Westwood MECHANICAL INC.

#4-FIRING EXPLOSIVE ACTUATED FASTENING GUNS-SAFE JOB

PROCEDURE (Final Oct. /04)

1. PURPOSE:

The purpose of this procedure is to provide the safe operation in the use of a explosive actuated fastening gun and to understand the potential hazards that may be present for all employees so as to prevent any injuries to themselves and others.

2. GENERAL:

Only trained and qualified operators shall use explosive actuated tools.

Use CSA Standard Z166 M-85 Series "Safety Code For Explosives actuated Tools" as a guide for safe operation and maintenance of tool.

3. SCOPE AND DEFINITION:

Power Load:
Is a specially loaded cartridge used in an explosive actuated tool. It provides the energy to drive a fastener into concrete or structural steel.

Load Colour:
A special colour on the paper wad or end of a cartridge indicates the strength or power load.

Cartridge Case Colour:
The colour of the cartridge case also indicates the power load strength. Cartridge cases come in two colours, brass and nickel. Nickel cased loads are much stronger than brass cased loads.

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Drive Pins:

Is a special nail –like fastener designed to pierce and pin the material or metal directly to the concrete, masonry or steel, in one operation.

High Velocity Tool:

Utilizes a specially loaded power charge which imparts sufficient energy directly to the fastener to cause the ballistic pointed shank of the fastener to penetrate dense materials and stay imbedded with great holding power.

Low Velocity Tool:

Utilizes charges, which are similar to those used in high velocity tools. However , the energy from the charge is impacted to a piston , which in turn , drives the fastener into the concrete or steel.

Fasteners:

Although similar in appearance , the fasteners used in explosive actuated tools are not common nails. They are manufactured from special steel and tempered to produce a very hard yet ductile fastener. The fastener is equipped with some type of tip, washer, eyelet or other guide member. These properties are necessary to permit the fastener to penetrate without breaking.

Threaded Stud:

A fastener comprised of a shank portion which is driven into the base material and a threaded portion to which an object can be attached with a washer and nut.

Base Materials:

A. Suitable Base Materials:

When pierced by the fastener will expand and/or compress and have sufficient hardness and thickness to produce holding power and not allow the fastener to pass completely through.

B. **Unsuitable Base Materials** can be put into 3 categories.

1. Too Hard-
   Fastener will not be able to penetrate and could possibly deflect or break, i.e. tempered steel.

2. Too Brittle-
   Material will crack or shatter and fastener could deflect or pass completely through. i.e., glass, glazed tile, brick , slate, etc.

3. Too Soft-
   Material does not have the characteristics to produce holding power and fasteners could pass completely through. I.e. wood, plaster, drywall, composition board, plywood, etc.

4. **PROCEDURE:**

Before use , the tool shall be inspected by the operator to ensure that:

- **The tool is unloaded.**
- **There is no obstruction in the barrel.**
- **All moving parts operate freely.**
- **The tool is in a safe working condition.**
- **The tool is not pointed at any person at any time , whether loaded or not.**
- **The tool is used in accordance with the manufacturer recommendations.**

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- **The tool shall not be used where flammable or explosive vapors , dust or other such substances are present.**
- **The tool is fired only when firmly held by the operator having a secure footing. No attempt shall be made to affix the tool to any pole, pipe or device for firing beyond the reach of the operators hands unless such a device has been approved by the manufacturers.**

Loading:

- The tool should be loaded exactly as described in the applicable instruction manual.
- Make sure the barrel is empty before loading a new fastener and cartridge.
- Insert charges and fasteners in the proper sequence.
- **Never load the tool until ready to fire.**

Power Load Selection:

- **Only power loads of strengths recommended by the manufacturer shall be considered acceptable for use in the tool.**

Firing:

- **Prior to firing ensure that protective equipment is being worn and in place.**
- **Before driving a fastener , particularly into materials where there is a possibility of over penetration , know what is behind the work in the line of fire area. Do not fire until the area is cleared and precautions have been taken to keep it clear.**

- **The tool should always be held perpendicular to the work surface.**
- **Depress gun and pull trigger.**
- **If after firing , the fastener is not seen in place, it may be buried in the work or may not have left the bore. Do not fire another fastener before checking the bore . Failure to clear the bore before firing another pin may damage the barrel beyond repair or even cause injury.**
- **If a loaded tool jams in the firing position, place it very carefully where it cannot cause harm, and repair the tool.**

Misfires:

- **A gun may misfire due to one of the following reasons: faulty cartridge, a broken firing pin, or the gun put together incorrectly.**
- **Because of the danger of an accident occurring such as a cartridge exploding in a operator's hand , the following procedures should be followed:**

  -Once the gun has misfired and with the gun in a closed position , wait for a period of 15 seconds, open the gun and turn the breech plug or cartridge, so that the firing pin will strike the rim of the cartridge in another place.

-If the cartridge fails to fire a second time, wait 15 seconds, open the gun and remove the cartridge from the breech plug and place the undetonated cartridge in a container of water until it can be disposed of safely.

Fastening in Steel:

When fastening into steel it is important to remember a few basic facts to assure safe and proper fastenings:

A. Do not fasten too close to the edge of a steel member.
B. Do not set fasteners too close together.
C. Do not fasten into thin steel base material.

Avoid Overdriving the Fastener:

A fastener with excessive force can be damaged or broken.

5. EQUIPMENT/MATERIAL REQUIRED:

Personal Protective Equipment

- **All operators shall wear eye protection.**
- **Use ear protection when fastening in confined areas such as small rooms, tanks, etc. (hearing protection for all applications is recommended)**
- **Operators and helpers shall wear hard hats and safety shoes.**

6. SPECIAL CONSIDERATIONS:

Storage:

Explosive actuated tools should be stored unloaded in a locked container when not in use. An operator having a tool in his charge must not leave the tool unattended , except when it is in its proper container, and closed.

Maintenance:

Clean and maintain tools in accordance with the manufacturer instructions.

When explosive actuated tools are used in confined areas , ventilation shall be provided to limit the contamination of the air to a recognized safe concentration.

CAUTION:

- **DO NOT USE EXPLOSIVE ACTUATED TOOL CARTRIDGES IN FIREARMS.**
- **USE ONLY FASTENERS AND CARTRIDGES RECOMMEDED BY THE MANUFACTURER.**
- **DO NOT CARRY CARTRIDGES LOOSE OR IN A POCKET, CARRY THEM IN THE MANUFACTURERS PACKAGE OR IN APPROVED CONTAINERS.**
- **DO NOT DISCARD UNFIRED CARTRIDGES CARELESSELY.**