

UCAN

FASTENING PRODUCTS

WARNING!
READ THIS MANUAL
PRIOR TO OPERATING TOOL

OPERATOR'S
INSTRUCTION
MANUAL



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SEMI-AUTOMATIC LOW VELOCITY
FASTENING TOOL

UCAN
FASTENING PRODUCTS

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INTRODUCTION

The LV 470 is a semi automatic piston drive tool. The piston design ensures low fastener velocity and dissipation of excess power upon overdriving. Through-shots and ricochets are, therefore, virtually eliminated. A power regulator allows for reduced noise and recoil. The power level may be adjusted according to the working requirements. A built-in muffler also helps to reduce noise.

THE OPERATOR SHOULD BE PROPERLY TRAINED BY A QUALIFIED INSTRUCTOR

In this instruction manual you will find illustrations of the LV 470 as well as information about cartridges, pistons, and other spare parts. If you have questions which are not addressed in this manual, or if you have enquiries concerning special fastening applications, please contact your nearest UCAN Fastening Products' Distributor.

TECHNICAL DATA

Tool weight:	3.2 kg (7 lbs)
Tool kits:	5.5 kg (12 lbs) / kits
Power loads:	CHS .27" caliber (6.8 x 11 mm) 10 cartridge / strip.
Power level:	level 5(red) and level 6(purple)
Fasteners:	PC drive pins for steel and concrete. UTS threaded studs for steel and concrete.

APPLICATIONS - examples

Fixing to concrete or steel of:

- Wooden block, framing sheet and plate.
- Clips, clamps or rings for electrical cables, conduits and pipes.
- Threaded studs for removable fixings.

OPERATION

The LV470 is designed to fire only after it has been fully cocked and pressed against a working surface with about 9 kg (90N) of pressure. The firing pin spring is not armed until the muzzle is pressed against the working surface.

LOADING

1. Holding the tool and muzzle upward, insert the fastener, with its point downward, into the cocking lever and let the fastener slide down.



2. Hold the tool horizontally. Grasp the loading grip, on the cocking lever, and pull up firmly to release it. Swing lever forward until it is aligned with the muzzle.



3. Pull back the loading grip as far as possible in order to position the fastener correctly in the guide. Push the grip forward and pivot the cocking lever back to its original position.



4. Insert the power load magazine into the base of the hand grip. **(CAUTION: Do not insert the power load magazine until the fastener has been loaded, otherwise, the first cartridge will be missed.)**



5. Check that the power regulator is in the desired position.



POWER REGULATION

The driving power is adjusted by means of a knurled wheel on the right side of the tool. When the indicator is in the rearmost position (+3) the greatest driving power is obtained from a power load. Similarly, when the indicator is moved to the foremost position (-1) the lowest driving power is obtained.

The red power load covers 90% of all applications. The purple power load is needed for the special fastening of steel to steel.

6. After the gun has been fired it may be reloaded by following steps 1-5.

NOTE CONCERNING STEP 3:
THE POWER LOAD STRIP WILL NOT ADVANCE
UNTIL THE COCKING LEVER IS RETURNED TO ITS ORIGINAL POSITION.

MISFIRE PROCEDURE

If the cartridge does not fire, wait 15 - 20 seconds holding the tool against the working surface. Do not point the tool at anyone.

Repeat the loading procedures in order to move the next cartridge into firing position. The misfired cartridge must be removed from the spent power load strip and disposed of in accordance with local regulations.

IMPORTANT CAUTIONS

The power load strip must always be removed from the LV470 before it is serviced or once a job is completed. The strip should be pulled out of the tool from above.

Never press in the fastener guide by hand. It is very dangerous! If the tool is loaded, the fastener could fire into your hand.

MAINTENANCE AND STORAGE

1. Clean and lubricate the tool as recommended in the Instruction Manual.
2. Check tool prior to each day's use to ensure it is in proper working order.
3. Replace worn or damaged parts as required.
4. Any tool found not in working order should be immediately removed from service, tagged as "defective", and used again only after being repaired.
5. Use only Ucan repair/replacement parts.
6. Powder actuated tools and cartridges shall be locked in a container and stored in a safe place when not in use. Only authorized personnel, trained to use the tool, should have access.

