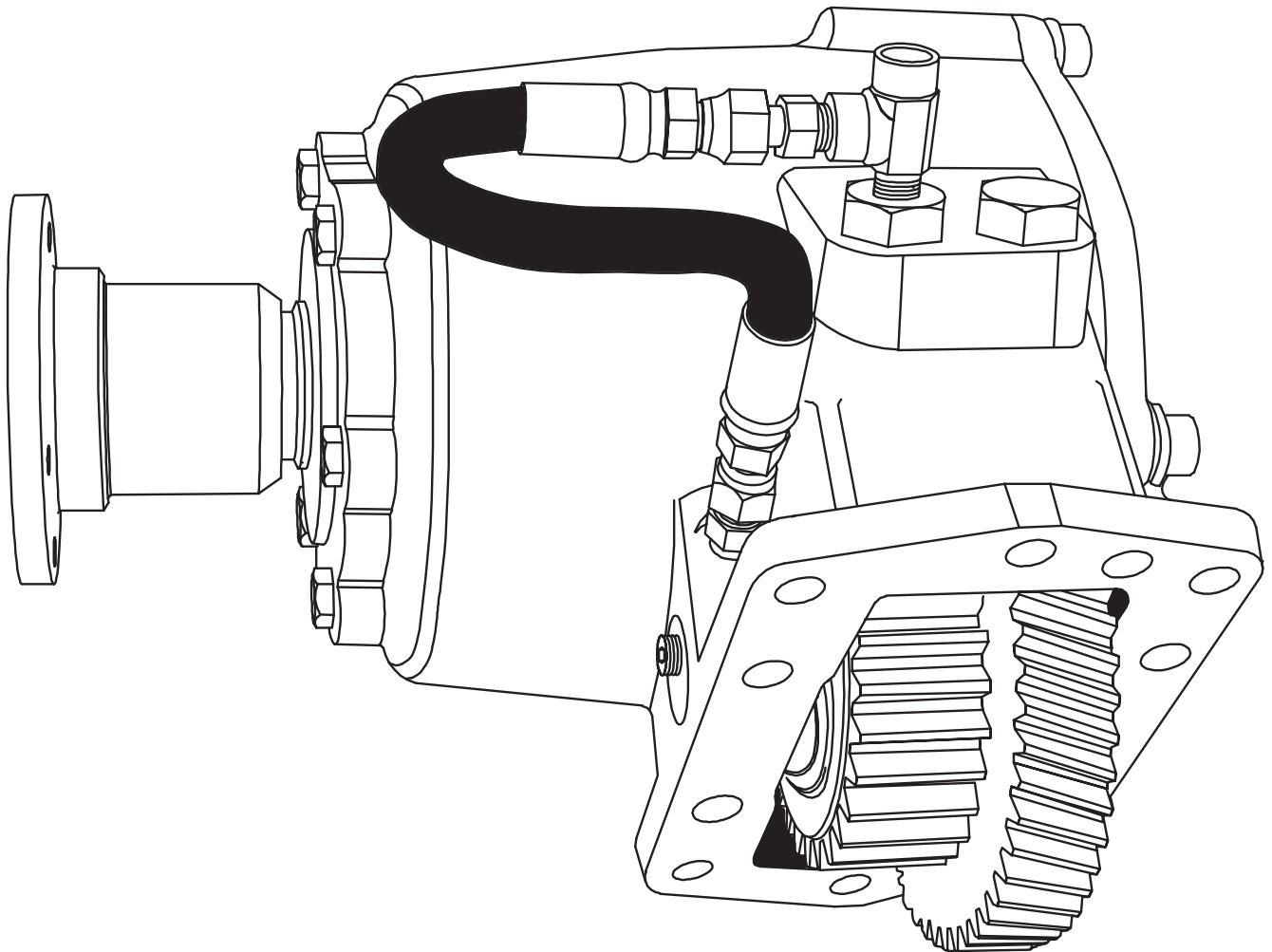




# CS41 SERIES CLUTCH SHIFT PTO

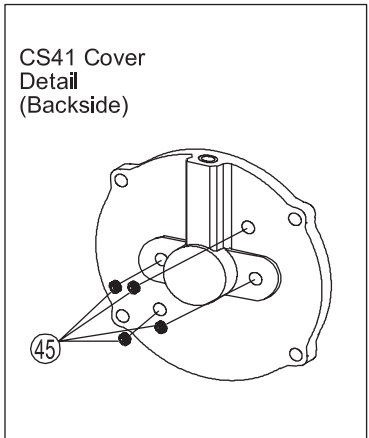
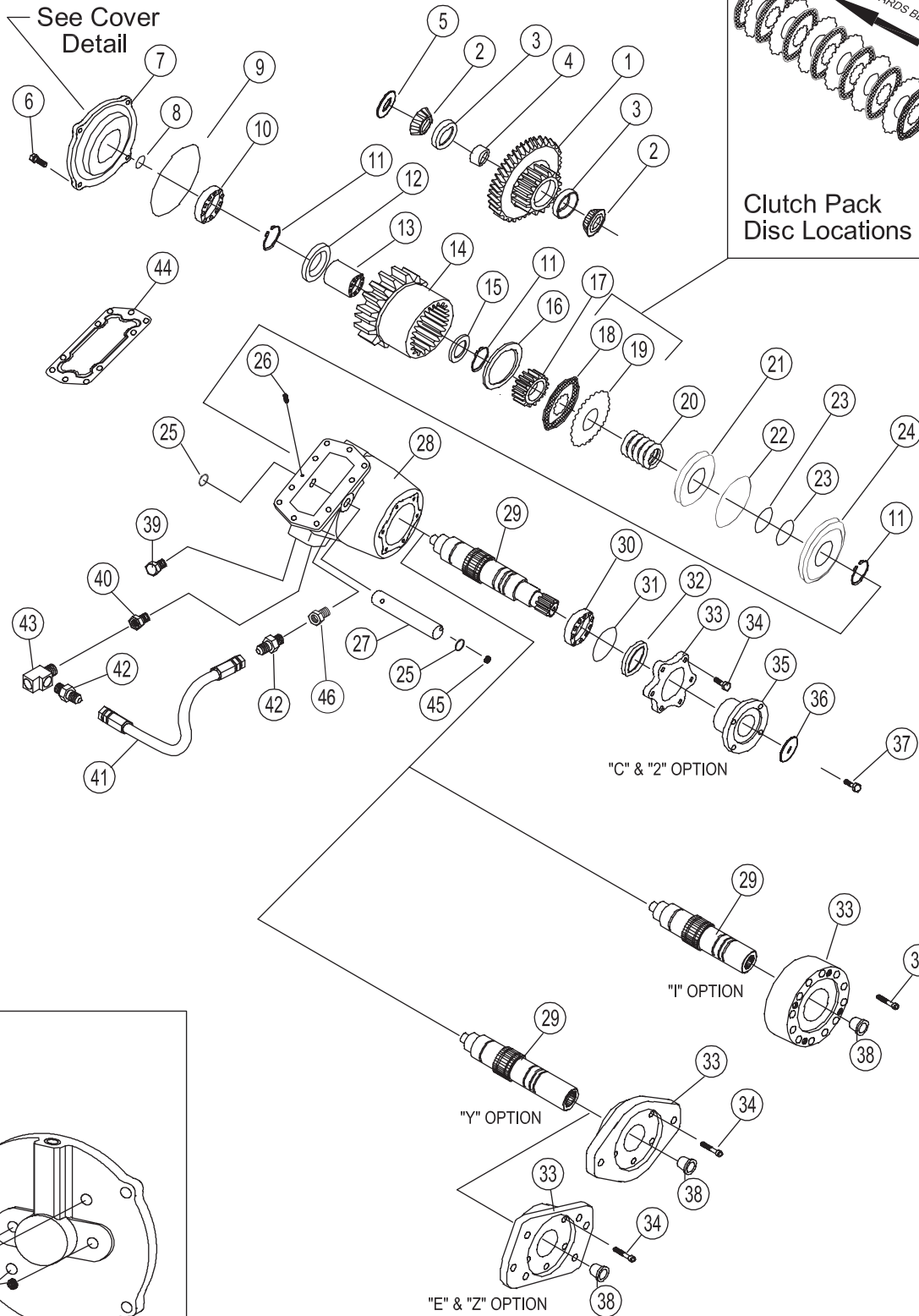
## PARTS LIST AND SERVICE MANUAL

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Patent #2004200334

# CS41 SERIES CLUTCH SHIFT PTO EXPLODED VIEW



# PARTS LIST AND DESCRIPTION

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	03T38671* 03T39514* 03T38674* 03T40199* 03T40200* See Table A	Input Gear - A1007 Input Gear - A1010 Input Gear - A1012 Input Gear - C9507 Input Gear - C9510
2	2	10T38684*	Bearing
3	2	10T38685*	Bearing Cup
4	1	See Table B*	Bearing Cone Spacer
5	1	See Table C*	Shim
<b>* Part numbers for identification purposes only. Items sold as sub-assembly only.</b>			
6	4	19T39418	Socket Capscrew
7	1	15T39288	End Cover
8	1	12T36081	O-Ring
9	1	12T36207	O-Ring
10	1	10T35994	Bearing
11	3	24T36040	Snap Ring
12	1	10T38691	Thrust Ring
13	1	10T35991	Bearing
14	1	02T38675 02T39516 02T38676	Output Ratio Gear – 07 (38T) Output Ratio Gear – 10 (32T) Output Ratio Gear – 12 (30T)
15	1	10T38696	Thrust Ring
16	1	28T38697	Spacer Ring
17	1	49T38692	Clutch Hub
18	7	49T38231	Friction Disc
19	6	49T38230	Spacer Disc
20	1	27T36112	Spring
21	1	49T38693	Piston
22	1	12T38665	O-Ring
23	2	12T36053	O-Ring
24	1	49T38694	Piston Cup
25	2	12T35577	O-Ring
26	1	19T36082	Set Screw
27	1	07T38689	Idler Shaft
28	1	01T38681 01T38683 01T40201 01T40202	Housing 3 Arrangement - A10 Housing 1 Arrangement - A10 Housing 3 Arrangement - C95 Housing 1 Arrangement - C95

