

OPERATION AND MAINTENANCE MANUAL FOR

PRT - Percussive Rescue Tool Kit



PN 22-000629

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LIST OF EFFECTIVE PAGES

Date of original pages is:

Original 1 December 1995

Total number of pages in this publication is 26 consisting of the following:

No. No Page No. *Change No. Title and A	Page	*Change		
No. No Title and A	No.	No	Page	*Change
Title and A			No.	No
Change Record 0 1-4 blank 0 Change Record-2 blank 0 2-1 through 2-3 0 Foreword-1 0 2-4 blank 0 Foreword-2 blank 0 3-1 0 i. through iii 0 3-2 blank 0 iv blank 0 4-1 through 4-3 0 4-4 blank 0 0 0	Title and A	0	1-1 through 1-3	0
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4-4 blank 0	iv blank	0	4-1 through 4-3	0
			4-4 blank	0

* Zero in this column indicates an original page.

VALIDATION CERTIFICATE

TECHNICAL MANUAL TITLE

OPERATION AND SERVICE MANUAL FOR PRT (PERCUSSIVE RESCUE TOOL)

TECHNICAL MANUAL NUMBER

P/N 22-000629

DATE

16 December 2011

CONTRACT/NO.

I-VALIDATION

Except as stated in II, the technical manual indentified above has been satisfactorily validated in accordance with all requirements of the applicable contact. The technical manual is hereby certified to be accurate and complete, and the information, instructions, text, and illustrations conform in all respects to the applicable general and detailed specifications.

II - EXCEPTIONS

EXCEPTIONS

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SIGNATURE OF PUBLICATIONS QUALITY ASSURANCE OFFICER	DATE
SIGNATURE ON FILE	

QAP20/002/B

Change Record

Change No.	Date	Title or Brief Description	Signature of Validating Officer
1	16 DEC 2011	PRT images updated to new style gripping surface	Signature on File

FOREWORD

This technical manual conforms to Military Specifications MIL-M-38784, General Style and Format Requirements, MIL-M-7298 Commercial Equipment Technical Manual and MIL-M-15071 Equipment and Systems Content Requirements for Technical Manuals. The manual contains description, operating instructions, scheduled maintenance recommendations, and parts list for the PRT (Percussive Rescue Tool) manufactured by Paratech Incorporated, 1025 Lambrecht Road, Frankfort, Illinois 60423-1648.

All pertinent data relative to the PRT (Percussive Rescue Tool) is contained herein without specific reference to other publications. Refer to the table of contents for the arrangement of the contents within this publication.

This manual consists of one volume arranged in four chapters as follows:

Chapter 1 - General Information and Safety Precautions

Chapter 2 - Operation

Chapter 3 - Scheduled Maintenance

Chapter 4 - Parts List

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SAFETY SUMMARY

The following are general safety precautions. These are recommended precautions that personnel must understand and apply during many phases of operation and maintenance.

Keep the work area clean when maintaining or repairing the PRT.

Personnel not directly involved in operation or maintenance of the PRT should keep a safe distance from the work area.

Operation of the PRT by unauthorized personnel or minors is prohibited.

Use the proper tool bit for each application.

Wear proper apparel: Safety Goggles, Hard Hat, Gloves, and Safety Shoes.

Use a respirator in contaminated environments.

During operation, do not over reach. Keep stable footing and balance at all times.

Don't pry with the PRT when attached to either the 6" or 14" penetrator. Such action can break the penetrator.

The following warnings and cautions appear in the text of this manual, and are repeated here for emphasis:



Always make sure that the handle and ram of the PRT are locked by the collet ring before changing tool bits. If the handle and ram are not locked down, they will succumb to gravity as the PRT is turned over and could cause injury.



When changing or installing tool bits, always make certain the tool retainer locking ring is securely locked in place before ramming the handle. If it is not sufficiently locked in place the tool bit will fly out of the end of the PRT and could present a serious hazard.



Locking the ram and handle in an open position is not considered a positive lock. The ram and handle can still be moved if a sufficient force is acting upon them. The strength of the lock in an open position is dependent upon the hand strength of the operator.



Keep fingers clear of the bottom of the handle and collet ring when ramming.



Keep hands and other body parts away from the end of the tool bit when ramming.

CHAPTER 1 GENERAL INFORMATION AND SAFETY PRECAUTIONS

1-1 SAFETY PRECAUTIONS

Refer to the Safety Summary preceding Chapter 1, "General Information and Safety Precautions", for safety precautions necessary for the protection of personnel and equipment.

