

# **DECK DRIVEN - GRASS COLLECTION SYSTEM**

**Worldlawn Cobra Series** 



ASSEMBLY **OPERATION MAINTENANCE** 

MANUAL PART#: 00488 REV: 0

# PECO GRASS COLLECTION SYSTEM TABLE OF CONTENTS

S	SECTION	PAGE	S	ECTION	PAGE
	SafetySafety Alert Symbols	3		2-9 Transition Installation 2-10 Hose Installation	
I	INTRODUCTION AND DESCRIPTION 1-1 Introduction 1-2 Description	5 5	III	OPERATING INSTRUCTIONS 3-1 General Safety	11 11 
II	INSTALLATION FOR USE 2-1 Preparation Of Mower 2-2 Lower Mount Bracket Assembly 2-3 Top Main Frame Assembly Insta	5 Installation 5	IV	MAINTENANCE	
	2-4 Aluminum Grass Container Insta 2-5 Dump Mechanism Adjustment - 2-6 Lift Handle Installation Exploded Parts and Drawing Views 2-8 Deck Drive Installation/Removal	6 7 8-9	)	PARTS AND SERVICE	12 13

#### **SAFETY**

- **1.** Read the operator's manual carefully and familiarize yourself with the proper use of your attachment. Do not allow anyone who is not acquainted with the Safety Instructions to use your attachment.
- 2. Know the controls and how to stop guickly. READ THE OPERATOR'S MANUAL!
- 3. Do not allow children to operate the vehicle. Do not allow adults to operate it without proper instruction.
- **4.** Be especially watchful of children and pets darting into the area while operating.
- **5.** Keep your eyes and mind on your unit while mowing or operating your attachment. Don't let others distract you.
- 6. Do not attempt to operate your unit or mower when not in the driver's seat.
- **7.** Always stop unit when emptying the container.
- **8.** Stop unit, shut off deck attachment, set parking brake, shut off mower engine and remove spark plug wire before removing clogs, removing or replacing hose, boot, blower cone, or performing any maintenance.
- 9. Mow across the face of slopes (not steeper than 10 degrees); never up and down the face.
- **10.** It is recommended that the container be kept only half full when negotiating any slopes. Start mowing on slopes when the container is empty.
- **11.** Inspect your lawn and remove any foreign objects before mowing. Never deliberately run the mower across any foreign object.
- **12.** Wear ear protection if the noise level is offensive.
- **13.** Wear eye protection to prevent debris from damaging your eyes.

#### **SAFETY ALERT SYMBOLS**

**WARNING! NEVER** operate the mower unless the discharge guard and either the deflector assembly or the vacuum collector adapter are fastened securely in place.

**WARNING!** Do not work around the mower deck boot or the blower area until you are certain that the mower blades and the blower impeller have stopped rotating.

**WARNING!** To avoid serious injury, perform maintenance on the vacuum collector; **ONLY AFTER STOPPING THE MOWER'S ENGINE AND WAITING FOR ALL MOVING PARTS TO COME TO A COMPLETE STOP.** Set the parking brake. Always remove the ignition key before beginning maintenance.

**WARNING!** For your own personal safety, **ALWAYS** mow **ACROSS** the face of slopes and **NEVER UP** and **DOWN** the face. **NEVER** attempt to mow excessively steep slopes, and use caution when turning on any slope.

#### **Safety Alert Symbol**



### This Safety Alert Symbol means: "ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!"

This symbol is used to call attention to safety precautions that Should be followed by the operator to avoid accidents. When you see this symbol, carefully read the message that follows and heed its advice. Failure to comply with safety precautions could result in death or serious bodily injury.

#### **Safety Signs**

The signal words **DANGER, WARNING,** and **CAUTION** are used on the equipment safety signs. These words are intended to alert the viewer to the existence and the degree of hazard seriousness.



This signal word indicates a potentially hazardous situation which, if not avoided, will result in death or serious injury.

White letters on **RED** 



This signal word indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

Black letters on **ORANGE** 

It may also be used to alert against unsafe practices.



This signal word indicates a potentially hazardous situation exist which, if not avoided, will result in minor or moderate injury.

Black letters on YELLOW

It may also be used to alert against unsafe practices.

#### PECO LIMITED WARRANTY FOR NEW PRODUCTS

#### A. WHAT IS UNDER WARRANTY?

PECO extends the following warranties to the original purchaser of each new PECO consumer product subject to the following limitations.

**1. PRODUCT WARRANTY:** Any part of any consumer product, which is defective in material or workmanship as delivered to the purchaser will be repaired or replaced, as PECO elects, without charge for parts or labor, if the defect appears within 12 months from the date of delivery of the product to the original purchaser.

ALL DEFECTIVE PARTS MUST BE RETURNED TO PECO FOR INSPECTION TO DETERMINE VALIDITY OF WARRANTY CLAIMS. Freight and mailing will be borne by the customer.

2. PARTS REPLACED DURING WARRANTY: Any new PECO part which is furnished in performance of this warranty and is defective in material or workmanship as delivered to the purchaser will be repaired or replaced, as PECO elects, without charge if the defect appears within 90 days from the date of installation of such part or before the expiration of the original warranty period, whichever is later.

#### **B. SECURING WARRANTY ADJUSTMENTS.**

Call PECO for Return Authorization. Damaged or broken parts other than engines or batteries, must be returned to New PECO, Inc. 100 Airport Road, Arden, NC 28704 before any warranty adjustment can be authorized. At the time of requesting warranty adjustment, the purchaser must present evidence of the date of delivery of the product. The purchaser shall pay any charge for the product to and from Arden, NC.

#### C. ITEMS NOT COVERED BY PECO WARRANTY.

Engines and batteries attached to PECO products are covered under a separate warranty by the respective manufacturer.

#### D. UNAPPROVED ALTERATION OR MODIFICATION.

All obligations of New PECO, Inc. under this warranty shall be terminated if products are altered or modified in ways not approved by New PECO, Inc.

#### E. ACCIDENTS AND NORMAL MAINTENANCE.

The warranty covers only defective material and workmanship. It does not cover depreciation or damage caused by normal wear, accident, improper use or abuse of products. The cost of normal maintenance and normal replacement of service items such as belts, cutting blades, hoses, etc., which are not defective shall be paid for by the purchaser.

#### F. NO REPRESENTATIONS ADDITIONAL WARRANTIES, DISCLAIMER.

Neither New PECO, Inc. nor any company affiliated with it makes any warranties, representations or promises as to the quality of performance of its products other than those set forth herein. Except as described above, New PECO, Inc. makes no other warranties **AND SPECIFICALLY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES OF FITNESS AND MERCHANTABILITY.** 

### G. ANY MACHINE USED FOR RENTAL PURPOSES ARE GUARANTEED FOR 45 DAYS FROM DATE OF ORIGINAL SALE ONLY.

#### H. REMEDIED EXCLUSIVE.

The only remedies the purchaser has in connection with the breach or performance of any warranty on New PECO, Inc. consumer products are set forth above. In no event will PECO be liable for special incidental or consequential damages.

#### 1. NO SERVICE CENTER WARRANTY.

The selling Service Center makes no warranty on his own on any item warranted by New PECO, Inc. unless he delivers to purchaser a separate written warranty certificate specifically warranting the item. The dealer has no authority to make any representation or promise on behalf of PECO or to modify the terms of this warranty in any way.

## Section I - Introduction & Description

#### 1-1 Introduction

Your grass collection system has been designed to give you a low maintenance, simple, and effective way to collect the grass clippings from your mower. This manual is provided to give you the necessary instructions to properly mount and operate the collection system on your mower. Please read this manual thoroughly. Understand what each control is for and how to use it. Observe all safety decal precautions on the machine and noted throughout the manual.

