LIMITED WARRANTY (ONE YEAR) ON SIMPSON STRONG-TIE® BRAND TOOLS

One Year Limited Warranty

Simpson warrants this tool when operated under normal uses in the United States and Canada. Simpson will repair, replace, or adjust this tool or its component parts found to be defective in materials or workmanship within one year from the date of purchase.

All we require is that you properly operate and maintain the tool as described herein and that you return the tool for warranty repairs to Simpson.

To the extent allowed by law:

1. Any implied warranty of merchantability or fitness is limited to the one-year duration of this written warranty.
2. Simpson shall not have any responsibility for loss of use of these tools, loss of time, inconvenience, commercial loss or incidental or consequential damages.

Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitations may not apply to you.

This warranty gives you specific legal rights and you also may have other rights, which may vary, from state to state.

Return Tools To:

Northwest U.S.A.
Simpson Strong-Tie Co., Inc.
5151 S. Airport Way
Stockton, CA 95206
(209) 234-7775

Southwest U.S.A.
Simpson Strong-Tie Co., Inc.
260 N. Palm Street
Brea, CA 92821
(714) 871-8373

Northeast U.S.A.
Simpson Strong-Tie Co., Inc.
2600 International Street
Columbus, OH 43228
(614) 876-8060

Southeast U.S.A.
Simpson Strong-Tie Co., Inc.
2221 Country Lane
McKinney, TX 75069
(972) 542-0326

Eastern Canada
Simpson Strong-Tie Co., Inc.
5 Kenview Boulevard
Brampton, ON L6T 5G5
(905) 458-5538

Western Canada
Simpson Strong-Tie Co., Inc.
11476 Kingston Street
Maple Ridge, BC V2X 0Y5
(604) 465-0296

T-SAS-PT27HD07 3/07

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WARNING

Read This Manual BEFORE Operating This Tool

SIMPSON Strong-Tie ANCHOR SYSTEMS®

OPERATOR'S MANUAL

Model PT-27HD

SIMPSON Strong-Tie ANCHOR SYSTEMS®

5956 W. Las Positas Blvd., Pleasanton, CA 94588 • www.simpsonanchors.com

SAFETY STARTS WITH YOU

A. TRAINING

1. All operators must complete the tool manufacturer's training before attempting to take an exam or to operate this Simpson tool. you must obtain certification of training from an authorized Simpson Strong-Tie® instructor. If such training is not available where you purchased the tool, call or write Simpson Strong-Tie before attempting to operate the tool for information on the nearest authorized instructor. Remember, obtaining this instruction is ***YOUR RESPONSIBILITY***.

2. Read this manual completely and understand its contents fully before attempting to operate the tool. If there is anything in this manual that you do not fully understand, ask your instructor or call Simpson Strong-Tie for information. Reading and understanding this manual is ***YOUR RESPONSIBILITY***.

B. LIMITATIONS

1. Just as no instruction book of any kind can forewarn a learner against all possible situations or emergencies that may arise, neither can Simpson Strong-Tie instructors or printed instructions detail all possible conditions or circumstances surrounding the use of this tool or its supporting products. Recognizing these circumstances and reacting in a safe manner is ***YOUR RESPONSIBILITY***.

2. Simpson Strong-Tie disclaims any responsibility for injury or death, which may result from any disregard of this manual or the verbal instruction of the authorized Simpson Strong-Tie instructor. Following the rules of safe operation given to you here and verbally is ***YOUR RESPONSIBILITY***.

