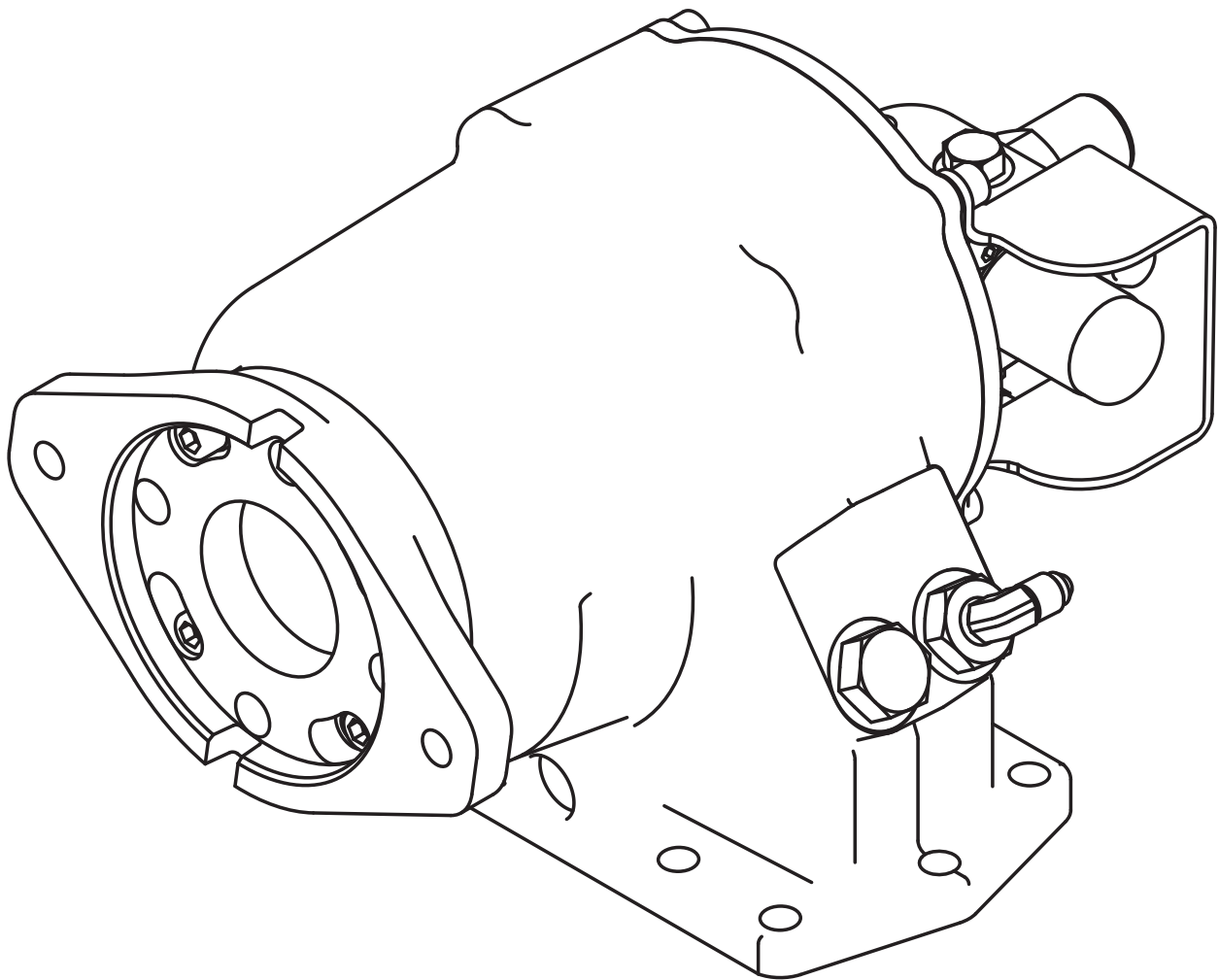




Muncie®
Power
Products

CS20 & CS21 SERIES CLUTCH SHIFT PTO

PARTS LIST AND SERVICE MANUAL



EXPLODED VIEW



PARTS LIST AND DESCRIPTION

ITEM	QTY	PART NO.	DESCRIPTION
1	1	SEE TABLE A	Input Gear
2	2	10T35776	Input Bearing
3	1	SEE TABLE B	Shim
3a	1	SEE TABLE C	Cone Spacer
4	4	19T36588	Capscrew
5	1	15T39314	Bearing Cover, Closed (9 /07 to 01/08) w/scw-in solenoid.
		15T40862	Bearing Cover, Closed (01/08 & later) w/drop-in solenoid
		15T40478	Bearing Cover w/o solenoid prov. (9 /07 & later)
CS20 units built after 09/07 have used the housing 01T39316 (1 arrg) or hsg 01T39318 (3 arrg). This will require the use of these housing when needing to replace a closed end cover shown above.			
6	1	12T36081	O-ring
7	1	12T36197	O-ring
8	2	10T21017	Bearing (1 req. "I" "D" "Z" output)
8a	1	10T38248	Bearing ("I" "D" "Z" output)
9	2	26T36175	Roll Pin (CS20, 22)
10	1	21T36473	Plate (CS20,22)
11	1	21T36511	Thrust Washer (CS20, 22)
12	1	21T36512	Plate (CS20, 22)
13	1	24T27240	Snap Ring
14	2	24T35480	Snap Ring
15	2	21T29017	Thrust Race
16	1	10T36285	Bearing
17	1	SEE TABLE D	Bell Gear
18	1	02T35454	Clutch Hub
18a	1	49T38819	Clutch Hub ("I" "D" "Z" output)
18b	1	49T38818	Flange ("I" "D" "Z" output)
18c	1	21T38907	Washer ("I" "D" "Z" output)
18d	1	24T37951	Snap Ring ("I" "D" "Z" output)
19	5	49T33564	Friction Disc
		49T38231	Friction Disc (CS22 only)
20	8	49T40641	Spacer Disc (only 4 req. "I" "D" "Z")
	4	49T38230	Spacer Disc CS22
21	1	27T36112	Spring
22	1	49T36463	Piston
		49T38552	Piston ("I" "D" "Z" output)
23	1	12T36472	O-ring
24	2	12T36471	O-ring
		12T36053	O-ring ("I" "D" "Z" output)
25	1	49T36464	Piston Cup
		49T38553	Piston Cup ("I" "D" "Z" output)
26	1	24T36470	Snap Ring
		24T36040	Snap Ring ("I" "D" "Z" output)
27	2	12T35774	O-ring
28	1	19T35785	Setscrew
29	1	07T35780	Idle Shaft
30	1	01T39316	Housing (1 arrng)
		01T39318	Housing (3 arrng)
		01T40238	Housing (1 arrng C95)
		01T40239	Housing (3 arrng C95)
		01T39793	Housing (1 Arr) ("I" "D" "Z" output)
		01T39792	Housing (3 Arr) ("I" "D" "Z" output)
31	1	SEE TABLE E	Output Shaft
32	1	26T01627	Woodruff Key
33	1	12T36751	O-ring
		12T38344	O-ring "I" "D" "Z"
34	1	11T37790	Seal
		11T37795	Seal "I" "D" "Z"
35	1	SEE TABLE F	Output Cover/Flange

