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Wired Communication in Confined Space

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Wired communication in Confined Space

What is a confined space?

1 - A **confined space** is a space that was not designed as a work place but can be occupied to undertake :

- maintenance work
- cleaning work
- inspections …

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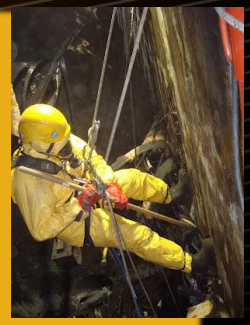
What is a confined space?

2 - A **confined space** can be an area difficult to access because of its location, its size or resources required to enter and exit



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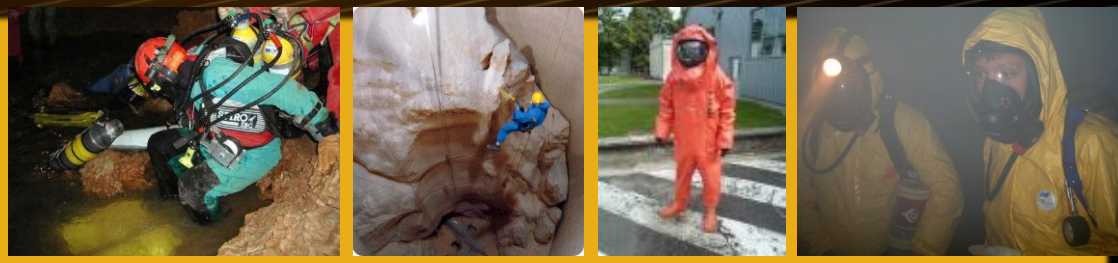
What is a confined space?

3 - A **confined space** can be a space where the atmosphere may endanger the health or safety of the operator who enters it because:

- Insufficient ventilation
- Materials or substances contained in the confined area
- Its design, location or equipment
- The nature of work



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Some examples of Confined Spaces

Tunnels

Large piping

Silos

Decontamination works

Wells

Sewers

Wagon or truck

Tanks

Tanks

Hopper

Ship bilge

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Multiple applications or precautions are required to prevent risks to entrants in **confined spaces**:

- A Permit to Entry
- Personnel training
- Personal protective Equipment
- Stringent safety precautions
- Emergency Rescue and evacuation procedures
- **Communication**

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What are the means of communication in confined spaces?

The configuration of most confined spaces, noise and personal protective equipment, limits adequate communication between the safety attendant outside and personnel in the confined space, especially in rescue operations.

- **Communication by personal radio's often impossible**
- **Communication by personal radios are not hands free**
- **Verbal communication limited by the SCBA.**
- **Communication difficult due to ambiant noise**

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LEADER Com : The only solution to enable communication in FULL DUPLEX where wireless systems don’t work!

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OVERVIEW OF EQUIPMENT

Inter-Operability Interface to allow the isolated interconnection of the LEADER Com with another communication system.

Communication Rope lifeline incorporating a communication cable

Headset with throat mic connected to its **interface**

Headset with boom mic connected to its **interface**

Junction box

Communication Cables with or without reel

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PRINCIPLE

- **An entrant performs the work in a confined space and communicates via:**
  - Simple cabled communication option: **Hard Line system**
  - Or by using a rope lifeline and a wired communication: **Life Line system that integrates the two functions in the rope**
  - Speaking with colleagues within the confined space
- **An attendant to communicate with.**
  He ensures the safety of the entrants and communicates with them to facilitate the work or progression.

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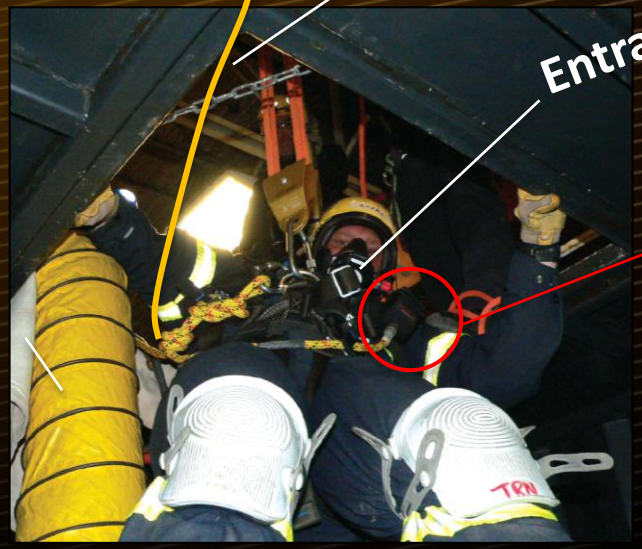
PRINCIPLE OPERATING



