

# GRASS COLLECTION SYSTEM

# DESIGNED FOR: CUB CADET TANK & LESCO Z2 MODEL# 21031203 & 07 & 33031203-05



# **OPERATOR'S MANUAL**

# **ASSEMBLY • OPERATION • MAINTENANCE**

MANUAL PART#: Q0375

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Safety

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# <u>Safety</u>

- **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 quickly. 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 of the slope.
- **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

**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.



White letters on RED



Black letters on **ORANGE** 



Black letters on YELLOW

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

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

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.

It may also be used to alert against unsafe practices.

# PECO LIMITED WARRANTY FOR NEW PRODUCTS

#### A. WHAT IS WARRANTED?

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.

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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 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 for 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 PECO Inc., under this warranty, shall be terminated if products are altered or modified in ways not approved by 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 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, 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 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 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 AND DESCRIPTION

## **1-1 Introduction**

We are pleased to have you as a PECO customer. Your 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.

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

# **1-2 Description**

The 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 good for picking up leaves and twigs in pre-season and post-season cleanup.

The engine/blower/blade assembly, is mounted on the right side of the unit. The blower draws grass clippings from the discharge area of the cutter deck back to the (3) 4 cubic foot collection bags P#(G0003) at the rear portion of the mower frame. The operator can engage the engine/blower/blade assembly by starting the engine. Once the bags are full, the can released for dumping.

# Section II INSTALLATION FOR USE

# 2-1 Preparation Of Mower

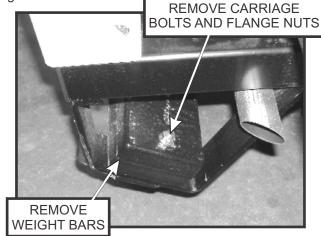
Carefully dismantle wooden shipping crate from around the components. Cut retaining straps and separate the parts. The collection system will have various parts located inside. Remove and sort all parts for easy identification.

**NOTE:** Before each step of assembly it will help to study the exploded drawings on pages 11 through 17. From the underside of the engine remove the bolt and bushing from the electric clutch assembly. It will help to use a bungee cord or similar device to hold the electric clutch in place during this step.

### **Removing The Weight Kit**

Remove the two carriage bolts and flange nuts that fasten the two existing weight bars to the rear frame of the mower. Remove the weight bars. See Figure 2-1a.

Figure 2-1a



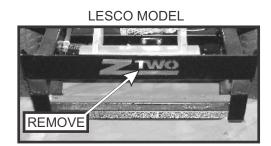
## **Removing The Rear Panel Guard**

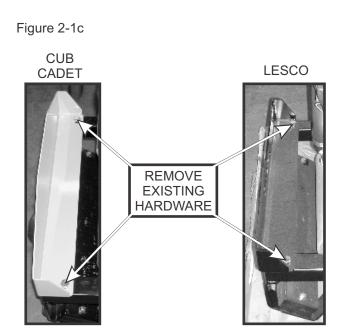
Remove the two existing nuts and bolts that fasten the panel guard to the rear frame of the mower. See Figure 2-1b and 2-1c for reference.



-1D CUB CADET MODEI

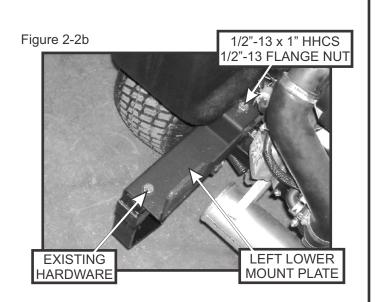






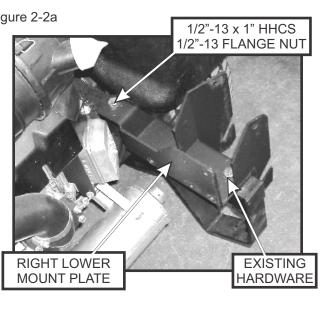
## **2-2 Left And Right Lower Mount Plate** Installation

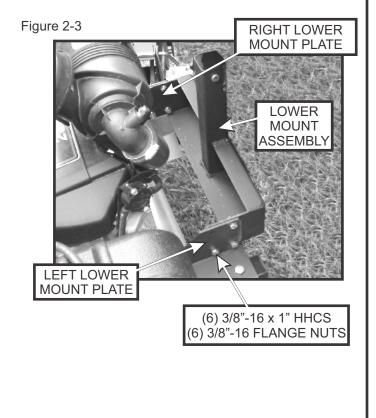
Fasten the left lower mount plate P#(B0395) and the right lower mount plate P#(B0396) to the rear frame of the mower using the (2) existing bolts and (2) nuts removed from the rear panel guard and (2) 1/2"-13 x 1" HHCS P#(K1231) and (2) 1/2"-13 flange nuts P#(K1246). See Figure 2-2a and 2-2b.



