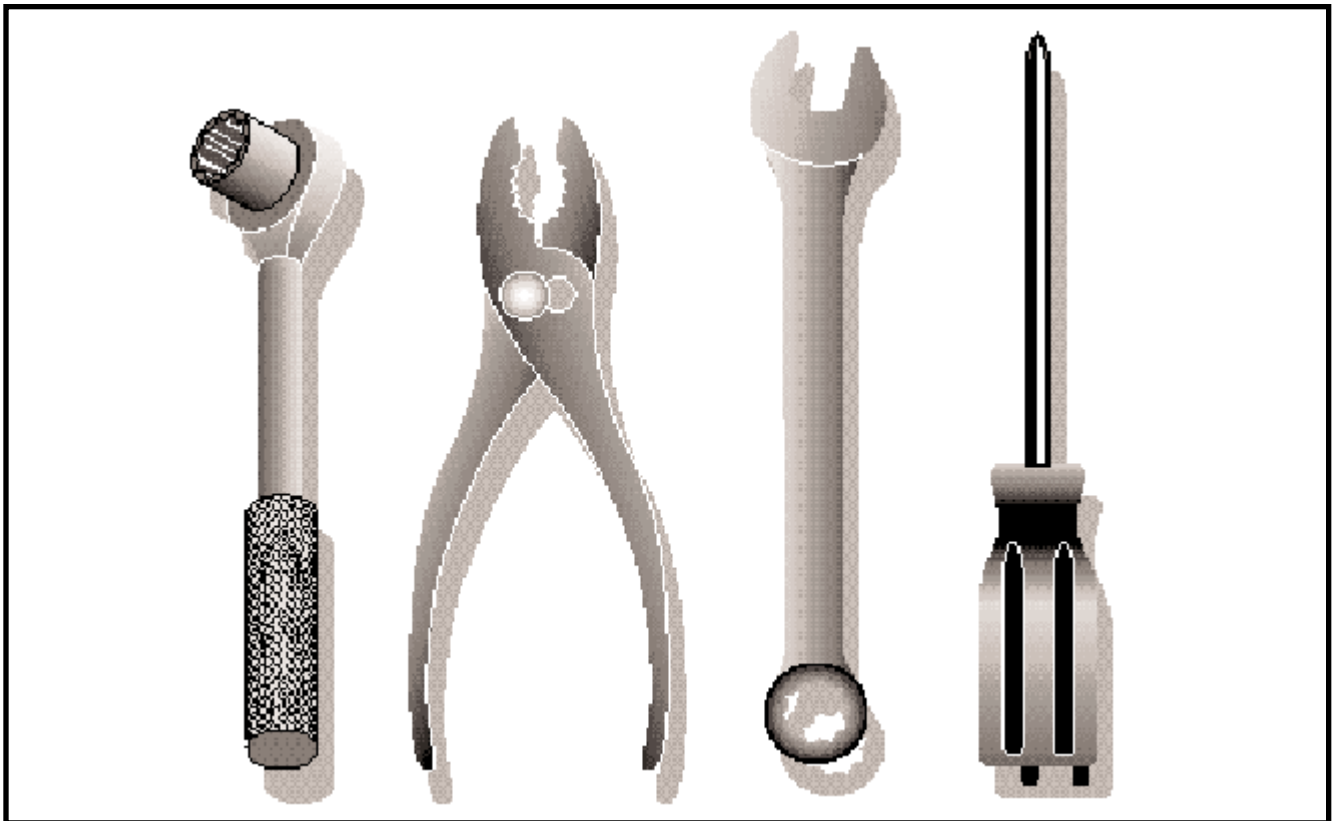


YTH 1848 XP B

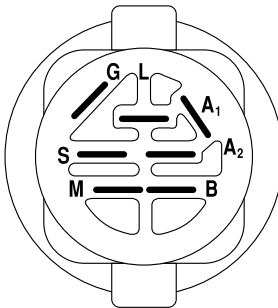
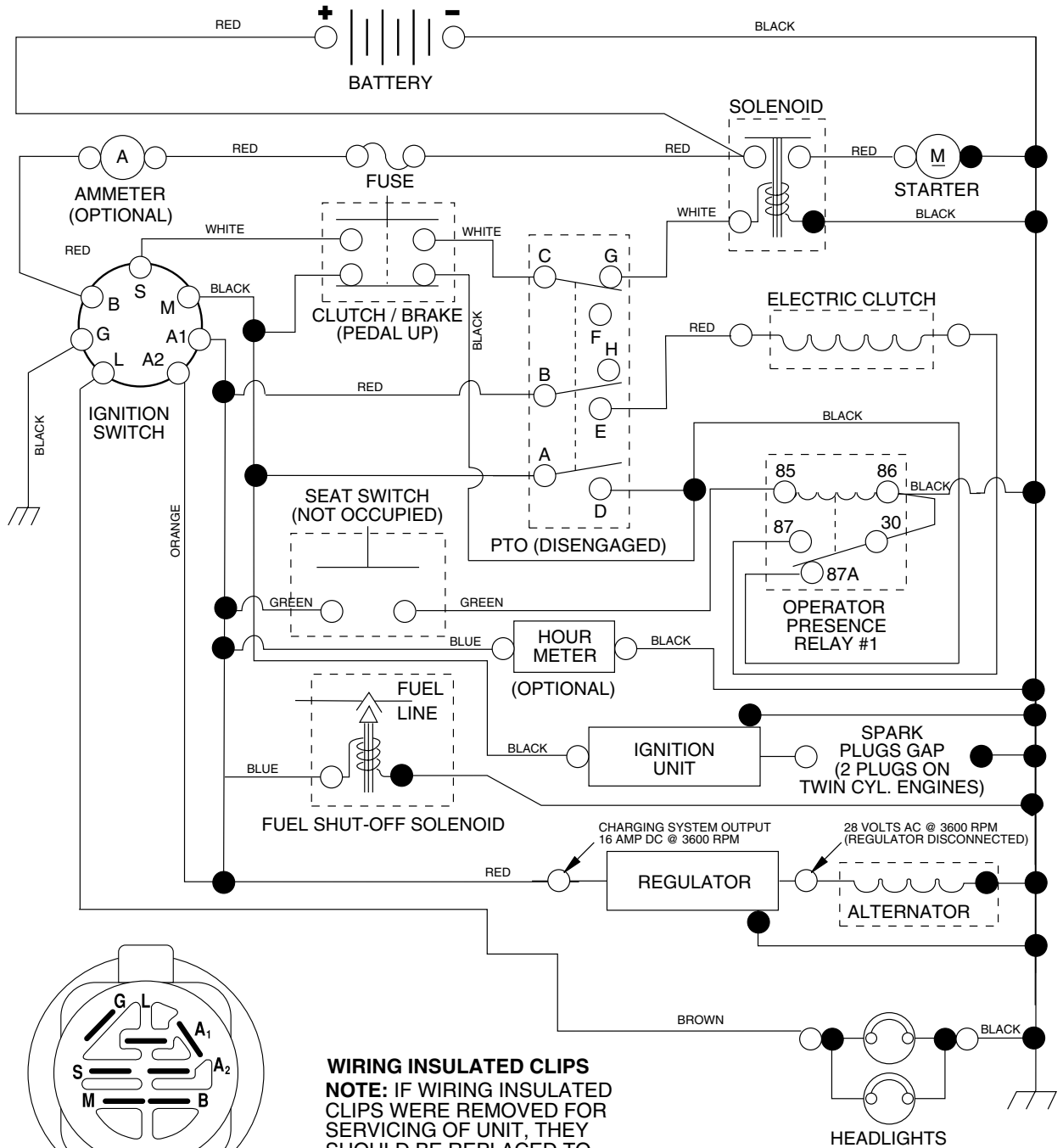
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Repair Parts Manual

Ride Mower

TRACTOR - MODEL NO. YTH1848XP (YTH1848XPB), PRODUCT NO. 954 56 72-60 SCHEMATIC



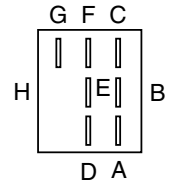
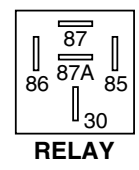
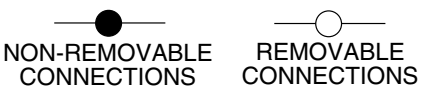
IGNITION SWITCH

POSITION	CIRCUIT	"MAKE"
OFF	M+G+A1	NONE
RUN/LIGHT	B+A1	A2+L
RUN	B+A1	NONE
START	B + S + A1	NONE

WIRING INSULATED CLIPS
NOTE: IF WIRING INSULATED CLIPS WERE REMOVED FOR SERVICING OF UNIT, THEY SHOULD BE REPLACED TO PROPERLY SECURE YOUR WIRING.