ITEM	QTY	PART NO.	DESCRIPTION
35a	1	28T36546 28T39404 24T38347	Spacer (K, G, Q, P, S, T, 6) Spacer (I) Snapping (Z)
35b	1	14T37378 14T37357	Companion Flg "2" Companion Flg "C"
35c	1	21T20092	Flat Washer (2, C, X)
35d	1	19T38266	Capscrew (2, C, X)
36	4	19T33233	Capscrew ("B")
37	4	19T34462	Socket Capscrew "K" & "P" HYD
		19T39257	Socket Capscrew "G" & "S" HYD
		19M84478	Socket Capscrew "I" "D"
		19T38249	Socket Capscrew "Z"
38	1	25T35724	Capplug "K" "S" "Q" "G" (storage only)
		25T35725	Capplug "P" (storage only)
		25T37769	Capplug "I" "D"
		25T35936	Capplug "Z"
39	1	SEE PAGE 6	Solenoid
40	1	49T39511	Protector
41	4	25T21684	Pipe Plug
42	2	19T36174	Setscrew
43	2	27T36173	Spring
44	1	13T35777	Gasket
45	1	25T35999	Plug
46	1	25T35784	Orifice
47	1	43T35867	Elbow
48	1	45T36308	Hose
49	1	43T36231	Tee
50	1	25T36726	Plug
51	1	SEE PAGE 7	HOSE KITS
N.S.	1	20MK1001	Mounting Bolt Kit See pg.10
N.S.	1	48TK5028	Installation Kit (12Volt) Includes: Shift Kit, Gasket Pack, Stud Kit, Std. Hose Kit
		48TK5038	Installation Kit (24 Volt) Includes: Shift Kit, Gasket Pack, Stud Kit, Std. Hose Kit
		48TK4708	Installation Kit (P Shift Option) Gasket Pack, Stud Kit,Std. Hose Kit Pressure switch,Press Swt fittings
N.S.	1	CS20-GSK	Gasket Kit Includes: (1)6, (1)7, (1)23, (2)24, (2)27, (1)33, (1)34, (1)44, (1)12TK3902
N.S.	1	CS20-GSK-IZ*	Gasket Kit Includes: (1)6, (1)7, (1)23, (2)24, (2)27, (1)33, (1)34, (1)44, (1)12TK3902
N.S.	1	CS20-RBK	Rebuild Kit Includes: (2)2, (1)3, (1)6, (1)7, (2)8, (1)11, (1)13, (2)14, (2)15, (1)16, (5)19, (8)20, (1)21, (1)23, (2)24, (1)26, (2)27, (1)33, (1)34, (2)43, (1)44, (1)12TK3902
N.S.	1	CS20-RBK-IZ*	Rebuild Kit Includes: (2)2, (1)3, (1)6, (1)7, (1)8, (1)8a, (1)11, (1)13, (2)14, (2)15, (1)16, (5)19, (8)20, (1)21, (1)23, (2)24, (1)26, (2)27, (1)33, (1)34, (2)43, (1)44, (1)12TK3902
N.S.	1	CS22-RBK-IZ*	Rebuild Kit Includes: (2)2, (1)3, (1)6, (1)7, (1)8, (1)8a, (1)11, (1)13, (2)14, (2)15, (1)16, (5)19, (8)20, (1)21, (1)23, (2)24, (1)26, (2)27, (1)33, (1)34, (2)43, (1)44, (1)12TK3902
*Kits contain appropriate components for model & output.			

TABLES A, B, C, D, E, F

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

ASSY NO	DESCRIPTION	BASE GEAR
03TA4624	A1005 Input Gear (50/21)	03T35752
03TA4625	A1006 Input Gear (50/23)	03T35919
03TA4626	A1007 Input Gear (50/25)	03T35755
03TA4627	A1008 Input Gear (50/27)	03T35758
03TA4628	A1010 Input Gear (50/29)	03T35761
03TA4629	A1012 Input Gear (50/32)	03T36545
03TA4630	A1015 Input Gear (50/35)	03T38830
03TA4978	C9505 Input Gear (45/21)	03T40237
03TA4979	C9506 Input Gear (45/23)	03T40217
03TA4980	C9507 Input Gear (45/25)	03T40218
03TA4981	C9508 Input Gear (45/27)	03T40219
03TA4982	C9510 Input Gear (45/29)	03T40220
03TA4983	C9512 Input Gear (45/32)	03T40221
03TA4984	C9515 Input Gear (45/35)	03T40222

TABLE B
SHIM — ITEM 3 (Shim Kit # 18TK4586)

PART NO	DESCRIPTION	DIMENSION
18T35783	BRG SPACER	0.1150 / 0.1130
18T38725	BRG SPACER	0.1175 / 0.1155
18T35782	BRG SPACER	0.1200 / 0.1180
18T38726	BRG SPACER	0.1225 / 0.1205
18T35781	BRG SPACER	0.1250 / 0.1230
18T38727	BRG SPACER	0.1275 / 0.1255
18T36230	BRG SPACER	0.1300 / 0.1280
18T38728	BRG SPACER	0.1325 / 0.1305
18T36229	BRG SPACER	0.1350 / 0.1330
18T38729	BRG SPACER	0.1375 / 0.1355
18T37151	BRG SPACER	0.1400 / 0.1380
18T38730	BRG SPACER	0.1425 / 0.1405
18T37152	BRG SPACER	0.1450 / 0.1430
18T38731	BRG SPACER	0.1475 / 0.1455
18T37153	BRG SPACER	0.1500 / 0.1480

TABLE C
CONE SPACER — ITEM 3a

PART NO	DESCRIPTION	"T" DIMENSION
18T38748	Cone Spacer	0.743 / 0.741
18T38532	Cone Spacer	0.740 / 0.738
18T38533	Cone Spacer	0.737 / 0.735
18T38534	Cone Spacer	0.734 / 0.732
18T38535	Cone Spacer	0.731 / 0.729
18T38536	Cone Spacer	0.728 / 0.726
18T38537	Cone Spacer	0.725 / 0.723
18T38538	Cone Spacer	0.722 / 0.720
18T38539	Cone Spacer	0.719 / 0.717
18T38540	Cone Spacer	0.716 / 0.714
18T38590	Cone Spacer	0.713 / 0.711
18T38591	Cone Spacer	0.710 / 0.708
18T38592	Cone Spacer	0.707 / 0.704

CONE SPACER INSTALLS BETWEEN THE TAPERED INPUT BEARINGS TO SET THE BEARING PRELOAD AT .002"-.006" LOOSE. CRITICAL DIMENSION.

PURCHASE INPUT GEAR ASSEMBLY (ITEM 1) WHICH INCLUDES THE CORRECT CONE SPACER.

