Flare Ignition

High Energy Ignition Devices for Flare

TESI IGNITERS

HIGH ENERGY IGNITION DEVICES FOR FLARE

TESI designes **complete Flare Ignition Systems,** based on High Energy technology and suitable to ignite **all kind of flares.**

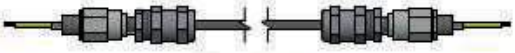
Our Flare Ignition Systems and devices are engineered for **precision** and **reliability.** From advanced **ignition controls** to high-performance flare tip **pilot burners,** our devices ensure safe and efficient flare operations in challenging environments both **in automatic or manual mode.**
Our offerings extend to **pilot torches** that feature **High Energy ignition rod,** integrated **flame detection** and **FFG outlets** (Flame Front Generator). These special pilot torches together with the **RE-IGNITION automation** inside the control box play a pivotal role in efficient gas flaring, providing sure, safe and eficient ignition while **minimizing emissions** and **ensuring compliance** with stringent environmental regulations.

8) HIGH ENERGY PILOT, L4

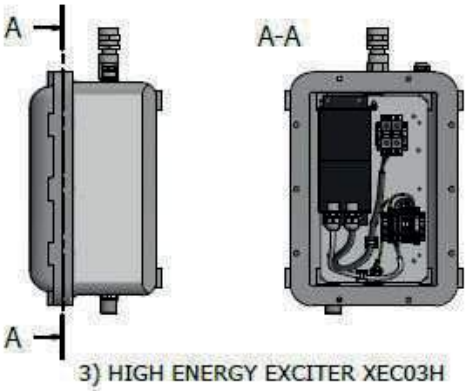
7) HIGH ENERGY IGNITION ROD, L4

6) HIGH TEMPERATURE CABLE

5) JUNCTION BOX



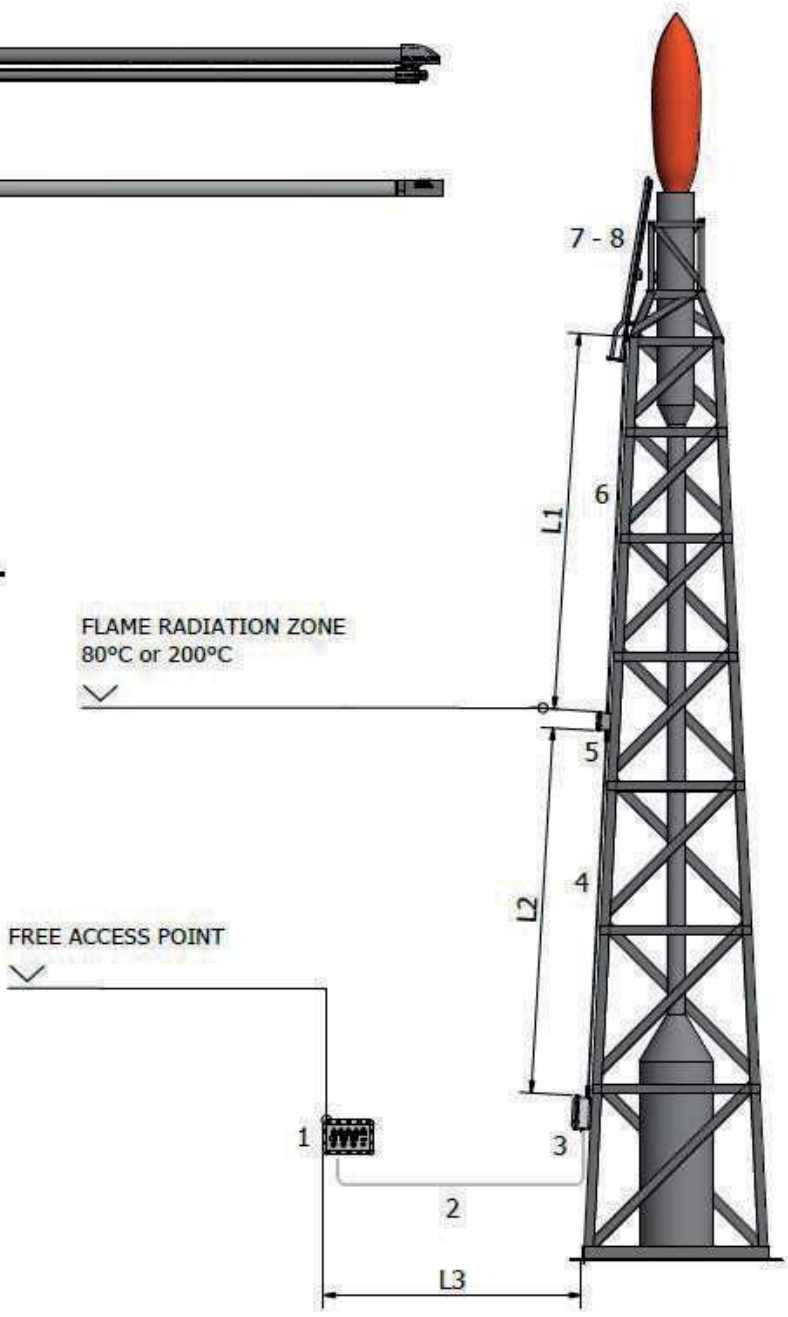
4) IGNITION CABLE
for 200°C or 80°C



3) HIGH ENERGY EXCITER XEC03H

2) MAIN POWER SUPPLY CABLE

1) Automatic RE-IGNITION
CONTROL BOX



Note 1 - The layout shown in the picture is intended to represent an installation example.
Note 2 - Components quantity for each flare stack.
Note 3 - Every length (L1, L2, L3, L4) has to be defined according to flare stack layout and construction.

Automatic RE-IGNITION Control Box

This control panel is designed with the aim to easily **automate the flare ignition process,** ensuring and surveying the flame presence.
It's not responsible to control the gas flaring time, including fuel control valves, but it instantly starts sparks generation cycle when receiving the ignition command, it detects the flame and react consequently to keep the whole process safe.

The control panel is installed in a safer area far from the flare stack, so a **remote controlled igniton** can be carried out both in **AUTOMATIC** and **MANUAL mode.**
Main features are:

- **Automatic RE-IGNITION LOOP** managed by feedback signals sensing the flame presence at the flare stack outlet.
- **Adjustable DUTY CYCLE** and **COOLING CYCLE.**
- If automation fails, it's possible to switch the ignition operation in **MANUAL mode.**

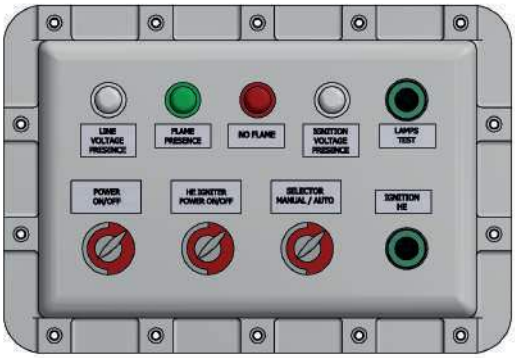
The control panel housing is available in Explosion-proof or Safe Area enclosure type, depending by hazard classification of the installation area, and accordingly certified **ATEX, IECEx , EAC, CCOE - PESO, etc.**

Technical Data

Electrical	
Input Voltage	115 - 230 Vac
Output Voltage	115 - 230 Vac
Frequency	50/60 Hz
Standard Duty Cycle	33% - 20 sec ON, 40 sec OFF, max 3 times
Standard Cooling Cycle	20 minutes OFF

Enclosure	
Protection Class	IP66
Housing type	Explosion-proof or Safe Area
Dimensions	545 x 373 x 320 mm
Weight	35 kg (if Explosion-proof)

Additional Specifications	
Input Connections	Panel power supply, H.E. exciter power supply, Flame Detector signal
Output Connections	H.E. exciter power supply



The control panel can be configured by installing on the cover the following components:

- N.1 RED LAMP, **FLAME OFF**
- N.1 GREEN LAMP, **FLAME ON**
- N.1 WHITE LAMP, **VOLTAGE PRESENCE**
- N.1 WHITE LAMP, **READY TO SPARK**
- N.1 SWITCH, **MAIN POWER SUPPLY ON/OFF**
- N.1 SWITCH, **SPARK POWER SUPPLY ON/OFF**
- N.1 SWITCH, **AUTOMATIC/MANUAL MODE SELECTION**
- N.1 PUSH BUTTON, **MANUAL IGNITION**
- N.1 PUSH BUTTON, **LAMPS TEST**

Note: Data according to example layout at page 2. Customizations are possible according to flare stack layout and construction.

High Energy Ignition Modules XEC03H

TESI ignition modules are primarily intended for installation in electrical panels to ignite **ground and elevated flares**.
The positioning of the flares typically requires the ignition units power supply **to be installed far from the ignition rod**. This often makes it difficult to generate a powerful spark, because of the lenght of the power supply cable.
Also, since flares systems are responsible for the disposal of process gas in refineries and petrochemical plants, they need to be fitted with an **extremely reliable ignition system** that ensures **instant flare ignition on demand**.