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BASIC KIT
With Hard Line Communication System

Externe Coordinator Headset

<

Master interface

>

Communication cable

<

Slave interface

>

Entrant Headset

- A resistant operational communication cable up to 4.8 km
- For communication situations in confined spaces requiring no lifeline

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BASIC KIT

LEADER Com Life Line Communication System

Externe coordinator Headset

<

Master Interface

<

Communication rope

<

Slave Interface

<

Entrant Headset

- A communication rope (lifeline incorporating a communication cable)
- For communication situations in confined spaces requiring a lifeline (avoids an additional cable or rope)

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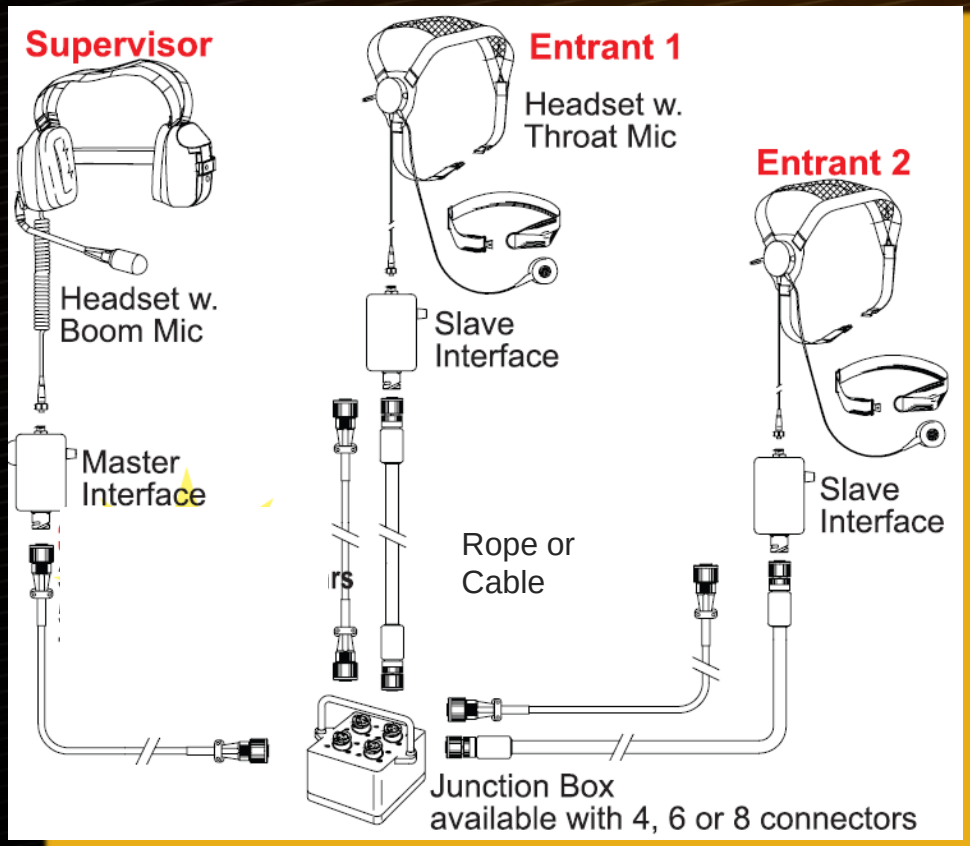
EXAMPLE OF A 3 PEOPLE CONFIGURATION WITH A JUNCTION BOX



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The equipment

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A RANGE OF HEADSETS

1. **Lightweight headset with single sided, and noise cancelling boom mic.**
2. **Noise attenuating headset with dual sided and noise cancelling Electret Boom mic.**
3. **Lightweight single sided headset with mesh headstrap and noise rejecting throat mic.**
4. **Lightweight single sided watertight headset with mesh headstrap and noise cancelling throat mic.**
5. **Lightweight dual sided watertight headset with mesh headstrap and noise cancelling throat microphone**