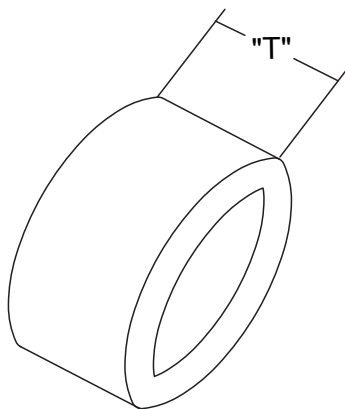


TABLE D
BELL GEAR — ITEM 17

PART NO.	DESCRIPTION
02T39319	BELL GEAR 05 (38T)
02T36466	BELL GEAR 06 (36T)
02T36467	BELL GEAR 07 (34T)
02T36468	BELL GEAR 08 (32T)
02T36469	BELL GEAR 10 (30T)
02T36542	BELL GEAR 12 (27T)
02T38832	BELL GEAR 15 (24T)

TABLE E
OUTPUT SHAFT — ITEM 31

PART NO.	DESCRIPTION
06T36452	OUTPUT SHAFT "B" 1 1/4 RD
06T37373	OUTPUT SHAFT "C" or "2"
06T38557	OUTPUT SHAFT "Z"
06T39405	OUTPUT SHAFT "D" Euro
06T36549	OUTPUT SHAFT "G" DANA SPECIAL
06T40728	OUTPUT SHAFT "I"
06T36547	OUTPUT SHAFT "K" 7/8 - 13 SPL and "6"
06T36548	OUTPUT SHAFT "Q" & "S" 7/8-13 SPL
06T36550	OUTPUT SHAFT "P" 1"-15 SPL
06T37337	OUTPUT SHAFT "T"

TABLE F
OUTPUT COVER/FLANGE — ITEM 35

PART NO.	DESCRIPTION
15T34576	BEARING COVER, OPEN "B"
14T37779	HYD FLANGE "K" & "P"
14T39137	HYD FLANGE "G" only
14T39141	HYD FLANGE "Q" & "T"
14T35464	HYD FLANGE "S"
14T38981	HYD FLANGE "6"
14T39406	HYD FLANGE "D" & "I"
14T38343	HYD FLANGE "Z"

INSTALLATION KITS

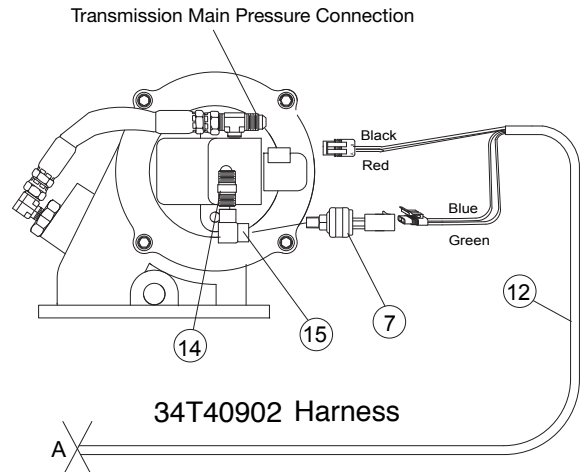
CS20 INSTALLATION KIT - 48TK5017 (12V)

ITEM	QTY	PART NO.	DESCRIPTION
1	1	30T36270	Switch Ass'y (includes 1,2,4,5)
2	1	36MA1005	Switch Bracket
4	1	36T36271	Face Plate without light access
5	1	30T35687	Rocker Switch (12v)
6	1	37T35674	Grommet
7	1	33T36299	Fuse Assembly
8	1	30T60228	Pressure Switch
9	1	34M18250	Female Spade Connector
10	1	34M18009	Ring Terminal
11	2	34M18187	Female Spade Connector
12	1	34M18002	Butt Splice
13	1	34T40902	Wire Harness
14	6	37M18000	Wire
15	1	43T37958	Pipe Nipple
16	1	43T37959	Pipe Elbow
N.S.	1	36MK1007	Bolt Kit Incl. w/30T36270 & 30T36453

For 24v Option Kit No. 48TK5018 (substitute)

		30T36453	Switch Ass'y (includes 1,2, & 5 from above and 3 & 4 from below.)
3	1	32MSR24V	Light Assembly
4	1	30T35712	Rocker Switch (24v)

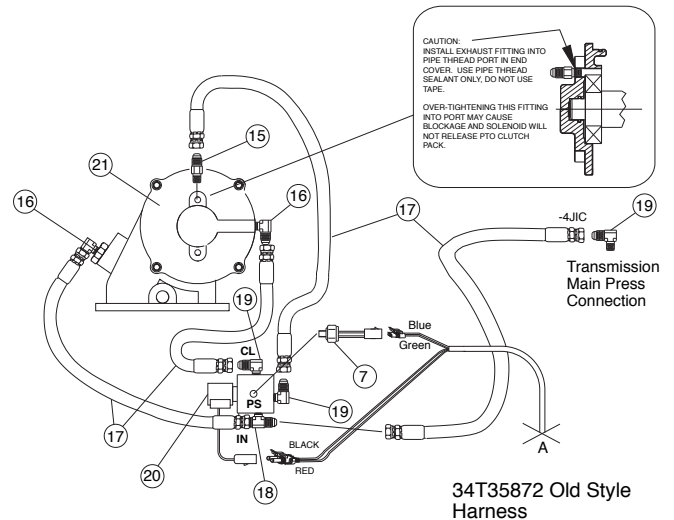
CS20 INSTALLATION KIT with DIRECT ACTIVATION SOLENOID (No Hose Kit required)



CS21 CONVERSION KIT - 48TK5076 (12V) Use with 48TK3882 (N.S.)

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.
21	1	15TA5075	Cover Assembly (Includes o-ring (6 & 7) as shown on page 2.
N.S.	1	43T36445	Elbow (Use as needed)
N.S.	2	19T36623	Capscrew
N.S.	2	22T35140	Nut
N.S.	2	21T37991	Lockwasher

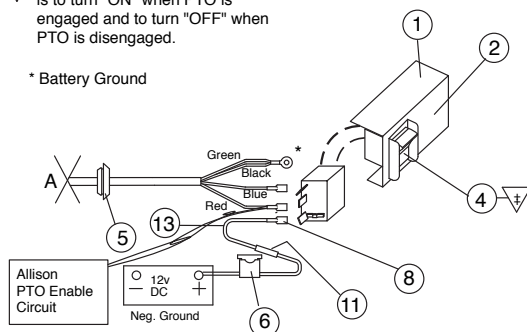
CS21 INSTALLATION KIT with REMOTE ACTIVATION SOLENOID



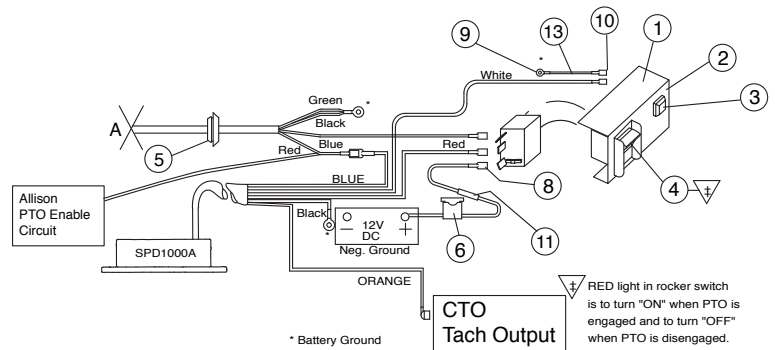
CIRCUIT INSTALLATION When used without Overspeed Switch

