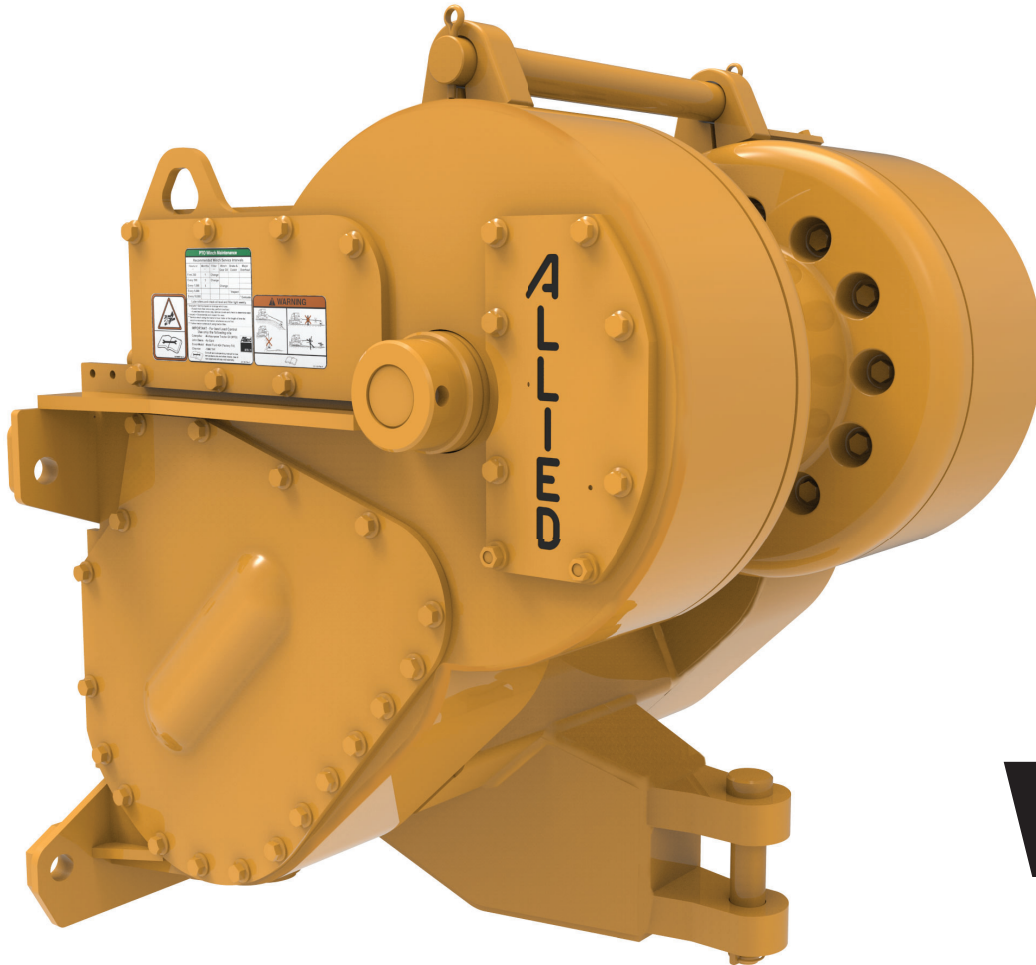


Parts Manual



W8L

**Power Controlled &
Electronic Controlled
Towing Winch
for Caterpillar Dozers**

A Product of

Allied Systems
COMPANY

Sherwood, OR USA

Please check the Allied Systems website
regularly for updates to this manual.
www.alliedsystems.com

P/N 599781W-CAT Printed in U.S.A. 6/18/2020

Safety Precautions

**Read, understand and observe the Safety Summary
on pages 0-3 through 0-5
to prevent injury to personnel and damage to equipment.**