3, 4, 5 Can be used with SCBA

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THE INTERFACES

Interfaces

Master

Slave

Master and Slave interfaces

- **Interface for the Headset and communication line**
- **Master interface feeds the system from 3 AA batteries. Allows up 140h of communication to 3 team members, 82h to 5 and 58h to 7.**
- **Each team member has an individual volume control on his interface** (master and slave)
- **Works hands-free**
- The sound is always active (No PTT – Push to Talk)
- **Two or more master interfaces can be used silmutaneously.** This function allows for a redundant power supply to ensure continues power, or to provide power for distances greater than 4.8km

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CABLE & COMMUNICATION ROPE

Possible length: up to 4.8 km per person connected!

Hard Line

Resistant simple cable , or

Resistant cable and tested in explosive areas in mines (**MSHA and Atex M1 certified**)

Life Line

Polyester rope incorporating a communication cable. Offering ALL the same working properties of a conventional climbing rope (Warranty: communication cable will not break before the rope breaks).

4,900 kg (10,800 lbs) load

Can be used as a primary or secondary lifeline

6 colors available (other on request)

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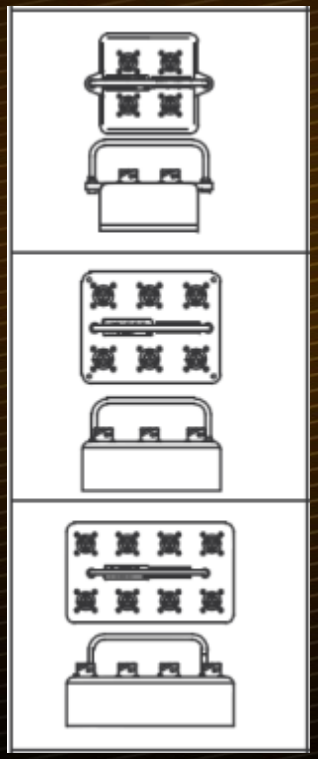
JUNCTION BOXES



- Four, Six or Eight way splitter to interface all users onto the same system
- Up to 10 people simultaneously connected
- Military waterproof connectors
- Waterproof junction box
- Lightweight and shockproof

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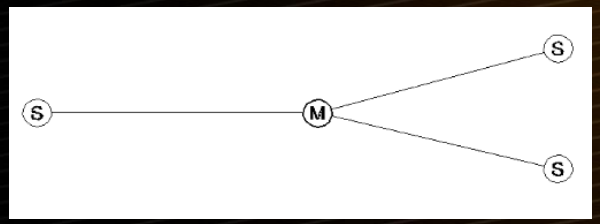
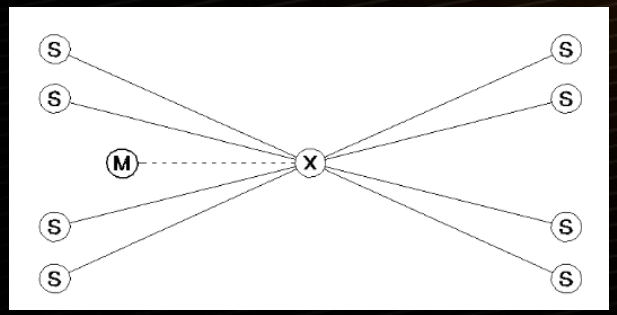
EXAMPLES OF CONFIGURATIONS WITH JUNCTION BOX