1-2 INTRODUCTION

This technical manual provides instructions for the operation, maintenance, and parts support for the PRT (Percussive Rescue Tool) manufactured by Paratech Incorporated, 1025 Lambrecht Road, Frankfort, Illinois 60423-1648.

The PRT is designed for use in rescue situations involving forcible entry and penetration.

The PRT is manufactured from aluminum (housing) for light weight and steel (ram) for strength. The PRTtool bits are manufactured from forged heat treated alloy steel to provide high impact strength and long tool life.

1-3 EQUIPMENT DESCRIPTION

1-3.1 PRT (PERCUSSIVE RESCUE TOOL)

The PRT is a powerful, manually operated forcible entry and penetration tool. The PRT uses the "Slam and Ram" principle of operation to maximize its power and to retain the efficiency of one man operation. Because there is no deflection of the pounding force, all of the energy is used to strike effective, penetrating blows by a single person.



Figure 1-1. The PRT (Percussive Rescue Tool) Part No. 22-000627

When hydraulic, electric, and pneumatic power is unavailable, the PRT allows you to continue working your way through various materials such as wood, block, concrete, metal, or composites.

The PRT is manufactured from aluminum (housing) for

light weight and steel (ram) for strength. It features a machine grooved non-slip handle, a collet ring that can lock the ram in any position to aid in leverage, and a tool retainer with its own locking ring that allows for quick and safe tool bit changes.

1-3.2 PRT TOOL BITS AND ACCESSORIES

Unlike other single task tools, the PRT allows the operator to select from a wide range of tool and penetrator bits that best suit to the job at hand. The PRTtool bits are manufactured from forged heat treated alloy steel to provide high impact strength and long tool life.

a. **Bull Point - 14**" The Bull Point tool bit is ideal for breaking concrete and masonry materials.



Figure 1-2. Bull Point - 14" Long Part No. 22-098101

b. **3" Wide Chisel - 14"** The 3" Wide Chisel is used for prying, metal cutting, and its extra long length is perfect for reaching into areas that are extra deep and narrow.



Figure 1-3. 3" Wide Chisel - 14" Long Part No. 22-098107

c. **1" Wide Chisel - 14"** The 1" Wide Chisel is good for prying, breaking bolts, and breaching brick and block walls.



Figure 1-4. 1" Wide Chisel - 14" Long Part No. 22-098111

d. Lock Breaker Claw The Lock Breaker Claw is used for prying and forcing open roll-up doors, elevator door, fire doors, windows, twisting open hasps and locks, and pulling large nails or spikes.

Figure 1-5. Lock Breaker Claw Part No. 22-000636

e. **Metal Cutting Claw** The Metal Cutting Claw is made to cut the metal of automobiles, aircraft, metal structures such as corrugated sheds, etc.



Figure 1-6. Metal Cutting Claw Part No. 22-000637

*f. **6"** Penetrator Applicator The 6" Penetrator Applicator is made from heat treated alloy steel and is used as a penetrating nozzle that will flow water, AFFF/foam solutions, halon, and carbon dioxide. The penetrator applicator was designed to allow access to battery/engine housings, aircraft fuselage, and watertight compartments. The 6" Penetrator Applicator has a capacity of 65 GPM @ 100 PSI (345 LPM @ 6.8 bar).



Figure 1-7. 6" Penetrator Applicator Part No. 22-098106

*g. **14" Penetrator Applicator** The 14" Penetrator Applicator is also made from heat treated alloy steel and has a capacity of 115 GPM @ 100 PSI (436

LPM @ 6.8 bar).



Figure 1-8. 14" Penetrator Applicator Part No. 22-098114

*h. Quick Connector The Quick Connector coupling is made from hard coated aluminum alloy and is used to hook up the PRT/Penetrating Applicator to whatever extinguishing media you happen to be using. Two Quick Connector coupling models are available, depending upon the connection necessary, NH or NPSH.



Figure 1-9. Quick Connector Part No. 22-550320 or 22-550330

i. **PRTKit Carrying Pouch** The PRT Kit Carrying Pouch is made from tough, strong vinyl coated nylon and features velcro straps for easy access and worryfree storage. It stores all the standard items that come with the PRT Kit, rolls up easily, and has two handy carrying straps so you can take the PRTjust about anywhere.



