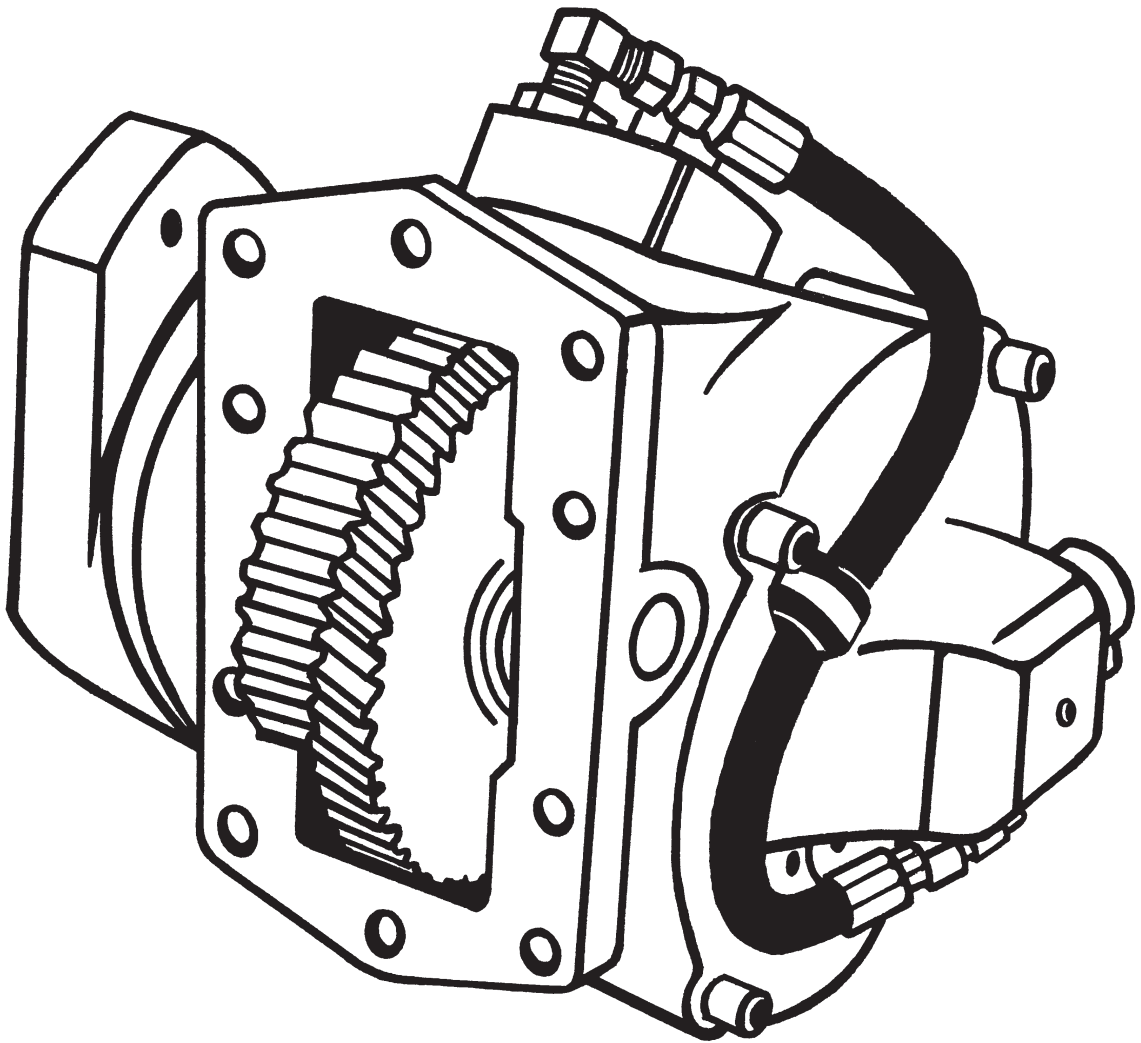




CS10 & CS11 SERIES CLUTCH SHIFT PTO

PARTS LIST AND SERVICE MANUAL

FOR THE ALLISON WORLD TRANSMISSION

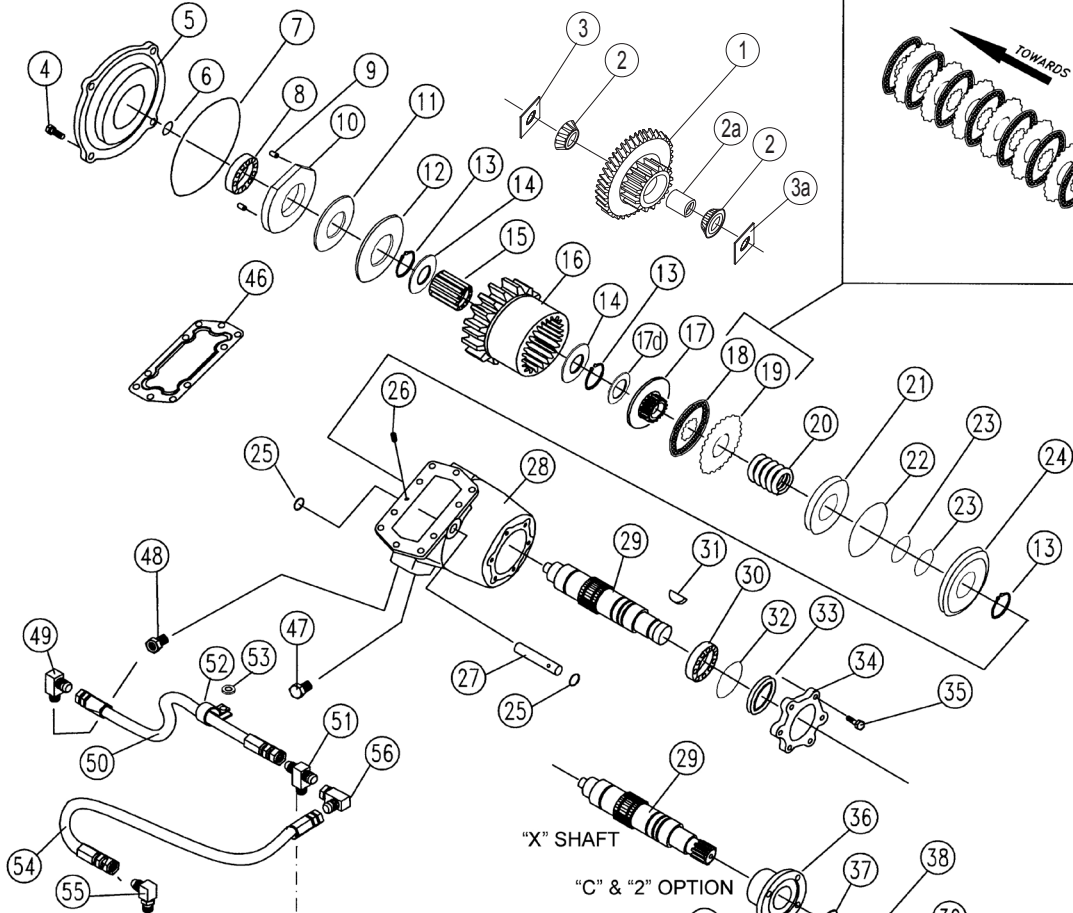
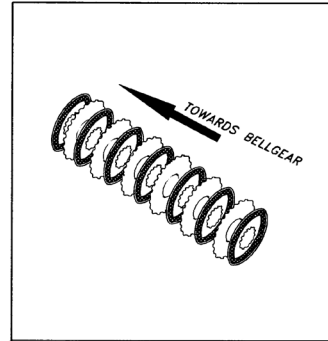