Ignition Module XEC03H is specifically designed to provide a good spark at **very long distances**, with a power cable **up to 500 m long.** The new housing is filled with resin, in order to ensure **waterproof** performance under all conditions, which is particularly important in outdoor applications.

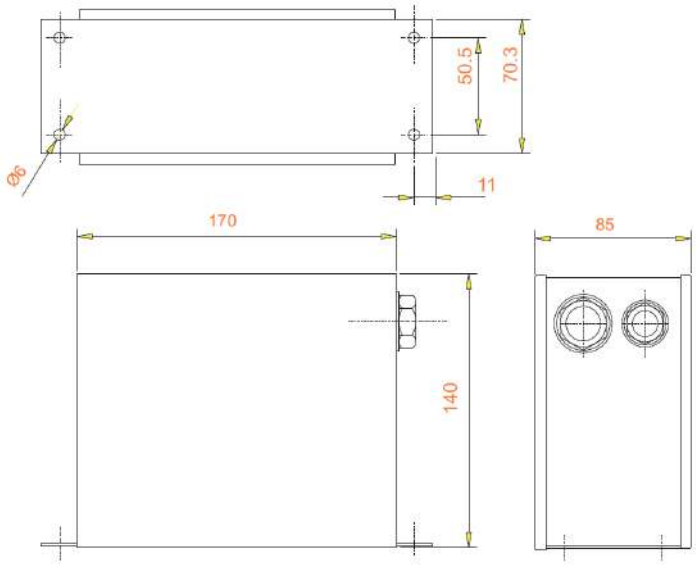
According to the areas where ignition systems shall be installed, TESI can provide Ignition Modules installed in different types of enclosures, fit to **potentially explosive atmospheres** (**ATEX classified**).

Technical Data

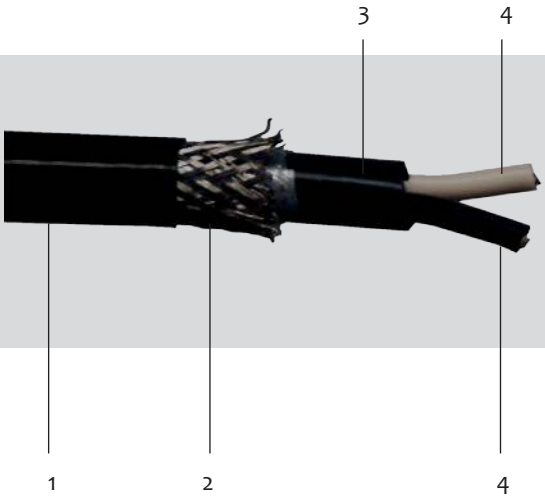
Power Supply Unit	
Input Voltage	115 - 230 Vac 50/60 Hz
Output Voltage	1000 Vdc
Output Energy (per spark)	18 J +/- 10%
Mean Spark Frequency	2 sparks / second
Input Power	110 W
Duty Cycle	33% - max spark ON 1'

Enclosure	
Protection Class	IP65
Material	Powder Coated Steel
Dimensions	170 x 140 x 85 mm
Weight	5 kg

Additional Specifications	
In-Out Connections	2 cables 1 m long
Optional Input Voltage	12/24 Vdc on request
Optional safety back-up	additional Ignition Module powered by UPS or Portable Igniter with battery re-charge by solar panels



Armoured High Energy Ignition Cable



Design

1) Silicon Rubber Jacket (black colour)
2) Armour AISI 304 strands braid
3)Silicon Rubber Filling Jacket
4) Conductors HE (white) - R (black)