## 2-3 Lower Mount Assembly Installation

Fasten the lower mount assembly P#(A0848) to the left lower mount plate P#(B0395) and the right lower mount plate P#(B0396) using (6) 3/8"-16 x 1" HHCS P#(K1191) and (6) 3/8"-16 flange nuts P#(K1215). See Figure 2-3 for reference.

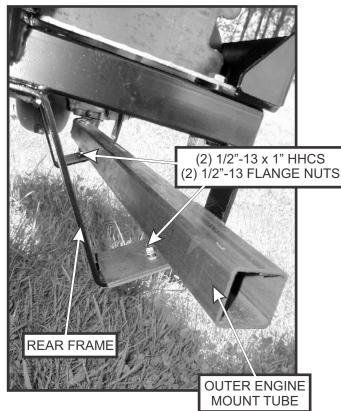




# 2-4 Outer Engine Mount Tube Installation

Fasten the outer engine mount tube P#(A0977) to the rear frame of the mower. Use (2) 1/2"-13 x 1" HHCS P#(K1231) and (2) 1/2"-13 flange nuts P#(K1246). You will use the existing holes from which the weights were removed. See Figure 2-4 for reference.

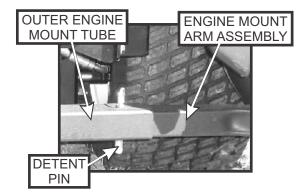
#### Figure 2-4



## 2-5 Engine Mount Arm Assembly Installation

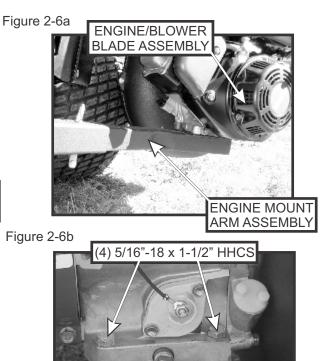
Insert the engine mount arm assembly P#(A0976) into the outer engine mount tube P#(A0977) and fasten with (1) detent pin P#(J0248). See Figure 2-5.

Figure 2-5



# 2-6 Engine/Blower/Blade Assembly Installation

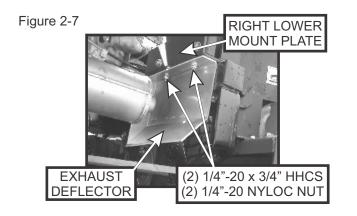
Place the engine/blower/blade assembly onto the engine mount arm assembly and align the mounting holes. Fasten by using (4) 5/16"-18 x 1-1/2" HHCS P#(K1157) and (4) 5-16"-18 flange nuts P#(K1178). See the figures below for detail.



# (4) 5/16"-18 FLANGE NUT

### **2-7 Exhaust Deflector Installation**

Fasten the exhaust deflector P#(C0058) to the underside of the right lower mount plate P#(B0396) and fasten using (2) 1/4"-20 x 3/4" HHCS P#(K1222) and (2) 1/4"-20 nyloc nuts P#(K1128). See Figure 2-7.

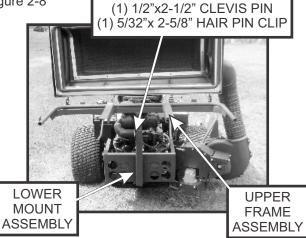


## 2-8 Upper Frame Assembly Installation

**NOTE:** During this step, it is suggested that two people install the upper frame to the lower mount tube.

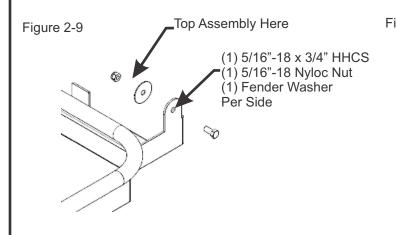
Using (2) people to lift the upper frame, lift the upper frame above the lower mount assembly P#(A0848) making sure the frame is pointing away from the mower (Figure 2-8). Slide the upper frame tube into the lower mount assembly aligning the mounting hole. Insert (1) 1/2" x 2-1/2" clevis pin P#(K0133) through the hole and fasten with (1) 5/32" x 2-5/8" hair pin clip P#(K0088).





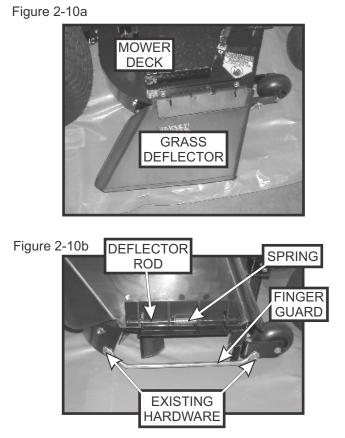
## 2-9 Top Assembly To Upper Frame **Assembly Installation**

Align the pivot brackets of the top assembly P#(A0585) to the pivot point on either side of the upper frame assembly. Place (1) P#(K0041) fender washer between each pivot point (Figure 2-7) and fasten each side by using (1) P#(K1153) 5/16"-18 x 3/4" HHCS and (1) P#(K1180) 5/16"-18 nyloc nut. When fastening leave nut slightly loose so that the top can pivot freely.