ITEM	QTY	PART NUMBER	DESCRIPTION
29	1 1 1	06T38695 06T39169 06T39151	Output Shaft "2", "C" Output Shaft "E", "Z", "Y" Output Shaft "I"
30	1	10T35775	Bearing
31	1	12T35773	O-Ring
32	1	11T37795	Shaft Seal
33	1	15T39226 14T36834 14T40576 14T36007 14T39188	End Cover "2", "C" Hydraulic Flange "I" Hydraulic Flange "E" Hydraulic Flange "Y" Hydraulic Flange "Z"
34	6	19T32740 19T35386 19T31577	Capscrew "2", "C" Capscrew "I" Flange Capscrew "E", "Y", "Z" Flange
35	1	14T37498 14T31499	Flange "2" Flange "C"
36	1	21T20092	Washer "2", "C"
37	1	19T38266	Capscrew "2", "C"
38	1	25T37767 25T35936	Caplug "I" (Storage Only) Caplug "E", "Y", "Z" (Storage Only)
39	1	25T35999	Plug
40	1	25T35784	Orifice Fitting
41	1	45T36308	Hose 10"
42	2	43T37503	Fitting
43	1	43T39129	Tee Fitting
44	1	13T35777	Gasket
45	5	25T21684	Pipe Plug 1/8"
46	1	43M02203	Orifice Fitting
N.S.	1	20MK1001  20TK4618 20TK4846	Standard Stud Kit - A10 See pg. #8 Special Stud Kit - A10 Standard Stud Kit - C95
N.S.	1	48TK4894 48TK4893 48TK4039	Installation Kit 12VDC - A10 Installation Kit 24VDC - A10 Installation Kit 12VDC - C95
N.S.	1	CS41-RBK	Rebuild Kit Incl.: (1) 8, (1) 9, (1) 10, (3) 11, (1) 12, (1) 13, (1) 15, (1) 16, (7) 18, (6) 19, (1) 20, (1) 22, (2) 23, (2) 25, (1) 26, (1) 30, (1) 31, (1) 32, (1) 44 Note: Rebuild Kit does not include input components. Input components are sold separately.
N.S.	1	CS41-GSK	Gasket Kit Incl.: (1) 8, (1) 9, (1) 22, (2) 23, (2) 25, (1) 31, (1) 32, (1) 44

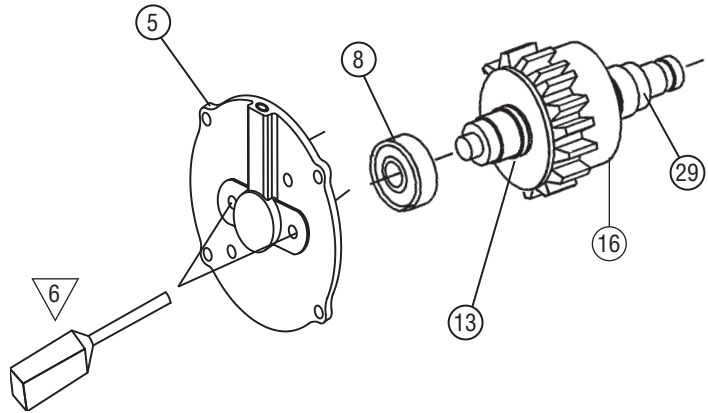
# CS41 DISASSEMBLY & REASSEMBLY

(REFERENCE EXPLODED VIEW ON PAGE 2)

## DISASSEMBLY PROCEDURE

▽ - DENOTES SPECIAL SERVICE PROCEDURES

1. Remove CS41 input gear, by removing the set screw in the pad and driving idler shaft from housing (26, 27).
3. Remove the four large socket capscrews (4) which hold bearing cover to PTO housing.
4. Position housing against a bench block and hit end of output shaft with a soft face hammer to remove entire output shaft assembly with bearing cover.
5. Remove the two pipe plugs (45) from bearing cover. This exposes ball bearing assembly within the cover.
- 6 ▽ Using a 1/4" punch and alternating between the two holes, drive bearing and shaft assembly from bearing cover.
7. Using snap ring pliers, remove snap ring (11) located on output shaft end while gently pushing on piston cup (24).
8. Pull piston cup (24) from the shaft and piston (21) will go with it.
9. Tap piston cup on a wood surface to remove piston.
10. Remove spring (20). The clutch friction discs (18), spacer disc (19), spacer ring (16), and inner clutch hub (17) can be removed by pointing shaft end down.
11. The snap ring (11) on opp end of bell gear can be removed with snap ring pliers. This allows bell gear to be removed towards closed end. The internal bearing (13) of bell gear can easily be removed.