#### **1-2 Description**

The grass collection system is designed for turf maintenance where there is a need to collect the grass clippings as the mower cuts the turf. It is also used for picking up leaves and in pre-season and post-season clean-up. This collection system is designed to work with the World Lawn deck drive system. The blower draws grass clippings from the discharge area of the cutter deck back to the 12 cubic foot aluminum box at the rear portion of the mower frame. The operator can engage the blower by starting the external engine. Once the container is full, the operator can easily push and raise the dump handle, opening the rear door on the container and pivoting the box to the ground. Once empty, the operator can easily lower and pull the dump handle, pivoting the box back into position and closing the door.

#### Section II - Installation For Use

#### 2-1 Preparation Of Mower

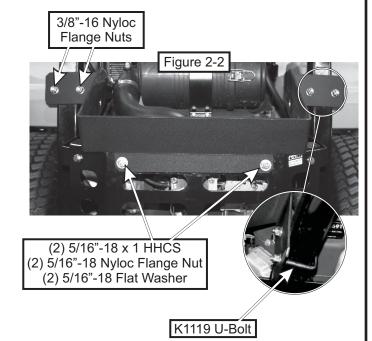
Carefully dismantle wooden shipping crate from around the components. Cut retaining straps and separate the parts. The collection system will have various parts located inside. Remove and sort all parts for easy identification.

**NOTE:** Before each step of assembly it will help to study the Exploded Parts View Section (See Table Of Contents on Page 2).

**NOTE:** All references made to right, left, front, rear, top or bottom are as viewed from the normal operator's position on the mower.

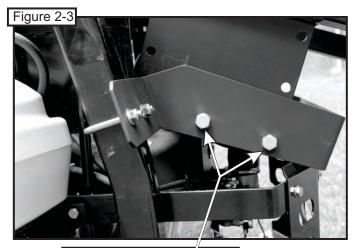
## 2-2 Lower Mount Bracket Assembly Installation

Install Lower Mount Bracket P#(B0881) to rear of mower using (2) 5/16"-18 x 1" HHCS P#(K1154), (2) 5/16"-18 Flat Washers P#(K0042), (2) 5/16"-18 Nyloc Flange Nuts P#(K2516), (2) 3/8"-16 x 2-1/8" x 2-5/8" U-Bolt P#(K1119), and (4) 3/8"-16 Nyloc Flange Nuts P#(K2038)



#### 2-3 Main Frame Assembly Installation

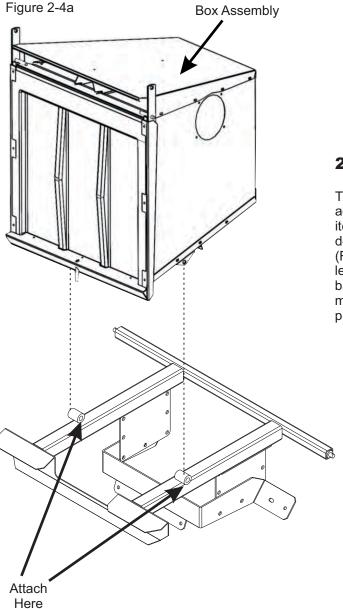
Install the Main Frame P#(A1097) to the Lower Mount Bracket P#(B0881) using (4) 1/2"-13 x 1" HHCS P#(K1231) and (4) 1/2"-13 Nyloc Flange Nuts P#(K2012) as shown in Figure 2-3.

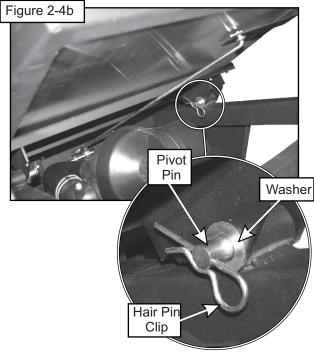


(2) 1/2"-13 x 1" HHCS (2) 1/2"-13 Nyloc Flange Nut Per Side

## 2-4 Aluminum Grass Container Installation

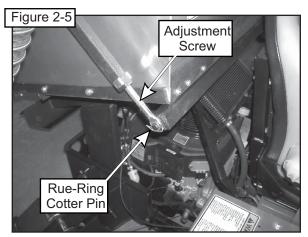
**NOTE:** It is recommended that (3) people assist in mounting the container. With three people available, two can lower the container onto the frame while the third person inserts the pivot pins P#(K0172) through the holes. Insert the pins from the outside to the inside. Secure with (1) 5/8" washer P#(K0058) and (1) 5/32" x 2-5/8" hair pin clip P#(K0088) per pivot pin (Figure 2-4b). Reattach the bottom ends of the door opening linkages to the main frame by using (1) Rue-Ring cotter pin P#(K1437) per side. To test the functionality of the dump mechanism, pull the lift handle away from the unit, and lift upward. The door of the container should open and the box should pivot clockwise towards the ground.





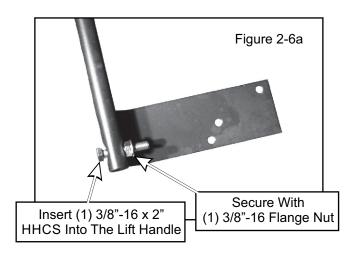
#### 2-5 Dump Mechanism Adjustment

The linkage may be adjusted in two places, at the adjusting screw P#(K1435) and the latch assembly items. See page 8 for visual clarification. To change the door closure tightness, thread the adjusting screw (Figure 2-5) in or out. To adjust the latch, change the length of the latch rod by threading the latch adjusting ball joint in or out. The latch hook pivot should be in the middle of the slot in the latch hook pivot plate. Slide the pivot back or forth and then re-tighten.

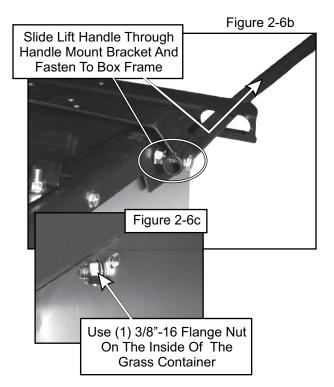


#### 2-6 Lift Handle Installation

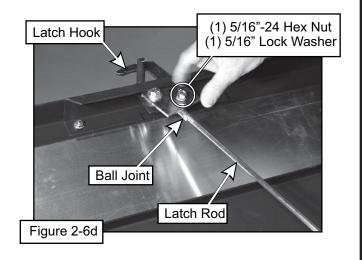
**NOTE:** Before continuing the lift handle installation, have someone assist you in turning the grass container upside down. Insert (1) 3/8"-16 x 2" HHCS P#(K1208) into the lift handle P#(A0273), and secure with (1) 3/8"-16 flange nut P#(K1215). Thread the flange nut onto the bolt upside down, as shown in Figure 2-6a. Do not tighten the nut fully at this time.



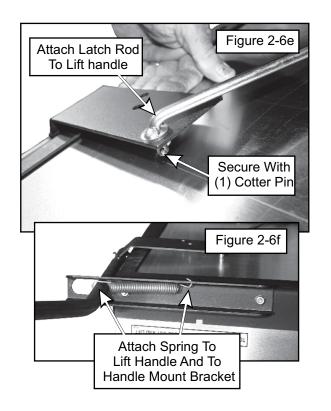
Slide the lift handle through the slot on the handle mount bracket. Insert the lift handle into the box frame as shown in Figure 2-6b, and secure using (1) 3/8"-16 flange nut P#(K1215) on the inside of the container as shown in Figure 2-6c. Now test the movement of the handle. It should have full-range of movement in the slot. If the handle does not have full-range of movement, adjust the 3/8"-16 flange nut from step 2-6a. Once achieved, tighten the fasteners.