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

* Battery Ground

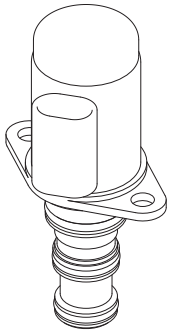


CIRCUIT INSTALLATION When used with Overspeed Switch



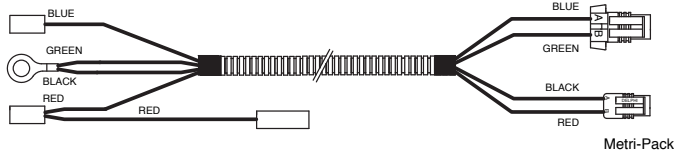
COVERS AND SOLENOIDS

DROP-IN SOLENOID VALVE — JANUARY 2008 AND LATER — ITEM 39

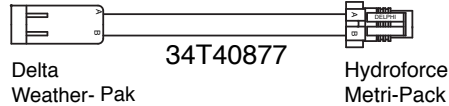


SOLENOID

HARNESS FOR DROP-IN VALVE — 34T40902

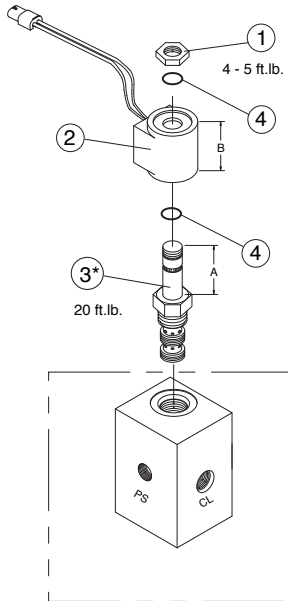


HARNESS ADAPTER (Converts old to new) — 34T40877



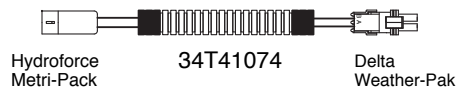
ITEM	QTY	PART NO.	DESCRIPTION
39	1	35T40860	Solenoid 12v
		35T40864	Solenoid 24v
39a	2	19T40859	5mm capscrew

SCREW-IN SOLENOID VALVE — BEFORE 2008 — ITEM 39



SOLENOID

HARNESS ADAPTER (Converts new to old) — 34T41074



SCREW IN SOLENOID REPLACEMENT PARTS — BEFORE 2008

HYDROFORCE solenoid is replaced by DELTA. (Coils are NOT interchangeable)

HYDROFORCE — Replacement parts.

ITEM	PART NO.	DESCRIPTION
1	22T36498	Nut
2	37T36496	12v Coil
	37T36497	24v Coil
3*	35T37997	Stem
DIM A = 1.50		DIM B = 1.47

BLOCK TYPE VALVE - For CS11/CS21

PART NO.	DESCRIPTION
35T37928	12v Valve with block (includes 35T36092)
35T37967	24v Valve with block (includes 35T36447A)

COMPLETE CARTRIDGE ASSEMBLY

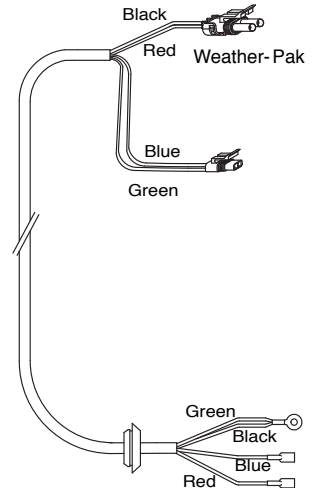
ITEM	PART NO.	DESCRIPTION
1	35T36092	Solenoid 12v
	35T36447A	Solenoid 24v

DELTA — Replacement parts.

ITEM	PART NO.	DESCRIPTION
1	22T39429	Nut
2	37T39088A	12v Coil
	37T38997A	24v Coil
3*	35T39577	Stem
4	12T39408	O-ring
DIM A = 1.84		DIM B = 1.77

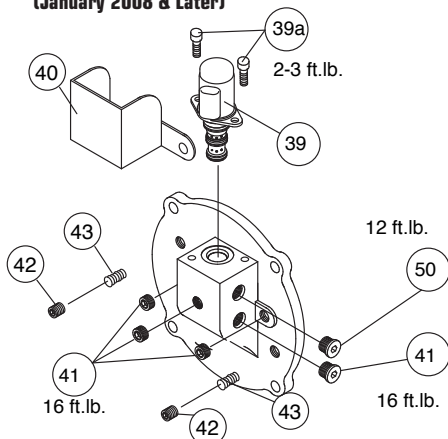
*3 is NOT Sold Separately

HARNESS FOR OLD-STYLE SCREW-IN VALVE — 34T35872



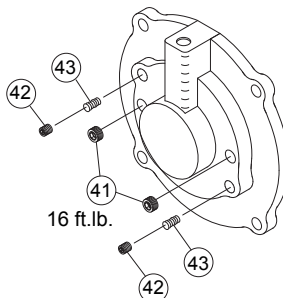
DROP-IN — 15T40862

(January 2008 & Later)



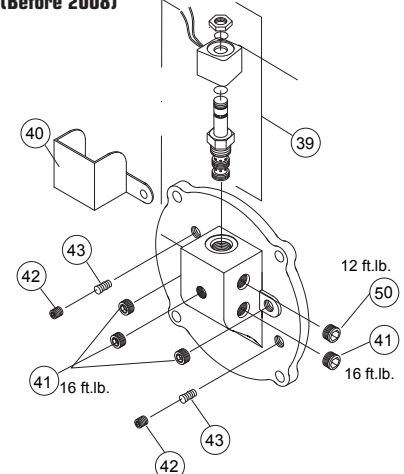
COVERS — ITEM 5

CS21 COVER — 15T40478



SCREW-IN — 15T39314

(Before 2008)



ACCESSORY KITS

INSTALLATION HOSE KIT — ITEM 51

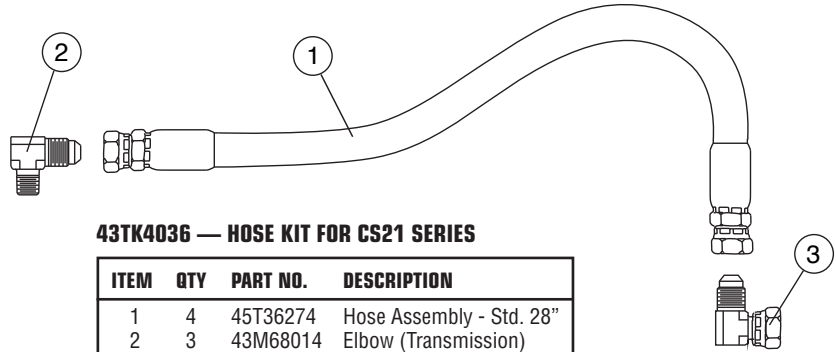
43TK3881 — HOSE KIT - STANDARD 28"

43TK3885 — HOSE KIT - FOR TOP R.S. 4000 SERIES 57"

43TK4545 — HOSE KIT - SPECIAL 17"

