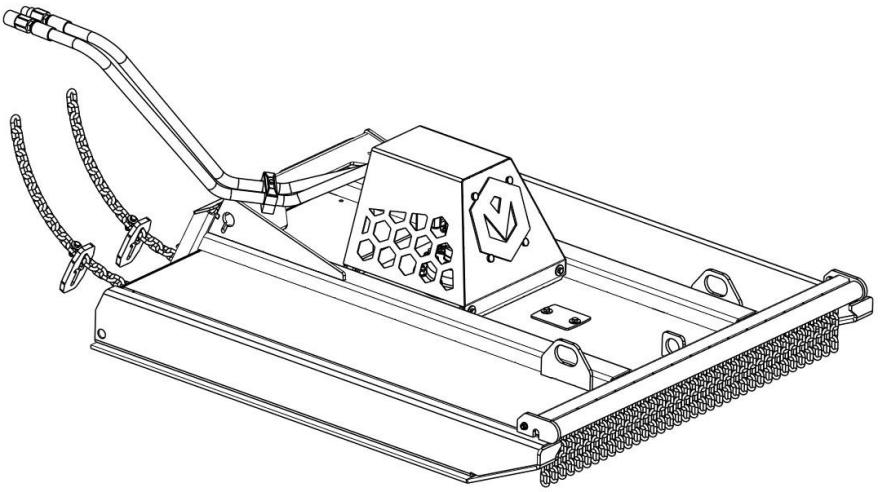
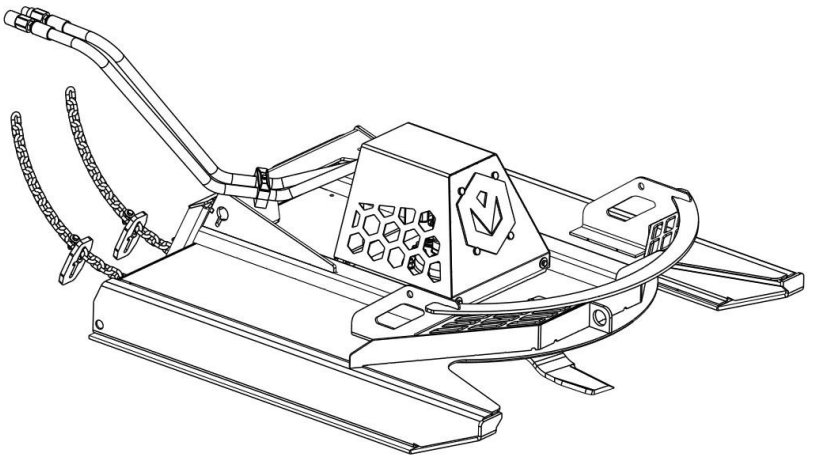
V20 Compact Brush Cutter

Standard and Open Front Decks

Closed Deck Shown Throughout Manual





Model Number _____

Serial Number _____

Serial Number 185600 - Current
Manufacture Date 05/10/21 – Current

Maximum Flow Rate: 18 GPM

Phone: 320-818-4040

05/10/21
Revised 05/10/21

CBC -S/B

Features of Virnig Mfg. Inc. V20 Compact Brush Cutters include:

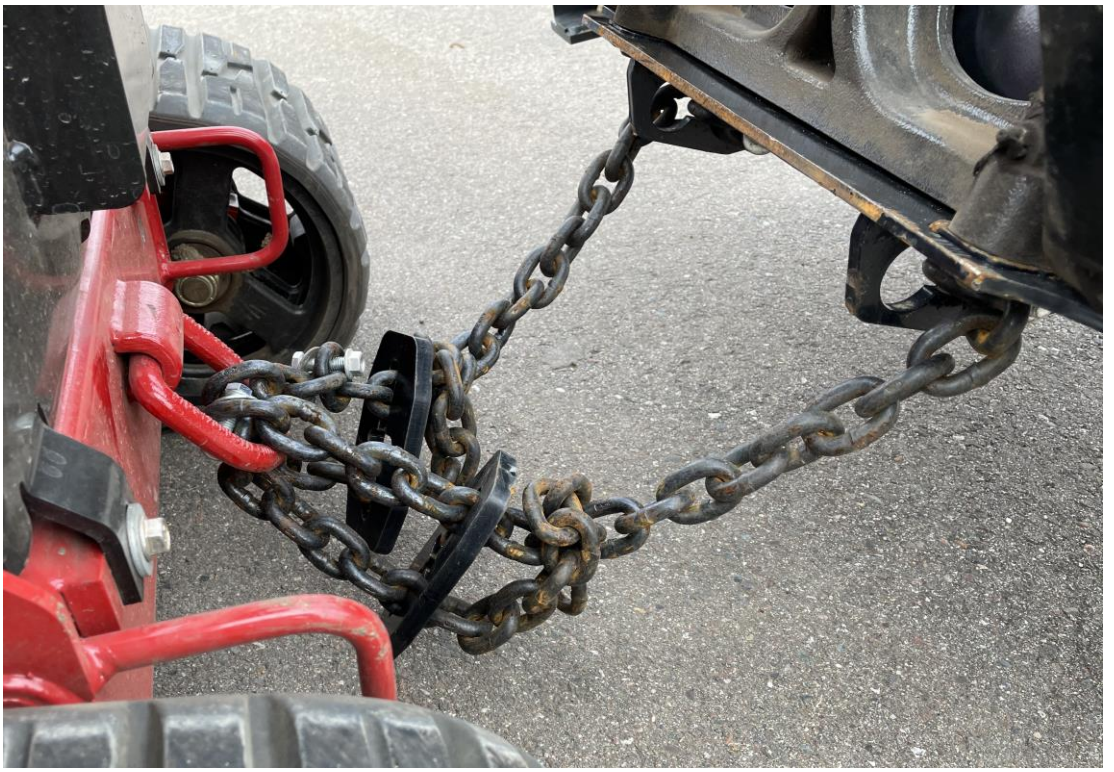
- 3” diameter maximum cutting capacity.
- Hydraulic motor covering flow rates of 11-18 GPM.
- Standard dual hydraulic pressure relief valves with dynamic braking.
- 3800 psi maximum operating pressure.
- 1/2” x 4” single side, updraft blades.
- Standard large 3 blade circular flywheel for smooth operation.
- Standard spindle guard protects bearing adapter output shaft seal.
- Recommended for compact loaders with a lift capacity over 590 lbs.
- Standard motor guard protects motor and hydraulic components.

