



Count on it.

Form No. 3424-820 Rev A

Service Manual

POWER MAX® HD Service Manual



Revision History

Preface

This service manual was written expressly for Toro service technicians. The Toro Company has made every effort to make the information in this manual complete and correct.

Basic shop safety knowledge and mechanical/electrical skills are assumed. The Table of Contents lists the systems and the related topics covered in this manual.

We are hopeful that you will find this manual a valuable addition to your service shop. If you have any questions or comments regarding this manual, please contact us at the following address:

The Toro Company
RLC/SWS Customer Care Department
8111 Lyndale Avenue South
Bloomington, MN 55420

The Toro Company reserves the right to change product specifications or make changes to this manual without notice.

Service Procedure Icons

The following icons appear throughout this Service Manual to bring attention to specific important details of a service procedure.



Critical Process

This icon is used to highlight:

- Installing safety equipment (shields, guards, seat belts, brakes, and R.O.P.S. components) that may have been removed
- Dimensions or settings that must be maintained for proper machine operation
- A specific fastener tightening sequence
- Component orientation that may not be obvious



Critical Torque

This icon is used to highlight an assembly torque requirement that is different than what is recommended in the Standard Torque Tables.



Fluid Specifications

This icon is used to highlight fluid specifications and capacities that are less common, and may not appear on the machine service decal or in the machine *Operator's Manual*.

Note: Refer to the service decal on the machine and the machine *Operator's Manual* for commonly used fluid specifications and capacities.

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Safety Instructions



DANGER



This safety symbol means danger. When you see this symbol, carefully read the instructions that follow. Failure to obey the instructions could cause serious permanent injury, disability, or death.



WARNING



This safety symbol means warning. When you see this symbol, carefully read the instructions that follow. Failure to obey the instructions can result in serious injury.



CAUTION



This safety symbol means caution. When you see this symbol, carefully read the instructions that follow. Failure to obey the instructions can result in minor to moderate injury and/or damage to property or equipment.

Think Safety First

Avoid unexpected starting of engine...

Always turn off the engine, remove the ignition key and disconnect the spark plug wire(s) before cleaning, adjusting, or repair.

Avoid lacerations and amputations...

Stay clear of all moving parts whenever the engine is running. Treat all normally moving parts as if they were moving whenever the engine is running or has the potential to start.

Avoid burns...

Do not touch the engine, muffler, or other components, which may be hot during operation, while the unit is running or shortly after it has been running.

Avoid fires and explosions...

Use extreme care in handling fuel. It is flammable and its vapors are explosive. Extinguish all cigarettes, cigars, pipes, and other sources of ignition. Avoid spilling fuel and never smoke while working with any type of fuel or lubricant. Wipe up any spilled fuel or oil immediately. Never remove the fuel cap or add fuel when the engine is running. Always use approved, labeled containers for storing or transporting fuel and lubricants. Do not add or drain fuel in an enclosed space. Do not store the machine or fuel container where there is an open flame, spark, or pilot light, such as on a water heater or other appliance.

Avoid asphyxiation...

Do not operate an engine in a confined area without proper ventilation.

Avoid injury from batteries...

Battery acid is poisonous and can cause burns. Avoid contact with skin, eyes and clothing. Battery gases can explode. Keep cigarettes, sparks and flames away from the battery.

Avoid injury due to inferior parts...

Use only original equipment parts to ensure that important safety criteria are met.

Avoid injury to bystanders...

Always clear the area of bystanders before starting or testing powered equipment.

Avoid injury due to projectiles...

Always clear the area of sticks, rocks or any other debris that could be picked up and thrown by the powered equipment.

Avoid modifications...

Never alter or modify any part unless it is a factory approved procedure.

Avoid unsafe operation...

Always test the safety interlock system after making adjustments or repairs on the machine. Refer to the Electrical section in this manual for more information.

Avoid electrical shock...

Never touch electrical wires or components while the engine is running. They can be sources of shock. De-energize the system if you are having to do repairs. If testing electrical components ensure you are working in a dry environment.

Hydraulic System...

Release all pressure in the hydraulic system before performing any work on the system. Keep your body and hands away from pin-hole leaks or nozzles that eject hydraulic fluid under high pressure. Do not use your hands to search for leaks. Hydraulic fluid escaping under pressure can have sufficient force to penetrate the skin and cause serious injury. Seek medical attention right away if hydraulic fluid gets in the skin.

Personal Protective Equipment...

Use appropriate personal protective equipment (PPE) for protecting yourself from potential hazards in the environment in which you will work. Each process outlined in this manual may need different PPE to protect the service person. Use the proper PPE for the task at hand.

Tools...

All tools should be in proper working order. Do not use tools that are broken or in disrepair. Use the proper tool for the proper application.

Lifts, Hoists, and Jacks...

All lifts, hoists, and jacks should be used in accordance with the manufacturer information. Inspect lifts, hoists, and jacks prior to use. Do not over load lifts, hoists, and jacks. Do not work under a suspended load. Ensure chock blocks are used on equipment that can move. Use lifts or jacks and jack stands that are rated to support the total weight of the machine and any attachments. Do not rely on jacks to support the machine. If you are unsure of the operation of any lifts, hoists, and jacks do not use.

Fire Extinguishers...

The proper class of fire extinguisher should be used in case of fire.

Class A extinguishers are for ordinary combustible materials such as paper, wood, cardboard, and most plastics. The numerical rating on these types of

extinguishers indicates the amount of water it holds and the amount of fire it can extinguish. Geometric symbol (green triangle).

Class B fires involve flammable or combustible liquids such as gasoline, kerosene, grease and oil. The numerical rating for class B extinguishers indicates the approximate number of square feet of fire it can extinguish. Geometric symbol (red square).

Class C fires involve electrical equipment, such as appliances, wiring, circuit breakers and outlets. Never use water to extinguish class C fires - the risk of electrical shock is far too great! Class C extinguishers do not have a numerical rating. The C classification means the extinguishing agent is non-conductive. Geometric symbol (blue circle).

ABC

Fire extinguishers are a dry chemical type used for multiple purposes. See above information for description.

Ensure fire extinguishers are serviceable and replace any that are discharged or out of inspection dates.



Specifications and Maintenance

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Specifications

Power Max HD					
Model	38840/38850	38841/38855	38842	38843/38860	38844/38865
Steering	Automatic Steering	Power Steering			
Throw Distance	Up to 45 ft. (13.5 m)		Up to 52 ft. (17.4 m)	Up to 60 ft. (18.3 m)	
Clearing Width	28 in. (71 cm)		32 in. (81 cm)	28 in. (71 cm)	32 in. (81 cm)
Starter	Recoil/Electric				
Fuel Capacity	0.92 gal. (3.5 L)		1.2 gal. (4.5 L)		
Engine	LC175FDS	LC180FDS	LC185FDS	LC190FDS	
Displacement	265cc	302cc	375cc	420cc	
Engine RPM	3300 ± 100				
Oil Capacity	32 oz. (0.95 L)		37 oz. (1.1 L)		
Spark Plug	Champion RN9YC/NGK BPR6ES/NHPS F7RTC				
Spark Plug Gap	0.030 in. (0.76 mm)				
Weight	264 lbs. (120 kg)	283 lbs. (128 kg)	300 lbs. (136 kg)	305 lbs. (138 kg)	310 lbs. (141 kg)
Length	62 in. (157.5 cm)				
Width	29.5 in. (75 cm)		33.5 in. (85 cm)	29.5 in. (75 cm)	33.5 in. (85 cm)
Height	44.5 in. (113 cm)				
Speed	6 Forward — 2 Reverse				
Tire Pressure	17–20 psi (116–137 kPa)				

Torque Specifications

The recommended fastener torque values are listed in the following tables. For critical applications, as determined by Toro, either the recommended torque or a torque that is unique to the application is clearly identified and specified in the service manual.

These torque specifications for the installation and tightening of fasteners shall apply for all fasteners which do not have a specific requirement identified in the service manual. The following factors shall be considered when applying torque: cleanliness of the fastener, use of a thread sealant (Loctite), degree of lubrication on the fastener, presence of a prevailing torque feature, hardness of the surface underneath of the fastener's head, or similar condition which affects the installation.

As noted in the following tables, torque values should be reduced by 25% for lubricated fasteners to achieve the similar stress as a dry fastener. Torque values may also have to be reduced when the fastener is threaded into aluminum or brass. The specific torque value should be determined based on the aluminum or brass material strength, fastener size, length of thread engagement, etc.

The standard method of verifying torque shall be performed by marking a line on the fastener (head or nut) and mating part, then back off fastener 1/4 of a turn. Measure the torque required to tighten the fastener until the lines match up.

Fastener Identification

Inch Series Bolts and Screws

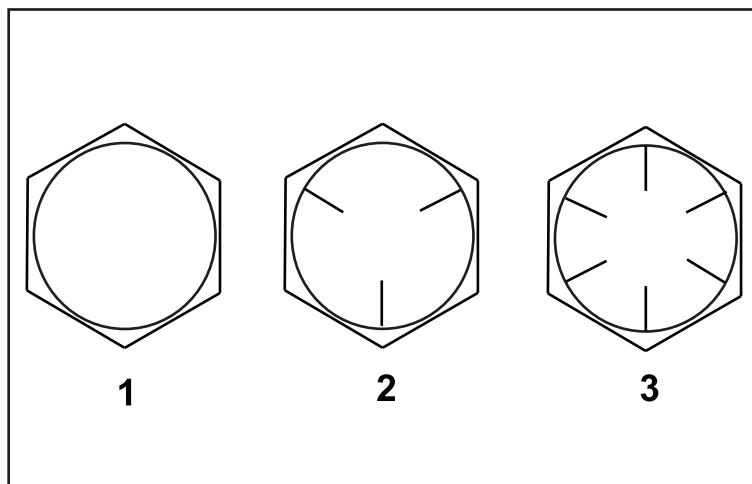


Figure 1

- | | |
|------------|------------|
| 1. Grade 1 | 3. Grade 8 |
| 2. Grade 5 | |

Metric Bolts and Screws

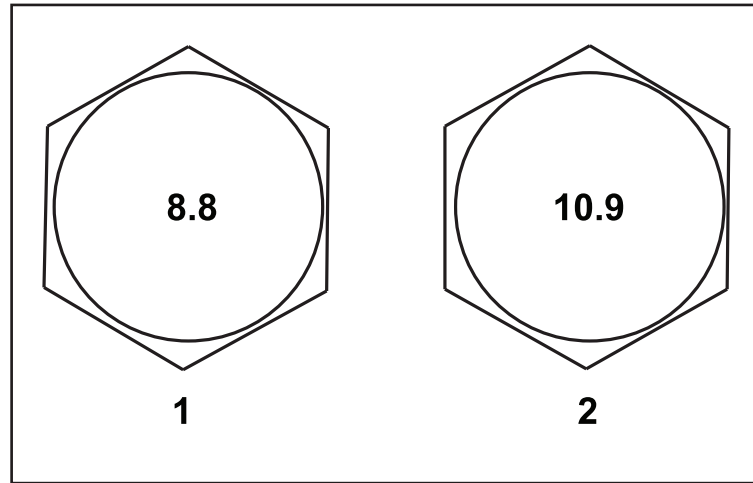


Figure 2

1. Class 8.8

2. Class 10.9

Standard Torque for Dry, Zinc Plated, and Steel Fasteners (Inch Series)