43TK5163 — HOSE KIT - FOR TOP R.S. 3000 SERIES 36"

ITEM	QTY	PART NO.	DESCRIPTION
1	1	45T36274	Hose Assembly - Std. 28"
		45T36273	Hose Assembly - HD Top 57"
		45T39186	Hose Assembly - Special 17"
		45T38840	Hose Assembly - 36"
2	1	43M68014	Elbow (Transmission)
3	1	43T36445	Elbow (use as needed) (43TK3881 & 43TK4545 only)



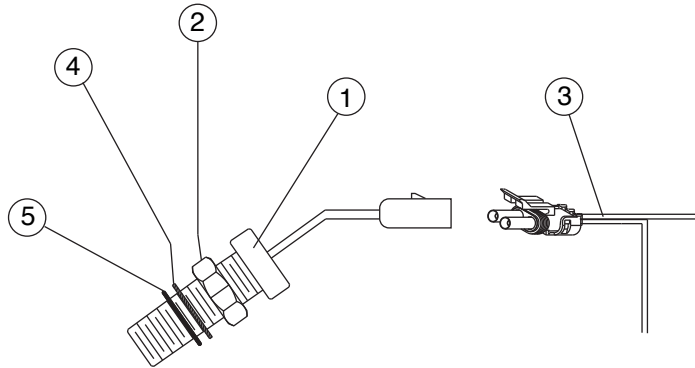
43TK4036 — HOSE KIT FOR CS21 SERIES

ITEM	QTY	PART NO.	DESCRIPTION
1	4	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

SPEED SENSOR KIT

31TK3873 — SPECIAL OPTION "U"

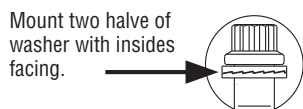
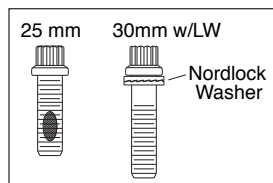
ITEM	QTY	PART NO.	DESCRIPTION
1	1	31T35108	Mag Pickup
2	1	21T35109	Jam Nut
3	1	34MA1415	Wiring Harness
4	1	21T36099	Flat Washer
5	1	12T35774	O-ring



BOLT KIT

20MK1001 — BOLT KIT FOR CS20

QTY	PART NO.	DESCRIPTION
6	19T40266	12pt. Capscrew - 30mm
2	19T37727	12pt. Capscrew - 25mm
2	20T35779	Alignment Stud
6	21T40360	Nordlock Washer



The two(2) 25mm long capscrews are to be used in positions 1 and 3 as shown in diagram (Fig. 1). The six(6) 30mm long capscrews and six(6) special lock washers are used in positions 2, 4, 5, 6, 7, & 8.

Torque to 45 lb.Ft.

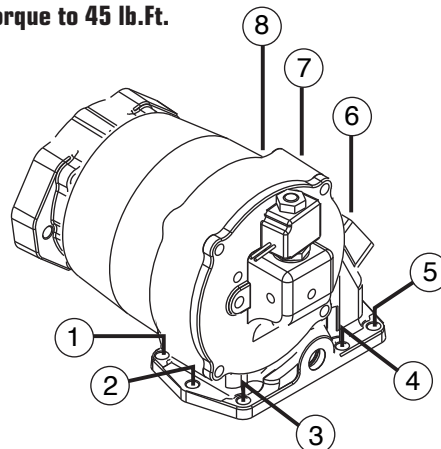


Figure 1. - CAPSCREW PLACEMENT

IMPORTANT

The CS20 includes the mounting kit, special shim/gasket, high pressure hose hookup kit, wiring harness, dash bracket kit, and installation instructions. 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 digital switch SPD-1000A to control the engagement or overspeed protection of the PTO. Contact your Muncie Application Specialist for assistance with these options.

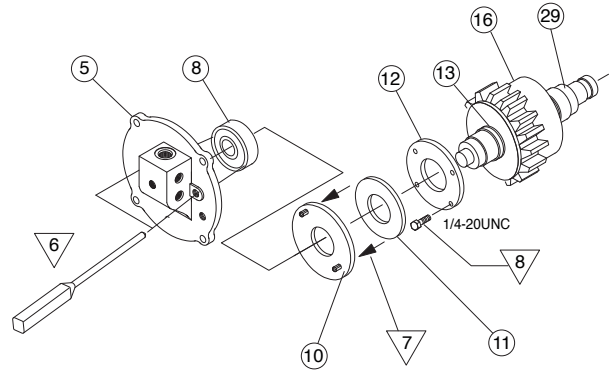
CS20 DISASSEMBLY AND ASSEMBLY

(Reference Exploded View on page 2)

▽ DENOTES SPECIAL SERVICE PROCEDURES

DISASSEMBLY PROCEDURE

1. Remove the CS20 input gear, by removing the set screw in the pad and driving the idler shaft from the housing. (28,30)
2. Remove the set screws (42) from the bearing cover (5) which hold the drag brake springs (43). Position the housing so that the springs fall from housing.
3. Remove the four large socket capscrews (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 (41) 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 capscrews into the drag brake rotor (12) until they just touch the back of the bell gear. Using an "X" pattern screw the capscrews 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 (26) located on the output shaft end while gently pushing on the piston cup (24).
10. Pull the piston cup (25) from the shaft and the piston (22) will go with it.
11. Tap the piston cup on a wood surface to remove the piston.
12. Remove the spring (21). The clutch friction discs (19) and spacer discs (20) and inner clutch hub (18) can be removed by pointing the shaft end down.
13. With the drag brake removed, the snap rings (13 & 14) 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 (16) of the bell gear can easily be removed.



DRAG BRAKE AND BELL GEAR REMOVAL

REASSEMBLY PROCEDURE

14. The reassembly of the unit is made in reverse of the disassembly. The re-use of seals, orings and snaprings are not recommended.
15. Be sure to lubricate the o-rings and all bearings upon installation. Torque capscrews to the values shown or to the following values. 5/16 capscrews - 18 ft.lb.
3/8 capscrews - 36 ft.lb. 1/4 set screw - 9 ft.lb.
- 16▽ The Input Gear is replaced as a set which includes the gear, cone spacer, & bearings. 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 per-load and measurement is not required.)
- 19▽ Tap the idler shaft into position and install set screw.