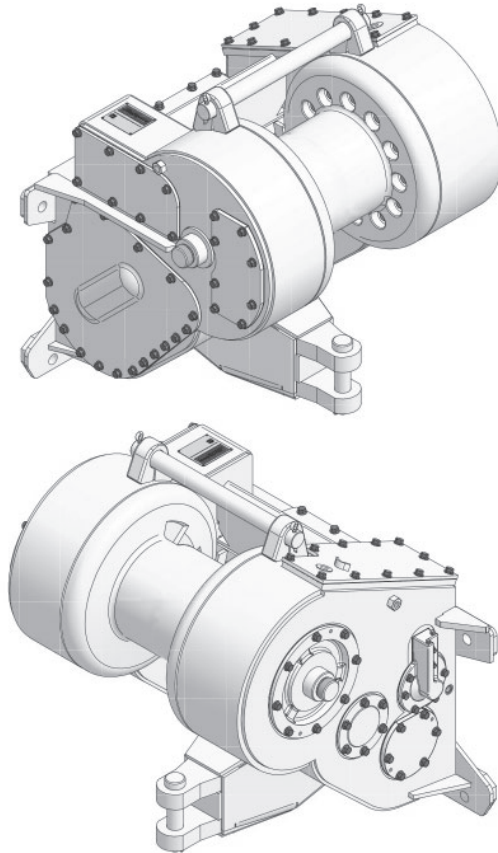
Winch serial number _____

Date put into service _____

**NOTE: This publication may be translated to different languages for sole purpose
of easy reference in non-English speaking locations.**

**Should there be differences in interpretations to the text,
please refer to the English language edition published by Allied Systems Company
as the controlling document.**

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Safety Summary

General Safety Notices

The following pages contain general safety warnings which supplement specific warnings and cautions appearing elsewhere in this manual. All electrical and hydraulic equipment is dangerous. You must thoroughly review and understand the Safety Summary before attempting to operate, troubleshoot or service this winch.

The following symbols and terms are used to emphasize safety precautions and notices in this manual:



DANGER

The “DANGER” symbol indicates a hazardous situation which, if not avoided, will result in serious injury or death. Carefully read the message that follows to prevent serious injury or death.



WARNING

The “WARNING” symbol appears wherever incorrect operating procedures or practices could cause serious injury or death. Carefully read the message that follows to prevent serious injury or death.



CAUTION

The “CAUTION” symbol appears where a hazardous situation which, if not avoided, could result in minor to moderate injury and equipment damage.

NOTICE

This signal word alerts to a situation that is not related to personal injury but may cause equipment damage.

NOTE: ...

The term “NOTE” highlights operating procedures or practices that may improve equipment reliability and/or personnel performance.

NOTE: All possible safety hazards cannot be foreseen so as to be included in this manual. Therefore, you must always be alert to potential hazards that could endanger personnel and/or damage the equipment.

Safety Regulations

Each country has its own safety legislation. It is in the operator's own interest to be conversant with these regulations and to comply with them in full. This also applies to local bylaws and regulations in force on a particular work site.

Should the recommendations in this manual deviate from those in the user's country, the national regulations should be followed.

Operation, Inspection, and Maintenance Warnings

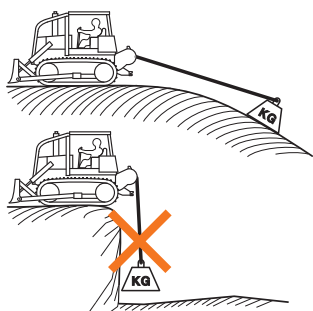


WARNING

Obey the following cautions and warnings before using your winch to avoid equipment damage, personal injury or death.

- Do not operate the winch unless you are authorized and trained to do so.
- Do not operate the winch unless the vehicle is equipped with a screen to protect the operator if the wire rope breaks.
- Read, understand, and follow the operating, inspection, and maintenance instructions in this manual.
- Do not use the control levers for hand holds when entering or leaving the vehicle.
- Do not permit other people near the control area when you inspect or repair a machine.
- Never inspect, repair, or perform maintenance on a machine that is in motion.
- Inspect the winch before each use:
 - » Make sure that the controls and instruments operate correctly.
 - » Report the need for repairs immediately.
 - » Do not work with a damaged or worn wire rope.
 - » Do not use a winch that needs repairs.