Thread Size	Grade 1, 5, & 8 Fasteners with Thin Height Nuts	SAE Grade 1 Bolts, Screws, Studs & Sems with Regular Height Nuts (SAE Grade 2 or Better Nut)		SAE Grade 5 Bolts, Screws, Studs & Sems with Regular Height Nuts (SAE Grade 5 or Better Nut)		SAE Grade 8 Bolts, Screws, Studs & Sems with Regular Height Nuts (SAE Grade 8 or Better Nut)	
		In-lb.	N-cm	In-lb.	N-cm	In-lb.	N-cm
#6-32 UNC	10 ± 2	13 ± 2	147 ± 23	15 ± 2	169 ± 23	23 ± 3	260 ± 34
#6-40 UNF				17 ± 2	192 ± 23	25 ± 3	282 ± 34
#8-32 UNC	13 ± 2	25 ± 5	282 ± 30	29 ± 3	328 ± 34	41 ± 5	463 ± 56
#8-36 UNF				31 ± 4	350 ± 45	43 ± 5	486 ± 56
#10-24 UNC	18 ± 2	30 ± 5	339 ± 56	42 ± 5	475 ± 56	60 ± 6	678 ± 68
#10-32 UNF				48 ± 5	542 ± 56	68 ± 7	768 ± 79
1/4-20 UNC	48 ± 7	53 ± 7	599 ± 79	100 ± 10	1130 ± 113	140 ± 15	1582 ± 169
1/4-28 UNF	53 ± 7	65 ± 10	734 ± 113	115 ± 12	1299 ± 136	160 ± 17	1808 ± 192
5/16-18 UNC	115 ± 15	105 ± 15	1186 ± 169	200 ± 25	2260 ± 282	300 ± 30	3390 ± 339
5/16-24 UNF	138 ± 17	128 ± 17	1446 ± 192	225 ± 25	2542 ± 282	325 ± 33	3672 ± 373
	ft-lb.	ft-lb.	N-m	ft-lb.	N-m	ft-lb.	N-m
3/8-16 UNC	16 ± 2	16 ± 2	22 ± 3	30 ± 3	41 ± 4	43 ± 5	58 ± 7
3/8-24 UNF	17 ± 2	18 ± 2	24 ± 3	35 ± 4	47 ± 5	50 ± 6	68 ± 8
7/16-14 UNC	27 ± 3	27 ± 3	37 ± 4	50 ± 5	68 ± 7	70 ± 7	95 ± 9
7/16-20 UNF	29 ± 3	29 ± 3	39 ± 4	55 ± 6	75 ± 8	77 ± 8	104 ± 11
1/2-13 UNC	30 ± 3	48 ± 7	65 ± 9	75 ± 8	102 ± 11	105 ± 11	142 ± 15
1/2-20 UNF	32 ± 4	53 ± 7	72 ± 9	85 ± 9	115 ± 12	120 ± 12	163 ± 16
5/8-11 UNC	65 ± 10	88 ± 12	119 ± 16	150 ± 15	203 ± 20	210 ± 21	285 ± 28
5/8-18 UNF	75 ± 10	95 ± 15	129 ± 20	170 ± 18	230 ± 24	240 ± 24	325 ± 33
3/4-10 UNC	93 ± 12	140 ± 20	190 ± 27	265 ± 27	359 ± 37	375 ± 38	508 ± 52
3/4-16 UNF	115 ± 15	165 ± 25	224 ± 34	300 ± 30	407 ± 41	420 ± 43	569 ± 58
7/8-9 UNC	140 ± 20	225 ± 25	305 ± 34	430 ± 45	583 ± 61	600 ± 60	813 ± 81
7/8-14 UNF	155 ± 25	260 ± 30	353 ± 41	475 ± 48	644 ± 65	667 ± 66	904 ± 89

Note: Reduce torque values listed in the table above by 25% for lubricated fasteners. Lubricated fasteners are defined as threads coated with a lubricant such as oil, graphite, or thread sealant such as Loctite.

Torque values may have to be reduced when installing fasteners into threaded aluminum or brass. The specific torque value should be determined based on the fastener size, the aluminum or base material strength, length of thread engagement, etc.

The nominal torque values listed above for Grade 5 and 8 fasteners are based on 75% of the minimum proof load specified in SAE J429. The tolerance is approximately ± 10% of the nominal torque value. Thin nuts include jam nuts.

Standard Torque for Dry, Zinc Plated, and Steel Fasteners (Metric Series)

Thread Size	Class 8.8 Bolts, Screws, Studs with Regular Height Nuts (Class 8 or Stronger Nuts)		Class 10.9 Bolts, Screws, Studs with Regular Height Nuts (Class 10 or stronger Nuts)	
	in-lb.	N-cm	in-lb.	N-cm
M5 X 0.8	57 ± 6	644 ± 68	78 ± 8	881 ± 90
M6 X 1.0	96 ± 10	1085 ± 113	133 ± 14	1503 ± 158
	ft-lbs.	N-m	ft-lbs.	N-m
M8 X 1.25	19 ± 2	26 ± 3	28 ± 3	38 ± 4
M10 X 1.5	38 ± 4	52 ± 5	54 ± 6	73 ± 8
M12 X 1.75	66 ± 7	90 ± 10	93 ± 10	126 ± 14
M16 X 2.0	166 ± 17	255 ± 23	229 ± 23	310 ± 31
M20 X 2.5	325 ± 33	440 ± 45	450 ± 46	610 ± 62

Note: Reduce torque values listed in the table above by 25% for lubricated fasteners. Lubricated fasteners are defined as threads coated with a lubricant such as oil, graphite, or thread sealant such as Loctite.

Torque values may have to be reduced when installing fasteners into threaded aluminum or brass. The specific torque value should be determined based on the fastener size, the aluminum or base material strength, length of thread engagement, etc.

The nominal torque values listed above are based on 75% of the minimum proof load specified in SAE J1199. The tolerance is approximately ± 10% of the nominal torque value. Thin height nuts include jam nuts.

SAE Grade 8 Steel Set Screws

Thread Size	Recommended Torque	
	Square Head	Hex Socket
1/4 - 20 UNC	140 ± 20 in-lb.	73 ± 12 in-lb.
5/16 - 18 UNC	215 ± 35 in-lb.	145 ± 20 in-lb.
1/2 - 13 UNC	75 ± 15 ft-lb.	50 ± 10 ft-lb.
3/8 - 16 UNC	35 ± 10 ft-lb.	18 ± 3 ft-lb.

Wheel Bolts and Lug Nuts

Thread Size	Recommended Torque**	
7/16 - 20 UNF Grade 5	65 ± 10 ft-lb.	88 ± 14 N-m
1/2 - 20 UNF Grade 5	80 ± 10 ft-lb.	108 ± 14 N-m
M12 X 1.25 Class 8.8	80 ± 10 ft-lb.	108 ± 14 Nm
M12 X 1.5 Class 8.8	80 ± 10 ft-lb.	108 ± 14 Nm

**For steel wheels and non-lubricated fasteners.

Thread Cutting Screws (Zinc Plated Steel)

Type 1, Type 23, or Type F	
Thread Size	Baseline Torque*
No. 6 - 32 UNC	20 ± 5 in-lb.
No. 8 - 32 UNC	30 ± 5 in-lb.
No. 10 - 24 UNC	38 ± 7 in-lb.
1/4 - 20 UNC	85 ± 15 in-lb.
5/16 - 18 UNC	110 ± 20 in-lb.
3/8 - 16 UNC	200 ± 100 in-lb.

*Hole size, material strength, material thickness and finish must be considered when determining specific torque values. All torque values are based on non-lubricated fasteners.

Conversion Factors

in-lb. X 11.2985 = N-cm

ft-lb. X 1.3558 = N-m

N-cm X 0.08851 = in-lb.

N-cm X 0.73776 = ft-lb.

Thread Cutting Screws (Zinc Plated Steel)

Threads Size	Threads per Inch		Baseline Torque*
	Type A	Type B	
No. 6	18	20	20 ± 5 in-lb.
No. 8	15	18	30 ± 5 in-lb.
No. 10	12	16	38 ± 7 in-lb.
No. 12	11	14	85 ± 15 in-lb.

*Hole size, material strength, material thickness and finish must be considered when determining specific torque values. All torque values are based on non-lubricated fasteners.

Equivalents and Conversions

Decimal and Millimeter Equivalents

Fractions	Decimals	mm	Fractions	Decimals	mm
1/64	0.015625	0.397	33/64	0.515625	13.097
1/32	0.03125	0.794	16/32	0.53125	13.484
3/64	0.046875	1.191	35/64	0.546875	13.891
1/16	0.0625	1.588	9/16	0.5625	14.288
5/64	0.078125	1.984	37/64	0.578125	14.684
3/32	0.09375	2.381	19/32	0.59375	15.081
1/8	0.1250	3.175	5/8	0.6250	15.875
9/64	0.140625	3.572	41/64	0.640625	16.272
5/32	0.15625	3.969	21/32	0.65625	16.669
11/64	0.171875	4.366	43/64	0.671875	17.066
3/16	0.1875	4.762	11/64	0.6875	17.462
13/64	0.203125	5.159	45/64	0.703125	17.859
7/32	0.21875	5.556	23/32	0.71875	18.256
15/64	0.234375	5.953	47/64	0.734375	18.653
1/4	0.2500	6.350	3/4	0.7500	19.050
17/64	0.265625	6.747	49/64	0.765625	19.447
9/32	0.28125	7.144	25/32	0.78125	19.844
19/64	0.296875	7.541	51/64	0.796875	20.241
5/16	0.3125	7.938	13/16	0.8125	20.638
21/64	0.328125	8.334	53/64	0.828125	21.034
11/32	0.34375	8.731	27/32	0.84375	21.431
23/64	0.359375	9.128	55/64	0.859375	21.828
3/8	0.3750	9.525	7/8	0.8750	22.225
25/64	0.390625	9.922	57/64	0.890625	22.622
13/32	0.40625	10.319	29/32	0.90625	23.019
27/64	0.421875	10.716	59/64	0.921875	23.416
7/16	0.4375	11.112	15/16	0.9375	23.812
29/64	0.453125	11.509	61/64	0.953125	24.209
15/32	0.46875	11.906	31/32	0.96875	24.606
31/64	0.484375	12.303	63/64	0.984375	25.003
1/2	0.5000	12.700	1	1.000	25.400
1 mm = 0.03937 in.			0.001 in. = 0.0254 mm		

U.S. to Metric Conversions

	To Convert	Into	Multiply By
Linear Measurement	Miles	Kilometers	1.609
	Yards	Meters	0.9144
	Feet	Meters	0.3048
	Feet	Centimeters	30.48
	Inches	Meters	0.0254
	Inches	Centimeters	2.54
	Inches	Millimeters	25.4
Area	Square Miles	Square Kilometers	2.59
	Square Feet	Square Meters	0.0929
	Square Inches	Square Centimeters	6.452
	Acre	Hectare	0.4047
Volume	Cubic Yards	Cubic Meters	0.7646
	Cubic Feet	Cubic Meters	0.02832
	Cubic Inches	Cubic Centimeters	16.39
Weight	Tons (Short)	Metric Tons	0.9078
	Pounds	Kilograms	0.4536
	Ounces	Grams	28.3495
Pressure	Pounds/Square Inch	Kilopascal	6.895
Work	Foot-Pounds	Newton-Meters	1.356
	Foot-Pounds	Kilogram-Meters	0.1383
	Inch-Pounds	Kilogram-Centimeters	1.152144
Liquid Volume	Quarts	Liters	0.9463
	Gallons	Liters	3.785
Liquid Flows	Gallons/Minute	Liters/Minute	3.785
Temperature	Fahrenheit	Celsius	1. Subtract by 32°
			2. Multiply by 5/9



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GEARS

The Systematic approach to defining, diagnosing and solving problems.



G

Gather Information

- Information reported by the customer
- Information observed by you
- Establish the what, where and when of the issue



E

Evaluate Potential Causes

- Consider possible causes of the problem to develop a hypothesis
- Narrow down the focus of the problem



A

Assess Performance

- Ensure you have all the necessary tools for testing
- Test all potential causes of the failure
- Reevaluate and create new hypotheses if necessary



R

Repair

- Return the unit to service by repairing, rebuilding or replacing



S

Solution Confirmation

- Did the issue go away
- Was the root cause of the issue correctly repaired
- Are there any other new symptoms

General Troubleshooting

See Operator's Manual for troubleshooting information.