SAFETY STARTS WITH YOU!!!
OBTAIN AUTHORIZED TRAINING

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PT-27HD KIT CONTENTS

CLEANING AND MAINTENANCE

CHANGING THE STABILIZER OR SPALL STOP:

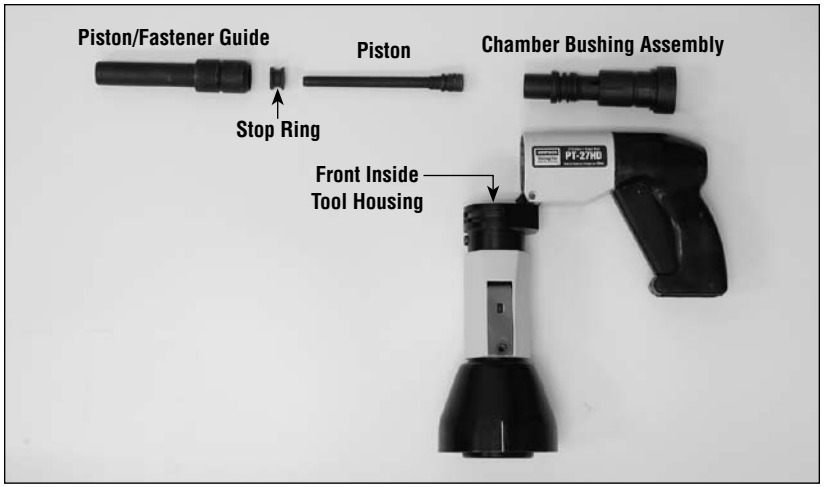
1. Using the point of a fastener, slide the retaining lock back.
2. Rotate the stabilizer or spall stop ¼ turn.
3. Slide the stabilizer or spall stop off.
4. To install the stabilizer or spall stop, press it on and rotate ¼ turn.

MAINTAINING THE TOOL:

A clean tool always functions best. The PT-27HD should be cleaned each day after normal use or after driving approximately 1,000 continuous fastenings.

1) Disassemble the chamber bushing assembly, piston, stop ring and piston/fastener guide.
2) Use the provided brushes and cleaning lubricant to spray, brush and wipe clean the chamber bushing assembly, piston, stop ring, piston/fastener guide and the front inside tool housing.

TOOL PARTS TO BE CLEANED:



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INTRODUCTION

The Simpson Strong-Tie® PT-27HD tool is a low velocity or indirect-acting powder actuated tool (P.A.T.). Do not attempt to operate this or any other tool before obtaining proper training and operator certification.

READ THIS MANUAL CAREFULLY!

It will help you operate the tool with the greatest SAFETY and efficiency by providing you with an understanding of the safety features, operating principles and limitations of the tool and its use. Simpson Strong-Tie disclaims any responsibility for incidents resulting from the disregard of these instructions.

GENERAL HANDLING OF P.A.T. AND POWDER LOADS

GENERAL HANDLING OF THE PT-27HD AND ALL P.A.T. TOOLS

1. ***Always*** point the tool away from yourself and all bystanders.
2. Open the tool before handling to make sure it is not loaded.
3. **Never** place your hand over the front (muzzle) of the tool.
4. **Never** operate the tool without checking to see if the barrel is free of obstructions and that the tool is clean and in good working condition.
5. **Never** attempt to alter, modify or manufacture parts for use in your Simpson Strong-Tie® tool, this can cause malfunctions and result in unsafe functioning of the tool. Use only genuine Simpson Strong-Tie parts, fasteners and power loads at all times.
6. Operators and bystanders must wear eye and ear protection, and head protection is recommended. Serious injury or death can occur if these safety items are not used.
7. Posting a warning sign, "Warning, Powder Actuated Tool In Use" is a minimum warning where P.A.T. tools are in use.
8. **REMEMBER:** use common sense and good judgement. Use this tool for its intended purpose only. Know the material you are fastening into making certain it is compatible with the powder actuated tool.

HANDLING THE PT-27HD, AND POWDER LOADS

1. **Never** carry powder loads in the same pocket or container with fasteners or any other hard objects.
2. **Never** use powder actuated loads in firearms. They are more powerful than normal small arms ammunition.
3. **Never** carry a loaded tool from job to job.
4. **Never** use the tool for anything other than its intended purpose.
5. **Never** use Powder Actuated Tools in flammable atmospheres.
6. **Never** attempt to force a load into the chamber of the tool.
7. **Never** strike or pry a load.
8. ***Always*** wear eye, ear and head protection
9. ***Always*** properly brace yourself when working on scaffolding or ladders.