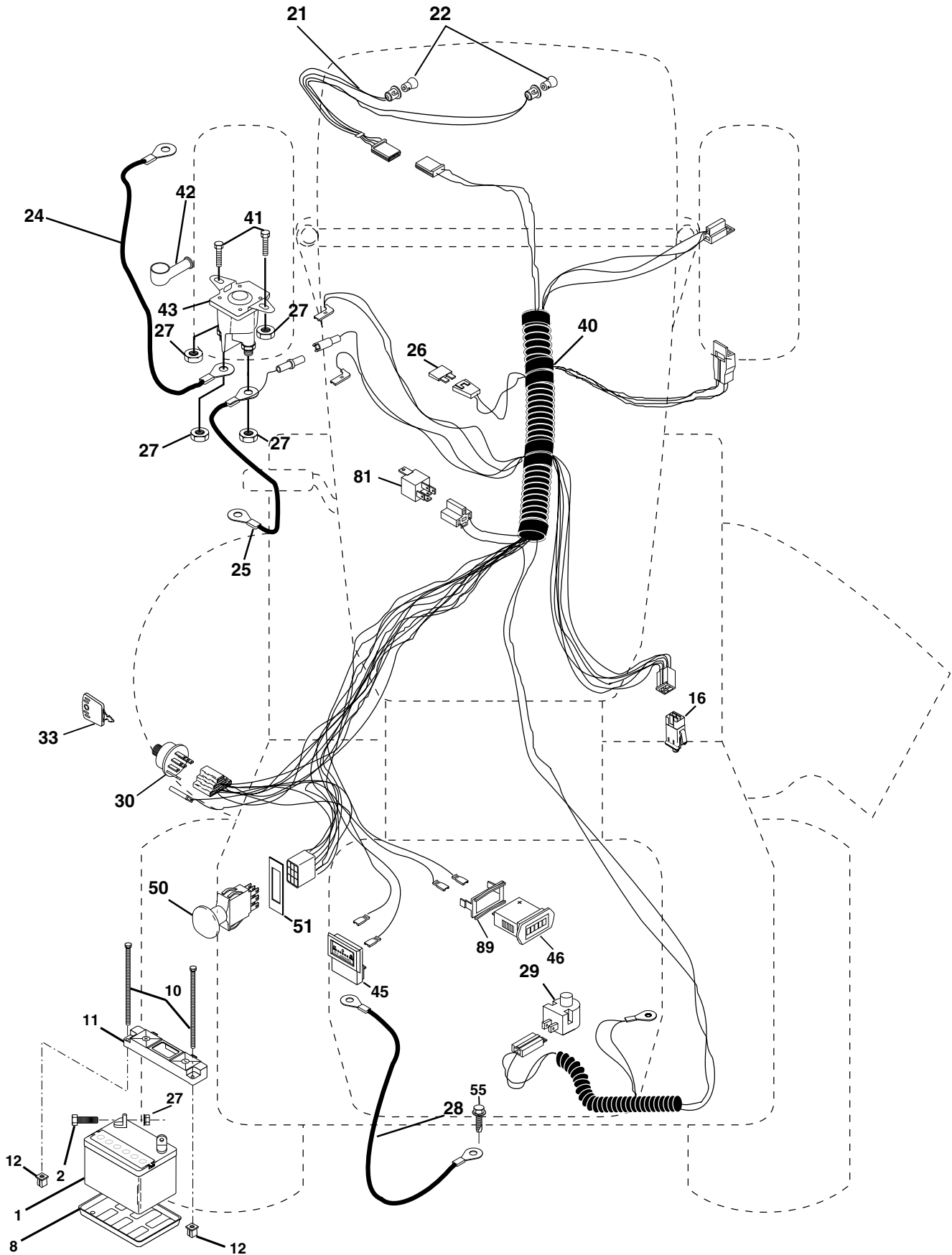
PTO SWITCH

POSITION	CIRCUIT
OFF	C + G, B + H
ON	C + F, B + E, A + D



REPAIR PARTS

TRACTOR - MODEL NO. YTH1848XP (YTH1848XPB), PRODUCT NO. 954 56 72-60
ELECTRICAL



REPAIR PARTS

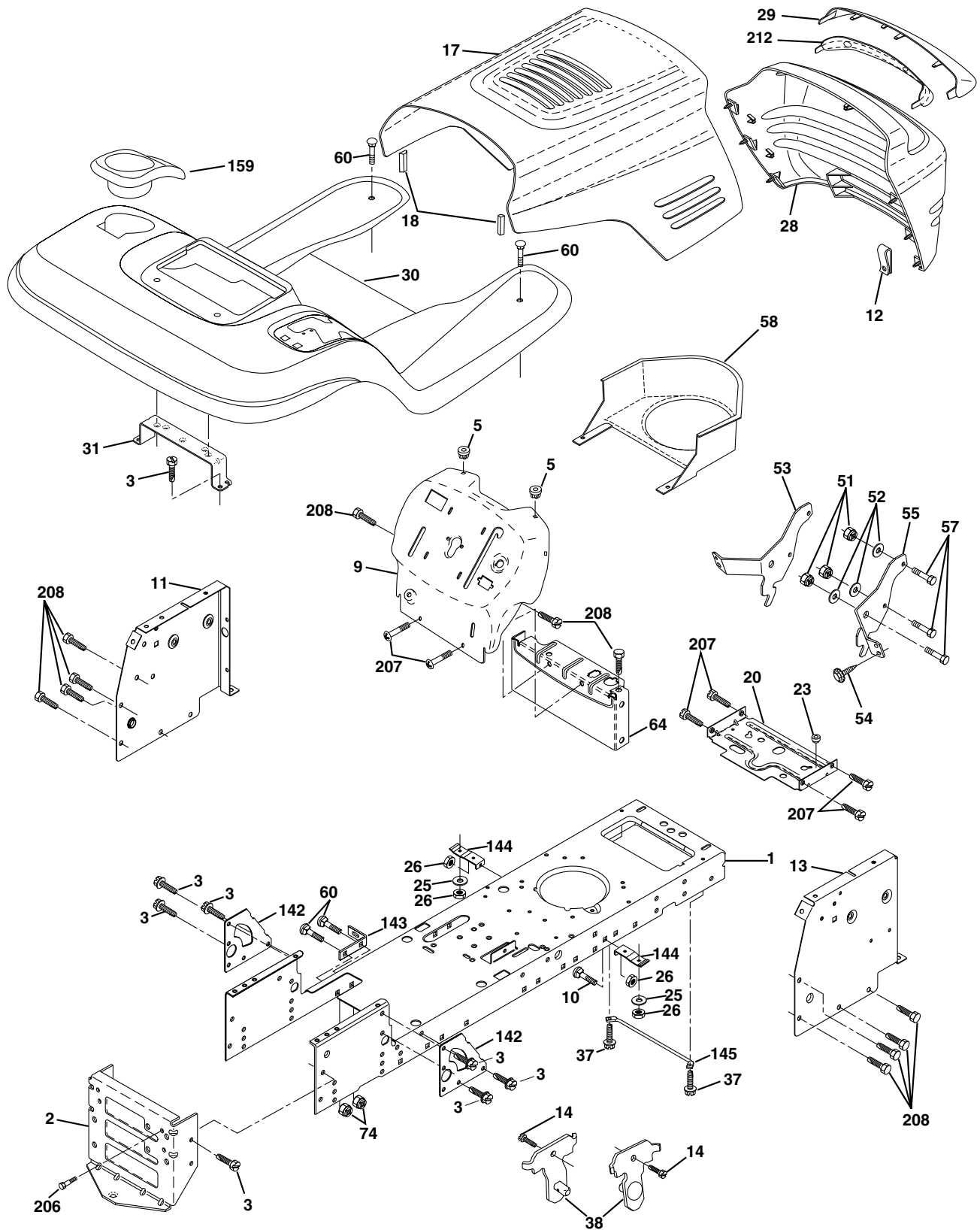
TRACTOR - MODEL NO. YTH1848XP (YTH1848XPB), PRODUCT NO. 954 56 72-60
ELECTRICAL

KEY NO.	PART NO.	DESCRIPTION
1	532144927	Battery 12 Volt 35 AMP
2	874760412	Bolt Hex Hd 1/4-20unc X 3/4
8	532124886	Tray Battery
10	532145211	Bolt Brt Frt 1/4-20 x 75 Ainc
11	532150109	Holddown Battery Front Mount
12	532145769	Nut Push Nylon 1/4" Battery Frt
16	532153664	Switch Interlock Push-In
21	532166181	Harness Asm Light W/4152j
22	532004152	Bulb Light #1 156
24	532124780	Cable Battery 6 Ga 11" red
25	532146148	Cable Battery 6 Ga 22" red w/16 wire
26	532175158	Fuse
27	873510400	Nut Keps Hex 1/4-20 Unc
28	532145491	Cable Ground 6 Ga 21" black
29	532160784	Switch Plunger Nc Gray
30	532175566	Switch Ign
33	532140401	Key Ign Molded Generic
40	532178441	Harness Ign.
41	871110408	Bolt Blk Fin Hex 1/4 - 20 x 1/2
42	532131563	Cover Terminal Red
43	532175141	Solenoid
45	532122822	Ammeter Rectangular 15 Amp
46	532169635	Meter Hour
50	532174651	Switch PTO
51	532140405	Ring Retainer TTO
55	817490508	Screw Thdrol 5/16-18 x 1-1/2 Tyt
81	532109748	Relay Asm.
89	532169639	Bracket Snap-In Hourmeter

NOTE: All component dimensions given in U.S. inches.
1 inch = 25.4 mm.

REPAIR PARTS

TRACTOR - MODEL NO. YTH1848XP (YTH1848XPB), PRODUCT NO. 954 56 72-60
CHASSIS AND ENCLOSURES