Technical Data

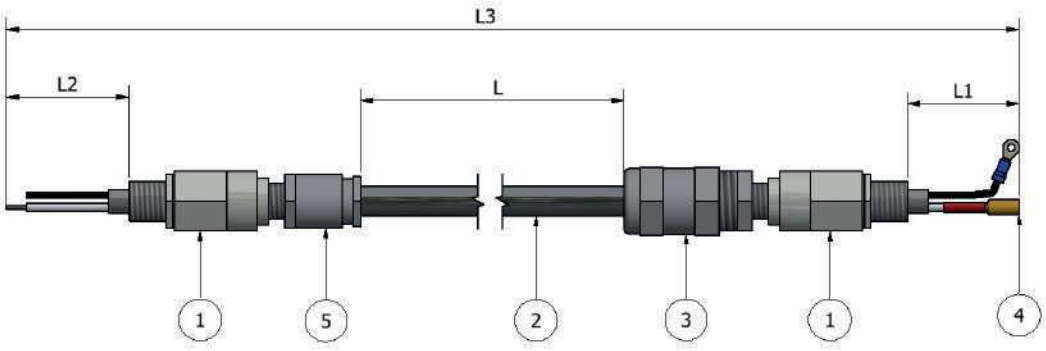
Product reference	CAR 2/560
External Diameter	15.00 mm ± 0.5 mm
Voltage Rating	4500 Vdc / 3200 Vac
Conductors	2 x 2.5 mmq stranded tin coated copper 50 x 0.25 mm, silicon rubber insulation 4.9 ± 0.1 mm, white and black colour
Temperature Range	-50°C / + 180°C for short period MAX +200°C
Flammability	according to IEC 60332-1-2
Resistance at 20°C	8.21 Ohm / Km
Reference Documents	according to EN 50363, IEC 60502, IEC 60092, EN 50525, EN 50395, EN 50396, IEC 60332-1-2, EN 50143, ASTM D624, IEC 60228, IEC 60754

Armoured High Energy Cable

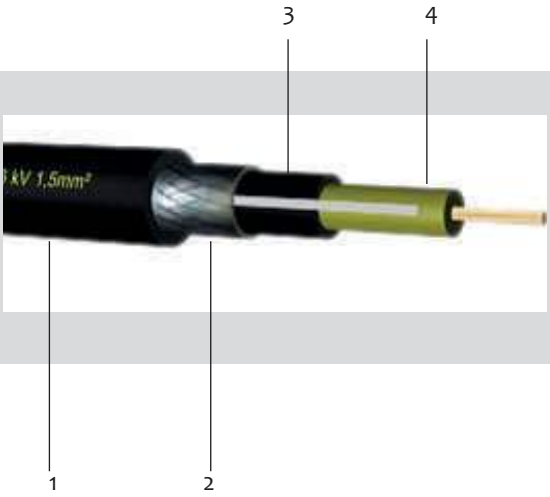
This high voltage double core armoured cable has a flat stainless steel braid (AISI 304).
It is non combustible, oil resistant, alogen free, higly flexible and suitable also for ATEX areas.

L	L1	L2	L3
+/- 50 mm	+/- 10 mm	+/- 10 mm	+/- 70 mm
on request	200 mm	400 mm	L +850 mm

PART	QUANTITY	DESCRIPTION
1	2	3 pieces union fitting 1/2" NPT (others on request)
2	1	Armoured cable CAR 2/560
3	1	PAP cable gland 1/2"
4	1	Connector TMGS
5	1	Cable gland 1/2"



Armoured High Energy Ignition Cable



Design

1) Polyvinyl chloride (PVC) Jacket (black colour)
2) Armour galvanized steel braid
3) Polyvinyl chloride (PVC) Filling Jacket
4) Conductor HE (yellow)

Technical Data

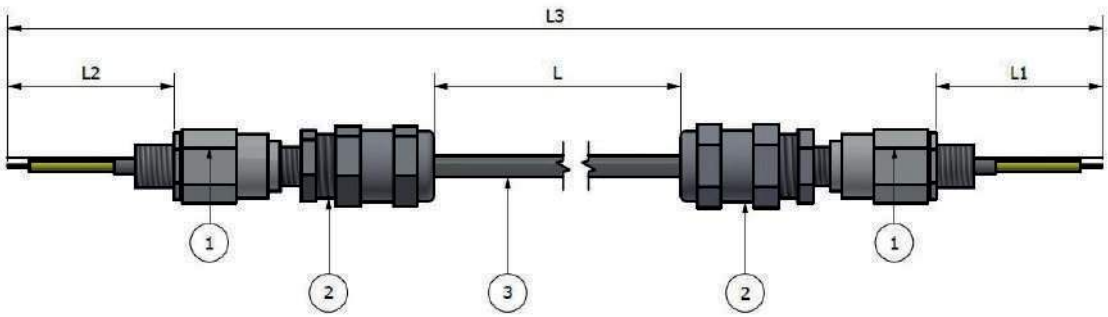
Product reference	HNOK 6000
External Diameter	10.9 mm ± 0.1 mm
Voltage Rating	6000 Vdc
Conductors	1.5 mmq stranded tin coated copper 30 x 0.25 mm, silicone ethylene propylene rubber (EPR) insulation 4.5 ± 0.1 mm (yellow colour)
Temperature Range	-40°C / + 80°C
Dielectric Strength	12 kVdc - 100%
Resistance at 20°C	13.7 Ohm / Km (IEC 60228)
Reference Documents	according to EN 50363, IEC 60502, IEC 60092, EN 50525, EN 50395, EN 50396, IEC 60332-1-2, EN 50143, ASTM D624, IEC 60228, IEC 60754