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General Information

Models 38840/38850 use Toro engine LC175FDS

Models 38841/38855 use Toro engine LC180FDS

Models 38843/38844/38860/38865 use Toro engine LC190FDS

Models 38842 use Toro engine LC185FDS

Service and Repairs

Engine Assembly

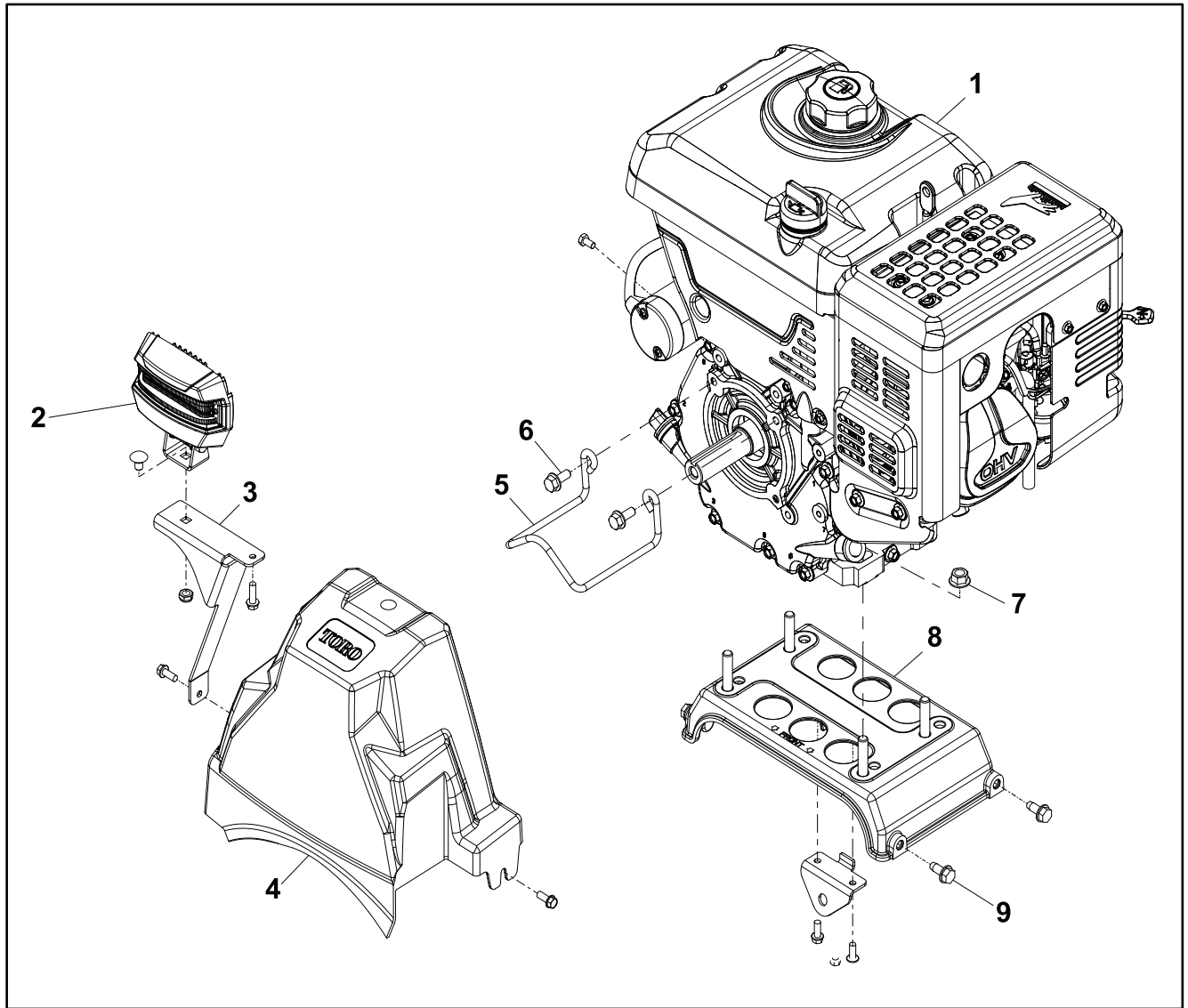


Figure 3

- | | |
|---|---|
| 1. Engine (high speed idle 3300 ± 100 RPM, carburetor bowl drain screw 62-88 in-lbs. (7.1–10.1 Nm)) | 6. Torque to 120-160 in-lbs. (13.8–18.4 Nm) |
| 2. LED Light Asm. | 7. Torque to 150 ± 15 in-lbs. (17.25 ± 1.7 Nm) |
| 3. Light Bracket | 8. Engine Plate Asm. |
| 4. Belt Cover | 9. Torque to 110 ± 20 in-lbs. (12.65 ± 2.3 Nm) |
| 5. Belt Guide (0.06 ± 0.03 in. (0.15 ± 0.08 mm) from auger belt when clutch is engaged) | |

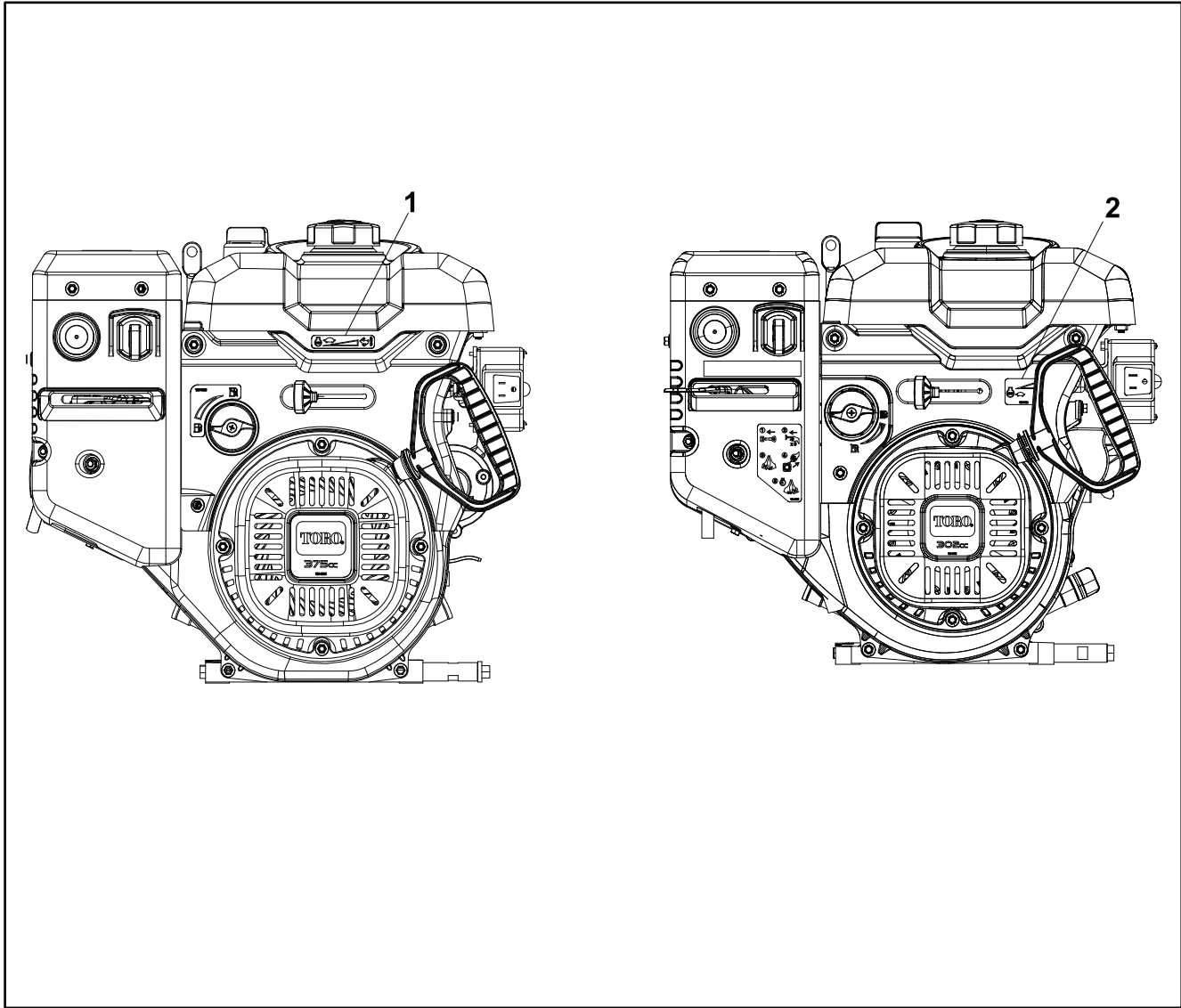


Figure 4

1. LC185/LC190 Engine

2. LC175/LC180 Engine

Engine Replacement

Engine Removal

1. Park the machine on a level surface. Stop the engine, wait for all moving parts to stop and remove the key.
2. Disconnect the light from the cover.



Figure 5

-
3. Remove the belt cover.
 4. Remove the belts and pulleys.
 5. Remove the 2 bolts securing the QUICK STICK® rod. Remove the QUICK STICK® rod.
 6. Remove the 4 (2 per side) motor mount bolts.



Figure 6

-
7. Using a proper lifting device, lift the engine away from the machine.

Engine Removal (continued)



Figure 7

Engine Installation



1. Using a proper lifting device, place the engine into position on the machine.
2. Apply loctite and install the 4 (2 per side) motor mount bolts. Torque bolts to 150 ± 15 in-lbs. (12.25 ± 1.7 Nm).
3. Install the QUICK STICK® rod. Secure with 2 bolts.



CAUTION



When installing the traction belt, make sure the belt is riding on top of the traction pulley sheaves to ensure the belt does not break.

-
4. Install the belts and pulleys.
 5. Install the belt cover.
 6. Connect the light to the cover.



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General Information

For the new generation of Power Max HD models, handles are reinforced and units have welded square tube handles for models 38843, 38844, 38860, 38865 only.

Service and Repairs

QUICK STICK® Assembly

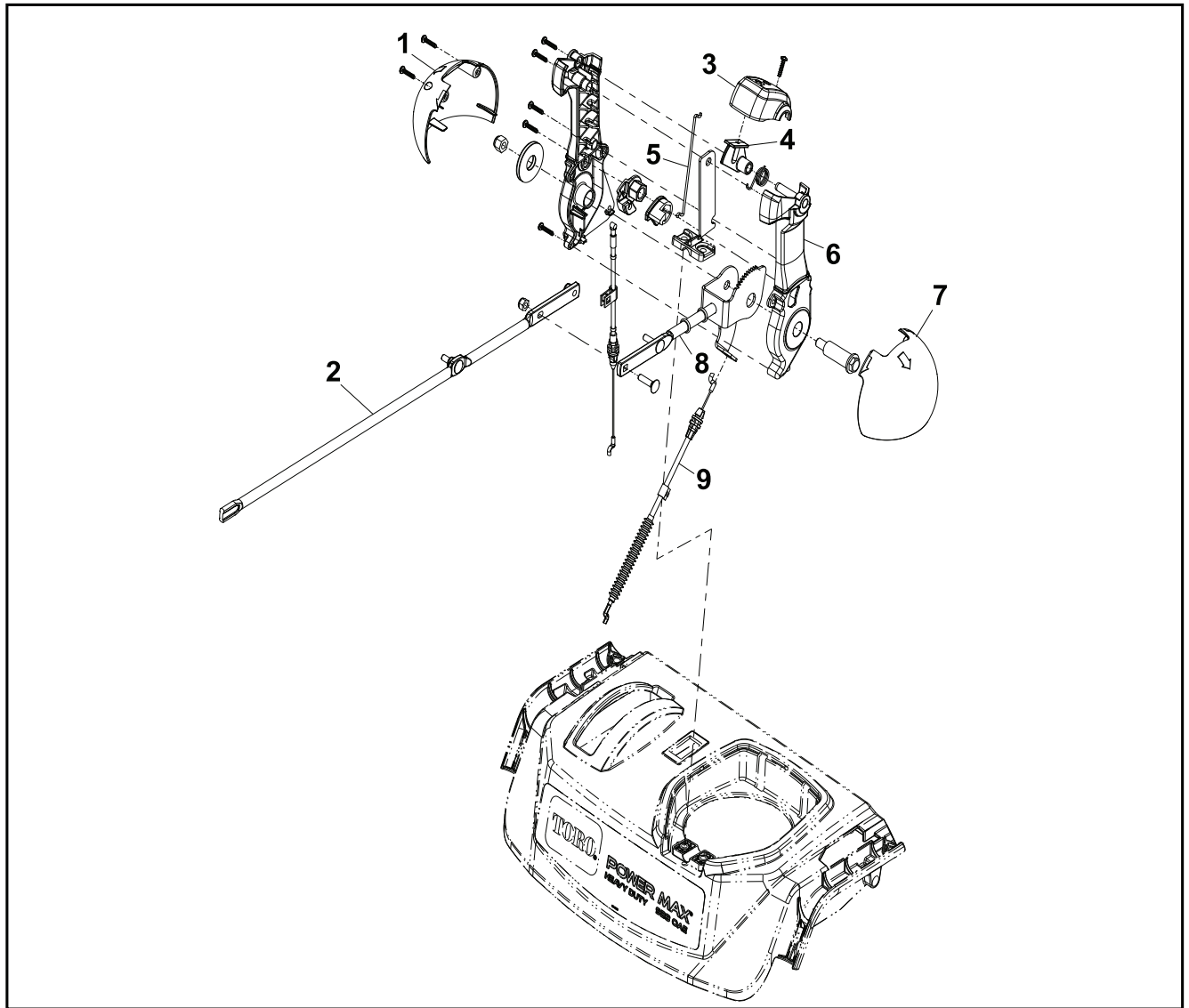


Figure 8

- | | |
|-------------------------|-----------------------------|
| 1. RH Quick Stick Globe | 6. Chute Control Lever Asm. |
| 2. Chute Rod | 7. LH Quick Stick Globe |
| 3. Lever Cap | 8. Chute Control Rod |
| 4. Latch Trigger | 9. Deflector Control Cable |
| 5. Latch Link | |