PROPER MAINTENANCE AND STORAGE OF POWDER ACTUATED TOOLS ARE NECESSARY TO ENSURE CONSISTENT, TROUBLE-FREE OPERATION AND TO HELP PREVENT INJURY.

DISASSEMBLING THE TOOL TO REPLACE THE PISTON & STOP RING

1. Lift the cocking lever & pivot it forward. Disengage the link from the advance bar connector.



2. Unscrew and remove the baseplate by rotating the cocking lever counter clockwise.



3. Pull the fastener guide from the piston guide.



4. Pry the stop ring off the fastener guide.



**NOTE:
OVERDRIVING WILL OFTEN DAMAGE
THE STOP RING**

If too short a fastener or too powerful a power load is used, or if there are variations in base material strength, the fastener may be overdriven. This may, in turn, damage the stop ring which will then need to be replaced.

5. Slide the piston guide out of the housing.



6. Push the piston out of the piston guide, from the back end of the guide, by using the rod supplied in the kit.



**NOTE:
THE PISTON GUIDE MAY STICK IN THE HOUSING
IF THE TOOL IS VERY DIRTY.**

Procedure: lubricate the outside of the piston guide. Then, screw on the baseplate and tap it lightly on a hard surface to disengage the piston guide.

REASSEMBLING THE TOOL

1. Ensure that a piston ring is fitted onto the piston. Fully insert the piston into the piston guide.
2. Align the parallel slots, on the piston guide, with the muffler. Then, insert the piston guide into the housing.
3. Press the stop ring onto the fastener guide.



4. Insert the fastener guide into the piston guide.



5. Slide the baseplate over the fastener guide. (The recess in the baseplate must align with the raised part of fastener guide.)



6. Screw the baseplate onto the housing by rotating the cocking lever clockwise until it stops. Turn back slightly so that the cocking lever is properly aligned with the housing. Pivot the cocking lever to its resting position. The connector and link will latch automatically.



CLEANING AND MAINTENANCE

Clean the parts and surfaces with the supplied brushes.

**NOTE:
ALWAYS CLEAN THE CARTRIDGE CHAMBER DAILY
OR AFTER APPROXIMATELY 1,000 FASTENINGS...
WHICHEVER COMES FIRST.**



Piston Guide
Internally & Externally



Piston
Externally



Fastener Guide
Internally & Externally



Baseplate
Internally & Externally



Steel Liner
Internally

Spray above parts* with UCAN P.A.T. lubricant and wipe off excess lubricant with a clean cloth, prior to reassembly.

**NOTE:
DO NOT SPRAY THE INSIDE OF THE STEEL LINER
OR OF THE MAGAZINE CHAMBER.**

FASTENERS AND LOADS

6MM HEADED FASTENERS with 12mm steel washers

PC 16K - 5/8" knurled	PC 42 - 1-5/8"
PC 19K - 3/4" knurled	PC 47 - 1-7/8"
PC 22 - 7/8"	PC 57 - 2-1/4"
PC 27 - 1-1/8"	PC 62 - 2-1/2"
PC 32 - 1-1/4"	PC 72 - 3"
PC 37 - 1-1/2"	PC 82 - 3-1/4"



1/4" - 20 THREADED STUDS with 12mm plastic guide washer

UTS 1032K - 7/16" knurled
Shank - 3/4" thread

UTS 245 - 1"
Shank - 3/4" thread



Requires stud piston: C-07A

POWER LOAD STRIPS .27 cal. in plastic strips

In strips of 10 cartridges each:



Colour	Power level	Part# (100's)
Red	5 strong	CHSR
Purple	6 x-strong	CHSP

FASTENER PENETRATION GUIDE

Light weight concrete	Cinder-concrete block, etc...	1-1/2"	penetration
Average concrete	Poured concrete, etc...	1"	penetration
Hard concrete	Pre-stressed/pre-cast concrete	3/4"	penetration
Steel	Structural steel, etc...	1/2"	penetration

REPLACEMENT PARTS AND REPAIR SERVICE

Your UCAN Fastening Products' Powder Actuated Tool is precision engineered for safety.