Armoured High Energy Cable

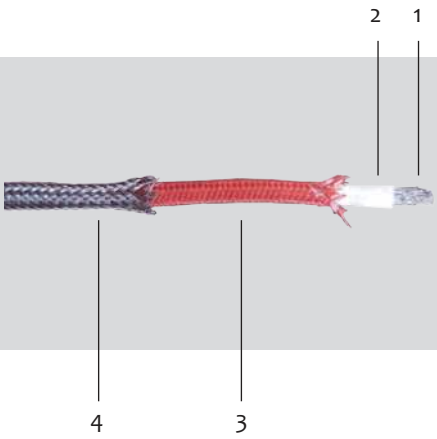
This high voltage single core armoured cable has a flat galvanized steel braid.
It is oil resistant, alogen free, higly flexible and suitable also for ATEX areas.

L	L1	L2	L3
+/- 50 mm	+/- 10 mm	+/- 10 mm	+/- 70 mm
on request	200 mm	400 mm	L +850 mm

PART	QUANTITY	DESCRIPTION
1	2	3 pieces union fitting 1/2" NPT (others on request)
2	2	PAP cable gland 1/2"
3	1	Armoured cable HNOK 6000



Armoured High Temperature Cable



Design

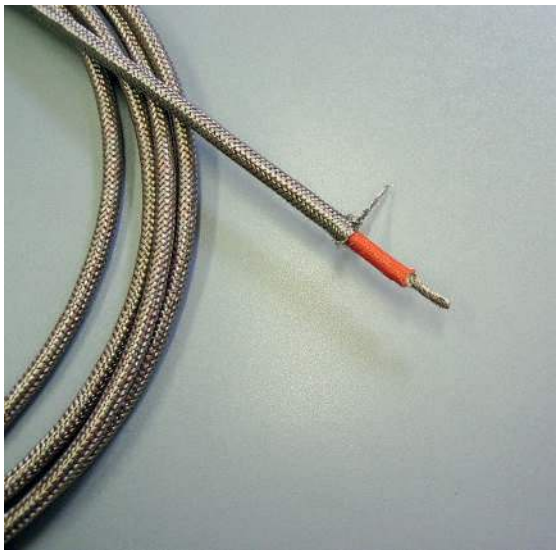
1) Conductor (Nickel plated copper)
2) Insulation (Mica tape, double layer)
3) Insulation (PTFE impregnated with glass fibre braiding 3.9 ± 0.10 mm)
4) Insulation (Stainless steel braid armour)

Armoured High Temperature Cable

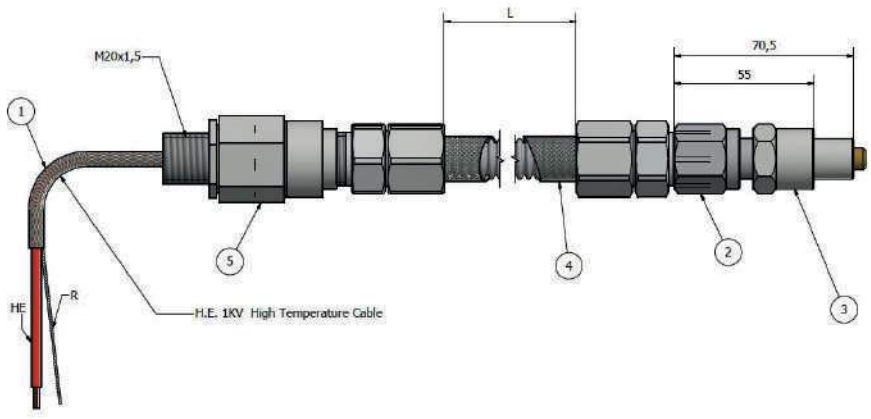
This high voltage armoured cable has a single core copper wire and flat stainless steel braid (AISI 304). It is high temperature resistant, non combustible, oil resistant, alogen free and higly flexible.