Figure 1-10. PRT Kit Carrying Pouch Part No. 22-015472

(*Optional Tools and accessories for use with the PRT)

1-4 RELATIONSHIP OF UNITS

Refer to Figures 1-1 through 1-10 for pictorial illustrations of the PRT and its tool bits and accessories.

1-5 REFERENCE DATA

Reference data pertaining to the PRT and its accessories are summarized for quick reference in tables 1-1 and 1-2

Table 1-1. Reference Data

PRT (PERCUSSIVE RESCUE TOOL) without to	ool bit
26.6" - 39.3" (67.6 cm - 99.8 cm)	
Part Number	2-000627
Stroke12.7" (32.3 cm)
Net Weight 10.0 lb	(4.5 kg)
BULL POINT	()
18" long (45.7 cm)	
Part Number	2-098101
Net Weight	(1.5 kg)
3" WIDE CHISEL	¢ 0,
18" long (45.7 cm)	
Part Number	2-098107
Net Weight	(1.8 kg)
1" WIDE CHISEL	ζ υ
18" long (45.7 cm)	
Part Number 22	2-098111
Net Weight	(1.5 kg)
LOCK BREAKER CLAW	
12.5" long (31.8 cm)	
Part Number	2-000636
Net Weight	(1.6 kg)
METAL CUTTING CLAW	ζ υ
12.3" long (31.2 cm)	
Part Number	2-000637
Net Weight	(1.4 kg)
6" PENETRATOR APPLICATOR	ζ υ
17.7" long (45.0 cm)	
Part Number	2-098106
Net Weight	(1.4 kg)
4" PENETRATOR APPLICATOR	(0)
26.9" long (68.3 cm)	
Part Number 22	2-098114
Net Weight 3 8 lb	(1.7 kg)
OUICK CONNECT COUPLING	(
1 1/2" NH - Connection	
Part Number 22	2-550320
Net Weight 0.5 lb	(0.2 kg)
1 1/2" NDSIL Connection	(0.2 kg)
Deat Next have	550220
Part Number	2-550330
Net Weight0.5 lb	o (0.2 kg)
CARRYING POUCH	
Part Number 22	2-015472
Net Weight 1.4 lb	(0.6 kg)

Table 1-2. Reference Data - Overall Length and Total Weight; PRT with Accessories

PRT Kit Complete
Total Length
Total Weight
PRT with BULLPOINT
Total Length40.3" - 53.0" (102.4 - 134.6 cm)
Total Weight 14.5 lb (6.6 kg)
PRT with 3" WIDE CHISEL
Total Length40.3" - 53.0" (102.4 - 134.6 cm)
Total Weight 15.1 lb (6.8 kg)
PRT with 1" WIDE CHISEL
Total Length40.3" - 53.0" (102.4 - 134.6 cm)
Total Weight 14.5 lb (6.6 kg)
PRT with LOCK BREAKER CLAW
Total Length
Total Weight 14.8 lb (6.7 kg)
PRT with METAL CUTTING CLAW
Total Length
Total Weight 14.2 lb (6.4 kg)
PRT with 6" PENETRATOR APPLICATOR
Total Length40.0" - 52.7" (101.6 - 133.9 cm)
Total Weight 14.2 lb (6.4 kg)
PRT with 14" PENETRATOR APPLICATOR
Total Length49.2" - 61.9" (125.0 - 157.2 cm)
Total Weight15.0 lb (6.8 kg)

1-6 DOCUMENTS SUPPLIED.

No documents other than this publication are required as supporting literature for the PRT (Percussive Rescue Tool).

CHAPTER 2 OPERATION

2-1 INTRODUCTION

The PRT is designed for use in rescue situations involving forcible entry and penetration.

The specific situation requiring the use of the PRT will generally determine which tool bit or optional accessory will be required to be utilized in combination with each other.

2-2 PREPARATION FOR USE

2-2.1 PRT

Before using the PRT, all operators should read the SAFETY SUMMARY preceding Chapter 1 of this manual and become familiar with all the warnings and cautions contained throughout this manual.

Only personnel trained and qualified in rescue should be allowed to operate the PRT.

Personnel not directly involved in operation of the PRT should keep a safe distance from the work area. PRT operators should be wearing the proper safety apparel indicated in the SAFETYSUMMARY preceding Chapter 1.

Always make sure that the handle and ram of the PRT are locked by the collet ring before changing tool bits. If the handle and ram are not locked down, they will succumb to gravity as the PRT is turned over and could cause injury.

