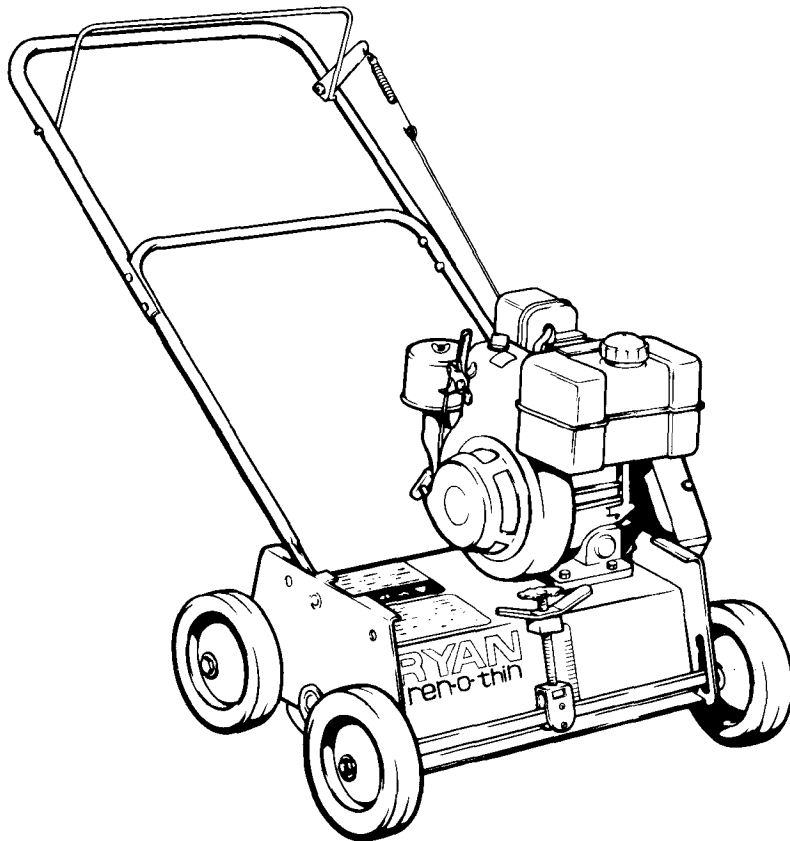


RYAN[®]

OPERATOR'S, PARTS AND SERVICE MANUAL



REN-O-THIN[®]

POWER RAKE MODEL 544865

**INCLUDES PARTS SECTION FOR
REN-O-THIN IV MODEL 544865
AND REN-O-THIN III MODEL 544864**

REN-O-THIN

GENERAL INFORMATION

To make sure you are fully aware of safety and service information, the following two symbols are used throughout this manual.



This symbol (SAFETY WARNING) appears above information (in bold type) that may help keep you and others from being hurt.



This symbol (NOTE) appears above information or instructions that may help you operate and maintain your equipment for optimum service and performance.

IMPORTANT!

THIS MANUAL WILL AID YOU IN THE SAFE OPERATION AND PROPER MAINTENANCE OF YOUR EQUIPMENT. READ THE MANUAL THOROUGHLY BEFORE ATTEMPTING OPERATION.

IF ANY PORTION OF THIS MANUAL IS NOT CLEARLY UNDERSTOOD, CONTACT AN AUTHORIZED DEALER FOR CLARIFICATION.

Additional operator's manuals are available through your dealer.



SAFETY WARNING

- **The information and instructions in this manual alert you to certain things you should do very carefully. If you don't, you could:**
 - Hurt yourself or others.
 - Hurt the next person who operates the equipment.
 - Damage the unit or accessory attachments.
- **This manual contains essential safety and operation information. It must remain with the unit at all times, within easy access of any operator.**
- **Altering this equipment in any manner which adversely affects the operation, performance, durability or use may cause hazardous conditions.**

IMPORTANT!

CALIFORNIA PUBLIC RESOURCES CODE, SECTIONS 4428-4442, REQUIRE **SPARK ARRESTERS** WHEN OPERATING ANY INTERNAL COMBUSTION ENGINE ON HYDROCARBON FUELS, ON FOREST-, BRUSH-, OR GRASS-COVERED LANDS.

PRODUCT REFERENCE

Information in this manual may refer to a specific product, brand name, number or tool. Unless specifically stated otherwise, an equivalent product may be used.

ILLUSTRATIONS & SPECIFICATIONS

All information, illustrations and specifications contained in this manual are based on the latest product information available at the time of printing. Cushman Inc. reserves the right to make changes at any time without notice.

OWNER REGISTRATION

Cushman makes every effort to keep owners informed of all safety related information. Therefore, changes in address and/or ownership should be reported to the manufacturer. Your dealer has REGISTRATION CHANGE forms which will be filled out and:

- Returned to the MANUFACTURER,
- Filed by the DEALER for his records.

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IDENTIFICATION NUMBERS

The Model number and Serial number are printed on the nameplate decal located on the back of the chassis (See Figure 1). **These numbers must appear on all correspondence concerning this unit.**

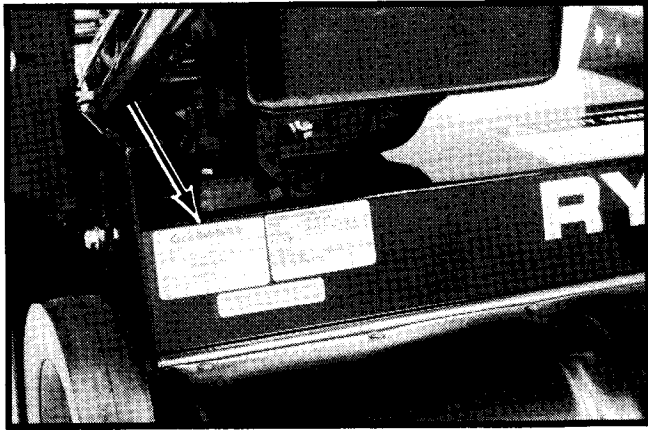


Figure 1. Nameplate Decal

SPECIFICATIONS

Chassis 12 gauge steel, formed and welded.
Reduction 1.33:1 (engine to reel)
Wheel Base 14 5/8" (371mm) at level position
Reel Speed 2700 RPM
Cutting Width 18" (457mm)
Blade Adjustment 1" (25mm) above ground level
to 7/8" (22mm) below ground level
Weight (less reel) 116 lbs. (53 Kg.)
Engine 7 hp Briggs and Stratton
model no. 171432, type 0521, trim 01, four cycle, aluminum cylinder with cast iron sleeve, 3600 RPM governor—no load, recoil starter.

SET-UP

Remove equipment and parts from the packing box and inspect it for possible shipping damage. You should have the following items:

- Upper and Lower Handle
- Pre-Assembled Chassis and Engine
- Loose Parts Bag
- Reel Assembly (if ordered with unit)

REEL INSTALLATION

1. Remove the belt guards and tilt the unit back to allow access to the underside of the chassis.



SAFETY WARNING

- **Block the unit as required to prevent it from falling accidentally.**
2. Loosen the reel clamps and pivot them down and out of the way. Set the reel into place against the chassis with the pulley end on the engine side. Bearing guides on the reel will provide correct alignment (See Figure 2).

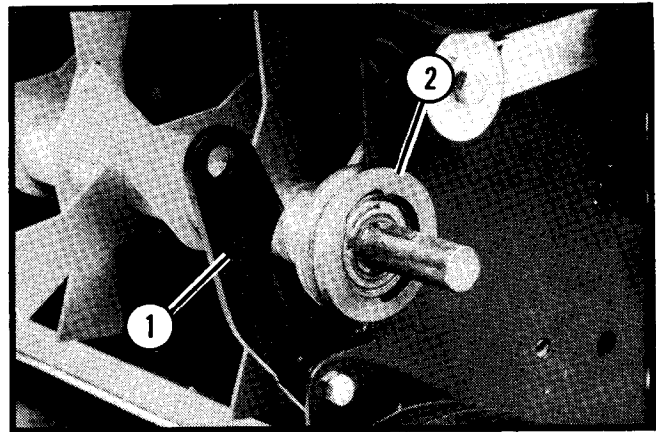


Figure 2. Reel Installation

1. Reel Clamp
2. Bearing Guide

3. Pivot the clamps back up over the reel bearings. Install the reel clamp rods, washers and nuts. Tighten the nuts securely but do not over tighten. Check the reel for free rotation.

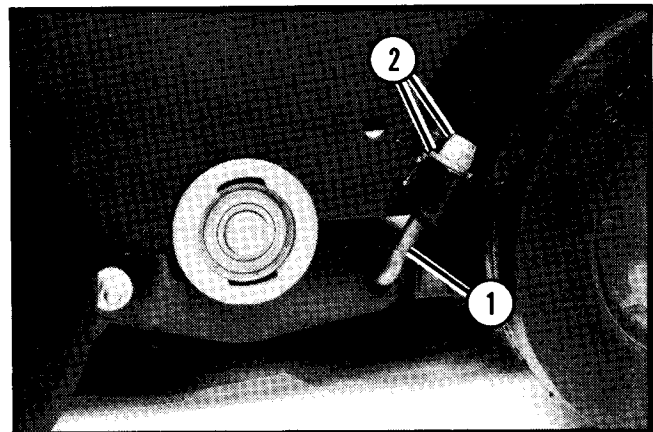


Figure 3. Clamp Securing Reel Bearing

1. Reel Clamp Rod
2. Reel Clamp Nut and Washer

PULLEY AND BELT INSTALLATION

1. Gently tap the woodruff key (from loose parts bag) into the slot on the reel shaft.
2. Start the two set screws into the reel pulley.
3. Slide the pulley, hub out, onto the reel shaft. Tap it into position over the woodruff key.
4. Align the reel pulley with the engine pulley. A straight edge across both pulleys will show when the two are aligned.
5. Tighten the reel pulley set screws and check the engine pulley set screws to make sure they are tight.
6. Place the new belts between the idler pulley and the snubber on the idler arm and then over the engine and reel pulleys (See Figure 4).