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CLEANING AND MAINTENANCE

CHANGING THE STOP RING:

The stop ring is designed to absorb energy and stop the piston from over driving when the load is too powerful or if the base material is too soft. Over driving can damage the stop ring. Indication of a damaged stop ring is that the piston is difficult to move with the ramrod, in which case, the stop ring needs to be replaced.

Steps for replacing the stop ring:

1. Remove the chamber bushing assembly.
2. Separate the piston from the chamber bushing assembly.
3. If the stop ring can not be removed from the piston by hand, place the extractor sleeve over the piston head and strike the front of the piston against a hard surface to remove the stop ring.
4. Insert a new stop ring onto the piston, and reassemble the piston/fastener guide, piston and chamber bushing assembly.

TROUBLE SHOOTING TIPS:

1. If loss of power is experienced:
   a) Check for a damaged stop ring and replace if necessary.
   b) Check for a damaged piston and replace if necessary.
   c) Clean the tool.
2. If discharged load does not eject:
   a) Open and close the tool until the auto-eject spring ejects the casing.
   b) If there is a live load in the chamber, remove the chamber bushing assembly and push the powder load out from the front of the chamber. Never pry the back of the powder load.
   c) Clean the tool chamber to maximize the auto-eject feature.
   d) If the casing will not eject using the step above, remove it with the provided awl.

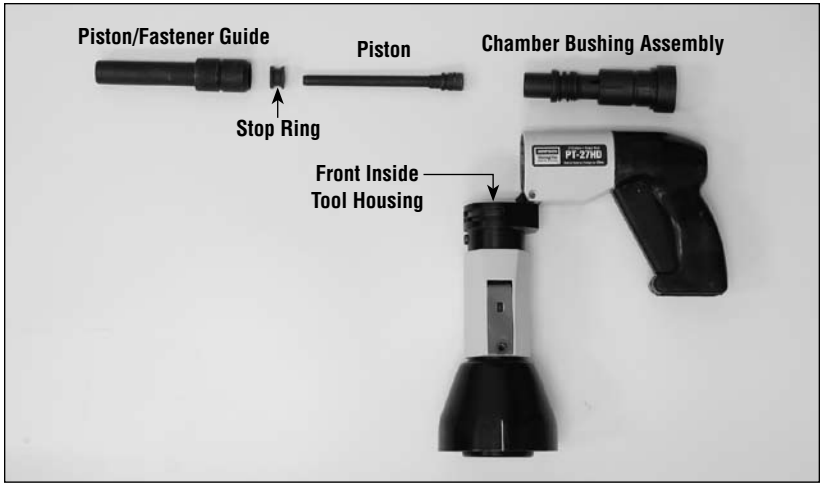
CLEANING AND MAINTENANCE

CHANGING THE PISTON, PISTON RING, OR FASTENER GUIDE:

1. With the tool open, press the front of the tool against a hard surface. This will make the chamber bushing assembly and piston pop loose.
2. Remove the chamber bushing assembly from the front tool housing.
3. Separate the piston from the chamber bushing assembly.
4. Point the front of the tool upward to allow the piston/fastener guide and stop ring to slide out.

ASSEMBLY:

5. Place the stop ring on the piston.
6. Put the proper piston (with stop ring) in the piston/fastener guide. Only use 10mm pistons with 10mm piston/fastener guides and only use 8mm pistons with 8mm piston/fastener guides.
7. Insert the piston/fastener guide, complete with piston and stop ring, into the front housing of the tool.
8. Lastly, insert the chamber bushing assembly into the front housing of the tool. The groove in the chamber bushing assembly must align with the allen guide screw.