SCREW-IN SOLENOID VALVE INSTALLATION

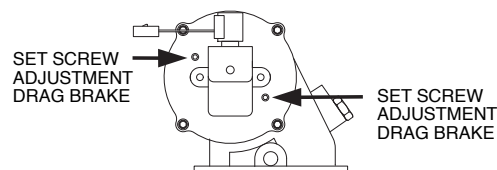
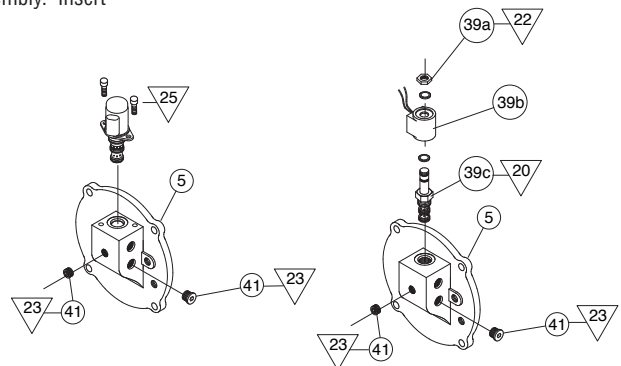
- 20▽ Separate the coil from the valve assembly. Insert the valve cartridge into the rear cover and torque to 20 ft.lb.
21. Slip one O-ring and the coil over the valve. Slip the second O-ring on.
- 22▽ Place thread locking compound on the post threads and install nut. Torque the nut 4 to 5 ft.lb. max.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

DROP-IN SOLENOID VALVE INSTALLATION

24. Valve is pushed into housing cavity.
- 25▽ Use two 5mm capscrews to mount solenoid. torque to 2 - 3 ft.lb.

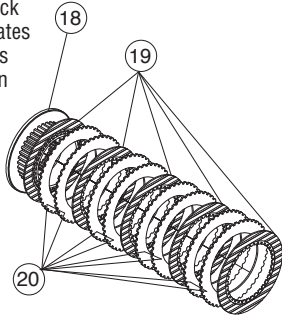
DRAG BRAKE ADJUSTMENT

26. When installing the rear cover be sure to align the roll pins in the drag brake plate with the holes in the rear cover.
27. After the cover has been attached to the housing insert the springs into the holes.
28. Insert the setscrew over the spring and turn the screw seven (7) full turns.
29. Follow the test and adjustment procedures in the CS20 owners manual.



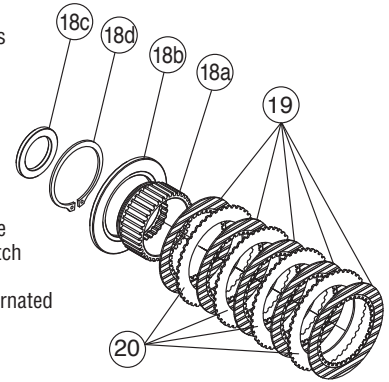
CLUTCH ASSEMBLY/ SOLENOID

Standard clutch pack assembly stator plates are stacked as pairs between the friction disc and arranged on a 1-piece clutch hub



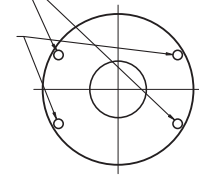
Modified clutch assembly for outputs I, D, or Z.

The output shaft for the I, D or Z output option is a larger diameter shaft and requires different clutch pack components. The clutch hub is assembled by inserting 18a into 18b and holding with snapping 18d. The spacer 18c is placed on the output shaft before installing the clutch hub assembly. The friction and stator plates are alternated starting with a friction disc.



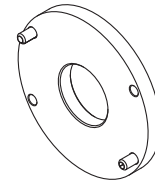
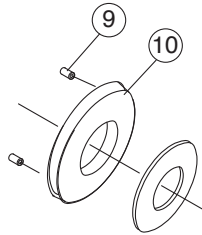
Install 1 pin (item#9) per hole, in these two holes.

OR
These two holes.



BRAKE PLATE — ITEM 10
Detail shows Roll Pin locations.

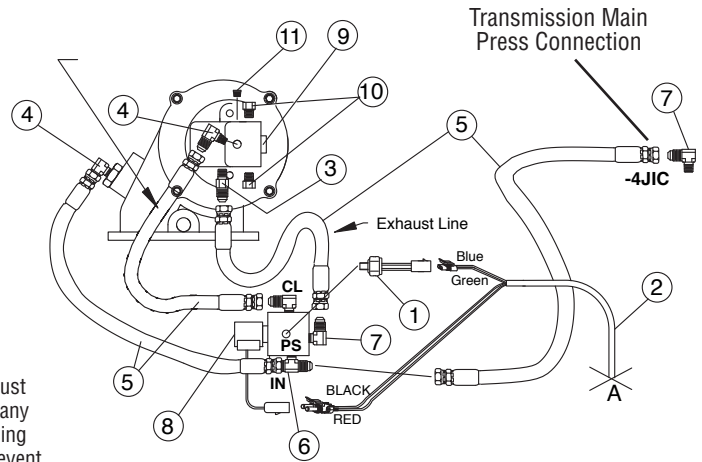
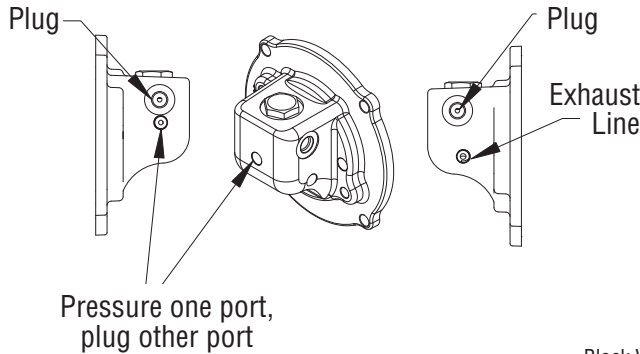
BRAKE PLATE ASSEMBLY



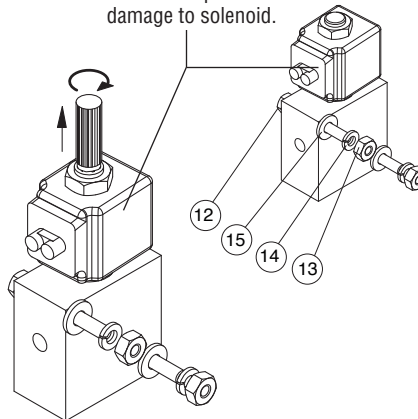
FINISHED ASSEMBLY

CS20 SERIES CONVERSION TO REMOTE ACTIVATION SOLENOID

Screw-in Solenoid Conversion Kit 48TK4942



Block Valve must be spaced off any flat surface using washers to prevent damage to solenoid.



CS21 WITH MANUAL OVER RIDE SOLENOID VALVE

(Remote Valve only)

48TK5005 Activation Kit

Replaces the 48TK4054 and includes 48TK3882 Installation Kit.

The solenoid valve (35T40956) supplied with this PTO has a manual override feature which will allow the PTO to be engaged without electrical power. Mount valve in a location that easily accessible to the operator and clear of any chassis moving parts, heat sources, pinch points, and clear of the PTO output shaft.

To activate:

- Stay clear of any moving or potentially moving components. Do not operate without blocking the vehicle wheels and any chassis/body lifts/cylinders as these can cause serious injury or death.
- The manual override feature is intended for emergency situations only.
- Pull knob and twist to hold valve in the "ON" position. Pull and twist in opposite direction to deactivate.