## REASSEMBLY PROCEDURE

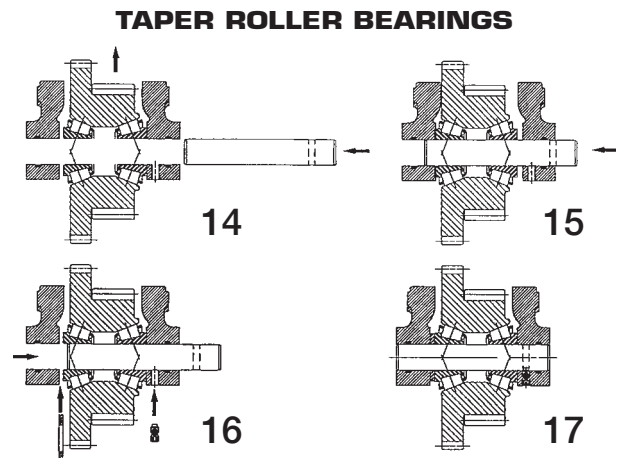
12. The reassembly of the unit is made in reverse of the disassembly.
13. Be sure to lubricate o-rings and all bearings upon installation.  
Torque capscrews to values shown or to following values:  
5/16 capscrews - 18 ft. lb.  
3/8 capscrews - 36 ft. lb.  
1/4 set screw - 9 ft. lb.

14 ▽ Place input bearing into input gear and slide this group into housing to line up idler shaft.

15 ▽ Tap idler shaft into housing and through both bearing races.

16 ▽ Tap idler shaft in reverse direction so that it is flush with bearing in this assembly. Insert thickest shim that can be **installed by hand** in gap between bearing and housing. Rotate input gear to ensure it is not excessively tight or loose. Recommended bearing pre-load is .002" loose to .006" loose.

17 ▽ Tap idler shaft into position and install set screw.



# CS41 SERIES INSTALLATION KITS

CS41 ELECTRICAL – KIT NO. 48TK3882 (12V)

CS41 ELEC/HYD SYSTEM – KIT NO. 48TK4894 (12V)  
(INCLUDES 48TK3882)

ITEM	QTY	PART NO.	DESCRIPTION
		<b>30T36270</b>	<b>Switch Ass'y (Incl. 1, 2, 3, 4)</b>
1	1	36MA1005	Switch Bracket
2	1	36M01006	Face Plate for Overspeed Light
		36T36271	Face Plate without light access
3	1	32MSR12V	Light Assembly (12 Volt)
4	1	30T35687	Rocker Switch (12 Volt)
6	1	33T36299	Fuse Assembly
7	1	30T37954	Pressure Switch
8	1	34M18250	Female Spade Connector
9	1	34M18009	Ring Terminal
10	2	34M18187	Female Spade Connector
11	1	34M18002	Butt Splice
12	1	34T35872	Wire Harness
13	6	37M18000	Wire
14	1	37T35674	Grommet
N.S.	1	36MK1007	Bolt Kit (Incl w/30T36270+30T36453)
N.S.	1	43M05522	Elbow

ITEM	QTY	PART NO.	DESCRIPTION
15	1	43T37503	1/8" NPT/JIC Fitting
16	2	43T35867	1/8" NPT/JIC Elbow
17	4	45T36274	Hose Assembly
18	1	43T36231	Straight Branch Tee
19	3	43M68014	7/16 - 20 Str. Thread Elbow
20	1	35T37928	Valve 12V D.C.
N.S.	2	19T36623	Capscrew
N.S.	2	22T35140	Nut
N.S.	2	21T37991	Lock Washer

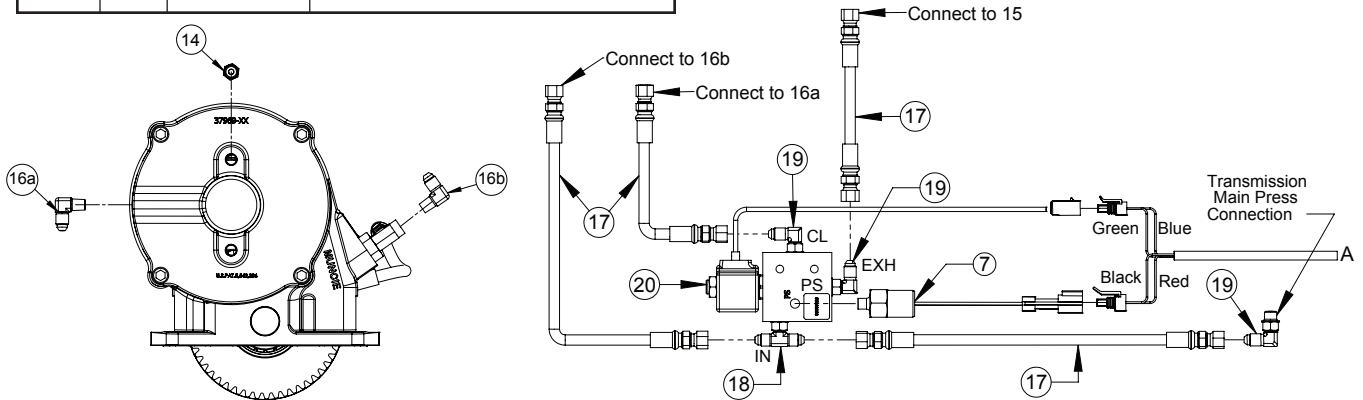
For 24V Option Kit No. 48TK4893 (Includes 48TK3891) Substitute:

20	1	35T37967	Valve 24V D.C.
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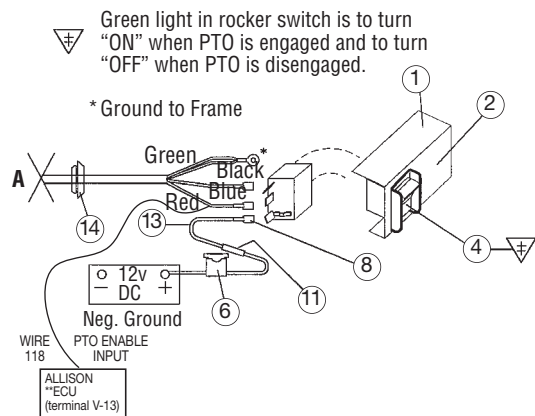
For 24V Option Kit No. 48TK3891 Substitute:

		<b>30T36453</b>	<b>Switch Ass'y (Incl. 1 &amp; 2 above and 3 &amp; 4 below)</b>
3	1	32MSR24V	Light Assembly (24 Volt)
4	1	30T35712	Rocker Switch (24 Volt)

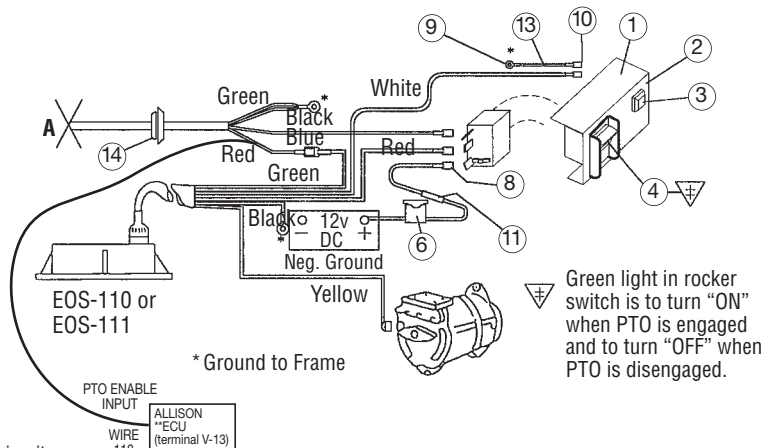
## CS41 SERIES INSTALLATION KIT WITH REMOTE ACTIVATION SOLENOID 43TK4036 HOSE KIT (STANDARD)



### CIRCUIT INSTALLATION WHEN USED WITHOUT OVERSPEED SWITCH



### CIRCUIT INSTALLATION WHEN USED WITH OVERSPEED SWITCH



\*\* Clutchshift PTO require connection to Allison "PTO Enable Input" circuit. Check with vehicle dealer or body builder's information for location.



# CS41 SERIES LUBE HOSE INSTALLATION

## INSTALLATION TIPS:

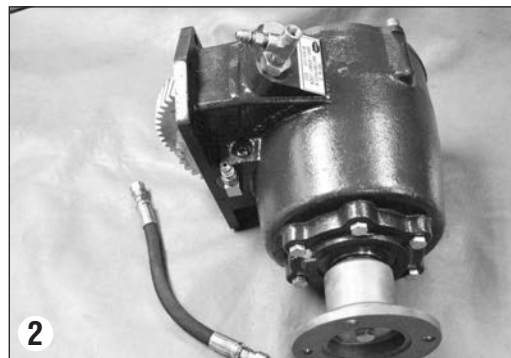
Do not use Teflon tape on pipe threads. If sealant is to be used, it is recommended that paste style thread sealant or Loctite® pipe thread sealant be used. Allow the proper drying times before pressurizing. See manufacturers instructions.

## CS41/CD40 WITH LUBE HOSE ALREADY INSTALLED INTO END OF IDLER SHAFT (FIG. 1)

Remove the hose from the fittings (2). Remove both fittings at the idler shaft and discard the silver 90 degree fitting. Remove the pipe plug from the housing and install it in the end of the idler shaft (3). Remove the street tee and hose fitting from the lube port below the model tag. Install PTO onto the transmission. Install the street tee, 43M02203 straight orifice fitting and hose fittings and tighten as shown in (5). Install hose as shown in (6) and tighten being careful not to twist the hose.