Handles and Controls Assembly

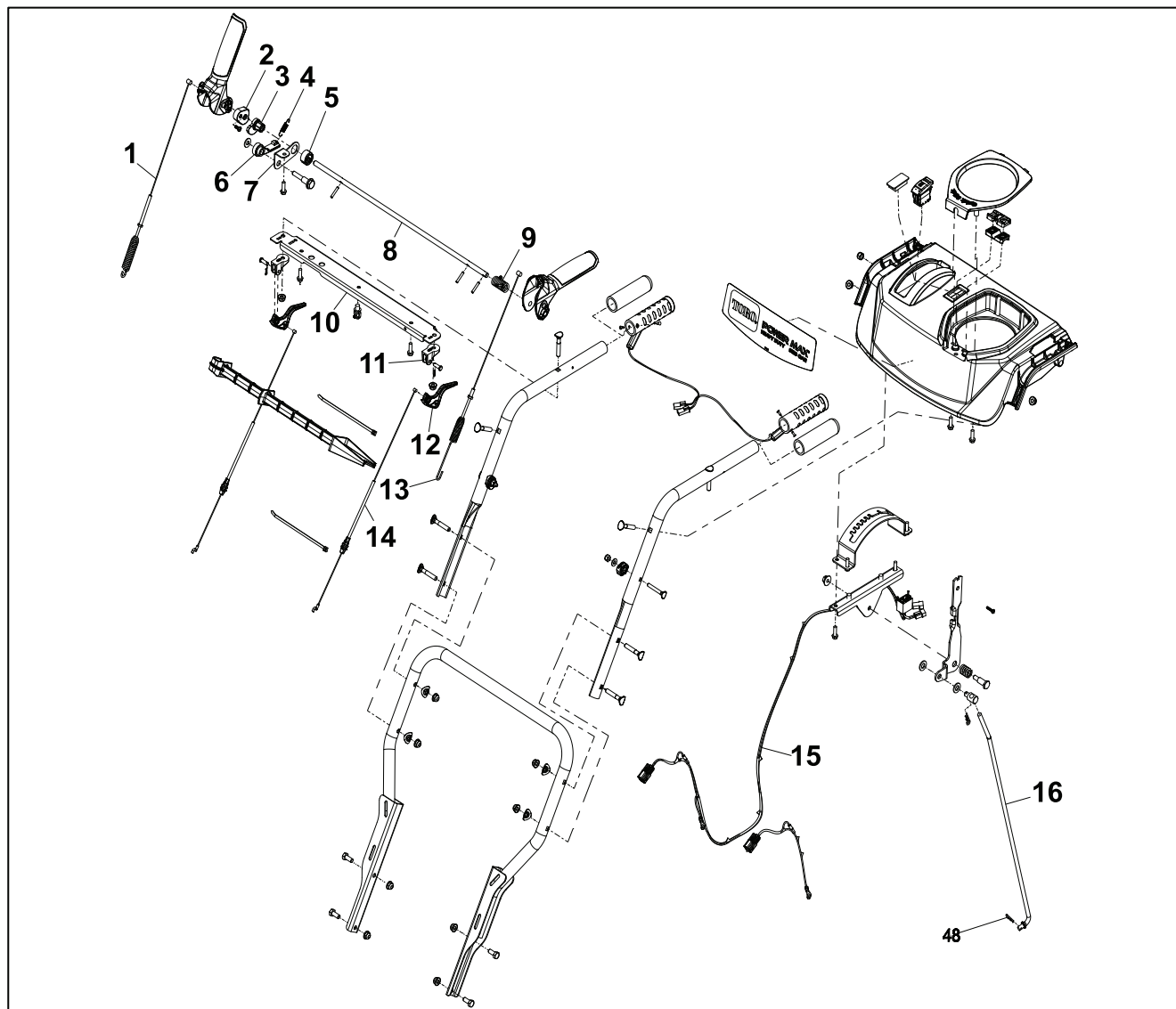


Figure 9

- | | | |
|--------------------------|---------------------------------|--------------------|
| 1. Auger Cable | 7. Lockout Link | 13. Traction Cable |
| 2. Handle Lock | 8. Lockout Rod | 14. Clutch Cable |
| 3. Lockout Cam | 9. Handle Return Torsion Spring | 15. Wire Harness |
| 4. Handle Lockout Spring | 10. Console Brace | 16. Shift Rod |
| 5. Cam Collar | 11. Clutch Mount Lever | |
| 6. Lockout Latch | 12. Clutch Lever | |

Handle Bracket

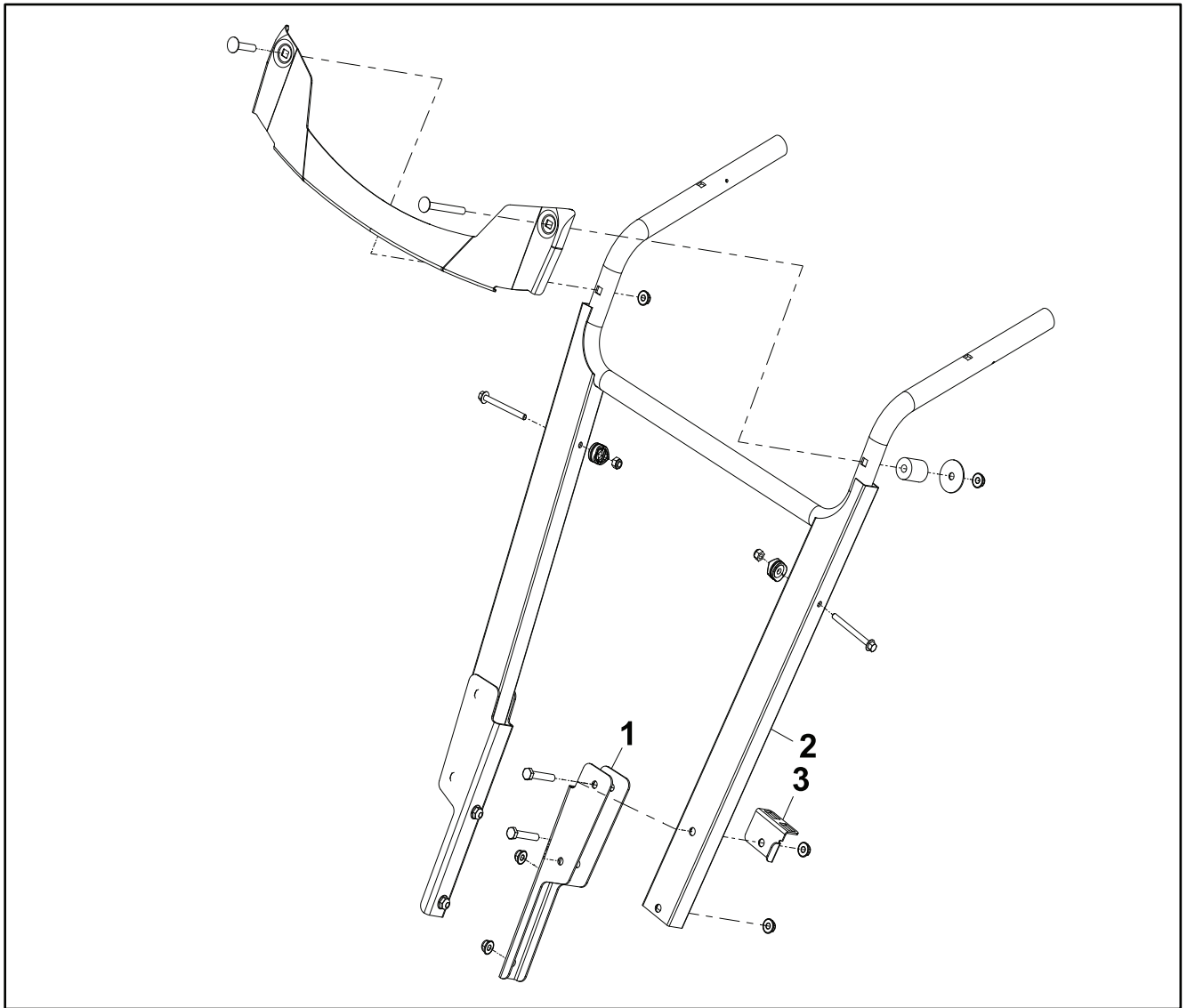


Figure 10

- 1. Lower Handle Bracket
- 2. Handle Asm.

- 3. Cleanout Stick Bracket

QUICK STICK® Replacement

QUICK STICK® Removal

1. Park the machine on a level surface. Stop the engine, wait for all moving parts to stop and remove the key.
2. Unhook the Z-bend and disconnect the deflector cable from the underside of the Quick Stick.



Figure 11

-
3. On the underside of the control panel, remove the 2 screws holding the Quick Stick cover in place.



Figure 12

-
4. Lift the front cover and pull forward to release the latch tabs on the rear. Set the cover aside.

QUICK STICK® Removal (continued)



Figure 13

-
5. Remove the 3 carriage bolts and nuts on the chute control rod and lift the Quick stick out of the control panel.

Note: Notice the location of the cable clamp for latch cable function.

6. Remove the top cover.
7. Disconnect the chute cable.



Figure 14

QUICK STICK® Disassembly

1. Remove the screw retaining the blue lever cap.

QUICK STICK® Disassembly (continued)



Figure 15

-
2. Remove the 2 screws on the RH of the Quick Stick globe (the part that looks like a ball). Remove both halves and set aside.



Figure 16

-
3. Remove the locknut from the shoulder bolt. Slide the chute control rod off and remove the friction washer.
 4. Hold the Quick Stick so that the 5 screws holding the handle halves are facing up. Remove the 5 screws and lift off the top handle half.

QUICK STICK® Disassembly (continued)



Figure 17

-
5. Lift the metal latch pawl off the hex on the cable lever. Remove the latch trigger and spring.

Note: Notice the orientation of the pawl to the lever for reassembly.



Figure 18

-
6. Rotate the cable until the barrel fitting slides off the cable lever.



Figure 19

QUICK STICK® Reassembly

1. Place the latch spring over the boss. The straight end of the spring should be down with the hooked end facing up.



Figure 20

2. Slide the latch trigger over the boss until it is fully seated, making sure that the stop on the trigger lever is above the stop on the quick lever. While holding the trigger lever in place, rotate the hooked end of the spring until it hooks under the front edge of the trigger lever.
3. Rotate the cable until the barrel fitting slides onto the cable lever.
4. Install the latch trigger and spring. Lift the metal latch pawl onto the cable lever hex.
5. Install the top handle into position, secure with 5 screws.
6. Install the friction washer. Slide the chute control rod into place. Secure with a locknut onto the shoulder bolt.
7. Install both globes. Secure with 2 screws on the right hand side of the chute control cover (the part that looks like a ball).
8. Install the cap and screw retaining the blue lever cap.

QUICK STICK® Installation

Note: The cable clamp must be installed on the chute control rod or the cable latch will not function.

1. Install the Quick Stick onto the control panel. Secure with 3 carriage bolts and nuts on the chute control rod.
2. Install the front cover into position. Secure with the latch tabs on the rear.
3. Install the 2 screws securing the Quick Stick cover in place on the underside of the control panel.
4. Hook the Z-bend and connect the deflector cable from the underside.

Control Interlock Replacement

Control Interlock Removal

1. Park the machine on a level surface. Stop the engine, wait for all moving parts to stop and remove the key.
2. Disconnect the auger and traction cables from the levers. If this is a wheel clutch model, disconnect the wheel clutch cables.

Control Interlock Removal (continued)



Figure 21

-
3. Remove the shoulder screw under the RH handgrip. When removed, the lockout latch, extension spring, flat washer, and locknut will drop out.



Figure 22

-
4. To remove the lockout rod, go to the RH end. There are 2 roll pins on the LH side and 1 in the lockout cam on the RH side.

Control Interlock Removal (continued)



Figure 23

-
5. Once the roll pins are driven out, the lockout rod can be moved to the side and removed. The lockout link can now be removed from the lockout rod.
 6. Remove the levers.

Note: Steps 1 and 2 above, do not need to be done in that order. It's possible to remove the rod without removing the shoulder bolt.



Figure 24

Control Interlock Installation

Note: Notice the spring on the lockout latch. The end with the slight bend goes behind the lockout latch and the hooked end goes over the small tab. It is easier to install the latch mechanism first, then hook the end of the spring with a wire to pull into place.

1. Install the traction lever and torsion spring.

Control Interlock Installation (continued)

2. Install the lockout link onto the lockout rod.
3. Install the lockout cam and auger lever.
4. Install the 2 roll pins on the LH side and the pin in the lockout cam on the RH side.
5. Install the lockout latch, extension spring, flat washer, and locknut. Install the shoulder screw under the RH handgrip
6. If this is a wheel clutch model, connect the wheel clutch cables. Connect the auger and traction cables to the levers.

Control Replacement and Adjustment

Deflector Cable Removal

1. Park the machine on a level surface. Stop the engine, wait for all moving parts to stop and remove the key.
2. Depress the tabs that retain the cable in the bracket under the control panel. Disconnect the Z-bend on the end.