NEVER attempt to modify parts since this can compromise the built-in safety.

When servicing, use only UCAN replacement parts. These are available through your local UCAN Fastening Products' Distributor.

If your tool requires service or warranty repairs, contact a UCAN Fastening Products' Distributor, who will determine whether the tool is field repairable or if it must be forwarded to a repair center.

Owners of Ucan Tools are assured of excellent service wherever they may be. Contact your nearest Ucan Distributor or our Technical Marketing Services Department for assistance with regards to fastening applications, tool maintenance, or operator instruction for "safe tool use".

DELUXE EQUIPMENT

Deluxe kit includes:



LV470



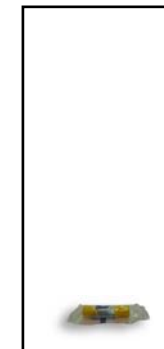
Cleaning brushes



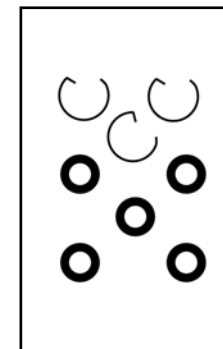
Lubricant spray



Rod



Ear Plugs
(Disposable)



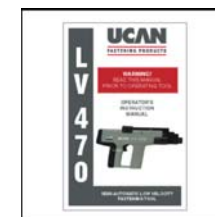
Spare Parts



Carrying Case



Safety Goggles



Manual



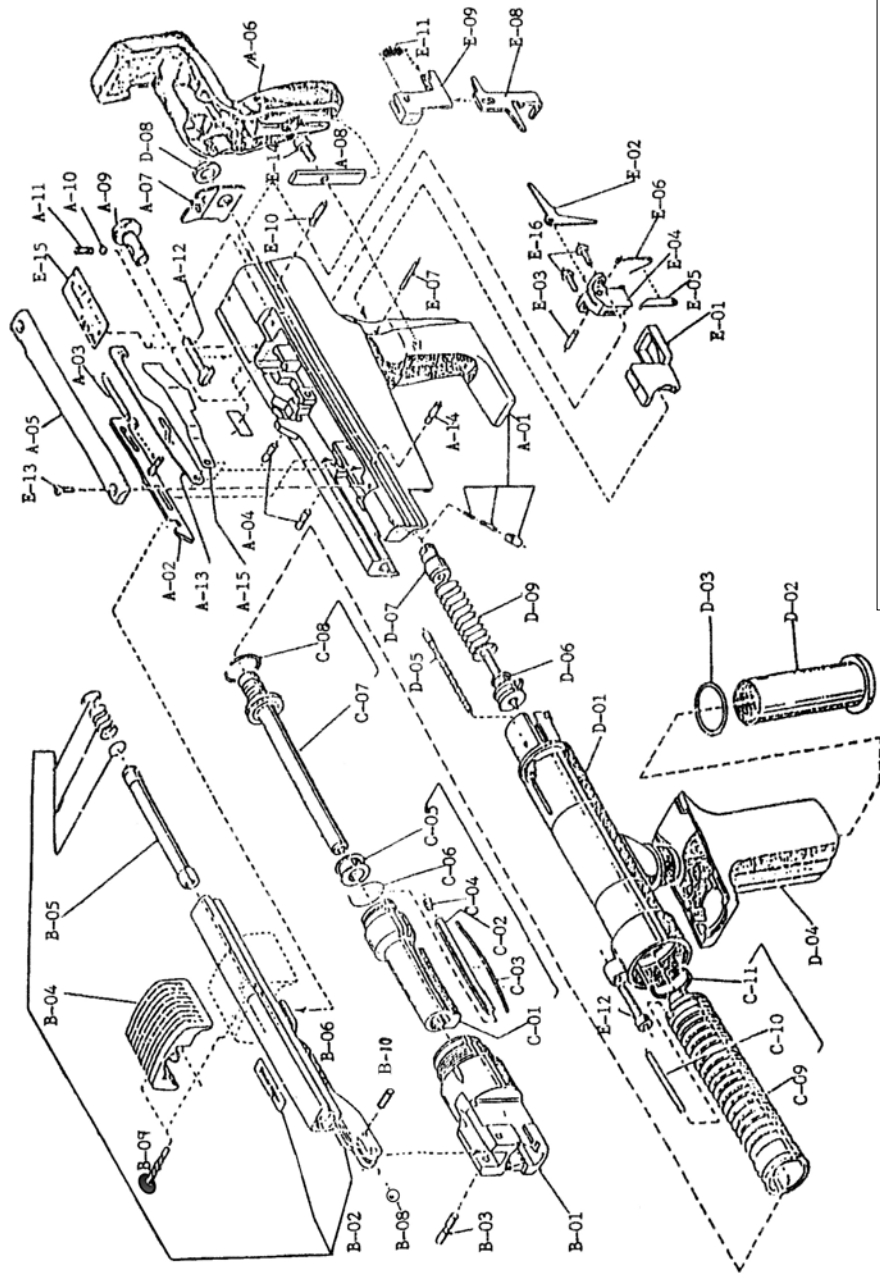
Cleaning cloth

UCAN Fastening Products provides a set of disposable sample ear plugs with each tool. These are not intended as permanent ear protection.

Parts may not be exactly as shown.

LV470 PARTS KIT BREAKDOWN

Part No.	Description	Part No.	Description	Part No.	Description
A-01	Body	C-01	Fastener Guide	E-01	Trigger
A-02	Connector, Advance Bar	C-02	Pressure Strip	E-02	Release Lever
A-03	Spring, Connector	C-03	Spring, Pressure Strip	E-03	Pin, Holder
A-04	Pin, Connector	C-04	Fixing Block	E-04	Holder
A-05	Cover, Plastic Strip	C-05	Stop Ring	E-05	Magazine Detent
A-06	Rubber Pad	C-06	Retaining Ring, Fastener Guide	E-06	Trigger Spring