Initial Use

- Read and understand all warning information in this manual before operating this attachment.
- Check that quick-tach on frame fits onto compact loader properly. Pins must engage through plates at bottom of quick-tach.
- Slowly roll back attachment. Make sure there is no interference between attachment and compact loader.
- Make sure hoses do not pinch during roll back.
- Attach Lift Limit Chains. (See details in “Operation” section of this manual.)
- Flow rate **cannot** exceed maximum flow rate noted on the label on the surface of the cutter’s deck (18 GPM).
- Start the V20 Compact Brush Cutter at an idle, bring up to engine operating rpm, stop cutter (see “Operation” section of this manual) and check for oil leaks per instructions in “Maintenance” section of this manual.
- Never exceed the maximum attachment operating pressure of 3800 psi.

Operation

- Always follow safety and operating information in this manual.
- Always follow all safety and operating instructions of compact loader.
- Never remove material deflectors or warning labels.
- Never operate V20 Compact Brush Cutter unless you have been properly trained.
- Make sure all safety labels are in place, look in this manual for locations.
- Lift Limit Chains must be installed for safe operation of V20 Compact Brush Cutter. Both chains need to be attached to the loader. For loaders with one front tie down, run both chains to the one tie down. If the loader has two front tie downs, run one chain to each. (See picture below.) Chain length should be adjusted so the rear of the deck (near the loader) should not be allowed to raise higher than 12” above the ground. Both chains need to be adjusted to the same length to prevent unnecessary twisting of loader arms. The V20 Compact Brush Cutter should NEVER be operated with the rear deck more than 12” above the ground. Doing so creates a great risk of damage to the loader as well as injury or death of the operator.



Correct installation of lift limit chain (Item #35) and lift limit retainer plate (Item #38).

Operation (cont.)

- Keep bystanders back 200 feet at all times. Do not operate near buildings, traffic, pets or livestock.
- Never allow riders on V20 Compact Brush Cutter, even when blades are not rotating.
- Check that all bolts are tight and that no parts are damaged. Make sure blades swing freely. Check blades for cracks or damage, replace as needed. Blades should always be replaced in sets. Never try to straighten or weld on blades.
- Never cut material larger than 3" diameter.
- Before cutting an area, thoroughly check for obstructions such as pipes, fence posts, wire/cable, rocks, etc. Remove obstructions if possible, flag any obstructions too large to move.
- Engage hydraulics at an idle, then bring loader to desired engine operating rpm. The V20 Compact Brush Cutter should be stopped before slowing engine rpm. It is equipped with dynamic braking and an anti-cavitation valve. Throttling down the loader before disengaging the hydraulics has greater potential to damage the cutters hydraulic system than disengaging the hydraulics at operating rpm.
- If blade rotation does not match your preferred detent position, the couplers can be switched on the hoses.
- Use extreme care when cutting close to fences, ditches, large obstacles, and on hillsides.
- Do not operate on or drive across steep slopes.
- Stop and inspect entire unit for damage after striking any foreign objects. Replace or repair any damaged components before continuing.
- Before dismounting, lower lift arms to stops, place cutter flat on the ground, disengage hydraulics, stop engine, engage parking brake and make sure all rotation has stopped.
- Always relieve pressure before disconnecting hydraulic hoses.
- Clean any debris from attachment. Pay special attention to any debris in quick-tach area.
- Since the V20 Compact Brush Cutter can rotate in either direction, the operator must determine which direction the cutter is spinning. When looking top down on the deck, the V20 Compact Brush Cutter should spin in a counter clockwise direction, as shown on the Cutter Blade Rotation Label. If, during the initial use, the V20 Compact Brush Cutter does not seem to have power, cuts poorly or easily stalls, the cutter is likely rotating in the incorrect direction. Change the direction of the cutter by reversing the direction of flow after bringing the unit to a complete stop.

Cutting Recommendations

- Continuous rotation of the blades is required to prevent overheating. If the cutter stalls, disengage hydraulics and remove cutter from material before restarting.
- Engage hydraulics at an idle. When blades are rotating smoothly, bring loader to engine operating rpm. Do not engage cutter into material to be cut until blades are running smoothly at engine operating rpm.
- If blades are slowing or loader engine rpm is decreasing, reduce travel speed into material to be cut or take less than full width cuts to maintain blade speed.
- For tall grass and heavy vegetation, raise the back of the cutter 2” - 3” off of the ground to better allow material to exit the cutter. Place the front skid shoes 1” - 2” off of the ground and drive into material. Never drive with the front of the cutter raised to a height where your view is obstructed. Never raise the unit to a height to expose yourself or others to the rotating blades. If you can see the blades, the unit is raised too high.
- When cutting large brush/small trees up to 3” diameter, keep the back of the cutter at or near ground level and roll the front of the cutter so it is 12” - 24” above the ground. Drive slowly into the material. The tilt cylinders of the loader can be used to bend over small trees. As the tree bends over, the blades will cut it off. The tree can be mulched by rotating the front of the cutter upward and driving over it moving forward. The tree can be further mulched by rolling the front of the cutter downward near ground level and backing up. Repeat as needed. The back of the cutter should be at or near ground level.