U.S. Pat. 5,542,306

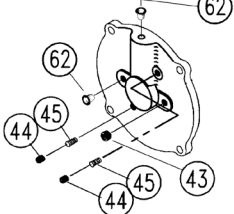
CS10 & CS11 SERIES CLUTCH SHIFT PTO

EXPLODED VIEW

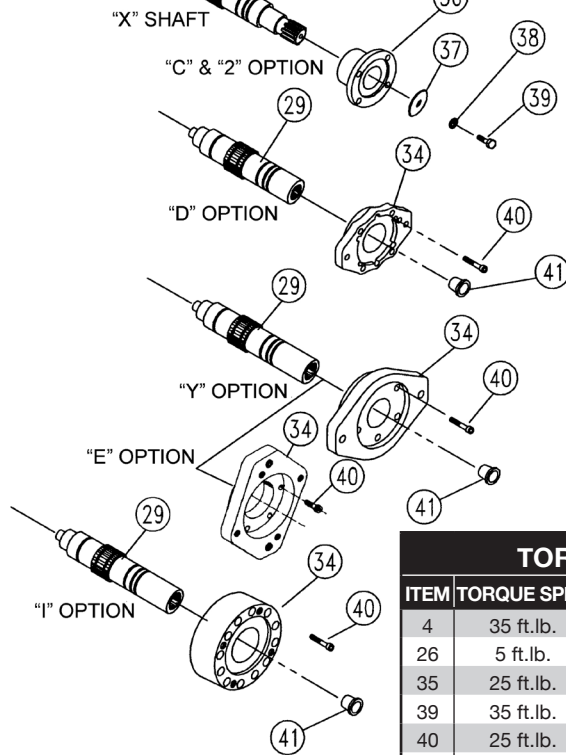
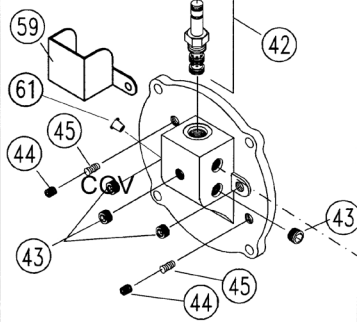
See Cover Detail



CS11 Cover Detail



CS10
Cover
Detail



TORQUE VALUES

ITEM	TORQUE SPEC	NOTE
4	35 ft.lb.	Apply Blue Loctite to fasteners
26	5 ft.lb.	
35	25 ft.lb.	Apply Blue Loctite to fasteners
39	35 ft.lb.	
40	25 ft.lb.	Apply Blue Loctite to fasteners
43	18 ft.lb.	Apply Blue Loctite to fasteners
47	25 ft.lb.	
48	25 ft.lb.	

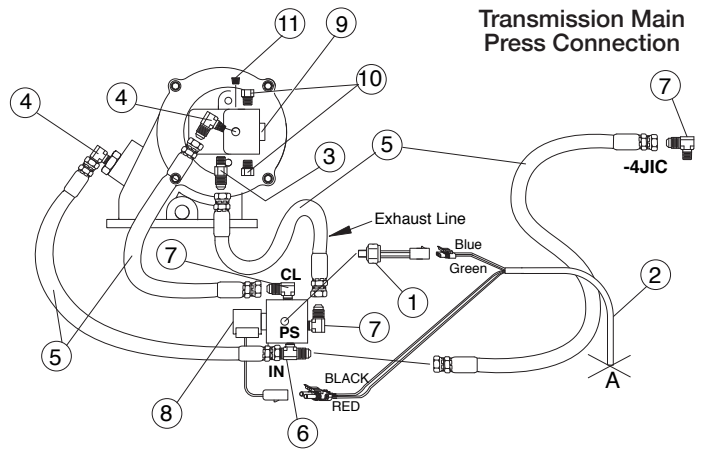
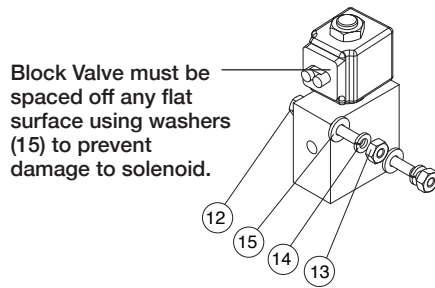
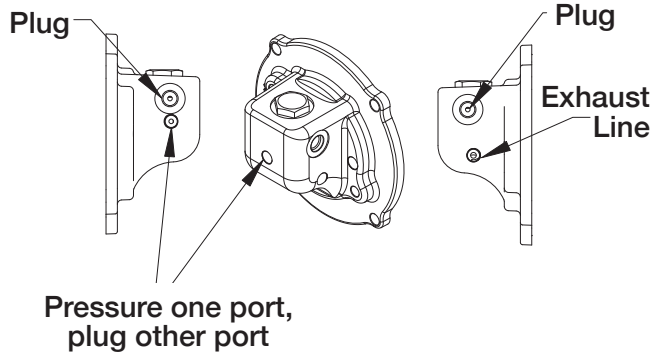
CS10 WITH MODEL DATE CODE 5/1/12 AND PARTS LIST AND DESCRIPTION