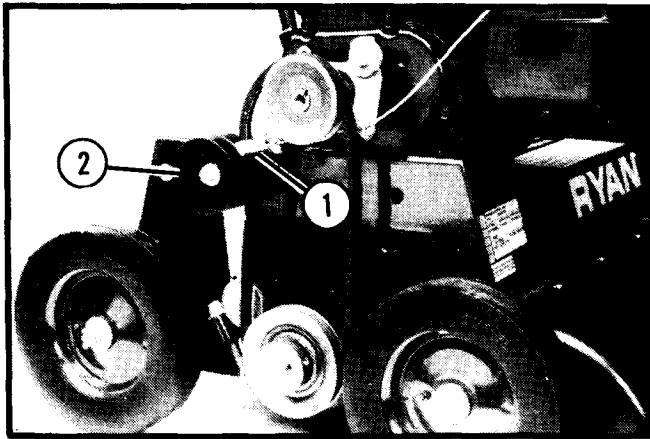


Figure 4. Belt Installed

1. Snubber
2. Idler Pulley

HANDLE AND CABLE INSTALLATION

1. Assemble the upper and lower handle sections using the hardware provided in the loose parts bag.
2. Mount the handle to the unit by placing the bottom ends of the handle over the pins at the top edge center of the chassis. Secure the handle with hairpins (provided).
3. Connect one end of the spring from the loose parts bag to the clutch cable and the other end to the arm of the clutch bail on the handle (See Figure 5).



Figure 5. Install Clutch Cable

4. Pull the bail back against the handle – the idler pulley should be tight against the reel belts.

Release the bail – the idler pulley should move away from the reel belts and allow them to slip on the engine pulley.

5. Reinstall the belt guards. The belt stop rod should be outside the belts as shown in Figure 6.

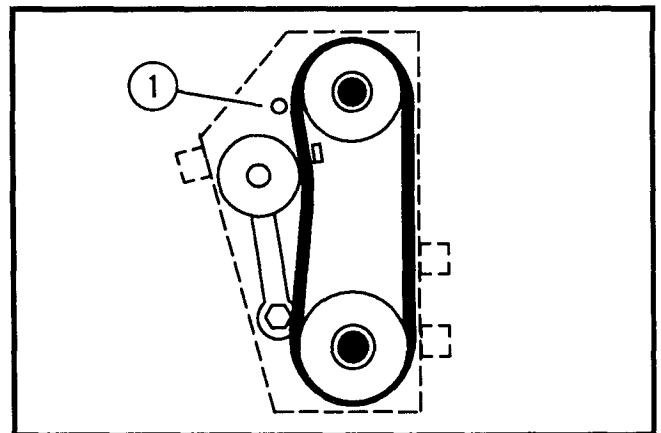


Figure 6. Belt Guard Installation

1. Belt Stop Rod

GREASE WHEEL BEARINGS

Use a pressure grease gun and standard lithium grease to lubricate the wheel bearings at the time of set-up and after every 25 hours of service.

NOTE

- At the time of set up, each wheel will require as much as 70 pumps, or more, with a grease gun to fill the cavity in the wheel. Cavity is full when grease can be seen coming out of the bearing.

BLADE HEIGHT ADJUSTMENT

Blade height is adjusted by loosening the locking lever and turning the adjusting knob to raise or lower the front wheels (See Figure 7).

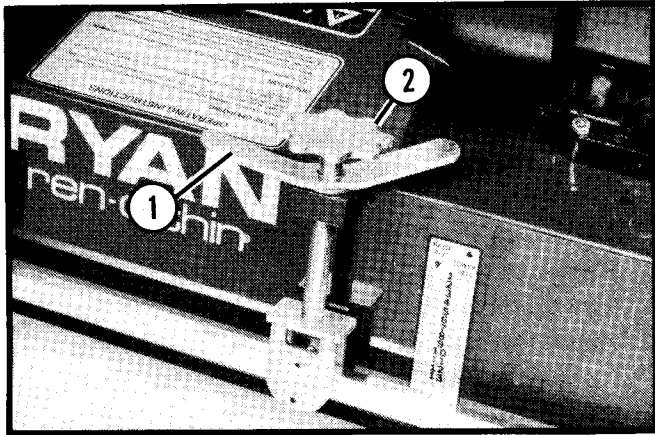


Figure 7. Height Adjustment

1. Locking Lever
2. Adjusting Knob

After installing any reel, make the first adjustment on a hard level surface.

Adjust the blades to 1/8" (3mm) above the surface. Test this setting on a small area, then adjust the blades to turf conditions as required. Each number on the adjustment decal represents a change of 1/8" (3mm).

If the desired blade position cannot be obtained by adjusting the front wheels, the rear wheels can be adjusted. Mounting the wheels in the top hole lowers the blades and mounting the wheels in the bottom hole raises the blades.

The front axle may be locked in the down position to prevent the floating action if desired. 1/2" screws, washers, lockwashers and nuts can be installed in the slots above the axle and tightened to prevent the axle from moving.

OPERATION



SAFETY WARNING

- **DO NOT** operate this equipment until you have read and understand and operation section of this manual.
- **DO NOT** operate this equipment without all shields in place.

- **DO NOT** make any adjustments or perform any maintenance while the engine is running.
- **NEVER** start or run the engine inside where exhaust fumes can collect. Carbon monoxide present in the exhaust is a colorless, odorless and deadly gas. Run only where there is enough fresh air to keep the fumes from getting too strong.
- Gasoline is extremely flammable and highly explosive under certain conditions. **ALWAYS** stop the engine and do not smoke or allow open flames or sparks while refueling.
- Any safety warning decal that becomes illegible must be replaced immediately.
- To prevent injuries from thrown blades, **NEVER** operate the unit with reel blades that are cracked, badly bent, missing or in any abnormal condition.
- Inspect the area to be raked before operating. Remove any objects that may present a safety hazard or damage the equipment.
- To prevent injury from rotating blades, **NEVER** place hands or feet beneath the unit.
- This unit is not self propelled by a mechanical drive system. However, under many conditions the reel rotation may cause the unit to move under its own power.
- Engage the reel **ONLY** when you are in the proper operator's position behind the handle. The clutch ball is designed to be held by the operator to keep the reel belt engaged **ONLY** during use. **DO NOT** clamp or fasten the ball to the handle. If the reel is allowed to rotate while the operator is not in the proper position, the unit may move on its own, injuring the operator or bystanders.

DAILY PRE-OPERATION CHECK

Visually check all parts and fasteners, if they are loose, bent or broken, make repairs before operating the unit.

Check the reel for bent or broken blades, replace as necessary.

Check the engine oil level. Fill if necessary following the engine manufacturers recommendations for oil type.

Fill the fuel tank with fuel according to the engine manufacturers recommendations.

STARTING THE ENGINE

1. Move the throttle lever on the engine to a "middle" position and turn the engine switch to ON (See Figure 8).

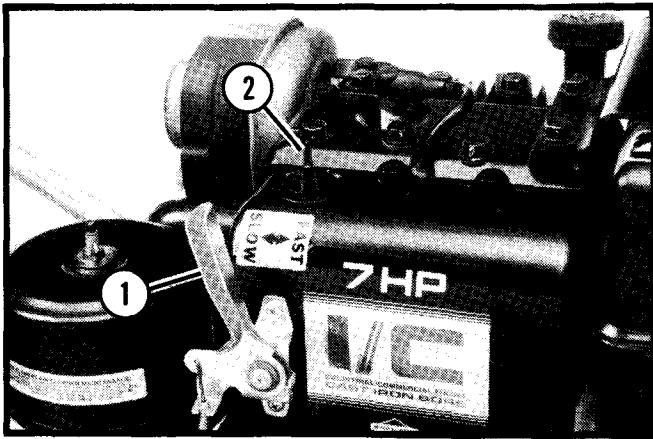


Figure 8. Engine Controls

1. Throttle Lever
2. Engine Switch

2. Pull the recoil starter (choke as required to start the engine).
3. Move the throttle to FAST for normal operation.

TIPS FOR OPERATING THE UNIT

Start the unit in motion **before** engaging the reel to prevent unnecessary damage to the turf and to avoid bogging down the engine. Disengage the reel before stopping forward motion.

Make all passes across the turf at a uniform speed.

Disengage the reel at the end of each pass and before slowing or stopping to make a turn. This prevents turf damage while turning the unit.

If the engine bogs down while going through a thick patch of turf, push down on the handle just enough to raise the reel and allow the engine to return to normal speed.

NOTE

- Never cross hard objects or surfaces (sidewalks, drives, stepping stones, etc.) with the reel engaged. Severe blade damage may occur.

REELS & SUGGESTED USES

Flail Blade Reel, Part No. 544440

1/8" (3mm) flail blades for thatch control and breaking up soil cores after aerating. This reel is **NOT RECOMMENDED** for fine lawns and turf, such as golf course greens.

1/8" (3 mm) Fixed Blade Reel, Part No. 545440

2" (51mm) blade spacing is excellent for general dethatching, renovating and breaking up cores.

1/16" (1.6 mm) Fixed Blade Reel, Part No. 547452

Blades can be spaced on 1" (25mm) or 1 1/2" (38mm) centers with the use of spacers between the blades. Use the 1" blade spacing for renovating heavy grass areas or preparing a lawn for reseeding. Use the 1 1/2" blade spacing for renovating and thinning all coarse stemmed grasses.

1/32" (0.8 mm) Fixed Blade Reel, Part No. 547453

3/4" (19mm) blade spacing is excellent for thatch and grain control on fine bent grasses, vertical slicing, renovating and seed bed preparation.

SERVICE



SAFETY WARNING

- When replacement parts are required, use **genuine RYAN parts or parts with equivalent characteristics, including type, strength and material.** Failure to do so may result in product malfunction and possible injury to the operator and/or bystanders.
- **NEVER start or run the engine inside where exhaust fumes can collect. Carbon monoxide present in the exhaust is a colorless, odorless and deadly gas. Provide enough fresh air to keep the fumes from getting too strong.**
- **Any safety warning decal that becomes illegible must be replaced immediately.**

BELT REPLACEMENT

Belt tension is maintained by a spring loaded idler, controlled by the clutch bail. No belt tension adjustment is necessary when proper belts are used.