Maintenance

*Before each use and after every 10 hours of operation

- Make sure all safety labels are in place, look in this manual for locations.
- Check oil level in V20 Compact Brush Cutter bearing by removing plug on the side, just above the mount flange (It may be necessary to remove the motor guard). If needed, add oil through hole or remove plug on top of bearing adapter, near the motor. Reinstall plug(s). When empty, bearing adapter holds 12 ounces of oil. Oil to be SAE 80W-90 gear lubricant, API-GL-5 approved.
- Check for loose, worn, or missing parts, repair or replace as needed.
- Check that all bolts are tight and that no parts are damaged. Pay special attention to the 6 bolts (Item #4) that hold the Flywheel Assembly (Item #20) to the Bearing Adapter (Item #2). If any of the 6 bolts are loose, remove, apply Loctite and re-install and torque to proper value. See “Bolt Torque” section in this manual for proper torque values.
- Make sure blades swing freely. Check blades for cracks or damage, replace as needed. Blades should always be replaced in sets. Never try to straighten or weld blades. Do not heat or pound on blades. Blades should be replaced if excessively nicked or worn. Bent blades need to be replaced immediately. Blade bolts and nuts MUST be replaced with the blades. Blades can be sharpened. Blades should be sharpened at the same time and same amount to maintain balance of the cutter. For best blade wear, do not sharpen blades to an edge, leave the blades 1/32” - 1/16” blunt.
- Remove any foreign debris such as string, wire, branches, etc. that may have wrapped around the flywheel.
- Inspect motor and bearing adapter, valves, hydraulic fittings, and hoses for leaks and damage. Replace as needed. Make sure loader is shut off and hydraulic pressure is relieved before checking for leaks. Never use hands to check for high pressure hydraulic leaks.
- The pressure relief valves require no maintenance. The valves are pre-set and require no adjustment. Changing settings may cause damage to the motor or change the rate the blades slow to a stop. Please call Virnig Mfg. Inc. with any questions or problems regarding the pressure relief valves.

Maintenance (cont.)

- If the V20 Compact Brush Cutter is still under warranty, contact your dealer before attempting any repairs. **Bearing adapters and motors that have been disassembled without prior approval will not be covered under warranty.** Motors and bearing adapters need to be intact for Virnig Mfg. Inc. to get any warranty reimbursement from the component manufacturer. If the component manufacturer declines warranty due to tampering or misuse, Virnig Mfg. Inc. reserves the right to void warranty as well.
- Contact your dealer for any required replacement parts.

*Every 50 hours of operation

- Thoroughly clean (power washing is recommended) both the topside and underside of the brush cutter deck. This will help identify any areas that may be damaged, broken or worn. Repair as necessary.

Blade Replacement Procedure

- Make sure hydraulics are disconnected from machine and deck is properly supported as you will need access to the bottom of the deck. The V20 Compact Brush Cutter is heavy and steps need to be taken to make sure the deck is stable and secure before making any repairs.
- Loosen 3/8” bolts (Item #23) securing blade bolt access cover (Item #16), and swing cover out of the way. Spin flywheel until blade bolt appears in access hole.
- Loosen and remove the 1” nut (Item #36) retaining the blade. The square neck on the bolt (Item #17) will prevent the bolt from spinning. When the nut is removed, the blade (Item #14) should drop freely from the flywheel.
- Reinstall new blade and hardware (this step may require additional help) and torque to the specified torque (see “Drive and Blade Assembly” section). **Note: There is a special washer (Item #45) that needs to be installed between the spacer (Item #5) and nut (Item # 36). Additionally, the square holed spacer (Item #25) should be flush with the flywheel and oriented with the blade bolt (Item #17)**
- Repeat above steps for the remaining blades.
- Reinstall blade bolt access cover and tighten retaining hardware.

Flywheel Removal and Installation

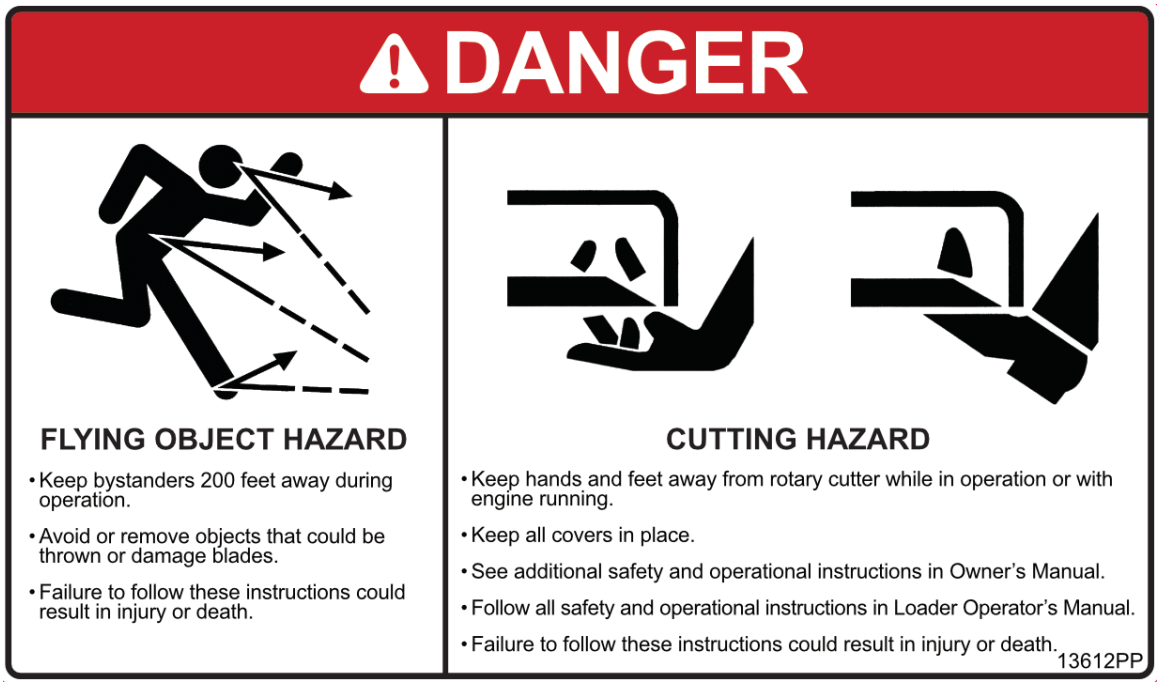
- Make sure hydraulics are disconnected from machine and deck is properly supported as you will need access to the bottom of the deck. The V20 Compact Brush Cutter is heavy and steps need to be taken to make sure the deck is stable and secure before making any repairs. The flywheel weighs approximately 125 lb. and care needs to be taken when handling.
- From the underside of the deck, remove 4 of the 6 – 3/4" bolts (Item #4) that hold the flywheel (Item #20) to the bearing adapter (Item #2); the 2 bolts left should be opposite each other. **Do Not** remove all 6 bolts at this time.
- Support the flywheel using blocking and remove the last 2 bolts that hold the flywheel to the bearing adapter. The flywheel should fall free of the bearing adapter. The use of a floor jack is recommended to finish removal of the flywheel.
- To reinstall, the flywheel should be positioned under the bearing adapter so the bolt holes are aligned. Using a jack, lift the flywheel until it comes in contact with the bearing adapter. Block up flywheel and remove jack. Install at least 2 bolts opposite each other to hold the flywheel in position. Remove blocking and install the remaining 4 bolts. Tighten and torque (see "Bolt Torque Chart"). It is recommended to use Loctite on the 6 bolts (Item #4) that hold the flywheel to the bearing adapter.