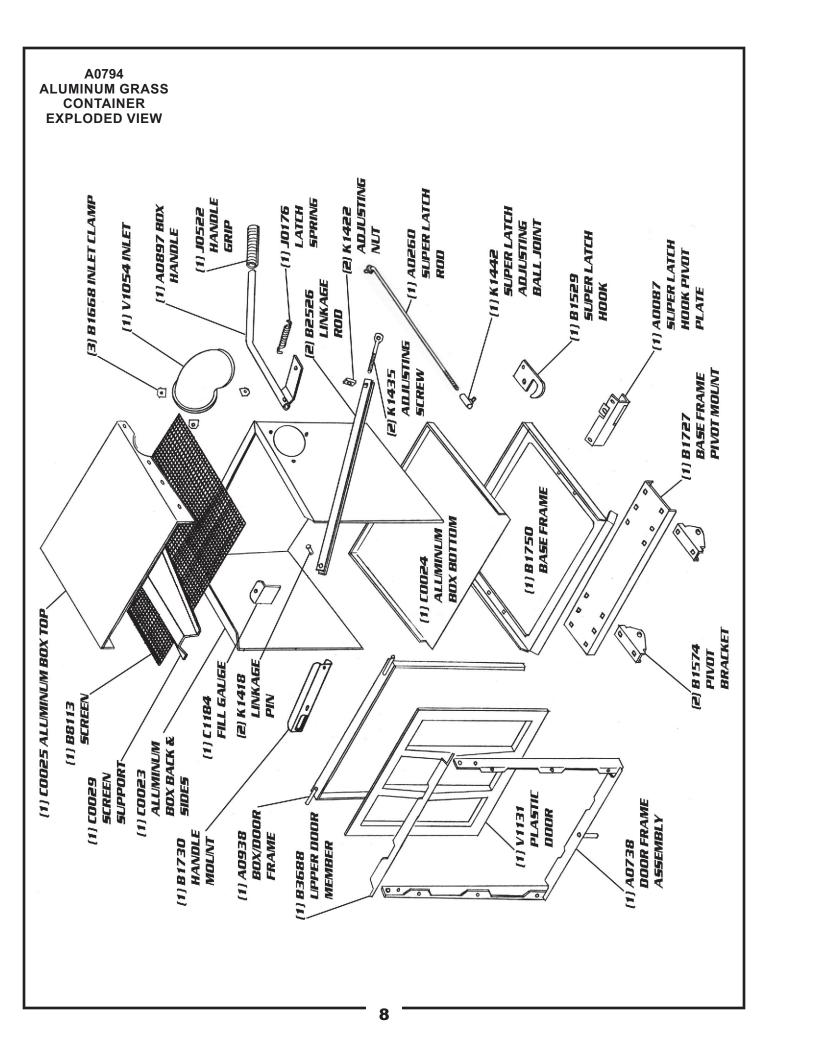


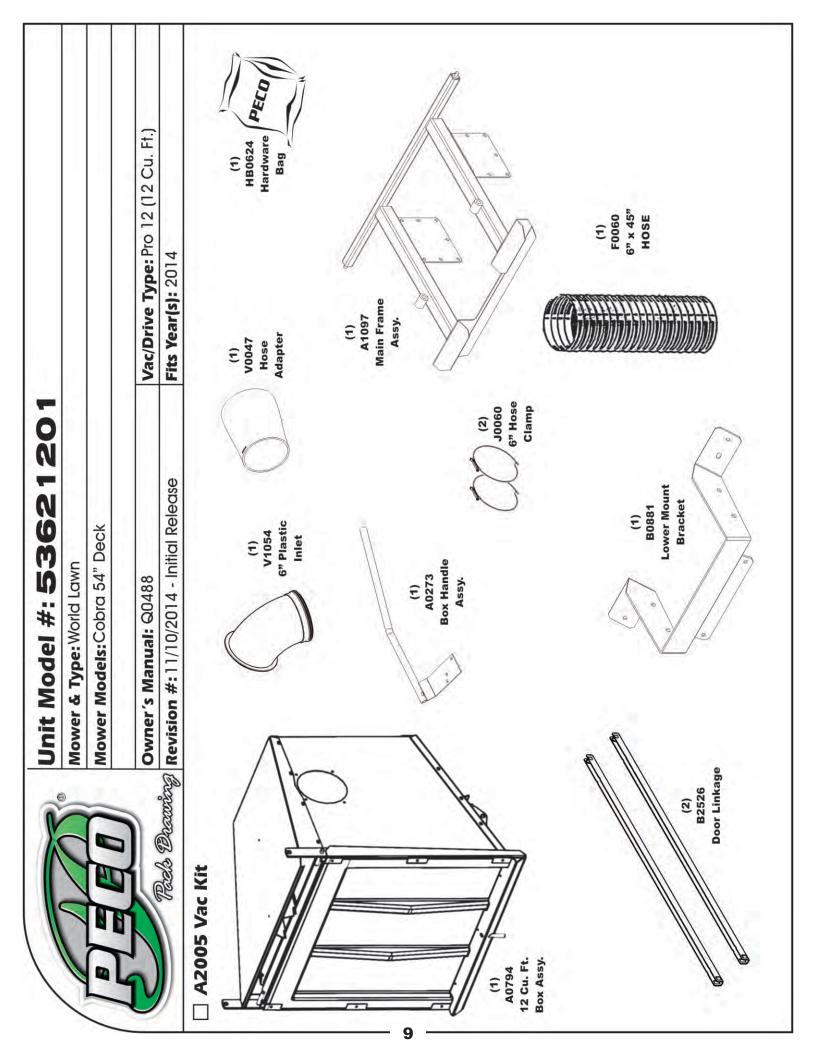
Fasten the ball joint P#(K1442) to the end of the latch rod P#(A0620). Tighten the ball joint to approximately half way down the threads on the latch rod. Attach the ball joint to the latch hook as shown in Figure 2-6d, using (1) 5/16"-24 hex nut P#(K1444) and (1) 5/16" lock washer P#(K0043).



Attach the other end of the latch rod to the lift handle, as shown in Figure 2-6e. Attach one end of the spring P#(J0176) to the lift handle and the other end of the spring to the handle mount bracket as shown in Figure 2-6f. Adjust the ball joint up or down on the latch rod threads until the latch hook closes completely. After adjusting the latch hook, secure the latch rod to the lift handle using (1) cotter pin P#(K0094).





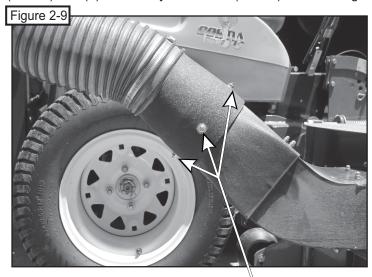


#### 2-8 Deck Drive Installation/Removal

**NOTE:** Refer to the World Lawn factory manual included with your mower for instructions on installation and removal of the deck drive system.

#### 2-9 Transition Installation

Align the Hose Adapter P#(V0047) with the exit port of the deck drive system. Using a 5/16" drill bit, drill 3 holes in the exit port transition using the Hose Adapter as a guide. Make sure to align the Hose Adapter so that all 3 holes are accessible for completing installation. Connect Hose Adapter to exit chute of deck drive using (3) 1/4"-20 x 1" Carriage Bolts P#(K1025) and (3) 1/4"-20 Nyloc Nuts P#(K2014). Refer to Figure 2-9 for reference.



(3) 1/4"-20 x 1" Carriage Bolts (3) 1/4"-20 Nyloc Nuts

#### 2-10 Hose Installation

Insert the Hose Clamps P#(J1000) on both ends of the hose. Insert the inlet into one end of the hose allowing approx. 2" overlapping the clamp. Tighten the clamp on the upper end of the hose. Insert the lower end of the hose over the deck drive outlet allowing approx. 2" overlapping the clamp. Tighten the lower hose clamp. Refer to Figure 2-10 for reference.



## SECTION III OPERATING INSTRUCTIONS

#### **3-1 General Safety**

Only qualified people familiar with this operator's manual and the mower's operator's manual should operate this machine.

### **3-2 Operation And Tips On Mowing**PTO MODELS

- A. Perform BEFORE EACH USE the maintenance list In paragraph 4-1.
- B. Start mower.
- C. With the mower at high idle speed, engage the mower deck.
- D. While seated in the operator's seat, rotate the engagement handle of the collection system away from the mower. Continue to rotate the handle until it stops in an over center position. With the blower engaged, you can proceed to operate the control levers of the mower.