Figure 25

-
3. Remove the cable clamp and disconnect the cable end from the deflector.

Deflector Cable Removal (continued)



Figure 26

-
4. Remove the cable clamp on the traction housing.

Deflector Cable Installation

1. Connect the cable end to the deflector. Secure with a cable clamp.
2. Connect the Z-bend end to the machine.
3. Install the cable onto the bracket. Secure with tabs.
4. Connect the cable clamp to the traction housing.

Deflector Cable Adjustment

Make sure the Quick Stick is in the maximum rear position and centered; ensure the deflector is in the full upward position. Draw the slack out of the cable and secure the clamp.



Figure 27

Shift Lever Adjustment

The shift lever on the control panel is connected to the friction wheel in the traction frame by a shift rod. Moving the shift lever changes the friction wheel location.



Figure 28

Shift Rod Adjustment

1. Park the machine on a level surface. Stop the engine, wait for all moving parts to stop and remove the key.

Note: The adjustment point is a trunnion on the upper end of the shift rod.



Figure 29

2. Pull the shift rod and arm upward as far as they will go. With the shift lever in R2, adjust the trunnion to take the slack out and re-secure.

Note: Excessive slack in the linkage may cause the drive to be in reverse when shifted into first gear.

Shift Rod Adjustment (continued)



Figure 30

Auger Control

The bail on the RH handle is the auger control. Squeeze the bail and the cable causes an idler to pivot the tensioning in the auger belt.

Clutch Cables Replacement and Adjustment (Wheel Clutch Models Only)

Clutch Cable Removal

1. Park the machine on a level surface. Stop the engine, wait for all moving parts to stop and remove the key.
2. Drain the fuel tank and stand the machine on the auger housing. Remove the rear cover. The wheels and the bottom cover can also be removed if needed.



Figure 31

Clutch Cable Removal (continued)

3. Remove the nut and washer that attach the cable clamp to the handle.
4. Slip the cable barrel end out of the wheel clutch lever on the handle.
5. Reach under the shift plate and compress the small ears on the cable fitting. The cable fitting can then be pushed out of the shift plate.
6. Disconnect the lower end of the cable from the shift collar.

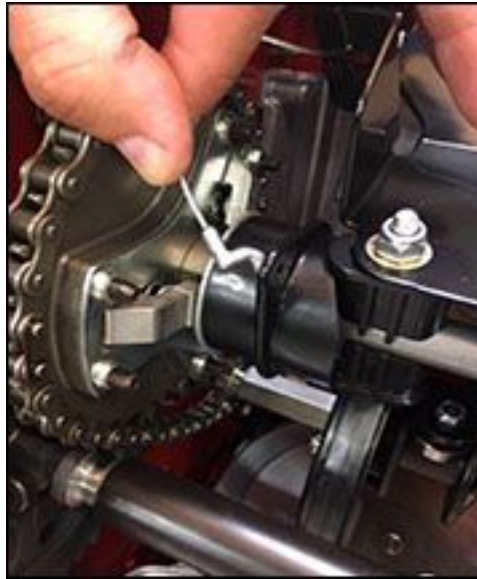


Figure 32

Clutch Cable Installation

1. Feed the lower end of the cable through the shift plate and snap the cable onto the plate. Install the lower end of the cable onto the shift collar (outside in).



Figure 33

2. Hook the upper end of the cable to the wheel clutch lever and install the cable clamp to the handle. See the adjustment procedure before securing the clamp.

Clutch Cable Installation (continued)

3. Install the covers and test run the unit.



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General Information

Some Power Max HD units use a new double-V auger drive belt.

Service and Repairs

Auger Drive Components

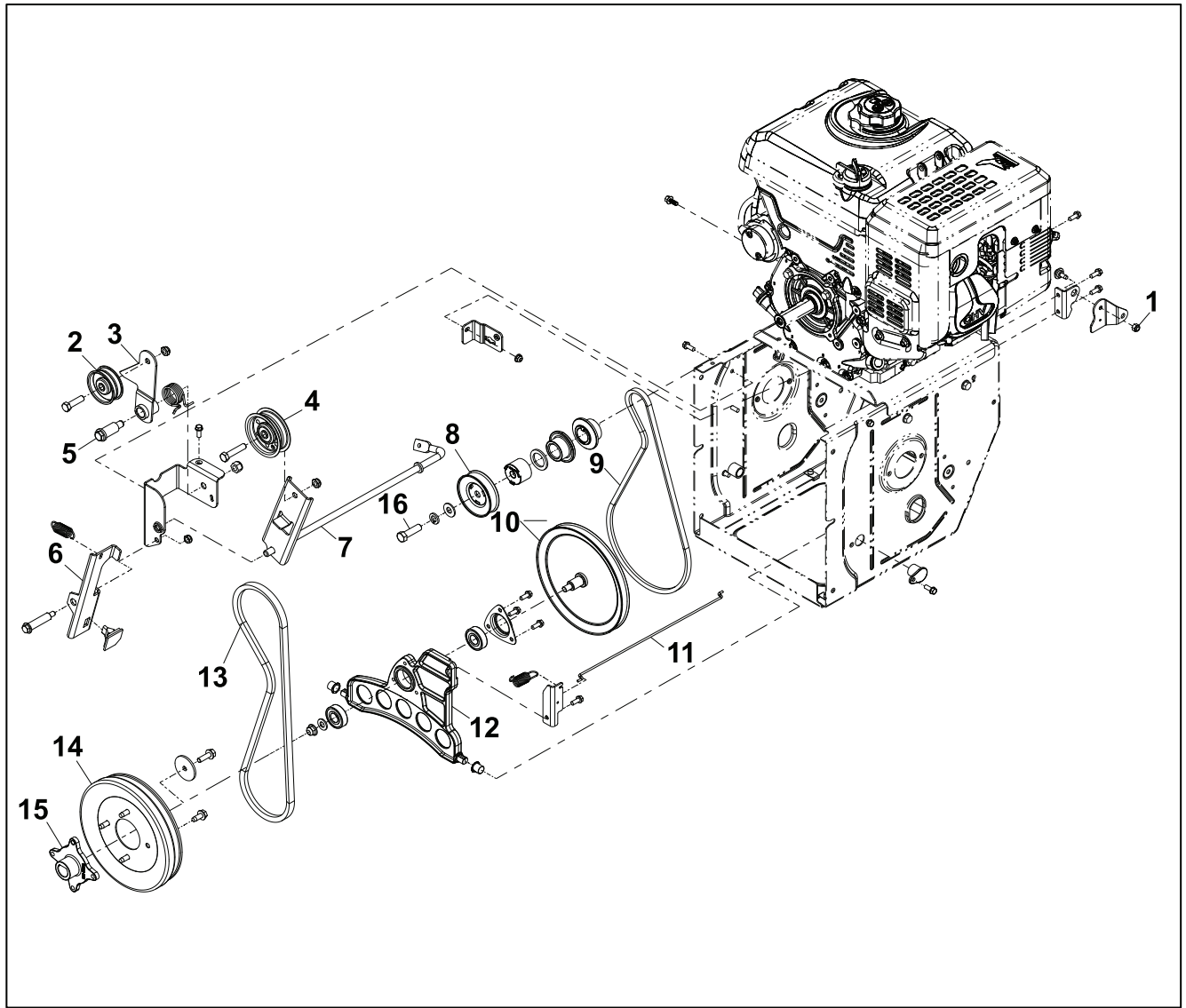


Figure 34

- | | |
|--|--|
| 1. Torque to 100 ± 10 in-lbs. (11.5 ± 1.15 Nm) | 9. V-Belt |
| 2. Idler Pulley | 10. Traction Pulley Asm. (friction plate-dry and free from oil) |
| 3. Traction Idler Arm | 11. Drive Link |
| 4. Impeller Idler Pulley | 12. Friction Wheel Plate |
| 5. Apply Anti-Seize | 13. V-Belt |
| 6. Brake Arm | 14. Impeller Pulley Single Sheave (pulley grooves-dry and free from oil) |
| 7. Impeller Clutch Arm Asm. | 15. Pulley Hub |
| 8. Idler Input Pulley (pulley grooves-dry and free from oil) | 16. Torque to 29 ± 3 ft-lbs. (3.3 ± 0.3 Nm) |

Auger Belt Replacement

Auger Belt Removal

1. Park the machine on a level surface. Stop the engine, wait for all moving parts to stop and remove the key.
2. Remove the belt covers.



Figure 35

-
3. Remove the belt guide. Avoid bending the guide.



Figure 36

-
4. Remove the bolt securing the engine pulley to the crankshaft. If necessary, hold the hub between the pulley and engine to keep the crankshaft from turning. Remove the pulley and the auger belt from the crankshaft.

Auger Belt Removal (continued)



Figure 37

-
5. Remove the fuel from the machine.
 6. Remove the auger belt from the impeller pulley.
 7. Tip the unit onto the front. Remove the bottom cover. Depress the auger lever to allow brake to be released.
 8. Pull the belt out of the bottom of the machine.



Figure 38

Auger Belt Installation

1. Using the auger lever, release the brake.
2. Install the belt through the bottom of the machine.
3. Install the auger belt onto the impeller pulley.
4. Install the Auger belt.
5. Install the bottom cover. Tip the unit into proper position.

Auger Belt Installation (continued)

6. Install the pulley and the auger belt to the crankshaft .Apply Loctite 243 (blue) to the bolt. Install the bolt securing the engine pulley to the crankshaft.
7. Install the belt guide.



CAUTION



When tightening the crank bolt, the engine must be cranked to prevent pinching the traction belt between the pulley sheaves. Failure to do so will damage the traction belt and crank bolt will have a low torque upon first use.

Traction Belt Replacement

Traction Belt Removal

1. Remove the fuel from the machine.
2. Remove the belt guide.
3. Remove the crank bolt.
4. Remove the impeller pulley.
5. Remove the belt from the crankshaft pulley.
6. Tip the unit on the front.
7. Remove the belt from the lower pulley.



Figure 39

Traction Belt Installation

1. Install the belt to the lower pulley.
2. Tip the unit back into proper position.
3. Install the belt to the crankshaft pulley.
4. Check for proper clearance between the belt and belt guide. Engage the auger belt and look between the belt and belt guide on the left side. There should be about 1/8 in. (3.2 mm) gap. Tighten the belt guide mounting bolts.

Traction Belt Installation (continued)



Figure 40

5. Install the pulley flange and the auger belt to the crankshaft .Apply Loctite 243 (blue) to the bolt. Install the bolt securing the engine pulley to the crankshaft.
6. Install the belt guide.



CAUTION



When tightening the crank bolt, the engine must be cranked to prevent pinching the traction belt between the pulley sheaves. Failure to do so will damage the traction belt and crank bolt will have a low torque.

Belt Adjustment

Belt adjustments are made by adjusting the control cables. See the Controls section for the procedure.



Auger Housing

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Scraper Replacement	7-4

General Information

The new Power Max HD models utilize an all new gearcase featuring a horizontal parting line and heavy duty steel gears.

