MODERNIZED DEMOLITION INITIATORS

CAPABILITIES

- **Standard military demolition missions**
- **New capability of priming buried charges & controlling simultaneous initiations**
- **Quarrying (with special application)**
- **Instantaneous or delay initiation**
- **Eliminates accidental initiations from static, transmitters, or electrical discharge**
- **Factory sealed ends keeps items (M11/M16/M151/M152/M12/M13) moisture proof for use up to 70 ft. (M14/M18= 3ft.) underwater, with no requirement for underwater igniting**
- **Hybrid (two types of firing systems)**
  - **MDI Stand alone**
  - **MDI with Detonating Cord**

CONSIDERATIONS

- ***MDI DOES NOT CHANGE CHARGE EMPLACEMENT OR SETUP***

- ***MDI has 3 PARTS:***
  - ***-Priming System***
  - ***-Transmission Line***
  - ***-Initiation System***

COMPONENTS

M12/M13
Blasting Cap Assy

M11/M16
Blasting Cap Assy

M151/M152
Booster Demo
Charge

M9 Holder

M14/M18
Time Fuse

M15 Blasting Cap
Assy

M81
Igniter

M81 - IGNITER

- *Same basic exterior appearance as M60 except 2 plugs vs. 1*
- *The addition of the shipping plug (soft plug)*

M81 - IGNITER
W/ SHOCK TUBE CAPABILITY

- *To Ignite Time Blasting Fuse (M14/M18)*
- *To Ignite Shock Tube (M12/M13/M11/M16)*
- *Hold with Leather Palmed Glove (Optional)*

REMINDER **"THE CURRENT M60 IGNITER WILL NOT RELIABLY IGNITE SHOCK TUBE"**

USING the M81 IGNITER with SHOCK TUBE

- Loosen collar 3-4 turns, then remove green solid plug
- Insert CUT shock tube end approx 7/8”, tighten collar
- Lightly tug on shock tube, making sure it’s secure
- Remove safety pin, pull ring sharply

SHOCK TUBE DESCRIPTION (M11,M16,M12,M13,M15)

- Shock tube is a 2 piece plastic tube (one inside the other)

- Inner wall contains a dusting of explosive (90% HMX & 10% aluminum powder)

- Once ignited, explosive velocity travels at 6500 fps inside tube, tube doesn't explode change shape or color

- Expended shock tube is a non-recyclable plastic which may be disposed of in an approved landfill. Blasting cap residue is considered hazardous waste and MUST be removed from shock tube and disposed of IAW local policy

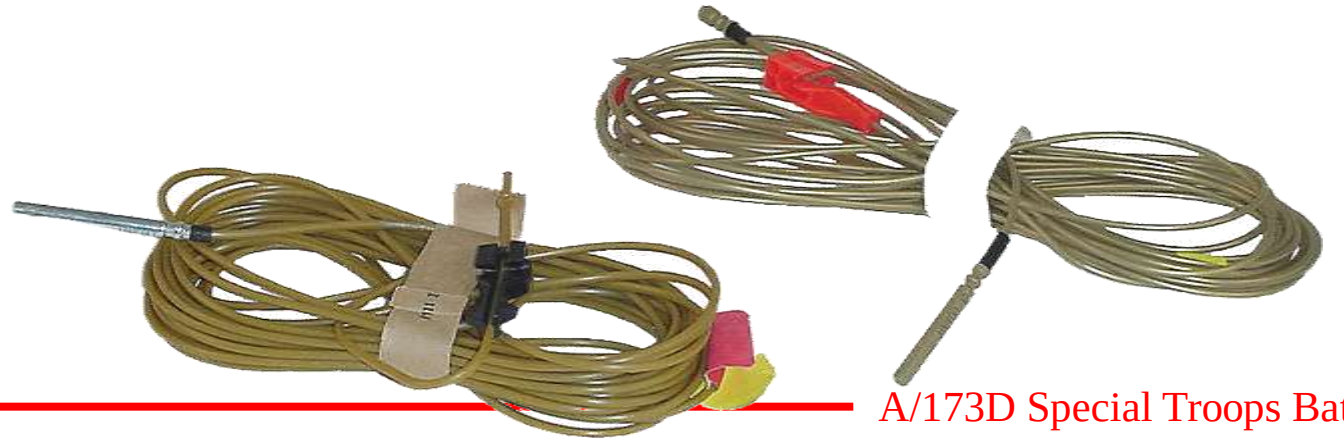
- When cutting all shock tube, use a sharp cutting item (knife, razor blade) a make a straight/square cut. NEVER use crimpers to cut, this will flatten the shock tube

M11 - NON ELECTRIC BLASTING CAP

- Used as a branch line to a primed charge or as a transmission line

- Can ignite M11/M16, M12/M13, M151/M152 or detonating cord

- Has a high strength cap factory crimped to a 30 ft. length of shock tube



M11 DESCRIPTION & PACKAGING

- **2 FLAGS**
  - **1 Yellow *(Two Meters From Cap)***
  - **1 Red *(One Meter From Cap)***