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MAKING SAFE FASTENINGS

BASE MATERIAL SUITABILITY & THE CENTER PUNCH TEST

Before loading the tool or fastening into any material, check the suitability and thickness of the base material. To check base material suitability, give it the center punch test.

CENTER PUNCH TEST:

Using the fastener as a punch, with a hammer, strike a solid blow to the actual material you wish to fasten into, then look for these results:

1. If the point of the fastener is blunted, the material is too hard and is unsuitable. If the material is too hard, the fastener can ricochet, and possibly escape, striking you or bystanders and cause serious injury or death.
2. If the material cracks or shatters, it is too brittle and is unsuitable. This can result in particles striking the operator or bystanders, or the fastener could pass completely through the base material causing serious injury or death.
3. If the fastener sinks into the material with the hammer blow, the material is too soft and is unsuitable. If the material is too soft, the fastener can pass completely through and strike someone on the other side causing serious injury or death.

DO NOT USE POWDER ACTUATED TOOLS FOR FASTENING INTO THESE MATERIALS:

1. Vertical mortar joints
2. Bricks
3. Hollow block or tile
4. Glazed tile
5. Glass
6. Hardened or tool grade steel
7. Cast iron
8. Welded areas or torch cuts
9. Spring steel
10. Natural rock

BASE MATERIAL THICKNESS

Thickness of the base material is perhaps the most important consideration for good safe fastenings. In concrete the thickness must be 3 times the shank penetration; in other words, for 1" of shank penetration, the concrete must be at least 3" thick. In steel the thickness must be equal to or greater than the diameter of the shank. Fastening into any base material, which is too thin, may allow the fastener to pass through and escape - resulting in serious injury or death.

THE "NO'S" OF P.A.T. FASTENING

GIDELINES FOR SAFE FASTENING

1. **Never** Hold the tool at an acute angle to the work surface. The tool must be perpendicular to the work surface making certain that NO debris is present on the surface.
2. **Never** set a fastener too close to another installed fastener as this can cause a ricochet.
3. **Never** fasten less than 3" from the edge of unsupported concrete or masonry, or less than ½" from the edge of steel except for specific applications recommended by the tool manufacturer.
4. **Never** fasten into rough, spalled, cracked or uneven concrete. Fasten at least 3" from the outer edge of a spalled area.
5. **Never** fasten into material which is too hard, such as hardened steel, welds, cast steel, marble, spring steel, natural rock, etc. This could cause the fastener to shatter and escape and result in serious injury or death.
6. **Never** fasten into material which is too brittle, such as glass, glazed brick, glazed tile, slate, etc. This could cause the material to shatter and result in serious injury or death.
7. **Never** fasten into material which is too soft, such as wood, plaster, drywall composition board, plywood, etc. This could cause the fastener to pass through and escape resulting in serious injury or death.
8. **Never** fasten through an existing hole in any material as the fastener could hit the edge of the hole and ricochet.
9. **Never** leave the chamber loaded. If you decide not to make a fastening after having loaded the tool, remove both the powder load and fastener from the tool before returning it to its case.
10. **Never** place your hand or any part of your body over the muzzle, or point the tool toward any person when the tool is chambered with a load.

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HOW TO LOAD AND FIRE THE PT-27HD TOOL

5. Lift the grip end of tool until it meets the front of the tool. Push forward to align with the front of tool, then rotate into the locked position.

6. Place one hand on the tool grip and the other hand supporting the heel of the tool. With the tool perpendicular to the work surface, firmly press the tool against the work surface and pull the trigger. If necessary, align the scribe marks on the stabilizer with the layout lines.

7. Extract the load by unlocking and opening the tool. Swing the front end down and the used load will eject automatically.

WARNING: Always install the fastenter in the tool first, and chamber the powder load last.

HOW TO LOAD AND FIRE THE PT-27HD TOOL

1. With the tool empty, closed, and in the locked position, insert a fastener head first into the fastener guide (insert headed pins head first, and insert threaded studs threaded end first).