REPAIR PARTS

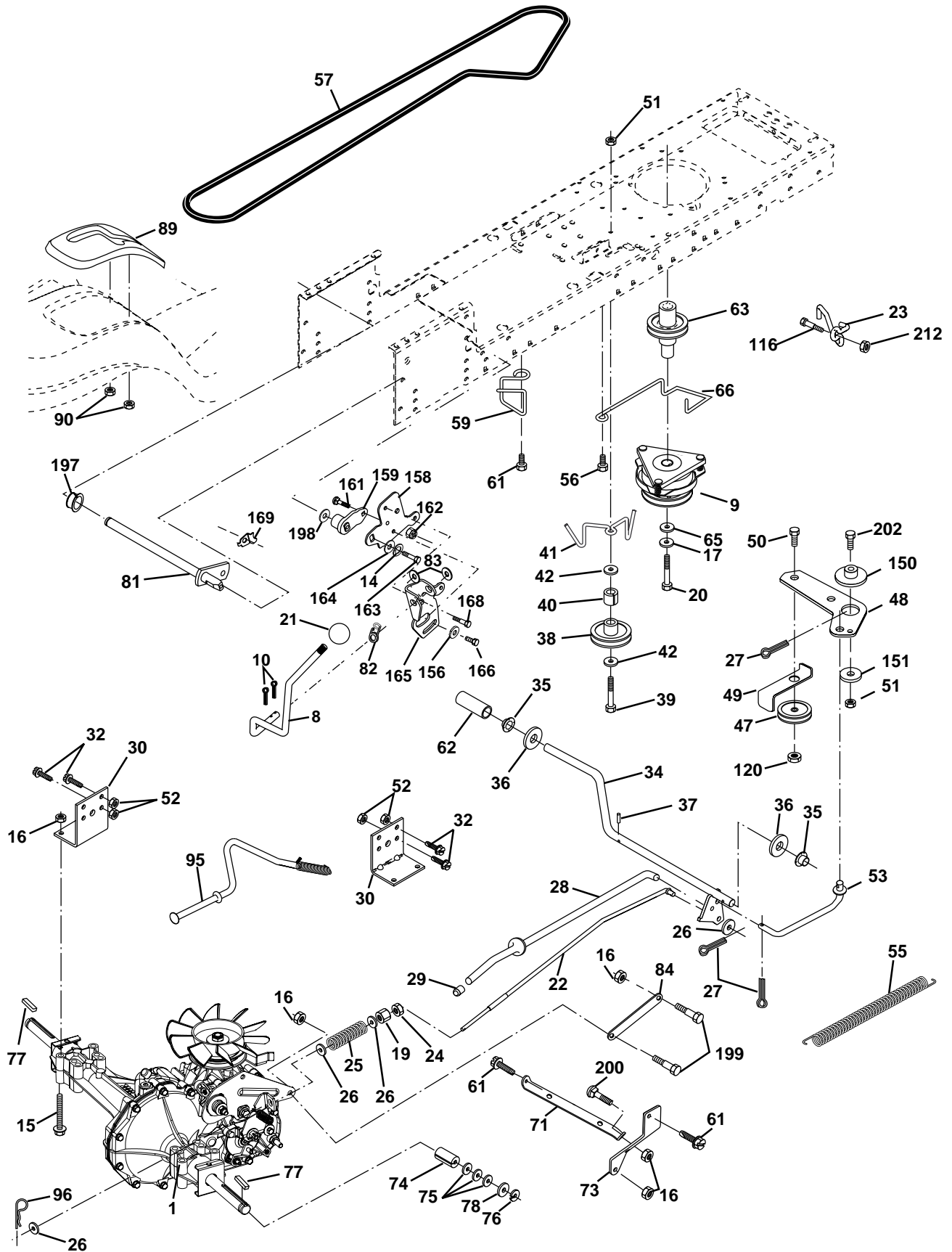
TRACTOR - MODEL NO. YTH1848XP (YTH1848XPB), PRODUCT NO. 954 56 72-60 CHASSIS AND ENCLOSURES

KEY NO.	PART NO.	DESCRIPTION
1	532174619	Chassis Stamping
2	532176554	Drawbar
3	817060612	Screw 3/8-16x3/4
5	532155272	Bumper
9	532171682	Dashboard
10	872140608	Bolt Rdhd Sqnk 3/8-16 Unc x 1
11	532155927	Panel Dash Lh
12	532145660	Clip Tinnerman Grille
13	532172106	Panel Dash Rh
14	817490608	Screw Thdrol 3/8-16 x 1/2
17	532162237	Hood
18	532126938	Bumper
20	532156437	Plate Mtg Battery/Fuel Tank
23	532124028	Bushing
25	819131312	Washer 13/32 x 13/16 x 12 Ga.
26	873800600	Nut Lock w/Insert 3/8-16 UNC
28	532170475	Grille Lens Asm
29	532176645	Lens
30	532171625	Fender
31	532139976	Bracket
37	817490508	Screw Thdrol 5/16-18 x 1/2
38	532175710	Bracket Asm Pivot Mower Rear
51	873800400	Nut Lock w/Insert 1/4-20
52	819091416	Washer 9/32 x 7/8 x 16 Ga.
53	532144697	Bracket Grille Lh
54	532161464	Screw Hex Wshd 8-18 x 7/8
55	532144696	Bracket Grille Rh
57	874780412	Bolt Fin Hex 1/4-20 Unc x 3/4
58	532162266	Duct Air
60	872140606	Bolt RDHD SQNK 3/8-16 x 3/4
64	532154798	Dash Lower Stlt
74	873680600	Nut Crownlock 3/8-16
142	532165867	Plate Reinforcement Stlt
143	532154966	Bracket Swaybar Chassis
144	532175582	Bracket Ft Rest
145	532156524	Rod Pivot Chassis Hood
159	532166508	Cupholder YTGT Grey
206	532170165	Bolt Shoulder 5/16-18 TT
207	817670508	Screw Thdrol 5/16-18 x 1/2 TYTT
208	817670608	Screw Thdrol 3/8-16 x 1/2 Ty-TT
212	532156229	Insert Lens Reflect