NOTE

- A matched pair of belts must be used for correct operation. If one belt needs to be replaced, you **MUST** replace both belts to assure proper belt tension.
1. Remove the belt guards and old belts from the unit.
 2. Place the new belts between the idler pulley and the snubber on the idler arm and then over the engine and reel pulleys (See Figure 9).

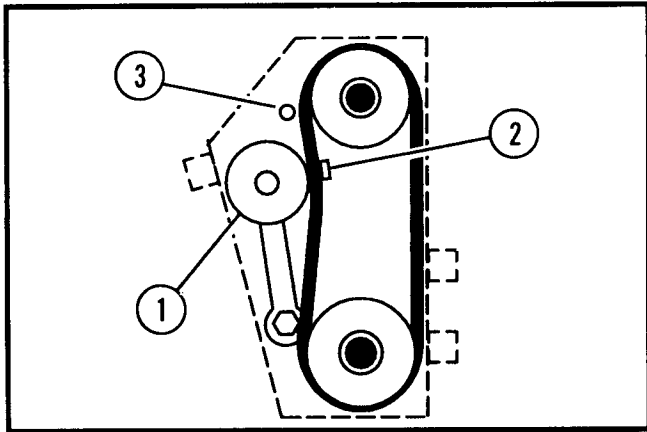


Figure 9. Belt installation

1. Idler Pulley
2. Snubber
3. Belt Stop Rod

3. Install the belt guards. Make sure the belt stop rod is outside of the belt (See Figure 9).

LUBRICATION

The reel and idler pulley bearings are factory sealed and require no lubrication.

Wheel bearings have grease fittings and require lubrication with standard lithium grease every 25 hours of use.

BLADE REPLACEMENT

Fixed Blade Reels

To replace worn or damaged blades, or to change to different blade and/or spacer combination:

1. Remove the entire reel from the chassis.
2. Remove the bearing from the shaft at the end opposite the pulley. Loosen the bearing's set screw. With a small punch, tap the bearing approximately one

quarter turn in the opposite direction of the reel rotation. This relieves the cam lock action of the bearing and it can be removed from the shaft.

3. Hold the shaft to keep it from turning and remove the shaft nut. Remove the blades and spacers from the shaft and replace or rearrange as required.

When reassembling the reel, it is important to start and end with a spacer. **DO NOT** assemble with a blade next to the shaft nut at either end.

Fixed blades must be placed on the shaft in a pattern 60° off center from the previous blade (See Figure 10).

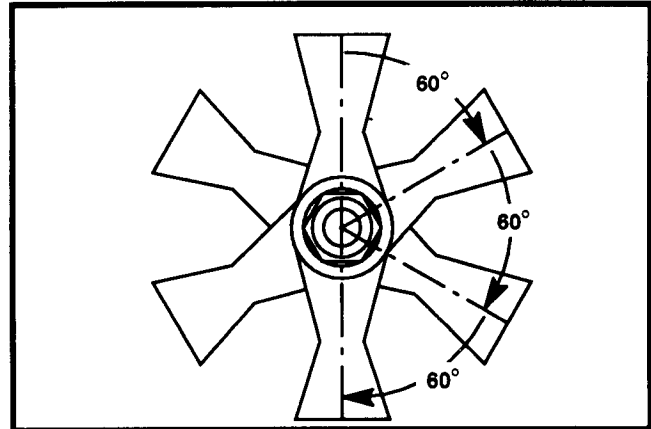


Figure 10. Fixed Blade Pattern

4. Reinstall the shaft nut and tighten securely to keep the blades from coming loose.
5. Reinstall the reel bearing by exactly reversing the steps taken to remove it.

NOTE

- Blades that are worn on one cutting face may be reversed and used again.

Flail Blade Reels

Work on only one of the six blade shaft assemblies at a time.

1. Remove the cotter pin from one end of one of the blade shafts and pull the shaft out.
2. Replace the blades and other worn parts and reassemble in the proper order while sliding the shaft back into place.
3. Install a new cotter pin to secure the shaft.

BELT GUARD ROD ADJUSTMENT

There are two belt guard rods mounted in the belt guard. The long rod helps to prevent the belts from slipping off of

the engine pulley. The short rod (belt stop rod) acts as a belt brake when the clutch bail is released, insuring that the reel stops quickly.

It is important that these two rods are adjusted correctly. If the belt guard is removed for any reason, make sure the two rods are positioned at the end of their respective slots (See Figure 11).

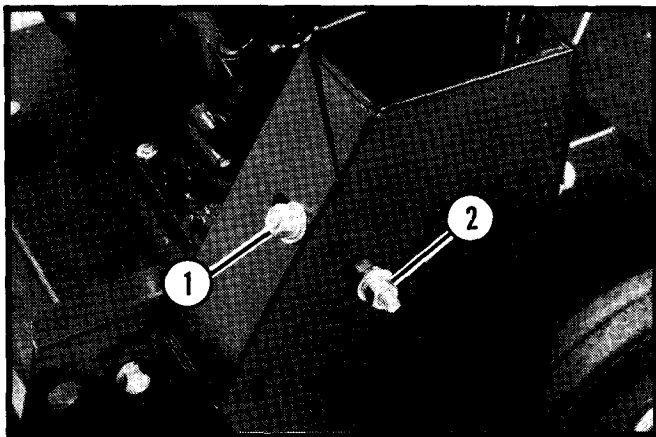


Figure 11. Belt Guard Rods

- 1. Long Belt Guard Rod**
- 2. Short Belt Guard Rod
(Belt Stop Rod)**

STORAGE



SAFETY WARNING

- To prevent possible explosion or ignition of vaporized fuel, **DO NOT** store equipment with fuel in the tank or carburetor in an enclosure with open flame (furnace, water heater pilot light etc.).

DAILY STORAGE

After every use:

Wash the unit with **water** after the engine has cooled.

Check the reel blades for damage. Replace any cracked, broken, bent or worn blades.

Check the engine oil level and inspect the air cleaner for excessive dirt or obstruction (service according to the engine manual recommendations).

EXTENDED STORAGE

To prepare the unit for extended storage (30 days or more):

1. Drain the fuel from the tank and fuel lines.
2. Start the engine and run it until all of the fuel in the carburetor bowl is gone and the engine stops.
3. While the engine is warm, drain the crankcase oil and replace it with the proper weight oil for the season that the unit will next be used.
4. Remove the spark plug and squirt a small amount of engine oil into the cylinder. Slowly pull the starter a few times to distribute the oil in the cylinder and reinstall the spark plug.
5. Check the reel for damaged blades and replace as needed.
6. Lubricate the wheel bearings with standard lithium grease.

To put the unit back into service after extended storage:

Check for loose parts and tighten as necessary.

Check for damaged blades and replace as necessary.

Fill the fuel tank

Check the engine oil level

Start the engine and check for fuel leaks. Repair any leaks before using the unit.

TOUCH UP PAINT

Evergreen Green (dark green)

16 oz. spray, order part no. 825361

1 qt. can, order part no. 825363

Turfkin Green (light green, used 8910 and prior)

16 oz. spray (lead free), order part no. 523340

1 qt. can (lead free), order part no. 523339

TORQUE SPECIFICATIONS HEX HEAD CAP SCREWS

The torque values shown should be used as a general guideline when specific torque values are not given.

U.S. Standard Hardware


Grade	Shank Size (Diameter in inches, fine or coarse thread)													
		1/4	5/16	3/8	7/16	1/2	9/16	5/8	3/4	7/8	1	1 1/8		
SAE grade 5 *	ft.-lb.	9	18	31	50	75	110	150	250	378	583	782		
	N·m	12	24	42	68	102	150	203	339	513	790	1060		
SAE grade 8 **	ft.-lb.	13	28	46	75	115	165	225	370	591	893	1410		
	N·m	18	38	62	108	156	224	305	502	801	1211	1912		
Flangelock Screw w/ Flangelock Nut	ft.-lb.		24	40										
	N·m		33	54										


* Grade 5 marking –  Minimum commercial quality (Lower quality not recommended).


** Grade 8 marking – 

Metric Standard Hardware

Grade	Shank Size (Diameter in millimeters, fine or coarse thread)														
		M4	M5	M6	M7	M8	M10	M12	M14	M16	M18	M20	M22	M24	M27
Grade 8.8*	N·m	2	4	7	11	18	32	58	94	144	190	260	368	470	707
	ft.-lb.	1.5	3	5.2	8.2	13.5	24	43.5	70.5	108	142	195	276	353	530
Grade 10.9**	N·m	3	6	10	16	25	47	83	133	196	269	366	520	664	996
	ft.-lb.	2.2	4.5	7.5	12	18.8	35.2	62.2	100	147	202	275	390	498	747
Grade 12.9 ***	N·m	3.6	7	11	20	29	58	100	159	235	323	440	628	794	1205
	ft.-lb.	2.7	5.2	8.2	15	21.8	43.5	75	119	176	242	330	471	596	904