Service and Repairs

Main Frame and Auger Housing

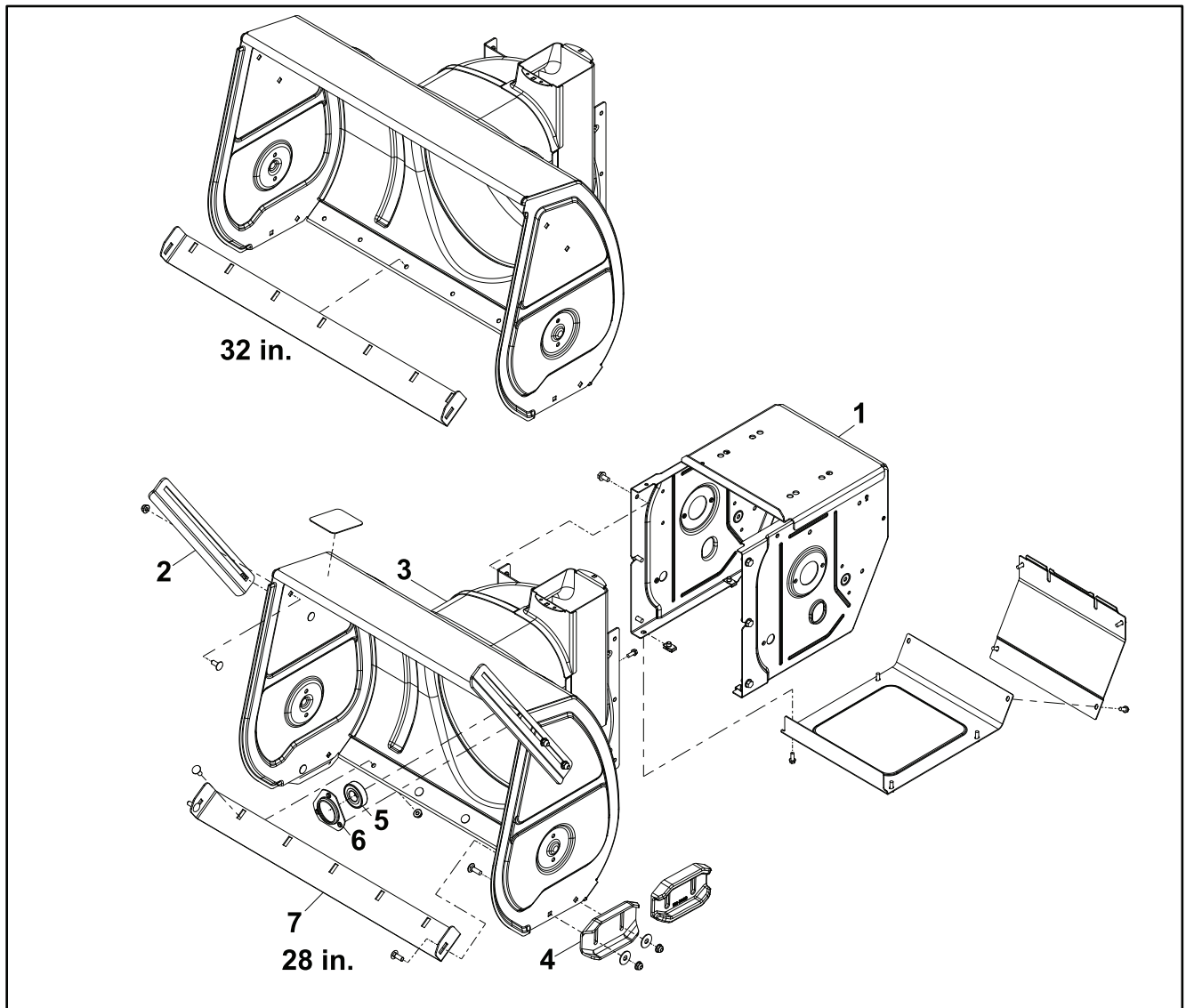


Figure 41

- | | |
|-----------------------|---------------------|
| 1. Traction Frame | 5. Ball Bearing |
| 2. Side Drift Breaker | 6. Bearing Retainer |
| 3. Auger Housing | 7. Scraper Blade |
| 4. Skid | |

Fixed Scraper

The fixed scraper is bolted solidly to the auger housing, it is intended to be raised slightly off the ground to minimize catching on pavement cracks and solid objects. The amount that it should be raised depends on how rough the ground is. The scraper is adjustable as the mounting holes are slotted.



Figure 42

Scraper Replacement

The scraper is attached with 5 carriage head bolts with locknuts for the 28 in. model, 7 carriage head bolts with locknuts for the 32 in. model. Install the new scraper but do not tighten the bolts until the scraper is adjusted.



Auger Gearbox

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General Information

The auger gearbox contains a worm gear and helical gear. It is driven by a clutched belt from the engine.

Service and Repairs

Gearbox, Auger and Impeller

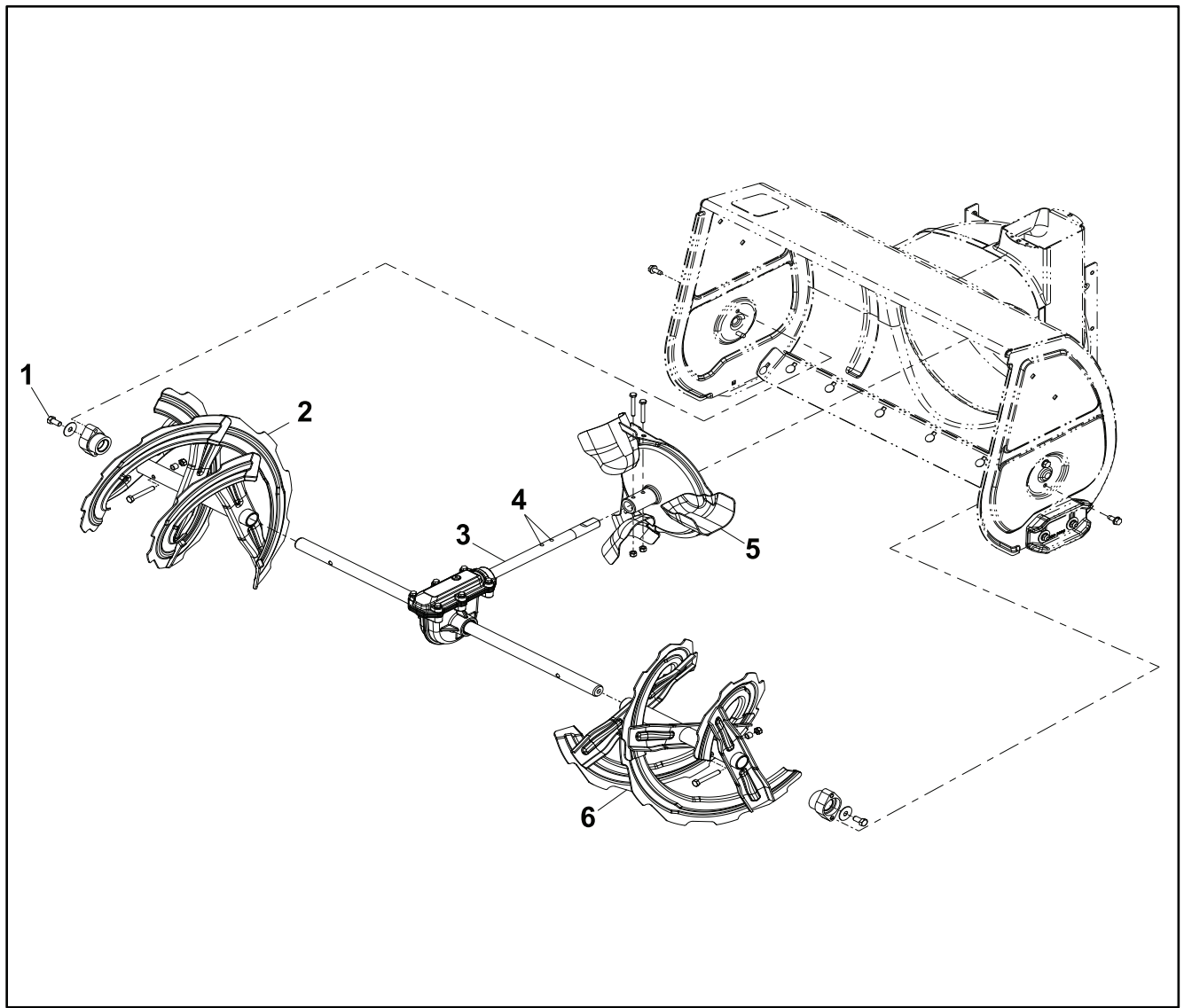


Figure 43

- | | |
|---|--|
| 1. Torque to 33 ± 3 ft-lbs. (3.8 ± 0.3 Nm) | 4. Apply light coat of anti-seize on shaft, $\frac{1}{2}$ in. outside of holes |
| 2. RH Auger | 5. Impeller |
| 3. Auger Gearcase Asm. (apply light coat of anti-seize) | 6. LH Auger |

Auger and Traction Assemblies

Separating the Auger and Traction Assemblies

1. Park the machine on a level surface. Stop the engine, wait for all moving parts to stop and remove the key.
2. Remove the 2 screws securing the cover.



Figure 44

-
3. Remove the belt guide around the crankshaft pulley, avoid bending the guide. See Belt Replacement chapter.



Figure 45

-
4. Remove the face gear cover.
 5. Disconnect the chute control cable.
 6. Disconnect the deflector cable from the deflector.

Separating the Auger and Traction Assemblies (continued)



Figure 46

-
7. Remove the 2 carriage bolts on the chute control rod.



Figure 47

-
8. Support the auger and traction housings with blocks of wood.
 9. Remove the friction wheel plate return spring.
 10. Remove the 3 cap screws on each side, connecting the auger to the traction assembly and separate the sections.

Separating the Auger and Traction Assemblies (continued)



Figure 48

-
11. Once separated, the auger pulley is in the open.
 12. Remove the pulley from the input shaft.
 13. Remove the 4 housing bolts on the outside of the auger housing.
 14. Slide the gear case, augers, and impellers out of the housing.

Auger Gear Box Replacement

Auger Gear Box Installation

1. Apply a thin coat of anti-seize to the auger shafts and the impeller shaft. Install the impeller and augers, secure with cap screws and locknuts. Slide the auger shaft bushings on the ends of the auger shaft.
2. Insert the impeller shaft through the bearing on the rear of the auger housing. The bearing mounting bolts should be slightly loose.
3. Secure the auger shaft bushings to the auger side plates with 4 cap screws (2 per side).
4. Apply a light coat of anti-seize to the impeller shaft and install the impeller pulley. Push the auger shaft to the rear and push the pulley forward and secure. There should be 1/8 in. (3 mm) front to back movement on the shaft.



Wheel Clutch Traction Drive System

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General Information

The handle mounted triggers allow clutching the wheels simultaneously or independently, one or both wheels can “freewheel.” This feature makes turning, reversing, and traction control simple and efficient.

When the drive is engaged, it is engaging the friction wheel. The hex shaft turns and drives the chain(s) to the 32-tooth sprocket by driving the 44-tooth gear powering the wheels. Each wheel is declutched by engaging its handle mounted trigger; this pulls the clutch cable which rotates the shift collar. The shift collar following the cam is forced outwards toward the wheel, in turn, pushing into the spring loaded pawls to disengage the 11-tooth pinion gear from the 32-tooth sprocket.

Service and Repairs

Traction Drive Assembly (Wheel Clutch Models)