NOTE: All component dimensions given in U. S. inches.
1 inch = 25.4 mm

REPAIR PARTS

TRACTOR - MODEL NO. YTH1848XP (YTH1848XPB), PRODUCT NO. 954 56 72-60
DRIVE



REPAIR PARTS

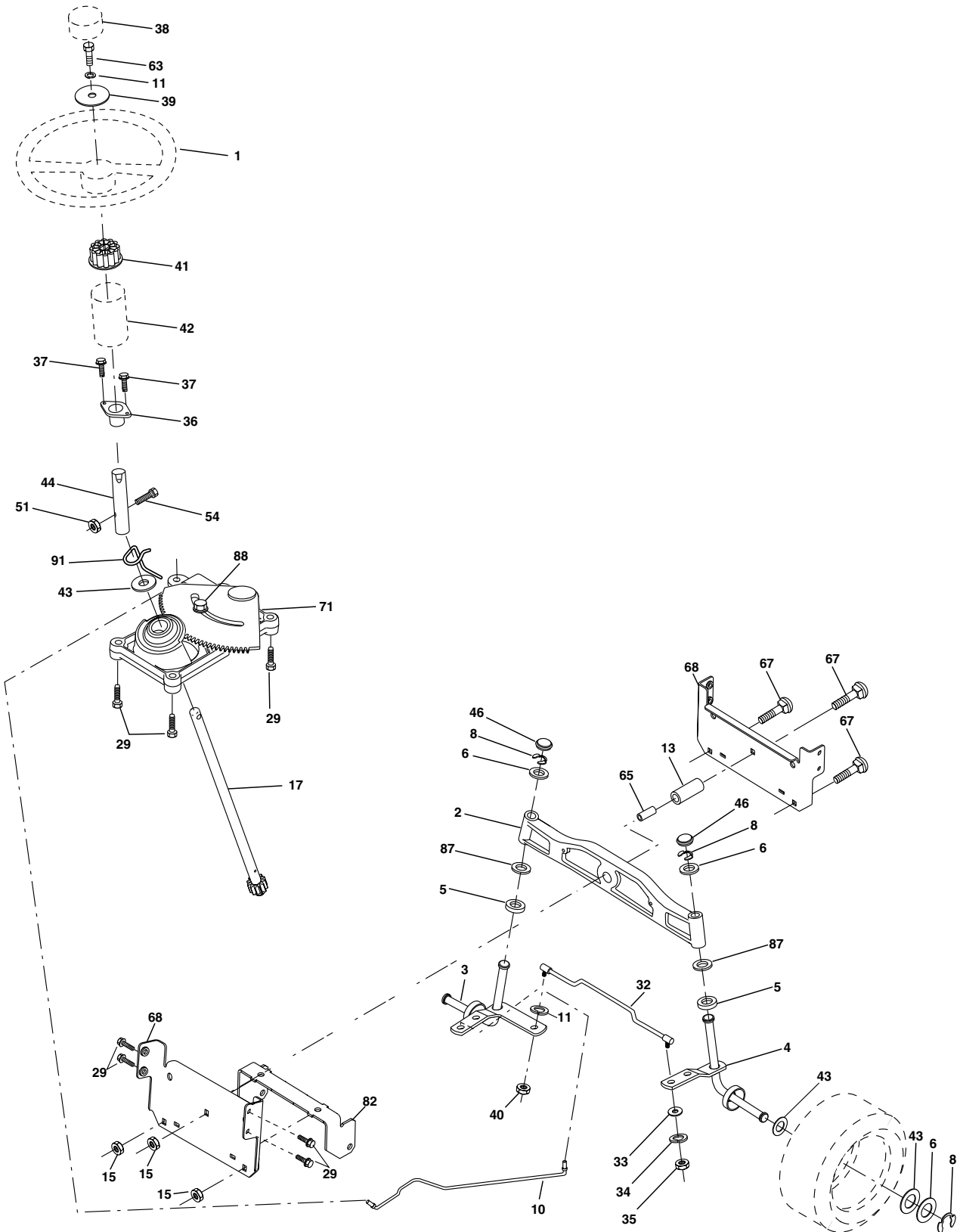
**TRACTOR - MODEL NO. YTH1848XP (YTH1848XPB), PRODUCT NO. 954 56 72-60
DRIVE**

KEY NO.	PART NO.	DESCRIPTION	KEY NO.	PART NO.	DESCRIPTION
1	-----	Transaxle, Hydro 314-0510 (Order Parts From Transaxle Manufacturer)	62	532124872	Cover, Pedal
8	532165866	Rod Shift Fender Adjust STLT	63	532175417	Pulley, Clutch Elect
9	532174367	Clutch Electric	65	810040700	Washer Lock Hvy HLCL Spr 7/16
10	876020416	Pin Cotter 1/8 x 1 CAD	66	532154778	Keeper Belt Engine
14	810040400	Washer Lock Hvy Helical	71	532169183	Strap Torque Lh Hydro
15	874490544	Bolt Hex 5/16-18 Unc Flghd	73	532169182	Strap Torque Rh Hydro
16	873800500	Nut Lock Hex W/Ins. 5/16-18 Unc P	74	532137057	Spacer, Axle
17	532126197	Washer 1-1/2 x 15/32	75	532121749	Washer 25/32 x 1-1/4 x 16 Ga.
19	873800600	Nut Lock Hex W/Ins 3/8-16 Unc	76	812000001	E-Ring
20	532173937	Bolt, Hex 7/16-20 x 4-1/4 Ga. 5	77	532123583	Key, Square
21	532140845	Knob Deluxe 1/2-13 UNC BLK/BLK	78	532121748	Washer 25/32 x 1-5/8 x 16 Ga
22	532169498	Rod, Brake Hydro	81	532165596	Shaft Asm Cross Tapered
23	532178289	Bracket Asm Mtg CL	82	532165711	Spring Torsion T/A
24	873350600	Nut Hex Jam 3/8-16 UNC	83	819171216	Washer 17/32 x 3/4 x 16 Ga.
25	532106888	Spring, Brake Rod	84	532169594	Link Transaxle
26	819131316	Washer	89	532166510	Console, Shift
27	876020412	Pin Cotter 1/8 x 3/4 CAD.	90	532124346	Nut Self Thd 1/4
28	532175765	Rod, Parking Brake	95	532170201	Control Asm. Bypass Hydro
29	532071673	Cap, Parking Brake	96	532124788	Retainer Spring 1" Zinc/Cad
30	532169592	Bracket, Transaxle	116	872140608	Bolt Rdhd Sqnk 3/8-16 Unc x 1
32	874760512	Bolt Hex Hd 5/16-18 Unc x 3/4	120	873900600	Nut Lock Flg 3/8-16
34	532175578	Shaft, Foot Pedal	150	532175456	Spacer Retainer
35	532120183	Bearing, Nylon	151	819133210	Washer 13/32 x 2 x 10 Ga.
36	819211616	Washer	156	532166002	Washer Srrted 5/16ID x 1.125
37	532124963	Pin, Roll	158	532165589	Bracket Shift Mount
38	532165936	Pulley, Composite, Flat	159	532165494	Hub Tapered Flange Shift Lt
39	874760648	Bolt, Fin, Hex 3/8-16 x 3	161	872140406	Bolt Rdhd Sqnk 1/4-20 x 3/4 Gr 5
40	532175461	Spacer Split	162	873680400	Nut Crownlock 1/4-20 Unc
41	532175556	Keeper, Belt Idler	163	874780416	Bolt Hex Fin 1/4-20 Unc x 1 Gr 5
42	819131312	Washer 13/32 x 13/16 x 12 Ga	164	819091010	Washer 5/8 x .281 x 10 Ga
47	532127783	Pulley, Idler, V-Groove Plastic	165	532165623	Bracket Pivot Lever
48	532154407	Bellcrank Clutch Grnd Drv STL	166	532166880	Screw 5/16-18 x 5/8
49	532123205	Retainer, Belt Style Spring	168	532165492	Bolt Shoulder 5/16-18 x .561
50	874760624	Bolt Hex Hd 3/8-16 Unc x 1-1/2	169	532165580	Plate Fastening STLT/CRD
51	873680600	Nut	197	532169613	Nyliner Snap 5/8" ID
53	532105710	Link, Clutch	198	532169593	Washer Nyl 7/8 ID x .105 Hyd
55	532105709	Spring, Return, Clutch	199	532169612	Bolt Shoulder 5/16-18 Unc
56	817060616	Screw 3/8-16 x 1.0	200	872140508	Bolt Rdhd Sqnk 5/16-18 Unc x 1
57	532140294	V-Belt, Ground Drive	202	872110612	Bolt
59	532169691	Keeper, Center Span	212	532145212	Nut Hex Flange Lock
61	817060612	Screw 3/8-16 x 3/4			