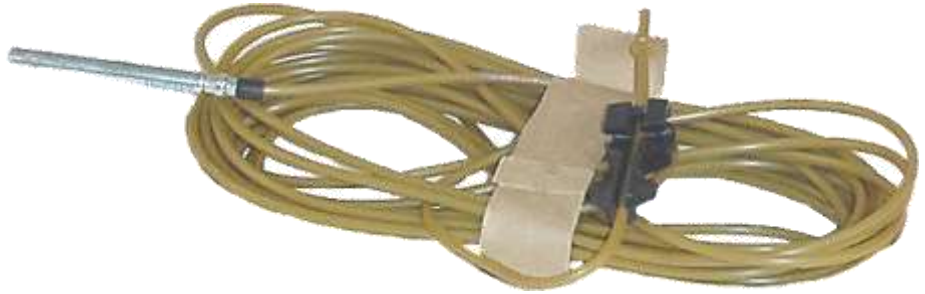
(Note - newer items may not have flags)

- **J - HOOK CONNECTOR**
  - **Used to connect M11 to detonating cord**

- **PACKAGING**
  - **Inner pack varies from different manufacturers**
  - **Over pack**
  - **Quantity - 60 per crate**

M16 – NON ELECTRIC BLASTING CAP

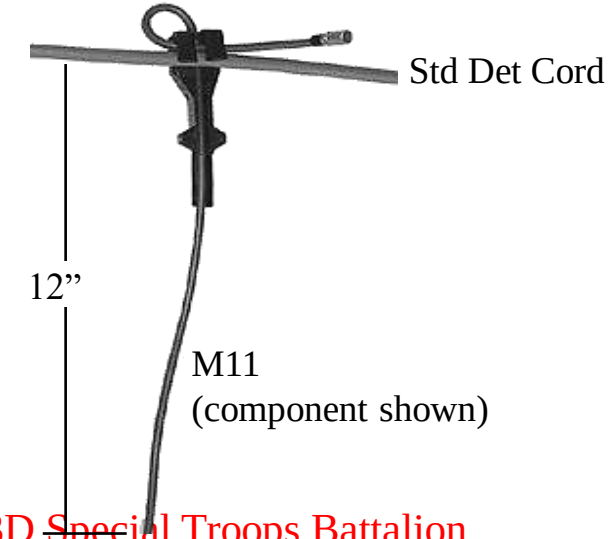
- Same physical & operational characteristics as the M11 only with 10 ft. of shock tube



- Quantity - 60 per crate (same as M11)

M11/M16 ISSUES

- ***Do Not Secure Det Cord and Shock Tube in the Same Holder***
- ***Do Not Hold Shock Tube When Firing***
- ***Use J - Hook to Secure to Std. Det Cord & Make Sure (M11/M16/M151/M152) Is Straight For 1 ft. Down Line Of 90° Angle On Std Det Cord***
- ***Crimped and Sealed End***
  - ***Moisture Resistant***
  - ***No Need to Cut Away Excess***
  - ***Provides Increased Reliability***



NEW TIME FUSE DESCRIPTION (M14,M18)

- MDI time fuse components are basically the M700 time fuse, except having a cap crimped on one end and other end is factory sealed

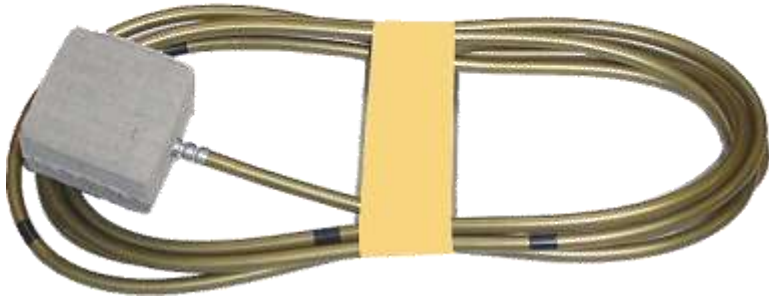
- Burn rates are different due to the different vendors who make the time fuse

- Manufacturer controls the total length by calibrating the burn time at sea level with a temperature of 125° F, user should note at higher elevation/ lower temp burn time will increase

- Time markings now equal 1 minute between each mark

- If a specific burn time is required, use a second item from the same lot to determine length of component to meet specific time OR use an M18 if available

M14 - NONELECTRIC BLASTING CAP, DELAY



- Used to detonate explosives
- Can Ignite shock tube
- Provide a standoff
- 5 minute burn time
(each mark = 1 minute)
- Has a high strength cap
factory crimped on one end,
moisture proof plug on other end
- Overall length of item may vary

M14 PACKAGING

- **Individually wrapped or sealed**
- **Inner & Outer pack**
- **Quantities - 40 per crate**

M18 - NONELECTRIC BLASTING CAP, DELAY

- Same physical & operational characteristics as the M14 only with a 20 minute burn time (each mark still equals 1 minute)

- Quantity - 40 per crate (same as the M14) pkg 2 per clear barrier bag

LOWER STRENGTH DET CORD DESCRIPTION (M151,M152)

- Black fiber lower strength det. cord containing 5 - 7.5 gr/ft, with environmental seal on one end and a booster containing 0.87 - 1.05 gms of PETN, crimped on the other end

- Is smaller in diameter than std det. cord

- Each component has a white pentagonal shape ID tag on both ends of assembly marked M151 or M152 to distinguish it from other MDI components

- Has same philosophy as std det. cord (can't cross other MDI items, item can't be coiled up, etc.)