A-07	Fixing Plate, Rubber Pad	C-07	Piston Assembly for PC	E-07	trigger Pin
A-08	Metal Strip	C-07A	Piston Assembly for UTS Studs(not shown)	E-08	Sear
A-09	Wheel, Power Regulator	C-08	Piston Ring	E-09	Sear Guide
A-10	Steel Ball	C-09	Piston Guide	E-10	Screw, Sear Guide
A-11	Compressing Spring	C-10	Pressing Pin	E-11	Sear Spring
A-12	Indicator, Power Regulator	C-11	Retaining Ring, Piston Guide	E-12	Screw, Housing
A-13	Advance Bar	D-01	Housing	E-13	Screw, Plastic Strip Cover
A-14	Screw, Advance bar	D-02	Muffler	E-14	Screw, Rubber Pad
A-15	Spring Plate	D-03	O-Ring	E-15	Label
B-01	Baseplate	D-04	Muffler Housing	E-16	Screw, Holder
B-02	Cocking Lever	D-05	Regulating Pin		
B-03	Pin, Baseplate	D-06	Firing Pin		
B-04	Grip, Cocking Lever	D-07	Guide Screw, Firing Pin		
B-05	Push Rod, Cocking Lever	D-08	Nut		
B-06	Link	D-09	Firing Pin Spring		
B-08	Rubber Ring				
B-09	Set screw, Grip				
B-10	Pin, Link				



Above parts are designed for the Ucan LV470 only.
Use of Ucan parts in any other tool is not recommended.

OPERATOR'S TRAINING COURSE FOR THE UCAN LV 470 POWDER ACTUATED TOOL AND FASTENERS

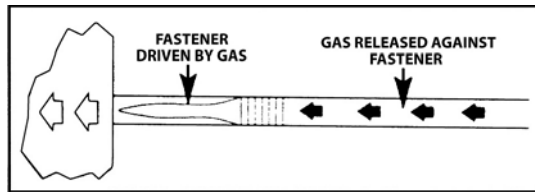
I. POWDER ACTUATED FASTENING SYSTEMS

Powder actuated fastening systems provide a means to make direct, forced entry fastenings into a variety of base materials for construction and maintenance applications. The system consists of a tool; a fastener; and a power load or cartridge. The qualified operator is the key to safe, efficient use of the system and therefore must be trained and licensed according to UCAN Fastening Products standards and procedures. The qualified operator must also follow any local regulations that apply to the use of the powder actuated fastening systems.