Technical Data

Product reference	RV 2.5 mmq + ARMOUR
Section	2.5 mmq
Stranding	50 x 0.25 mm
External Diameter	4.40 mm ± 0.10 mm
Voltage Rating	600 Vac / 1000 Vdc
Dielectric Strength	4000 Vdc - 100%
Resistance at 20°C	8.21 Ohm / Km
Temperature Range	Continuosly -60°C +400°C, intermittent +750°C, peak +1565°C



L	L1
+/- 50 mm	+/- 10 mm
on request	200 mm



Habia Cable:

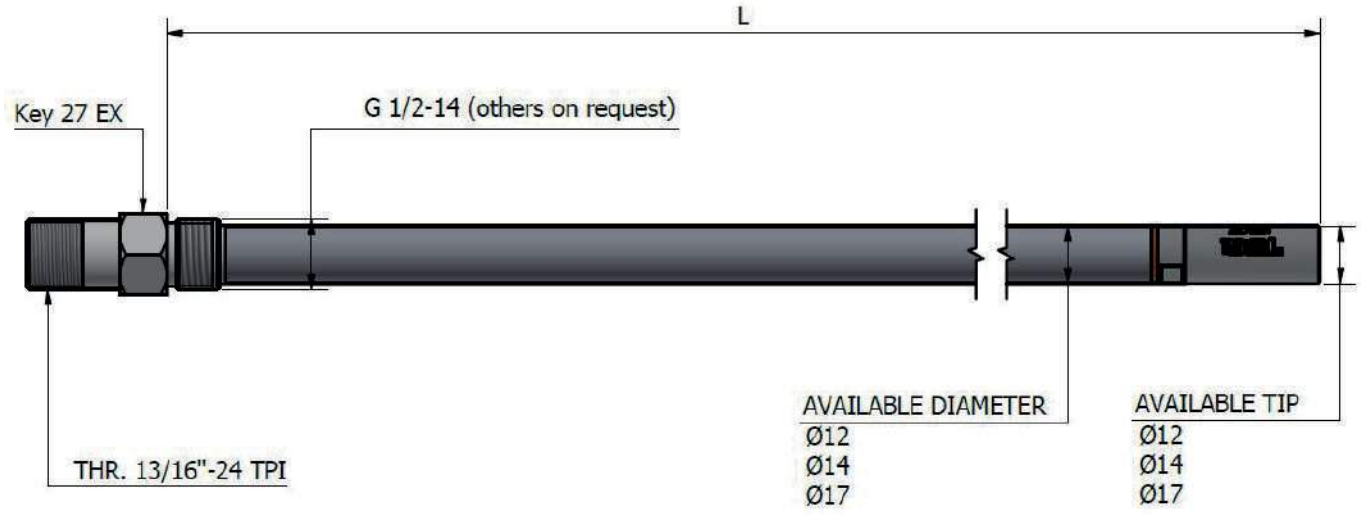
(R) return conductor
(HE) High Energy conductor

TESI product range includes a broad selection of ignition rods.
The recent and ever increasing demand for **direct ignition of main burners** led TESI to develop a dedicated range **specifically designed for overexposure to high temperatures**. This range, allowing to replace pilots, leads also to a considerable reduction in the plants manufacturing and operational costs.
In order to satisfy this operational need for direct ignition of main burners, TESI introduced a selection of special solutions alongside standard devices, that makes them suitable to ignite directly a wide range of fuels including natural gas, fuel gas, diesel, light fuel oil (LFO) and heavy fuel oil (HFO):

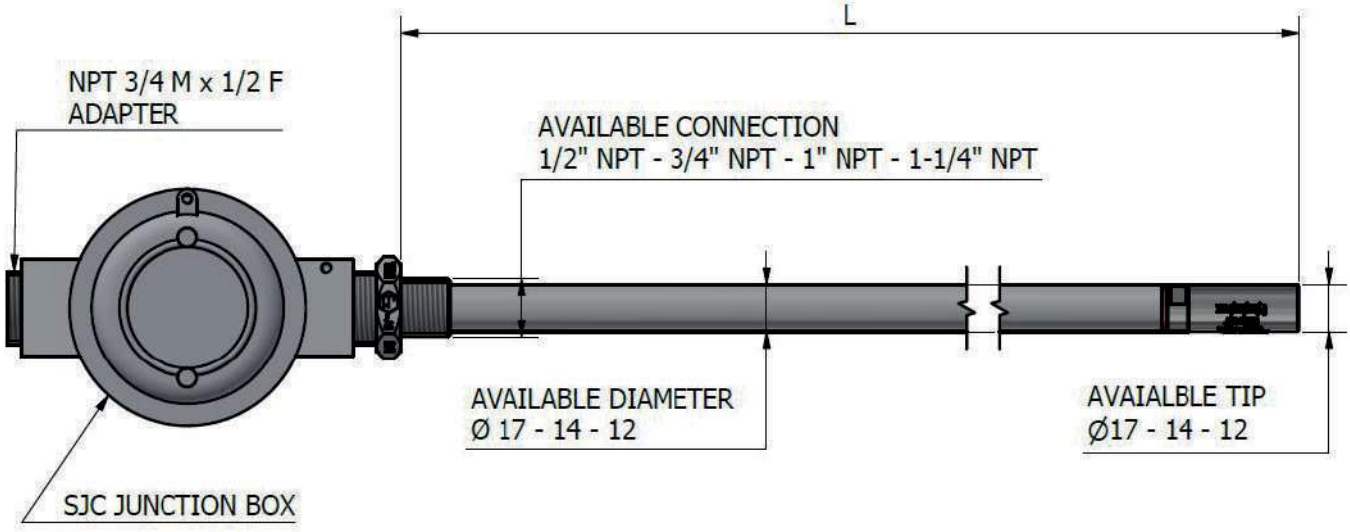
- **side or coaxial retractable prenumatic devices** protecting tips from dirt and flames once sparking is finished
- **tilting flexible rods** to follow the main burner's angle
- **guide pipes**