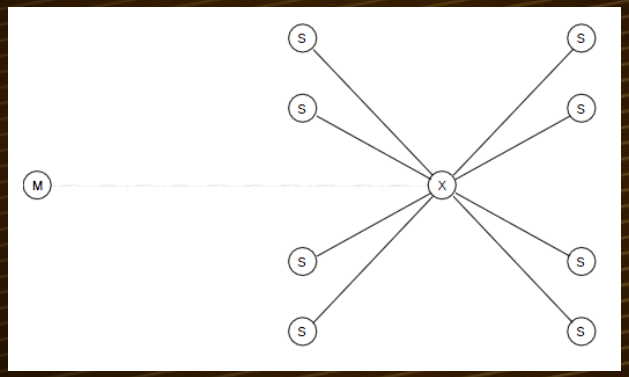
M Master Interface

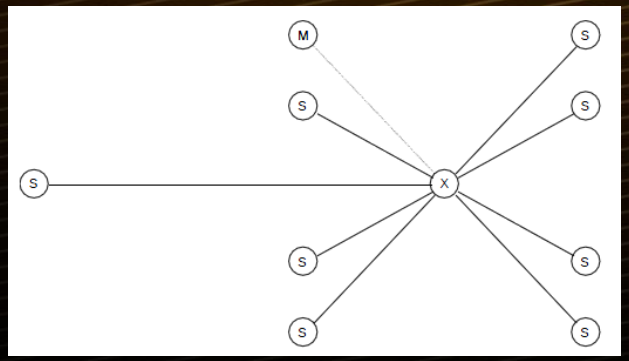
S Slave Interface

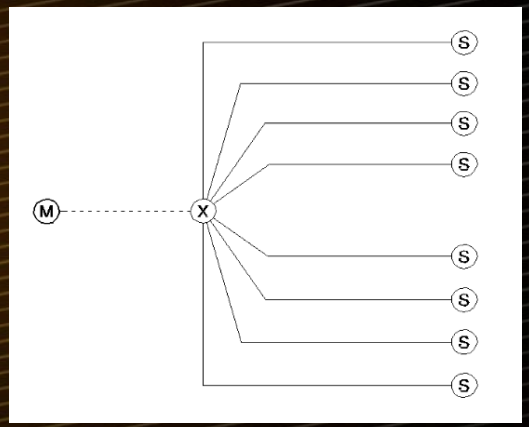
X Junction Box











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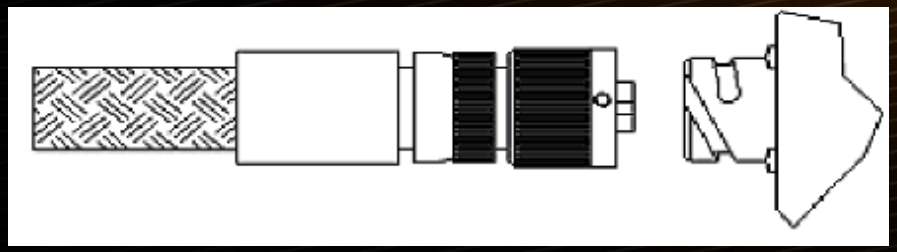
CONNECTORS



- Ropes and cables are equipped only with male connectors to prevent incorrect connection
- Military connectors
  - Water resistant to 10 m depth
  - Robust and easy to connect
  - Support a load of 50 kg
  - Mounted on all cables and ropes:
    Hard Line
    Life Line

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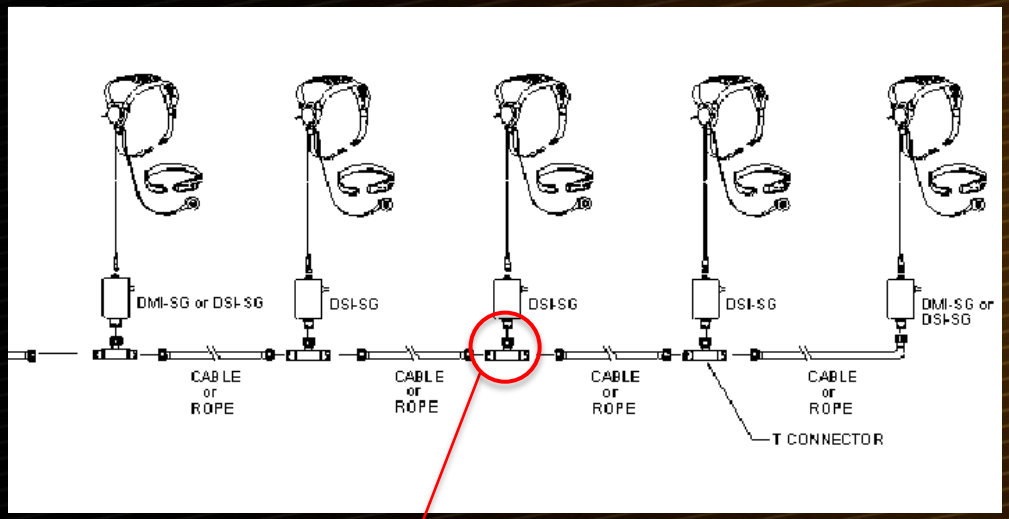
EXAMPLE OF USE OF T-CONNECTORS