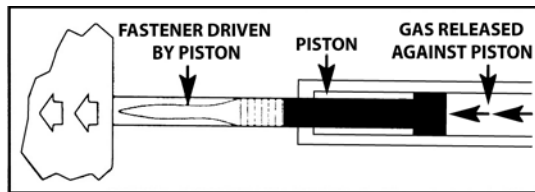
II. POWDER ACTUATED TOOLS

There are two types of powder actuated tools:

1. Direct acting tools operate by the action of the expanding gas of the cartridge acting directly on the fastener to drive it into the work surface.



2. Indirect acting tools have a captive piston which is driven by the expanding cartridge gas. The piston then drives the fastener into the work surface.



There are three velocity classes of powder actuated tools. The velocity class of the tool is determined by a ballistic test utilizing the lightest fastener and the strongest cartridge which is designated for use with the tool by the manufacturer.

- A. High velocity class - A tool produces an average test velocity over 150 meters (492 feet) per second.
- B. Medium velocity class - A tool which produces an average test velocity greater than 100 meters (328 feet) per second, but not exceeding 150 meters (492 feet) per second.
- C. Low velocity class - A tool which produces an average test velocity which does not exceed 100 meters (328 feet) per second.

UCAN Fastening Products LV Powder Actuated Tools are indirect-acting tools which conform to the requirements for low velocity class tools.

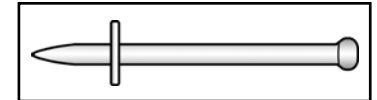
III. FASTENERS

Fasteners used in powder actuated fastening systems are manufactured from special steels and heat treated by a special process which insures that they are hard enough to drive into concrete and steel yet are not brittle. The fact that the fasteners are ductile (not brittle) permits them to be driven into concrete or steel without shattering or breaking during normal applications. Powder actuated fasteners normally have a plastic or metal washer or eyelet around the shank. These devices perform two functions:

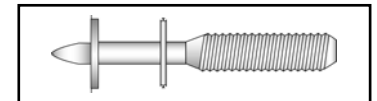
1. Assist in holding the fastener in the tool prior to driving it into the work surface.
2. To provide alignment and guidance for the fastener during the driving process.

The most common fastener used with powder actuated tools is the drive pin.

The drive pin makes a permanent fastening (ie., the material that you are fastening to the base material cannot normally be removed without damage to the material or the base material.)



The threaded stud fastener is comprised of a shank portion which is driven into the base material and a threaded portion onto which a nut is inserted. This type of fastener is used for semi-permanent fastening where the material to be fastened to the base material has a pre-drilled hole or slot and is inserted over the threaded stud (after it is driven), then fastened down with the nut and washer combination.



There are also other specialty fasteners made for powder actuated applications such as eye pins; conduit clips; ceiling clips; etc., designed to make certain trade applications easier. In addition, large diameter metal washers are sometimes assembled to drive pins and provide more bearing surface to accommodate fastening of insulations, sill plates (where required by local codes), etc.

NOTE: Remember that P.A.T. fasteners are made of special steel and heat treated especially for these applications. Under no circumstances should fasteners other than those recommended by the tool manufacturer be used in the tool.

IV. POWER LOADS/CARTRIDGES

The power load or cartridges is the energy source used in powder actuated tools. UCAN Fastening Products' cartridges are rim fire, cased power loads. Rim fire means that the power load is fired if the load is hit on the rim (outer edge) hard enough by the firing pin. The cartridges may also fire if enough pressure is applied to the rim. This is the reason that cartridges should be pried loose from the tool (or magazine strip).

UCAN Fastening Products' powder actuated tools use power loads which are inserted into the tool either individually or in a strip magazine which contains 10 cartridges. The UCAN LV470 uses .27 caliber loads in strip magazines.

All powder actuated tool power loads are colour coded to identify and differentiate power levels.

In addition, the packages that contain the power loads have a visual colour and number identification. To avoid any confusion, power loads of different power levels and types must be kept in separate containers or compartments.