NOTE: All component dimensions given in U.S. inches
1 inch = 25.4 mm

REPAIR PARTS

TRACTOR - MODEL NO. YTH1848XP (YTH1848XPB), PRODUCT NO. 954 56 72-60
STEERING ASSEMBLY



REPAIR PARTS

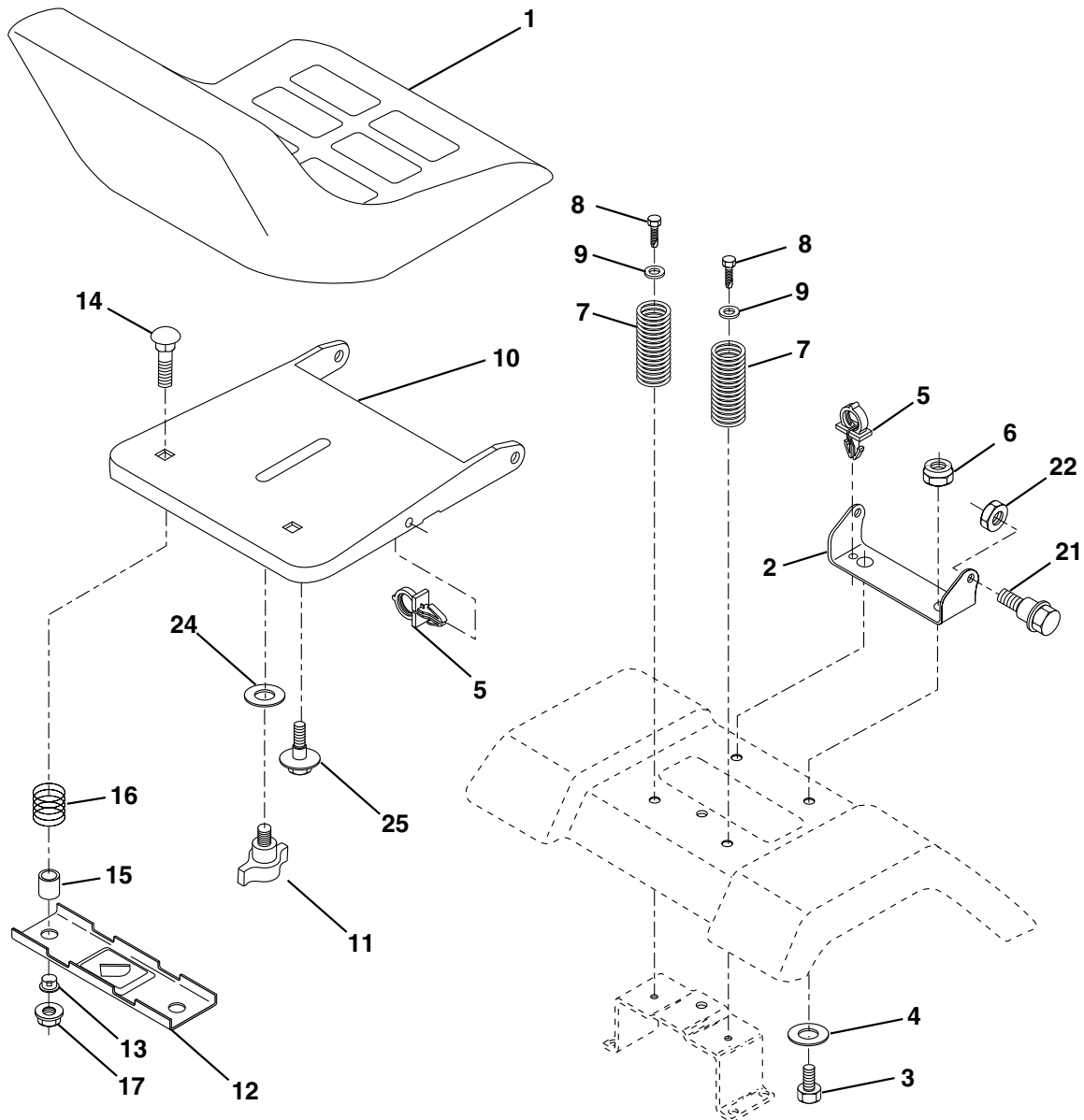
TRACTOR - MODEL NO. YTH1848XP (YTH1848XPB), PRODUCT NO. 954 56 72-60
STEERING ASSEMBLY

KEY NO.	PART NO.	DESCRIPTION
1	532166627	Wheel Steering
2	532172393	Axle Cast Lt Machined
3	532169840	Spindle Asm LH
4	532169839	Spindle Asm RH
5	532124931	Bearing Race Thrust Harden
6	532121748	Washer 25/32 X 1-5/8 X 16 Ga
8	812000029	Ring Klip #t5304-75
10	532175121	Link Drag
11	810040600	Washer Lock Hvy Hlcl Spr 3/8
13	532136518	Spacer Brg Axle Front
15	532145212	Nut Hex Flange Lock
17	532177876	Shaft Asm Strg
29	817060612	Screw 3/8-16x3/4
32	532170162	Rod Tie Ball J
33	819111216	Washer 11/32 x 3/4 x 16 Ga.
34	810040500	Washer Lock Hvy Helical 5/16
35	873540500	Nut Crown Lock 5/16-24Unf
36	532155099	Bushing Strg
37	532152927	Screw
38	532166626	Insert Cap Strg Wh
39	819132411	Washer 13/32 x 1-1/20 x 11 Ga
40	532124701	Lock nut
41	532159945	Adaptor Wheel Strg
42	532169634	Boot Steering Shaft
43	532121749	Washer 25/32 X 1 1/4 X 16 Ga
44	532153720	Extension Steering Shaft LR/LT
46	532121232	Cap Spindle Fr Top Blk
51	873800500	Nut Lock Hex w/Ins 5/16-18
54	874780520	Bolt Fin Hex 5/16-18 Unc x 1-1/4
63	874780616	Bolt Fin Hex 3/8-16unc x 1 Gr. 5
65	532160367	Spacer Brace Axle
67	872140618	Bolt Rdhd Sq 3/8-16 x 2-1/4
68	532169827	Axle, Brace
71	532175146	Steering Asm
82	532169835	Bracket Susp Chassis Front
87	532173966	Washer Flat .781 x 1-1/2 x .14
88	532175118	Bolt Shoulder 7/16-20
91	532175553	Clip Steering

NOTE: All component dimensions given in U.S. inches.
1 inch = 25.4 mm.

REPAIR PARTS

TRACTOR - MODEL NO. YTH1848XP (YTH1848XPB), PRODUCT NO. 954 56 72-60
SEAT ASSEMBLY



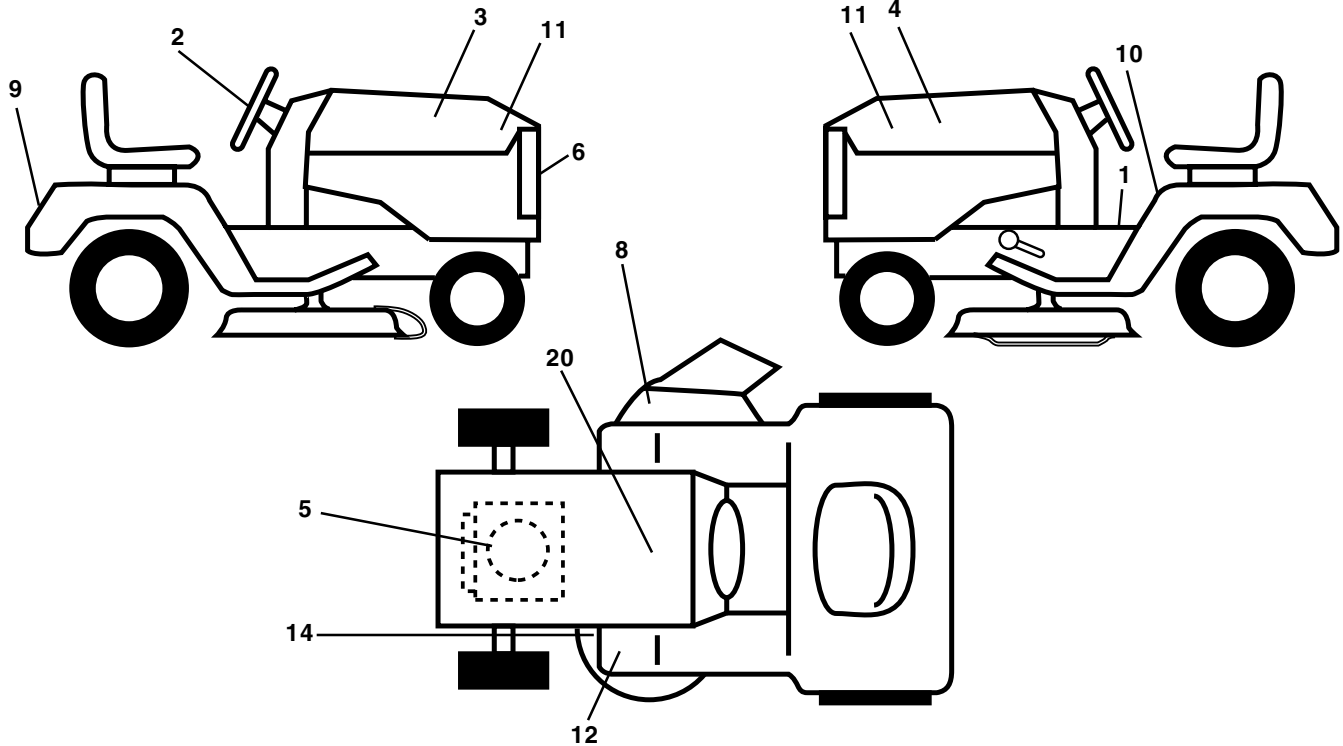
KEY NO.	PART NO.	DESCRIPTION
1	532140840	Seat
2	532140551	Bracket Pivot Seat 8 720
3	871110616	Bolt Fin Hex 3/8-16 x 1
4	819131610	Washer Flat 13/32 x 1.0 x 10 Ga.
5	532145006	Clip Push-In
6	873800600	Nut Hex w/Ins. 3/8-16 Unc
7	532124181	Spring Seat Cprsn 2 250 Blk Zi
8	817000616	Screw 3/8-16 x 1
9	819131614	Washer 13/32 x 1.0 x 14 Ga.
10	532174894	Pan Seat
11	532166369	Knob Seat Adj Wingnut
12	532121246	Bracket Mounting Switch
13	532121248	Bushing Snap Blk Nyl 50 Id