- Not approved for 1.4S, but can be transported with all other MDI items

M151 - NONELECTRIC BOOSTER

- Used as a branch line to a primed charge (above or below ground)
- Can ignite M11/M16, M12/M13, M151/M152 or detonating cord
- Booster has the same strength as a #12 comm. cap (M11), however it contains only secondary explosives (PETN), no primary and will fit into std military cap wells

- Is factory crimped to a 10 ft. length of lower strength detonating cord (19500 fps vs. 25000 fps)
- Use to control simultaneous charge detonation (e.g. bridge demolitions)

M151 DESCRIPTION & PACKAGING

- 2 ID FLAGS
  - One at each end of component
- DET CORD CLIP
  - Used to connect component to detonating cord
- PACKAGING
  - 20 per sub-pack, 6 sub-packs per over-pack
  - Quantity - 120 per crate

M152 - NONELECTRIC BOOSTER

- Same physical & operational characteristics as the M151 only with 30 ft. of low strength detonating cord

- Quantity - 60 per crate (20/ sub-pack, 3 sub-packs/ over-pack)

M151/M152 ISSUES

- *Never Ignite M151/M152 directly from M81 Igniter*
- *Do Not Secure M151/M152 and Shock Tube in the Same Holder*
- *M151/M152 Can Cross itself, but Cannot Cross Other MDI Components*
- *Use to pre-prime charges*
- *Use Det cord clip to Secure to Std Det. Cord*
- *Plugged and Sealed End*
  - *Moisture Resistant*
  - *No Need to Cut Away Excess*
  - *Proves Increased Reliability*

M21 & M23

- Replaces the existing M12 & M13
- Now has a HIGH strength blasting cap (same as the M11)
- Factory crimped to 500’ or 1000’ of mini tube which is shock tube reduced (wt. & size) by approx 40%
- Has an in-line initiator (similar to an M81)

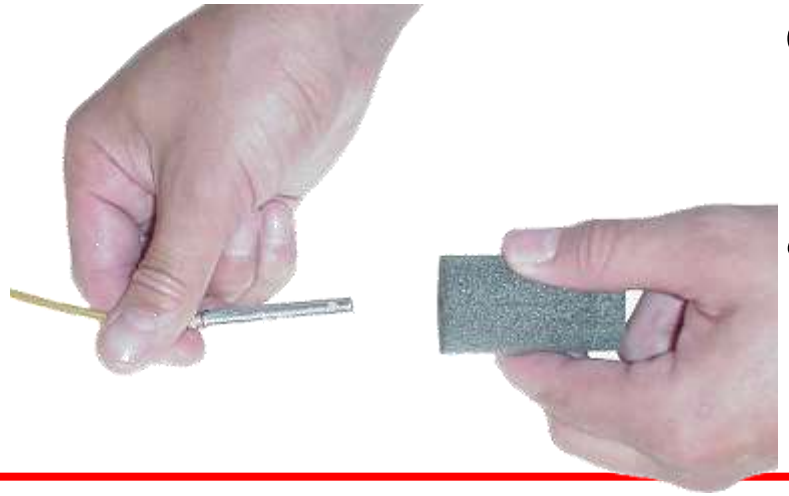
M21 500 ft. Mini Tube

M23 1000 ft. Mini Tube

M19

- Has TWO high strength blasting cap (same as the M11)
- Factory crimped to 200’ of DUAL mini tube.
- Has DUAL in-line initiator (similar M81)
- Primary use is for Urban Ops, Dual Priming, Dual Initiation

FOAM PROTECTORS



- Used to protect blasting caps/boosters outside their original pkg
- Protectors will be packaged with each M11,M16,M14,M18 M151 & M152 over-pack and quantities will equal 1 for 1
- Push cap/booster into hole at one end of protector

M9 - HOLDER
USES / PACKAGING

USES:

- Secures blasting cap/booster (small flap end)
- Secure shock tube/lower strength det cord to the blasting cap/booster (larger flap)
- Can secure up to five shock tube or lower strength det. cord components for initiation
- Can secure one strand of std det. cord

PACKAGING:

- Cardboard box
- Quantity - 500 per box

M9 ISSUES

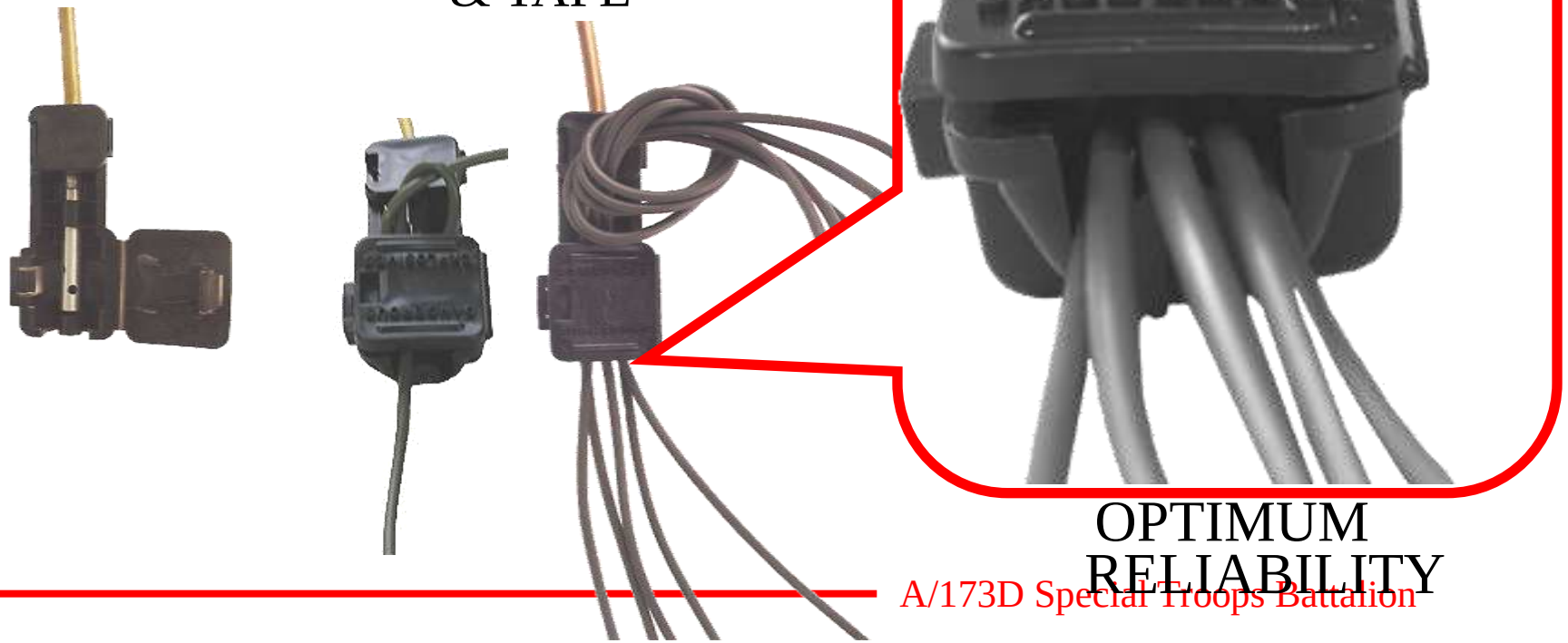
- **Small flap secures high strength cap/booster (M11, M14, M16, M18, M151 & M152)**
- **Large flap secures up to 5 shock tube/low strength det. cord components or 1 strand of std det.cord**
- **Secure large flap with tape**
- ***NOT REUSABLE* *(when used with live demo)***
- **Unit must request enough to support both training and live fire missions**

USING the M9 HOLDER

- M9 can be used with the M11, M16, M14, M18, M151, M152 or applicable inert items

Insert cap/booster in holder, secure small flap

1-5 shock tubes or M151/M152, tie in a knot, secure large flap & TAPE



OPTIMUM RELIABILITY

M12 - NONELECTRIC BLASTING CAP

- Used as a transmission line to initiate another M12/M13, M11/M16 or M151/M152

- Has a low strength cap (in it's own holder) factory crimped to a 500 ft length of shock tube on a spool

M12 PACKAGING

- **500 ft per spool**
- **2 spools per foil bag**
- **4 bags (8 spools) per cardboard box**
- **Quantity - 40 spools per crate**

M13 - NONELECTRIC BLASTING CAP

USES:

“ SAME AS THE M12”

M13 PACKAGING

- 1000 ft per spool
- 1 spool per foil bag
- 4 bags (4 spools) per cardboard box
- Quantity - 20 spools per crate

M15 – NONELECTRIC BLASTING CAP, DELAY

"Currently a Specialized Use Item Only"