- » If the wire rope and ferrule must be removed from the drum, make sure the end of the wire rope and ferrule are controlled when the ferrule is released. The end of the wire rope can suddenly move from the drum like a compressed spring when the ferrule is released, and cause an injury.
- Stay in the operator's seat when operating the winch.
- Do not stand on the vehicle when operating the winch.
- Avoid winch operation near people or other machines.
- Never stand nor permit others to stand in the bight (loop) of a wire rope.
- Do not stand nor permit others to be near the winch or wire rope when there is tension on the wire rope.
- Observe job site rules.
- Be in complete control at all times.
- Do not use the control levers as hangers for clothes, water bags, grease guns, lunch pails, etc.
- Do not leave the vehicle when the winch wire rope is under tension.
- Do not permit riders on the vehicle or load.
- Do not use the winch as an anchor for a double or two-part line.
- Do not pull the hook through the throat or over the drum, which will cause damage.
- When the winch is not in use, make sure the control lever is in **BRAKE-ON** position and the winch brake is applied.
- Do not use winch as a hoist. Tractor and skidder mounted winches are designed for towing.
- Always inspect wire rope, tail chain and other rigging components for wear, damage, broken strands or abuse before use.
- Never use wire rope, tail chain or other rigging that is worn-out, damaged or abused.
- Never overload wire rope, tail chain or rigging.
- Wire rope and tail chain will fail if worn-out, overloaded, misused, damaged, improperly maintained or abused. Wire rope or tail chain failure may cause serious injury or death!
- Do not terminate wire rope to tail chain by the use of a knot.
- Do not handle wire rope if the hook end is not free. A load could break away, suddenly tensioning the wire rope, resulting in serious injury or death.
- Stay clear of wire rope entry areas (fairlead or arch rollers, winch drum etc).
- Make sure ground personnel are in plain view of the operator, and at a distance of at least 1½ times the working length of the wire rope.
- Make sure that any hand signals used by ground personnel are clearly defined and understood by everyone involved.
- Do not attempt to "jerk" or "shock" a load free. Doing so can cause loads in excess of the rated capacity of the wire rope, winch, or mounting hardware.
- Replace any parts only with genuine Allied Winch parts.
- Maintain a **minimum of three (3) complete wraps of wire rope** on the drum for normal operation. It may help to paint the last five wraps of wire rope a contrasting color, to serve as a visual indicator.