## CS41/CD40 WITHOUT LUBE HOSE INSTALLED (FIG. 3)

If the 1/8" pipe plug is located in the housing port above the idler shaft, remove and install it in the end of the idler shaft (3). Locate the lube hose, hose fittings, 43M02203 straight orifice fitting and street tee (4). Install PTO onto the transmission. Install the street tee, 43M02203 straight orifice fitting and hose fittings and tighten as shown in (5). Install hose as shown in (6) and tighten being careful not to twist the hose.



**TABLE A - ITEM #1 INPUT GEAR**

*Input Gear Sold as Sub-Assembly Only*

SUB-ASS'Y	INPUT GEAR	DESCRIPTION (#T)
03TA4826	03T38671	Input Gear - A1007 (50/28)
03TA4827	03T39514	Input Gear - A1010 (50/34)
03TA4828	03T38674	Input Gear - A1012 (50/36)
03TA4937	03T40199	Input Gear - C9507 (45/28)
03TA4938	03T40200	Input Gear - C9510 (45/34)

*Input sub-assembly includes: input gear, cone bearings, bearing cups and cone spacer.*

**TABLE B - ITEM #4 CONE SPACER**

SPACER	DESCRIPTION	DIMENSION
18T39242	Cone Spacer	0.798 / 0.796
18T39243	Cone Spacer	0.795 / 0.793
18T39244	Cone Spacer	0.792 / 0.790
18T39245	Cone Spacer	0.789 / 0.787
18T39246	Cone Spacer	0.786 / 0.784
18T39247	Cone Spacer	0.783 / 0.781
18T39248	Cone Spacer	0.780 / 0.778
18T39249	Cone Spacer	0.777 / 0.775
18T39250	Cone Spacer	0.774 / 0.772
18T39970	Cone Spacer	0.801 / 0.799
18T39971	Cone Spacer	0.804 / 0.802
18T39972	Cone Spacer	0.807 / 0.805
18T39973	Cone Spacer	0.810 / 0.808
18T39974	Cone Spacer	0.813 / 0.811
18T39975	Cone Spacer	0.816 / 0.814

*Only one spacer is used in input sub-assembly.*

**TABLE C - ITEM #5 BEARING SHIM**

SHIM	DESCRIPTION	DIMENSION
18T39227	Bearing Shim	0.0650 / 0.0630
18T39228	Bearing Shim	0.0675 / 0.0655
18T39229	Bearing Shim	0.0700 / 0.0680
18T39230	Bearing Shim	0.0725 / 0.0705
18T39231	Bearing Shim	0.0750 / 0.0730
18T39232	Bearing Shim	0.0775 / 0.0755
18T39233	Bearing Shim	0.0800 / 0.0780
18T39234	Bearing Shim	0.0825 / 0.0805
18T39235	Bearing Shim	0.0850 / 0.0830
18T39236	Bearing Shim	0.0875 / 0.0855
18T39237	Bearing Shim	0.0900 / 0.0880
18T39238	Bearing Shim	0.0925 / 0.0905
18T39239	Bearing Shim	0.0950 / 0.0930
18T39240	Bearing Shim	0.0975 / 0.0955
18T39241	Bearing Shim	0.1000 / 0.0980

*Only one shim is used in assembly of the PTO.*

*Kit 18TK4832 includes one of each.*

**MODEL NUMBER CONSTRUCTION**

**CS 41 - A10 07 - H 1 C X**

**PTO Type**

Clutch Shift — CS

**Series**

41

**Trans.**

Allison

Caterpillar

**CS Gear Data**

10.16P RH — A10

19.7349PLH — C95

**Speed Ratio**

07 — .74:1

10 — 1.06:1

12 — 1.20:1

**Special Feature**

- X — None (Pressure Lube Std. on all Units)
- B — Hose Kit (HD Trans. R.S.)
- D — Pulse Generator & EOS-111
- U — Pulse Generator

**Output Type**

- C — 1410 Companion Flange
- E — SAE "C" 2 & 4 Bolt
- I — DIN 5462
- Y — SAE "C" 2 Bolt
- 2 — DIN Companion Flange
- Z — 1 1/4" 14T "C" Shaft w/SAE "B" 2 & 4 Bolt

