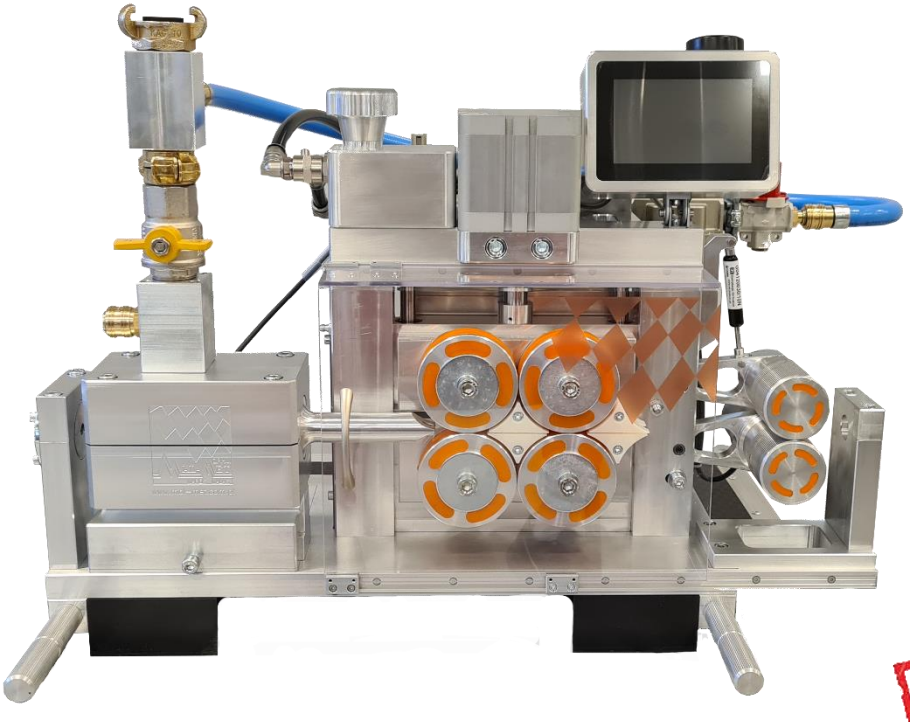
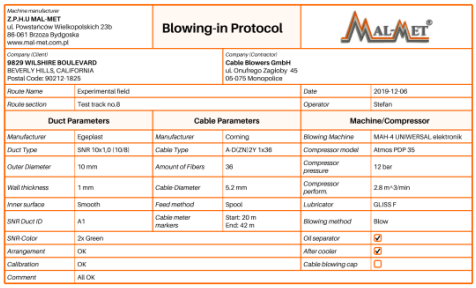
MAH–4 UNIWERSAL ELECTRONIC



PROPIETARY PRODUCT



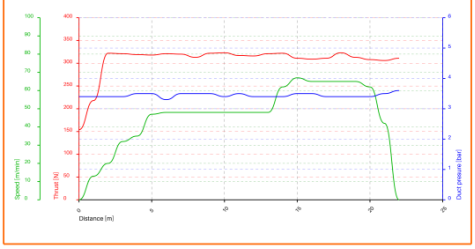
Machine manufacturer
Z.P.H.U MAL-MET
ul. Powstanców Wielkopolskich 23b
86-061 Brzoza Bydgoska
www.mal-met.com.pl

Blowing-in Protocol

Company (Client)		Company (Contractor)	
9829 WILSHIRE BOULEVARD BEVERLY HILLS, CALIFORNIA Postal Code: 90212-1825		Cable Blowers GmbH ul. Druhego Zagleby 45 05-075 Monopolice	
Route Name	Experimental field	Date	2019-12-06
Route section	Test track no.8	Operator	Stefan

Duct Parameters		Cable Parameters		Machine/Compressor	
Manufacturer	Egeplast	Manufacturer	Corning	Blowing Machine	MAH-4 UNIWERSAL elektronik
Duct Type	SNR 10x1,0 (10/8)	Cable Type	A-DJZN(ZY 1x36	Compressor model	Atmos PDP 35
Outer Diameter	10 mm	Amount of Fibers	36	Compressor pressure	12 bar
Wall thickness	1 mm	Cable-Diameter	5,2 mm	Compressor perform.	2.8 m^3/min
Inner surface	Smooth	Feed method	Spool	Lubricator	GLISS F
SNR Duct ID	A1	Cable meter markers	Start: 20 m End: 42 m	Blowing method	Blow
SNR-Color	2x Green			Oil separator	☑
Arrangement	OK			After cooler	☑
Calibration	OK			Cable blowing cap	☐
Comment	All OK				