- T-connectors allow simple connections in “in line“ configurations
- Avoid the need for a junction box
- Allow users to connect / disconnect without affecting communications
- Reduces the amount of cables. One single cable ‘daisy-chained’
- Waterproof to 10 m depth
- Lightweight and efficient

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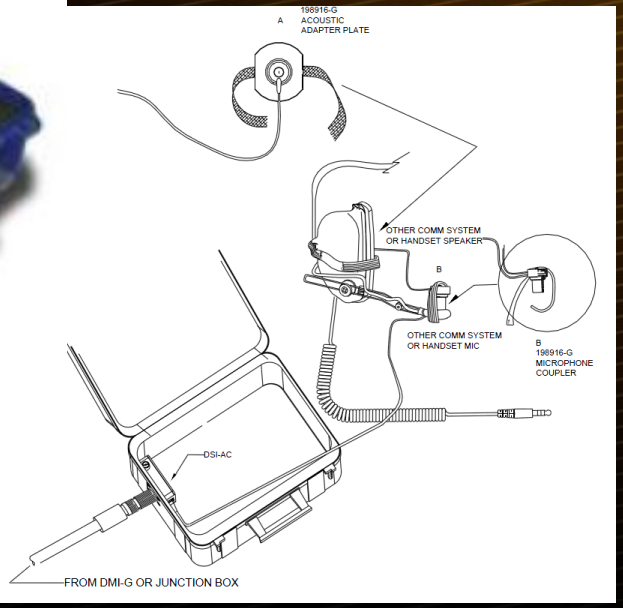
INTEROPERABILITY SYSTEM

- **Allows to inter-connect LEADER Com to another existing communication system** (other wired system or mobile phone, or radio ...)
- **Allows the LEADER Com to interface with equipment from other manufacturers.**



By attaching a speaker and microphone to the headset of another communication system, and placing this in specially designed case allows a smooth interface , avoids ambient noise interference and protects the system.

**** This is 'The interoperability system'.**

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THE BENEFITS OVER COMPETITORS

A real plus: the rope communication keeps to a minimum the amount of ropes and cables needed

Practical: the junction box down in the confined space. Contrary to the competition, it does not include batteries. It does not require management by the supervisor on the outside and allows to minimise entry communications to a single cable / rope instead of several.

Optimal: each team sets his volume, can communicate for 140h at 3 with a cable length of 4.8 km!

Shrewd: the T connector avoids bulky junctions.

Interesting: interoperability allows to continue to use existing equipment

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CERTIFICATIONS

- **CE certified**
- **Atex and M1 mining Certification**: to come in Q4 2012
- **NFPA certified**: CE equivalence in the USA
- **UL certified**: International reference for industrial users safety
- **CSA certified**: Certifies products for the USA and Canada
- **MSHA certified - Mine Safety and Health Administration (USA)**: Tested in mines with methane atmosphere loaded
- **RoHS certified**: Industrial European standard banning the use of dangerous substances in electric and electronic equipment development