Blade Tip Speeds

Blade tip speeds at specified flow rates in gallons per minute (GPM).
Blade tip speeds listed in feet per minute.

MODEL	11 gpm Minimum	15 gpm	18 gpm Maximum
CBC42	6,980	9,520	11,430
CBC42-O	6,980	9,520	11,430
CBC48	7,980	10,880	13,070
CBC48-O	7,980	10,880	13,070

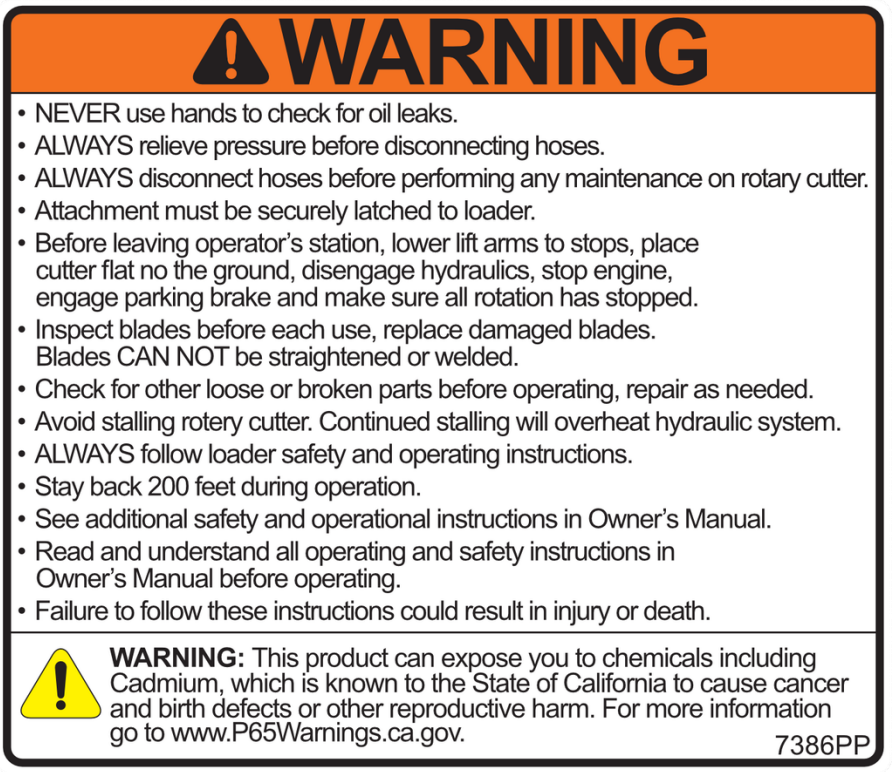
Labels on V20 Compact Brush Cutter



13612PP - DANGER HAZARD LABEL
This label has several important instructions for safe operation regarding flying object hazards and cutting hazards.

7388PP - DANGER STAY CLEAR LABEL
All bystanders must stay clear during operation.

Labels on V20 Compact Brush Cutter (cont.)



7386PP - MAIN WARNING LABEL
This label has several important instructions that must be followed for safe operation of this attachment.

7387PP - LIFT LIMIT WARNING LABEL
Lift Limit Chains must be properly installed for safe operation of this attachment. (See additional information in this manual)

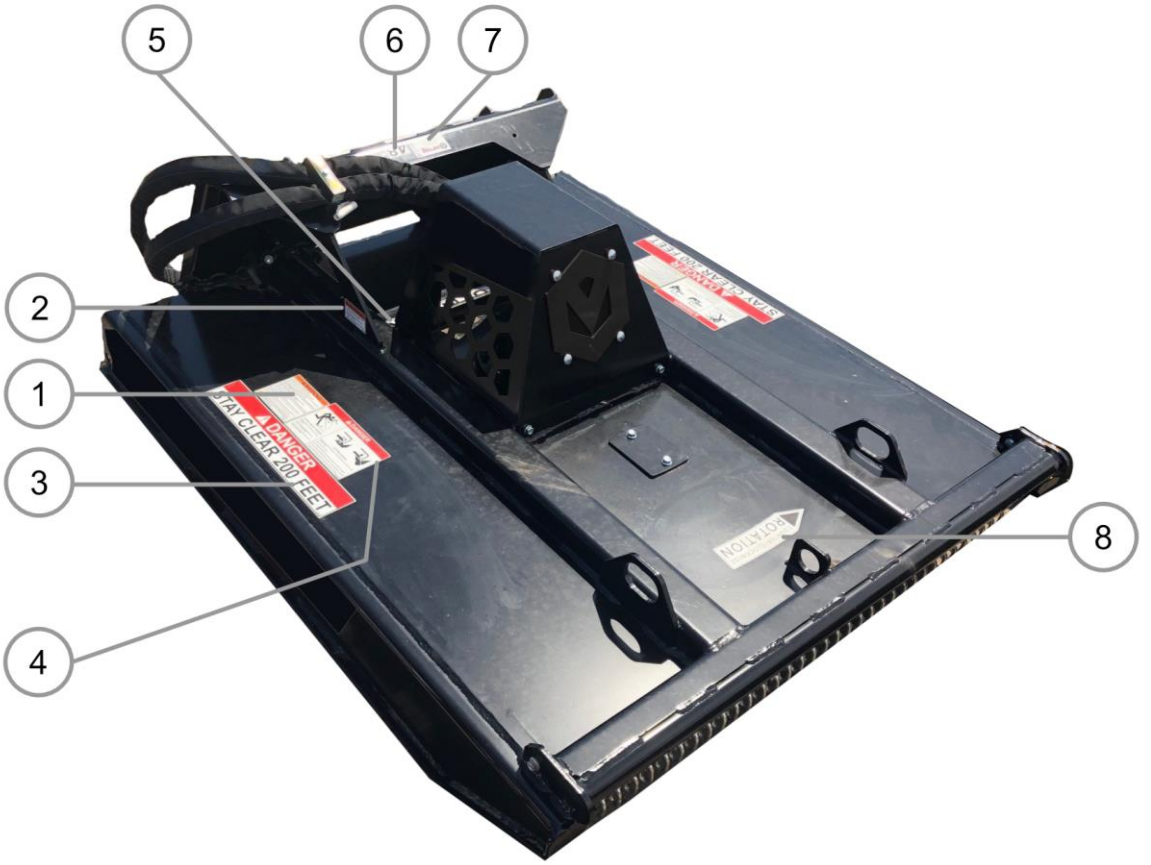
Labels on V20 Compact Brush Cutter (cont.)