#### **ENGINE DRIVEN MODELS**

- A. Perform BEFORE EACH USE maintenance list in paragraph 4-1.
- B. Start the engine/blower/blade assembly.
- B. Start mower.
- C. With the mower at high idle speed, engage the mower deck.
- D. Proceed to operate the control levers of the mower.

**NOTE:** If the collection system does not appear to be collecting the grass clippings; disengage the deck, and blower, engage the parking brake and turn the mower off. Check the upper hose, lower hose, top screen and boot for clogs.

To obtain the maximum effectiveness from your collection system the tips listed below should be followed:

- \* Watch your speed- Normal conditions will allow a speed of up to approximately 5 mph, but thick, heavy damp conditions will require reduced ground speed.
- \* Mow with sharp blades- A sharp blade cuts cleaner.
- \* Wet grass and leaves will decrease effectiveness and will increase horsepower requirements.
- \* Mow at higher cutting heights- Remove and mulch no more than 2" of grass length with each mowing. (Experts recommend not cutting off more than 1/3 of the grass blade length at any given time.)
- \* Mow twice, at different height settings, (high, then low), if grass is extra tall.
- \* Remember that horsepower requirements will vary with the mowing conditions such as type and height of turf grass, moisture content, amount of leaves, whether the terrain is flat or hilly, etc.

### **3-3 Disengagement Of The Blower**PTO MODELS

A. To disengage the blower, rotate the engagement handle towards the mower.

**WARNING:** The blower will continue to spin. DO NOT TOUCH the blower, pulleys, or the belt until the tractor is turned off. DO NOT adjust the belt tension until the mower is turned off. (See Table Of Contents on Page 2).

#### **ENGINE DRIVEN MODELS**

B. (5.5HP Briggs & Stratton) To stop the engine, throttle the engine to the stop position.

C. (6.5HP Briggs & Stratton Vanguard) To stop the engine, move the fuel lever to the OFF position.

#### 3-4 Unloading The Collection System

**NOTE:** Press the tab, located behind the operator's left side, downward to feel if the collection system is full. If the container is full there will be resistance when depressing the tab.

- A. Stop the forward movement of the mower.
- B. Disengage the mower deck.
- C. Disengage the blower or turn the external engine off.
- D. Verify that the dump area is clear.
- E. Push the dump handle, on the left of the operator, away from the unit. While holding the handle pushed away, move the handle upward. The container door will swing upward and the container will rotate downward. The container will release its contents.
- F. Once the contents of the container have fallen out, the container is ready to move back into its normal operating position. With the handle in the 'away' position, pull the handle downward until it stops. Move the handle towards the center of the mower. This motion will allow the latch to lock back into collection position.

**NOTE:** If you do not hold the handle away from the mower as you pull the handle downward, the latch will not lock and the container can unexpectedly release the contents collected.

## SECTION IV MAINTENANCE

#### **4-1 Maintenance Checklist**

Before each use:

- 1. Check blades and spindles to be sure that no foreign objects, such as wire or steel strapping bands, are wrapped around them.
- Inspect blades for wear. Replace if necessary. If it is necessary to sharpen the blades, remove the blades from the spindles before sharpening. DO NOT sharpen blades while still attached to the mower.

- Make sure all shields are in place and in good condition. Repair or replace any missing or damaged shields.
- 4. Perform lubrication per paragraph 4-2.
- 5. Listen for abnormal sounds, which might indicate loose parts, damaged bearings, or other damage. Correct any deficiency before continuing operation.
- 6. <u>PTO MODELS ONLY:</u> With the engine off, engage the blower assembly. Check the belt tension and inspect the pulley belt for cracks or tears.
- 7. Check for wear or deterioration of the upper or lower hoses. If there are any portions of the hose that have been torn or worn through, replace with genuine PECO parts.

After Each Use:

- 1. Clean all debris from machine especially from the container, underneath the belt shields, and safety decals. Replace any missing or illegible decals.
- Inspect the unit for worn or damaged components.
  Repair or replace before the next use. Any
  replacement component installed during repair shall
  include the component's current safety decal specified
  by the manufacturers to be affixed to the component.
- 3. **PTO MODELS ONLY:** Check belt for proper tension.

#### **4-2 Lubrication For PTO Models**

**NOTE:** Use only white lithium based grease for lubrication of the shaft on the blower assembly.

- 1. On initial use: Grease the fitting on the blower shaft.
- 2. Every 25 hours of use: Re-grease the grease fitting.
- 3. Every 200 hours of use: Check oil levels in gear box. Oil in gear box should cover the gears. If necessary, fill using an EP90 weight oil. 6oz. will fill the gear box from empty.

## SECTION V PARTS AND SERVICE

#### **5-1 Parts And Service Information**

PECO collection system owners should record the name and telephone number of their Service Center. Your Service Center will be happy to supply replacement parts, accessories, and do any service or repairs to your collection system. If for any reason your Service Center is unable to service your collection system or supply replacement parts, contact PECO and include the following information on the chart below.

THE SERIAL NUMBER PLATE IS LOCATED ON THE TOP ASSEMBLY P#(A0794)

PECO OUTDOOR POWER EQUIPMENT			
Model Number			
Serial Number			
Arden, North Carolina 28704			

WRITE THE MODEL AND SERIAL NUMBER IN THE BOX ABOVE FOR FUTURE REFERENCE.

Unit Model Number:	
Unit Engine Size:	
Unit Serial Number:	
Date of purchase:/	
Dealer/Distributor Name:	
Dealer's/Distributor's:	
Phone Number:	
Address DEGO Inc	

Address: PECO Inc. 100 AIRPORT ROAD Arden, NC 28704

Phone #: (828) 684-1234 or Toll Free: (800) 438-5823

Email: peco@lawnvac.com

#### **SAFETY DECALS**

To promote safe operation, PECO supplies safety decals on all products manufactured. Damage can occur to safety decals either through shipment, use or reconditioning. Contact your local Service Center for replacement decals.



Part #: R4027



Part #: R1053



Part #: R1057

#### **IMPORTANT**

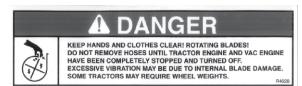
Hoses are subject to normal wear and deterioration. Check hoses frequently and if they become defective, install new hoses.

For best collection results, trim hoses so there are no more than 2 inches excess hose with mower deck lowered.