In the event that the operator is colour blind; the number identification on the package will assist in power level identification. Operators who are unable to distinguish the colours used must be given special instructions to enable them to avoid error.

UCAN Fastening Products' LV470 tool uses the following power levels:

POWER LEVEL	CASE COLOUR	LOAD COLOUR
#5	Brass	Red
#6	Brass	Purple

NOT ALL POWER LEVELS CAN BE USED IN EACH TOOL.

Under no condition should a power load other than those recommended in the Tool Instruction Manual be used with a powder actuated tool.

To determine the correct power level for any application, always start with the lowest level (#5 red for UCAN LV 470) cartridge recommended for use with the tool. If the lowest power level/cartridge does not achieve the desired level of fastener penetration, increase the power level, with the power dial, or the cartridge by single steps until proper penetration is achieved.

In the event of a misfire, the operator shall continue to hold the tool firmly against the work surface for a period of not less than 15 seconds and then the cartridge shall be ejected. The misfired cartridge must be removed from the spent power loadstrip and disposed of in accordance with local regulations.

V. BASE MATERIALS

The material into which the fastener shank is driven and from which the holding power is obtained is known as the base material. Concrete and structural steel are the two most common base materials into which powder actuated fasteners are driven. When penetrated by a P.A.T. fastener, a suitable base material will expand and/or compress around the fastener and have sufficient hardness and thickness to produce sufficient holding power and not allow the fastener to pass completely through.

Unsuitable base materials will be:

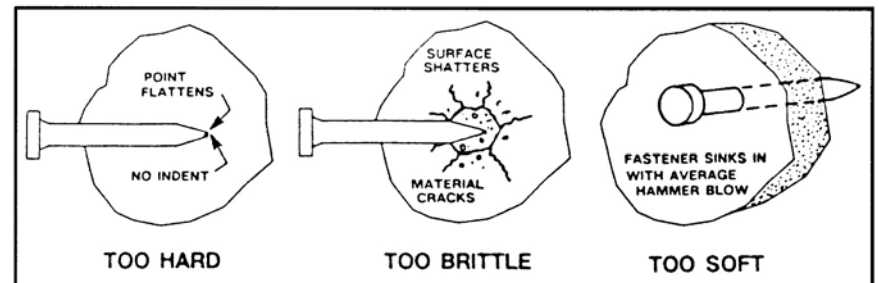
1. Too hard for the fastener to penetrate (hardened steel, welds, cast steel, marble, natural rock, etc.).
2. Too soft for the fastener to penetrate without cracking or shattering the base material (glass, glazed tile, brick, slate, etc.).
3. Too soft for the fastener to produce sufficient holding power or to keep the fastener from passing completely through the base material (wood, plaster, drywall, composition board, etc.).

To determine the suitability of any base material, a center punch test should be performed prior to making any fastenings.

CENTER PUNCH TEST PROCEDURES

Use a hammer and firmly tap a P.A.T. fastener into the base material:

1. If the base material shows a clear fastener point and the fastener is not blunted, then proceed with the first test fastening.
2. If the fastener point is blunted, then the material is too hard.
3. If the base material cracks or shatters, the material is too brittle.
4. If the fastener sinks into the material with an average hammer blow, the base material is too soft.



VI. APPLICATION RULES - WARNINGS

For Concrete.....

1. Do not fasten into cracks or spalled areas as this weakens holding power.
2. Concrete must be at least three times thicker than the depth of penetration of the fastener.
3. Do not fasten closer than 3" from an unsupported edge of masonry.
4. Recommended minimum distance between fastenings is 3" in concrete.
5. Average required depth of penetration of fasteners into concrete is:
> 1-1/2" in length weight concrete (less than 2000 PSI), block, etc.
> 1" in average weight concrete.
> 3/4" in hard concrete (5000 to 6000 PSI).
6. Concrete with a compressive strength over 8400 PSI is not normally suitable for fastening with powder actuated fasteners.

For Steel.....

