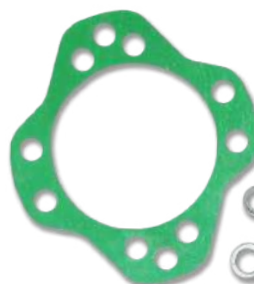
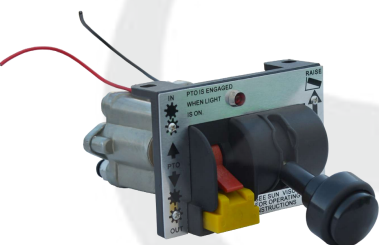
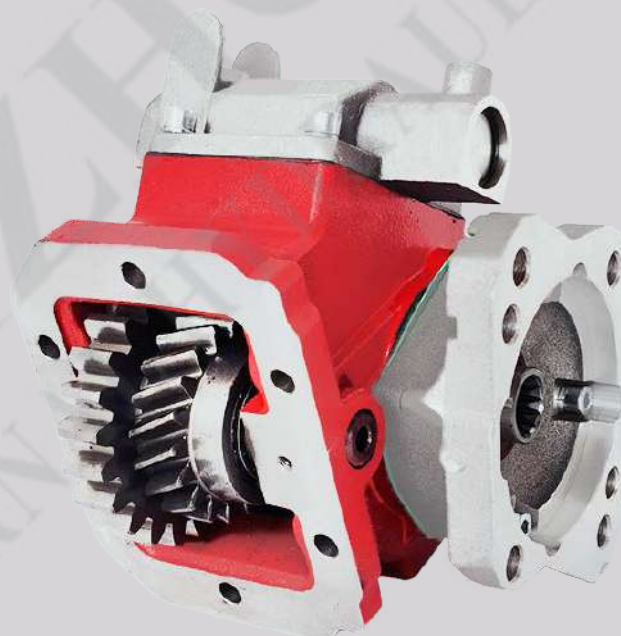
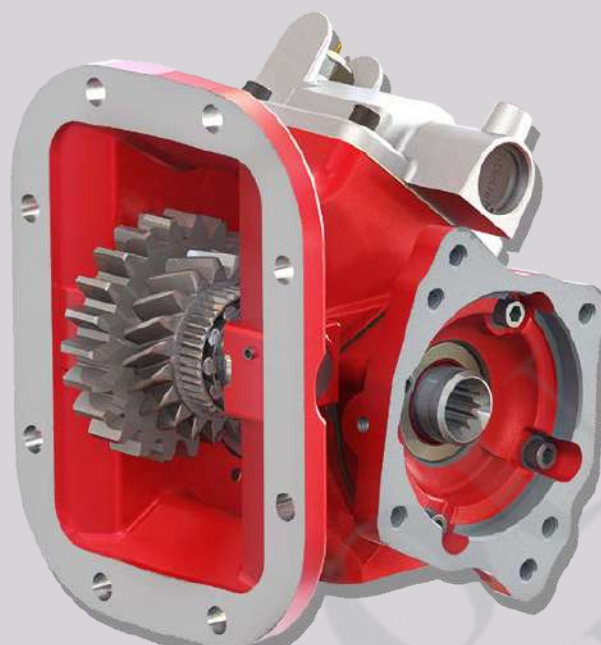
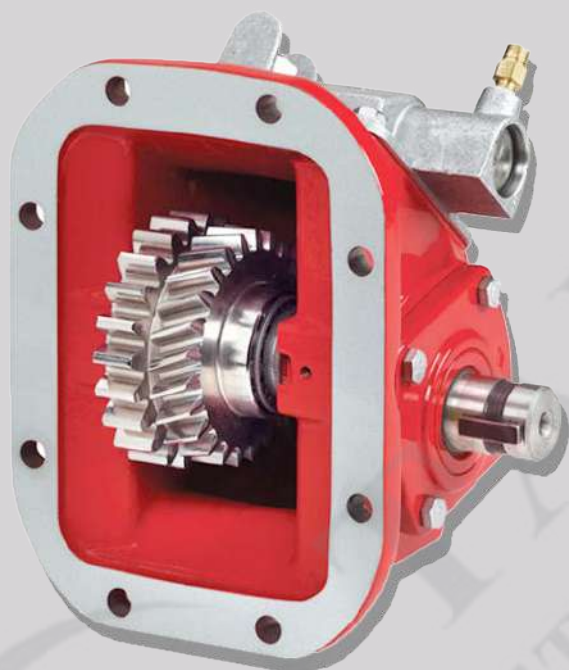


Power Take-offs



E442/E489系列取力器

E442/E489 Series Power Take-offs



E489-XQAHX-A3XK



E489-XQAHX-A3XD



E442-XQAHX-A3XK



E442-XQAHX-A3XD

E489 **X** **Q** **AH** **X** - **A** **3** **XK**

Basic Model
E489 / E442

Mounting Option

- X** = Standard Mount
- G** = Standard Mount w/ Metric Stud Kit
- K** = Standard Mount w/o Stud Kit
- Q** = Eaton Endurant
- Z** = Deep Mount

Gear Ratio

- A** = 14/39 **R** = 22/24
- C** = 17/37 **S** = 24/22
- F** = 21/37 **U** = 26/20
- H** = 23/35 **W** = 26/17
- L** = 25/34 **X** = 38/21
- Q** = 19/24

Input Option

- IT: Without Gear AH: Fuller Series
- BG: TTC Transmission DC: Mack Transmission
- DA: Eaton Transmission

Lube Option

- X** = No Pressure Lube
- P** = Pressure Lube

Shift Option

- ¹**A** = Air Shift
- V** = Air Shift w/o Installation Kit
- ¹**P** = 12V Elec/Air Shift
- Q** = 24V Elec/Air Shift
- D** = Eaton Endurant™ 12V Elec/Air Shift
- ²¹**S** = Air Shift w/ PTO/Dump Pump Combo Valve w/ Kick Out w/ Neutral Spring Return
- ²¹**T** = Air Shift w/ PTO/Dump Pump Combo Valve w/o Kick Out w/ Neutral Spring Return
- ²¹**U** = Air Shift w/ PTO/Dump Pump Combo Valve w/ Kick Out w/o Neutral Spring Return
- ¹**W** = Wire Shift
- X** = Wire Shift w/o Cable & Knob
- M** = Constant Mesh
- H** = No Shifter Assembly
- C** = Special Shift Control & Bracket Kit

Output Option

Driveline Output

XD = Rd Standard Shaft (1-1/4" - 5/16" Key)

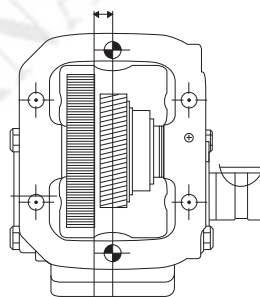
Pump Mount

XK = SAE B 2 or 4-Bolt Flange, SAE B Shaft (7/8" - 13T)

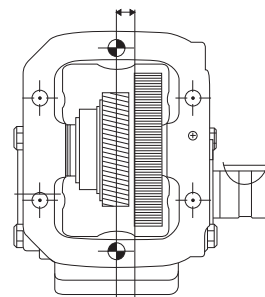
Assembly Arrangement

3, 4, 5, 6

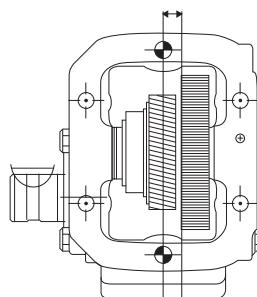
- 1 Includes mounting parts
- 21 Includes installation kit, console sold separately