Part #: R1054



Part #:R1051



Part #: R4028

TO DUMP GRASS: PUSH HANDLE OUT AND LIFT

Part #: R1055



Part #: R1065



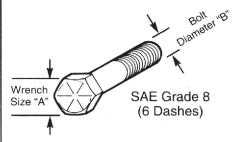
#### **TORQUE SPECIFICATIONS**

#### **AMERICAN**

**Bolt Head Markings** 

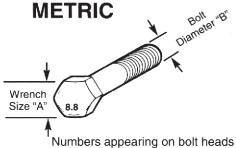






Recommended Torque in Foot Pounds (Newton Meters).\*

WRENCH SIZE (IN.) "B" AND         SAE GRADE 2         SAE GRADE 5         SAE GRADE 8           7/16         1/4 - 20 UNC         6 (7)         8 (11)         12 (16)           7/16         1/4 - 20 UNC         6 (8)         10 (13)         14 (18)           1/2         5/16 - 18 UNC         11 (15)         17 (23)         25 (33)           1/2         5/16 - 24 UNF         13 (17)         19 (26)         27 (37)           9/16         3/8 - 16 UNC         20 (27)         31 (42)         44 (60)           9/16         3/8 - 24 UNF         23 (31)         35 (47)         49 (66)           5/8         7/16 - 14 UNC         32 (43)         49 (66)         70 (95)           5/8         . 7/16 - 20 UNF         36 (49)         55 (75)         78 (106)           3/4         1/2 - 13 UNC         49 (66)         76 (103)         106 (144)           3/4         1/2 - 20 UNF         55 (75)         85 (115)         120 (163)           7/8         9/16 - 12 UNC         70 (95)         109 (148)         153 (207)           7/8         9/16 - 18 UNF         79 (107)         122 (165)         172 (233)           15/16         5/8 - 18 UNF         110 (149)         170 (230)         240						
7/16         1/4 - 28 UNF         6 (8)         10 (13)         14 (18)           1/2         5/16 - 18 UNC         11 (15)         17 (23)         25 (33)           1/2         5/16 - 24 UNF         13 (17)         19 (26)         27 (37)           9/16         3/8 - 16 UNC         20 (27)         31 (42)         44 (60)           9/16         3/8 - 24 UNF         23 (31)         35 (47)         49 (66)           5/8         7/16 - 14 UNC         32 (43)         49 (66)         70 (95)           5/8         7/16 - 20 UNF         36 (49)         55 (75)         78 (106)           3/4         1/2 - 13 UNC         49 (66)         76 (103)         106 (144)           3/4         1/2 - 20 UNF         55 (75)         85 (115)         120 (163)           7/8         9/16 - 12 UNC         70 (95)         109 (148)         153 (207)           7/8         9/16 - 18 UNF         79 (107)         122 (165)         172 (233)           15/16         5/8 - 11 UNC         97 (131)         150 (203)         212 (287)           15/16         5/8 - 18 UNF         110 (149)         170 (230)         240 (325)           1-1/8         3/4 - 10 UNC         144 (195)         266 (360)		(IN.) "B" AND	1			
1/2         5/16 - 18 UNC         11 (15)         17 (23)         25 (33)           1/2         5/16 - 24 UNF         13 (17)         19 (26)         27 (37)           9/16         3/8 - 16 UNC         20 (27)         31 (42)         44 (60)           9/16         3/8 - 24 UNF         23 (31)         35 (47)         49 (66)           5/8         7/16 - 14 UNC         32 (43)         49 (66)         70 (95)           5/8         7/16 - 20 UNF         36 (49)         55 (75)         78 (106)           3/4         1/2 - 13 UNC         49 (66)         76 (103)         106 (144)           3/4         1/2 - 20 UNF         55 (75)         85 (115)         120 (163)           7/8         9/16 - 12 UNC         70 (95)         109 (148)         153 (207)           7/8         9/16 - 18 UNF         79 (107)         122 (165)         172 (233)           15/16         5/8 - 11 UNC         97 (131)         150 (203)         212 (287)           15/16         5/8 - 18 UNF         110 (149)         170 (230)         240 (325)           1-1/8         3/4 - 10 UNC         144 (195)         266 (360)         376 (509)           1-1/8         3/4 - 10 UNC         144 (195)         266 (360) </td <td>7/16</td> <td>1/4 - 20 UNC</td> <td>6 (7)</td> <td>8 (11)</td> <td>12 (16)</td>	7/16	1/4 - 20 UNC	6 (7)	8 (11)	12 (16)	
1/2 5/16 - 24 UNF 13 (17) 19 (26) 27 (37)  9/16 3/8 - 16 UNC 20 (27) 31 (42) 44 (60)  9/16 3/8 - 24 UNF 23 (31) 35 (47) 49 (66)  5/8 7/16 - 14 UNC 32 (43) 49 (66) 70 (95)  5/8 7/16 - 20 UNF 36 (49) 55 (75) 78 (106)  3/4 1/2 - 13 UNC 49 (66) 76 (103) 106 (144)  3/4 1/2 - 20 UNF 55 (75) 85 (115) 120 (163)  7/8 9/16 - 12 UNC 70 (95) 109 (148) 153 (207)  7/8 9/16 - 18 UNF 79 (107) 122 (165) 172 (233)  15/16 5/8 - 11 UNC 97 (131) 150 (203) 212 (287)  15/16 5/8 - 18 UNF 110 (149) 170 (230) 240 (325)  1-1/8 3/4 - 10 UNC 144 (195) 266 (360) 376 (509)  1-1/8 3/4 - 16 UNF 192 (260) 297 (402) 420 (569)  1-5/16 7/8 - 9 UNC 166 (225) 430 (583) 606 (821)  1-5/16 7/8 - 14 UNF 184 (249) 474 (642) 668 (905)  1-1/2 1 - 8 UNC 250 (339) 644 (873) 909 (1232)  1-1/2 1 - 12 UNF 274 (371) 705 (955) 995 (1348)  1-1/2 1 - 14 UNF 280 (379) 721 (977) 1019 (1381)  1-11/16 1-1/8 - 7 UNC 354 (480) 795 (1077) 1288(1745)  1-7/8 1-1/4 - 7 UNC 500 (678) 1120 (1518) 1817 (2462)  1-7/8 1-1/4 - 12 UNF 553 (749) 1241 (1682) 2013 (2728)  2-1/16 1-3/8 - 6 UNC 655 (887) 1470 (1992) 2382 (3228)  2-1/16 1-3/8 - 6 UNC 870 (1179) 1950 (2642) 3161 (4283)	7/16	1/4 - 28 UNF	6 (8)	10 (13)	14 (18)	
9/16	1/2	5/16 - 18 UNC	11 (15)	17 (23)	25 (33)	
9/16 3/8 - 24 UNF 23 (31) 35 (47) 49 (66)  5/8 7/16 - 14 UNC 32 (43) 49 (66) 70 (95)  5/8 7/16 - 20 UNF 36 (49) 55 (75) 78 (106)  3/4 1/2 - 13 UNC 49 (66) 76 (103) 106 (144)  3/4 1/2 - 20 UNF 55 (75) 85 (115) 120 (163)  7/8 9/16 - 12 UNC 70 (95) 109 (148) 153 (207)  7/8 9/16 - 18 UNF 79 (107) 122 (165) 172 (233)  15/16 5/8 - 11 UNC 97 (131) 150 (203) 212 (287)  15/16 5/8 - 18 UNF 110 (149) 170 (230) 240 (325)  1-1/8 3/4 - 10 UNC 144 (195) 266 (360) 376 (509)  1-1/8 3/4 - 16 UNF 192 (260) 297 (402) 420 (569)  1-5/16 7/8 - 9 UNC 166 (225) 430 (583) 606 (821)  1-5/16 7/8 - 14 UNF 184 (249) 474 (642) 668 (905)  1-1/2 1 - 8 UNC 250 (339) 644 (873) 909 (1232)  1-1/2 1 - 12 UNF 274 (371) 705 (955) 995 (1348)  1-1/2 1 - 14 UNF 280 (379) 721 (977) 1019 (1381)  1-11/16 1-1/8 - 7 UNC 354 (480) 795 (1077) 1288 (1745)  1-7/8 1-1/4 - 7 UNC 500 (678) 1120 (1518) 1817 (2462)  1-7/8 1-1/4 - 7 UNC 500 (678) 1120 (1518) 1817 (2462)  2-1/16 1-3/8 - 6 UNC 655 (887) 1470 (1992) 2382 (3228)  2-1/16 1-3/8 - 12 UNF 746 (1011) 1672 (2266) 2712 (3675)  2-1/4 1-1/2 - 6 UNC 870 (1179) 1950 (2642) 3161 (4283)	1/2	5/16 - 24 UNF	13 (17)	19 (26)	27 (37)	
5/8         7/16 - 14 UNC         32 (43)         49 (66)         70 (95)           5/8         7/16 - 20 UNF         36 (49)         55 (75)         78 (106)           3/4         1/2 - 13 UNC         49 (66)         76 (103)         106 (144)           3/4         1/2 - 20 UNF         55 (75)         85 (115)         120 (163)           7/8         9/16 - 12 UNC         70 (95)         109 (148)         153 (207)           7/8         9/16 - 18 UNF         79 (107)         122 (165)         172 (233)           15/16         5/8 - 11 UNC         97 (131)         150 (203)         212 (287)           15/16         5/8 - 18 UNF         110 (149)         170 (230)         240 (325)           1-1/8         3/4 - 10 UNC         144 (195)         266 (360)         376 (509)           1-1/8         3/4 - 16 UNF         192 (260)         297 (402)         420 (569)           1-5/16         7/8 - 9 UNC         166 (225)         430 (583)         606 (821)           1-5/16         7/8 - 14 UNF         184 (249)         474 (642)         668 (905)           1-1/2         1 - 8 UNF         250 (339)         644 (873)         909 (1232)           1-1/2         1 - 14 UNF         280 (379) <td>9/16</td> <td>3/8 - 16 UNC</td> <td>20 (27)</td> <td>31 (42)</td> <td>44 (60)</td>	9/16	3/8 - 16 UNC	20 (27)	31 (42)	44 (60)	
5/8         7/16 - 20 UNF         36 (49)         55 (75)         78 (106)           3/4         1/2 - 13 UNC         49 (66)         76 (103)         106 (144)           3/4         1/2 - 20 UNF         55 (75)         85 (115)         120 (163)           7/8         9/16 - 12 UNC         70 (95)         109 (148)         153 (207)           7/8         9/16 - 18 UNF         79 (107)         122 (165)         172 (233)           15/16         5/8 - 11 UNC         97 (131)         150 (203)         212 (287)           15/16         5/8 - 18 UNF         110 (149)         170 (230)         240 (325)           1-1/8         3/4 - 10 UNC         144 (195)         266 (360)         376 (509)           1-1/8         3/4 - 16 UNF         192 (260)         297 (402)         420 (569)           1-5/16         7/8 - 9 UNC         166 (225)         430 (583)         606 (821)           1-5/16         7/8 - 14 UNF         184 (249)         474 (642)         668 (905)           1-1/2         1 - 8 UNC         250 (339)         644 (873)         909 (1232)           1-1/2         1 - 14 UNF         280 (379)         721 (977)         1019 (1381)           1-1/16         1-1/8 - 7 UNC         35	9/16	3/8 - 24 UNF	23 (31)	35 (47)	49 (66)	