ITEM	QTY	PART NO	DESCRIPTION
1	1	03T36214	Input Gear (05) (50T/27T) (See Table A for additional gears)
2	2	See Table A	Input Bearing
2a	1	See Table A	Cone Spacer(0.743/0.741)
3	1	See Table C	Bearing Shim
3a	1	18T41452	Bearing Shim
4	4	19T39418	Cap Screw "C", "D", & "2"
5	1	15T36206	Bearing Cover, Closed (CS10)
		15T37970	Bear. Cov. w/o Valve Prov. (CS11)
6	1	12T36081	O-Ring
7	1	12T36207	O-Ring
8	1	10T35994	Bearing
9	2	26T36175	Roll Pin
10	1	21T36170	Drag Brake Plate
11	1	21T36172	Bronze Brake Disc
12	1	21T36171	Drag Brake Rotor
13	3	24T36040	Snap Ring
14	2	10T35989	Thrust Race
15	1	10T62370	Bearing
16	1	02T36219	Bell Gear (05) (47T)
		02T36220	Bell Gear (06) (45T)
		02T36221	Bell Gear (07) (43T)
		02T36222	Bell Gear (08) (40T)
		02T36223	Bell Gear (10) (38T)
17	1	02T36113	Clutch Hub (Before 4/99)
	1	49TA4136	Clutch Hub Assembly (4/99) (Includes: 17a, 17b, & 17c) (See Pg 9)
17a	1	49T37920	Clutch Hub (4/99)
17b	1	49T37921	Clutch Flange (4/99)
17c	1	24T37951	Snap Ring (4/99)
17d	1	10T37930	Thrust Washer (4/99) (Used w/49TA4136 Only)
18	7	49T33564	Friction Disc
19	11	49T40641	Spacer Disc (Before 4/99)
	6	49T40641	Spacer Disc (4/99)
20	1	27T36112	Spring
21	1	49T36114	Piston
22	1	12T36054	O-Ring
23	2	12T36053	O-Ring
24	1	49T36115	Piston Cup
25	2	12T35774	O-Ring
26	1	19T35785	Set Screw
27	1	07T35780	Idler Shaft
28	1	01T42194	Housing (1 Arrangement)
		01T42195	Housing (3 Arrangement)
<i>Output Shafts (OS) were changed 4/99 to accommodate the two-piece clutch hub (17). When replacing shaft in PTO prior to 4/99, clutch hub assembly (17) and washer (17d) must be added to required parts.</i>			
29	1	06T37932	OS "B" replaces 06T36039
		06T37933	OS "C", "2", & "X" replaces 06T36072
		06T37934	OS "D" & "S" replaces 06T36073
		06T37935	OS "E", "Y", & "Z" replaces 06T36074
		06T37936	OS "I" replaces 06T36832
		06T37937	OS "P" replaces 06T36799
30	1	10T35775	Output Bearing
31	1	26T01627	Woodruff Key
32	1	12T36863	O-Ring
33	1	11T64141	Seal
34	1	15T39226	Bearing Cov., Open ("2", "B", "C", & "X")
		14T35767	Hyd Flange ("D" & "P")
		14T39188	Hyd Flange ("Z")
		14T40576	Hyd Flange ("E" Only)
		14T36007	Hyd Flange ("Y" Only)

ITEM	QTY	PART NO	DESCRIPTION
<i>34 continued</i>			
34		14T36834	Hyd Flange ("I" Only)
		14T37474	Hyd Flange ("S" Only)
		14T42875	Hyd Flange ("EW")
35	6	19T39417	Cap Screw ("B", "C", "X", & "2")
36	1	14T31499	Companion Flange ("C" Only)
		14T37498	Companion Flange ("2" Only)
		14T43425	Companion Flange DIN 120 ("9")
37	1	21T20092	Washer ("C", "2" Only)
38	1	21T20526	Lock Washer ("C", "2", & "9" Only, If Req.)
39	1	19T20522	Cap Screw ("C" Only)
		19T38266	Cap Screw ("X", "2", & "9" Only)
40	6	19T39257	Socket Cap Screw "D", "P", "S", & "Z" Hyd
		19T35386	Socket Cap Screw "I" Hyd
		19T31577	Socket Cap Screw "E" & "Y" Hyd
		25T35936	Cap Plug "E", "I", "Y", & "Z" (Storage Only)
		25T35725	Cap Plug "P" (Storage Only)
42	1	35T36092	12 V Solenoid
		35T36447A	24 V Solenoid
43	4	25T21684	Pipe Plug
44	2	19T36174	Set Screw
45	2	27T36173	Spring
46	1	13T35777	Gasket
47	1	25T35999	Plug
48	1	25T35784	Orifice
49	1	43T35867	Elbow
50	1	45T35865	Hose
51	1	43T36231	Tee
52	1	49T36283	Hose Clamp
53	1	21T36448	Washer
		43TK3881	Standard Hose Kit
		43TK3885	HD For R.S. Installation
54	1	45T36274	Hose (Std 28")
		45T36273	Hose (HD R.S. 57")
55	1	43M68014	Elbow
56	1	43T36445	Elbow (use as needed)
59	1	49T41288	Protector
60	1	35T37928	Remote Mount Valve Ass'y (CS11) (See Page 7)
61	1	25T34029	Cap Plug
62	2	25T34029	Cap Plug (CS11)
N.S.	1	48TK3900	12 V Installation Kit CS10
		48TK5343	12 V Installation Kit CS10, EW Output Incl: 43TK5342 Hose Kit
		48TK4037	12 V Installation Kit CS11, Incl: Shift Kit, Gasket Pack, Stud Kit, Std. Hose Kit
		48TK4039	24 V Installation Kit CS11, Incl: Shift Kit, Gasket Pack, Stud Kit, Std. Hose
N.S.	1	CS10-GSK	Gasket Kit Incl: (1)6, (1)7, (1)22, (2)23, (2)25, (1)32, (1)33, (1)46
N.S.	1	CS10-RBK*	Rebuild Kit Includes: (1)3, (1)6, (1)7, (1)8, (2)9, (1)11, (3)13, (2)14, (1)15, (7)18, (1)19, (1)22, (2)23, (2)25, (1)30, (1)32, (1)33, (2)45, (1)46
N.S.	1	48TK4051	CS11 Conversion Kit Includes: 43TK4036 Hose Kit (page 6), 35T37928 12 V Control Valve, 15TA4056 Cover Kit, and Solenoid Mounting Hardware
N.S.	1	25T37702	Cap Plug
* Date Code Is Located Under PTO Model Label.			
* Rebuild kit does not include cone spacer or bearings, these are only sold with input gear.			