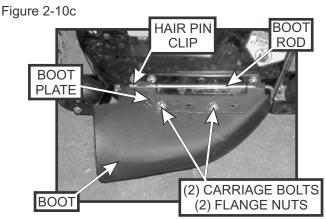


### 2-10 Boot To Mower Deck Installation

Remove the grass deflector (Figure 2-10a.) from the mower deck by lifting the deflector and removing the deflector rod and spring (Figure 2-10b.). Remove the deck finger guard and existing hardware (Figure 2-10b.).



Fasten the boot plate P#(B2555) to the boot P#(E1031) using (2) 3/8"-16 x 1" carriage bolts and (2) 3/8"-16 flange nuts. Insert the carriage bolt from the inside of the boot before fastening, to prevent grass from potentially building up on the threads. Insert the boot rod P#(B4331) into the holes on the mower deck, fasten with a (1) hair pin clip P#(K0099), then attach the boot and boot plate to the mower deck (Figure 2-10c.)



### **2-11 Blower Cone Installation**

Thread (1) 5/16"-18 jam nut P#(K0120) onto each end of (2) 5/16"-18 x 2-1/2" HHCS P#(K0125). Now partially thread the bolts into each of the two tabs located on the blower housing. Place blower cone so the two tabs line up with the bolts then tighten completely. See Figure 2-11.

# Figure 2-11 again. **BLOWER** HOUSING TABS (2) 5/16"-18 x 2-1/2" **BLOWER ALL THREAD HHCS** CONE (2) 5/16"-18 JAM NUT Figure 2-12 IMPELLER BLADE

### 2-12 Impeller Blade Removal/Replacement

**To Remove:** First remove the center bolt (#1), washer (#2) and spacer (#3) from the taper-lock bushing (#5). See Figure 2-12. Next remove the (2) 1/4"-20 bolts (#4) and place them into the threaded holes of the taper-lock bushing (next to the holes they were removed from). Gradually thread each bolt evenly into the taper-lock bushing, forcing the blade to break-away from the taper-lock bushing. If the impeller will not move, hit the base of the impeller, between each vein, with a hammer, then try again.

**To Replace:** Place impeller blade over the engine shaft. Slide the taper-lock bushing on to the engine shaft and into the impeller blade, aligning the **non-threaded** holes of the taper-lock bushing to the threaded holes of the impeller blade. Fasten by using (2) 1/4"-20 HHCS grade #8 bolts, (1) spacer washer and (1) HHCS bolt w/ washer. Torque to the proper specifications in the torque chart on the back of this manual. Next, rotate the impeller blade to insure that the blade is clear of contact on all sides of the blower housing.

# 2-13 Length Of Hose Adjustment

The hoses in steps 2-14 and 2-15 must be cut to fit your machine. Follow steps 2-14 and 2-15. do not cut the hoses until you have tried to fit them on your machine. Remember that the hoses have to be long enough to adjust for the blower assembly's movement as well as allow for enough clamping surface between the inlet, blower assembly, and the deck boot.

# 2-14 Upper Hose Installation

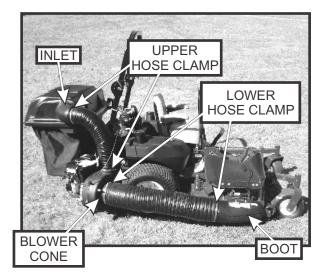
Fasten the inlet to the plastic top by sliding the inlet from the inside of the top to the outside and lock into place. Slide (1) upper hose clamp P#(J1000) onto each end of the 6" upper hose (Figure 2-15). Then slide one end of the 6" hose onto the inlet. Make sure there is about a two-inch overlap between the hose end and the container inlet. Proceed to slide the opposite end of the 6" hose onto the outlet of the blower assembly. See (Figure 2-15) for details. Make sure both ends of the hose are clearly attached to the inlet and the blower assembly inlet. Tighten the hose clamps.

# 2-15 Lower Hose To Blower Cone

## Installation

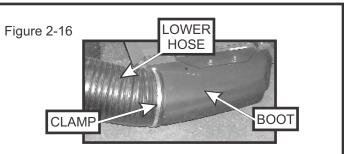
Slide (1) lower hose clamp P#(J1000) over each end of the lower hose. Then proceed to slide the lower hose onto the blower cone. Tighten the hose clamp. The assembly should look like Figure 2-15.

### Figure 2-15



# 2-16 Lower Hose To Boot Installation

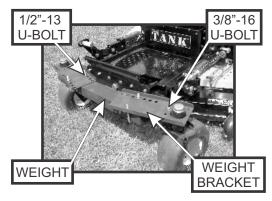
Take the unattached end of the lower hose and slide it over the circular end of the boot. Use the lower hose clamp to secure the hose to the boot (Figure 2-16). Tip: Before securing clamp rotate hose counter-clockwise (away from yourself) approximately 1" to add in retaining boot to mower deck.