11628PP - CUTTER BLADE ROTATION LABEL
This label indicates the proper blade rotation of the cutter.

7489PP - 18 GPM MAX LABEL
This label indicates the maximum flow rate for this attachment.

V20 Compact Brush Cutter (CBC) Labels

ITEM	PART NO.	QTY	DESCRIPTION
1	7386PP	2	MAIN WARNING LABEL
2	7387PP	1	LIFT LIMIT WARNING LABEL
3	7388PP	2	DANGER STAY CLEAR LABEL
4	13612PP	2	DANGER HAZARD LABEL
5	7489PP	1	18 GPM MAX LABEL
6	13157PP	1	42 WIDTH LABEL
	10259PP		48 WIDTH LABEL
7	SERIALTAG	1	SERIAL NUMBER TAG
8	11628PP	1	CUTTER BLADE ROTATION LABEL



V20 Compact Brush Cutter (CBC) Parts List

	ITEM	PART NO.	QTY	DESCRIPTION
	1	1003PP	2	1/2"-13 REVERSE LOCK NUT
	2	10073PP	1	BEARING ADAPTER
	3	1008PP	3	5/8"-11 TOP LOCK NUT
	4	10090PP	6	3/4"-16 X 1 3/4" LG HHCS GR 8
	5	10110VP	3	PLATE SPACER
	6	10125VW	1	SPINDLE GUARD WDT
	7	10127PP	3	3/8"-16 X 3" LG HHCS GR8
	8	10320PP	1	MAGNETO MOUNT GASKET
	9	10684PP	1	5/16"-18 X 3 1/4" LG HHCS
	10	1075PP	3	3/8" LOCK WASHER
	11	1083PP	2	3/8" USS FLAT WASHER
	12	1089PP	6	3/8"-16 X 1" LG CARRIAGE BOLT
	13	12451VP	1	HEX BADGE
A	14	—	3	BLADE CUL UPDRAFT
	15	12518PP	1	MOTOR
	16	12641VP	1	BOLT ACCESS COVER
	17	12693PP	3	BRUSH CUTTER BLADE BOLT 3"
	18	12842VW	1	CUTTER GUARD WELDMENT STD
	19	13092VP	2	CBC CHAIN ROD KEEPER PLATE
A	20	—	1	FLYWHEEL ASSEMBLY
A	21	—	1	DECK WDT
A	22	—	1	CHAIN ROD
	23	13378PP	6	3/8"-16 X 1" LG HHSFS GR8
	24	13588PP	1	CUL MANIFOLD DUAL CROSSOVER
	25	13610VP	3	CUTTER SQ BOLT SPACER
	26	5148PP	2	1/2" USS FLAT WASHER
	27	5226PP	2	1/2"-13 X 1 1/2" LG HHCS
	28	6140PP	8	3/8"-16 TOP LOCK FLANGE NUT
	29	6717PP	9	9/16" HI-ALLOY LOCK WASHER
	30	6719PP	4	1/2"-13 X 1 1/2" LG SHCS
	31	6720PP	4	1/2" HI-COLLAR LOCK WASHER
	32	6734PP	1	COUPLER FEMALE 12FB
	33	6735PP	1	COUPLER MALE 12FB
	34	7327PP	—	5/16" X 5 LINK CHAIN GRADE 30
A	35	7328PP	2	3/8" X 42" GR80 LIFT LIMIT CHAIN
	36	7330PP	3	1" -14 TOP LOCK
	37	7335PP	2	3/8"-16 X 1 1/2" LG HHCS
	38	7479VP	2	LIFT LIMIT RETAINER PLATE
	39	7665PP	9	9/16"-12 X 2 3/4" LG HHCS GR8
	40	7672PP	1	5/16"-18 TOP LOCK FLANGE NUT

A - See Table 1.

V20 Compact Brush Cutter (CBC)
Parts List (cont.)

41	7790PP	3	5/8"-11 X 2" LG CB
42	8276PP	2	HYD HOSE 3/4" X 78" LG 12MB TO 12FJX W/SLEEVE
43	8697PP	1	HOSE CLAMP ASSEMBLY 3/4" HOSE
44	9028PP	2	ADAPTER 12MJ TO 10MB
45	9340PP	3	1" DIAMETER NORD-LOCK WASHER
46	9717PP	9	9/16"-12 TOP LOCK NUT

A - See Table 1.

Table 1

	MODEL		CBC42	CBC42-O	CBC48	CBC48-O
	CBC DECK WELDMENT	UNIVERSAL MINI	13090VW	13061VW	13117VW	13105VW
		MINI BOB-TACH	13600VW	13602VW	13593VW	13598VW
	FLYWHEEL ASSEMBLY		13062VA	13062VA	13106VA	13106VA
	NO. OF CHAINS		33	—	36	—
	CHAIN ROD		13103VP	—	13127VP	—
B	BLADE REPLACEMENT KIT		MBK42	MBK42	MBK48	MBK48
	WEIGHT (LBS.)		620	590	720	690

B - Blade kits contain 3 each of blade, bolt, washer, and nut.