When changing or installing tool bits, always make certain the tool retainer locking ring is securely locked in place before ramming the handle. If it is not sufficiently locked in place the tool bit will fly out of the end of the PRT and could present a serious hazard. Keep fingers clear of the bottom of the handle and collet ring when ramming.

Keep hands and other body parts away from the end of the tool bit when ramming.

2-3 CONTROLS AND INDICATORS

2-3.1 CONTROLS

The controls of the PRT consist of the following: the Tool Retainer Locking Ring and the Collet Ring. See Figure 2-1. Operation of Controls.

a. **Tool Retainer Locking Ring** - The Tool Retainer Locking Ring is used during the installation or changing of tool bits. With the PRT held in a vertical position with the ram and handle end at the bottom and the tool retainer end at the top, the tool retainer locking ring is rotated clockwise to disengage the tool retainer finger that holds the tool bit in place. When the tool retainer locking ring is tightened counter-clockwise, the finger comes into contact with it and is prevented from opening any further, thus keeping the tool bit from emerging from the tool retainer when the ram is struck.

b. **Collet Ring -** The Collet Ring is primarily used to lock the ram and handle in the closed position for safety while carrying the PRT. It also has the capability of locking the handle and ram in an open position anywhere along the length of the stroke.



Figure 2-1. Operation of Controls

WARNING

It should be noted, however, that locking the ram and handle in an open position is not considered a positive lock. The ram and handle can still be moved if a sufficient force is acting upon them. The strength of the lock in an open position is dependent upon the hand strength of the operator.

Holding the PRT in a vertical position with the tool retainer end at the bottom and the ram and handle end at the top, the Collet Ring is rotated counter-clockwise to disengage the collet chuck that grips the ram and allows the ram and handle to slide freely inside the PRThousing. Tightening the Collet Ring by Rotating it clockwise clamps down on the collet chuck, thus inhibiting the ram and handle's freedom of movement.

2-3.2 INDICATORS

The indicators on the PRT consist of the following: Labels on Tool Retainer and the Housing.

a. **Tool Retainer Label** - An easy to understand graphical representation of the two possible states of the tool retainer. By rotating the tool retainer locking ring in the directions indicated on the label, it becomes either locked or unlocked.

b. **Collet Ring Label** - Identical to the tool retainer locking ring label, it is an easy to understand graphical representation of the two possible states of the collet ring. By rotating the collet ring in the directions indicated on the label, it becomes either locked or unlocked.



PRT Lock/Unlock Label

2-4 APPLICATIONS

The PRT is a forcible entry and penetrating tool, so its application parameters are defined by the materials it will be working on. The choice of the proper tool bit for varying materials is the most important factor to consider when using the PRT. The following descriptions should help you in determining the proper tool bit for the job at hand.

a. Bull Point - 14" The Bull Point tool bit is ideal

for breaking concrete and masonry materials.

b. **3" Wide Chisel - 14"** The 3" Wide Chisel is used for prying, metal cutting, and its extra long length is perfect for reaching into areas that are extra deep and narrow.

c. **1" Wide Chisel - 14"** The 1" Wide Chisel is good for prying, breaking bolts, and breaching brick and block walls.

d. Lock Breaker Claw The Lock Breaker Claw is used for prying and forcing open roll-up doors, elevator doors, fire doors, windows, and twisting open hasps and locks.

e. Metal Cutting Claw The Metal Cutting Claw is made to cut the metal of automobiles, aircraft, metal structures such as corrugated sheds, etc.

*f. **6"** Penetrator Applicator The 6" Penetrator is used as a penetrating nozzle that will flow water AFFF/foam solutions, halon, and carbon dioxide. The penetrator applicator was designed to allow access to battery/engine housings, and watertight compartments. The 6" Penetrator Applicator has a capacity of 65 GPM @ 100 PSI (345 LPM @ 6.8 bar).

*g. **14" Penetrator Applicator** The 14" Penetrator Applicator has a capacity of 115 GPM @ 100 PSI (436 LPM @ 6.8 bar).

*h. Quick Connector The Quick Connector coupling is used to hook up the PRT/Penetrating Applicator to whatever extinguishing media you happen to be using. Two Quick Connector coupling models are available, depending upon the connection necessary, NH or NPSH.

2-5 NORMAL OPERATING PROCEDURES

Operation of the PRT is fairly simple, just follow these steps:

- 1. Unroll the PRTcarrying pouch.
- 2. Select the tool bit best suited for the task at hand.