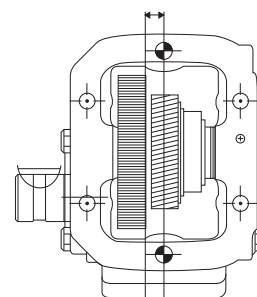
Ass'y 3



Ass'y 4



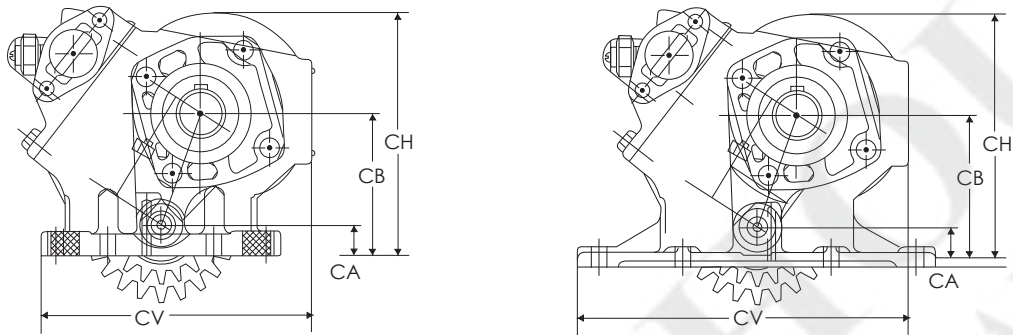
Ass'y 5



Ass'y 6

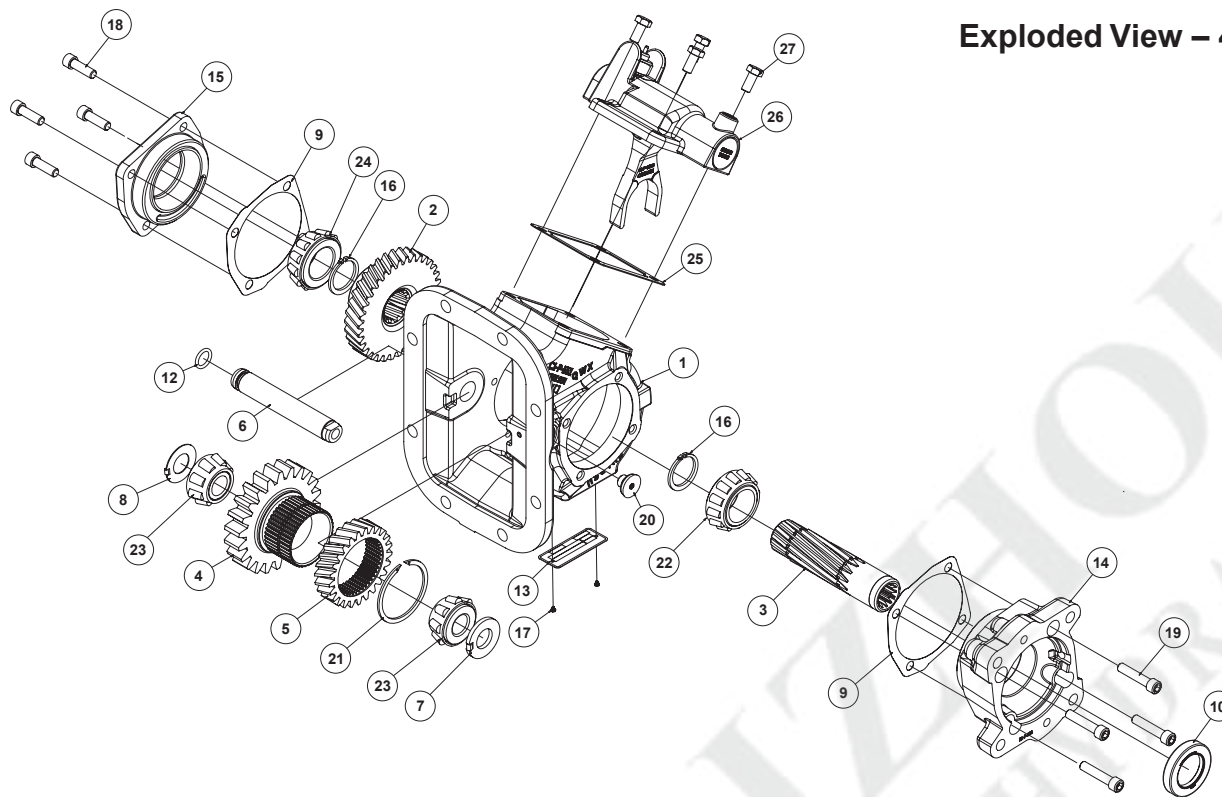
ETERNAL E442/E489 SERIES DIMENSIONS

HOUSING DIMENSIONS



ETERNAL SERIES		MOUNT	CA	CB	CD	CH	CV
E442 SERIES	1-P-557X	Standard	0.793	3.800 (F, H, L, R, S, U) 3.701 (Q, W, X)	3.317 (F, H, L, R, S, U) 3.087 (Q, W, X)	6.428	7.000
	1-P-558X	Deep	0.573	3.580 (F, H, L, R, S, U) 3.481 (Q, W, X)	3.317 (F, H, L, R, S, U) 3.087 (Q, W, X)	6.207	7.000
E489 SERIES	1-P-552X	Standard	1.072	4.079 (F, H, L, R, S, U) 3.980 (Q, W, X)	3.317 (F, H, L, R, S, U) 3.087 (Q, W, X)	6.708	8.500
	1-P-562X	Deep	0.930	3.937 (F, H, L, R, S, U) 3.838 (Q, W, X)	3.317 (F, H, L, R, S, U) 3.087 (Q, W, X)	6.566	8.500





Exploded View – 489GLAHX-A3XP

Item	Part Number	Description	Qty.
1	1-P-552X	Housing.....	1
2	2-P-727 ⁽¹⁾	Output Gear 24T.....	1
3	3-P-282	Shaft Output Assembly	1
4	5-P-1004 ⁽¹⁾	Input Gear 22T.....	1
5	5-P-964 ⁽¹⁾	Input Gear Ratio	1
6	9-P-88	Idler Shaft .75".....	1
7	14-P-73-1	Spacer .762" x 1.500" x .149" - .151".....	1 or
	14-P-73-2	Spacer .762" x 1.500" x .152" - .154".....	1 or
	14-P-73-3	Spacer .762" x 1.500" x .155" - .157".....	1
8	31-P-102	Thrust Washer .754" x .440" x .030".....	1
9	22-P-24-1	Gasket .010"	A.R.
	22-P-24-2	Gasket .020"	A.R.
	22-P-24-3	Gasket .015"	A.R.
10	28-P-216	Oil Seal 2.004" x 1.250" x .374".....	1
12	28-P-191	O-Ring .549" x .103".....	1
13	68-P-2	Name Plate	1
14	328328X	Pump Flange Assembly ("XP")	1
15	328274X	Bearing Cap & Cup Assembly 6-Bolt.....	1
16	378391	Lockring	2
17	378422	Drive Screw.....	2

Item	Part Number	Description	Qty.
18	378447-6	Socket Head Capscrew .312" - 18 x 1.000".....	4
19	378447-8	Socket Head Capscrew .312" - 18 x 1.500".....	4
20	379672	Plug, O-Ring w/ Socket Face (NWD Plug).....	1
21	379522	Lockring	1
22	550397	Bearing Cone, Tapered 1.250" x .812".....	1
23	550439	Bearing Cone, Tapered .750" x .8598".....	2
24	550532	Bearing Cone, Tapered 1.18" - 11 x .8125".....	1
25	35-P-8	Shifter Cover Gasket.....	1
26	329361X	Air Shift Assembly.....	4
27	378430-9	Hex Head Capscrew .312" - 18 x .875"	4

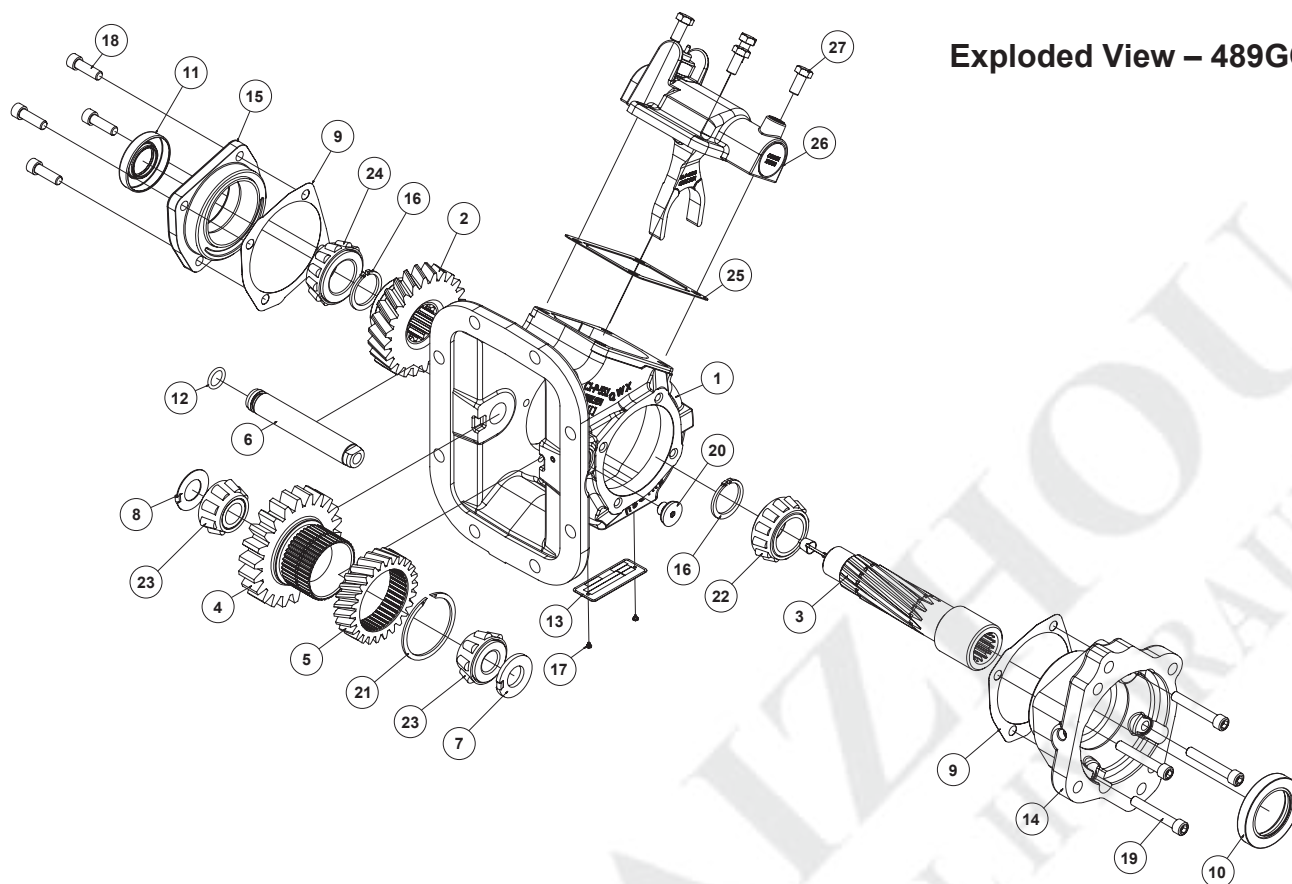
See [Page 10](#) & [11](#) for more Air Shift information

Service Kits

Part Number	Description
329202X	Indicator Switch Connector
328356-67X	Gasket & Seal Kit
328356-71X	Shifter Cover Seal Kit, Air Shift
328594-13X	Bearing and Spacer Kit, Non Pressure Lube

A.R. – As Required

⁽¹⁾ See [Page 12](#) for other Gear Options



Exploded View – 489GQAHX-A3GF

Item	Part Number	Description	Qty.
1	1-P-552X	Housing.....	1
2	2-P-559 ⁽¹⁾	Output Gear 24T.....	1
3	3-P-921X	Shaft Assembly, Greasable.....	1
4	5-P-1004 ⁽¹⁾	Input Gear 22T.....	1
5	5-P-965 ⁽¹⁾	Input Gear Ratio.....	1
6	9-P-88	Idler Shaft .75.....	1
7	14-P-73-1	Spacer .762" x 1.500" x .149 - .151".....	1 or
	14-P-73-2	Spacer .762" x 1.500" x .152 - .154".....	1 or
	14-P-73-3	Spacer .762" x 1.500" x .155 - .157".....	1
8	31-P-102	Thrust Washer .754" x .440" x .030".....	1
9	22-P-24-1	Gasket .010".....	A.R.
	22-P-24-2	Gasket .020".....	A.R.
	22-P-24-3	Gasket .015".....	A.R.
10	28-P-219	Oil Seal 2.506" x 1.625" x .375".....	1
11	28-P-268	Oil Seal 2.004" x 1.00" x .437".....	1
12	28-P-191	O-Ring .549" x .103".....	1
13	68-P-2	Name Plate.....	1
14	329088X	Flange Pump Assembly ("AF", "AW", "FF").....	1
15	328273X	Bearing Cap & Cup Assembly.....	1
16	378391	Lockring.....	2

