Plug	1 unit



Refer to the appropriate tables below



**Table A
Duct Clamps ***

89021	1 in.
89041	1.25 in.
89061	1.50 in.
89071	2 in.

* Metric sizes also available



**Table B
Duct Seals ***

89022	1 in.
89042	1.25 in.
89062	1.50 in.
89072	2 in.

* Metric sizes also available

**Table C and D
Cable Collets**

89081	.24 - .35 in. (6-9 mm)	1 Collet Req. (exit side)	Collet and guide used together for this size cable
89082	.24 - .35 in. (6-9 mm)	1 Guide Req. (in feed side)	
89083	.35 - .47 in. (9-12 mm)	1 Collet Req. (exit side)	Collet and guide used together for this size cable
89084	.35 - .47 in. (9-12 mm)	1 Guide Req. (in feed side)	
89091	.47 - .63 in. (12-16 mm)	2 Collets Req.	Same collet used on both in feed and exit side
89092	.63 - .79 in. (16-20 mm)	2 Collets Req.	
89101	.79 - .95 in. (20-24 mm)	2 Collets Req.	
89102	.94 - 1.10 in. (24-28 mm)	2 Collets Req.	



How to specify the collets and seals to match your cable and duct size.

1. Select one (1) Duct Clamp (Table A) that represents the inside diameter of the duct that you're using.
2. Select one (1) Duct Seal (Table B) that represents the inside diameter of the duct that you're using.
3. Select the Cable Collet (Table C). Always use a Cable Collet on the cable exit side.

If you use either .23 in.- .35 in. (6-9 mm) or .35 in.- .47 in. (9-12 mm) cable, use a Cable Guide (Table D) on the cable in feed side, for anything larger than these sizes, use a Cable Collet on the in feed side.

4. Select the Cable Seals (Table E) that match your cable size.
5. Select one (1) Cable Seal Plug that matches your cable size.



**Table E
Cable Seals**

89085	.23 - .29 in. (6-7.5 mm)	10/Pk
89086	.29 - .35 in. (7.5-9 mm)	10/Pk
89087	.35 - .41 in. (9-10.5 mm)	10/Pk
89088	.41 - .47 in. (10.5-12 mm)	10/Pk
89093	.47 - .55 in. (12-14 mm)	10/Pk
89094	.55 - .63 in. (14-16 mm)	10/Pk
89095	.63 - .71 in. (16-18 mm)	10/Pk
89096	.71 - .79 in. (18-20 mm)	10/Pk
89103	.79 - .87 in. (20-22 mm)	10/Pk
89104	.87 - .95 in. (22-24 mm)	10/Pk
89105	.94 - 1.02 in. (24-26 mm)	10/Pk
89106	1.02 - 1.10 in. (26-28 mm)	10/Pk



**Table F
Cable Seal Plugs**

89125	.23 - .29 in. (6-7.5 mm)	
89126	.29 - .35 in. (7.5-9 mm)	
89127	.35 - .41 in. (9-10.5 mm)	
89128	.41 - .47 in. (10.5-12 mm)	
89129	.47 - .55 in. (12-14 mm)	
89130	.55 - .63 in. (14-16 mm)	
89131	.63 - .71 in. (16-18 mm)	
89132	.71 - .79 in. (18-20 mm)	
89133	.79 - .87 in. (20-22 mm)	
89134	.87 - .94 in. (22-24 mm)	
89135	.94 - 1.02 in. (24-26 mm)	
89136	1.02 - 1.10 in. (26-28 mm)	



MetaFlux Chain Lubricant

A fully synthetic, special chain grease for use in lubrication of the Tornado's drive chain. Can also be used as a superior lubricant on any other machine which uses a chain.

- ▶ Temperature ranged from 5° F to 480° F (-15° C to 250° C)
- ▶ High penetration, powerful adhesion, no drips
- ▶ Stable viscosity, and no effect on regular O-rings
- ▶ Non-soiling, colorless, free of silicone and solid matter
- ▶ Transparent with corrosion resistance up to one year
- ▶ Long term protection even with high dust occurrence, resistant to hot and cold water

P/N 89153 Weight: 13.5 oz. (400 ml)



Air Glide Duct Lube

A silicone-based synthetic lubricant specifically designed to pre-lubricate the interior of ducts prior to cable blowing.

- ▶ Compatible with all cable jacket and innerduct materials
- ▶ 1 quart when blown into a 1.25 in. (32 mm) ID duct with a sponge will effectively coat 1000 ft. (305 M)
- ▶ Non-flammable
- ▶ Low odor
- ▶ Not water soluble
- ▶ Usable at all temperatures

P/N 89138 Weight: 25 lbs (11.5 kg.) per case. Sold in case of 12 quarts



Tube Blowing Chain Configurations

Cross Section



3 X 10

Lower Chain	Upper Chain
89180	89191

Cross Section



5 X 10

Lower Chain	Upper Chain
89180	89180

Cross Section



3 X 12

Lower Chain	Upper Chain
89193	89191

Cross Section



4 X 12

Lower Chain	Upper Chain
89193	89193



Tornado Conversion for 3 X 10 mm Micro Duct

Items needed for conversion

89178	50 cc Motor (2 needed for conversion)
89183	Venturi Collet
89186	Infeed Guide Collet
89191	Upper Drive Belt (1 each)
89180	Lower Drive Belt (1 each)

Tornado Conversion for 3 X 12 mm Micro Duct

Items needed for conversion

89178	50 cc Motor (2 needed for conversion)
89184	Venturi Collet
89188	Infeed Guide Collet
89191	Upper Drive Belt (1 each)
89193	Lower Drive Belt (1 each)



Tornado Conversion for 5 X 10 mm Micro Duct

Items needed for conversion

89178	50 cc Motor (2 needed for conversion)
89182	Venturi Collet
89187	Infeed Guide Collet
89180	Upper and Lower Drive Belts (2 of same needed)
89137	Tube Guide (replaces roller on "in feed" side)

Tornado Conversion for 4 X 12 mm Micro Duct

Items needed for conversion

89178	50 cc Motor (2 needed for conversion)
89185	Venturi Collet
89189	Infeed Guide Collet
89193	Upper and Lower Drive Belts (2 of same needed)
89137	Tube Guide (replaces roller on "in feed" side)