(Reference Figure 2-1 Operation of Controls, page 2-1)

3. Make certain that the ram and handle are in a locked position so they won't slide out of the housing unexpectedly while you are installing the tool bit. Accomplish this by twisting the collet ring in the direction indicating "Locked" on the collet ring label located on the PRT housing near the handle.

4. Insert the shank end of the tool bit into the tool retainer. If the tool retainer finger impedes the tool bit from seating completely into the retainer, release the tool retainer more by twisting the tool retainer ring in the direction indicating "Unlocked" on the tool retainer label until the collar on the tool bit clears the tool retainer finger.

5. Lock in the tool bit by rotating the tool retainer ring in the direction indicating "Locked" on the tool retainer label. This will close the tool retainer finger over the shank of the tool bit and hold it in place.

6. Now that the tool bit is securely in place, place the working tip of the tool bit on the work surface where you want to begin penetrating.

7. Release the ram and handle of the PRT by rotating the collet ring in the direction indicating "Unlocked" on the collet ring label located on the housing near the handle until the ram and handle operate smoothly when withdrawn and repeatedly struck (Slam and Ram) against the tool bit.



ALWAYS CHECK TO MAKE SURE THAT THE COLLET RING IS IN THE LOCKED POSITION WHEN THE PRT IS NOT IN SERVICE TO PREVENT THE RAM AND HANDLE FROM ACCIDENTLY SLIPPING OUT OF THE HOUSING AND INJURING ANYONE.



ALWAYS OPERATE THE PRT AGAINST A WORK SURFACE.



ALWAYS KEEP THE TOOL BITS SHARP AND WELL EDGED.

NOTE: If using the optional 6" or 14" Penetrators in conjunction with PRT, it is always the best practice to penetrate the material first before attaching any fire hoses or other extinguishing medium to the penetrator. Also, if you need to penetrate through concrete or masonry and are planning to use the optional penetrators, use the bull point tool bit to penetrate the concrete or masonry first. then switch to the penetrators to extinguish.

CHAPTER 3 SCHEDULED MAINTENACE

3-1 INTRODUCTION

The major components of the PRT and its accessories require little maintenance to ensure optimum performance. This chapter provides preventative maintenance procedures.

3-2 MAINTENANCE PLAN

Preventative maintenance for the PRT is accomplished in accordance with the PRT Maintenance Schedule in Table 3-1.

3-3 GENERAL MAINTENANCE

3-3.1 GENERAL

General maintenance shall be performed as detailed in the PRT Maintenance Schedule in Table 3-1.

3-3.2 SURFACE CLEANING

As with any quality tool, the state of cleanliness of it can affect its performance and lifespan. Following the procedures in the PRT Maintenance Schedule in Table 3-1 will assist you in keeping your PRT clean and effective.

3-3.3 INSPECTION

Operators should inspect the PRT and its tool bits and accessories before and after each use to ensure safe, effective, and efficient use. If corrective action is necessary, follow the procedures outlined in the PRT Maintenance Schedule in Table 3-1.

3-3.4 TOOL BIT SHARPENING

Combine the scheduling outlined in Table 3-1 and the following instructions to keep your tool bits sharp and productive.

a. **1**" & **3**" Chisels - Using a grinding wheel or file, grind down cutting edge to approximately 45 degrees on each side to produce a sharp, even cutting edge.

b. **Bull Point** - Using a grinding wheel or file, grind down all four sides of point to approximately 45 degrees to produce a sharp, even penetrating point.

c. **Metal Cutting Claw** - Using a grinding wheel or file, grind down both sides of the chisel portion of the claw to approximately 45 degrees to produce a sharp, even cutting edge. On the claw portion, use a belt-sander along the back (flat) side cutting edge to clean up any nicks, notches, or other irregularities.

d. Lock Breaker Claw - Using a grinding wheel or file, grind down 1" of the rounded side of the claw at the tips of the forks being careful to keep their thickness and length as close to equal as possible.

3-3.5 STORAGE

The PRT, its tool bits, and accessories should be stored in a dry, flat area.