KEY NO.	PART NO.	DESCRIPTION
14	872050412	Bolt Rdhd Sqnk 1/4-20x1-1/2
15	532121249	Spacer Split 28 x .88 Zinc
16	532123740	Spring Cprsn Plate
17	532123976	Nut Lock 1/4 Lge Flg Gr 5 Zinc
21	532171852	Bolt Shoulder 5/16-18 Unc
22	873800500	Nut Hex Lock W/Ins 5/16-18
24	819171912	Washer 17/32 X 1 -3/16 X 12 Ga.
25	532127018	Bolt Shoulder 5/16-18 X 62

NOTE: All component dimensions given in U.S. inches.
1 inch = 25.4 mm

REPAIR PARTS

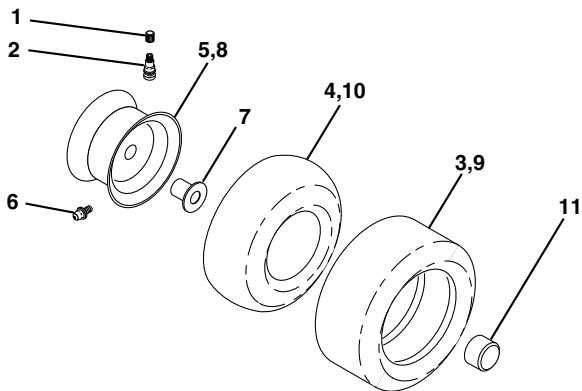
TRACTOR - MODEL NO. YTH1848XP (YTH1848XPB), PRODUCT NO. 954 56 72-60
DECALS



KEY NO.	PART NO.	DESCRIPTION
1	532157032	Decal Oper Inst Hyd E/F
2	532170564	Decal Strg Wheel Logo
3	532177672	Decal Hood RH
4	532177673	Decal Hood LH
5	532178386	Decal Engine
6	532150616	Decal Grille Husq
8	532170563	Decal Warning
9	532176822	Decal Fender Husq
10	532157140	Decal Fender Danger E/F
11	532176871	Decal Hood Sides

KEY NO.	PART NO.	DESCRIPTION
12	532178502	Decal Clutch/Brake
14	532175291	Decal V-Belt Schematic
20	532145005	Decal Bat Dan/Psn
--	532169210	Decal By Pass Lt Hydro
--	532171284	Pad Footrest LH
--	532171285	Pad Footrest RH
--	532138311	Decal Handle Lft Height Adjust
--	532179564	Manual Owner's (English)
--	532179565	Manual Owner's (French)

WHEELS & TIRES

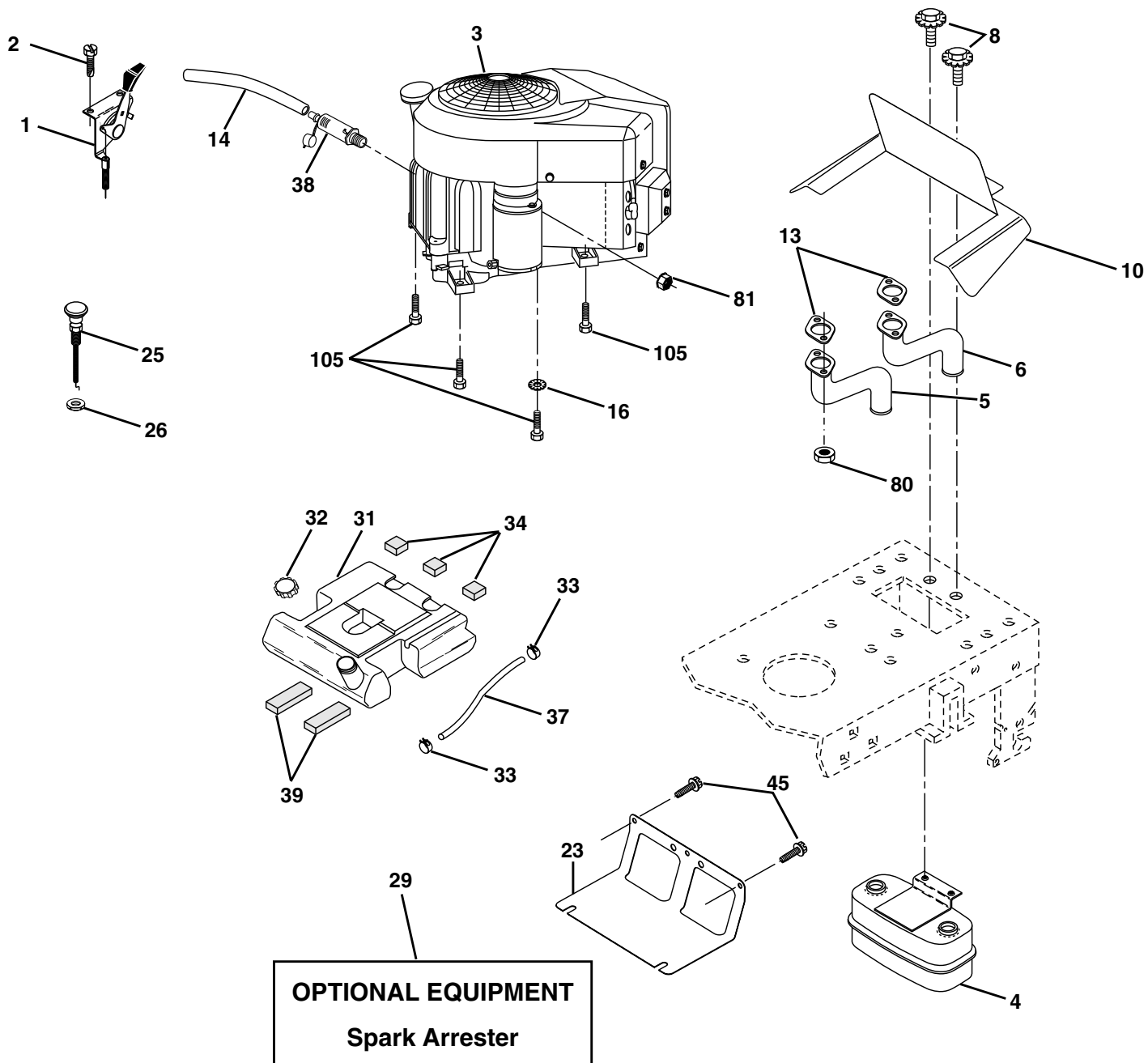


KEY NO.	PART NO.	DESCRIPTION
1	532059192	Cap Valve Tire
2	532065139	Stem Valve
3	532106222	Tire F Ts 15 X 6 0 - 6 Service
4	532059904	Tube Front (Service Item Only)
5	532138336	Rim Asm 6"front Silver Service
6	532124957	Fitting Grease (Front Wheel Only)
7	532124959	Bearing Flange (Front Wheel Only)
8	532138337	Rim Asm 8"rear Silver Service
9	532122082	Tire R Ts 20x10-8 C Service
10	532124926	Tube Rear (Service Item Only)
11	532175039	Cap Axle Blk 1 50 X 1 00
--	532144334	Sealant, Tire (10 oz. Tube)