# 2-17 Front Weight Installation

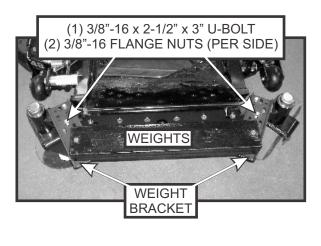
**CUB CADET:** Fasten the weight brackets P#(B0026) to the weight P#(B2220) using (2) 1/2"-13 U-bolt P#(K0331) and (4) 1/2"-13 flange nut P#(K1246). Fasten the weight to the wheel frame using (2) 3/8"-16 U-bolt P#(K1119) and (4) 3/8"-16 flange nut P#(K1215). See Figure 2-17a. for reference.

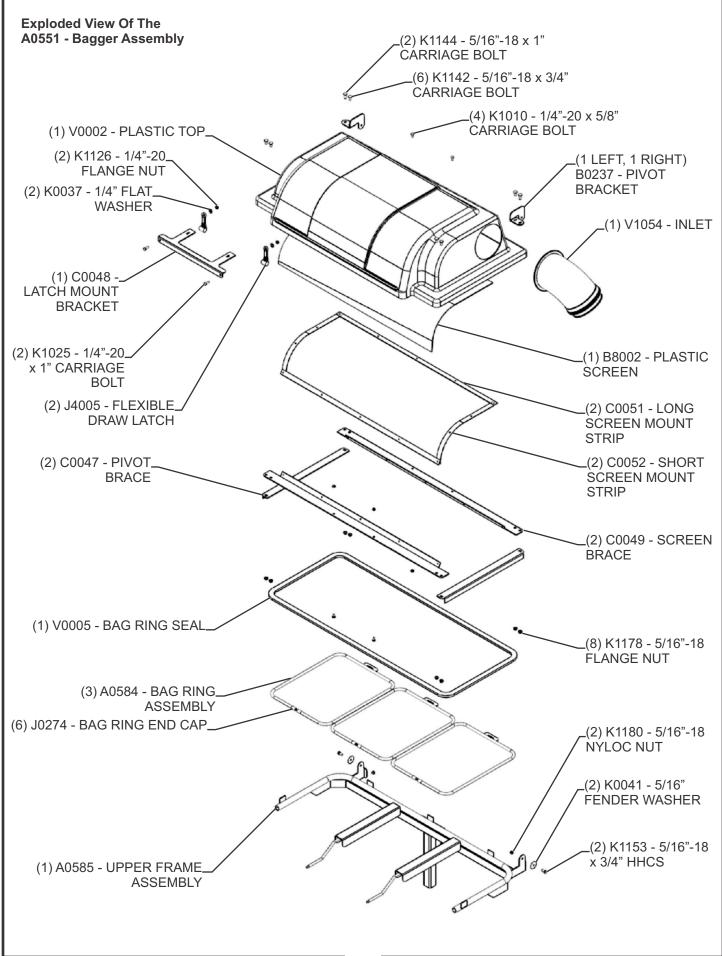
Figure 2-17a