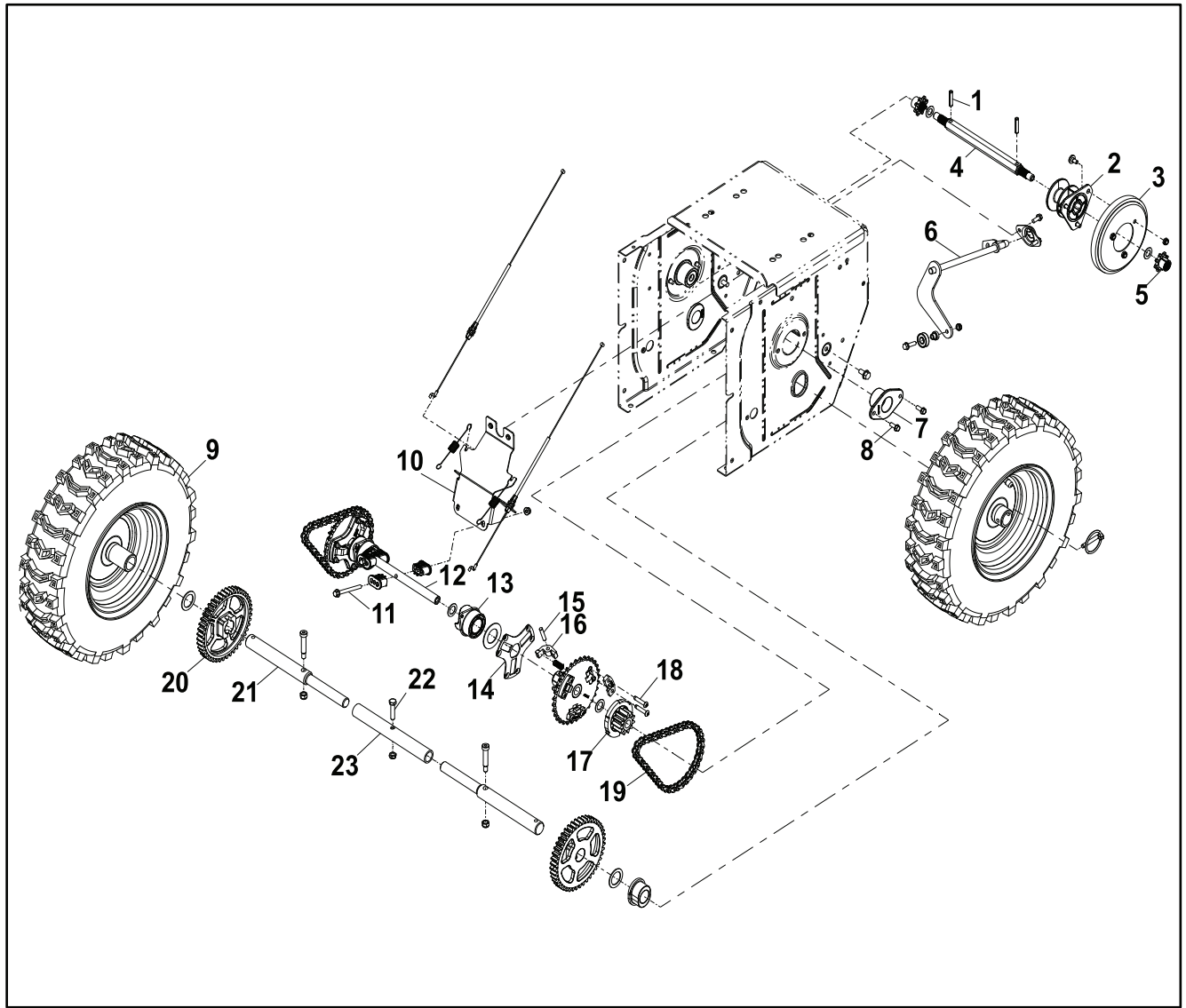


Figure 49

- | | |
|--|--|
| 1. Slotted Roll Pin Centered in Shaft | 13. LH Shift Collar |
| 2. Trunnion | 14. Pawl Pin Retainer |
| 3. Friction Wheel (needs to be dry and free from oil) | 15. Dowel Pin (apply light coat of oil) |
| 4. Hex Shaft (apply light coat of oil) | 16. Clutch Pawl |
| 5. 8-Tooth Gear Pinion | 17. 11T Gear Asm. |
| 6. Shift Rod | 18. Torque to 100-125 in-lbs. (11.5-14.4 Nm) |
| 7. Bearing Retainer | 19. Roller Chain (master link toward clip toward center of unit) |
| 8. Torque to 50-70 in-lbs. (19.5-34.5 Nm) | 20. Axle Gear (apply grease) |
| 9. LH and RH tires must be rotated with "V" tread rotating forward | 21. Axle (apply light coat of anti-seize) |
| 10. Shift Collar Brace | 22. Tighten to torque of locking feature |
| 11. Torque to 50-70 in-lbs. (5.7-8.0 Nm) | 23. Axle Tube |
| 12. Intermediate Shaft (apply light coat of oil) | |

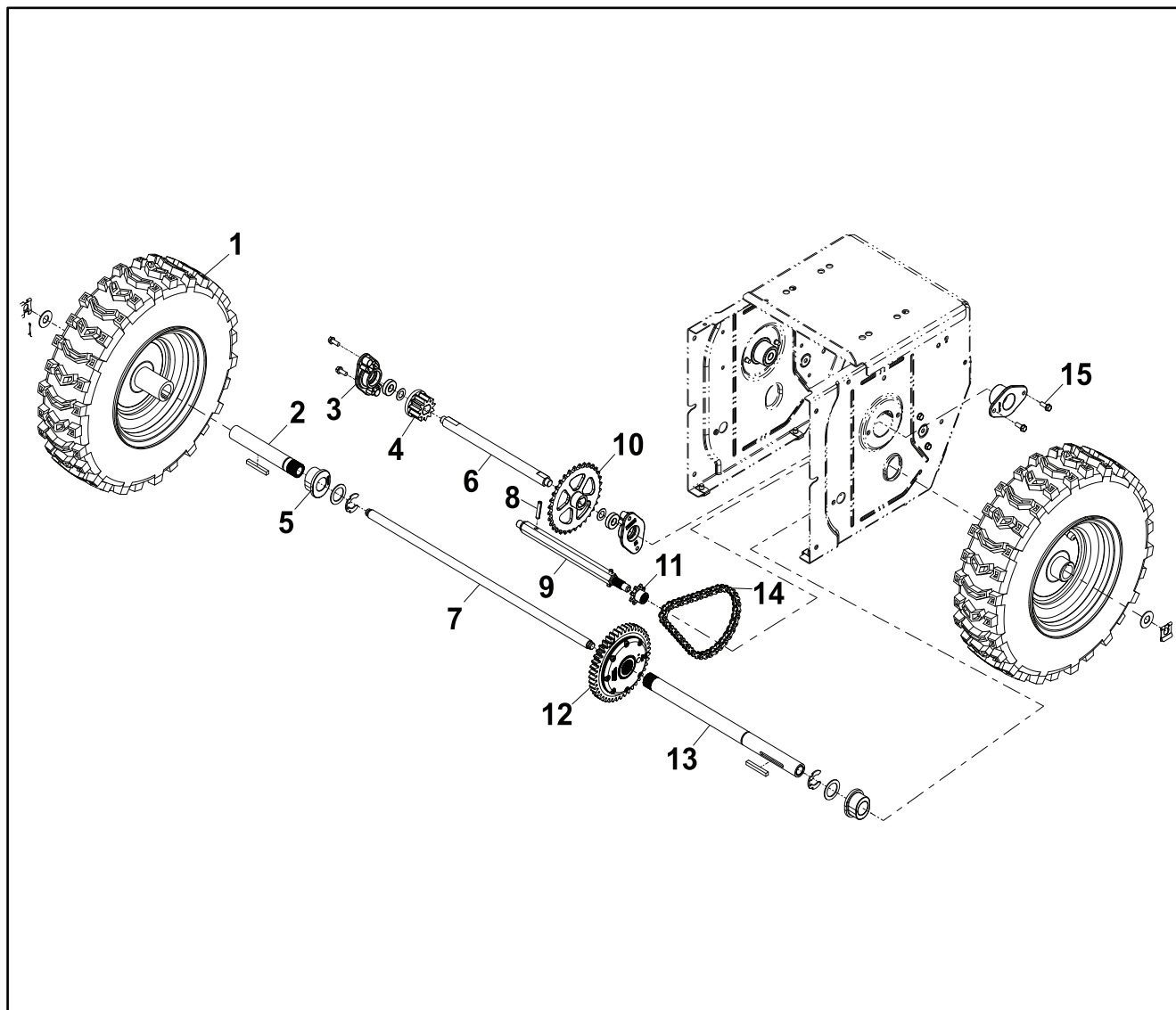


Figure 50

- | | |
|---|---|
| 1. LH and RH tires must be oriented with "V" tread rotating forward | 9. Hex Shaft (apply light coat of oil) |
| 2. RH Tube Axle | 10. Sprocket (apply a coating of grease) |
| 3. Intermediate Bearing Retainer | 11. 8-Tooth Pinion Gear |
| 4. 11-Tooth Gear | 12. Transmission (apply a coating of grease) |
| 5. Axle Bushing | 13. LH Tube Axle |
| 6. HD Intermediate Shaft | 14. Roller Chain (master link clip toward center of unit) |
| 7. HD Base Axle | 15. Torque to 50–70 in-lbs. (19.5–34.5 Nm) |
| 8. Slotted Roll Pin Centered in Shaft | |

Traction Drive System Replacement (Wheel Clutch Models)

Traction Drive System Removal (Wheel Clutch Models)

1. Park the machine on a level surface. Stop the engine, wait for all moving parts to stop and remove the key.
2. Remove the fuel from the machine.
3. Disconnect the shift linkage and tip the machine forward on auger housing.
4. Remove the upper and lower covers.



Figure 51

-
5. Remove the 2 cap screws securing the bearing retainers securing the hex shaft to each side of the traction assembly. Remove both bearing retainers.

Note: This will ease removal and reinstallation of the drive chain.



Figure 52

-
6. Remove the 2 bolts (1 per side) that hold the wheel clutch assembly to the housing.

Traction Drive System Removal (Wheel Clutch Models) (continued)



Figure 53

-
7. Remove the 2 extension springs by unhooking the springs from the lower clutch collar and housing.



Figure 54

-
8. Remove the clutch cables by rotating the shift collar up to release tension. Maneuver the Z-bend of the cable end out of the upper clutch collar.

Traction Drive System Removal (Wheel Clutch Models) (continued)

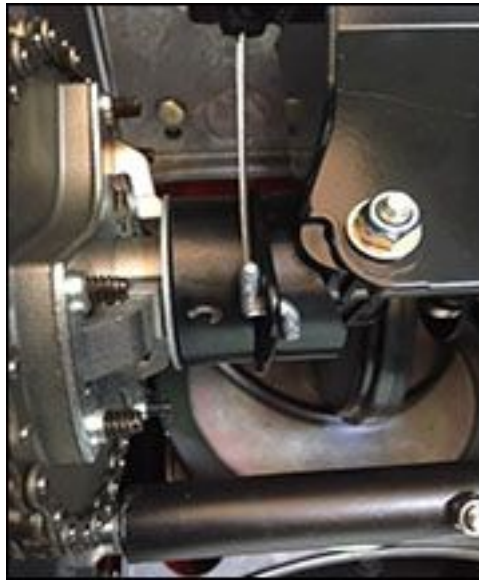


Figure 55

-
9. Remove the 2 bolts on the end of the shift brace from the housing.



Figure 56

-
10. Remove both roller chains from the 32-tooth gears. Lift the wheel clutch assembly from the traction unit.

Traction Drive System Removal (Wheel Clutch Models) (continued)



Figure 57

Note: Install a screw and washer onto each end of the shaft to keep the parts from sliding off.



Figure 58

11. Remove both bolts on either side of the axle from the 44-tooth gear.

Traction Drive System Removal (Wheel Clutch Models) (continued)



Figure 59

-
12. Slide the axle shaft out through the axle bushing one at a time, holding onto the 44-tooth gear.



Figure 60

-
13. Slide the tube of the axle shaft through the housing.
14. Remove the other half of the axle shaft with the 44-tooth gear.

Traction Drive System Removal (Wheel Clutch Models) (continued)

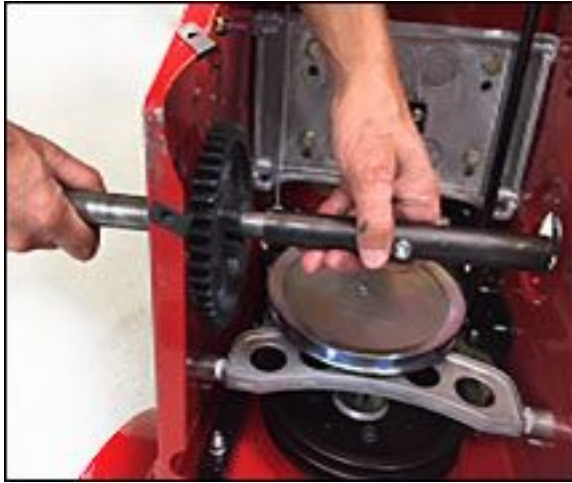


Figure 61

-
15. Remove the hex shaft bearing retainers.
 16. Remove the hex shaft clutch assembly/friction wheel from the housing.



Figure 62

-
17. Remove the friction wheel from the hex shaft by removing the 3 nuts and bolts that secure the friction wheel to the trunnion on the hex shaft.

Traction Drive System Removal (Wheel Clutch Models) (continued)



Figure 63

18. Remove the belt cover.



Figure 64

19. Remove the extension spring from the housing.

20. Remove the pivot pulley bolts on either side of the housing.

21. Remove the pivot pulley plate assembly from the housing.

Traction Drive System Installation (Wheel Clutch Models)

1. Install the pivot plate assembly onto the housing and install the belt. The idler pulley should be pushed away to install the pivot plate.

2. Install the chains and pinion onto the hex shaft.

Note: The master link clip should be placed in the center of the unit.

3. Install the friction disk and hex shaft.

4. Install the hex shaft bearing retainers.

5. The 44-tooth gears should have the hub facing inward before installation.

Traction Drive System Installation (Wheel Clutch Models) (continued)

6. Before installing the axle with the 44-tooth sprockets, apply a light coat of anti-seize to the outer 5 inches of both ends of the axle shaft. Apply a light coat to the inside diameter at both ends of the tube (about 4 inches).