Item	Part Number	Description	Qty.
17	378422	Drive Screw.....	2
18	378447-6	Socket Head Capscrew .312" - 18 x 1.000".....	4
19	378447-10	Socket Head Capscrew .312" - 18 x 2.000".....	4
20	379672	Plug, O-Ring w/ Socket Face (NWD Plug).....	1
21	379522	Lockring.....	1
22	550397	Bearing Cone, Tapered 1.250" x .812".....	1
23	550439	Bearing Cone, Tapered .750" x .8598".....	2
24	550532	Bearing Cone, Tapered 1.1811" x .8125".....	1
25	35-P-8	Shifter Cover Gasket.....	1
26	329361X	Air Shift Assembly.....	1
27	378430-9	Hex Head Capscrew .312" - 18 x .875".....	4

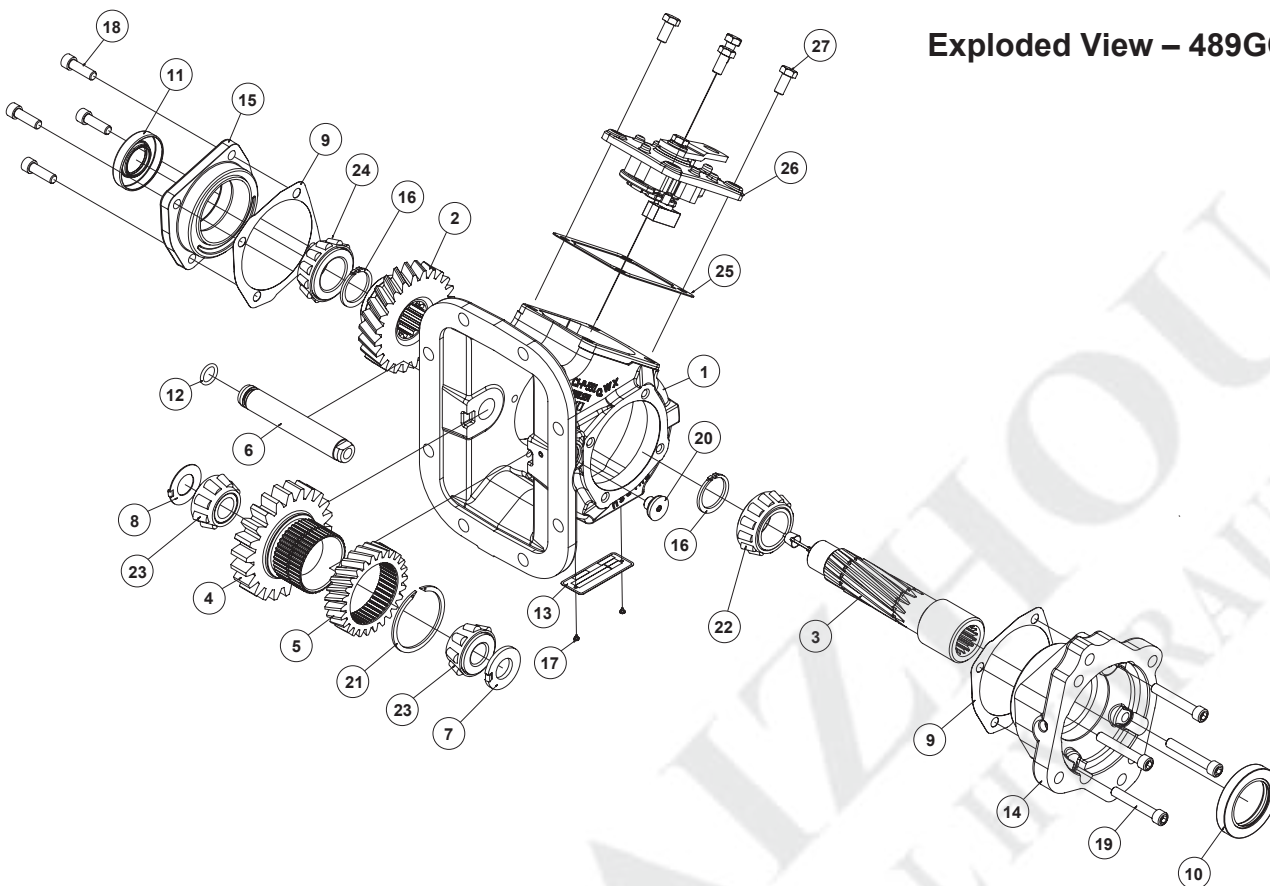
See [Page 10- & 11](#) for more Air Shift information

Service Kits

Part Number	Description
329202X	Indicator Switch Connector
328356-67X	Gasket & Seal Kit
328356-71X	Shifter Cover Seal Kit, Air Shift
328594-13X	Bearing and Spacer Kit, Non Pressure Lube

A.R. – As Required

⁽¹⁾ See [Page 12](#) for other Gear Options



Exploded View – 489GQAHX-W3GF

Item	Part Number	Description	Qty.
1	1-P-552X	Housing.....	1
2	2-P-559 ⁽¹⁾	Output Gear 24T.....	1
3	3-P-921X	Shaft Assembly, Greasable.....	1
4	5-P-1004 ⁽¹⁾	Input Gear 22T.....	1
5	5-P-965 ⁽¹⁾	Input Gear Ratio	1
6	9-P-88	Idler Shaft .750".....	1
7	14-P-73-1	Spacer .762" x 1.500" x .149 - .151".....	1 or
	14-P-73-2	Spacer .762" x 1.500" x .152 - .154".....	1 or
	14-P-73-3	Spacer .762" x 1.500" x .155 - .157".....	1
8	31-P-102	Thrust Washer .754" x .440" x .030".....	1
9	22-P-24-1	Gasket .010".....	A.R.
	22-P-24-2	Gasket .020".....	A.R.
	22-P-24-3	Gasket .015".....	A.R.
10	28-P-219	Oil Seal 2.506" x 1.625" x .375".....	1
11	28-P-268	Oil Seal 2.004" x 1.00" x .437".....	1
12	28-P-191	O-Ring .549" x .103".....	1
13	68-P-2	Name Plate.....	1
14	329088X	Pump Flange Assembly ("AF", "AW", "FF")...	1
15	328273X	Bearing Cap & Cup Assembly	1
16	378391	Lockring	2

Item	Part Number	Description	Qty.
17	378422	Drive Screw.....	2
18	378447-6	Socket Head Capscrew .312" - 18 x 1.000".....	4
19	378447-10	Socket Head Capscrew .312" - 18 x 2.000".....	4
20	379672	Plug, O-Ring w/ Socket Face (NWD Plug).....	1
21	379522	Lockring	1
22	550397	Bearing Cone, Tapered 1.250" x .812".....	1
23	550439	Bearing Cone, Tapered .750" x .8598".....	2
24	550532	Bearing Cone, Tapered 1.1811" x .8125".....	1
25	35-P-8	Shifter Cover Gasket.....	1
26	329119-1X	Shifter Cover Assembly, Cable Control.....	1
27	378430-9	Hex Head Capscrew .312" - 18 x .875"	4

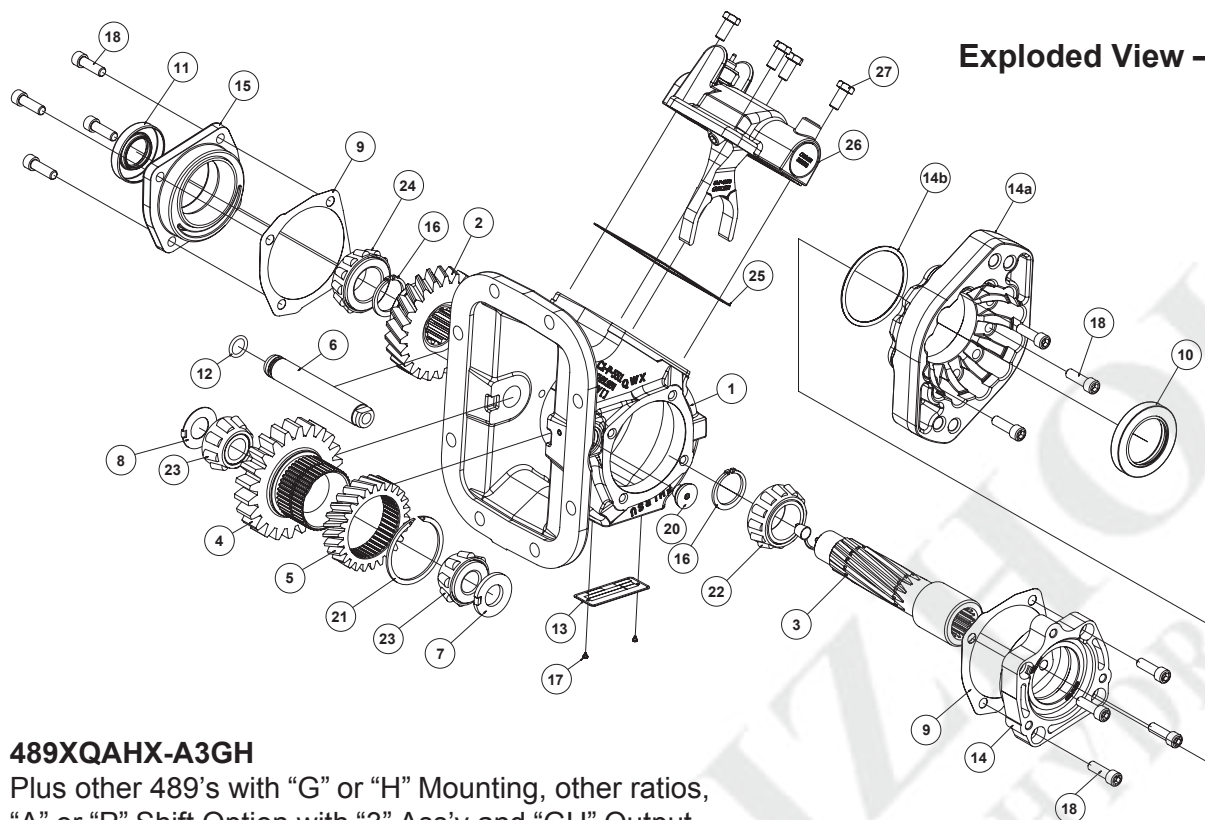
See [Page 10](#) for more Shifter Cover Assembly information