Frequency Maintenanc	e Requirement	Paragraph
During Use	Keep Tool Bit Sharp	3-3.4
After Use are	Keep Tool Bit Sharp, Clean Ram (Clean of all debris, wipe down with a rag lightly oiled with a lubricant such as WD40), Clean grooves on Handle and Housing to provide a good grip, Make sure all fasteners (screws, etc.) tightened.	3-3.1, 3-3.2
Quarterly	Lubricate threads on Tool Retainer Locking Ring and Collet Ring with WD40 type lubricant to ensure	3.32

Table 3-1 Maintenance Schedule

CHAPTER 4 PARTS LIST

4-1 INTRODUCTION

This chapter list standard and optional parts for the PRT (Percussive Rescue Tool). The parts list is used to identify and locate all repair parts, including all attaching hardware supplied. The parts should be ordered by part number when ordered from Paratech Incorporated, 1025 Lambrecht Road, Frankfort, Illinois 60423-1648.

4-2 LIST OF MAJOR COMPONENTS

The PRT is comprised essentially of detail parts and contain no major components.

4-3 PARTS LIST TABLES

The PRT's parts and accesories are listed in Table 4-1 through 4-2. The table(s) contain five columns which are described below.

4-3.1 FIGURE AND INDEX NUMBER COLUMN

This column shows the figure and index number of each part listed. Tables 4-1 through 4-2 relate to illustrations contained in chapter 4. The index numbers which identify the individual parts are separated from the figure number by a hyphen. Index numbers run consecutively.

4-3.2 DESCRIPTION COLUMN

The DESCRIPTION column describes each part (by noun names and modifiers) in sufficient detail for clarity. Descriptions are successively indented to the right to show assembly and part relationship.

4-3.3 QUANTITY COLUMN

Quantities specified in the QUANTITY column are the total number of each part required per assembly.

4-3.4 CAGE COLUMN

The assembly and parts are identified by a five digit code. These code numbers are in accordance with Federal Supply Cataloging Handbook H-4-1. A cross reference between these codes and the manufacturer's is shown in Table 4-3.

4-3.5 PART NUMBER COLUMN

The part number column contains an identifying number for each part listed. Vendor numbers are shown where applicable.

4-4 LIST OF MANUFACTURERS

A list of all manufacturers' code numbers used in the parts list is shown in Table 4-3. These codes are in accordance with Federal Supply Cataloging Handbook H-4-1.



Figure 4-1. PRT Components

Table 4-1.	PRT	Assembly	Parts List
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Figure and Index Number	Description	Quantity	CAGE	Part Number
4-1	PRT ASSEMBLY	1	30978	22-000627
1	HANDLE & KAM ASSEMBLY	1	30978	22-015720
-1	Handle	1	30978	22-015/21
-2	Rubber Bumper	I	30978	22-015726
-3	Grooved Pin	1	30978	22-015049
-4	Ram	1	30978	22-015722
-5	Collet Ring	1	30978	22-015725
-6	Collet Chuck	1	30978	22-015724
-7	O-Ring	1	30978	22-895248
-8	Sleeve	1	30978	22-015723
-9	Grooved Pin	1	30978	22-015015
	HOUSING ASSEMBLY	1	30978	22-015710
-10	Housing Tube	1	30978	22-015711
-11	Tool Bit Retainer	1	30978	22-015712
-12	Retainer Finger	1	30978	22-015713
-13	Retainer Locking Ring	1	30978	22-015714
-14	Screw	1	30978	22-670507
	NOT SHOWN			
	Labels			



Figure 4-2. PRT Tool Bits and Accessories

Table 4-2.	PRT Tool I	Bits and	Accessories	Parts L	ist
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Figure and Index Number	Description	Quantity	CAGE	Part Number
4-2	PRT TOOL BITS & ACCESSORIES			
-1	Bull Point - 14" long	1	30978	22-098101
-2	3" Wide Chisel - 14" long	1	30978	22-098107
-3	1" Wide Chisel - 14" long	1	30978	22-098111
-4	Lock Breaker Claw	1	30978	22-000636
-5	Metal Cutting Claw	1	30978	22-000637
-6	6" Penetrator Applicator (optional)	1	30978	22-098106
-7	14" Penetrator Applicator (optional)	1	30978	22-098114
-8	Quick Connector Coupling NH (optional)	1	30978	22-550320
ľ	Quick Connector Coupling NPSH (optional)	1	30978	22-550330
-9	PRT Kit Carrying Pouch	1	30978	22-015472

CAGE	Manufacturer's or Vendors Name and Address	
30978	Paratech Incorporated, 1025 Lambrecht Road, Frankfort, Illinois 60423-1648	