CS10 SERIES CONVERSION TO REMOTE ACTIVATION SOLENOID

CONVERSION KIT 48TK4942



CONVERSION KIT - 48TK4942

ITEM	QTY	PART NO	DESCRIPTION
1**	1	30T60228	Pressure Switch
2**	1	34T35872	Wire Harness
3	1	43T37503	1/8" NPT/JIC Fitting
4	2	43T35867	1/8" NPT/JIC Elbow
5	4	45T36274	Hose Assembly
6	1	43T36231	Straight Branch Tee
7	3	43M68014	7/16 -20 Str. Elbow
8	1	35T37928	12 V Valve
9	1	25T40727	Cavity Plug
10	2	25T36726	Str. Plug
11	1	25T21684	Pipe Plug
Solenoid Mounting Hardware			
12	2	19T36623	Cap Screw
13	2	22T35140	Nut
14	2	21T37991	Lock Washer
15	2	21T23153	Washer

Note: ** Included with original PTO, not included in this kit.

TABLE A
INPUT GEAR ASSEMBLY—ITEM 1 & ITEM 2a
(Sold only as assembly)

INPUT SUB ASSEMBLY	DESIGNATION	BASED ON INPUT GEAR	RATIO	TEETH
03TA4619	A1005	03T36214	05	50T/27T
03TA4620	A1006	03T36215	06	50T/29T
03TA4621	A1007	03T36216	07	50T/31T
03TA4622	A1008	03T36217	08	50T/34T
03TA4623	A1010	03T36218	10	50T/36T

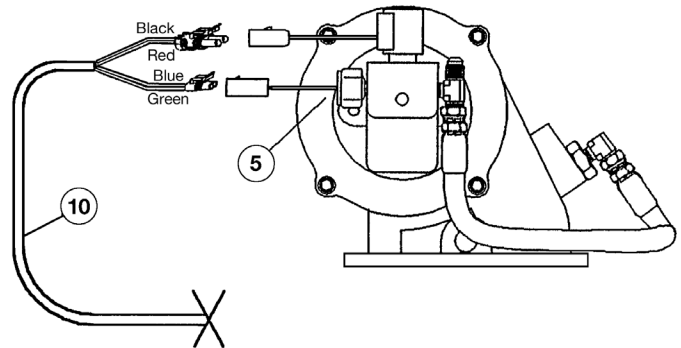
TABLE B
BEARING SHIM—ITEM 3 (Sold only as a kit)

18TK5233 Bearing Shim Kit for models with date Code 5/1/12 or later
18TK 4586 Bearing Shim Kit for models with date Code before 5/1/12

INSTALLATION KITS

CS10 INSTALLATION KIT - 48TK3882 (12 V)

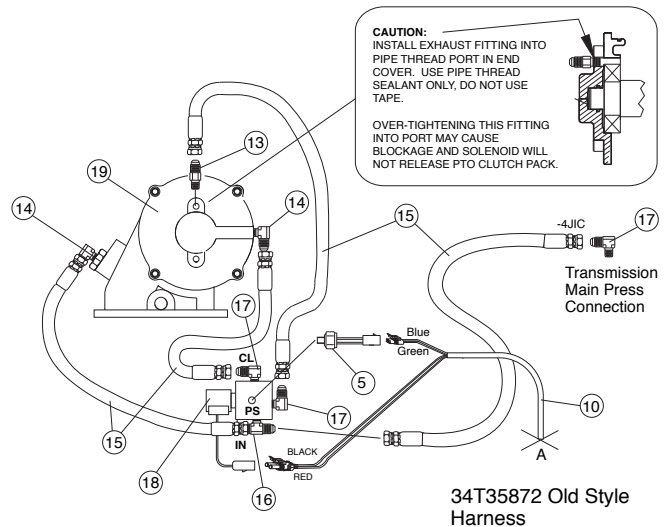
ITEM	QTY	PART NO	DESCRIPTION
1	1	36MA1005	Switch Bracket
2	1	36T36271	Face Plate without light access
3	1	30T35687	12 V Rocker Switch
4	1	33T36299	Fuse Assembly
5	1	30T60228	Pressure Switch
6	1	34M18250	Female Spade Connector
7	1	34M18009	Ring Terminal
8	2	34M18187	Female Spade Connector
9	1	34M18002	Butt Splice
10	1	34T35872	Wire Harness
11	6	37M18000	Wire
12	1	37T35674	Grommet
N.S.	1	36MK1007	Bolt Kit Incl. w/30T36270 & 30T36453
N.S.	1	43M05522	Elbow
For 24 V Option Kit No. 48TK3891 (substitute)			
		30T36453	Switch Assembly (Incl. Items #1 & 2 above & #3 below)
3	1	30T35712	24 V Rocker Switch



CS11 INSTALLATION KIT with REMOTE ACTIVATION SOLENOID

CS11 CONVERSION KIT - 48TK4051 (12 V) Use with 40TK3882 (N.S.)

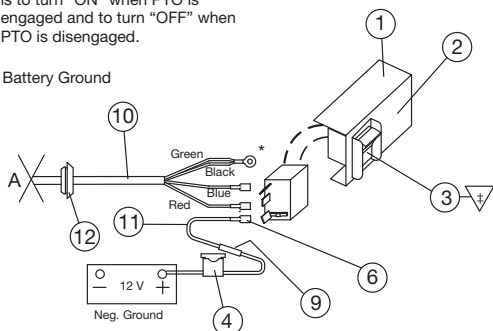
ITEM	QTY	PART NO	DESCRIPTION
13	1	43T37503	1/8" NPT/JIC Fitting
14	2	43T35867	1/8" NPT/JIC Elbow
15	4	45T36274	Hose Assembly
16	1	43T36231	Straight Branch Tee
17	3	43M68014	3/4" -20 Str. Thread Elbow
18	1	35T37928	12 V Valve
19	1	15TA4056	Cover Assembly (Includes Bearing & O-Ring (6 & 7) as shown on page 2)
N.S.	2	19T36623	Cap Screw
N.S.	2	22T35140	Nut
N.S.	2	21T37991	Lock Washer
For 24 V Option Kit No. 48TK4052 (Use with 48TK3891) Substitute:			
18	1	35T37967	24 V Valve