Service Kits

Part Number	Description
329202X	Indicator Switch Connector
328356-15X	Shifter Cover Sealt Kit, Cable Control
328356-67X	Gasket & Seal Kit
328594-13X	Bearing and Spacer Kit, Non Pressure Lube

A.R. – As Required

⁽¹⁾ See [Page 12](#) for other Gear Options



Exploded View – 489XQAHX-A3GH

489XQAHX-A3GH

Plus other 489's with "G" or "H" Mounting, other ratios, "A" or "P" Shift Option with "3" Ass'y and "GH" Output

Item	Part Number	Description	Qty.
1	1-P-552X	Housing.....	1
2	2-P-559 ⁽¹⁾	Output Gear 24T.....	1
3	3-P-941X	Shaft Assembly, Greasable.....	1
4	5-P-1004 ⁽¹⁾	Input Gear 22T.....	1
5	5-P-965 ⁽¹⁾	Input Gear Ratio	1
6	9-P-88	Idler Shaft .750".....	1
7	14-P-73-1	Spacer .762" x 1.500" x .149 - .151".....	1 or
	14-P-73-2	Spacer .762" x 1.500" x .152 - .154".....	1 or
	14-P-73-3	Spacer .762" x 1.500" x .155 - .157".....	1
8	31-P-102	Thrust Washer .754" x .440" x .030".....	1
9	22-P-24-1	Gasket .010"	A.R.
	22-P-24-2	Gasket .020"	A.R.
	22-P-24-3	Gasket .015"	A.R.
10	28-P-219	Oil Seal 2.506" x 1.625" x .375".....	1
11	28-P-268	Oil Seal 2.004" x 1.00" x .437".....	1
12	28-P-191	O-Ring .549" x .103"	1
13	68-P-2	Name Plate	1
14	329264X	Bearing Cap Assembly ("GH").....	1
14a	21-P-626	Pump Flange ("GH").....	1
14b	28-P-271	O-Ring 2.482" x .143"	1
15	328273X	Bearing Cap & Cup Assembly.....	1

Item	Part Number	Description	Qty.
16	378391	Lockring	2
17	378422	Drive Screw.....	2
18	378447-6	Socket Head Capscrew .312" - 18 x 1.000" ...	11
20	379672	Plug, O-Ring w/ Socket Face (NWD Plug) ...	1
21	379522	Lockring	1
22	550397	Bearing Cone, Tapered 1.250" x .812"	1
23	550439	Bearing Cone, Tapered .750" x .8598"	2
24	550532	Bearing Cone, Tapered .1811" x .8125"	1
25	35-P-8	Shifter Cover Gasket.....	1
26	329361X	Air Shift Assembly.....	1
27	378430-9	Hex Head Capscrew .312" - 18 x .875"	4

See [Page 10 & 11](#) for more Air Shift information

Stud Kits

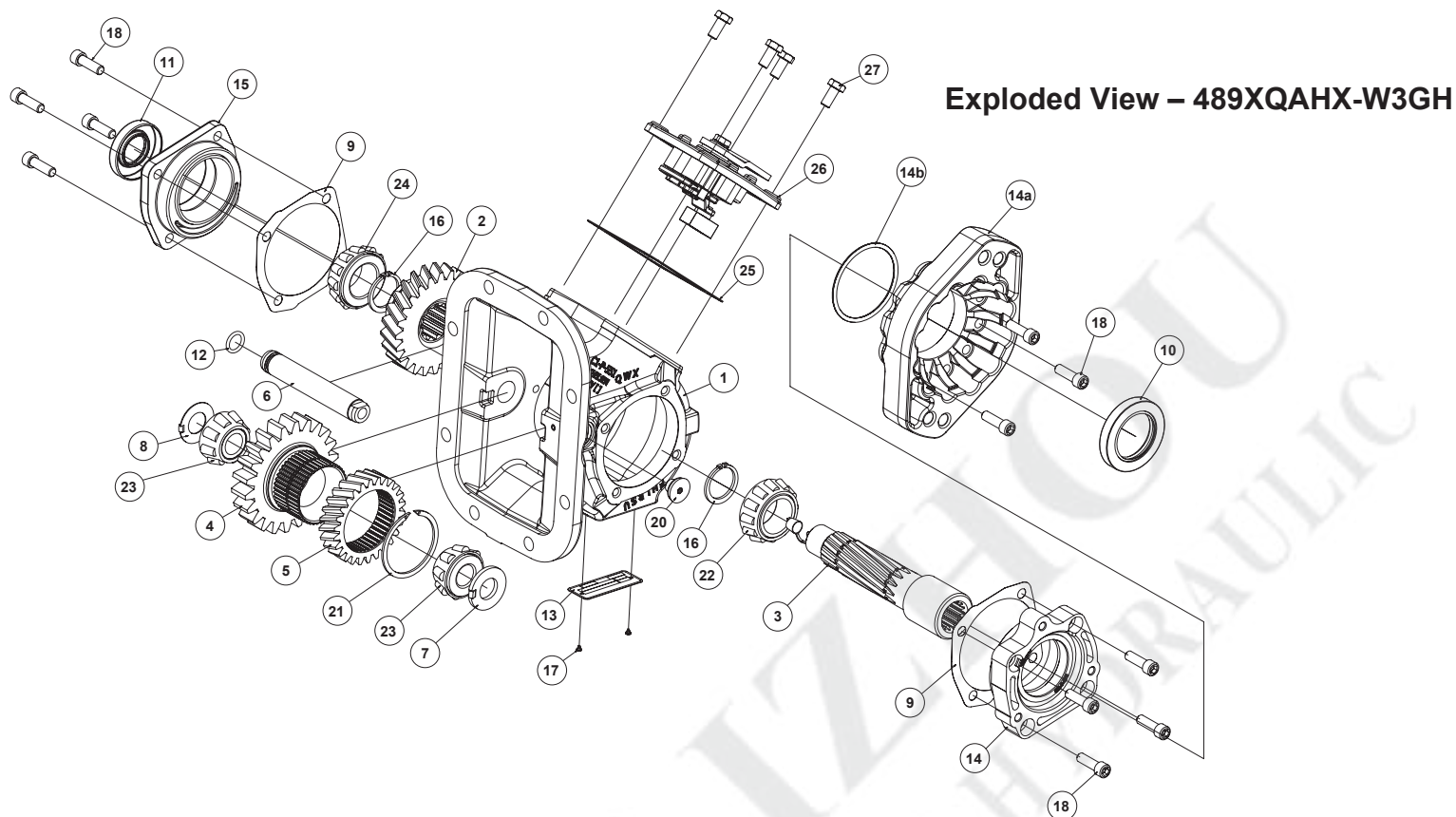
Part Number	Description
328170-76X	Mounting Kit ("X" Mounting)
328170-77X	Mounting Kit ("G" Mounting)

Service Kits

Part Number	Description
329202X	Indicator Switch Connector
328356-67X	Gasket & Seal Kit
328356-71X	Shifter Cover Seal Kit, Air Shift
328594-13X	Bearing and Spacer Kit, Non Pressure Lube

A.R. – As Required

⁽¹⁾ See [Page 12](#) for other Gear Options



Item	Part Number	Description	Qty.
1	1-P-552X	Housing.....	1
2	2-P-559 ⁽¹⁾	Output Gear 24T.....	1
3	3-P-941X	Shaft Assembly, Greasable.....	1
4	5-P-1004 ⁽¹⁾	Input Gear 22T.....	1
5	5-P-965 ⁽¹⁾	Input Gear Ratio	1
6	9-P-88	Idler Shaft .75"	1
7	14-P-73-1	Spacer .762" x 1.500" x .149" - .151".....	1 or
	14-P-73-2	Spacer .762" x 1.500" x .152" - .154".....	1 or
	14-P-73-3	Spacer .762" x 1.500" x .155" - .157".....	1
8	31-P-102	Thrust Washer .754" x .440" x .030"	1
9	22-P-24-1	Gasket .010.....	A.R.
	22-P-24-2	Gasket .020.....	A.R.
	22-P-24-3	Gasket .015.....	A.R.
10	28-P-219	Oil Seal 2.506" x 1.625" x .375".....	1
11	28-P-268	Oil Seal 2.004" x 1.00" x .437".....	1
12	28-P-191	O-Ring .549" x .103"	1
13	68-P-2	Name Plate	1
14	329264X	Bearing Cap Assembly ("RF").....	1
14a	21-P-626	Pump Flange Assembly ("RF")	1
14b	28-P-271	O-Ring 2.482" x .143"	1
15	328273X	Bearing Cap & Cup Assembly	1
16	378391	Lockring	2