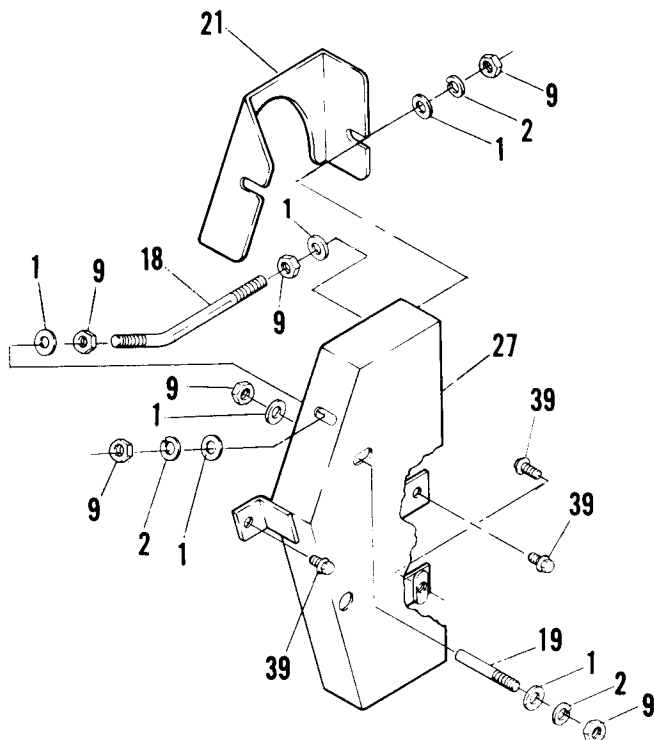
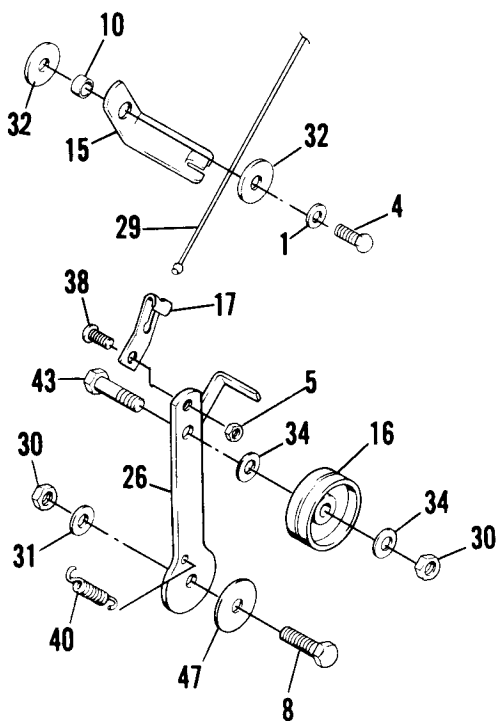
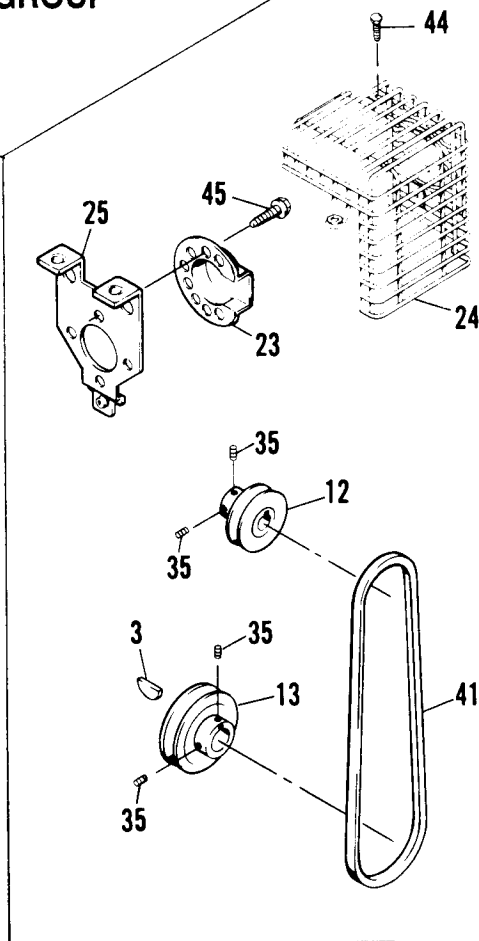
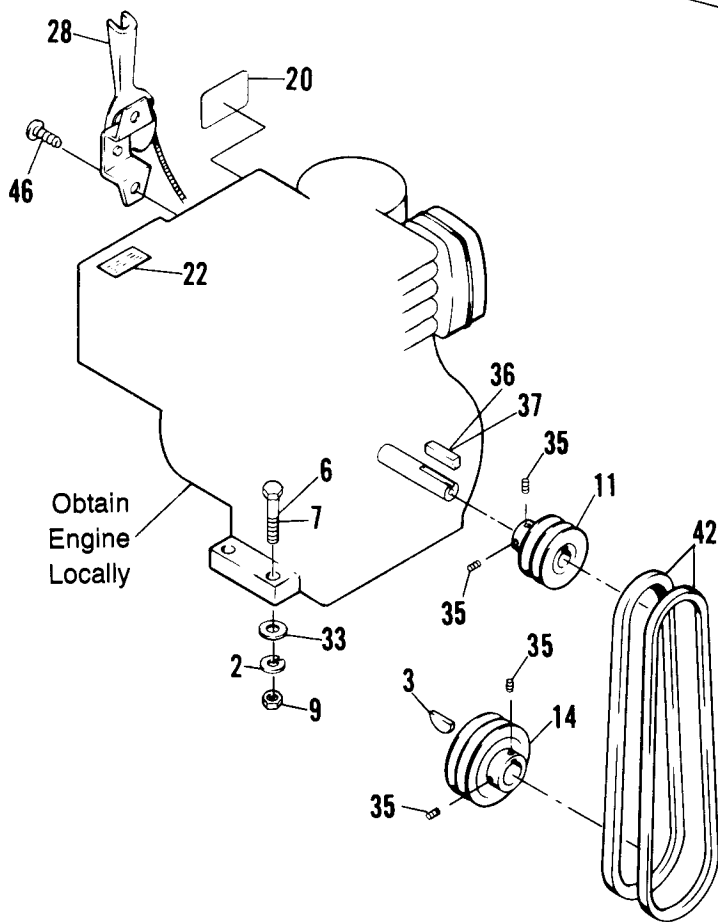
* Grade 8.8 marking – 

** Grade 10.9 marking – 

*** Grade 12.9 marking – 

ENGINE & GUARD GROUP

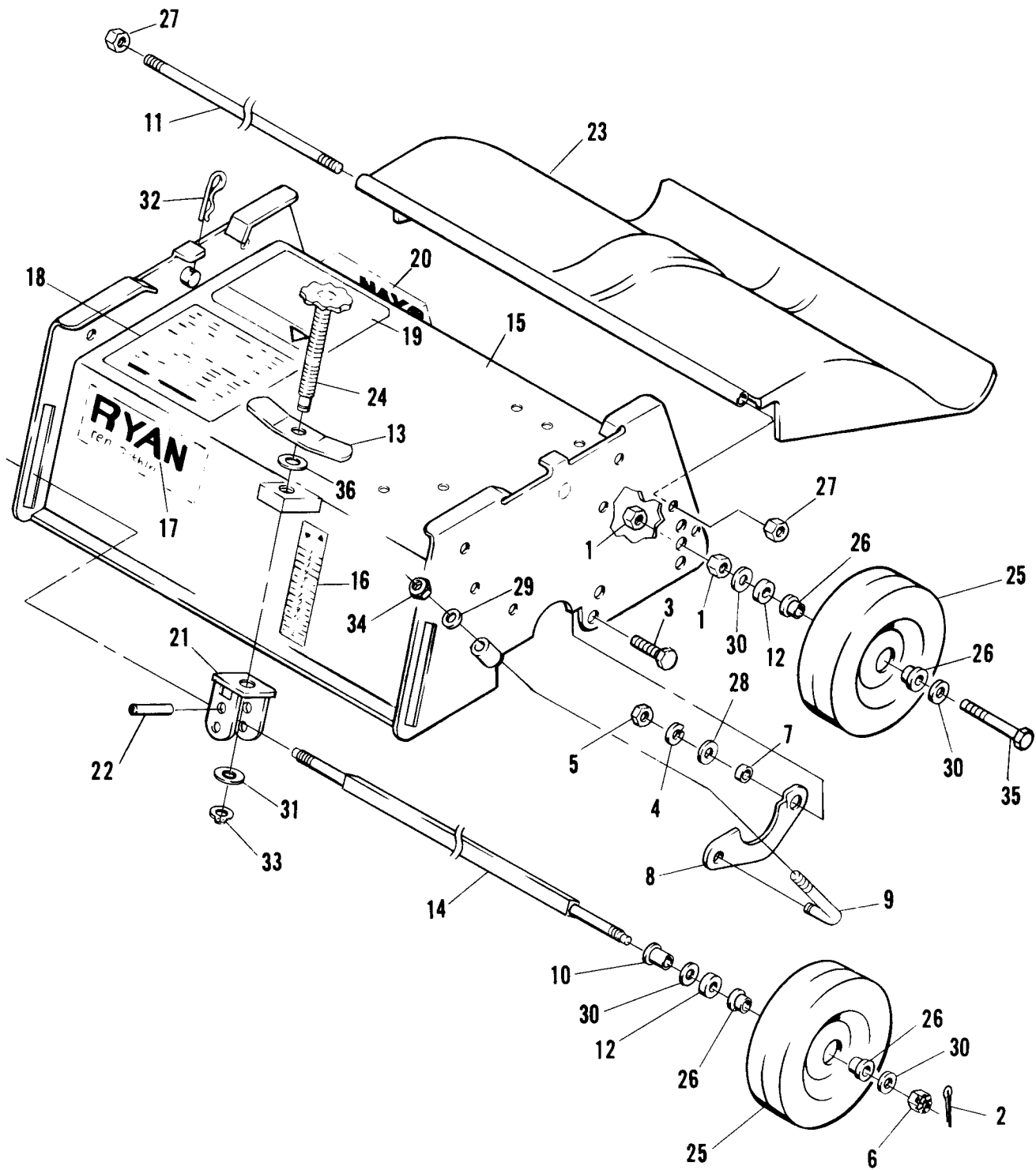
5hp, Ren-O-Thin III Only



ENGINE & GUARD GROUP

Ref. No.	Part No.	Description	No. Req'd. 5 hp 7 hp		Ref. No.	Part No.	Description	No. Req'd. 5 hp 7 hp	
1	103867	Washer, 5/16	7	7	26	547435	Arm, idler	1	1
2	306325	Lockwasher, 5/16	7	7	27	547440	Guard, belt (outer)	1	1
3	306367	Key, woodruff #9	1	1	28	547442	Throttle Control		1
4	306369	Screw, 5/16-18 x 3/4	1	1	29	547445	Cable, control	1	1
5	306375	Nut, 1/4-20	1	1	30	548052	Nut, lock 3/8-16	2	2
6	306423	Screw, 5/16-18 x 1 3/4		4	31	548155	Washer, 3/8	1	1
7	306501	Screw, 6/16-15 x 1 1/2		4	32	548157	Washer, 1 1/4	2	2
8	306835	Screw, 3/8-16 x 1 1/4	1	1	33	548159	Washer, 5/16	4	4
9	306932	Nut, 5/16-18	10	10	34	548164	Washer, 3/8	2	2
10	515268	Bushing	1	1	35	548201	Screw, set 5/16-18 x 5/16	4	4
11	517097	Pulley, engine		1	36	548359	Key, sq. 1/4 x 1		1
12	517099	Pulley, engine		1	37	548366	Key, sq. 3/16 x 3/4		1
13	517137	Pulley, reel		1	38	548735	Screw, 1/4-20 x 3/4	1	1
14	517139	Pulley, reel		1	39	548901	Screw, flangelock 5/16-18 x 1/2	3	3
15	523802	Arm, deflector	1	1	40	548995	Spring, extension	1	1
16	520870	Pulley, idler	1	1	41	548996	Belt		1
17	520878	Clip, cable	1	1	42	548997	Belt Set (2 matched belts)		1
18	520879	Rod, belt guide	1	1	43	551094	Screw, 3/8-16 1 3/4	1	1
19	520902	Rod, belt stop	1	1	44	800589	Screw, tapping #10-32 x 3/8		4
20	520914	Decal, throttle		1	45	800590	Screw, tapping #8-32 x 3/8		3
21	520941	Guard, belt (inner)	1	1	46	819195	Screw, self drill #8-18 x 1/2		2
22	521813	Decal, safety sound level		1	47	822419	Washer, 1 5/8	1	1
23	523520	Deflector, muffler		1					
24	523521	Guard, muffler		1					
25	523522	Bracket, muffler mounting		1					