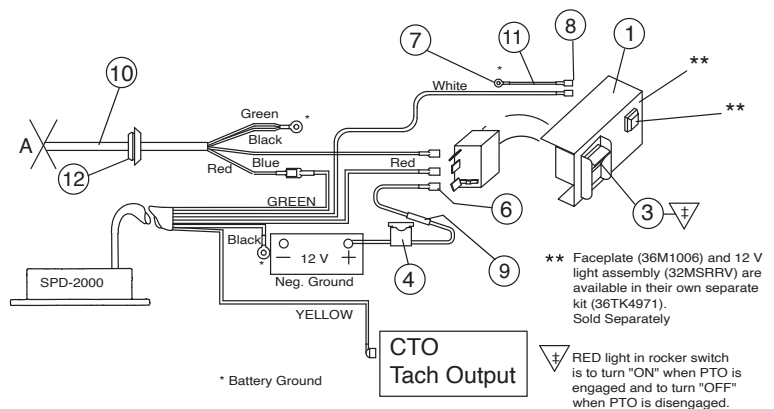
CIRCUIT INSTALLATION When used without Overspeed Switch

RED light in rocker switch is to turn "ON" when PTO is engaged and to turn "OFF" when PTO is disengaged.

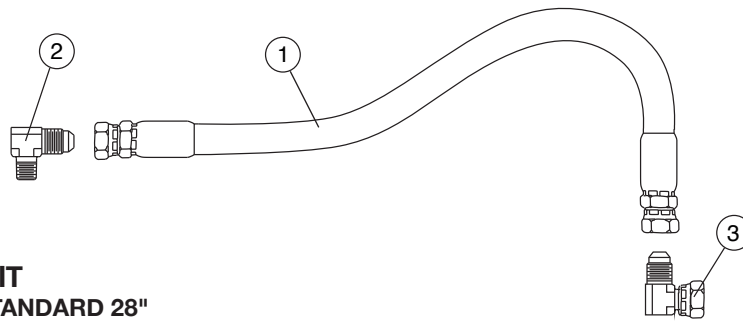
* Battery Ground



CIRCUIT INSTALLATION When used with Overspeed Switch



ACCESSORY KITS



INSTALLATION HOSE KIT

43TK3881 – HOSE KIT – STANDARD 28"

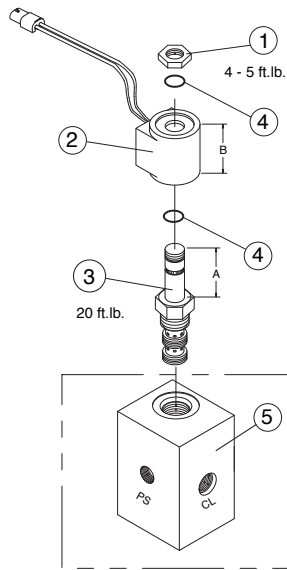
43TK3885 – HOSE KIT – FOR TOP R.S. HD SERIES 57"

43TK4545 – HOSE KIT – SPECIAL 17"

ITEM	QTY	PART NO	DESCRIPTION
1	1	45T36274	Hose Assembly - Std. 28"
		45T36273	Hose Assembly - HD Top 57"
		45T39186	Hose Assembly - Special 17"
2	1	43M68014	Elbow (Transmission)
3	1	43T36445	Elbow (Use as needed) (43TK3881 & 43TK4545 only)

43TK4036 – HOSE KIT FOR CS11 SERIES

ITEM	QTY	PART NO	DESCRIPTION
1	1	45T36274	Hose Assembly - Std. 28"
2	3	43M68014	Elbow (Transmission)
3	1	43T36445	Elbow (Use as needed)
N.S.	2	43T35867	Elbow
N.S.	1	43T36231	Tee Fitting



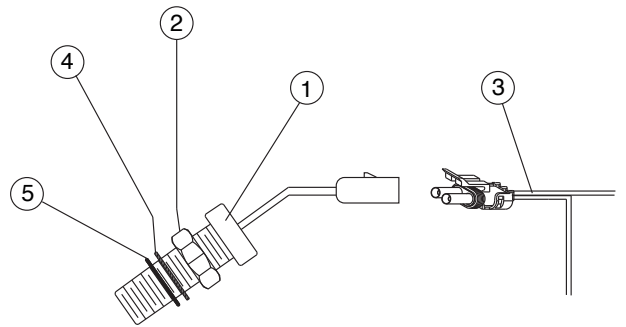
SOLENOID VALVE

35T37928 (12 V) – w/ 35T36092 Solenoid

35T37967 (24 V) – w/ 35T36447 Solenoid

ITEM	QTY	PART NO	DESCRIPTION
1	8	22T39429	Nut
2	1	37T39088A	12 V Coil (Delta)
		37T38997A	24 V Coil (Delta)
3*	1	35T39577	Valve
4	2	12T39408	O-Ring
5*	1	N.A.	Manifold Blk (CS11)

* (Not Sold Separately)



SPEED SENSOR KIT

31TK3873 – SPECIAL OPTION "U"

ITEM	QTY	PART NO	DESCRIPTION
1	1	31T35108	Mag Pickup
2	1	21T35109	Jam Nut
3	1	34MA1415	Wiring Harness
4	1	21T36099	Flat Washer
5	1	12T35774	O-Ring

20TK6388 – STUD KIT

QTY	PART NO	DESCRIPTION
6	19T64314	Cap Screw
2	20T62873	Metric Stud
2	20T63321	Alignment Stud
8	21T64303	Flat Washer
2	22T63877	Nut, M10 x 1.5 12 PT

CS10 & CS11 DISASSEMBLY AND REASSEMBLY

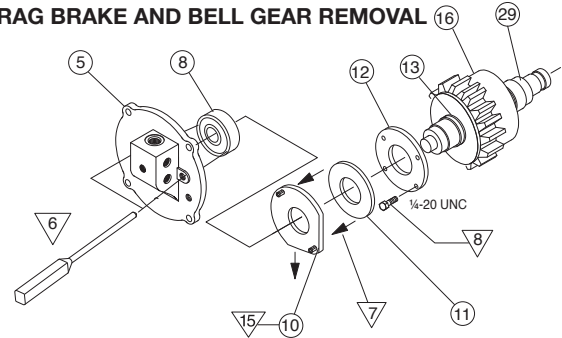
(Reference Exploded View on page 3)