A.R. – As Required

⁽¹⁾ See [Page 12](#) for other Gear Options

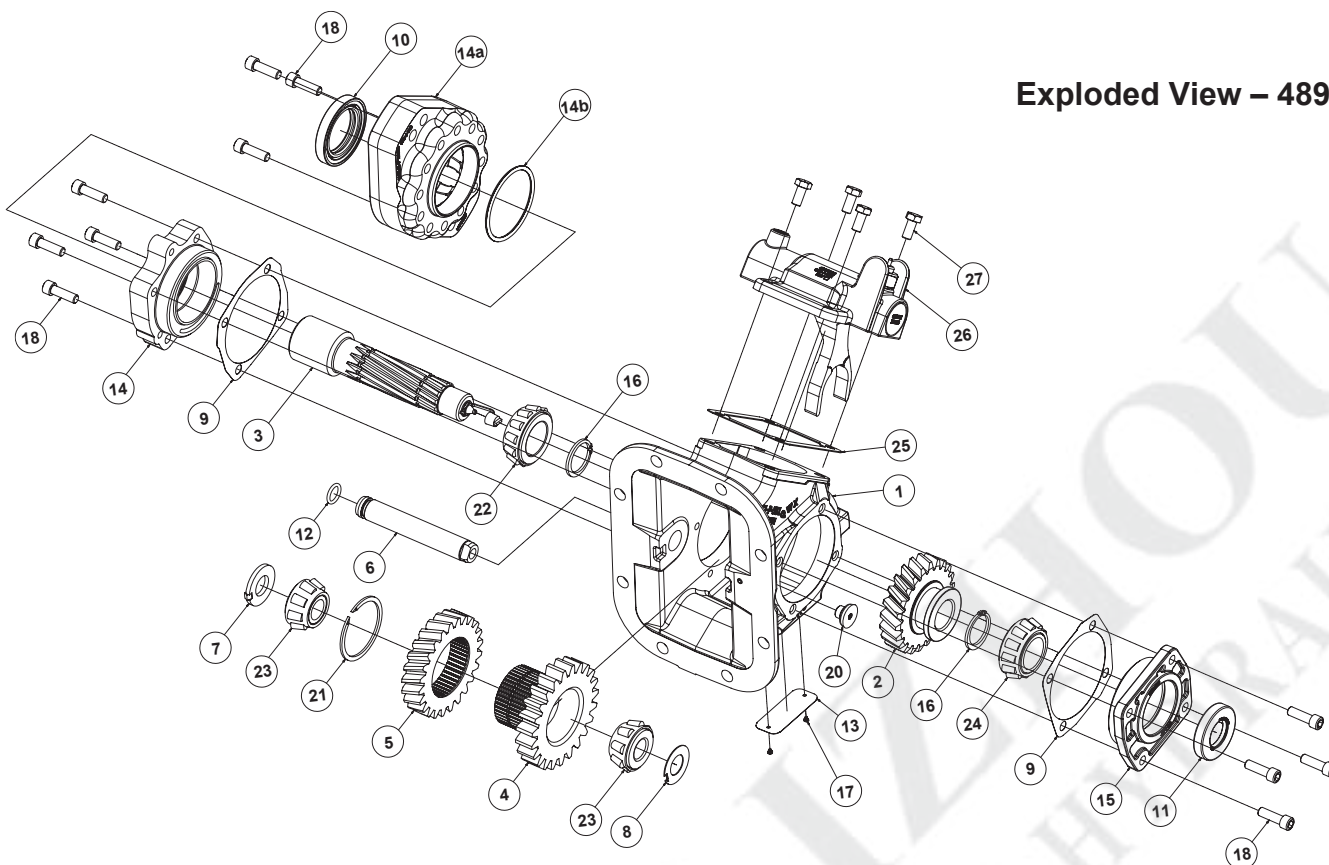
Item	Part Number	Description	Qty.
17	378422	Drive Screw.....	2
18	378447-6	Socket Head Capscrew .312" - 18 x 1.000".....	11
20	379672	Plug, O-Ring w/ Socket Face (NWD Plug)....	1
21	379522	Lockring	1
22	550397	Bearing Tapered Cone 1.250" x .812".....	1
23	550439	Bearing Tapered Cone .750" x .8598".....	2
24	550532	Bearing Tapered Cone 1.1811" x .8125".....	1
25	35-P-8	Shifter Cover Gasket.....	1
26	329119-1X	Shifter Cover Assembly, Cable Control	1
27	378430-9	Hex Head Capscrew .312" - 18 x .875"	4

See [Page 10](#) for more Shifter Cover Assembly information

Service Kits

Part Number	Description
329202X	Indicator Switch Connector
328356-15X	Shifter Cover Seal Kit, Cable Control
328356-67X	Gasket & Seal Kit
328594-13X	Bearing and Spacer Kit, Non Pressure Lube

Exploded View – 489ZSDAX-P5GH



Item	Part Number	Description	Qty.
1	1-P-562X	Housing Assembly Deep Mount.....	1
2	2-P-637 ⁽¹⁾	Output Gear 22T	1
3	3-P-941X	Shaft Assembly, Greasable.....	1
4	5-P-1037 ⁽¹⁾	Input Gear 23T	1
5	5-P-966 ⁽¹⁾	Input Gear 24T	1
6	9-P-88	Idler Shaft .75"	1
7	14-P-73-1	Spacer .762" x 1.500" x .149" - .151"....	1 or
	14-P-73-2	Spacer .762" x 1.500" x .152" - .154"....	1 or
	14-P-73-3	Spacer .762" x 1.500" x .155" - .157"....	1
8	31-P-102	Thrust Washer .754" x .440" x .030"	1
9	22-P-24-1	Gasket .010.....	A.R.
	22-P-24-2	Gasket .020.....	A.R.
	22-P-24-3	Gasket .015.....	A.R.
10	28-P-219	Oil Seal 2.506" x 1.625" x .375"	1
11	28-P-268	Oil Seal 2.004" x 1.00" x .437"	1
12	28-P-191	O-Ring .549" x .103"	1
13	68-P-51	Name Plate	1
14	329264X	Bearing Cap Assembly ("RF").....	1
14a	21-P-626	Flange Pump ("RF")	1
14b	28-P-271	O-Ring 2.482" x .143"	1
15	328273X	Bearing Cap & Cup Assembly	1

Item	Part Number	Description	Qty.
16	378391	Lockring	2
17	378422	Drive Screw.....	2
18	378447-6	Socket Head Capscrew .312" - 18 x 1.000"	11
20	379672	Plug, O-Ring w/ Socket Face (NWD Plug)..	1
21	379522	Lockring	1
22	550397	Bearing, Tapered Cone 1.250" x .812"	1
23	550439	Bearing, Tapered Cone .750" x .8598"	2
24	550532	Bearing, Tapered Cone 1.1811" x .8125"	1
25	35-P-8	Shifter Cover Gasket.....	1
26	329361X	Air Shift Assembly.....	1
27	378430-9	Hex Head Capscrew .312" - 18 x .875"	4

See [Page 10 & 11](#) for more Air Shift information

Service Kits

Part Number	Description
329202X	Indicator Switch Connector
328356-67X	Gasket & Seal Kit
328356-71X	Shifter Cover Seal Kit, Air Shift
328594-13X	Bearing and Spacer Kit, Non Pressure Lube

A.R. – As Required

⁽¹⁾ See [Page 12](#) for other Gear Options

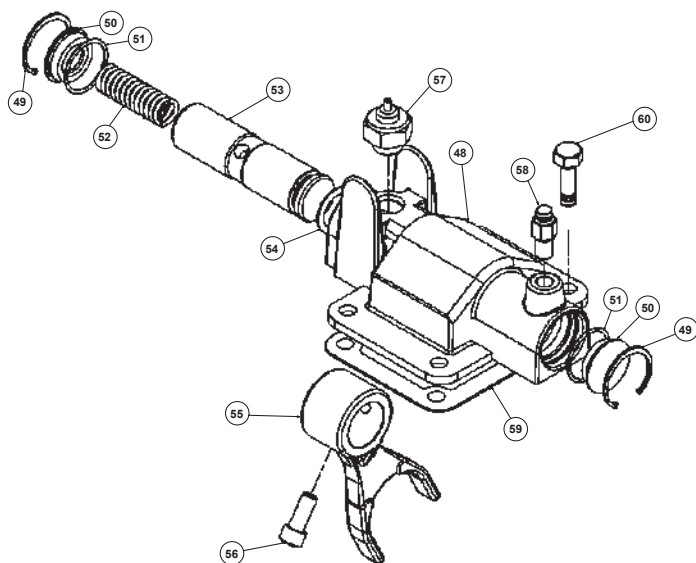
489 Series Disassembly

1. Observe and make notes
 - 1.1. Observe and note the Bearing Cap position.
 - 1.1.1. Note relation of closed end Bearing Cap (15) arrow to ratio letters on Housing (1).
 - 1.1.2. Note and mark Output Flange (14) (open end) to correct ratio on Housing (1).
 - 1.2. The Hub of the Output Gear (2) is positioned above the Input Gear (4).
 - 1.3. Observe and note the position of the Shift Fork (26).
 - 1.4. The Bearing Shims are on the same side as the Ratio Gear (7).
 - 1.5. Observe and note the Assembly Arrangement position.
 - 1.6. Ratio Gear (5) tooth round faces the Output Gear (2) not the Input Gear. (4)
 - 1.7. Do not reuse Snap Rings (16).
2. Disassembly
 - 2.1. Shifter Cover (26)
 - 2.1.1. Using a 1/2" socket remove the four bolts (27) on the Shifter Cover (26).
 - 2.1.2. Remove the Shifter Cover and the Gasket.
 - 2.1.3. Inspect the condition of the Gasket (25).
 - 2.2. Input Gear Section
 - 2.2.1. Remove the NWD plug (20) from the Idler Shaft (6) using a 3/16" Hex Wrench.
 - 2.2.2. Remove Idler Shaft (6) while holding the Input Gear section (4).
 - 2.2.3. Remove complete Input Gear section.
 - 2.2.4. Inspect Gears and Bearings.
 - 2.3. Closed End Bearing Cap (15)
 - 2.3.1. Remove the four Cap Screws (18) on the closed end Bearing Cap (15) using a 1/2" Hex Wrench.
 - 2.3.2. Remove the Bearing Cap (15) and Gaskets (9).
 - 2.3.3. Inspect condition of Gaskets (9) and keep together.
 - 2.4. Disassembly – Output (Open) End (14)

NOTE: To remove the Rotatable Flange option, remove the three Capscrews (18), Flange (14a) and O-Ring (14b).