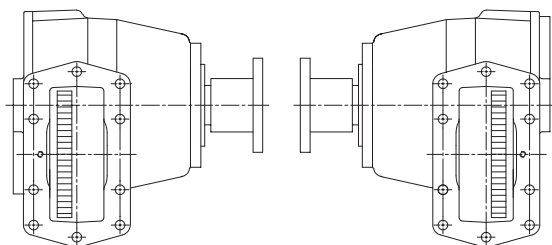
**Assembly Arrangement**

- 1
- 3

**Shifter Type**

- H — 12 Volt Electric/Hydraulic
- J — 24 Volt Electric/Hydraulic

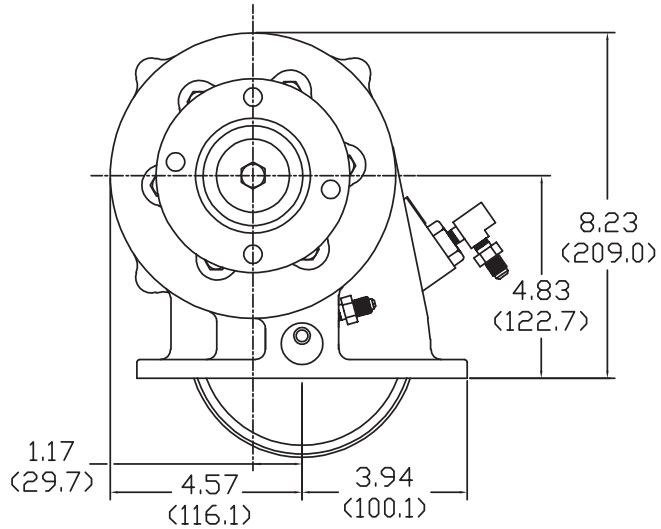
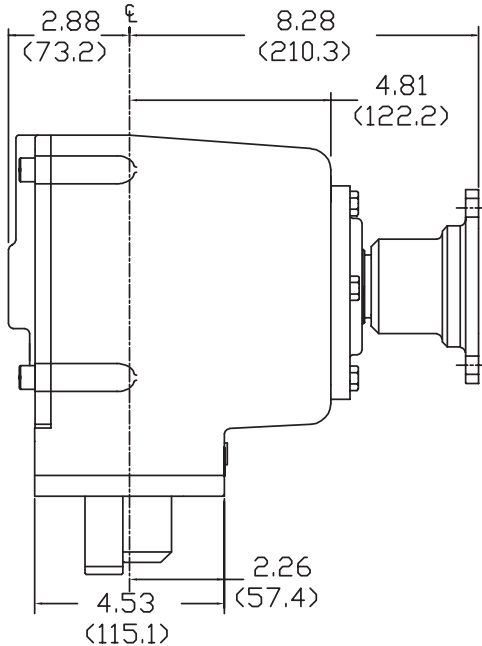
**PTO ASSEMBLY ARRANGEMENTS**



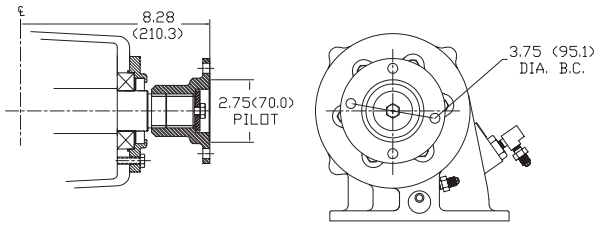
NO. 3 ASSEMBLY

NO. 1 ASSEMBLY

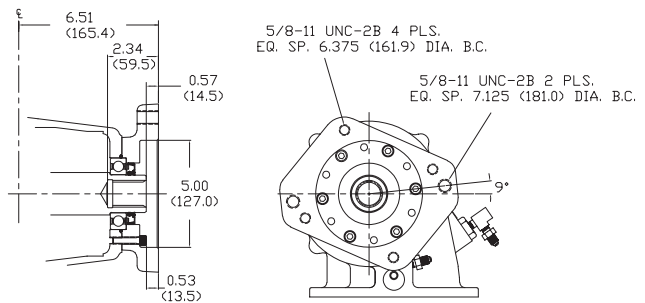
# MOUNTING DIMENSIONS IN INCHES (MM)



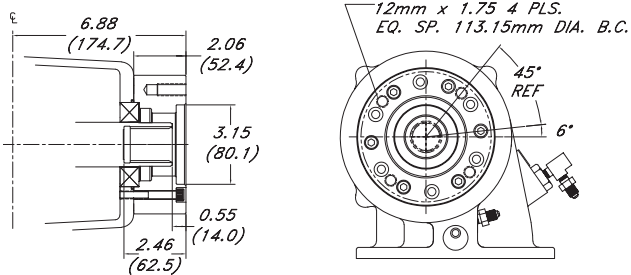
**1-1/2"-10 SPLINE W/1410 SERIES FLANGE ("C" OPTION)**



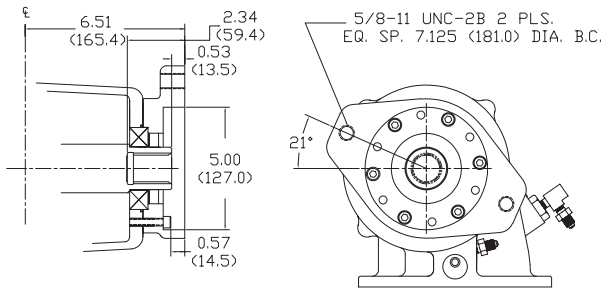
**1-1/2"-10 SPLINE W/1410 SERIES FLANGE ("C" OPTION)**