NOTE: All component dimensions given in U.S. inches
1 inch = 25.4 mm

REPAIR PARTS

TRACTOR - MODEL NO. YTH1848XP (YTH1848XPB), PRODUCT NO. 954 56 72-60
ENGINE



REPAIR PARTS

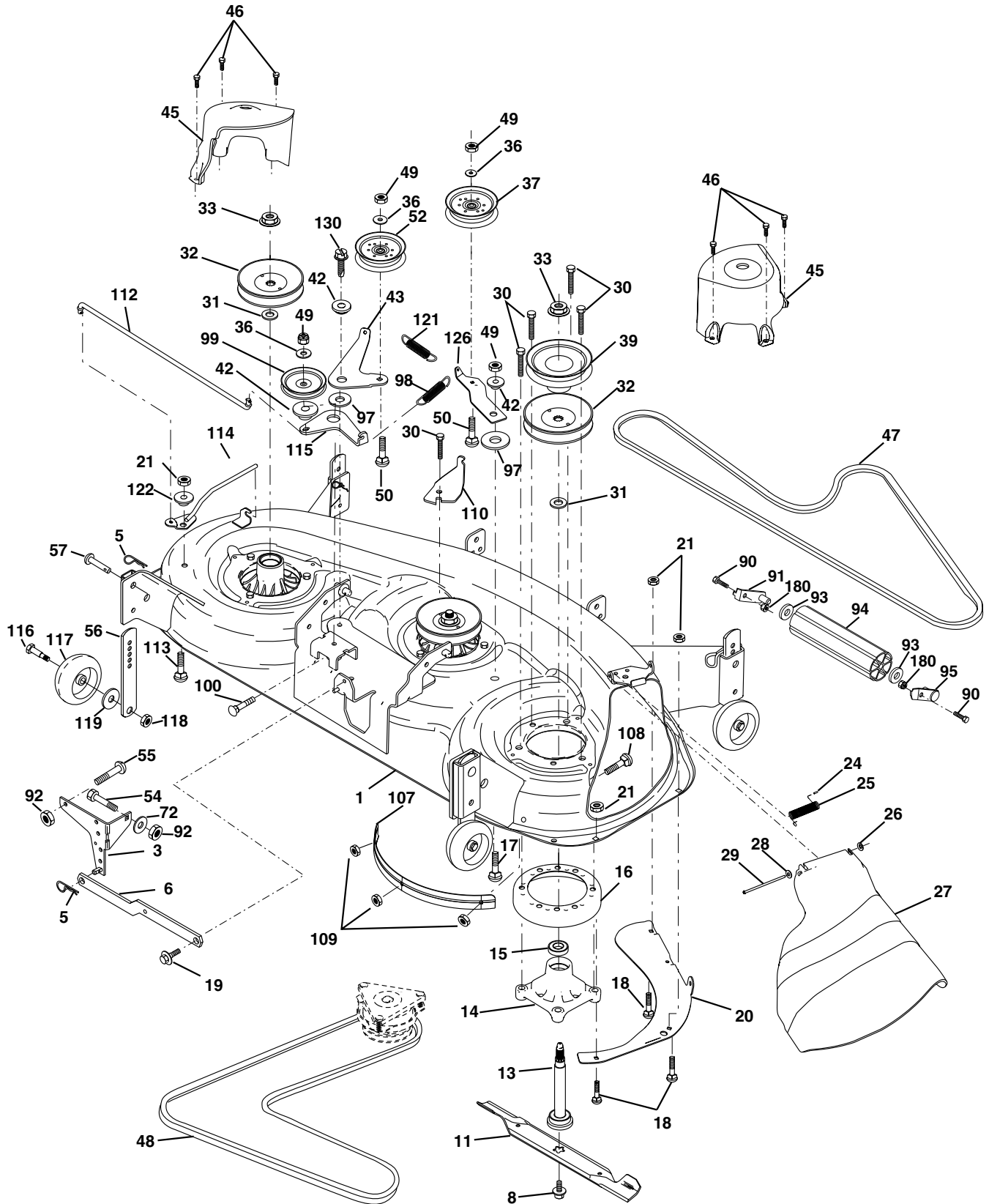
TRACTOR - MODEL NO. YTH1848XP (YTH1848XPB), PRODUCT NO. 954 56 72-60
ENGINE

KEY NO.	PART NO.	DESCRIPTION
1	532170803	Control Throt Flg
2	817720410	Screw Hex Thd Cut 1/4-20x5/8 T
3	-----	Engine KAWA FH531V (Order Parts from Engine Manufacturer)
4	532149723	Muffler Asm Twin Lo-Tone
5	532176067	Exhaust Tube
6	532176068	Exhaust Tube
8	532171877	Bolt 5/16-18unc x 3/4 W/Sems
10	532146629	Shield Browning
13	532178591	Gasket Muffler
14	532148456	Tube Drain Oil Easy
16	811050600	Washer Lock Ext Tooth 3/8
23	532169837	Shield Browning
25	532132782	Choke Control
26	873920600	Nut, Keps 3/8-24 Unf
29	532137180	Kit Spark Arrestor (Flat Scrn)
31	532157103	Tank Fuel 3 50 Rear
32	532140527	Cap Asm Fuel Top N/Lany Vented
33	532123487	Clamp Hose Blk
34	532106082	Pad, Spacer
37	532142158	Line Fuel
38	-----	Plug Drain Oil (Order from Engine Manufacturer)
39	532109227	Pad, Idler
45	817000612	Screw Hexwsh Thdr 3/8-16 x 3/4
80	532163305	Nut Flange M8-1.25
81	873510400	Nut Keps Hex 1/4-20 Unc
105	817120616	Screw 3/8-16 x 1