 - 2.4.1. Using a 1/2" Hex Wrench remove the four (4) open end Hex Head Cap Screws. (18) or (19)
 - 2.4.2. Remove Open end Bearing (14) Cap and Gaskets (9).
 - 2.4.3. Inspect condition of Gaskets and keep together.
 - 2.5. Driveshaft Removal
 - 2.5.1. Using a Bearing Puller Set, remove the closed end Bearing (24) from the Output Shaft (3).
 - 2.5.2. Remove closed end Snap Ring (16) on the Output Shaft. DO NOT REUSE.
 - 2.5.3. Slide shaft (3) out of housing and remove the output gear (2).
 - 2.5.4. Inspect open end bearing (22) on shaft. Remove Snap Ring and press bearing off shaft if replacing.
3. Assembly
 - 3.1. Output Section
 - 3.1.1. If output bearing (22) was removed press bearing onto shaft and install new Snap Ring (16).
 - 3.1.2. Make sure the Output Gear (2) matches the correct Assembly Arrangement of the P.T.O.
 - 3.1.3. The Output Gear (2) Shift Hub is positioned above the Input Gear (4) in the engaged position.
 - 3.1.4. Slide Output Shaft (3) into Housing and slide Output Gear (2) onto the Shaft.
 - 3.1.5. "U", "W" & "X" ratios will slide through the opening as an assembly.
 - 3.1.6. Using a Snap Ring Slide or Snap Ring Pliers install the closed end Snap Ring (16) onto the Shaft.
 - 3.1.7. Make sure that the Snap Ring (16) is seated into the groove on the Output Shaft (3).
 - 3.1.8. Install Bearing (24) onto closed end.
 - 3.1.9. Reminder: Make sure the Bearing (24) is seated against the Snap Ring. Forgetting to do this can affect shaft end play.
 - 3.1.10. Install Gaskets (9).
 - 3.1.11. Install closed end Bearing Cap (15). Make sure the offset of the Bearing Cap is positioned correctly for the P.T.O. Ratio.
 - 3.1.12. Using 1/2" Hex Wrench tighten and torque Cap Screws to 24 - 28 Lbs. ft. [33 - 38 N.m.].
 - 3.1.13. **NOTE:** Always use a crossing pattern when tightening bolts.
 - 3.1.14. Using a seal slide, install Open End Cap/Pump Flange (14) and Gaskets (9) onto housing. Using a 1/2" hex wrench tighten and torque cap screws to 24-28 Lbs. ft. [33-38 Nm]
 - 3.1.15. **NOTE:** The narrow portion of the open end Bearing Cap matches the position of the arrow on the closed cap.
 - 3.1.16. If the P.T.O. has a rotatable flange, this can be installed at this time or when installing on the vehicle. See Chart on page 12 for correct torque specifications.
 - 3.1.17. Tighten and torque fasteners 24 - 28 Lbs. ft. [33 - 38 N.m.].
 - 3.1.18. **NOTE:** Always use a crossing pattern when tightening the bolts.
 - 3.1.19. Check end play is set correctly between .001" - .005".
 - 3.1.20. Can the shaft be turned by hand?
 - 3.2. Input Gear Section
 - 3.2.1. Place the Ratio Gear (5) on the splined surface of the Input Gear (4).
 - 3.2.2. **NOTE:** The rounded edge of the Ratio Gear (5) should be away from the Input Gear (4).
 - 3.2.3. Use a Snap Ring Slide and Driver or Snap Ring Pliers to install the Snap Ring (21) in the groove of the Input Gear.
 - 3.2.4. **NOTE:** Be careful to not over stretch the snap ring.
 - 3.2.8. Insert the Thrust Washer (8) next to the Input Gear (4), Place Bearing shims (7) on the same side as the Ratio Gear (5).
 - 3.2.9. **NOTE:** Tabs on washer and shims are placed in pocket on housing.
 - 3.2.10. Note position of Output Gear (2) in the 'engaged' position.
 - 3.2.11. Shifter hub should be over P.T.O. input gear.
 - 3.2.12. Using a idler guide tool, insert complete input section into housing.
 - 3.2.13. Install O-Ring (12) on Idler Shaft (6), be careful not to nick or cut the O-Ring.
 - 3.2.14. Slide the notched end of the shaft (6) into the housing (1), aligning notch with roll pin.
 - 3.2.15. Install NWD Plug (20) on Idler Shaft (6) and Torque: 120 - 156 in-lb. (13.56 - 17.53 N.m.)
 - 3.2.16. Position Output Gear (2) in the disengaged position.
 - 3.2.17. Position gasket and shift cover onto the P.T.O. housing.
 - 3.2.18. Slide the shift block or Fork onto the hub of the output gear.
 - 3.2.19. Install capscrews (27) and torque (16 - 20 Lbs. ft. [22 - 27 N.m.])
 - 3.2.20. Do not over tighten you can break the shift cover or housing.
 - 3.2.21. Last function test the shifter and indicator switch.
 - 3.2.22. Place P.T.O. on flat surface and "spin" the input gear.
 - 3.2.23. Gear should spin with-out lifting up housing.
4. Final Check
 - 4.1.1. Re-label P.T.O.
 - 4.1.2. All Bolts & Cap screws proper Torque
 - 4.1.3. Testing
 - 4.1.4. Function Test Shifter
 - 4.1.5. Test Indicator Switch
 - 4.1.6. Check End Play of Output Shaft
 - 4.1.7. Check Input Gear Bearings
 - 4.1.8. Ready to install
 - 4.1.9. Refer to Mounting the P.T.O. on the Transmission for installation instructions

Air Shift Cover Assembly

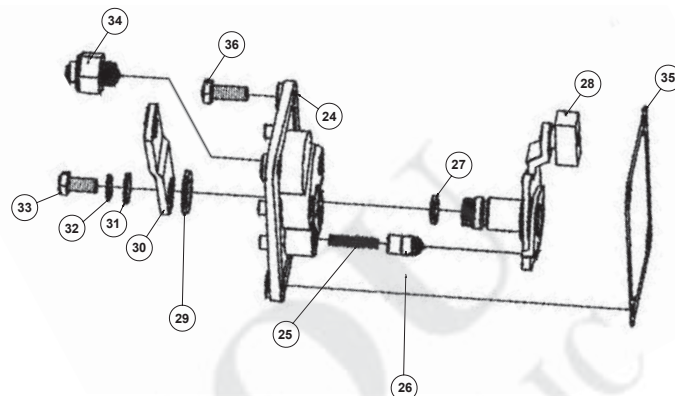


Item	Part Number	Description	Qty.
	329361X	Air Shift Shifter Cover Assembly (Includes Items 48-57)	1
48	34-P-130	Shifter Cover	1
49	378316	Snap Ring	2
50	378315	Cover Plug	2
51	28-P-42	O-Ring	2
52	37-P-21	Shifter Spring	1
53	11-P-75	Shaft, Shifter	1
54	28-P-41	O-Ring	1
55	32-P-180	Shifter Fork	1
56	378447-4	Socket Head Capscrew, w/lockpatch .312" - 18 x .750"	1
57	379639	Indicator Switch (Normally OFF)	1
58	379904	Push Connect, for 1/4" tubing	1
59	35-P-8	Gasket, Shifter Cover	1
60	378430-9	Hex Head Capscrew .312" - 18 x .875"	4
AIR SHIFT CONVERSION KITS			
	328390-117X	Lever or Cable to Air	1
	328390-119X	Lever or Cable to Electric/Air, 12V	1
	328390-120X	Lever or Cable to Electric/Air, 24V	1

Service Kit

Part Number	Description
328356-71X	Shifter Cover Seal Kit, Air Shift

Cable Control Assembly



Item	Part Number	Description	Qty.
24	34-P-39	Cover Plate, Shifter - Constant Mesh	1
	34-P-74	Cover Plate, Shifter	1
25	37-P-19	Spring	1
26	63-P-16	Poppet Pin	1
27	28-P-191	O-Ring	1
		Ratios "Q" & "W" & "X"	
28	329118-1X	Post and Plate Assembly, (Ass'y 3 & 6)	1
28	329118-2X	Post and Plate Assembly, (Ass'y 4 & 5)	1
		Ratios "F", "H", "L", "R", "S" & "U"	
28	329120-1X	Post and Plate Assembly, (Ass'y 3 & 6)	1
28	329120-2X	Post and Plate Assembly, (Ass'y 4 & 5)	1
		Ratios "A", "B" & "C"	
28	329265-1X	Post and Plate Assembly, (Ass'y 3 & 6)	1
28	329265-2X	Post and Plate Assembly, (Ass'y 4 & 5)	1
29	378004	Flat Washer	1
30	51-P-22	Shifter Lever	1
31	500365-22	Flat Washer	1
32	500356-10	Lockwasher	1
33	500409-6	Capscrew, Hex Head (.312" - 24 x .625")	1
34	379639	Indicator Switch, Pin Style (Normally Off)	1
35	35-P-8	Gasket, Shifter Cover	1

P.T.O. Assembly Arrangement	P.T.O. Ratio Gear	Shifter Cover Assembly	Post & Plate Assembly
3 & 6	Q, W, X	329271-1X	329265-1X
4 & 5	Q, W, X	329271-2X	329265-2X
3 & 6	F, H, L, R, S & U	329121-1X	329120-1X
4 & 5	F, H, L, R, S & U	329121-2X	329120-2X
3 & 6	A, B & C	329119-1X	329118-1X
4 & 5	A, B & C	329119-2X	329118-2X

Correct shifter cover number is determined by the P.T.O. model number ratio & assembly designators.