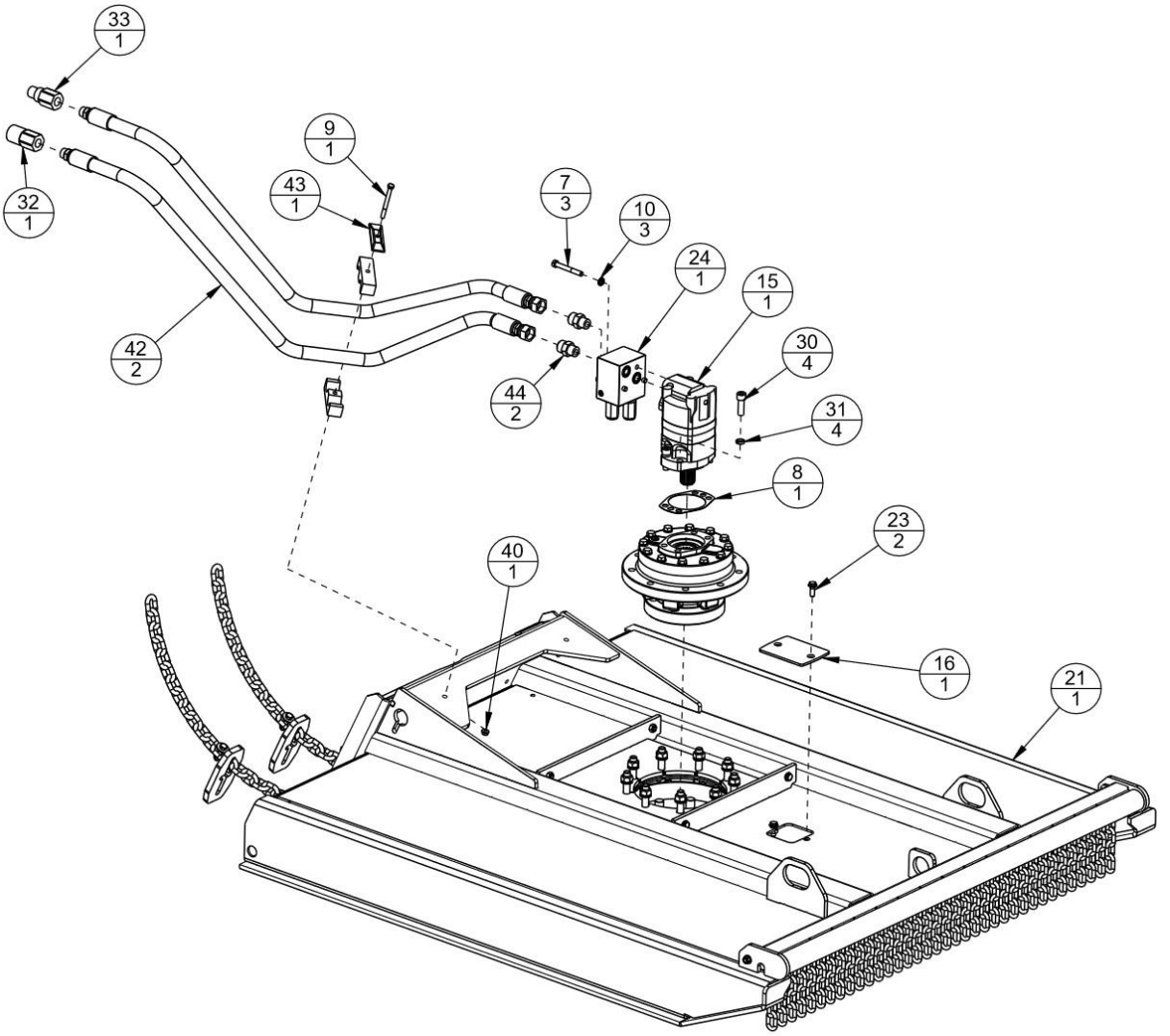
Bolt Torque Chart

	GRADE 5		GRADE 8		SHCS*	
SIZE	COARSE	FINE	COARSE	FINE	COARSE	FINE
1/4"	6	7	9	10	10	12
5/16"	13	15	18	20	22	24
3/8"	23	26	33	37	38	43
7/16"	37	41	52	58	61	68
1/2"	57	64	80	90	93	105
9/16"	82	91	115	128	134	150
5/8"	113	128	159	180	179	202
3/4"	200	223	282	315	317	354