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	Valve 12v D.C.
9	1	25T40727	Cavity Plug
10	2	25T36726	Str. Plug
11	1	25T21684	Pipe Plug

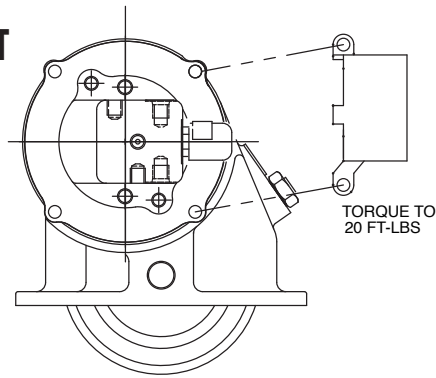
SOLENOID MOUNTING HARDWARE

ITEM	QTY	PART NO.	DESCRIPTION
12	2	19T36623	Capscrew
13	2	22T35140	Nut
14	2	21T37991	Lockwasher
15	2	21T23153	Washer

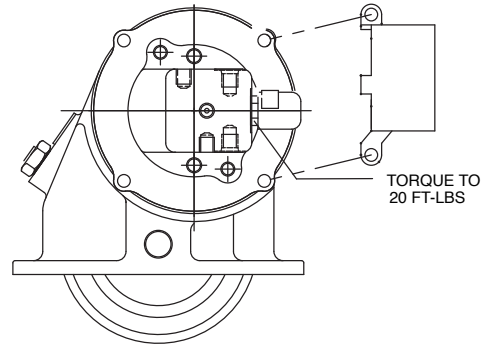
** Included with original PTO, not included in this kit.

ARRANGEMENTS

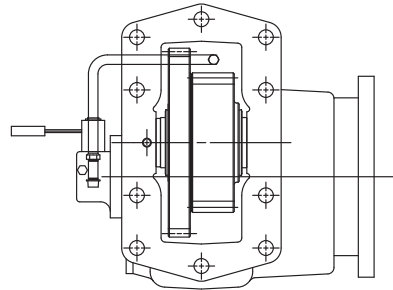
CS20 ARRANGEMENT



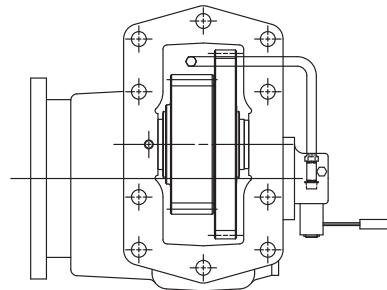
NO. 1 ASSEMBLY



NO. 3 ASSEMBLY

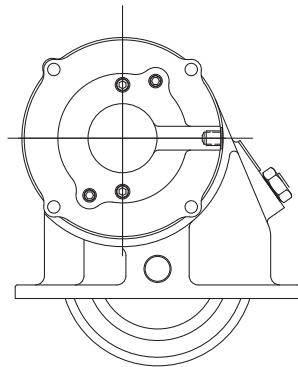


NO. 1 ASSEMBLY

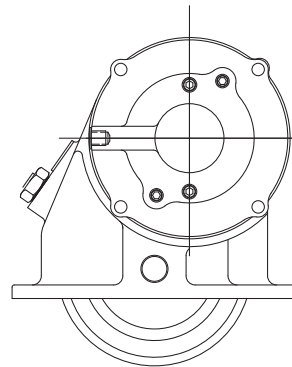


NO. 3 ASSEMBLY

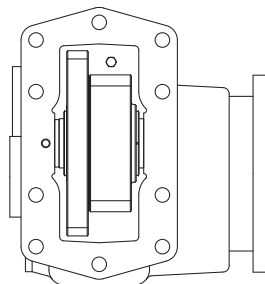
CS21 ARRANGEMENT



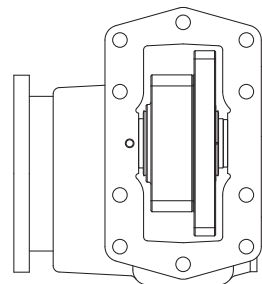
NO. 1 ASSEMBLY



NO. 3 ASSEMBLY



NO. 1 ASSEMBLY



NO. 3 ASSEMBLY

MODEL NUMBER CONSTRUCTION

CS 20 A10 06 H 1 B X

PTO TYPE

Clutch Shift CS

MOUNTING

10-Bolt Mount, Design 2 - 20
10-Bolt Mount, Design 2 w/remote solenoid - 21
10-Bolt Mount, Special - 22

TRANS. CS GEAR DATA

Allison 10.16P RH - A10
Caterpillar 9.55P RH - C95

SPEED RATIO

05 - .55:1
06 - .64:1
07 - .74:1
08 - .84:1
10 - .97:1
12 - 1.19:1
15 - 1.46:1

SHIFTER TYPE

12 Volt Electric/Hydraulic - H
24 Volt Electric/Hydraulic - J
Less Activation Kit - P

ASSEMBLY ARRANGEMENT

1 or 3

SPECIAL FEATURES

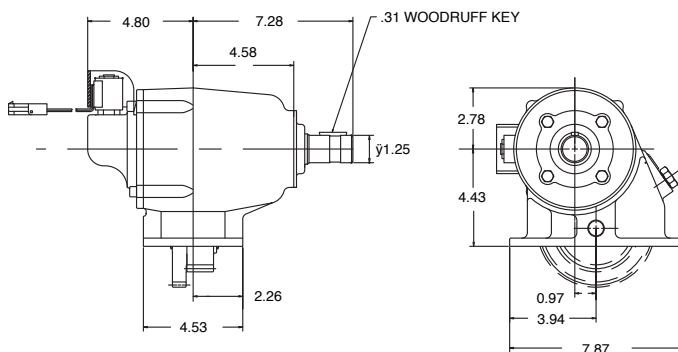
X - None (Pressure Lube is standard on all units)
A - Special SAE B 2-bolt flange for Parker sculpted piston pump (used with "P" shaft only)
B - Hose kit (HD Trans. R.S.)
D - Pulse Generator & SPD-1001A
U - Pulse Generator
3 - Hose Kit Special 17"
4 - Hose Kit deleted
2 - Hose Kit Special 36"

OUTPUT TYPE

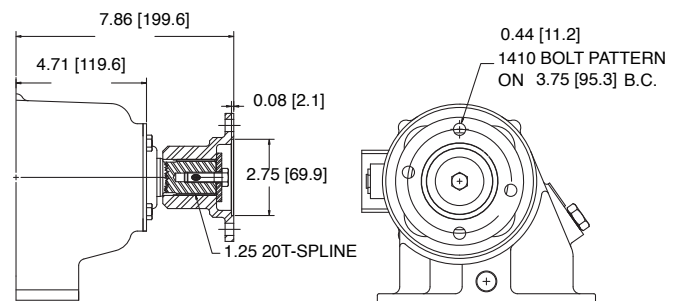
B - 1-1/4 Round 5/16KW
C - 1-1/4 20 Spl. (1410 Flange)
D - DIN 5462 (European Mount)
G - Special (Dana Mount)
I - DIN 5462
K - SAE "B" 2&4-Bolt
P - SAE "B-B" 2&4-Bolt
Q - SAE "A" 2-Bolt
S - SAE "B" 2-Bolt
T - SAE "A" 2-Bolt (3/4 11 Spl.)
X - 1.3 - 21 Spline
Z - SAE "B" 2&4 Bolt SAE "C" 1-1/4" 14 Spline
2 - 1-1/4" 20 Spl. (DIN 100 Flange)
6 - SAE "B" 2-Bolt