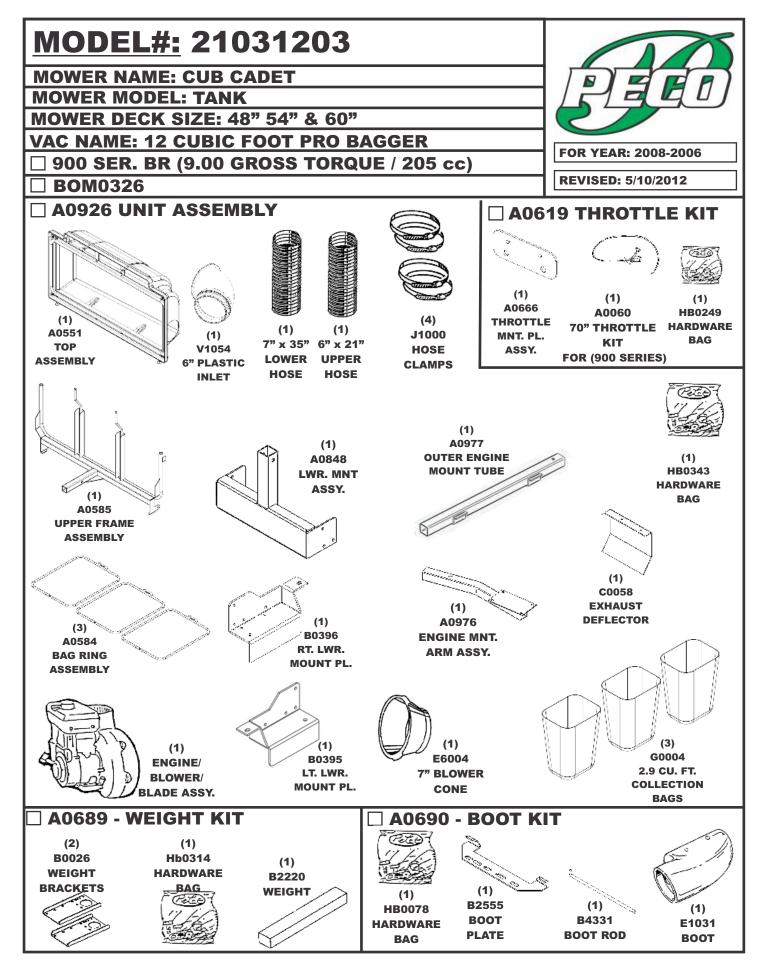


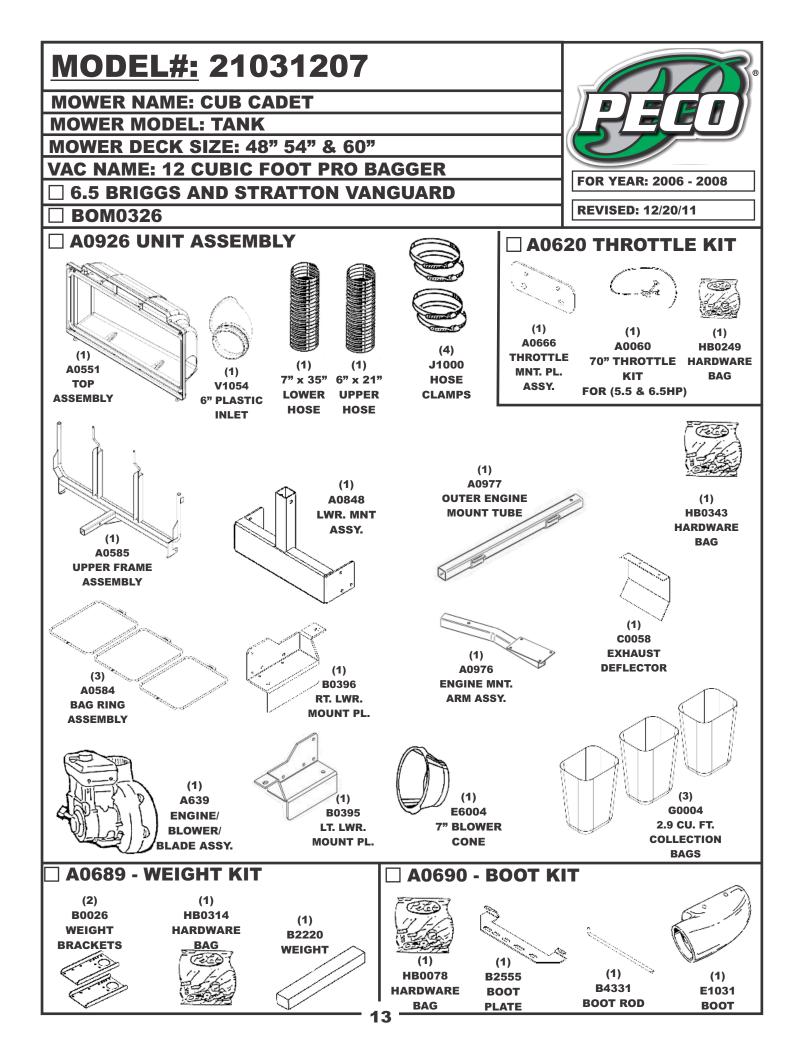
**LESCO:** Fasten the (2) weight brackets P#(B3750) to the wheel frame using (1) 3/8"-16 x 2-1/2"-3" U-bolt P#(K1432) and (2) 3/8"-16 flange nut P#(K1215) PER SIDE. Fasten the weights that were removed in section 2-1, to the weight brackets, using (1) 3-8"-16 x 4" HHCS P#(K1201) and (1) 3/8"-16 flange nut P#(K1215) PER SIDE. See Figure 2-17b for reference.