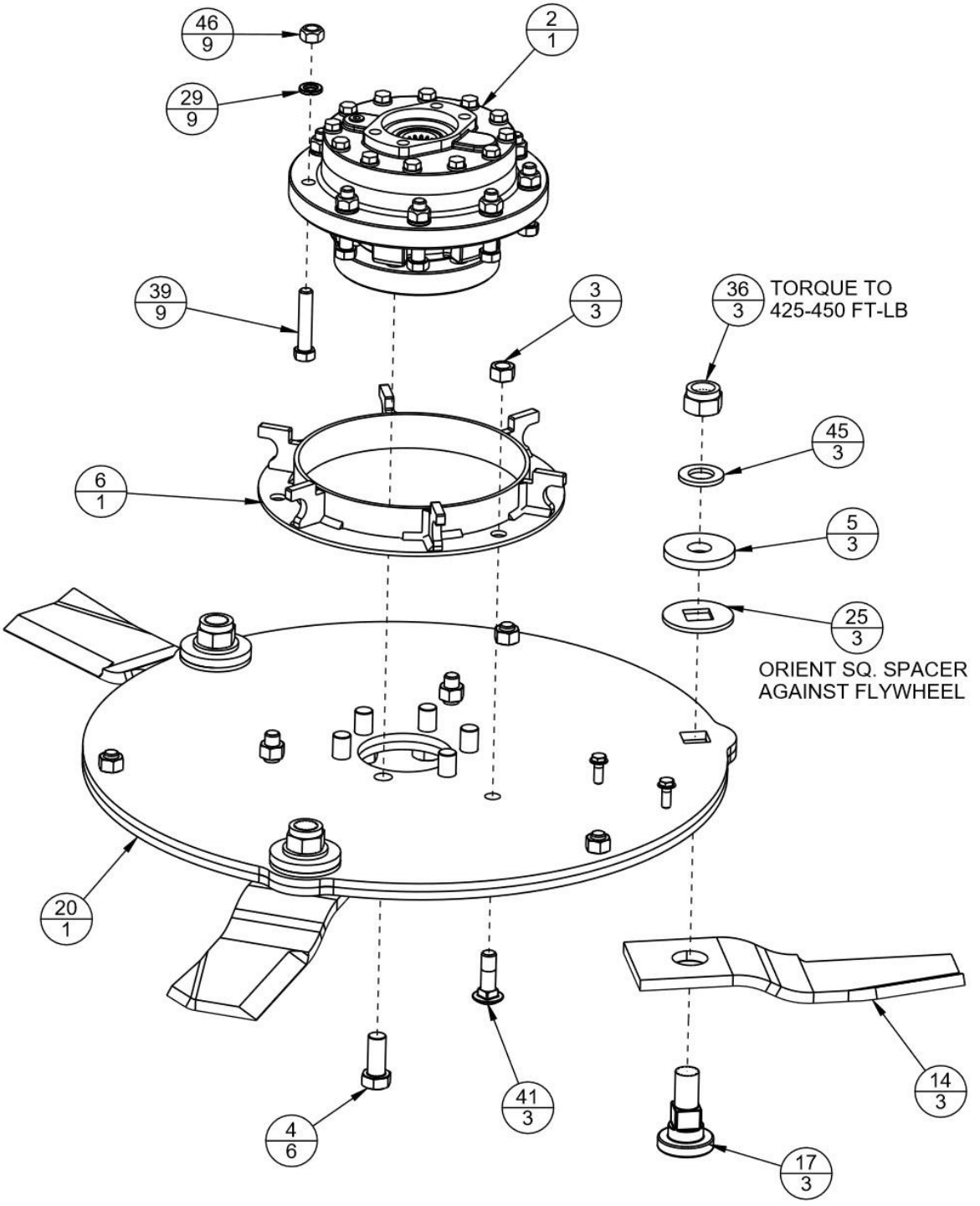
*SHCS—Socket Head Cap Screw

Values are in ft.-lb. and are recommended unless otherwise noted.