442 X Q ES X - W 3 XK
Ratio Assembly

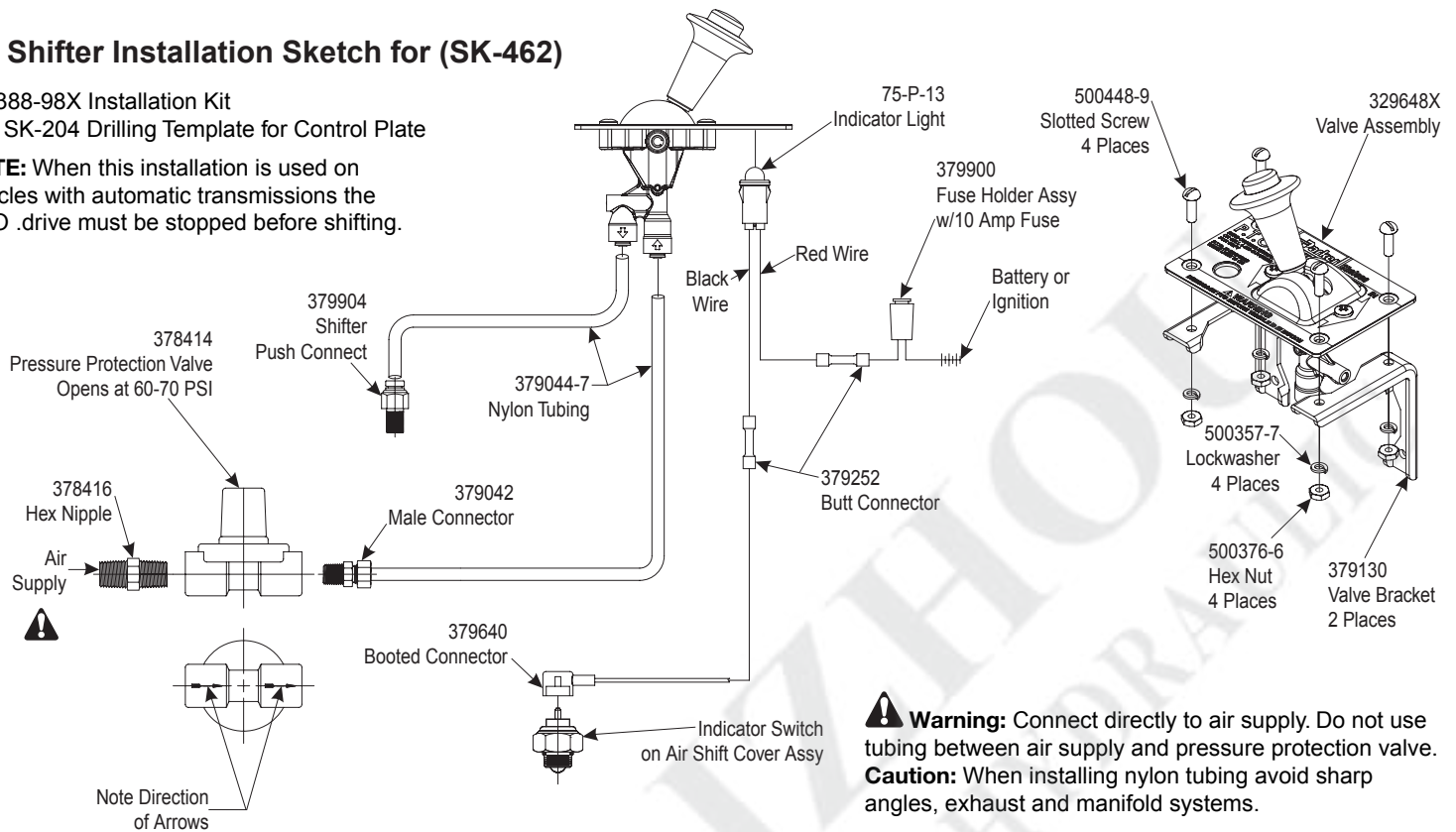
Service Kits

Part Number	Description
328356-15X	Shifter Cover Seal Kit, Cable Control
328356-69X	Shifter Cover Seal Kit, Cable Control "A", "B" & "C" Ratio

Air Shifter Installation Sketch for (SK-462)

328388-98X Installation Kit
See SK-204 Drilling Template for Control Plate

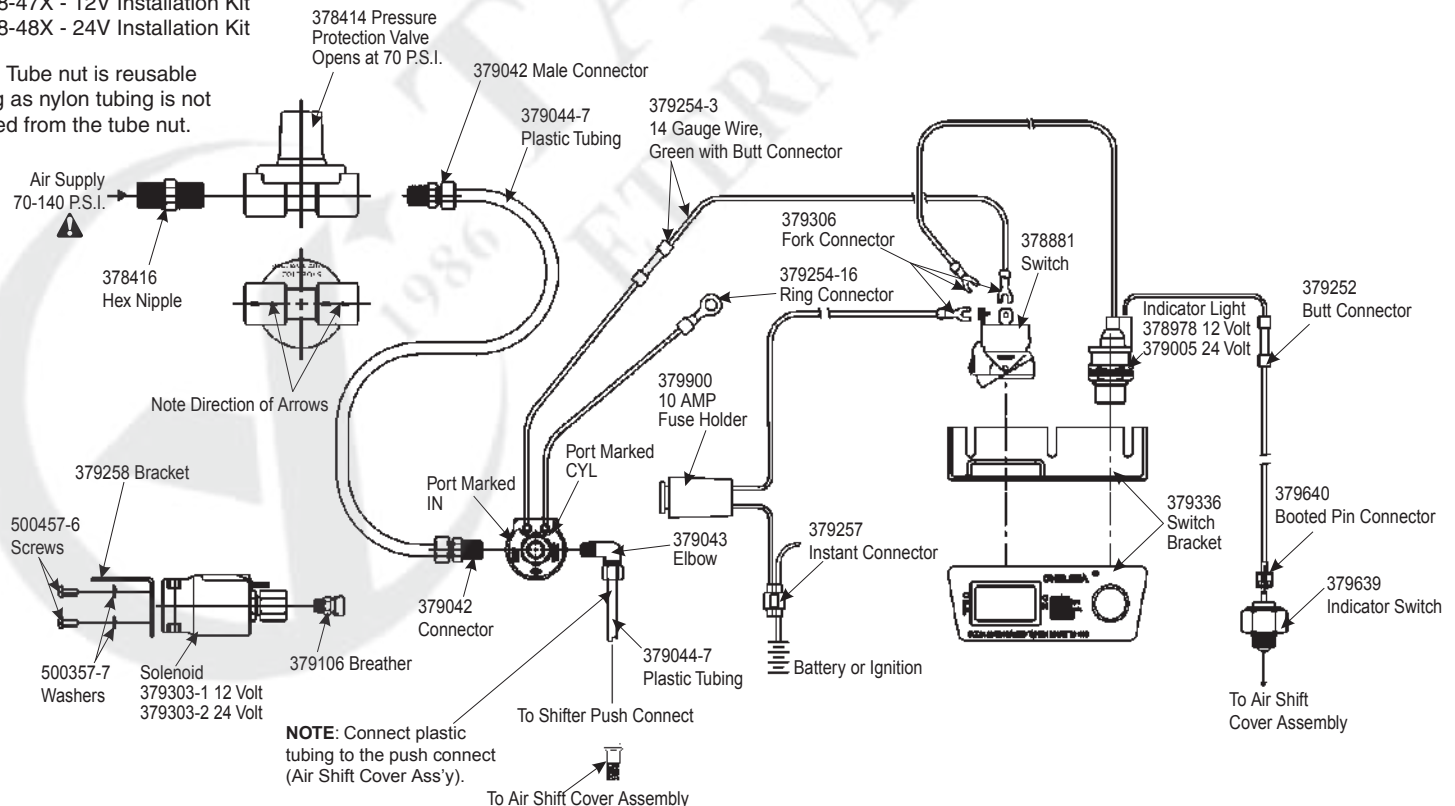
NOTE: When this installation is used on vehicles with automatic transmissions the P.T.O. drive must be stopped before shifting.



Electric Over Air Shift Installation Sketch (SK-238 Rev H)

328388-47X - 12V Installation Kit
328388-48X - 24V Installation Kit

NOTE: Tube nut is reusable as long as nylon tubing is not removed from the tube nut.



Torque Chart

Location	Torque (English)	Torque (Metric)
NWD Plug	120 - 156 In. Lbs.	14 - 18 N.m.
Bearing Cap Closed/Open	24 - 28 Lbs. ft.	33 - 39 N.m.
Rotatable Flanges		
"GA", "GB", "PA", "PF", "RA", "RB", "RE" and "RF" (378447-6) (Qty. 3)	16 - 20 Lbs. ft.	22 - 27 N.m.
"RC", "RD", and "RH" (378446-4) (Qty. 6)	8 - 12 Lbs. ft.	11 - 16 N.m.
"RJ" (Qty. 6), and "RY" (Qty. 3) (379740-6)	35 - 40 Lbs. ft.	47 - 54 N.m.
Zerk Fitting – Greasable Shafts	Finger Tight - Plus Two (2) full turns with a wrench	
Shift Covers	16 - 20 Lbs. ft.	22 - 27 N.m.
Shaft Nut "XX" (501181)	75 - 85 Lbs. ft.	102 - 115 N.m.

Gear Chart

Model Number	Gear Part Number	Gear Type	No. Teeth A Input Gear	No. Teeth Ratio Gear	No. Teeth Output Gear
489**AH	5-P-1004	SPUR	22		
489**DA	5-P-1037	SPUR	23		
489*AAH	5-P-1280	SPUR	22	14	
489*ADA	5-P-1284	SPUR	23	14	
489*BAH	5-P-1418	SPUR	22	14	
489*CAH	5-P-1287	SPUR	22	17	
489*CDA	5-P-1291	SPUR	23	17	
489*FAH	5-P-1077	SPUR	22	21	
489*FDA	5-P-1085	SPUR	23	21	
489*HAH	5-P-1364	SPUR	22	23	
489*HDA	5-P-1365	SPUR	23	23	
489*L	5-P-964			25	
489*Q	5-P-965			19	
489*R	5-P-1214			22	
489*S	5-P-966			24	
489*U	5-P-967			26	
489*W	5-P-968			26	
489*X	5-P-969			38	
489*A	2-P-791				39
489*B	2-P-833				39
489*C	2-P-792				37
489*F	2-P-726				37
489*H	2-P-802				35
489*L	2-P-727				34
489*Q	2-P-559				24
489*R	2-P-559				24
489*S	2-P-637				22
489*U	2-P-560				20
489*W	2-P-561				17
489*X	2-P-728				21

SAE Eight Hole, Two Gear-Single Speed Lateral 8 tal. 2 Engranajes

Pneumatic
Neumático



Description Descripción

The E2000 Series PTO has been engineered to work with most of the existing transmissions in the market. It is a very durable PTO with a wide range of input gears, shifters, speed ratios and output shafts to meet all of the market applications.

La serie E2000 ha sido diseñada para funcionar en la mayoría de las transmisiones existentes en el mercado. Se trata de una toma de fuerza muy duradera con una amplia gama de engranajes de mando, accionamientos, relaciones de velocidad y ejes de salida para satisfacer todas las aplicaciones del mercado.