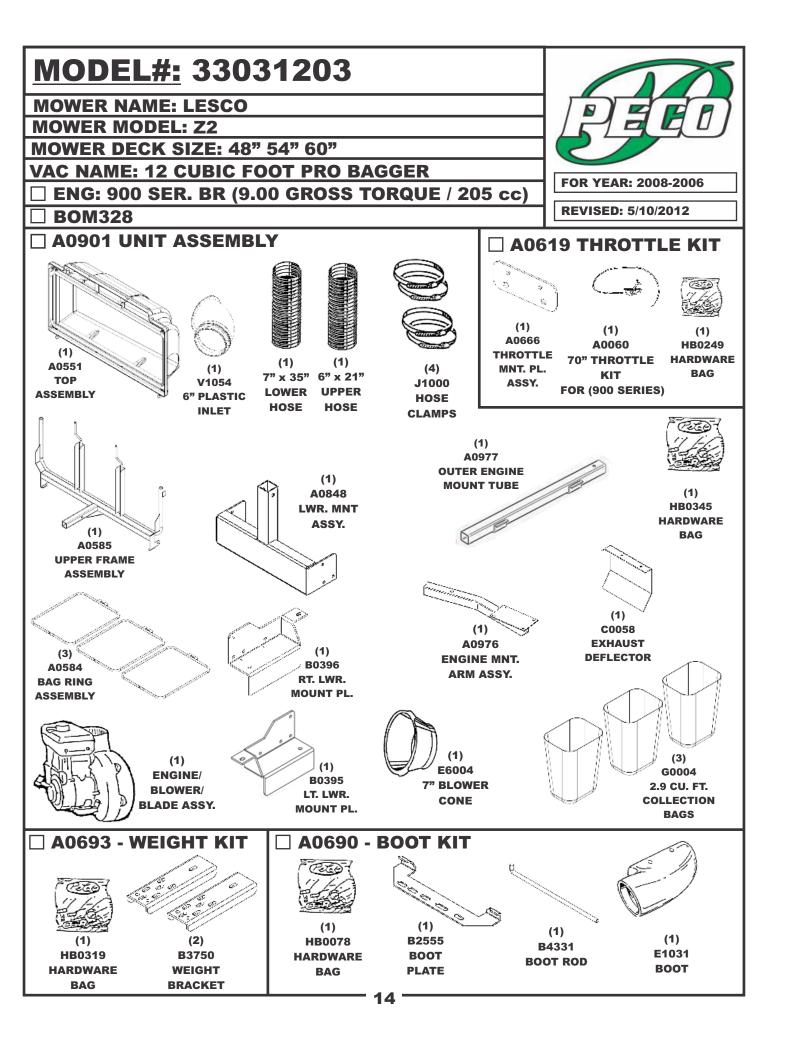
Figure 2-17b

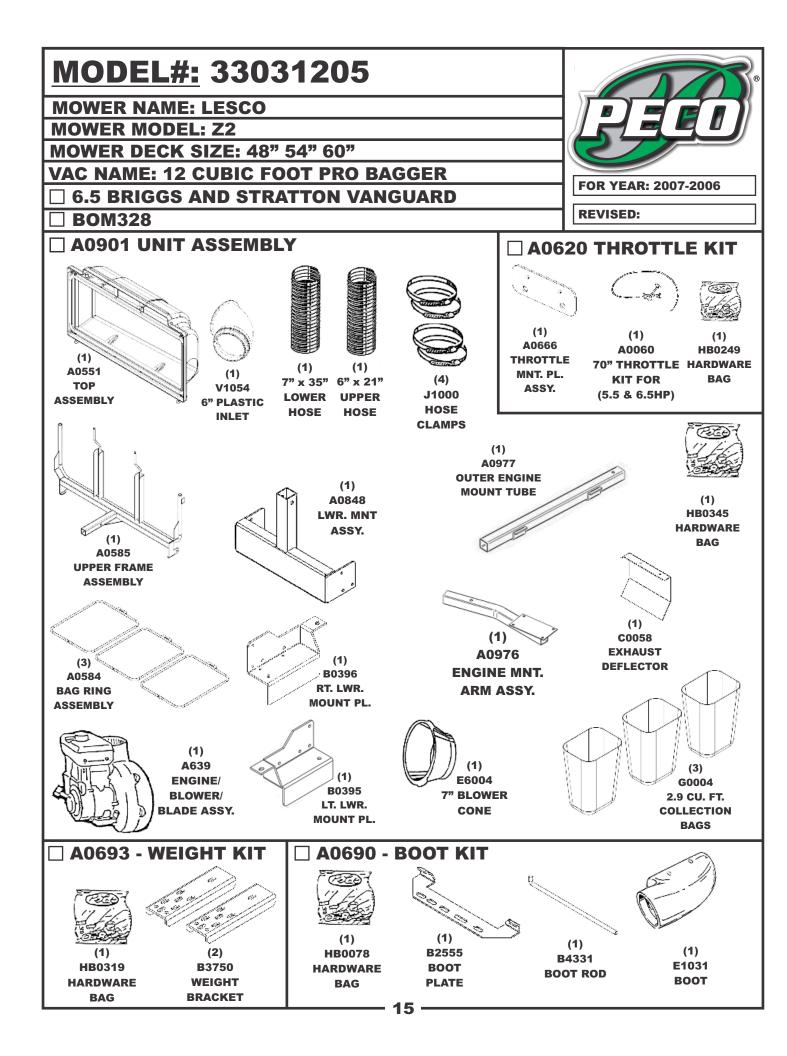












## 2-18 Throttle Cable Installation

To install the throttle cable kit to the ROPS (roll over protection system), place the 3/8" U-Bolt P#(K0136) onto the ROPS with the threads facing the front of the mower. Next slide on the throttle mount plate assembly P#(A0666) with the rivets also facing toward the front of the mower. Tighten the throttle mount plate assembly securely to the ROPS using (2) 3/8"16 flange nuts P#(K1215) (Figure 2-18a). With the throttle cable facing toward the engine/blower/blade assembly, place the throttle base plate over the rivets, Slide the throttle cable kit to the right, moving the smaller end of the slot over the rivets. When positioned correctly, the throttle spring plate will snap into place (Figure 2-18b).