▽ DENOTES SPECIAL SERVICE PROCEDURES

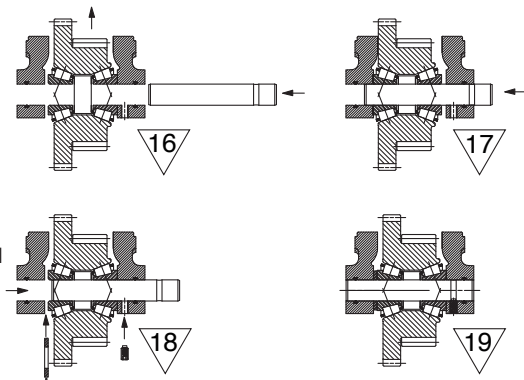
DISASSEMBLY PROCEDURE

- 1 Remove the CS10 input gear, by removing the set screw in the pad and driving the idler shaft from the housing. (26, 27)
- 2 Remove the set screws (44) from the bearing cover (5) which hold the drag brake springs (45). Position the housing so that the springs fall from housing.
- 3 Remove the four large socket cap screws (4) which hold the back cover to the PTO housing.
- 4 Position the housing against a bench block and hit the end of the output shaft with a soft face hammer to remove the entire output shaft assembly with bearing cover (5).
- 5 Remove the two pipe plugs (43) from the bearing cover. This exposes the ball bearing assembly within the cover.
- 6 Using a 1/4" punch and alternating between the two holes, drive the bearing and shaft assembly from the bearing cover.
- 7 Using a bearing puller remove the rear bearing (8) by grabbing the drag brake plate (10) and removing both pieces. The bronze brake disk (11) can be removed.
- 8 Insert four 1/4-20 cap screws into the drag brake rotor (12) until they just touch the back of the bell gear. Using an "X" pattern screw the cap screws in at 1/4 turn intervals until the brake rotor is free of the output shaft (29).
- 9 The piston and clutch pack may be serviced without removal of the drag brake. Using snap ring pliers, remove the snap ring (13) located on the output shaft end while gently pushing on the piston cup (24).
- 10 Pull the piston cup (24) from the shaft and the piston (21) will go with it.
- 11 Tap the piston cup on a wood surface to remove the piston.
- 12 Remove the spring (20). The clutch friction discs (18) and spacer discs (19) and inner clutch hub (17) can be removed by pointing the shaft end down.
- 13 With the drag brake removed, the snap rings (13) on this end of the bell gear can be removed with snap ring pliers. This allows the bell gear to be removed towards the closed end. The internal bearing (15) of the bell gear can easily be removed.

DRAG BRAKE AND BELL GEAR REMOVAL



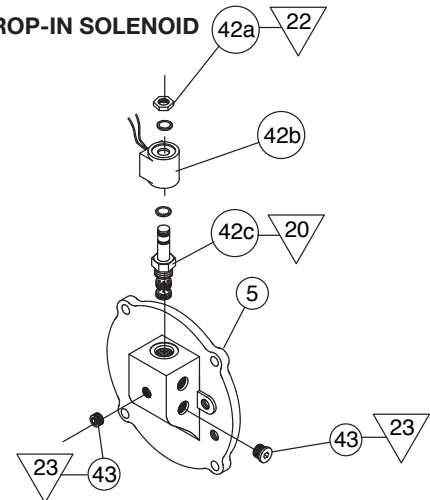
TAPER ROLLER BEARINGS



REASSEMBLY PROCEDURE

- 14 The reassembly of the unit is made in reverse of the disassembly. The re-use of seals, O-Rings and snap rings are not recommended.
- 15 Be sure to lubricate the O-Rings and all bearings upon installation. It is important to position drag brake plate so that input gear clears. This is the reason for the flat sides of the plate. Torque cap screws to the values shown or to the following values.
5/16 cap screws – 25 ft.lb. 3/8 cap screws – 35 ft.lb. 1/4 set screw – 9 ft.lb.
- 16 The Input Gear is replaced as a set which includes the gear, cone spacer, and bearings. See Table A. Slide this sub-assembly into the housing to line up the idler shaft.
- 17 Tap the idler shaft into the housing and through both bearing races.
- 18 Tap the idler shaft in the reverse direction so that it is flush with the bearing in this assembly. Insert the thickest shim that can be installed by hand in the gap between the bearing and housing. Remove shim and select the next thicker shim and drive it into the gap. Rotating the gear to make sure it easily rotates. The recommended bearing pre-load is .002" to .006" loose. (The cone spacer sets this pre-load and measurement is not required.)
- 19 Tap the idler shaft into position and install set screw.

DROP-IN SOLENOID

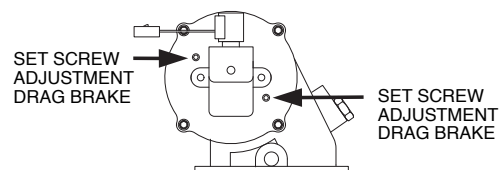


SOLENOID VALVE INSTALLATION (CS10 ONLY)

- 20 Separate the coil from the valve assembly. Insert the valve cartridge into the rear cover and torque to 20 ft.lb.
- 21 Slip one O-Ring and the coil over the valve. Slip the second O-Ring on.
- 22 Place thread locking compound on the post threads and install nut. Torque the nut 4 to 5 ft.lb. max.
- 23 Place thread sealant on pipe plugs. Torque 10-16 ft.lb.

DRAG BRAKE ADJUSTMENT (CS10 ONLY)

- 24 When installing the rear cover be sure to align the roll pins in the drag brake plate with the holes in the rear cover. **NOTE:** It is important that one of the flat edges of this plate is positioned towards the input gear.
- 25 After the cover has been attached to the housing insert the springs into the holes.
- 26 Insert the set screw over the spring and turn the screw four (4) full turns.
- 27 Follow the test and adjustment procedures in the CS10 operator's manual.



MODEL NUMBER CONSTRUCTION

CS 10 A10 05 H 1 B X

PTO Type

CS — Clutch Shift

Mountings

10 — 10-Bolt Mount
11 — 10-Bolt Mount with Remote Solenoid

Transmission Input Gear Option

A10 — Allison 10.16P RH

Speed Ratios

05 — .57:1
06 — .64:1
07 — .72:1
08 — .85:1
10 — .95:1

Note:

* Extended Shaft not included.