CHASSIS GROUP

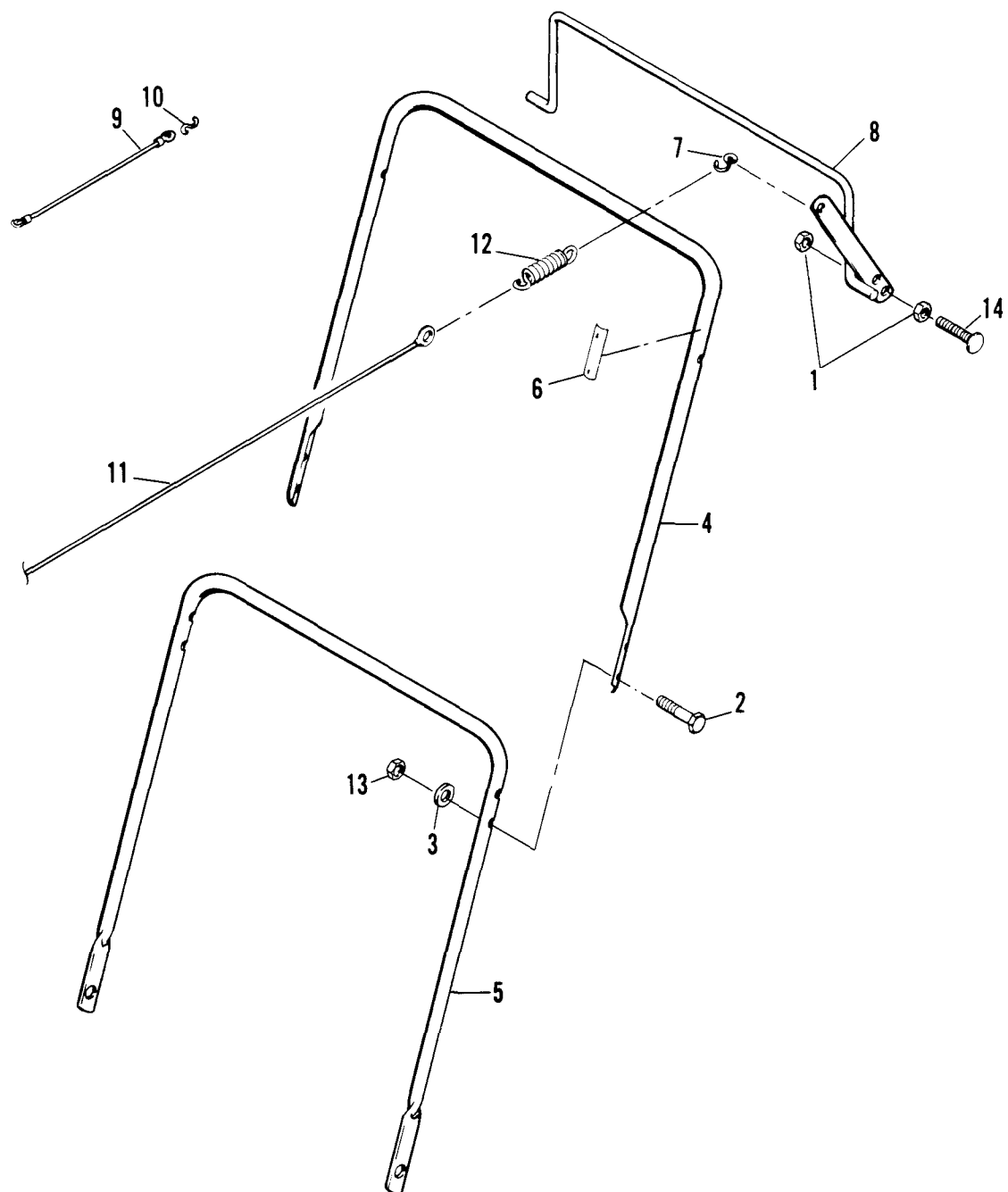


CHASSIS GROUP

Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
1	301988	Nut, 1/2-20	4	19	522394	•Decal, warning	1
2	304635	Pin, cotter 1/8 x 1	2	20	523295	•Decal, RYAN	1
3	306322	Screw, 5/16-18 x 7/8	2	21	545859	Pivot	1
4	306325	Lockwasher, 5/16	2	22	316947	•Pin, spirol	2
5	306932	Nut, 5/16-18	2	23	545861	Shield, trailing	1
6	306941	Nut, castle 1/2-20	2	24	545862	Screw, adjusting	1
7	517226	Bushing	2	25	547436	Wheel	4
8	518972	Clamp, reel	2	26	520963	•Bearing	2
9	519043	Rod, reel clamp	2	27	548048	Nut, lock 5/16-18	2
10	520875	Spacer, flanged	2	28	548154	Washer, special 5/16 x 3/4 OD	2
11	520877	Rod, shield	1	29	548155	Washer, special 3/8 x 7/8 OD	2
12	522256	Washer, felt	4	30	548157	Washer, 1/2	8
13	522375	Lever, locking	1	31	548164	Washer, 3/8	1
14	522385	Axle	1	32	548190	Pin, hair	2
15	545840	Chassis (w/decals)	1	33	548357	Ring, retaining	1
16	520913	•Decal, adjustment	1	34	548993	Nut, lock 3/8-24	2
17	521166	•Decal, RYAN/Ren-o-Thin	1	35	800493	Screw, 1/2-20 x 3	2
18	522390	•Decal, operating	1	36	809156	Washer, 5/8	1

•INDENTED PART NAMES INDICATE THESE PARTS ARE INCLUDED IN PRECEDING ASSEMBLY

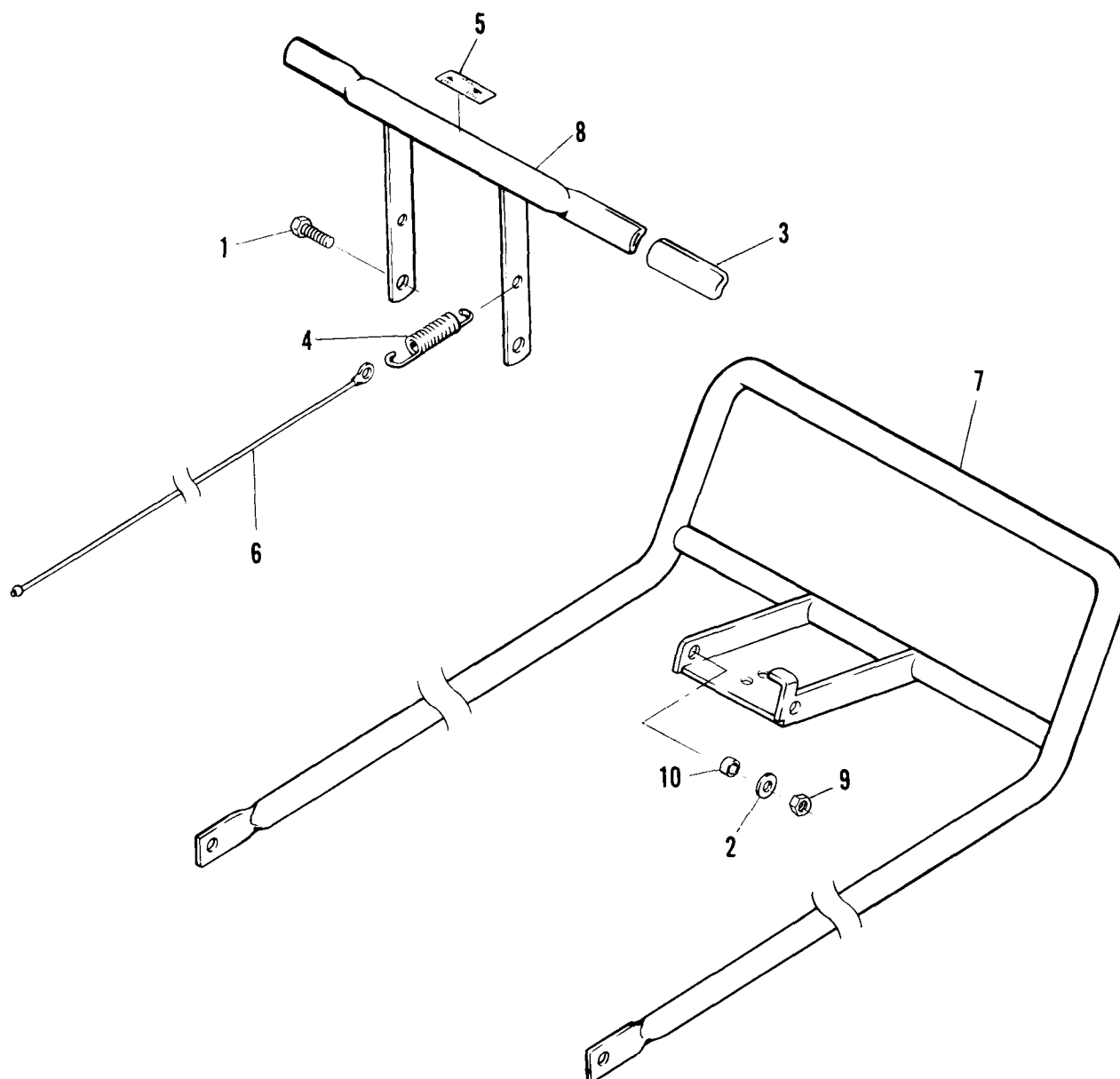
Handle



Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
1	302103	Nut, jam 5/16-18	2	8	547441	Bail, clutch control	1
2	303459	Screw, 1/4-20 x 1 1/2	4	9	547444	◆Cable, upmill	1
3	308090	Washer, 1/4	4	10	521744	◆Hook, "S"	1
4	520868	Handle, upper	1	11	547445	Cable, control	1
5	520869	Handle, lower	1	12	548994	Spring, extension	1
6	520912	Decal, clutch	1	13	800059	Nut, lock 1/4-20	4
7	521744	Hook "S"	1	14	800062	Bolt, carriage 5/16-18 x 1 1/4	1