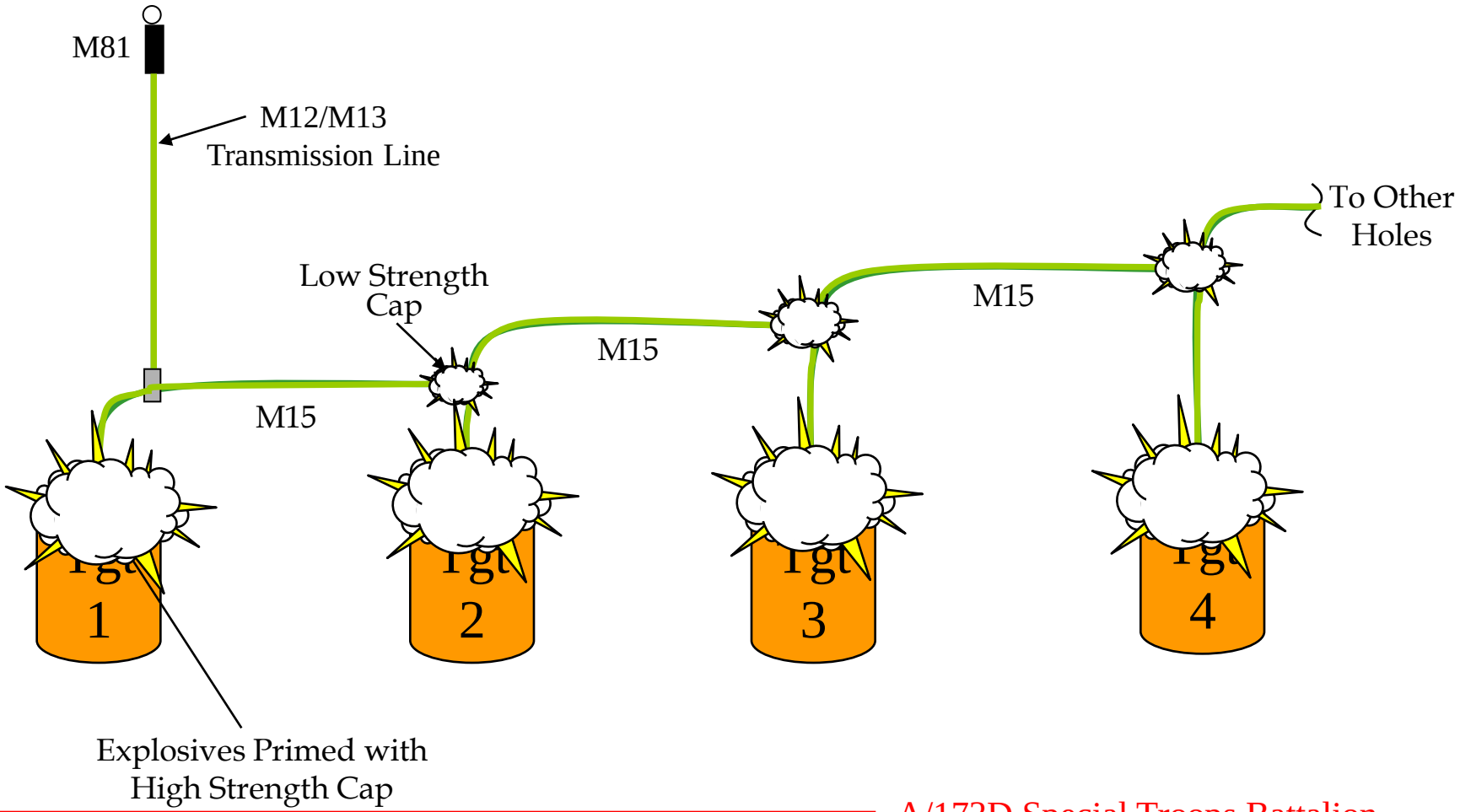
Low strength cap

Holder used to connect another M15 to assemble a daisy chain scenario

M15 USES

- Provide a Delay in the Priming System for Staged Demolitions
- ***25 ms Delay*** on Low Strength End
- Ignite ***Shock Tube*** From the ***Low Strength End***
- ***200 ms Delay*** on High Strength End
- Ignite ***Explosive Charges*** From the ***High Strength End***

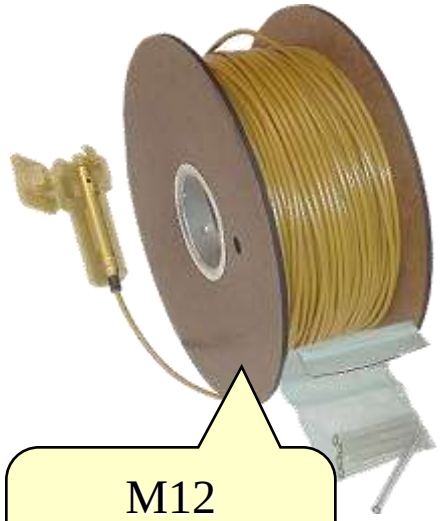
M15 EXAMPLE


M81
M12/M13
Transmission Line
Low Strength
Cap
M15
M15
M15
To Other
Holes
1
2
3
4
Explosives Primed with
High Strength Cap

M15 PACKAGING

- **70 Ft Individual Coils**
- **6 Coils Per Fiber Board Box**
- **10 Boxes Per Crate**
- **Quantity - 60 per crate**

INERT COMPONENTS



M12
Blasting Cap
Assy

M20
Dual Blasting
Cap Assy

M152
Booster Assy

M14
Time Fuse

M11
Blasting Cap Assy

M22
Blasting Cap
Assy

M15
Blasting Cap
Assy

SUMMARY

1. Some of the MDI components have larger than normal cap sizes and will not fit a standard cap well

2. The low strength caps are less powerful than normal and will not detonate military explosives

3. All inert items will be bronze in color and marked inert or dummy. Treat all items as if they were live

4. MDI is your only option. EOD, SF, & Rangers gain MDI in their inventory

5. MDI components are manufactured to a PERFORMANCE spec. Some changes (cosmetic) may vary (I.E. "J" hook shape, factory sealing, etc.).