Special Features

X — None (Pressure Lube is standard on all units)
B — Hose Kit for Top Opening
D — Pulse Generator & SPD-2000
U — Pulse Generator
3 — Activation Hose — 17"
4 — Lube Hose Delete (CS10)

Output Types

B — 1¼ Round Keyed Shaft
C — 1410 Companion Flange
D — SAE "B" ¾" -13T, SAE "B" 2- & 4-Bolt
E — SAE "C" 1¼" -14T, SAE "C" 2- & 4-Bolt
I — DIN 5462
P — SAE "BB" 1" -15T, SAE "B" 2- & 4-Bolt
S — SAE "B" ¾" -13T, SAE "B" 2-Bolt
V — Extended Shaft Option*
Y — SAE "C" 1¼" -14T, SAE "C" 2-Bolt
Z — SAE "C" 1¼" -14T, SAE "B" 2- & 4-Bolt
2 — DIN 100 Companion Flange
9 — DIN 120 Companion Flange

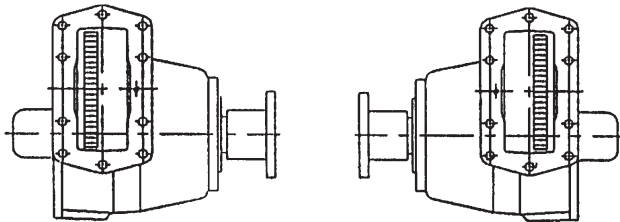
Assembly Arrangements

1 — Right Side Shaft Low
3 — Left Side Shaft Low

Shift Types

H — 12 V Electric/Hydraulic
J — 24 V Electric/Hydraulic

PTO ASSEMBLY ARRANGEMENTS



NO. 1 ASSEMBLY

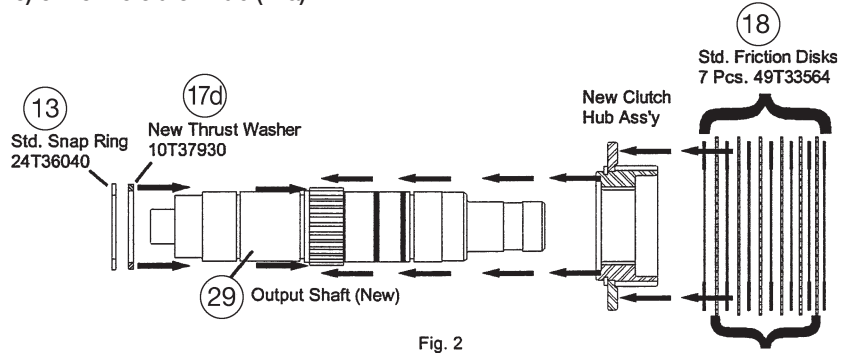
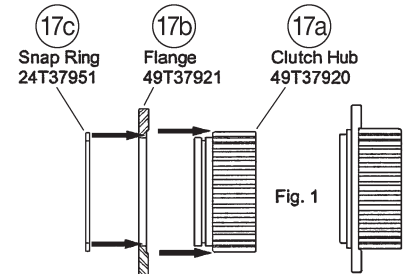
NO. 3 ASSEMBLY

CS10 CLUTCH HUB REPLACEMENT

Effective April 1999 the clutch hub supplied in the CS10 Series PTO has the two piece clutch hub as shown on this page. The two piece hub consists of a splined hub and a flange which is held together by a snap ring. Because of this design change the clutch pack stack up has changed as shown on page 3.

Begin by assembling the new clutch hub:

1. Place the flange (17b) on to the clutch hub (17a) so that the recessed area of the flange is against the splines. Fig. 1.
2. Using snap ring pliers install the snap ring (17c) on to the clutch hub (17a).
3. The new clutch hub requires a new output shaft. Select the appropriate shaft and install the thrust washer (17d) against the splines on the output shaft (29). Fig. 2.
4. Hold thrust washer in place with the snap ring (13).



06T37932 = 06T36039X ("B")

06T37934 = 06T36073X ("S", "D")

06T37636 = 06T36832X ("I")

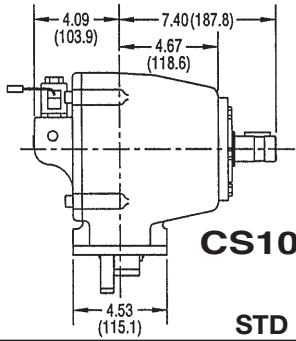
06T37933 = 06T36072X ("C", "X", "2")

06T37935 = 06T36074X ("E", "Y")

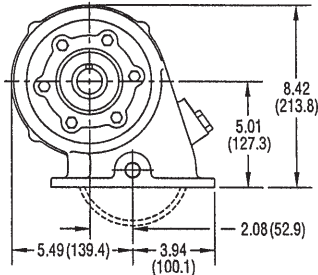
06T37937 = 06T36799X ("P")

Current Inventory that has been reworked will have an "X" marked on the shaft by the part number.

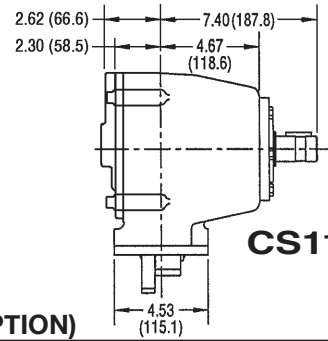
DIMENSIONS IN INCHES (MM)



CS10

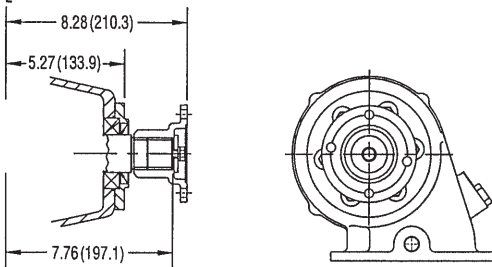


STD 1 1/4" ROUND KEYED SHAFT ("B" OPTION)