**NOTE:** If mower is not equipped with a ROPS Intall the throttle cable kit to the upper frame assembly P#(A0585) using the same steps as above. Make sure to locate the throttle cable kit were it can be easily accessed from the operator's seat.

To remove the throttle cable kit, lift the throttle spring plate and slide the throttle kit to the left.

Route cable over upper hose as shown in Figure 2-18c.

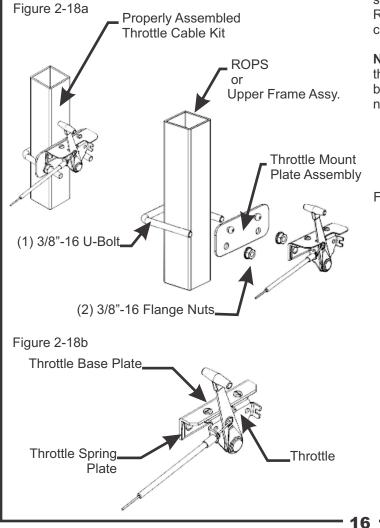


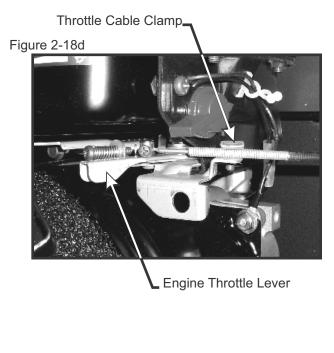
Figure 2-18c



Route Throttle Cable\_ Over Upper Hose

To fasten the throttle cable end to the engine, place the throttle control lever into the "stop" position. Rotate the engine throttle lever to the "stop" position. Thread the wire end of the throttle cable into the engine throttle lever eyelet and tighten the screw. Fasten the throttle cable sleeve to the clamp on the engine throttle (Figure 2-18d). Rotate the throttle control lever into the "fast" position to check for proper installation.

**NOTE**: Cable sleeve may need to be cut, depending on the engine type. Once throttle cable is attached, pull the box handle to dump the box and be sure the cable does not alter the movement of the box.



## **2-19 Installation/Removal Of** Collection Bags

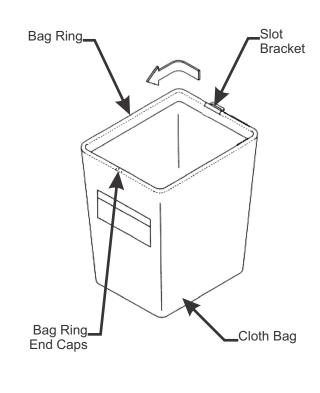
To install the bag onto the bag ring, first make sure the bag ring end caps are fastened to the bag ring. Place the seam openings of the bag onto the bag ring openings and turn the bag until the slot bracket in the bag ring is protruding from the opening in the bag (Figure 2-19a). Do this for each of three bags.

Install the completed assemblies onto the support frame and close the plastic top. Fasten both draw latches to hold the plastic top closed (Figure 2-19b).

To empty the bag, remove the bag and bag ring by lifting and sliding rearward. Grasp the loop on the bottom of the bag, turn it upside down and empty the collected debris (Figure 2-19c). Repeat for the other bags. Reinstall all bags, line with plastic bags if desired, close the plastic top and reattach the draw latches.

Plastic lawn and leaf bags, 33 gallon size, may be used inside the cloth bags. Be sure to leave enough plastic bag hanging over the frame so the plastic bags can be twist tied before emptying (Figure 2-19d).

Figure 2-19a



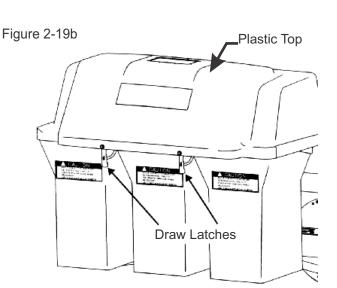
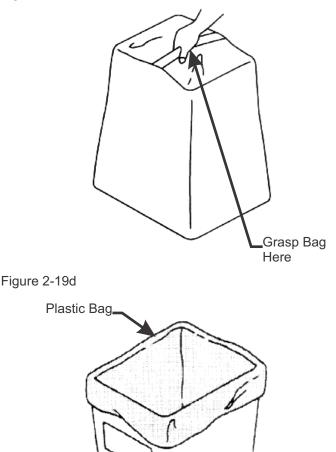


Figure 2-19c



Cloth Bag

# 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 & Tips On Mowing

- 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 sloped, etc.

# **3-3 Unloading The Collection System**

- A. Stop the forward movement of the mower.
- B. Disengage the mower deck.
- C. Using the throttle cable slow the engine down to idle.
- D. Engage the parking brake.