SAFETY

- ***Safety is everyone's responsibility***
- ***Follow all basic ammunition SOPs***
- ***Any one can call a cease fire***
- ***Report any unsafe act to person in charge***
- ***Shock tube still terminates to caps***
- ***Use foam protectors on all caps/boosters when removed from their original packaging***
- ***Wear glove while firing the M81***
- ***Do not hold shock tube while firing***

HANDLING

- ***Treat all MDI components with care***
- ***Do not strike, drop, or abuse caps***
- ***Do not expose to extreme environments***
- ***Do Not yank or pull on shock tube/lower strength det. cord components***

STORAGE

- **Store in well ventilated areas**
- **Store in *Original Containers* until needed**
- **MDI Storage is compatible with majority of other explosives**
- **Hazard class are 1.4S and 1.4D, can transport MDI on same vehicle with other explosives**

HAZARDS

- ***Detonated/burning explosives/plastics produce poisonous fumes***
- ***Residue must be disposed of properly (Local SOP)***
- ***Any unfired segments of shock tube must be treated as live Ordnance***
- ***Do not <u>INGEST</u> (when conducting shock tube blow test)***

MISFIRES

- Locate and identify misfires
- Know misfire procedures
- Replace misfired components

MISFIRES CON'T

"A misfire is a failure of one or more of the components to function"

In case of a misfire:

- Notify person in charge
- Wait **30 minutes + the Burn time of the M14 or M18**
- Investigate with personnel that emplaced charges

MISFIRE CORRECTIONS

1. “M81 Primer fails”
   a) Recock and attempt to fire

   b) Replace igniter if it fails on the 2nd attempt

   c) If igniter functioned and the charge did not fire go to Step 2

2. “Shock tube blows out of the igniter”
   a) Cut 6” and dispose of (blow method)

   b) Cut another 12” from end of the shock tube and check for powder

   c) Silver Powder present - Replace igniter

   d) No powder - Shock tube functioned, 30 minute wait, go to Step 3

MISFIRE CORRECTIONS CON'T

3. "Charge does not function"

- Proceed downrange and check all components in the firing system

- If a blasting cap has not fired, it is likely that the shock tube was not initiated by the up-line blasting cap

- Determine if the shock tube has fired at a particular point, step 2 may be done with a 1-foot section of shock tube cut from the suspect area