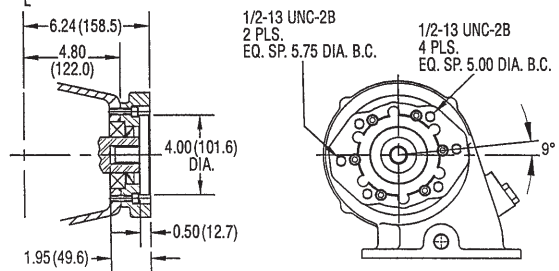


CS11

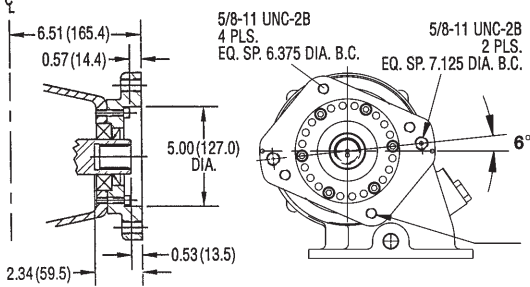
1 1/2" 10 SPLINE W/1410 SERIES FLANGE ("C" OPTION)



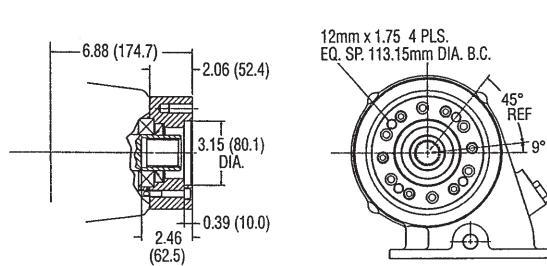
SAE "B" 2- & 4-BOLT 7/8" 13 SPLINE ("D" OPTION)



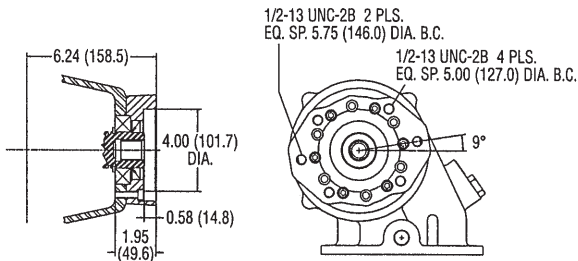
SAE "C" 2- & 4-BOLT 1 1/4" 14 SPLINE ("E" OPTION)



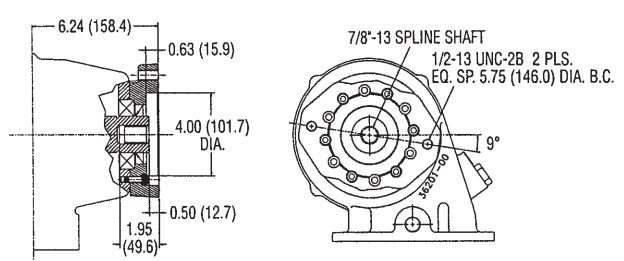
DIN 5462 36MM 8 SPLINE ("I" OPTION)



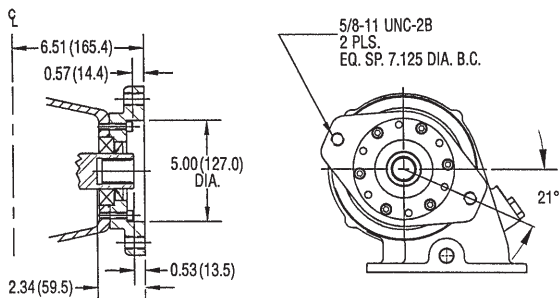
SAE "B&B" 2- & 4-BOLT 1" 15 SPLINE ("P" OPTION)



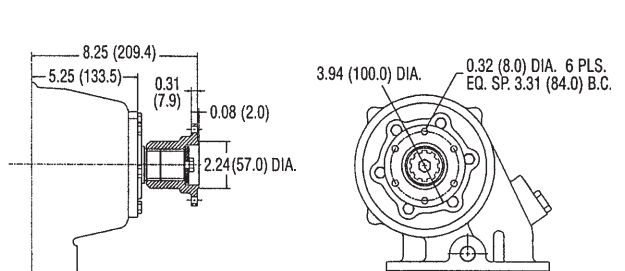
SAE "B" 2-BOLT 7/8" 13 SPLINE ("S" OPTION)



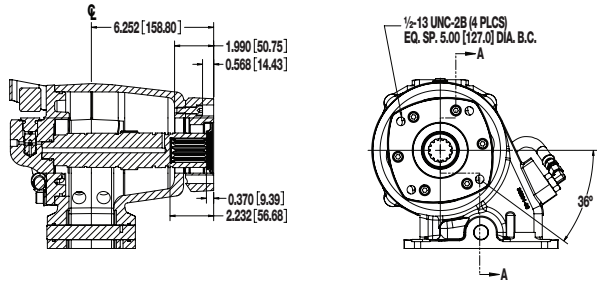
SAE "C" 2-BOLT 1 1/4" 14 SPLINE ("Y" OPTION)



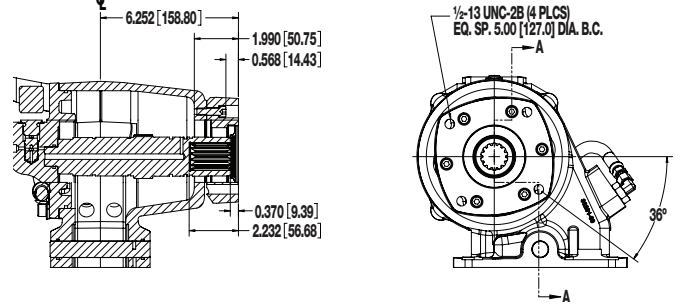
1 1/2" 10 SPLINE W/DIN 100 FLANGE ("2" OPTION)



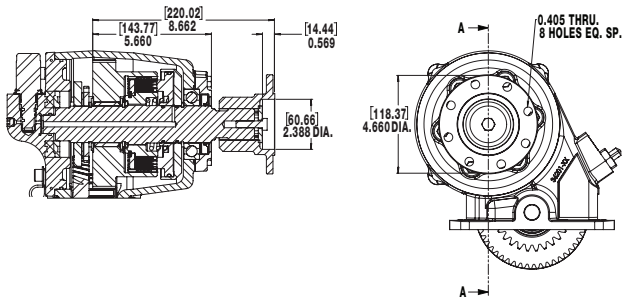
SAE "B" FLANGE W/SAE "C" SHAFT ("Z" OPTION)



SPECIAL FOR EXTENDED SHAFT ("V" OPTION)



1 1/2" 10 SPLINE W/DIN 120 FLANGE ("9" OPTION)





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