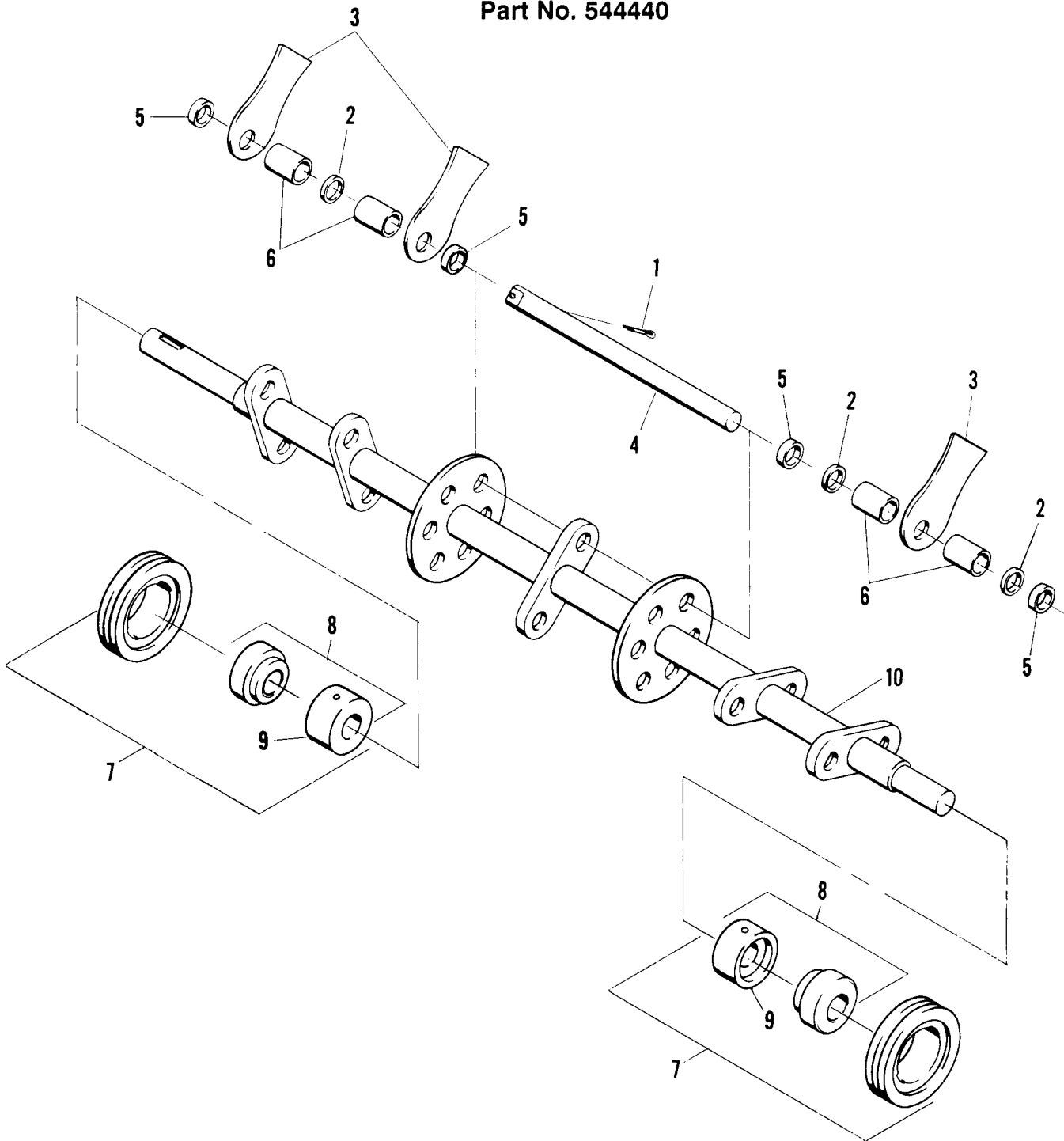
•INDENTED PART NAMES INDICATE THESE PARTS ARE INCLUDED IN PRECEDING ASSEMBLY
◆Used 8910 & prior only.

HANDLE 9010 through 9110



Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
1	306409	Screw, 1/4-20 x 7/8	2	6	547445	Cable, control	1
2	308090	Washer, 1/4	2	7	547699	Handle	1
3	523139	Grip, handle	2	8	547700	Arm, clutch	1
4	523366	Spring, extension	1	9	800059	Nut, lock 1/4-20	2
5	523445	Decal, reel drive	1	10	817019	Bushing	2

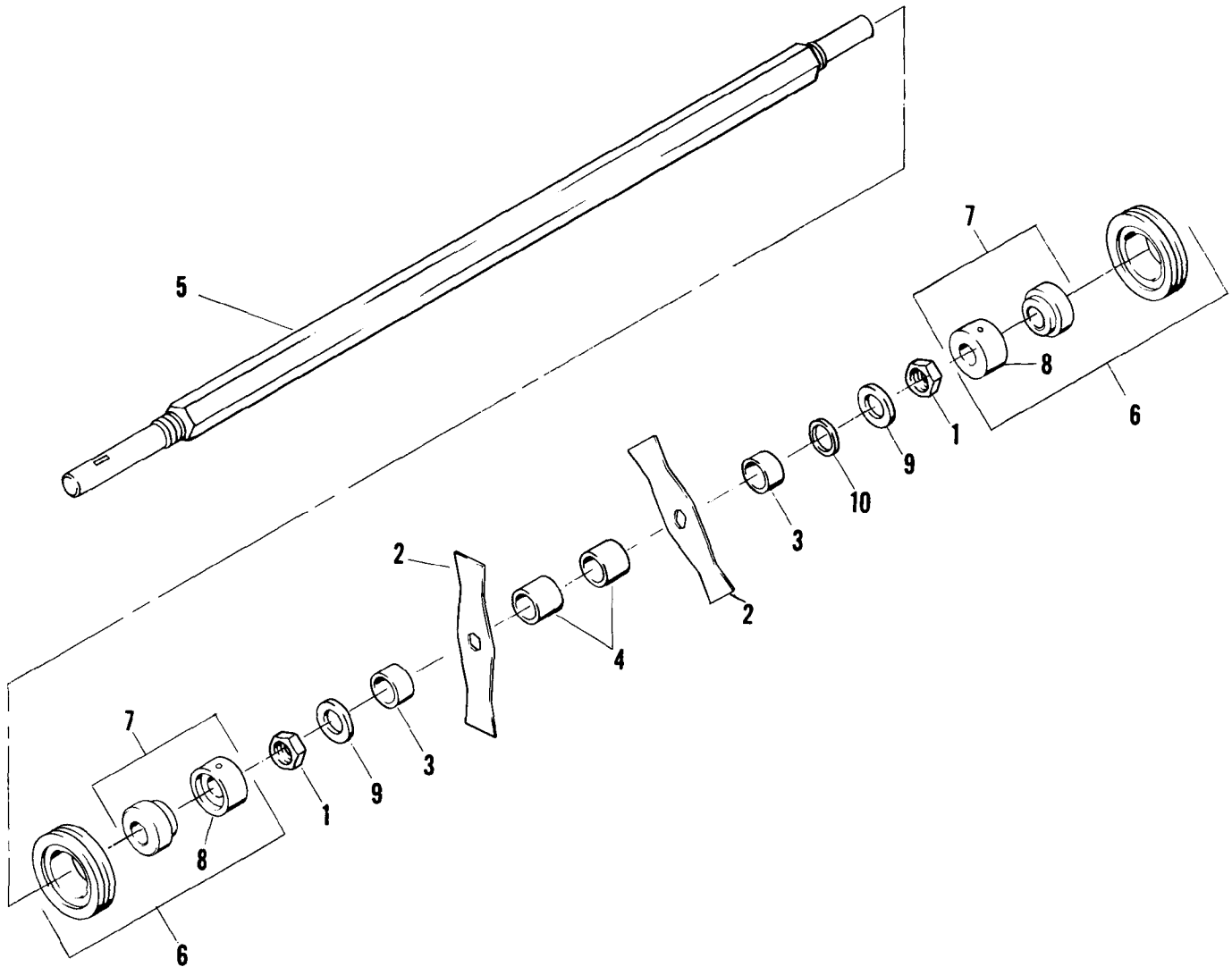
FLAIL BLADE REEL
Part No. 544440



Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
1	306956	Pin, cotter 1/8 x 3/4	6	6	517163	Spacer, rubber .891 (23mm)	24
2	308091	Washer, 1/2	18	7	545640	Pillow Block, complete	2
3	516897	Blade, flail	18	8	548101	•Bearing, ball	1
4	517155	Shaft	6	9	521857	••Collar, locking	1
5	517162	Spacer, rubber .328 (8mm)	24	10	546377	Shaft, main	1