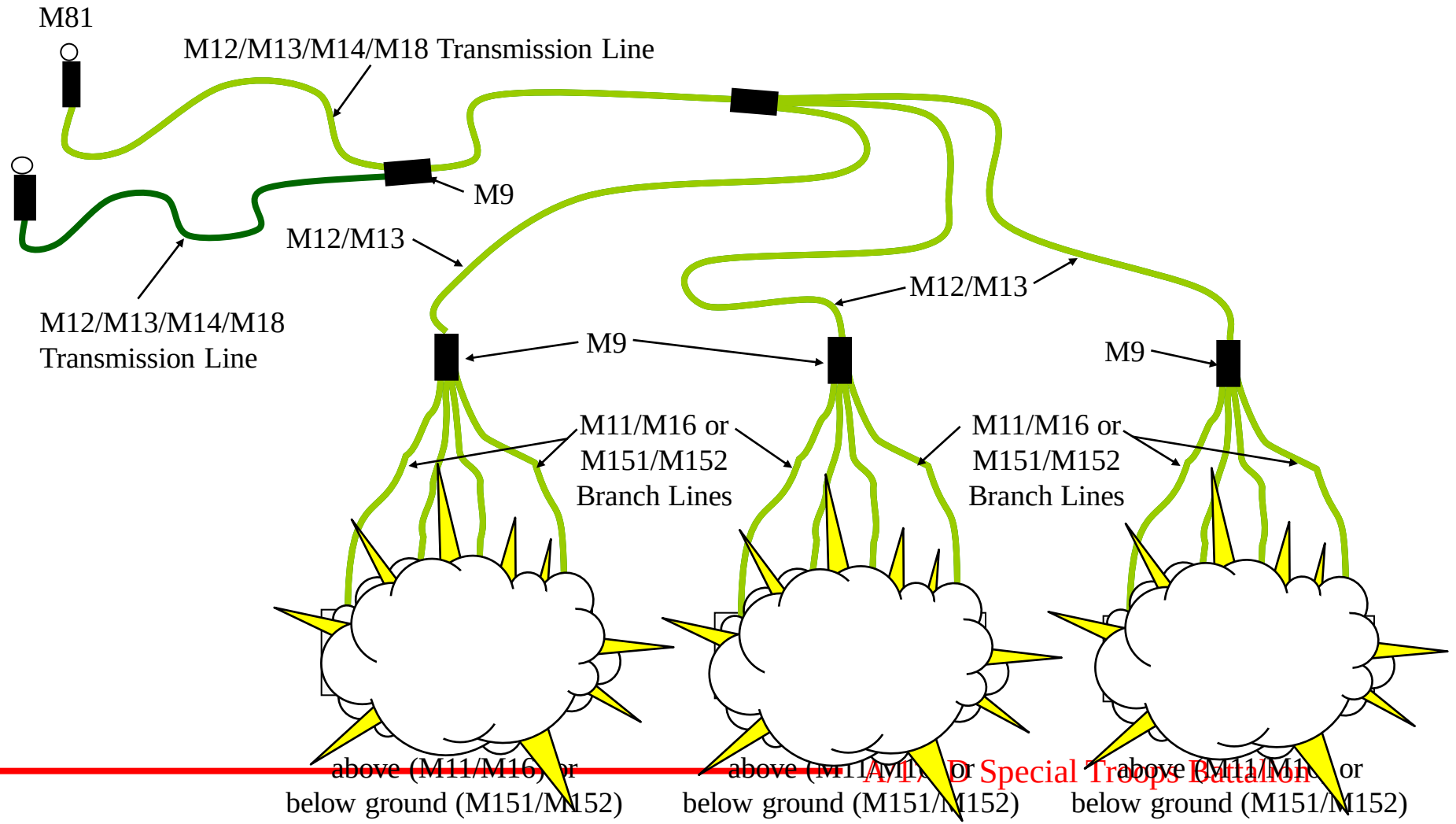
MISFIRE SUMMARY

- **When performing misfire procedures with explosives remember to always follow proper safety guidelines**

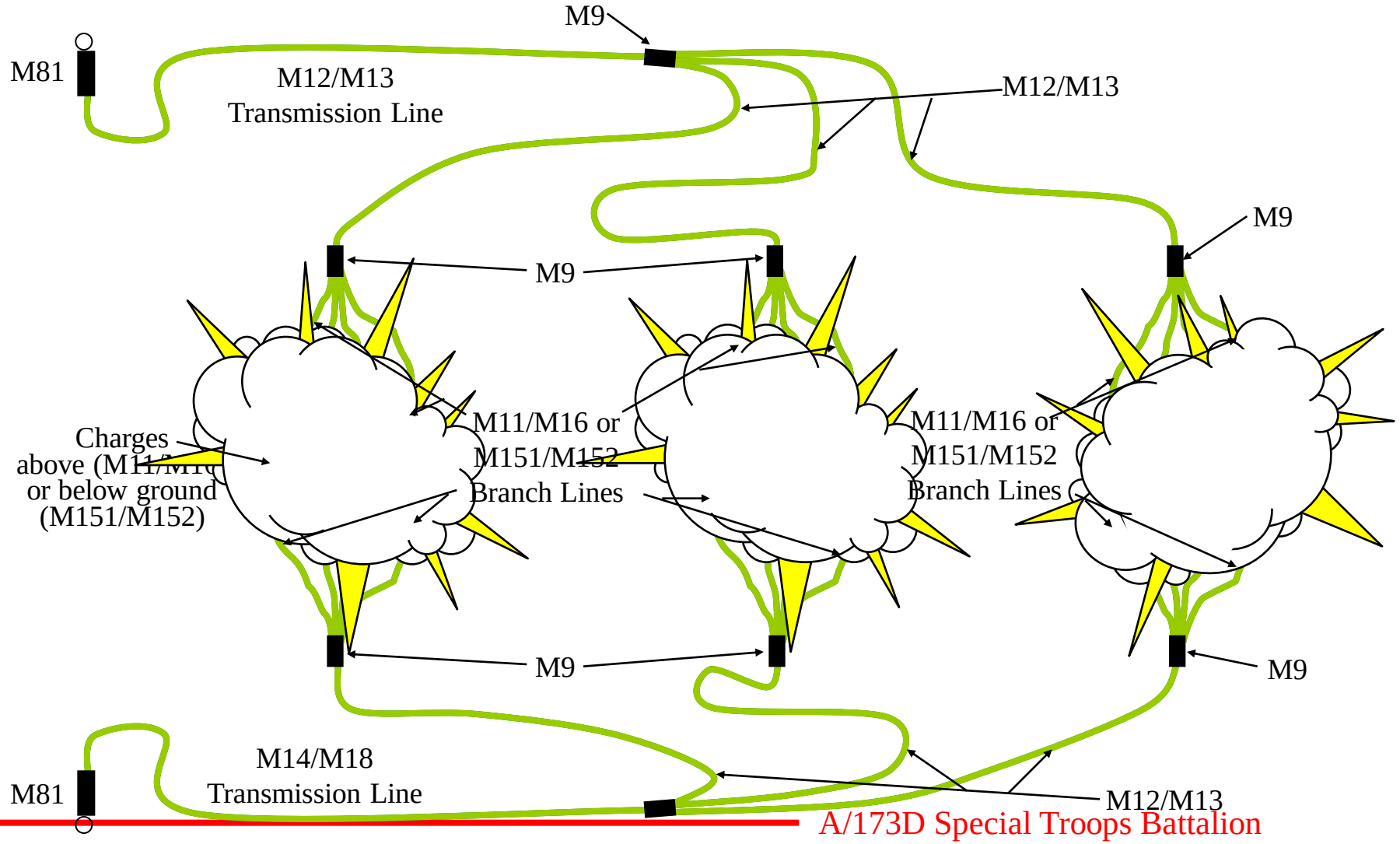
- **The instantaneous action of MDI still requires a wait time of 30 minutes plus the burn time of the M14 or M18 in the event there is a misfire**