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Examples of kits

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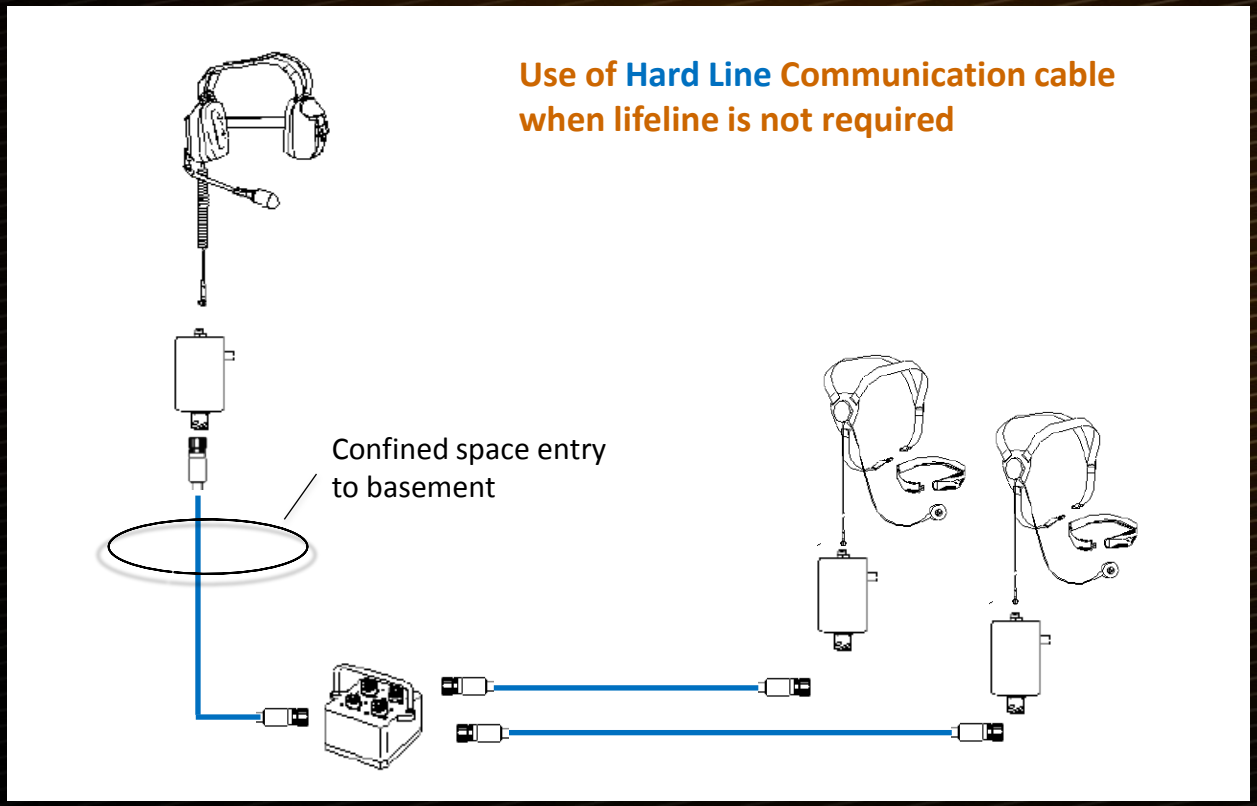
EXAMPLE OF KIT: 1 attendant + 2 entrants



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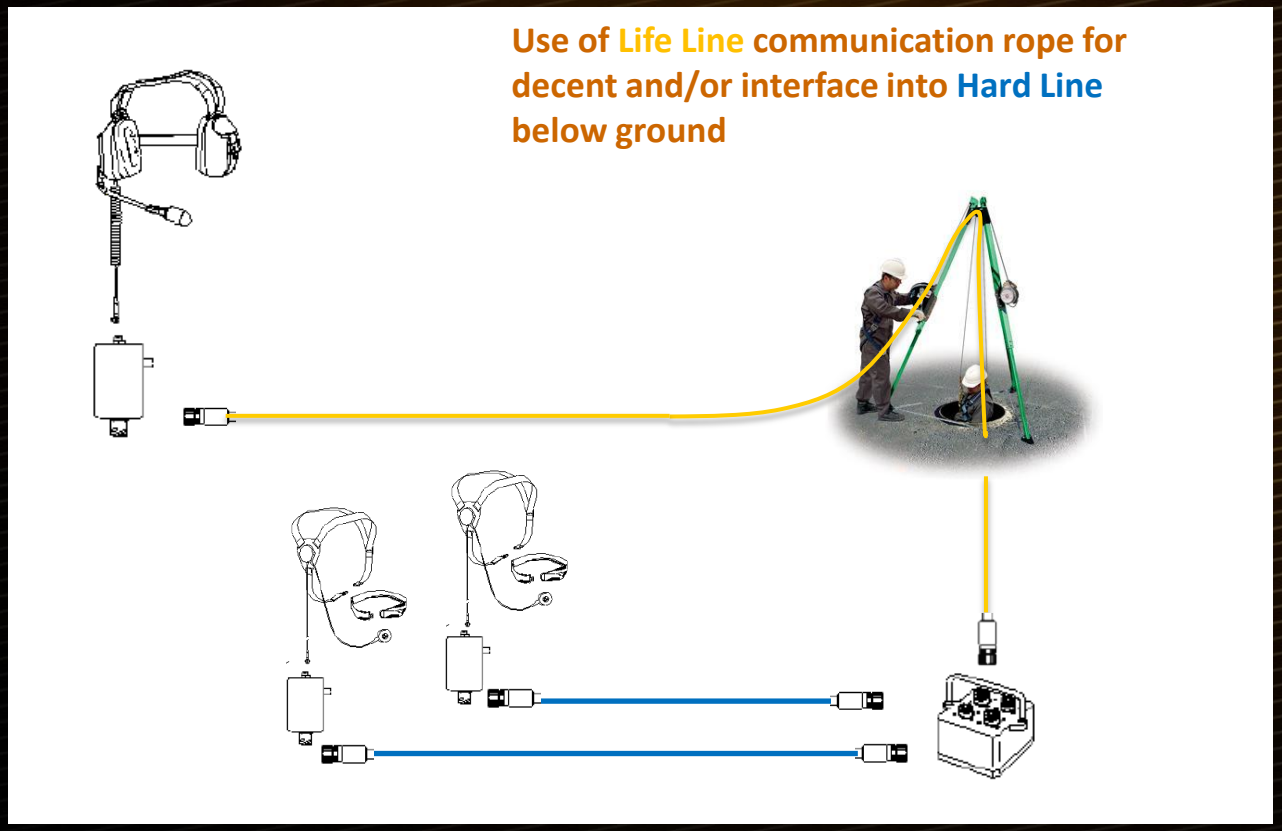
EXAMPLE OF KIT: 1 attendant + 2 entrants