2. Use the ramrod to push the fastener back until it stops. When it stops, the head of the fastener will be against the front of the piston, and the piston will be chambered.

3. Rotate the front end of the tool to the unlocked position, pull forward, and lower the front end of the tool.

4. Place the load into the chamber.

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BEFORE CHAMBERING A POWDER LOAD

PREPARE FOR LOADING

1. ***Always*** open the tool before handling it to be certain it is unloaded.
2. ***Always*** check to be sure that the tool is clean. Excessive dirt or debris can cause accidental firing or misfiring of the tool.
3. **Never** load or fire the tool in an explosive atmosphere or when flammables are nearby.
4. **Never** use improper power loads or fasteners in the tool, as this may be unsafe or damage the tool.
5. ***Always*** insert the fastener first, and the load last. Make sure you never double load the fasteners.
6. **Never** allow bystanders to gather around you when using the tool.
7. **Never guess** - before fastening into any unknown base material, particularly into walls, perform the center punch test described in this manual.
8. **Never guess** - once you determine that the base material is suitable, make a test fastening with a Green (P27LVL3) load. If the Green does not set the fastener try Yellow (P27LVL4), Red (P27LVL5) and then Purple (P27LVL6) until the proper power is determined.

SELECTING FASTENERS AND LOADS

THE PT-27HD IS DESIGNED FOR THE FOLLOWING LOADS:

Simpson Strong-Tie® Part #	Power Level	Color
P27LVL3	3	Green
P27LVL4	4	Yellow
P27LVL5	5	Red
P27LVL6	6	Purple

THE PT-27HD IS DESIGNED FOR THE FOLLOWING FASTENERS: ¾" – 3" lengths

Simpson Strong-Tie Fasteners	Description
PSLV3-XXXXXX Series	⅜" Threaded Studs with .205 Shank Dia. with 10mm fastener guide and piston.
PSLV4-XXXXXX Series	¼" Threaded Studs with .150 Shank Dia. with 8mm fastener guide and piston.
PHV3-XXX Series	⅜" Headed Fasteners with .177" Shank Dia. with 10 mm fastener guide and piston
PHN-XXX Series	8 mm Headed Fasteners with 3.7 mm Shank Dia. with 8mm fastener guide and piston
PDP-XXX Series	.300 Headed Fasteners with .145 Shank Dia. with 8mm fastener guide and piston.

SAFE HANDLING PRACTICES OF P.A.T.

1. If the powder load does not fire after pulling the trigger, hold the tool firmly against the work surface for at least 30 seconds. Carefully remove the tool from the work surface, making sure to point it away from yourself and any bystanders. Remove the load and dispose of it in a can of water. Unfired loads must never be thrown in trash containers or carelessly discarded in any way.
2. **NEVER** attempt to force or pry an unfired powder load from the chamber plug with a sharp or pointed object, as this may cause an accidental discharge.
3. **NEVER** attempt to disassemble a jammed tool containing a live powder load. Tag the tool "DO NOT USE" and store it safely in a locked case. Call your Simpson Strong-Tie® representative for tool repair.
4. If at any time during the operation of the tool you feel it is not working properly, STOP using it and call your Simpson Strong-Tie representative.
5. If unnecessary bystanders are in the area tell them to leave, warn all others that you are using a powder actuated tool.
6. Check the work surface to be sure it is clear of any debris. Clear away any debris so that the tool sits flush on the work surface.
7. Check the work area for explosive or flammable materials. If any are found remove them before operating the tool.
8. Check the chamber of the tool to be sure there is no dirt, grit or foreign objects present.
9. Check the barrel to make sure you don't double load it with fasteners, and that it is clear of any obstruction.
10. Any tool found not to be in proper working condition shall be immediately removed from service and tagged "Defective Tool", until it has been repaired according to manufacturer's instructions.