Hydraulic Component/Access Cover Assembly

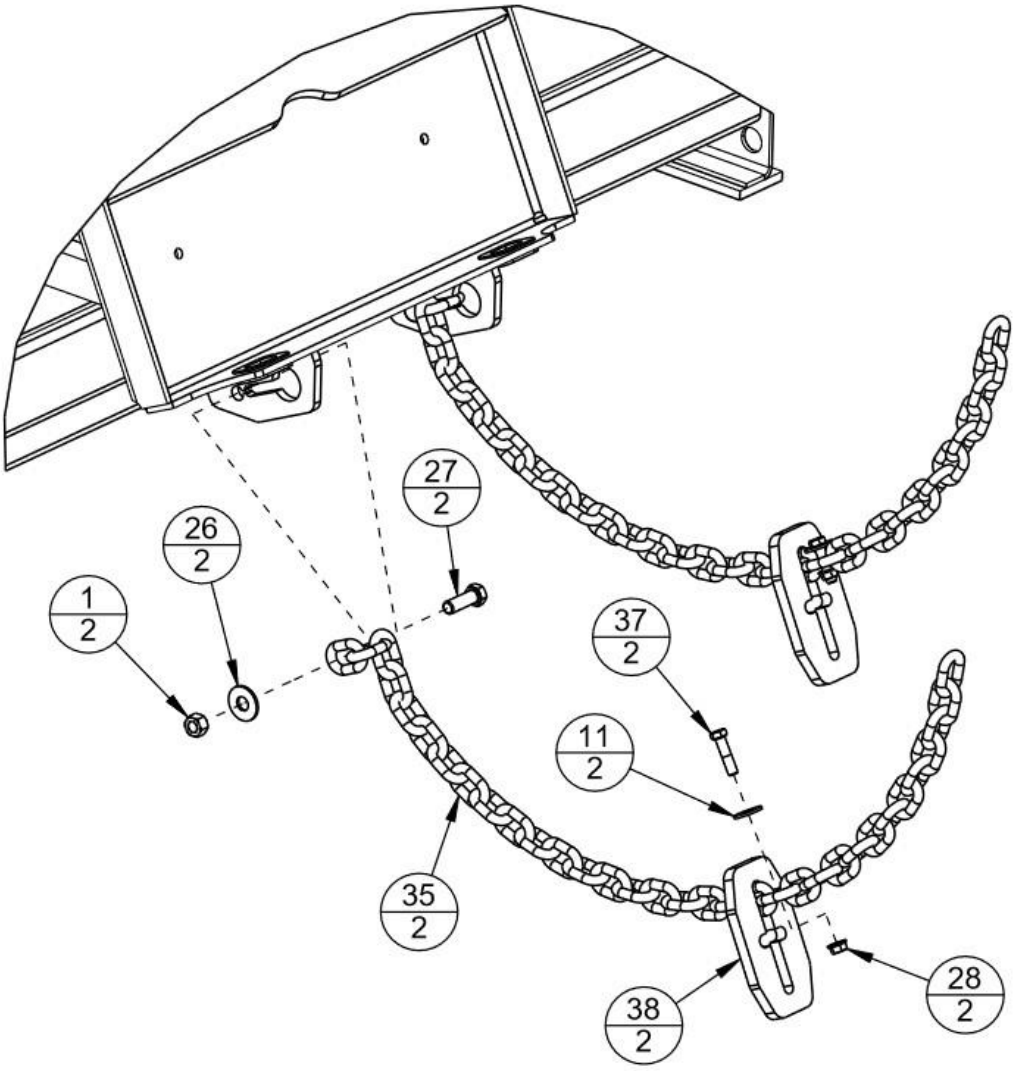


Drive and Blade Assembly



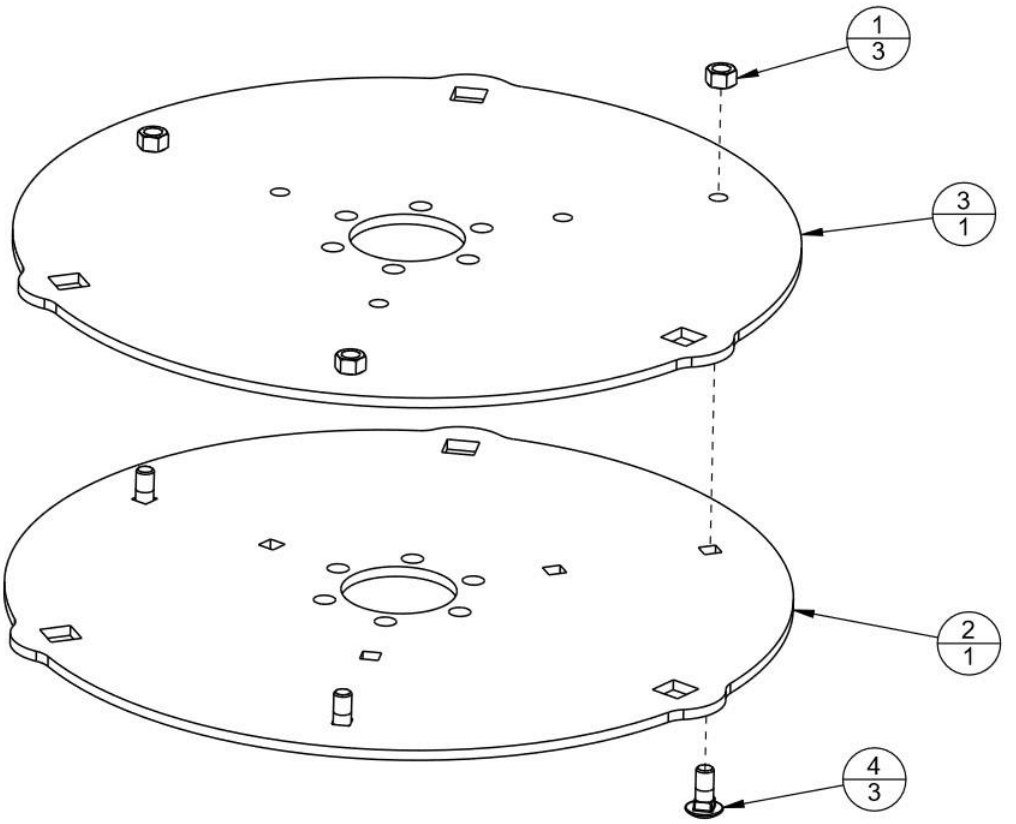
Note: Apply Locktite to Item #4 prior to assembly.

Lift Limit Chain Assembly

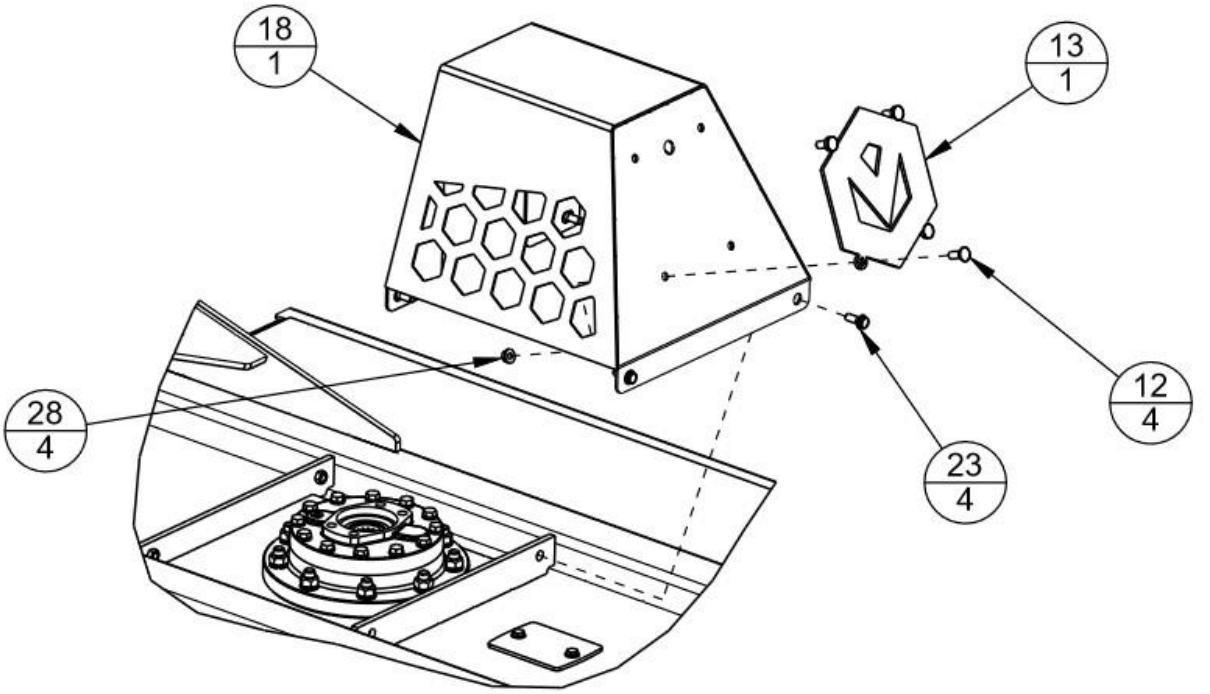


Flywheel Assembly

ITEM	PART NO.	QTY	DESCRIPTION
1	1008PP	3	5/8"-11 TOP LOCK NUT
2	13063VP	1	CBC42 FLYWHEEL BOT PLATE
	13107VP		CBC48 FLYWHEEL BOT PLATE
3	13064VP	1	CBC42 FLYWHEEL TOP PLATE
	13108VP		CBC48 FLYWHEEL TOP PLATE
4	6773PP	3	5/8"-11 X 1 1/2" LG CB



Motor Guard Assembly



Chain Curtain Assembly