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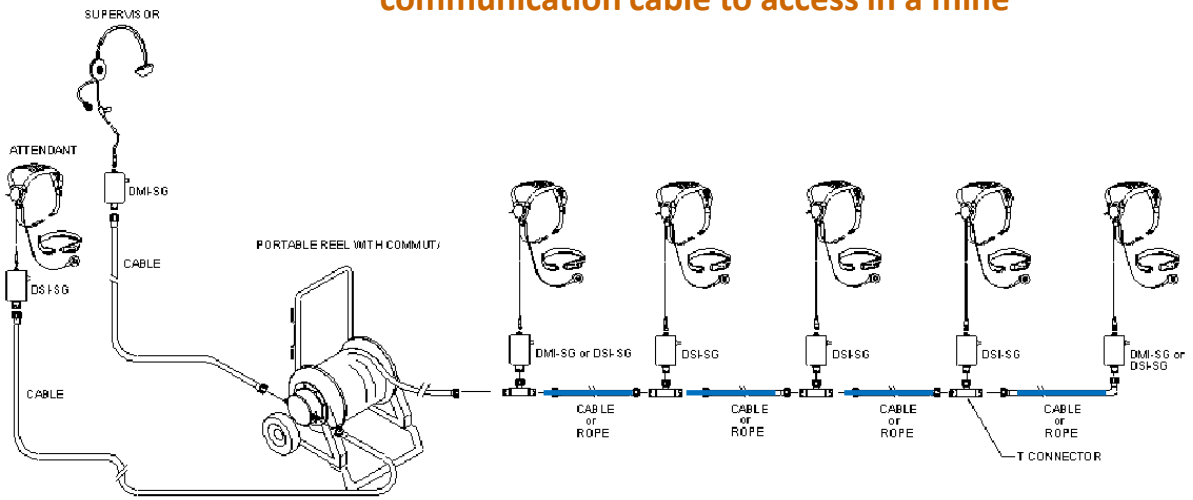
EXAMPLE OF KIT: 2 attendants + 5 entrants