Main Data Datos Principales

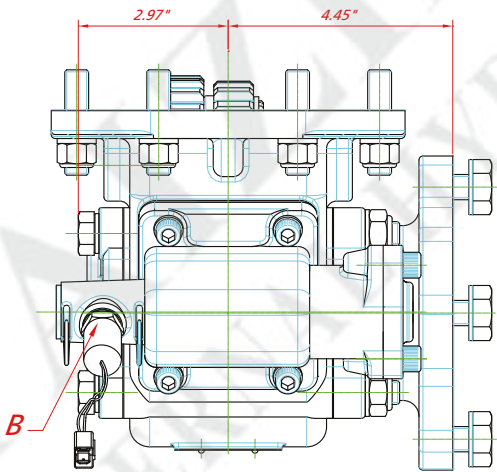
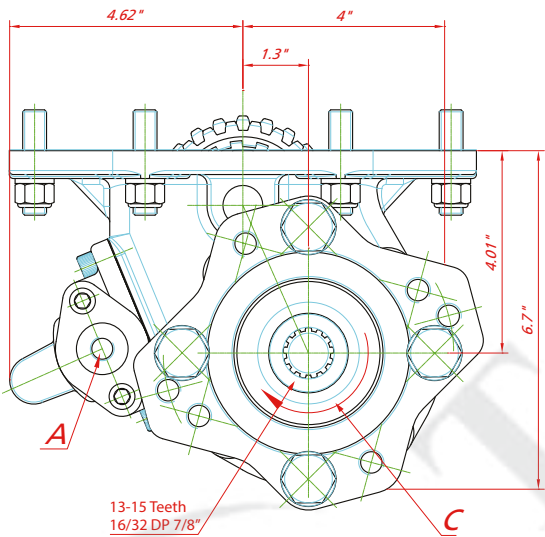
Mounting position Lado de montaje	Bottom, Right, Left Inferior, Derecho, Izquierdo
Weight Peso (Lb)	34

Engine to PTO ratio (See application book) Relación motor - Toma de Fuerza (Consultar libro de aplicaciones)

INTERNAL RATIO	INTERMITTENT SERVICE				CONTINUOUS SERVICE	
	Torque (Lb. FT)	Power (HP)		Torque (Lb. FT)	Power (HP)	
		At 500 r.p.m.	At. 1000 r.p.m.		At 500 r.p.m.	At. 1000 r.p.m.
55%(B)	250	25	49	178	18	35
73%(C)	250	25	49	178	18	35
86%(E)	225	22	44	160	16	31
95% (J)	225	22	44	160	16	31
125% (O)	200	20	39	142	14	28
137% (R)	200	20	39	142	14	28
150% (S)	190	19	37	135	13	26
165% (T)	175	17	34	124	12	24

SAE Eight Hole, Two Gear-Single Speed
Lateral 8 tal. 2 Engranajes

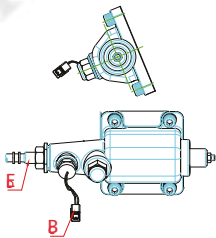
Pneumatic
Neumático



Mechanic Mecánico

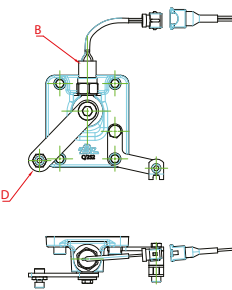
Cable Shift

Acc. por cable integrado



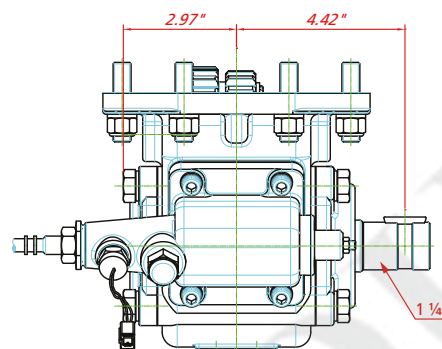
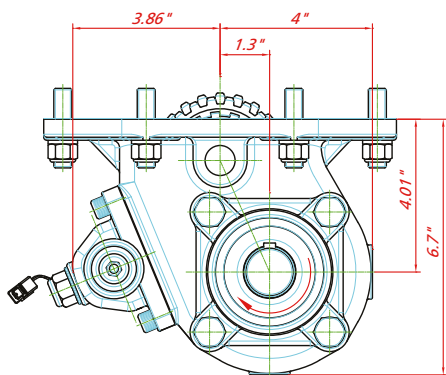
Wire Shift

Acc. por cable exterior

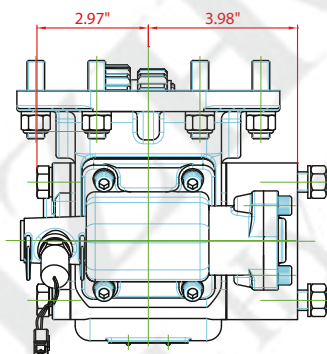
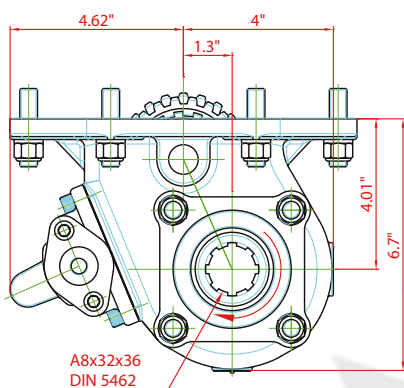


Notes		Notas	
A	Air connection, thread 1/4" BSP	A	Toma de aire, 1/4" GAS
B	Indicator switch	B	Indicador de funcionamiento
C	Rotation	C	Sentido de giro
D	Wire shift	D	Accionamiento por cable exterior
E	Cable shift	E	Accionamiento por cable integrado

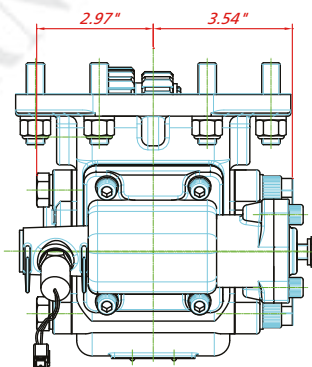
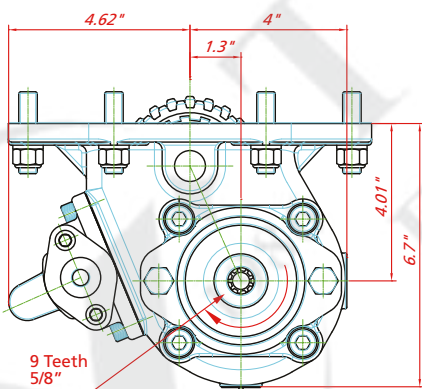
Round shaft Eje chaveteado



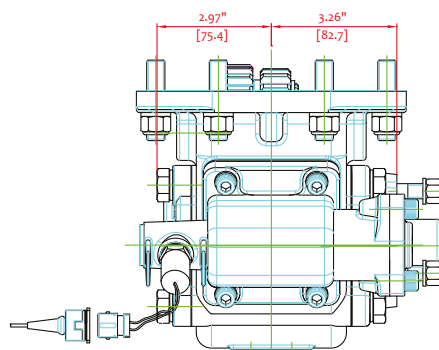
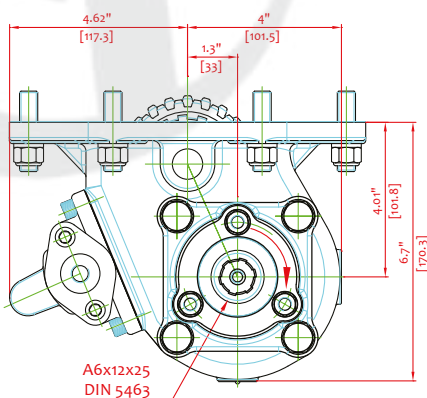
ISO 4 bolt ISO 4 taladros



SAE "A" 2 bolt SAE "A" 2 taladros



UNI 3 bolts 6T UNI 3 taladros 6T



Part Number Breakdown Codificación PTO

E2000 X J N 01 1 RA

SERIES:

E2000 Standard Mounting, 8 bolt
E2010 Deep Mounting, 8 bolt

VERSIONS:

X Standard
G Greaseable Output Shaft
P Oil pressure lube idler Shaft

INTERNAL RATIOS:

1:0.55 (B) → PT801034-01
1:0.73 (C) → PT800534
1:0.8 (E) → PT800634
1:0.95 (J) → PT800734
1:1.25 (O) → PT800834
1:1.50 (S) → PT801434
1:1.65 (T) → PT800934

SHIFTER TYPE:

W Wire with 10' Cable
F Electric 24V
M Constant Mesh
N Air without 101 Air Kit

INPUT GEAR:

01 Fuller series (R/675)	27 Eaton / Fuller (R/692)
02 Universal (R/683))	28 Fuller (R/771)
03 Spicer (R/736)	30 Eaton / Fuller (R/698)
05 Spicer (R/677)	33 Spicer (R/697)
06 Fuller (TREMEC) (R/679)	34 Spicer (R/696)
07 Navistar (R/693)	36 New Process (R/739)
08 Spicer (R/682)	39 Warner (R/741)
09 Spicer (R/684)	41 Warner (R/743)
10 Chevy (R/678)	42 Fuller (R/770)
11 Chevy / Spicer (R/699)	50 ZF (R/700)
13 New Process (R/718)	51 Dodge (R/702)
14 Fuller (R/737)	52 ZF (R/694)
15 Eaton / Fuller FS-4005C/4205C (R/717)	55 Mack / Renault (R/748)
16 ZF (R/716)	56 Tremec (R/744)
17 Eaton 6305 A (R/680)	57 ZF (R/740)
18 Eaton FS 3005 / 4005 AB (R/717)	61 Ford (R/754)
20 Dodge (R/701)	64 Allison (R/752)
21 ZF S5-42/5.72 (R/676)	66 Fuller (R/862)
22 Eaton / Fuller (R/738)	67 Aisin (R/870)
23 Eaton / Fuller FS-3005 B (R/714)	68 Tremec (R/897)
24 Mack (R/695)	70 Mercedes G60 (R/956)
25 Eaton / Fuller FS 7206 A (R/715)	75 Endurant (G/210)

OUTPUT TYPE:

DA ISO 4 bolt
FA Flange SAE 1100
IB Flange SAE 1300
IC Flange SAE 1400
SE SAE Type 1 1/4" round shaft
SF SAE "A" 2 bolt 9T
SH SAE "AA" 2 bolt 11T
RA SAE "B" 2/4 bolt 13T. rotatable
SG SAE B 2/4 bolt 14T. rotatable
RB SAE "BB" 2/4 bolt 15T. rotatable
TP Tyron pump (Chelsea type)
UN UNI 3 bolts 6T

ASSEMBLY ARRANGEMENTS:

- 1 Right, Forward
- 2 Right, Rear
- 3 Left, Forward
- 4 Left, Rear