Our key strength is the ability to provide **CUSTOM CONFIGURATIONS.**
TESI **utmost flexibility** is highly appreciated among our customers, since it allow us to **meet their real requirements**.
TESI ignition rods range comes in three main standard diameters: 12 / 14 / 17 mm; **length and diameter of the igniter are customizable**, and various accessories are available in order to satisfy any operational need.

SAFE AREA IGNITION ROD + RAPID FITTING



EX-D IGNITION ROD + JUNCTION BOX



Note: for igniter 12 mm diameter, spark tip will be welded and not detachable

High Energy Ignition Spark Rods

High reliability
The powerful sparks ensure reliable ignition in all conditions and environments, removing any risks of failure due to contaminants or humidity.

Low maintenance
TESI self-cleaning spark tips guarantee a successful ignition while reducing maintenance efforts. The high power of the sparks cleans the surface of the tip during every ignition.
Igniters and flame ionization electrodes can be easily disassembled, without pulling out the entire pilot.

Easy tip replacement
Being spark tips screwed onto the end of the rod, they can be replaced quite easily, reconditioning the system very quickly and reducing costly downtime.

Accessories & spare parts
A wide range of accessories and spare parts on stock can be quickly supplied and allows for customization of the systems according to customer specifications.

Compact design & flexibility
Dimension and shape can be fully customized to match customer requirements.

High Energy Standard Replaceable Spark Tips

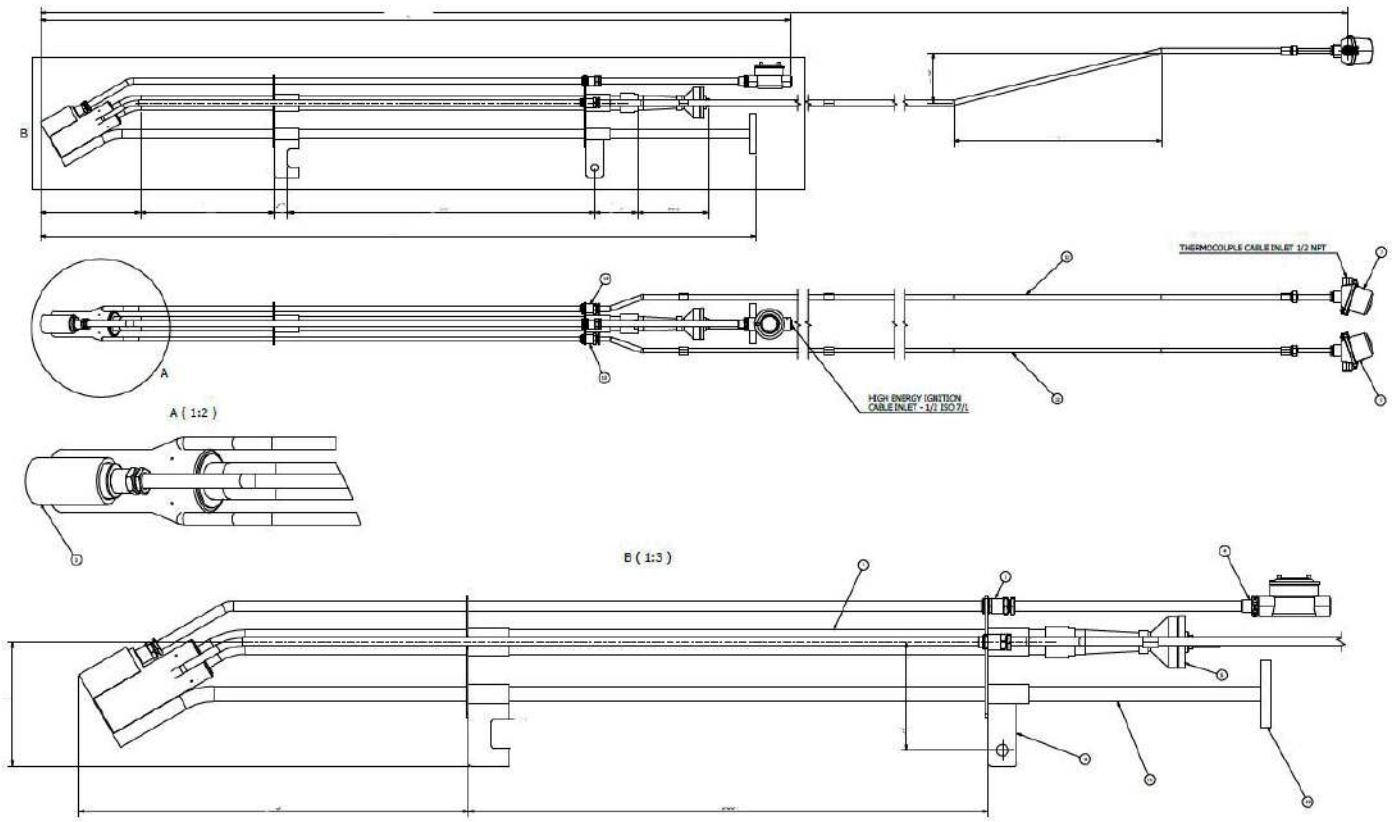
HERC 17 TIPS - EXTERNAL DIAMETER 17MM		
Code	Operating Temperature	features
HERC17	760°C (max 1000°C) 1400°F (max 1832°F)	standard
HERC17 HT	1000°C 1832°F	high temperature
HERC17 HD	760°C (max 1000°C) 1400°F (max 1832°F)	increased durability
HERC17 HD HT	1000°C 1832°F	high temperature increased durability