3/4         1/2 - 13 UNC         49 (66)         76 (103)         106 (144)           3/4         1/2 - 20 UNF         55 (75)         85 (115)         120 (163)           7/8         9/16 - 12 UNC         70 (95)         109 (148)         153 (207)           7/8         9/16 - 18 UNF         79 (107)         122 (165)         172 (233)           15/16         5/8 - 11 UNC         97 (131)         150 (203)         212 (287)           15/16         5/8 - 18 UNF         110 (149)         170 (230)         240 (325)           1-1/8         3/4 - 10 UNC         144 (195)         266 (360)         376 (509)           1-1/8         3/4 - 16 UNF         192 (260)         297 (402)         420 (569)           1-5/16         7/8 - 9 UNC         166 (225)         430 (583)         606 (821)           1-5/16         7/8 - 14 UNF         184 (249)         474 (642)         668 (905)           1-1/2         1 - 8 UNC         250 (339)         644 (873)         909 (1232)           1-1/2         1 - 14 UNF         280 (379)         721 (977)         1019 (1381)           1-1/16         1-1/8 - 7 UNC         354 (480)         795 (1077)         1288(1745)           1-7/8         1-1/4 - 7 UNC	5/8	7/16 - 14 UNC	32 (43)	49 (66)	70 (95)	
3/4         1/2 - 20 UNF         55 (75)         85 (115)         120 (163)           7/8         9/16 - 12 UNC         70 (95)         109 (148)         153 (207)           7/8         9/16 - 18 UNF         79 (107)         122 (165)         172 (233)           15/16         5/8 - 11 UNC         97 (131)         150 (203)         212 (287)           15/16         5/8 - 18 UNF         110 (149)         170 (230)         240 (325)           1-1/8         3/4 - 10 UNC         144 (195)         266 (360)         376 (509)           1-1/8         3/4 - 16 UNF         192 (260)         297 (402)         420 (569)           1-5/16         7/8 - 9 UNC         166 (225)         430 (583)         606 (821)           1-5/16         7/8 - 14 UNF         184 (249)         474 (642)         668 (905)           1-1/2         1 - 8 UNC         250 (339)         644 (873)         909 (1232)           1-1/2         1 - 12 UNF         274 (371)         705 (955)         995 (1348)           1-1/2         1 - 14 UNF         280 (379)         721 (977)         1019 (1381)           1-1/16         1-1/8 - 7 UNC         354 (480)         795 (1077)         1288(1745)           1-7/8         1-1/4 - 7 UNC	5/8	. 7/16 - 20 UNF	36 (49)	55 (75)	78 (106)	
7/8         9/16 - 12 UNC         70 (95)         109 (148)         153 (207)           7/8         9/16 - 18 UNF         79 (107)         122 (165)         172 (233)           15/16         5/8 - 11 UNC         97 (131)         150 (203)         212 (287)           15/16         5/8 - 18 UNF         110 (149)         170 (230)         240 (325)           1-1/8         3/4 - 10 UNC         144 (195)         266 (360)         376 (509)           1-1/8         3/4 - 16 UNF         192 (260)         297 (402)         420 (569)           1-5/16         7/8 - 9 UNC         166 (225)         430 (583)         606 (821)           1-5/16         7/8 - 14 UNF         184 (249)         474 (642)         668 (905)           1-1/2         1 - 8 UNC         250 (339)         644 (873)         909 (1232)           1-1/2         1 - 12 UNF         274 (371)         705 (955)         995 (1348)           1-1/2         1 - 14 UNF         280 (379)         721 (977)         1019 (1381)           1-1/16         1-1/8 - 7 UNC         354 (480)         795 (1077)         1288(1745)           1-7/8         1-1/4 - 7 UNC         500 (678)         1120 (1518)         1817 (2462)           1-7/8         1-1/4 - 12	3/4	1/2 - 13 UNC	49 (66)	76 (103)	106 (144)	
7/8         9/16 - 18 UNF         79 (107)         122 (165)         172 (233)           15/16         5/8 - 11 UNC         97 (131)         150 (203)         212 (287)           15/16         5/8 - 18 UNF         110 (149)         170 (230)         240 (325)           1-1/8         3/4 - 10 UNC         144 (195)         266 (360)         376 (509)           1-1/8         3/4 - 16 UNF         192 (260)         297 (402)         420 (569)           1-5/16         7/8 - 9 UNC         166 (225)         430 (583)         606 (821)           1-5/16         7/8 - 14 UNF         184 (249)         474 (642)         668 (905)           1-1/2         1 - 8 UNC         250 (339)         644 (873)         909 (1232)           1-1/2         1 - 12 UNF         274 (371)         705 (955)         995 (1348)           1-1/2         1 - 14 UNF         280 (379)         721 (977)         1019 (1381)           1-1/16         1-1/8 - 7 UNC         354 (480)         795 (1077)         1288(1745)           1-1/16         1-1/8 - 12 UNF         397 (538)         890 (1206)         1444 (1957)           1-7/8         1-1/4 - 7 UNC         500 (678)         1120 (1518)         1817 (2462)           1-7/8         1	3/4	1/2 - 20 UNF	55 (75)	85 (115)	120 (163)	
15/16         5/8 - 11 UNC         97 (131)         150 (203)         212 (287)           15/16         5/8 - 18 UNF         110 (149)         170 (230)         240 (325)           1-1/8         3/4 - 10 UNC         144 (195)         266 (360)         376 (509)           1-1/8         3/4 - 16 UNF         192 (260)         297 (402)         420 (569)           1-5/16         7/8 - 9 UNC         166 (225)         430 (583)         606 (821)           1-5/16         7/8 - 14 UNF         184 (249)         474 (642)         668 (905)           1-1/2         1 - 8 UNC         250 (339)         644 (873)         909 (1232)           1-1/2         1 - 12 UNF         274 (371)         705 (955)         995 (1348)           1-1/2         1 - 14 UNF         280 (379)         721 (977)         1019 (1381)           1-1/16         1 - 1/8 - 7 UNC         354 (480)         795 (1077)         1288(1745)           1-1/16         1 - 1/8 - 12 UNF         397 (538)         890 (1206)         1444 (1957)           1-7/8         1 - 1/4 - 7 UNC         500 (678)         1120 (1518)         1817 (2462)           1-7/8         1 - 1/4 - 12 UNF         553 (749)         1241 (1682)         2013 (2728)           2-1/16 </td <td>7/8</td> <td>9/16 - 12 UNC</td> <td>70 (95)</td> <td>109 (148)</td> <td>153 (207)</td>	7/8	9/16 - 12 UNC	70 (95)	109 (148)	153 (207)	
15/16         5/8 - 18 UNF         110 (149)         170 (230)         240 (325)           1-1/8         3/4 - 10 UNC         144 (195)         266 (360)         376 (509)           1-1/8         3/4 - 16 UNF         192 (260)         297 (402)         420 (569)           1-5/16         7/8 - 9 UNC         166 (225)         430 (583)         606 (821)           1-5/16         7/8 - 14 UNF         184 (249)         474 (642)         668 (905)           1-1/2         1 - 8 UNC         250 (339)         644 (873)         909 (1232)           1-1/2         1 - 12 UNF         274 (371)         705 (955)         995 (1348)           1-1/2         1 - 14 UNF         280 (379)         721 (977)         1019 (1381)           1-11/16         1-1/8 - 7 UNC         354 (480)         795 (1077)         1288(1745)           1-11/16         1-1/8 - 12 UNF         397 (538)         890 (1206)         1444 (1957)           1-7/8         1-1/4 - 7 UNC         500 (678)         1120 (1518)         1817 (2462)           1-7/8         1-1/4 - 12 UNF         553 (749)         1241 (1682)         2013 (2728)           2-1/16         1-3/8 - 6 UNC         655 (887)         1470 (1992)         2382 (3228)           2-1/16<	7/8	9/16 - 18 UNF	79 (107)	122 (165)	172 (233)	
1-1/8         3/4 - 10 UNC         144 (195)         266 (360)         376 (509)           1-1/8         3/4 - 16 UNF         192 (260)         297 (402)         420 (569)           1-5/16         7/8 - 9 UNC         166 (225)         430 (583)         606 (821)           1-5/16         7/8 - 14 UNF         184 (249)         474 (642)         668 (905)           1-1/2         1 - 8 UNC         250 (339)         644 (873)         909 (1232)           1-1/2         1 - 12 UNF         274 (371)         705 (955)         995 (1348)           1-1/2         1 - 14 UNF         280 (379)         721 (977)         1019 (1381)           1-11/16         1-1/8 - 7 UNC         354 (480)         795 (1077)         1288(1745)           1-11/16         1-1/8 - 12 UNF         397 (538)         890 (1206)         1444 (1957)           1-7/8         1-1/4 - 7 UNC         500 (678)         1120 (1518)         1817 (2462)           1-7/8         1-1/4 - 12 UNF         553 (749)         1241 (1682)         2013 (2728)           2-1/16         1-3/8 - 6 UNC         655 (887)         1470 (1992)         2382 (3228)           2-1/16         1-3/8 - 12 UNF         746 (1011)         1672 (2266)         2712 (3675) <td< td=""><td>15/16</td><td>5/8 - 11 UNC</td><td>97 (131)</td><td>150 (203)</td><td>212 (287)</td></td<>	15/16	5/8 - 11 UNC	97 (131)	150 (203)	212 (287)	