Use of the intrinsically safe Hard Line communication cable to access in a mine



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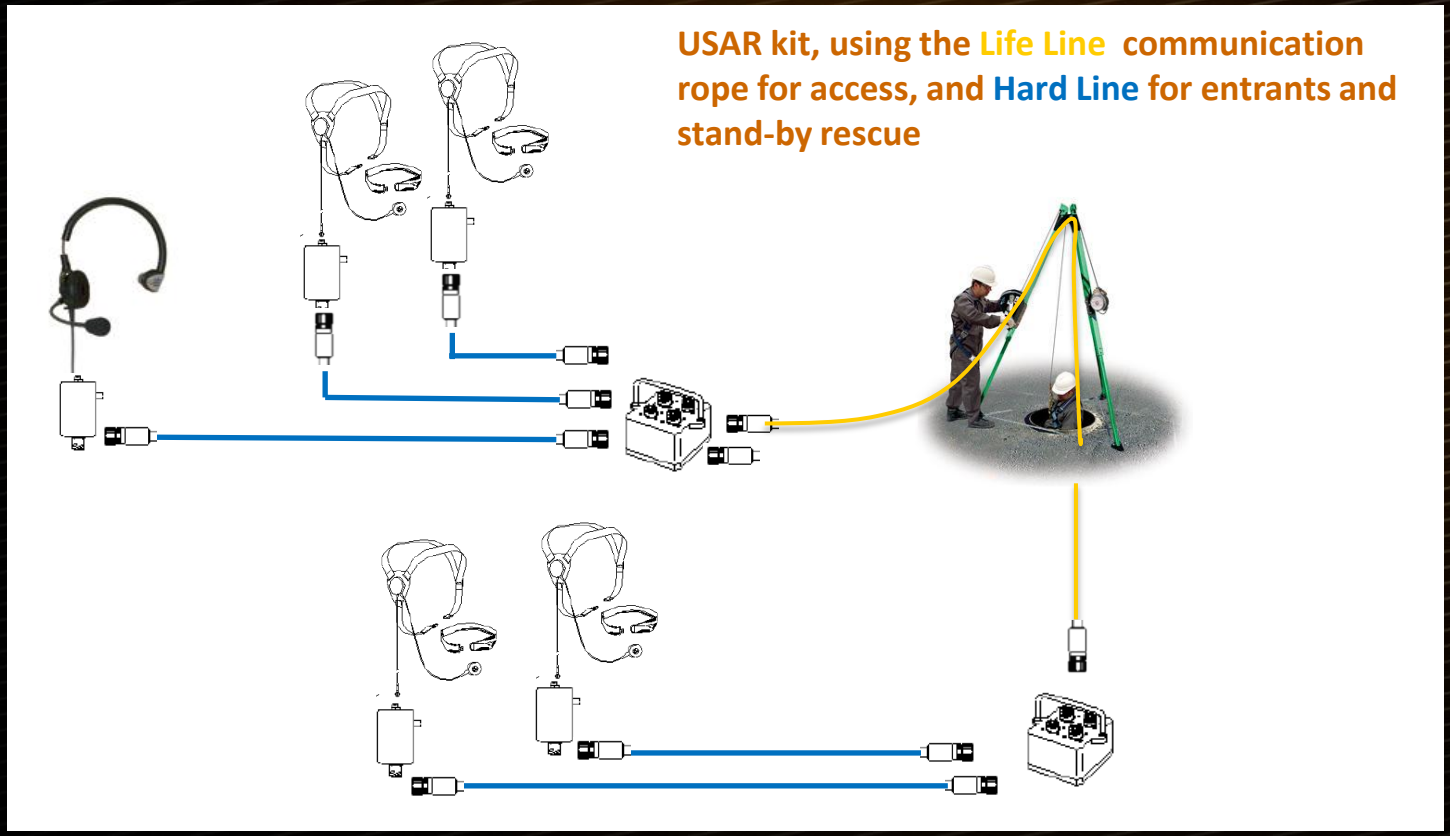
EXAMPLE OF KIT: 1 attendant + 2 entrants on stand by + 2 entrants



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Summary

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THE STRENGTHS OF LEADER Com ?

- **Only solution where wireless systems do not work! Or Will not work**
- A **communication rope** which simplifies Entry
- Up to **10 peoples simultaneously connected** in full duplex
- **Hands free, it works up to 140h for 3 users with 4.8 km of cable/rope per connected person**
- **Only equipment already certified MSHA and Atex (M1 – for Mines use - in Q4 2012)**
- **Waterproof** and with military connectors and can be used with SCBA
- Practical, **Modular**, Adaptable and Extensionable,
- Equipment **required to increase safety** in confined spaces

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WHY ACQUIRE LEADER Com ?

- For reduction of risks in Confined Space Entry,
- To break the isolation of workers
- To reduce the stress
- To optimize the Working entry time
- To reinforce the security
- To improve reactivity

www.leader-group.eu