BEFORE loading the tool, operate it a few times on a solid surface making certain all parts move freely and that the firing pin clicks when the tool is fully depressed and the trigger is pulled. "Dry firing" will not damage the tool.

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PRINCIPLES AND GUIDELINES FOR PROPER FASTENING

FISH-HOOKING:

"Fish-hooking" is when the fastener curves when driven into concrete. This is caused by the fastener hitting large, hard, or excessive amounts of aggregate, rebar, or any hard object. Fish-hooking can reduce the holding power of the fastener, result in spalling, and may increase unsafe conditions due to escaping particles. Fish-hooking can be minimized by:

- Reducing shank penetration
- Increasing shank diameter
- Using appropriate powder load level. Excessive power can cause over driving.
- Fastening through a metal disc

FASTENING INTO STEEL:

The most common type of steel fastened into is structural steel in the form of beam, angle iron, channel, tee, plate, and strip. The holding power of the powder actuated fastener is a function of the gripping action of the steel base material around the fastener, and the fusion of the fastener to the base material.

FACTORS THAT INFLUENCE THE HOLDING POWER OF FASTENERS IN STEEL ARE:

- Shank diameter: Larger shank diameters increase holding power
- Thickness of steel base material: Thicker base material increases holding power
- Fastener Point Penetration: Getting the point to pass through base material by approximately ¼" increases holding power
- Knurled Fasteners: Knurling on the fastener provides interlocking of the shank and the base material which increases the holding power

GENERAL RULES:

Minimum spacing of fasteners into steel is 1½". Minimum edge distance of fasteners into steel is ½". Steel Thickness must be no less than than the shank diameter of the fastener.

PRINCIPLES AND GUIDELINES FOR PROPER FASTENING

FASTENING INTO MASONRY MATERIALS:

Masonry materials suitable for fastening into include:

- Poured concrete
- Precast concrete
- Pre-stressed concrete
- Grout filled concrete block
- Grouted joints

Fasteners are primarily held into masonry by a combination of clamping of concrete around the fastener, and sintering. Factors that influence a fastener driven into conrete include:

- Depth of penetration
- Compressive strength of concrete
- Fastener spacing and edge distance
- Fastener shank diameter
- Concrete aggregate

PROPER DEPTH OF PENETRATION:

	.145" Dia. Shank Penetration	⅜" Stud Penetration
Concrete Block & Joints	1"-1¼"	1½"-1¾"
Conrete 2000-2500 psi	9-10 times Shank Dia. or 1¼" -1½"	1"-1½"
Concrete 2500-4000 psi	7-8 times shank Dia. or 1"-1¼"	1"-1½"
Precast or prestressed concrete 4,000 psi	5-6 times shank Dia. or ⅞"-1¼"	⅞"-1"

FASTENER EDGE DISTANCE ON CONCRETE:
Distance should be no closer than 3".

MINIMUM DISTANCE BETWEEN FASTENINGS:
.300 and 8 mm headed fasteners – 3" spacing.
¼" and ⅜" threaded fasteners – 6" spacing.

CONCRETE THICKNESS:
Concrete thickness must be at least 3 times the fastener penetration.

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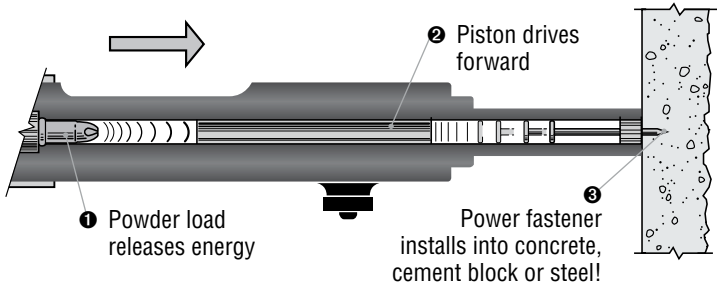
OPERATING PRINCIPLE OF P.A.T.