•INDENTED PART NAMES INDICATE THESE PARTS ARE INCLUDED IN PRECEDING ASSEMBLY

FIXED 1/8" BLADE REEL
Part No. 545440

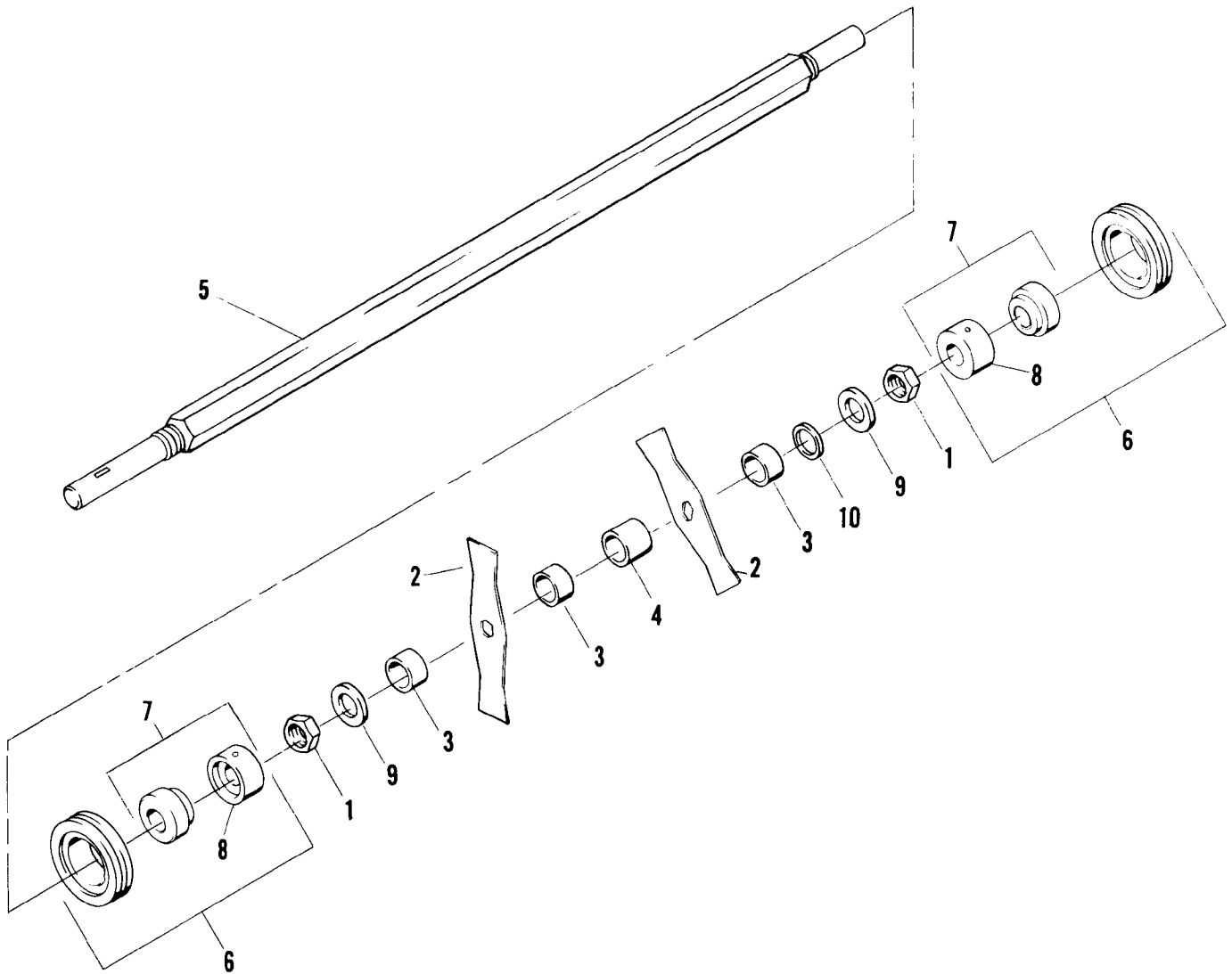


Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
1	305134	Nut, jam 7/8-14	2	6	545640	Pillow Block, complete	2
2	516898	Blade, 1/8 (3mm)	10	7	548101	•Bearing, ball	1
3	516904	Spacer, .700 (18mm)	2	8	521857	••Collar, locking	1
4	516905	Spacer, .900 (23mm)	18	9	548176	Washer	2
5	517148	Shaft	1	10	820484	♦Spacer, .125 (3mm)	1

•INDENTED PART NAMES INDICATE THESE PARTS ARE INCLUDED IN PRECEDING ASSEMBLY

♦Use spacers as required so that the nut (ref. no. 1) will not contact hex shaft when tight.

FIXED 1/16" BLADE REEL
Part No. 545452

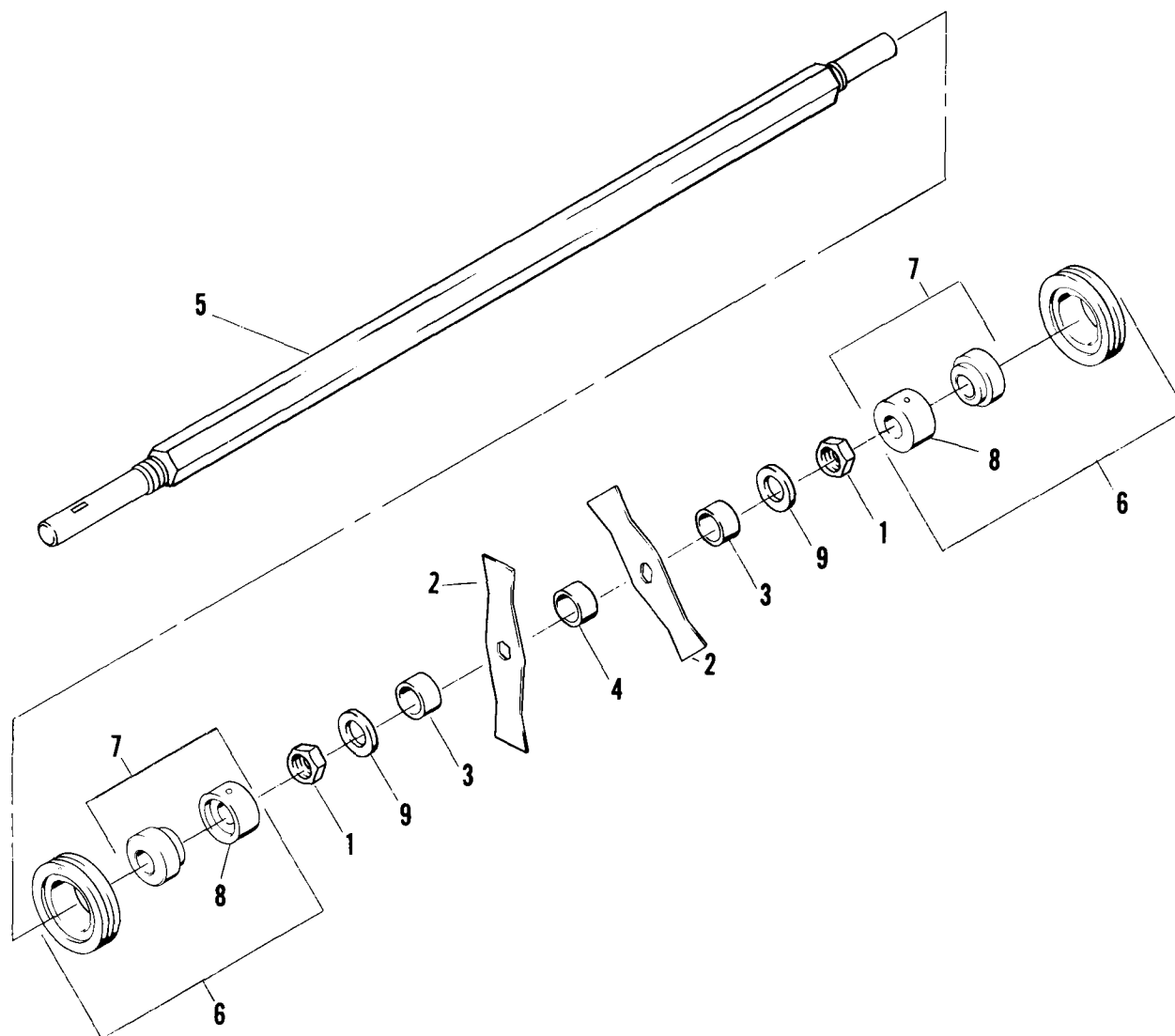


Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
1	305134	Nut, jam 7/8-14	2	6	545640	Pillow Block, complete	2
2	516900	Blade, 1/16 (3mm)	13	7	548101	•Bearing, ball	1
3	516903	Spacer, .500 (18mm)	14	8	521857	••Collar, locking	1
4	516905	Spacer, .900 (23mm)	12	9	548176	Washer	2
5	517148	Shaft	1	10	820484	♦Spacer, .125 (3mm)	1

•INDENTED PART NAMES INDICATE THESE PARTS ARE INCLUDED IN PRECEDING ASSEMBLY

♦Use spacers as required so that the nut (ref. no. 1) will not contact hex shaft when tight.