1-1/8         3/4 - 16 UNF         192 (260)         297 (402)         420 (569)           1-5/16         7/8 - 9 UNC         166 (225)         430 (583)         606 (821)           1-5/16         7/8 - 14 UNF         184 (249)         474 (642)         668 (905)           1-1/2         1 - 8 UNC         250 (339)         644 (873)         909 (1232)           1-1/2         1 - 12 UNF         274 (371)         705 (955)         995 (1348)           1-1/2         1 - 14 UNF         280 (379)         721 (977)         1019 (1381)           1-11/16         1-1/8 - 7 UNC         354 (480)         795 (1077)         1288(1745)           1-11/16         1-1/8 - 12 UNF         397 (538)         890 (1206)         1444 (1957)           1-7/8         1-1/4 - 7 UNC         500 (678)         1120 (1518)         1817 (2462)           1-7/8         1-1/4 - 12 UNF         553 (749)         1241 (1682)         2013 (2728)           2-1/16         1-3/8 - 6 UNC         655 (887)         1470 (1992)         2382 (3228)           2-1/16         1-3/8 - 12 UNF         746 (1011)         1672 (2266)         2712 (3675)           2-1/4         1-1/2 - 6 UNC         870 (1179)         1950 (2642)         3161 (4283)	15/16	5/8 - 18 UNF	110 (149)	170 (230)	240 (325)	
1-5/16         7/8 - 9 UNC         166 (225)         430 (583)         606 (821)           1-5/16         7/8 - 14 UNF         184 (249)         474 (642)         668 (905)           1-1/2         1 - 8 UNC         250 (339)         644 (873)         909 (1232)           1-1/2         1 - 12 UNF         274 (371)         705 (955)         995 (1348)           1-1/2         1 - 14 UNF         280 (379)         721 (977)         1019 (1381)           1-11/16         1-1/8 - 7 UNC         354 (480)         795 (1077)         1288(1745)           1-11/16         1-1/8 - 12 UNF         397 (538)         890 (1206)         1444 (1957)           1-7/8         1-1/4 - 7 UNC         500 (678)         1120 (1518)         1817 (2462)           1-7/8         1-1/4 - 12 UNF         553 (749)         1241 (1682)         2013 (2728)           2-1/16         1-3/8 - 6 UNC         655 (887)         1470 (1992)         2382 (3228)           2-1/16         1-3/8 - 12 UNF         746 (1011)         1672 (2266)         2712 (3675)           2-1/4         1-1/2 - 6 UNC         870 (1179)         1950 (2642)         3161 (4283)	1-1/8	3/4 - 10 UNC	144 (195)	266 (360)	376 (509)	
1-5/16         7/8 - 14 UNF         184 (249)         474 (642)         668 (905)           1-1/2         1 - 8 UNC         250 (339)         644 (873)         909 (1232)           1-1/2         1 - 12 UNF         274 (371)         705 (955)         995 (1348)           1-1/2         1 - 14 UNF         280 (379)         721 (977)         1019 (1381)           1-11/16         1-1/8 - 7 UNC         354 (480)         795 (1077)         1288(1745)           1-11/16         1-1/8 - 12 UNF         397 (538)         890 (1206)         1444 (1957)           1-7/8         1-1/4 - 7 UNC         500 (678)         1120 (1518)         1817 (2462)           1-7/8         1-1/4 - 12 UNF         553 (749)         1241 (1682)         2013 (2728)           2-1/16         1-3/8 - 6 UNC         655 (887)         1470 (1992)         2382 (3228)           2-1/16         1-3/8 - 12 UNF         746 (1011)         1672 (2266)         2712 (3675)           2-1/4         1-1/2 - 6 UNC         870 (1179)         1950 (2642)         3161 (4283)	1-1/8	3/4 - 16 UNF	192 (260)	297 (402)	420 (569)	
1-1/2         1 - 8 UNC         250 (339)         644 (873)         909 (1232)           1-1/2         1 - 12 UNF         274 (371)         705 (955)         995 (1348)           1-1/2         1 - 14 UNF         280 (379)         721 (977)         1019 (1381)           1-11/16         1-1/8 - 7 UNC         354 (480)         795 (1077)         1288(1745)           1-11/16         1-1/8 - 12 UNF         397 (538)         890 (1206)         1444 (1957)           1-7/8         1-1/4 - 7 UNC         500 (678)         1120 (1518)         1817 (2462)           1-7/8         1-1/4 - 12 UNF         553 (749)         1241 (1682)         2013 (2728)           2-1/16         1-3/8 - 6 UNC         655 (887)         1470 (1992)         2382 (3228)           2-1/16         1-3/8 - 12 UNF         746 (1011)         1672 (2266)         2712 (3675)           2-1/4         1-1/2 - 6 UNC         870 (1179)         1950 (2642)         3161 (4283)	1-5/16	7/8 - 9 UNC	166 (225)	430 (583)	606 (821)	
1-1/2         1 - 12 UNF         274 (371)         705 (955)         995 (1348)           1-1/2         1 - 14 UNF         280 (379)         721 (977)         1019 (1381)           1-11/16         1-1/8 - 7 UNC         354 (480)         795 (1077)         1288(1745)           1-11/16         1-1/8 - 12 UNF         397 (538)         890 (1206)         1444 (1957)           1-7/8         1-1/4 - 7 UNC         500 (678)         1120 (1518)         1817 (2462)           1-7/8         1-1/4 - 12 UNF         553 (749)         1241 (1682)         2013 (2728)           2-1/16         1-3/8 - 6 UNC         655 (887)         1470 (1992)         2382 (3228)           2-1/16         1-3/8 - 12 UNF         746 (1011)         1672 (2266)         2712 (3675)           2-1/4         1-1/2 - 6 UNC         870 (1179)         1950 (2642)         3161 (4283)	1-5/16	7/8 - 14 UNF	184 (249)	474 (642)	668 (905)	
1-1/2         1 - 14 UNF         280 (379)         721 (977)         1019 (1381)           1-11/16         1-1/8 - 7 UNC         354 (480)         795 (1077)         1288(1745)           1-11/16         1-1/8 - 12 UNF         397 (538)         890 (1206)         1444 (1957)           1-7/8         1-1/4 - 7 UNC         500 (678)         1120 (1518)         1817 (2462)           1-7/8         1-1/4 - 12 UNF         553 (749)         1241 (1682)         2013 (2728)           2-1/16         1-3/8 - 6 UNC         655 (887)         1470 (1992)         2382 (3228)           2-1/16         1-3/8 - 12 UNF         746 (1011)         1672 (2266)         2712 (3675)           2-1/4         1-1/2 - 6 UNC         870 (1179)         1950 (2642)         3161 (4283)	1-1/2	1 - 8 ŲNC	250 (339)	644 (873)	909 (1232)	
1-11/16         1-1/8 - 7 UNC         354 (480)         795 (1077)         1288(1745)           1-11/16         1-1/8 - 12 UNF         397 (538)         890 (1206)         1444 (1957)           1-7/8         1-1/4 - 7 UNC         500 (678)         1120 (1518)         1817 (2462)           1-7/8         1-1/4 - 12 UNF         553 (749)         1241 (1682)         2013 (2728)           2-1/16         1-3/8 - 6 UNC         655 (887)         1470 (1992)         2382 (3228)           2-1/16         1-3/8 - 12 UNF         746 (1011)         1672 (2266)         2712 (3675)           2-1/4         1-1/2 - 6 UNC         870 (1179)         1950 (2642)         3161 (4283)	1-1/2	1 - 12 UNF	274 (371)	705 (955)	995 (1348)	
1-11/16         1-1/8 - 12 UNF         397 (538)         890 (1206)         1444 (1957)           1-7/8         1-1/4 - 7 UNC         500 (678)         1120 (1518)         1817 (2462)           1-7/8         1-1/4 - 12 UNF         553 (749)         1241 (1682)         2013 (2728)           2-1/16         1-3/8 - 6 UNC         655 (887)         1470 (1992)         2382 (3228)           2-1/16         1-3/8 - 12 UNF         746 (1011)         1672 (2266)         2712 (3675)           2-1/4         1-1/2 - 6 UNC         870 (1179)         1950 (2642)         3161 (4283)	1-1/2	1 - 14 UNF	280 (379)	721 (977)	1019 (1381)	
1-7/8     1-1/4 - 7 UNC     500 (678)     1120 (1518)     1817 (2462)       1-7/8     1-1/4 - 12 UNF     553 (749)     1241 (1682)     2013 (2728)       2-1/16     1-3/8 - 6 UNC     655 (887)     1470 (1992)     2382 (3228)       2-1/16     1-3/8 - 12 UNF     746 (1011)     1672 (2266)     2712 (3675)       2-1/4     1-1/2 - 6 UNC     870 (1179)     1950 (2642)     3161 (4283)	1-11/16	1-1/8 - 7 UNC	354 (480)	795 (1077)	1288(1745)	
1-7/8     1-1/4 - 12 UNF     553 (749)     1241 (1682)     2013 (2728)       2-1/16     1-3/8 - 6 UNC     655 (887)     1470 (1992)     2382 (3228)       2-1/16     1-3/8 - 12 UNF     746 (1011)     1672 (2266)     2712 (3675)       2-1/4     1-1/2 - 6 UNC     870 (1179)     1950 (2642)     3161 (4283)	1-11/16	1-1/8 - 12 UNF	397 (538)	890 (1206)	1444 (1957)	
2-1/16     1-3/8 - 6 UNC     655 (887)     1470 (1992)     2382 (3228)       2-1/16     1-3/8 - 12 UNF     746 (1011)     1672 (2266)     2712 (3675)       2-1/4     1-1/2 - 6 UNC     870 (1179)     1950 (2642)     3161 (4283)	1-7/8	1-1/4 - 7 UNC	500 (678)	1120 (1518)	1817 (2462)	
2-1/16 1-3/8 - 12 UNF 746 (1011) 1672 (2266) 2712 (3675) 2-1/4 1-1/2 - 6 UNC 870 (1179) 1950 (2642) 3161 (4283)	1-7/8	1-1/4 - 12 UNF	553 (749)	1241 (1682)	2013 (2728)	
2-1/4 1-1/2 - 6 UNC 870 (1179) 1950 (2642) 3161 (4283)	2-1/16	1-3/8 - 6 UNC	655 (887)	1470 (1992)	2382 (3228)	
	2-1/16	1-3/8 - 12 UNF	746 (1011)	1672 (2266)	2712 (3675)	
2-1/4 1-1/2 - 12 UNF 979 (1327) 2194 (2973) 3557 (4820)	2-1/4	1-1/2 - 6 UNC	870 (1179)	1950 (2642)	3161 (4283)	
	2-1/4	1-1/2 - 12 UNF	979 (1327)	2194 (2973)	3557 (4820)	