THERE ARE TWO TYPES OF POWDER ACTUATED TOOLS:

INDIRECT-ACTING TYPE TOOL

Indirect-acting type tools work by expanding gases that act directly on a piston which drives the piston forward to strike the fastener.



The PT-27HD is an indirect-acting type tool.

DIRECT-ACTING TYPE TOOL

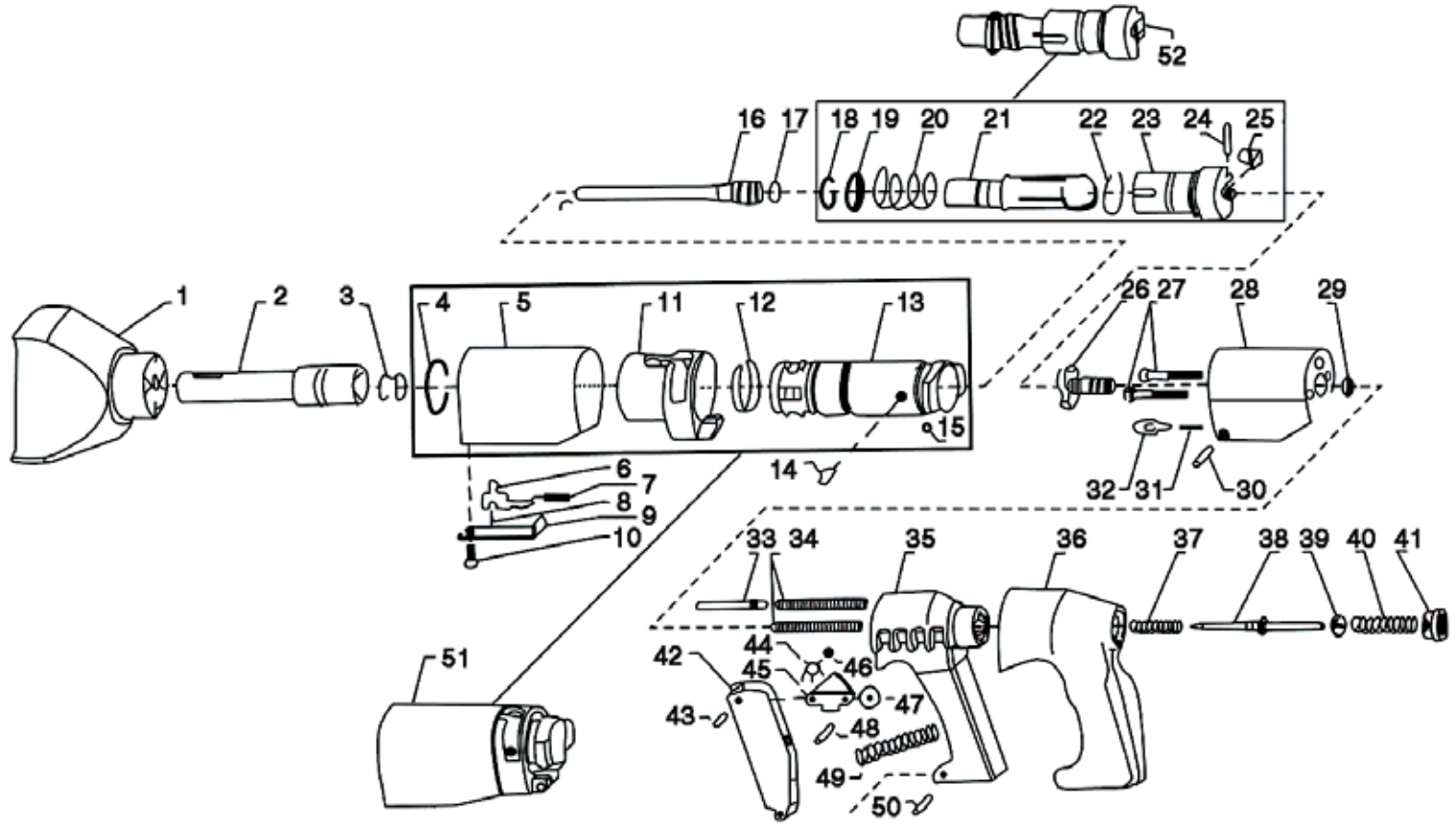
Direct-acting type tools work by expanding gases that act directly on the fastener without the use of a piston. Direct-acting tools are no longer manufacturered in North America and are regarded as far less safe to operate than indirect-acting tools.