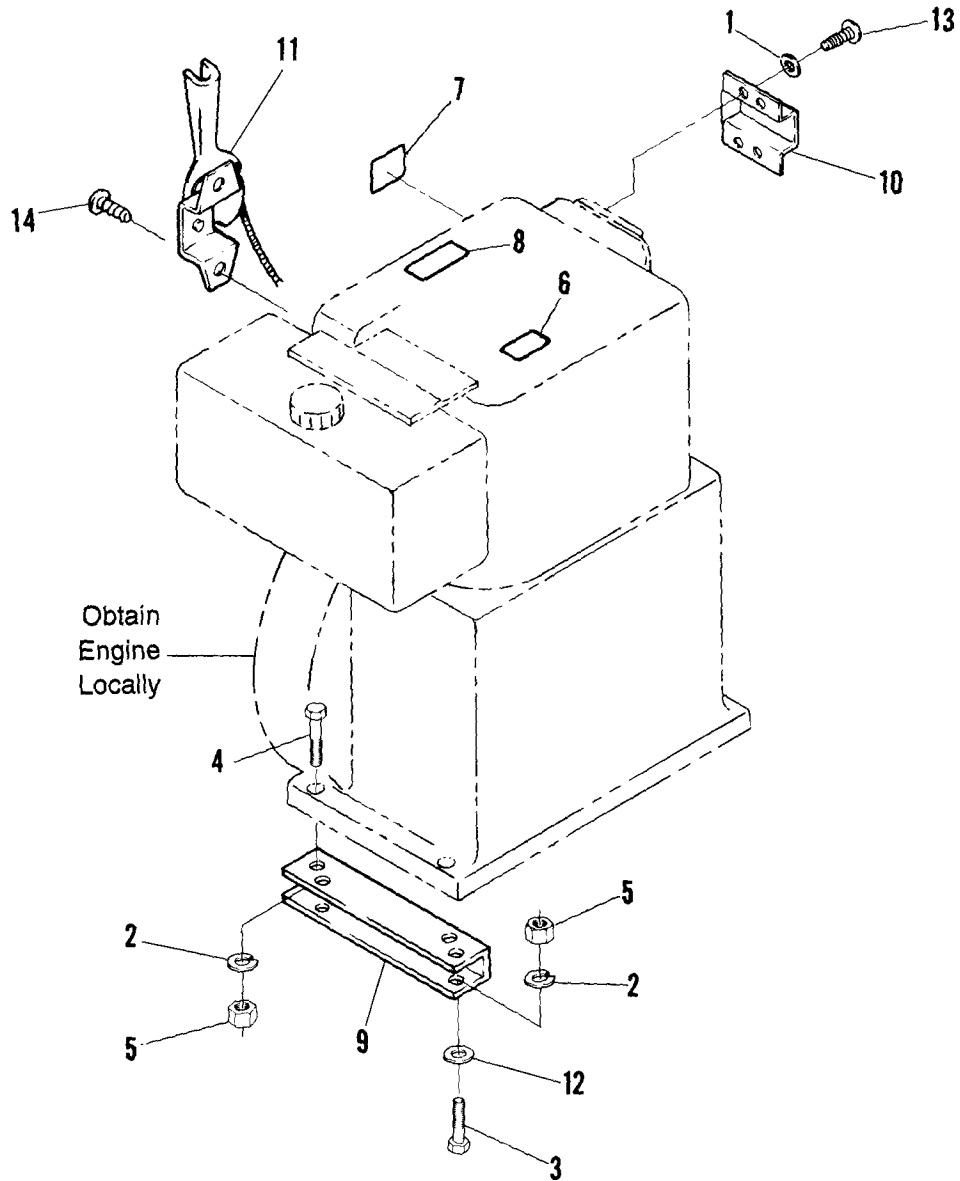
FIXED 1/32" BLADE REEL
Part No. 545453



Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
1	305134	Nut, jam 7/8-14	2	6	545640	Pillow Block, complete	2
2	516901	Blade, 1/32 (3mm)	25	7	548101	•Bearing, ball	1
3	516903	Spacer, .500 (13mm)	2	8	521857	••Collar, locking	1
4	516904	Spacer, .700 (18mm)	24	9	548176	Washer	2
5	517148	Shaft	1				

•INDENTED PART NAMES INDICATE THESE PARTS ARE INCLUDED IN PRECEDING ASSEMBLY

**MOUNTING PARTS FOR TECUMSEH ENGINE
(Model 544865-8605 HM8015526F 8hp)**



Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
1	120052	Lockwasher, #10	2	8	521813	Decal, sound level	1
2	306325	Lockwasher, 5/16	8	9	522205	Bar, adaptor	2
3	306416	Screw, 5/16-18 x 1	4	10	522271	Deflector, exhaust	1
4	306501	Screw, 5/16-18 x 1 1/2	4	11	547442	Throttle Control	1
5	306932	Nut, 5/16-18	8	12	548159	Washer	4
6	520909	Decal, stop	1	13	800344	Screw, self tap #10 x 9/16	2
7	520914	Decal, throttle	1	14	819195	Screw, self tap #8 x 1/2	2

NOTES

RYAN® LIMITED WARRANTY

Cushman Inc., warrants for one (1) year all new Ryan turf care products, models 8910 and later. All previous models (8810 and prior) with the exception of LA 28, GA 30 and GA 24, have a 90 day warranty. The Ryan LA 28, GA 30 and GA 24 models (8810 and prior) have a (1) year warranty. All new Ryan products are warranted according to the following terms:

This warranty extends to the original retail purchaser only and commences on the date of original retail purchase. Accordingly, this warranty is not transferable to any subsequent purchasers. Any part of the Ryan Product manufactured or supplied by Cushman Inc. and found in the reasonable judgment of Cushman Inc. to be defective in material or workmanship will be repaired or replaced by an authorized Ryan distributor without charge for parts and labor.

The Ryan product including any defective part must be returned to an authorized Ryan distributor within the warranty period. The expense of returning the Ryan product to an authorized distributor for warranty service and the expense of returning it back to the owner after repair or replacement will be paid for by the owner. Cushman Inc.'s responsibility in respect to claims is limited to making the required repairs or replacements, and no claim of breach of warranty shall be cause for cancellation or rescission of the contract of sale of any Ryan product. Proof of purchase will be required by the authorized Ryan distributor to substantiate any warranty claim. All warranty work must be performed by an authorized Ryan distributor.

Cushman Inc. makes no warranty with respect to engines, tires, or other parts not of their manufacture as such parts are usually warranted separately by their respective manufacturers.

This warranty does not include service items subject to normal wear, such as blades, tines, filters, spark plugs, ignition points, brake and clutch linings, or belts. This warranty does not cover any Ryan product that has been subject to misuse, neglect, negligence, or accident, or that has been operated or maintained in any way contrary to the operating or maintenance instructions as specified in the Ryan Operator's Manual. The warranty does not apply to any Ryan product that has been altered or modified so as to adversely affect the product's operation, performance or durability or that has been altered or modified so as to change its intended use. In addition, the warranty does not extend to repairs made necessary by normal wear, or by the use of parts or accessories which in the reasonable judgment of Cushman Inc. are either incompatible with the Ryan product or adversely affect its operation, performance or durability.

Cushman Inc. reserves the right to change or improve the design of any Ryan product without assuming any obligation to modify any product previously manufactured.

ALL IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE APPLICABLE ONE YEAR PERIOD. ALL IMPLIED WARRANTIES, INCLUDING MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE ARE DISCLAIMED IN THEIR ENTIRETY AFTER THE EXPIRATION OF THE ONE YEAR WARRANTY PERIOD.

CUSHMAN INC.'S OBLIGATION UNDER THIS WARRANTY IS STRICTLY AND EXCLUSIVELY LIMITED TO THE REPAIR OR REPLACEMENT OF DEFECTIVE PARTS, AND CUSHMAN INC. DOES NOT ASSUME OR AUTHORIZE ANYONE TO ASSUME FOR THEM ANY OTHER OBLIGATION.

CUSHMAN INC. ASSUMES NO RESPONSIBILITY FOR INCIDENTAL, CONSEQUENTIAL OR OTHER DAMAGES INCLUDING, BUT NOT LIMITED TO, EXPENSE FOR GASOLINE, EXPENSE OF RETURNING THE RYAN PRODUCT TO AN AUTHORIZED DISTRIBUTOR AND EXPENSE OF RETURNING IT BACK TO THE OWNER, MECHANIC'S TRAVEL TIME, TELEPHONE OR TELEGRAM CHARGES, TRAILERING OR TOWING CHARGES, RENTAL OF A LIKE PRODUCT DURING THE TIME WARRANTY SERVICE IS BEING PERFORMED, TRAVEL, LODGING, LOSS OR DAMAGE TO PERSONAL PROPERTY, LOSS OF REVENUE, LOSS OF USE OF THE RYAN PRODUCT, LOSS OF TIME, OR INCONVENIENCE.

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

This warranty applies to all Ryan products sold in the United States. Any products sold elsewhere are warranted by the affiliated marketing company of Cushman Inc.

CUSHMAN INC.
P.O. BOX 82409
Lincoln, Nebraska 68501-2409

WARRANTY SERVICE

To make claim under warranty, contact the distributor immediately upon realizing a problem exists. We recommend having the warranty work performed by the distributor who originally sold you the product; however, warranty work can be obtained from any authorized Ryan distributor. Remember, your Ryan product must be delivered to an authorized Ryan distributor within the warranty period, and all warranty work must be performed by an authorized Ryan distributor. Proof of purchase will be required by the distributor to substantiate any warranty claim.

EXAMPLES OF ITEMS NOT COVERED UNDER WARRANTY

Provisions of the warranty will not apply to:

Normal service work over and above the repair and replacement of defective parts.

Products subject to misuse, neglect, negligence, or accident.

Products that have been altered or modified so as to adversely affect their operation, performance or durability or to change their intended use.

Repairs made necessary by the use of parts or accessories which are either incompatible with the products or adversely affects the operation, performance or durability.

Products not operated or maintained in accordance with the instructions in the Ryan Operator's Manual.

Normal cleaning, adjusting or replacing of such items as filter, spark plugs, ignition points.

Periodic checking or adding of lubricant to the products or service check-up, tune-up or diagnosis.

Expense of delivering the product to the dealer and expense of returning the product back to the owner, mechanic's travel time, trailering or towing charges, or rental of a like product during the time warranty repairs are being performed.

Engines, tires, or parts manufactured by other than Ryan are not covered under this warranty as such parts are usually warranted by their respective manufacturers.

The warranty applies only to the original retail purchaser. Second-owner or subsequently owned products are not covered under warranty.

OWNER'S OBLIGATION AND RESPONSIBILITY

Normal maintenance service and replacement of service items are the responsibility of the owner and such are not considered defects in material or workmanship within the terms of the warranty. Individual operating habits and usage contribute to the need for maintenance service.

See your Ryan distributor for proper maintenance and care of your product. Proper maintenance and care will assist in keeping your overall operating cost at a minimum.

To validate a warranty claim, it is the owner's responsibility to maintain all components in proper adjustment and service the product as specified in the Ryan Operator's Manual. It is the owner's responsibility to provide proper lubrication for all components and provide correct recommended fuel for the products. It is the owner's responsibility to maintain the correct tire pressures where applicable.

RANSOMES

CUSHMAN

Cushman Inc. • A Ransomes Company
P.O. Box 82409, Lincoln, Nebraska 68501-2409