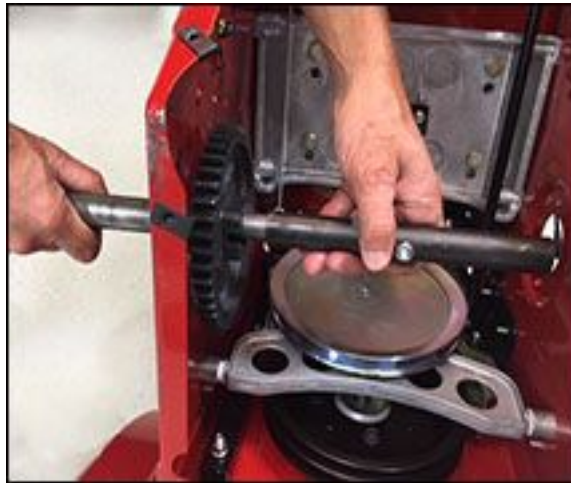


Figure 65

-
7. Install the axle shaft with the 44-tooth gear.
 8. Insert the tube of the axle shaft through the housing.
 9. Install the other axle.
 10. Lightly coat the 44-tooth sprocket with grease.
 11. Before installing the wheel clutch assembly, lightly coat the 11-tooth gear of the wheel clutch with grease.
 12. Install the wheel clutch assembly with the brace shift plate facing away and up towards the housing. The collars are installed with the "RIGHT" and "LEFT" facing inward.
 13. Route the chains around the 32-tooth sprocket of the clutch assembly.
 14. Attach the shift brace plate to the housing.
 15. Torque the 2 intermediate shaft screws to 170–225 in-lbs. (19.2–33.9 Nm).
 16. Install the 2 extension springs from the lower part of the shift collar flange to the housing.
 17. Install the Z-bend of the clutch cable from the outside to the inside of the shift collar.
 18. Install the shift rod onto the housing, making sure the bearing fits into the trunnion.
 19. Install the upper and lower covers, with the upper cover over-lapping the lower cover.
 20. Connect the shift linkage to the shift rod.
 21. Install the wheels. The wheels are installed with the "V" tread rotating forward.
 22. Install the belt cover.
 23. Check the clutch cable adjustment and adjust if necessary. See Adjustments.



Traction Drive System Replacement (Autoturn Models)

Traction Drive System Removal (Autoturn Models)

1. Park the machine on a level surface. Stop the engine, wait for all moving parts to stop and remove the key.
2. Remove the fuel from the machine.
3. Disconnect the shift linkage and tip the machine forward on the auger housing.
4. Remove both wheels and wheel keys.
5. Remove the upper and lower covers.
6. Remove the 2 screws securing the bearing retainers and hex shaft to each side of the traction assembly. Remove both bearing retainers.
7. Remove the hex shaft and friction wheels.
8. Remove the 4 screws (2 per side) securing the intermediate shaft to the housing.
9. Remove the snap ring securing the axle bearing to the housing.
10. Slide the axle bearing onto the drive shaft.



Figure 66

-
11. Pull the axle through the housing.

Traction Drive System Removal (Autoturn Models) (continued)



Figure 67

-
12. Remove the stub shaft, transmission, and axle from the machine.



Figure 68

Traction Drive System Installation (Autoturn Models)

1. Install the axle, transmission, and stub shaft onto the machine.
2. Place the axle into position on the housing.
3. Slide the axle bearing into position.
4. Install the snap ring securing the axle bearing to the housing.
5. Install the hex shaft and friction wheels.
6. Install both bearing retainers. Install the 2 screws securing the bearing retainers and hex shaft to each side of the traction assembly.
7. Install the 4 screws (2 per side) securing the intermediate shaft to the housing.
8. Install both wheel keys and wheels.

Traction Drive System Installation (Autoturn Models) (continued)

9. Tip machine backwards, off the auger housing.
10. Connect the shift linkage.
11. Put fuel into the machine.

Wheel Clutch Replacement

Wheel Clutch Disassembly

1. Remove the 11-tooth gear from the intermediate shaft.



Figure 69

-
2. Slide the washer behind the 11-tooth gear off the shaft.
 3. Remove the 32-tooth sprocket and the thrust washer from the shaft.



Figure 70

-
4. Remove the shift collar and flat washer from the shaft.

Wheel Clutch Disassembly (continued)

Note: Shift collars are marked right and left at the top of the inside flange.



Figure 71

-
5. Unbolt the 4 guide collars from the shaft.



Figure 72

-
6. Remove the wheel clutch components from the other end of the shaft.
 7. Remove the 3 (per gear) compression springs from under the pawls and set aside.

Wheel Clutch Disassembly (continued)



Figure 73

-
8. Remove the 6 (per side) T-27 torx screws that secure the pawl retainer plate.
 9. Remove the retainer plate off of the sprocket hub.



Figure 74

-
10. Remove the pawl pins and pawls from the 32-tooth sprocket.
 11. Repair or replace defective components.

Wheel Clutch Reassembly

Note: Apply a light coat of SAE 30W oil to intermediate shaft before assembly.

1. Set the 32-tooth sprocket on a flat surface and install the pawls.
2. With the pawls facing up and away from the hub, slide the retainer plate onto the hub. Make sure the pins are seated flush and the retainer plate sits flush onto the gear.

Wheel Clutch Reassembly (continued)

3. Clamp or hold the gear and turn it over to properly install the 3 pawl supports and torx screws.



4. Torque the T-27 torx screws to 100–125 in-lbs. (11.3–14.1 Nm).
5. Install the 4 guide collars to the shaft with the shift brace plate.



Figure 75



6. Torque the screws to 50–70 in-lbs. (5.65–7.9 Nm).
7. Slide the flat washers into position next to the guides.
8. Install the RIGHT and LEFT collar into position.

Note: The top flanges of the shift collars have “left” and “right” stamped into them. Install accordingly on the right and left ends of the shaft with the shift brace plate oriented as shown.



Figure 76

9. Install the compression springs under the pawls.
10. Slide the thrust washer onto the 32-tooth sprocket.

Wheel Clutch Reassembly (continued)



Figure 77

11. Slide the complete 32-tooth gear sprocket onto the shaft.



Figure 78

12. Install the flat washer.

13. Make sure the 11-tooth gear slides on so it is flush with the end of the shaft.

Wheel Clutch Reassembly (continued)



Figure 79

-
14. Make sure the pawls are up against the thrust washer and the spring are not binding and are compressing properly.



Figure 80

-
15. Apply a light coat of grease to the 11-tooth gear. Repeat the process for the opposite side.
16. Assembly can now go back into the housing.

Wheel Clutch Reassembly (continued)



Figure 81



Discharge Chute

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General Information

The new Power Max HD snow blowers are all made with steel discharge chutes.

Service and Repairs

Chute Assembly

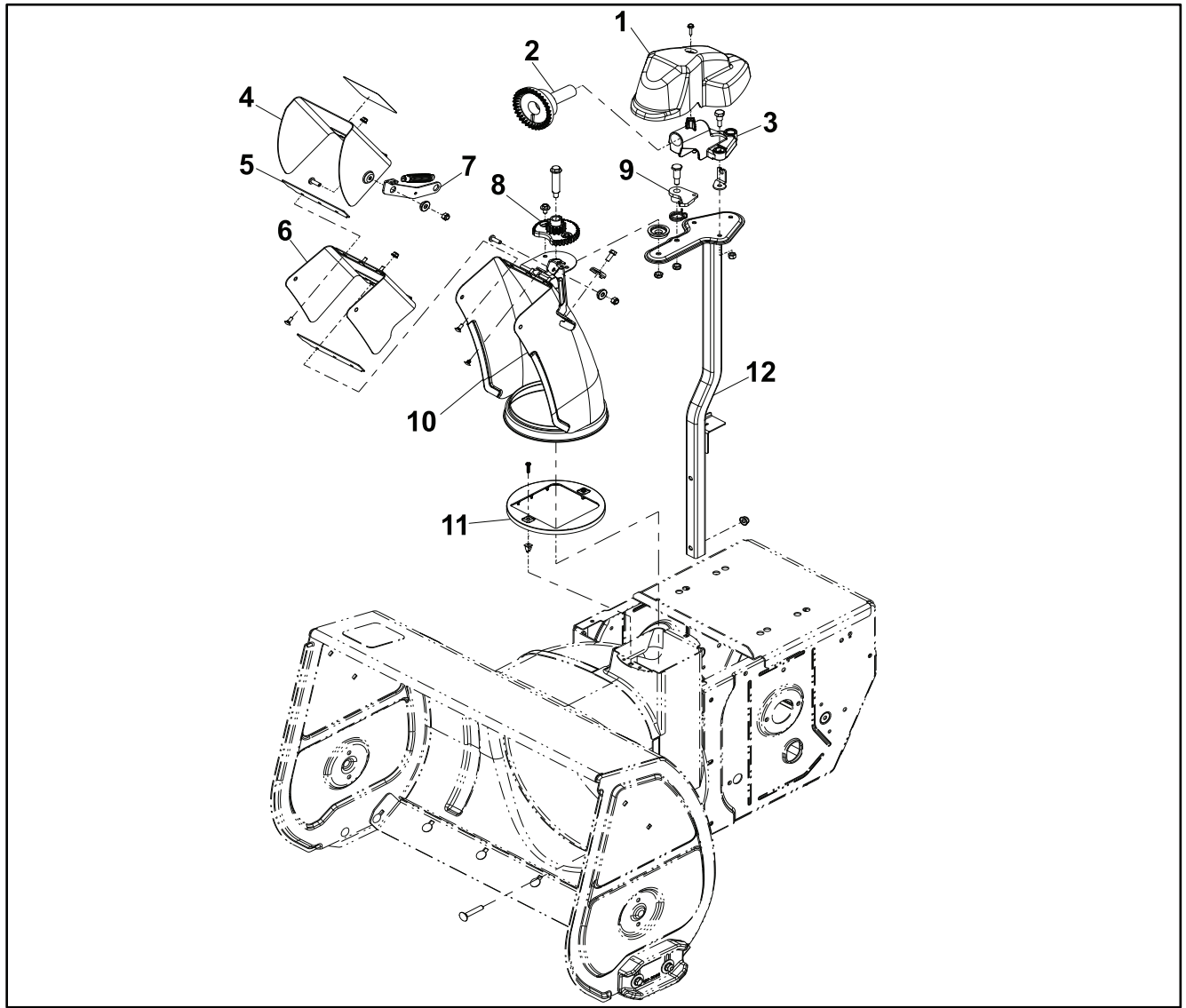


Figure 82

- | | |
|--------------------------|----------------------|
| 1. Face Gear Cover | 7. Deflector Link |
| 2. Face Gear | 8. Chute Gear |
| 3. Face Gear Mount | 9. Chute Latch |
| 4. Upper Deflector Asm. | 10. Lower Chute Asm. |
| 5. Deflector Gasket | 11. Chute Guide |
| 6. Middle Deflector Asm. | 12. Chute Post Asm. |

Chute and Face Gear Cover Replacement

Chute and Face Gear Cover Removal

1. Park the machine on a level surface. Stop the engine, wait for all moving parts to stop and remove the key.
2. Remove the cable from the clamp and deflector link.



Figure 83

-
3. Remove the screw retaining the gear cover. Lift the front of the cover and slide towards the rear.



Figure 84

-
4. Remove the bolt on the chute gear.

Chute and Face Gear Cover Removal (continued)



Figure 85

-
5. Remove the chute.

Chute and Face Gear Cover Installation

1. Install the chute. Secure with a bolt on the face gear.
2. Install the front of the cover into position. Secure with a screw.

Chute Gear Replacement

Chute Gear Removal

1. Park the machine on a level surface. Stop the engine, wait for all moving parts to stop and remove the key.
2. Remove the screw on the face gear cover.
3. Raise the front of the cover and slide towards the rear.
4. Remove the locknut from the bottom of the 3 shoulder screws.
5. Disconnect the latch cable from the cable anchor.
6. Raise the front of the face gear and slide towards the chute rod.
7. Remove the shoulder bolt from the chute gear.
8. Remove the 2 screws securing the gear to the bracket. Remove the gear.

Note: A plastic spacer is under the bracket.

Chute Gear Installation

1. Attach the chute gear to the bracket. Secure with 2 screws.
2. Place the spacer side up on the support tube, then set the gear and bracket down on it. The shoulder bolt goes through and is secured with the washer and locknut.
3. Slide the face gear mount on the chute rod, if removed. Slide the face gear on the chute rod.
4. The face gear has a rib molded into it and the chute gear has 2. Line up the ribs and place the face gear mount onto the support tube.

Chute Gear Installation (continued)

5. Install the end of the latch cable in the latch and install the cable conduit into the cable anchor.



Foldout Drawings

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Electrical Drawing Abbreviations

The following abbreviations are used for wire harness colors on the electrical schematics and wire harness drawings in this chapter.

Abbreviation	Color
BK	Black
BR or BM	Brown
BU	Blue
GN	Green
GY	Gray
OR	Orange
PK	Pink
R or RD	Red
T	Tan
VIO	Violet
W or WH	White
Y or YE	Yellow

Numerous harness wires include a line with an alternate color. These wires are identified with the wire color followed by a / or _ and then the line color (e.g, R/BK is a red wire with a black line; OR_BK is an orange wire with a black line).

Note: The electrical harness drawings in this chapter identify both the wire color and the wire gauge. For example, 16 BK on a harness diagram identifies a 16 gauge wire with black insulation.

Note: A splice used in a wire harness will be identified on the wire harness diagram by SP. The manufacturing number of the splice is also identified on the wire harness diagram (e.g., SP01 is splice number 1).

Electrical Schematic with Hand Warmers