CAUTION: The PT-27HD is capable of fastening into concrete and/or steel. The fastener enters the work surface with an extreme amount of energy. Make certain not to misdirect the energy.

SAFETY STARTS WITH YOU!

As the powder actuated tool operator, your safety and the safety of those around you should always be kept in mind. Consider that the least powerful load used in powder actuated stud drivers produce approximately 10 times the power of a .22 caliber long rifle cartridge. Respect this power as you would a chain saw, a lawn mower, or a rifle.

SCHEMATIC AND PARTS FOR THE PT-27HD TOOL



PT-27HD-**1-1**	Stabilizer (half round)	PT27HD-**13**	Bolt Bushing	PT27HD-**26**	Firing Pin Guide	PT27HD-**41**	End Cap
PT27HD-**1-2**	Spall Surpressor	PT27HD-**14**	Allen Cap Screw	PT27HD-**27**	Allen Cap Screw M6x40	PT27HD-**42**	Trigger Body
PTHD-G8 (#**2**)	Guide (8mm)	PT27HD-**15**	Ball Ø4.5	PT27HD-**28**	Bolt Cover	PT27HD-**43**	Pin A4x18
PTHD-G10 (#**2**)	Guide (10mm)	PTHD-P8 (#**16**)	Piston (8mm)	PT27HD-**29**	Firing Pin Circlip	PT27HD-**44**	Twisted Spring
PTHD-G12 (#**2**)	Guide (12mm)	PTHD-P10 (#**16**)	Piston (10mm)	PT27HD-**30**	Hinge Pin	PT27HD-**45**	Trigger Lever
PTHD-SR (#**3**)	Stop Ring	PTHD-P12 (#**16**)	Piston (12mm)	PT27HD-**31**	Hinge Spring	PT27HD-**46**	Ring
PT-27HD-**4**	Shaft End Circlip	PT27HD-**17**	Piston Ring	PT27HD-**32**	Ejector Trip	PT27HD-**47**	Trigger Wheel
PT-27HD-**5**	Bolt Head Cover	PT27HD-**18**	Piston Sleeve cirlip	PT27HD-**33**	Buffer Rod	PT27HD-**48**	Dowel Pin A4x10
PT27HD-**6**	Catch	PT27HD-**19**	Retaining Ring	PT27HD-**34**	Firing Pin RT Spring	PT27HD-**49**	Trigger Spring
PT27HD-**7**	Catch Spring	PT27HD-**20**	Return Spring	PT27HD-**35**	Back Body	PT27HD-**50**	Pin A4x30
PT27HD-**8**	Catch Compression Spring	PT27HD-**21**	Piston Sleeve	PT27HD-**36**	Back Body Rubber Grip	PT27HD-**51**	Housing Body Unit
PT27HD-**9**	Catch Holder	PT27HD-**22**	Clip Ring	PT27HD-**37**	Compression Spring	PT27HD-**52**	Chamber Assembly
PT27HD-**10**	Allen Screw M5x10	PT27HD-**23**	Chamber Body	PT27HD-**38**	Firing Pin		
PT27HD-**11**	Extension	PT27HD-**24**	Ejector Pin	PT27HD-**39**	Retaining Plate		
PT27HD-**12**	Circlip	PT27HD-**25**	Ejector	PT27HD-**40**	Firing Pin Spring		