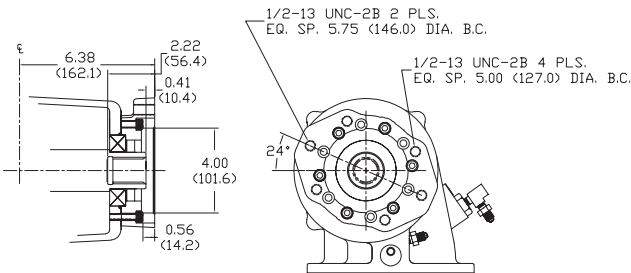
**SAE "C" 2 & 4 BOLT 1-1/4"-14 SPLINE ("F" OPTION)**



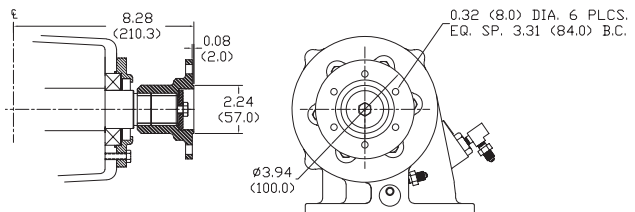
**DIN 5462 36MM-8 SPLINE ("I" OPTION)**



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



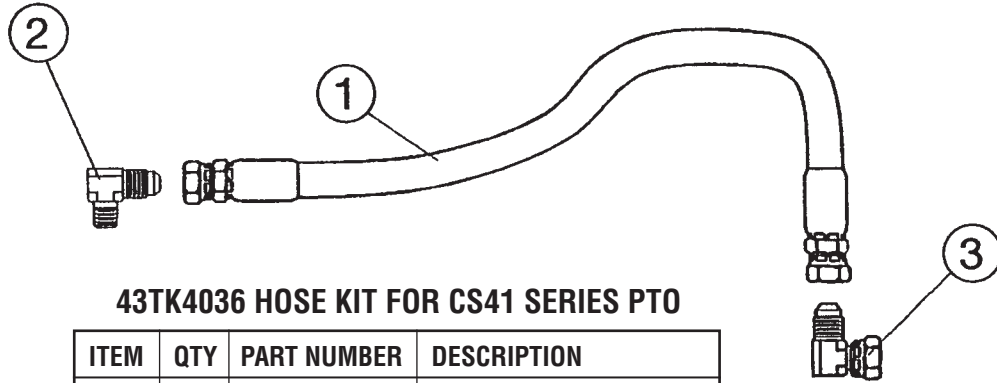
**SAE "B" 2 & 4 BOLT 1-1/4"-14 SPLINE ("Z" OPTION)**



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



# INSTALLATION HOSE KITS

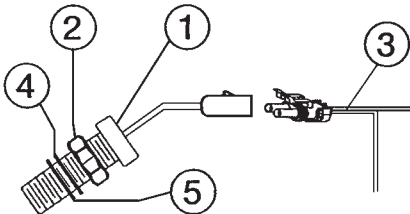


**43TK4036 HOSE KIT FOR CS41 SERIES PTO**

ITEM	QTY	PART NUMBER	DESCRIPTION
1	4	45T36274	Hose Ass'y 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

## SPEED SENSOR KIT

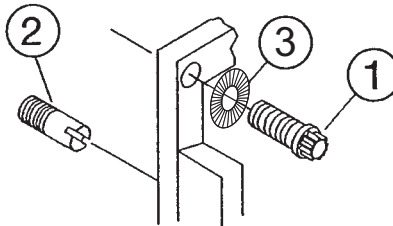
**31TK3873**  
SPECIAL OPTION "U"



ITEM	QTY	PART NO.	DESCR.
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

## BOLT KIT

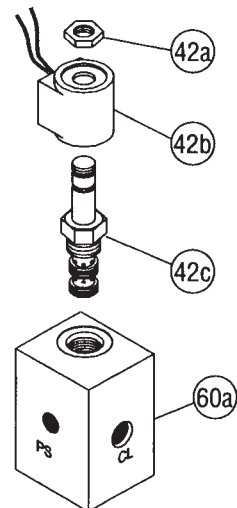
**20TK5189**



ITEM	QTY	PART NO.	DESCR.
1	8	19T40266	12 Point Capscrew –
2	2	20T35779	Alignment Stud
3	8	21T40360	Washer

## SOLENOID VALVE ASSEMBLY REPLACEMENT PARTS

**35T36092 (12V)**  
**35T36447A (24V)**



ITEM	QTY	PART NO.	DESCR.
42a	1	22T39429	Retaining Nut
42b	1	37T39088A 37T39577	12v Coil 24v Coil
42c	1	35T37997	Valve
N.S.	1	12T39408	o-ring
60a	1	N.A.	Manifold Blk

The CS41 includes the mounting kit, special shim/gasket, high pressure hose hook-up kit, wiring harness, dash bracket kit, and installation instructions. The installation does not require any special tools. The PTO is available with a pulse generator pick-up for use with the Muncie digital tachometer 38MK2000 (request MP92-04) or use with the Muncie overspeed switch SPD-1001A to control the engagement or overspeed protection of the PTO. Contact your Muncie Application Specialist for assistance with these options.



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