NOTE: All component dimensions given in U.S. inches
1 inch = 25.4 mm

REPAIR PARTS

TRACTOR - MODEL NO. YTH1848XP (YTH1848XPB), PRODUCT NO. 954 56 72-60
MOWER DECK



REPAIR PARTS

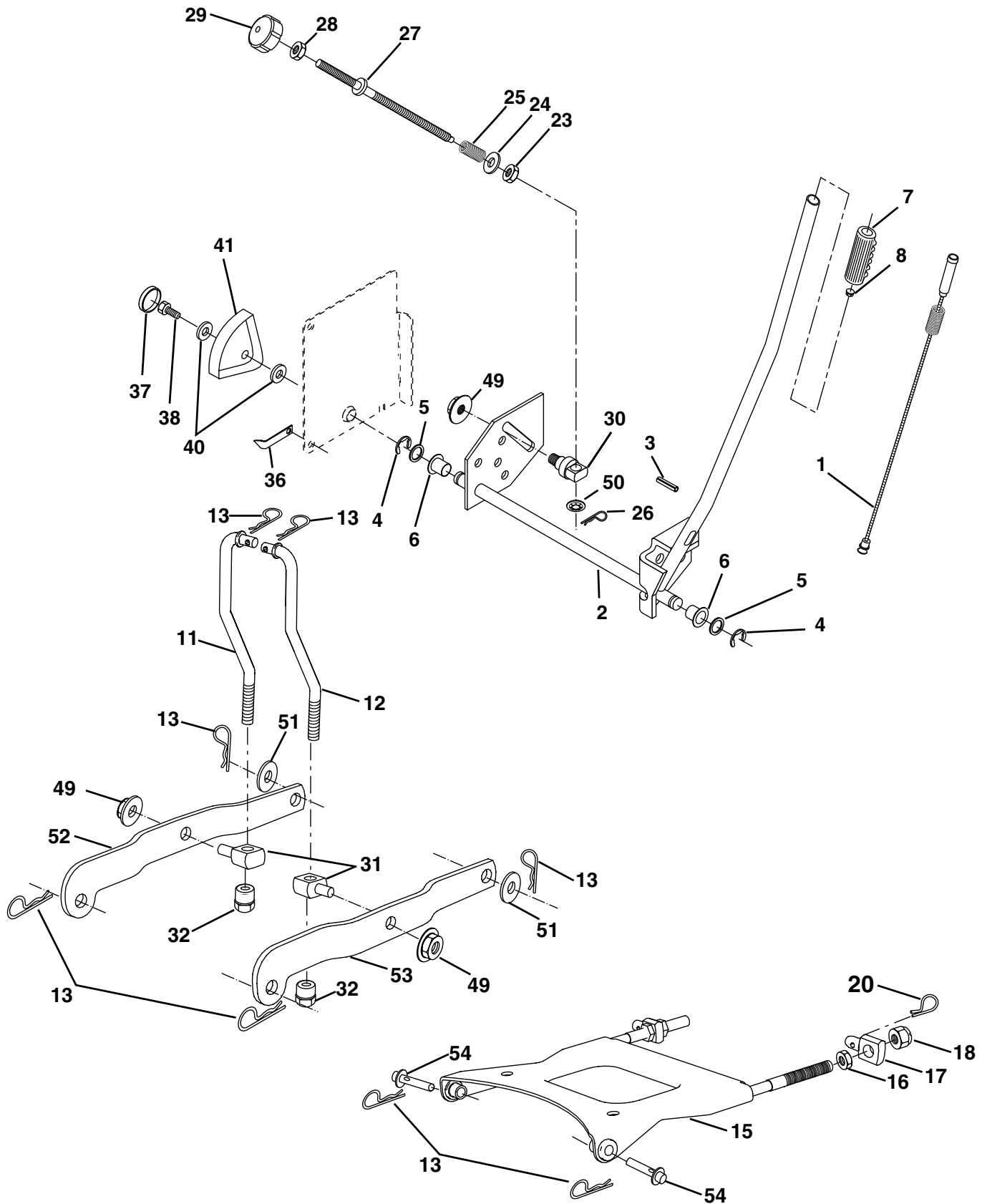
TRACTOR - MODEL NO. YTH1848XP (YTH1848XPB), PRODUCT NO. 954 56 72-60 MOWER DECK

KEY NO.	PART NO.	DESCRIPTION	KEY NO.	PART NO.	DESCRIPTION
1	532174348	Deck Weldment Mower 48	55	872140608	Bolt Rdhd Sqnk 3/8-16 x 1
3	532138017	Bracket Asm., Sway Bar	56	532155986	Bar Pnt Adjusting Wheel Gauge
5	532004939	Retainer Spring	57	532156941	Pin Head Rivet
6	532130832	Arm, Suspension, Rear (Sway Bar)	72	819131312	Washer 13/32 x 13/16 x 12
8	532174365	Bolt, 7/16 Asm. Blade	90	874760516	Bolt, Fin, Hex 5/16-18 x 1.0
10	532140296	Washer, Hard Blade, Mower Vented	91	532175384	Bracket, Asm Noseroller, LH 48
11	532173920	Blade	92	873800600	Nut Lock Hex w/Ins 3/8-16
13	532174360	Shaft Asm. greaseable	93	819171416	Washer 17/32 x 7/8 x 16 Ga.
14	532174358	Housing Mandrel 48"	94	532176066	Roller, Nose 48"
15	532110485	Bearing, Ball, Mandrel	95	532175996	Bracket, Asm Noseroller RH 48
16	532174493	Stripper, Mower	97	532133943	Washer Hardened
17	872110610	Bolt Rdhd Sq Neck 3/8-16 x 1.25	98	532174370	Spring Primary Drive
18	872140505	Bolt, Carriage 5/16-18 x 5/8	99	532175080	Pulley Idler "V"
19	532132827	Bolt, Hex Head, Shoulder 5/16-18	100	872110616	Bolt RDHD Sqnk 3/8-16 Unc x 2
20	532174378	Baffle, Vortex Mower	107	532175294	Baffle Vac Edge Mower
21	873680500	Nut, Crownlock 5/16-18 UNC	108	872110404	Bolt Carr.
24	532105304	Cap, Sleeve	109	87360400	Nut Crownlock 1/4-20
25	532178102	Spring, Torsion	110	532175016	Arm Spring Secondary
26	532110452	Nut, Push	112	532174387	Link Tension Relief Lever
27	532174346	Shield, Deflector Mower	113	872110508	Bolt Carr. 5/16-18 x 1
28	819111016	Washer 11/32 x 5/8 x 16 Ga.	114	532174384	Tension Asm Relief Lever
29	532131491	Rod, Hinge	115	532174609	Arm Spring Tension Relief
30	532157722	Screw, Thdroll, Washer Head	116	532137644	Bolt, Shoulder
31	532129963	Washer, Spacer Mower Vented	117	532133957	Gauge Wheel
32	532177865	Pulley, Mandrel	118	873930600	Nut, Centerlock 3/8-16 UNC
33	532178342	Nut, Flg. Top Lock Cntr. 9/16	119	819121414	Washer 3/8 x 7/8 x 14 Ga.
36	819131316	Washer 13/32 x 13/16 x 16 Ga.	121	532174371	Spring Secondary Drive
37	532173437	Pulley, Idler, Flat	126	532174372	Arm, Idler, Primary Deck
39	532174375	Pulley, Idler, Driven	130	817060616	Screw 3/8-16 x 1.0
42	532122052	Spacer, Retainer	180	873800500	Nut, Lock, Hex 5/16-18
43	532174373	Arm, Idler Secondary	--	532177146	Replacement Mower, Complete
45	532174343	Cover, Mandrel Deck	--	532174356	Mandrel Assembly Service (Includes Key Nos. 13-15)
46	532137729	Screw, Thdroll. 1/4-20 x 5/8			
47	532174369	V-Belt, Mower, Secondary			
48	532174368	V-Belt, Mower, Primary			
49	873680600	Nut, Crownlock 3/8-16 UNC			
50	872110612	Bolt, Carriage 3/8-16 x 1-1/2 Gr. 5			
52	532175820	Pulley Idler Flat 46 Pri. Drive			
54	874780616	Bolt Fin Hex 3/8-16 x 1			

NOTE: All component dimensions given in U.S. inches
1 inch = 25.4 mm

REPAIR PARTS

TRACTOR - MODEL NO. YTH1848XP (YTH1848XPB), PRODUCT NO. 954 56 72-60
MOWER LIFT



REPAIR PARTS

TRACTOR - MODEL NO. YTH1848XP (YTH1848XPB), PRODUCT NO. 954 56 72-60
MOWER LIFT

KEY NO.	PART NO.	DESCRIPTION
1	532159460	Wire Asm Inner/Spring W/Plunger LT
2	532159471	Shaft Asm Lift RH w/Inf
3	532105767	Pin Groove 1 500 Zinc
4	812000002	E Ring #5133-62
5	819211621	Washer 21/32 X 1 X 21 Ga
6	532120183	Bearing Nylon Blk 629 Id
7	532125631	Grip Handle Fluted Blk
8	532124526	Button Plunger Black
11	532175370	Link Lift LH
12	532175371	Link Lift RH
13	532124670	Retainer Spring
15	532175562	Plate Asm Susp Front
16	873350800	Nut Jam Hex 1/2-13 Unc
17	532175689	Trunnion
18	873800800	Nut Lock w/Wsh 1/2-13unc
20	532163552	Retainer Spring
23	532110807	Nut Special
24	819131016	Washer 13/32 X 5/8 X 16 Ga
25	532124874	Spring 2-1/8"
26	532169484	Retainer Clip
27	532126971	Rod Adj Lift Zinc 7.49 Wrk Lg
28	873350600	Nut Hex Jam 3/8-16 Unc
29	532138057	Knob Inf 3/8-16 Unc Blk W/sym
30	532150233	Trunnion Infin Height
31	532176205	Trunnion
32	532175994	Nut Lift Link 7/16-20
36	532155097	Indicator Height STLT
37	532123935	Plug Hole Blk 1.485/1.515 Dia.
38	817060516	Screw 5/16-18 x 1
40	819112410	Washer 11/32 x 1-1/2 10 Ga.
41	532155098	Scale Ind. Height Blk.
49	532145212	Nut Hex Flange Lock
50	532110452	Nut, Push Phos & Oil
51	819171416	Washer 17/32 x 7/8 x 16 Ga.
52	532175378	Arm Susp. Rear Lh
53	532175802	Arm Susp. Rear Rh
54	532175560	Pin Flange

NOTE: All component dimensions given in U.S. inches
1 inch = 25.4 mm