HEM 17 TIPS - EXTERNAL DIAMETER 17MM REDUCED TO 12MM		
Code	Operating Temperature	features
HEM17	760°C (max 1000°C) 1400°F (max 1832°F)	standard
HEM17 HT	1000°C 1832°F	high temperature

HEM 14 TIPS - EXTERNAL DIAMETER 14MM REDUCED TO 12MM		
Code	Operating Temperature	features
HEM14	760°C (max 1000°C) 1400°F (max 1832°F)	standard
HEM14 HT	1000°C 1832°F	high temperature

Ideal For:

Outdoor	Waterproof	Gas	Heavy Oil
√	√	√	√



Note: Lengths in accordance with customer requirements.

FEATURES

- **Compact design and flexibility**: dimensions and shape can be customized to meet customer's request.
- **High Voltage Electrode** or **High Energy Igniter** offering the most reliable and cost-effective ignition, not affected by humidity, water and dirt.
- **FFG** (Flame Front Generator) retrofit and upgrade.
- **Integrated flame detection** for automatic re-ignition cycle.
- **Forced or induced draft** combustion air flow configuration.

TECHNICAL DATA

REFERENCE CODE	TG40/L ...*
TUBE OUTER DIAMETER	42,2 mm (1" 1/4)
OUTLET DESIGN	Straight or angled pilot burner
FFG CONNECTION	threaded or flanged according to customer spec.
GAS CONNECTION	G 3/8 (others on request)
AIR FLOW CONF.	Induced draft (Venturi)
GAS PRESSURE	1,8 ÷ 2,5 Nm^3/h
GAS FLOW RATE	0,2 ÷ 0,4 atm
IGNITION ROD	High Energy igniter up to Ø17 mm
FLAME DETECTION	Redundant thermocouples

* Tube Length [mm] on demand

ITALY
TESI IGNITERS S.r.l.
Headquarters
Via Piave, 20/13
20071 Vermezzo con Zelo (MI) - ITALY
T +39 02 9440501

CHINA
DAEMAR Heating Technology Co. Ltd
Unit 501, Building 1
Jia 12 Jiuxianqiao Road
Chaoyang District, Beijing - CHINA
M +86 13 911468400
M +86 13 426335768

USA
TESI Group, LLC
10617 Jefferson Chemical Rd
Conroe, TX 77301 - USA
T +1 936 441 5678
F +1 936 756 5566

UAE
TESI Middle East
Plot 1K-20#W-1 | PO Box 50865
Hamriyah Free Zone, Sharjah - UAE
T +971 6 5667114
F +971 6 5668115
M +971 543 733958

info@tesigniters.com
www.tesigroup.com

TESI IGNITERS