DIMENSIONS

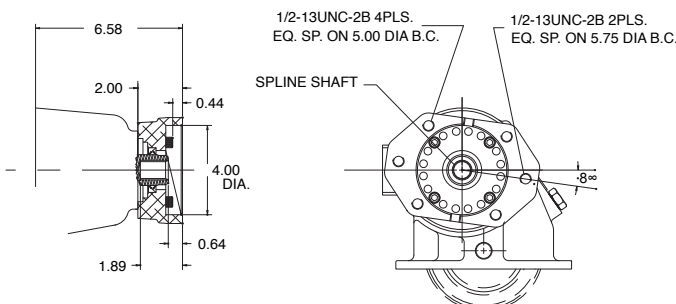
STANDARD 1-1/4 ROUND KEYED SHAFT ("B" OPTION)



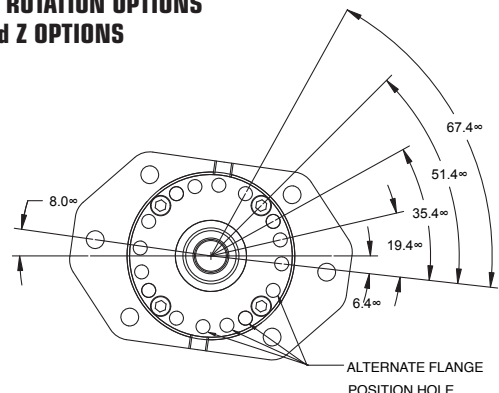
1-1/4-20 SPLINE W/1410 SERIES FLANGE ("C" OPTION)



SAE "B" 2 & 4 BOLT 7/8"-13 SPLINE ("K" OPTION) SAE "B-B" 2 & 4 BOLT 1"-15 SPLINE ("P" OPTION) SAE "B" 2 & 4 BOLT 1.25"-14 SPLINE ("Z" OPTION)

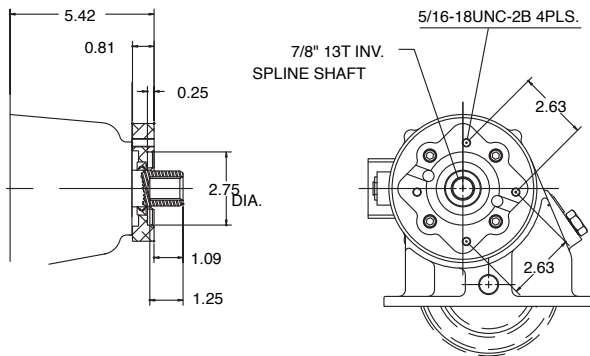


FLANGE ROTATION OPTIONS K, P, and Z OPTIONS

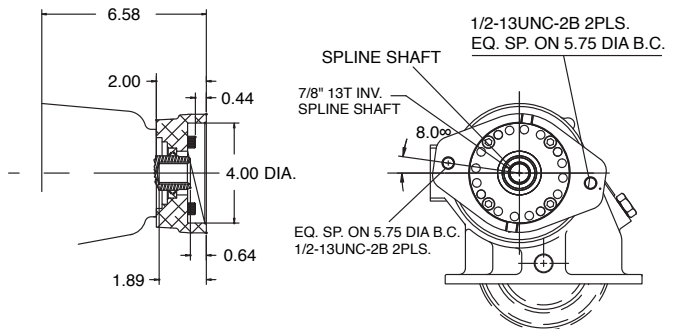


DIMENSIONS

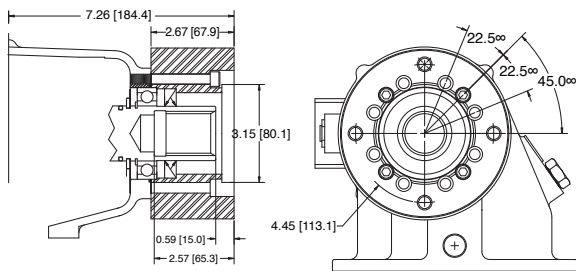
SPECIAL 7/8-13 SPLINE ("G" OPTION)



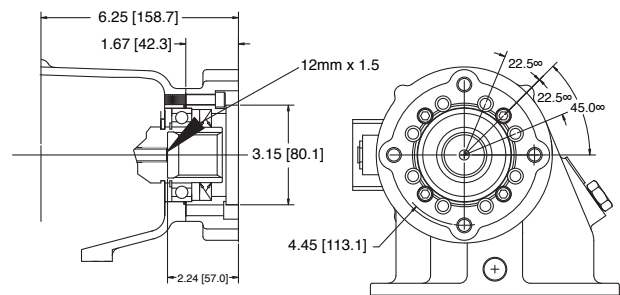
SAE "B" 2-BOLT 7/8-13 SPLINE ("G" OPTION)



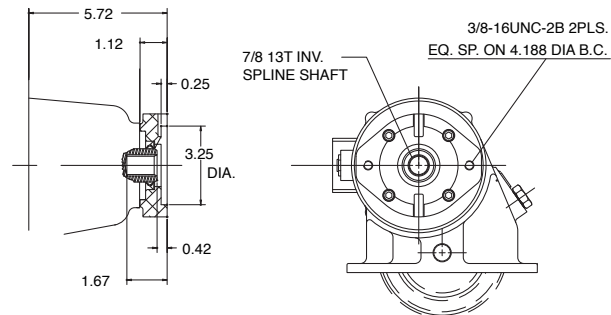
DIN 5462 36MM - 8 SPLINE ("I" OPTION)



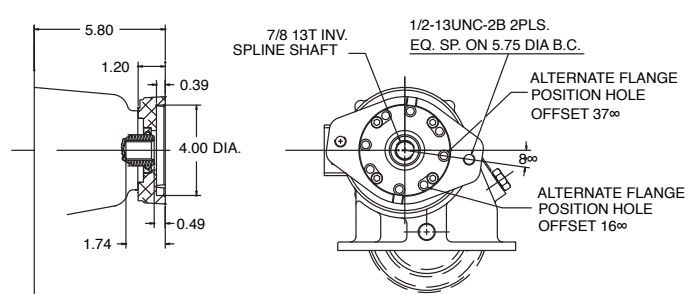
DIN 5462 36MM - 8 SPLINE ("D" OPTION)



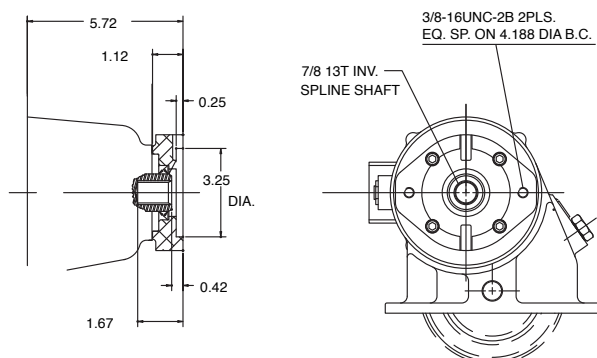
SAE "A" 2-BOLT 7/8-13 SPLINE ("Q" OPTION)



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



SAE "A" 2-BOLT 3/4-11 SPLINE ("T" OPTION)



1-1/4-20 SPLINE WITH DIN 100 FLANGE ("2" OPTION)