- E. Once the parking brake has been engaged, then and only then, walk behind the mower and check the collection bags by lifting the plastic hood. Load in bags should not exceed the height of the installed bag.
- F. To release bags from frame, lift bag ring from tab on bagger frame, slide bag out and turn bags over to deposit clippings.
- G. Follow steps on page 14 to re-attach bags back to the bagger.
- **NOTE:** Do not allow collection bags to become overfilled as potential damage may occur to your equipment. Also, be sure to clean the hood screen as needed.

# SECTION IV MAINTENANCE

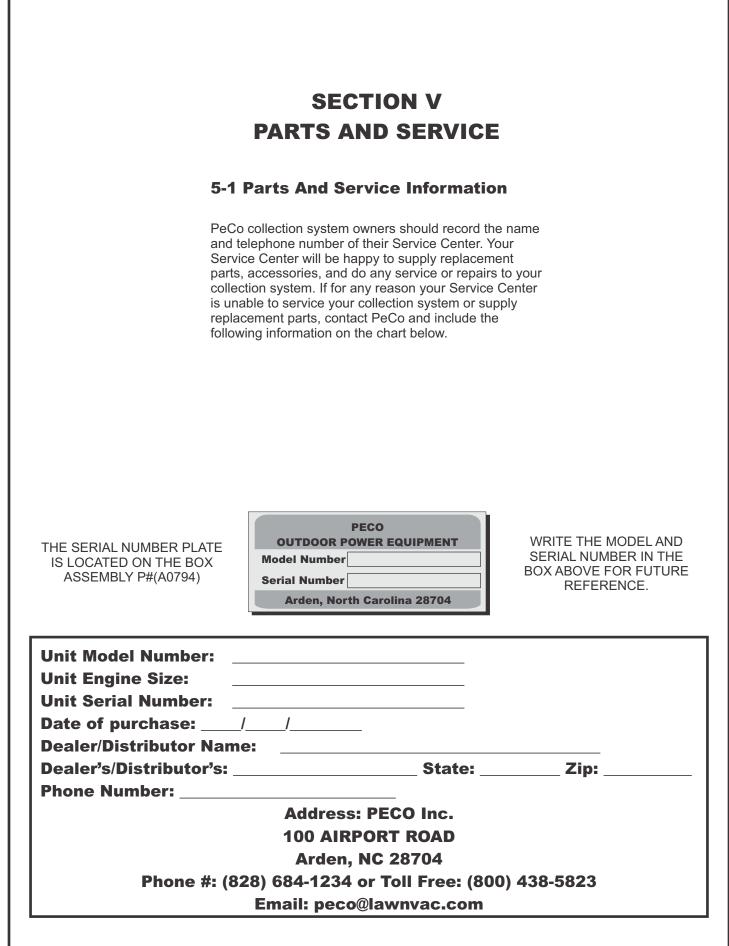
## **4-1 Maintenance Checklist**

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.
- 2. 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.
- 3. Make sure all shields are in place and in good condition. Repair or replace any missing or damaged shields.
- 4. Listen for abnormal sounds, which might indicate loose parts, damaged bearings, or other damage. Correct any deficiency before continuing operation.
- 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, and off of safety decals. Replace any missing or illegible decals.
- 2. Clean all debris from the box screen.
- Inspect unit for worn or damaged components. Repair or replace before the next use. Any replacement component installed during repair shall include the components current safety decal specified by the manufacturers to be affixed to the component.

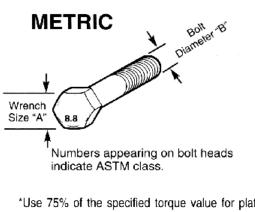


# SAFETY DECALS

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.



AME	RICAN		oque for American commended Torqu			equipment. ters).*
Bolt Hea	d Markings	WRENCH SIZE (IN.) "A"	BOLT DIAMETER (IN.) "B" AND THREAD SIZE	SAE GRADE 2	SAE GRADE 5	SAE GRADE 8
		7/16	1/4 - 20 UNC	6 (7)	8 (11)	12 (16)
$\sim$		7/16	1/4 - 28 UNF	6 (8)	10 (13)	14 (18)
		1/2	5/16 - 18 UNC	11 (15)	17 (23)	25 (33)
	SAE Grade 2 (No Dashes)	1/2	5/16 - 24 UNF	13 (17)	19 (26)	27 (37)
	(NO Dashes)	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)
A Contraction		7/8	9/16 - 12 UNC	70 (95)	109 (148)	153 (207)
	SAE Grade 5	7/8	9/16 - 18 UNF	79 (107)	122 (165)	172 (233)
$\bigcirc$	(3 Dashes)	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)
	Bon Bon B	1-5/16	7/8 - 9 UNC	166 (225)	430 (583)	606 (821)
	Bolt Diameter "B"	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)
Vrench Size "A"	SAE Grade 8	1-1/2	1 - 14 UNF	280 (379)	721 (977)	1019 (1381
	(6 Dashes)	1-11/16	1-1/8 - 7 UNC	354 (480)	795 (1077)	1288(1745
Т		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
		2-1/4	1-1/2 - 12 UNF	979 (1327)	2194 (2973)	3557 (4820



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

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)



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