Numbers appearing on bolt heads indicate ASTM class.

\*Use 75% of the specified torque value for plated fasteners. Use 85% of the specified torque values for lubricated fasteners.

Recommended torque in foot pounds (newton Meters).\*

WRENCH SIZE (mm) "A"	BOLT DIA. (mm) "B"	ASTM 4.6	ASTM 8.8	ASTM 9.8	ASTM 10.9
8	5	1.8 (2.4)		5.1 (6.9)	6.5 (8.8)
10	6	3 (4)		8.7 (12)	11.1 (15)
13	8	7.3 (10)		21.1 (29)	27 (37)
16	10	14.5 (20)		42 (57)	53 (72)
18	12	25 (34)	74 (100)	73 (99)	93 (126)
21	14	40 (54)	118 (160)	116 (157)	148 (201)
24	16	62 (84)	167 (226)	181 (245)	230 (312)
30	20	122 (165)	325 (440)		449 (608)
33	22		443 (600)		611 (828)
36	24	211 (286)	563 (763)		778 (1054)
41	27		821 (1112)		1138 (1542)
46	30	418 (566)	1119 (1516)		1547 (2096)



#### 10 WALDEN DRIVE ARDEN, NORTH CAROLINA 28704

(800) 438-5823 OR (828) 684-1234 FAX: (828) 684-0858

EMAIL: peco@lawnvac.com
WEBSITE: www.lawnvac.com