- **The MDI shock tube requires the same respect as any other explosive item**

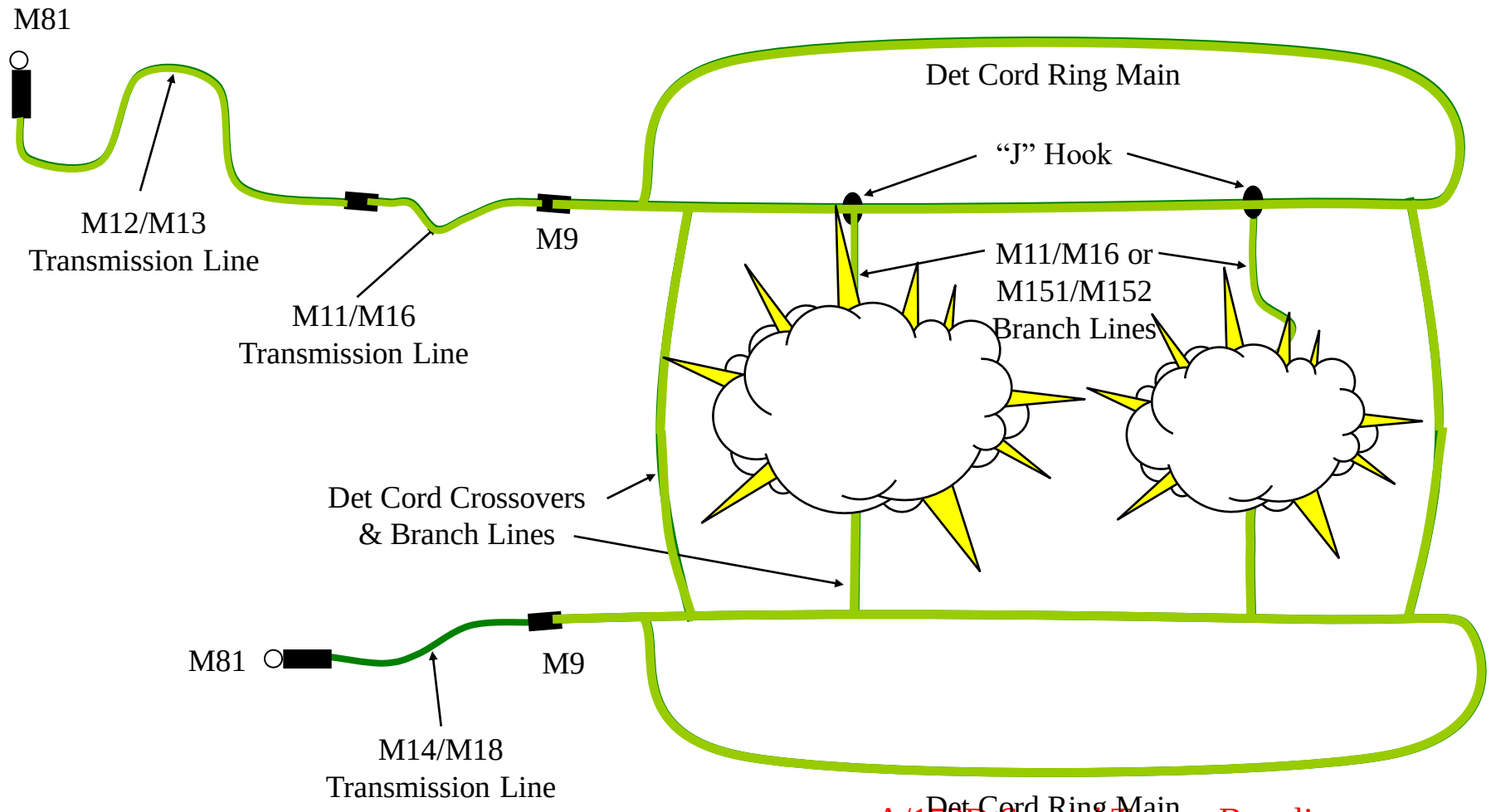
SINGLE PRIMED, DUAL INITIATED FIRING SYSTEM (EXAMPLE)



DUAL PRIMED FIRING SYSTEM (EXAMPLE)



MDI AND DET. CORD COMBINATION (EXAMPLE)



British Junction

Two M81s attached to two M14s/ M11s, with a strip of det cord to tie in to shock tube or det cord
Time on M14s based off mission