Blowing-in parameters chart



Summary					
Crash test performed	☐	Max. permissible thrust setting in the ambient conditions listed below			
Route length	22 m	Weather	21,8°C, 42,4%RH, 1024hPa	GPS Position	53.02622, 18.01535
Start time	10:38:20	Stop time	10:40:13	Total time	00:01:53

***FIBER OPTIC DIAMETER**: 1-17mm*

***HDPE DIAMETER** : 0-50mm*

***MAX DISTANCE**: 2500m*

www.mal–met.com.pl

Machine specifications:

- 12V power supply (18Ah battery)
- Working pressure 6-15 bar
- Gear motor operating pressure 0.63 MPa
- Operating pressure in the head 6-15 bar
- Gear motor air consumption 55 m^3 / h
- Blowing speed 0-70 m/min
- Air consumption in the head 1-11 m^3 / min
- Weight 50kg
- Dimensions 660mm x 530mm x 480mm
- Number of bearings 20 pieces
- Number of rollers 4 pieces
- HDPE sizes ⌀0-50mm
- Fiber optic sizes ⌀1mm-17mm

1) Smart intuitive touch screen controller

2) GPS

3) Readings of atmospheric conditions such as: temperature, pressure, humidity, date, time, time shifts

4) Three languages: Polish, English, German

5) Wireless connectivity and remote updates

6) Possibility to observe process parameters online on a phone or tablet

7) Automatic counter that has many functions

8) Automatic operation

9) Manual work

10) Introducing limits such as: insertion force, distance limit, selection of calibration and individual diameters, adjustment of measurement sensitivity in [%]

11) Smooth speed regulation

12) Registration of all blowing parameters saved in the form of a report to a *.PDF file: cable insertion force, carrying pressure, blowing speed, distance, weather conditions parameters

13) Intuitive data entry interface using a web browser

14) Adjustment of controller parameters and settings both locally and remotely

15) Cable stop system – a system that recognizes whether the fiber optic cable is moving in the tube or not

16) Cable test - checking at what pressure the cable will be damaged

The blowing machine is equipped with:

- Equipment for blowing one diameter of optical fiber (profile rollers, head insert, supports)
- Fixings for three diameters of HDPE tubes
- User manual
- CE Declaration of Conformity
- Tool box
- A set of tools for operating the machine
- Pneumatic gun for cleaning
- Suitcase with battery and power cable
- Transport case

The most modern model of fiber optic blowing machines. **MAH-4 UNIWERSAL ELECTRONIC** model is the most versatile on the world. Intended for for fiber optics with diameters from 1mm to 17mm. The automation in our blowing machines means continuous control over the optical fiber. It is characterized by the fact that by entering appropriate data into the controller, the machine takes measurements on the cable and, depending on the forces acting on the fiber optic route, regulates the pressure in Newtons so as not to exceed the parameters set by the operator. If the limit point is reached, the process will be stopped to prevent damage to the cable. Thanks to such innovative and modern technology, the operator's work is made much easier, and with the registration option purchased, he can watch the entire process on an online graph via Wi-Fi on e.g. a phone or tablet. The report after work can be printed or saved in the machine's memory. The fiber optic cable is inserted through a set of aluminum-rubber profile rollers depending on the external diameter of the cable. Each roller has its own mechanical drive, which is transmitted by gears and a chain. The rubber part of the roller is designed to prevent the cable from slipping due to resistance that occurs on long sections and bends of fiber optic routes. The groove in the rubber part of the roller, profiled to match the cable diameter, wraps the optical fiber by 90%, which increases the force of inserting the optical fiber into the microduct tube. The driving force of the mechanical system of the roller set is a pneumatic gear motor. The head into which compressed air is fed plays an important role in supporting the process of blowing optical fiber into the microduct tube. The air head is designed so that the compressed air fed to the duct pipe is properly shaped and lifts the cable, minimizing cable friction against the internal walls of the duct. Thanks to less friction, it is possible to feed the cable over much longer distances.

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