1. Do not fasten into steel thinner than the shank diameter of the fastener.
2. Do not fasten closer than 1/2" from the edge of steel.
3. Recommended minimum distance between fastenings is 1" in steel.
4. Do not use fasteners with shanks longer than required for the application.
5. Average depth of penetration for structural steel is 3/16" to 1/2".
6. To achieve maximum holding power in steel plate: Get the fastener point all the way through the plate. This prevents the steel from compressing around the point and causing fastener back-out.
7. Do not fasten into pre-drilled holes (unless the tool is equipped with a positive alignment device) because the fastener may be deflected by the edge of the hole.

VI. APPLICATION RULES - WARNINGS cont'd...

NOTE: To determine the correct length of drive pin for a particular application, add the thickness of the material to be fastened and the required depth of penetration into the base material.

EXAMPLE: You want to fasten a 2 x 4 board (1-1/2" thick) to average strength concrete. The recommended depth of penetration is 1" - Hence, you would normally use a 2-1/2" drive pin.

To determine the correct size of a threaded stud, the shank length is determined by the required penetration into the base material as you are normally driving a threaded stud directly into the base material. The length of the threaded portion required is determined by the thickness of the material that you are going to insert over the threaded stud and fasten down. Remember that the threads must protrude through the material to be fastened far enough to allow for full thread engagement of the nut or nut/washer combination.

**FAILURE TO FOLLOW THESE APPLICATION RULES MAY RESULT
IN POOR FASTENING AND/OR COULD RESULT IN DEATH OR
SERIOUS INJURY TO THE OPERATOR.**

NOTE: Review of this general training course is required to become a qualified operator of UCAN Fastening Products Powder Actuated Tools. Review of the individual tool instruction manuals, as well as hands on instructions on the operation and maintenance of the specific tools are required prior to using a Powder Actuated Tool.

GENERAL SAFETY RULES

1. Do not use P.A.T. tools in explosive or flammable environments.
2. Never leave a P.A.T. tool unattended in a place where it would be available to unauthorized personnel.
3. A warning sign (8" x 10" with 1" letters min.) must be posted in plain sight in areas where P.A.T. tools are being used as adjacent areas where wall, floor, or work surface penetration by the fastener by pose a hazard. The wording on the sign should be similar to "Powder Actuated Tools Use".
4. Operators and co-workers should always wear safety goggles, ear and head protection when powder actuated tools are in use.
5. Always maintain good balance when working on ladders, scaffolds, etc.
6. Never load the tool until ready to make a fastening. When using a tool that uses multiple booster strips, always insert the fastener into the tool prior to advancing to a "live" cartridge.
7. Always operate the tool at right angles to the work surface (to minimize the chance of the fastener deflecting off the work surface).
9. Never carry fasteners or other sharp objects in the same pocket or apron section with power loads as they may strike the cartridge and cause it to fire.
10. An operator must be trained for each tool he uses, even though he may already be trained for another P.A.T. tool made by the same manufacturer.

W A R N I N G
FAILURE TO FOLLOW THESE SAFETY RULES MAY RESULT
IN DEATH OR SERIOUS INJURY

WARRANTY

This new fastening tool is a quality product of UCAN Fastening Products. It has been developed through study and research into the fastening methods and applications of the building industry and associated trades. Every reasonable precaution has been taken in the manufacturing of this tool to assure its compliance with UCAN Fastening Products' standards of high quality. Consultation on the operation and maintenance of the tool is available from your local UCAN Fastening Products' Distributor.

ONE YEAR LIMITED WARRANTY: For 1 year from the date of shipment, the original purchaser of the tool will not be charged for the parts and labour required to correct defects in materials and workmanship, provided the tool is returned to a UCAN Fastening Products Distributor for servicing and inspection, the serial number has not been removed or defaced, only UCAN compatible consumables and parts have been used with the tool, and no unauthorized servicing has been performed. The warranty does not cover normal wear and tear and the cost of shipping and insurance.

THIS IS THE ONLY WARRANTY AND GUARANTEE MADE BY UCAN FASTENING PRODUCTS, AND IT IS GIVEN IN LIEU OF ALL OTHER (EXPRESSED OR IMPLIED) WARRANTIES INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND OF FITNESS FOR A PARTICULAR PURPOSE. Under no circumstances will UCAN Fastening Products be obligated for incidental or consequential damages, losses, or expenses in connection with, or by reason of, or inability to use the tool for any purpose.