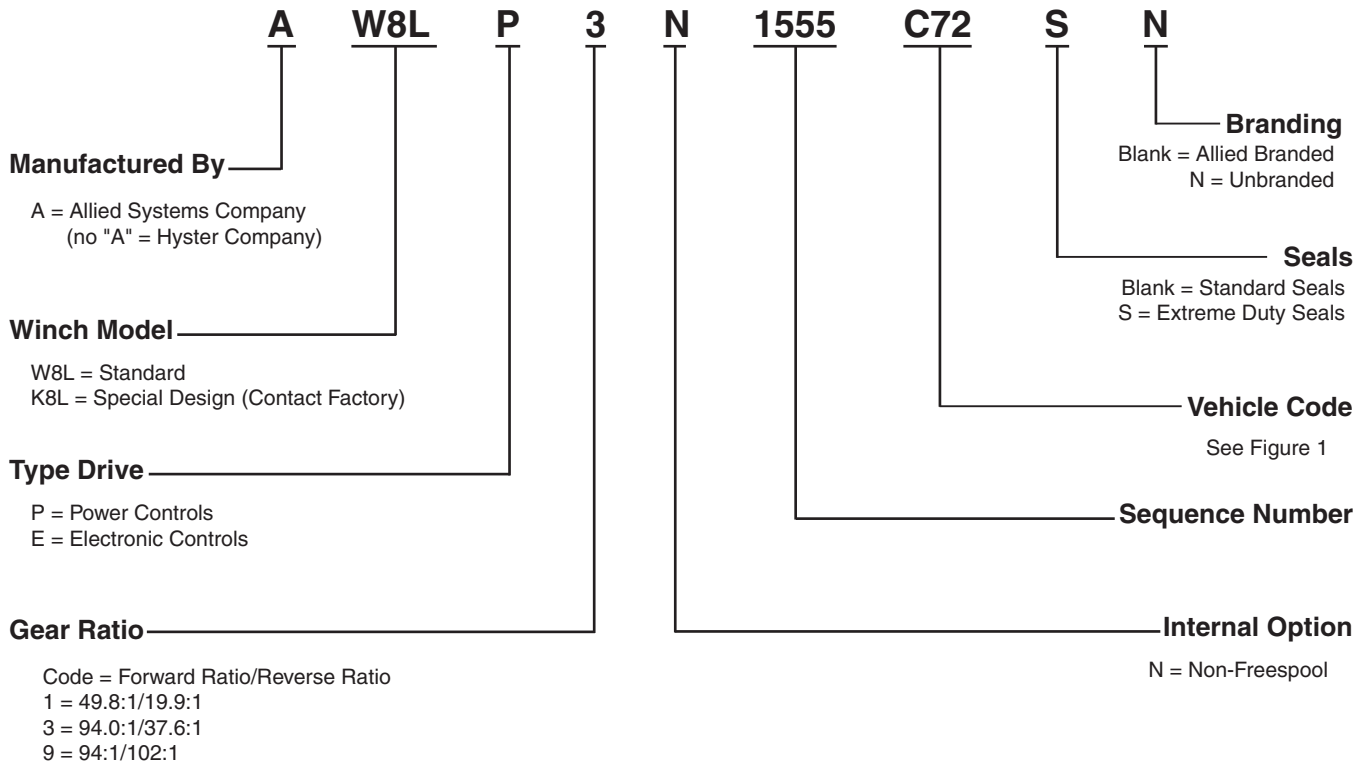


- Do not handle wire rope with bare hands. Wear leather gloves at all times.
- Align the tractor with the load to prevent side loading the winch, and to maintain even spooling of the wire rope.
- If applying tension to the wire rope manually during spooling:
 - » ensure that the operator is winching in slowly,
 - » keep your hands and clothing well clear of any rollers or the winch drum,
 - » do not maintain tension by letting the wire rope to slip through your hands,
 - » use a hand-over-hand technique to maintain tension.
- Be aware of the ground conditions, and make sure the ground and tractor are stable enough to pull the intended load.
- Do not attempt to pull loads in excess of the rated capacity of the winch.
- Keep yourself informed of any applicable codes, regulations and standards for the job.
- Your winch may have temperature shut-off system for protection of tractor and winch. Manual override of high temperature shut-off will cause damage to tractor and winch.
- This winch is neither intended, designed, nor rated for any application involved in the lifting or moving of personnel.
- Use only the lubricants listed in the Recommended Oil List. See page 0-11.
- Do not weld on any part of the winch. Contact Allied Systems if weld repairs are needed.
- The hydraulic system must be kept clean and free of contamination at all times.
- Be aware of the hazards of pressurized hydraulics:
 - » Wear personal protective equipment, such as gloves and safety glasses, whenever servicing or checking a hydraulic system.
 - » Assume that all hydraulic hoses and components are pressurized. Relieve all hydraulic pressure before disconnecting any hydraulic line.
 - » Never try to stop or check for a hydraulic leak with any part of your body; use a piece of cardboard to check for hydraulic leaks.
 - » Small hydraulic hose leaks are extremely dangerous, and can inject hydraulic oil under the skin, even through gloves.
 - » Infection and gangrene are possible when hydraulic oil penetrates the skin. See a doctor immediately to prevent loss of limb or death.



Identification - Unit

Allied Winch S/N Nameplate Data For Tractor Mountings



- Notes:** 1. In Addition to the serial number plate, the serial number is stamped on to the left hand side of the frame
2. Circled numbers in **Figure 1** indicate possible gear ratios.

Figure 1 - Tractor Identification

Tractor Make Model and Starting Tractor Serial Number Where Applicable	
C O D E	C Caterpillar
715	D6GC ③
72	D7R SERIES II ① ③ ⑨
721	D7 BUILD 17A ⑨

Capacities and Specifications

Recommended Oil List

Recommended Oils* - General Conditions			
Manufacturer	Oil Type	Ambient Temperature Range	
		°F	°C
ExxonMobil	Mobil Fluid 424 (Factory fill)	-13 to 104	-25 to 40
John Deere	Hy-Gard™	-13 to 122	-25 to 50
Chevron	1000 THF	-13 to 104	-25 to 40
Caterpillar	Multipurpose Tractor Oil (MTO)	-13 to 104	-25 to 40
Case	Hy-Tran Ultra	-20 to 122	-29 to 50
Recommended Oils* - Low Temperature Conditions			
Manufacturer	Oil Type	Ambient Temperature Range	
		°F	°C
ExxonMobil	Mobil Fluid LT	-40 to 86	-40 to 30
John Deere	Low Viscosity Hy-Gard	-40 to 86	-40 to 30
Chevron	THF W	-40 to 86	-40 to 30

* Note: Use of non-recommended oils may void warranty.

Figure 2 Recommended Oil List

Note: Refer to Winch Maintenance decal on page 23 for more information.

Winch Oil Capacity

Winch Model	Oil Capacity
W8L	20.0 Gallon (76 L)

Note: The gear box uses 0.5 gallon oil, and is separate from the winch.

Figure 3 Winch Oil Capacity

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Section 1

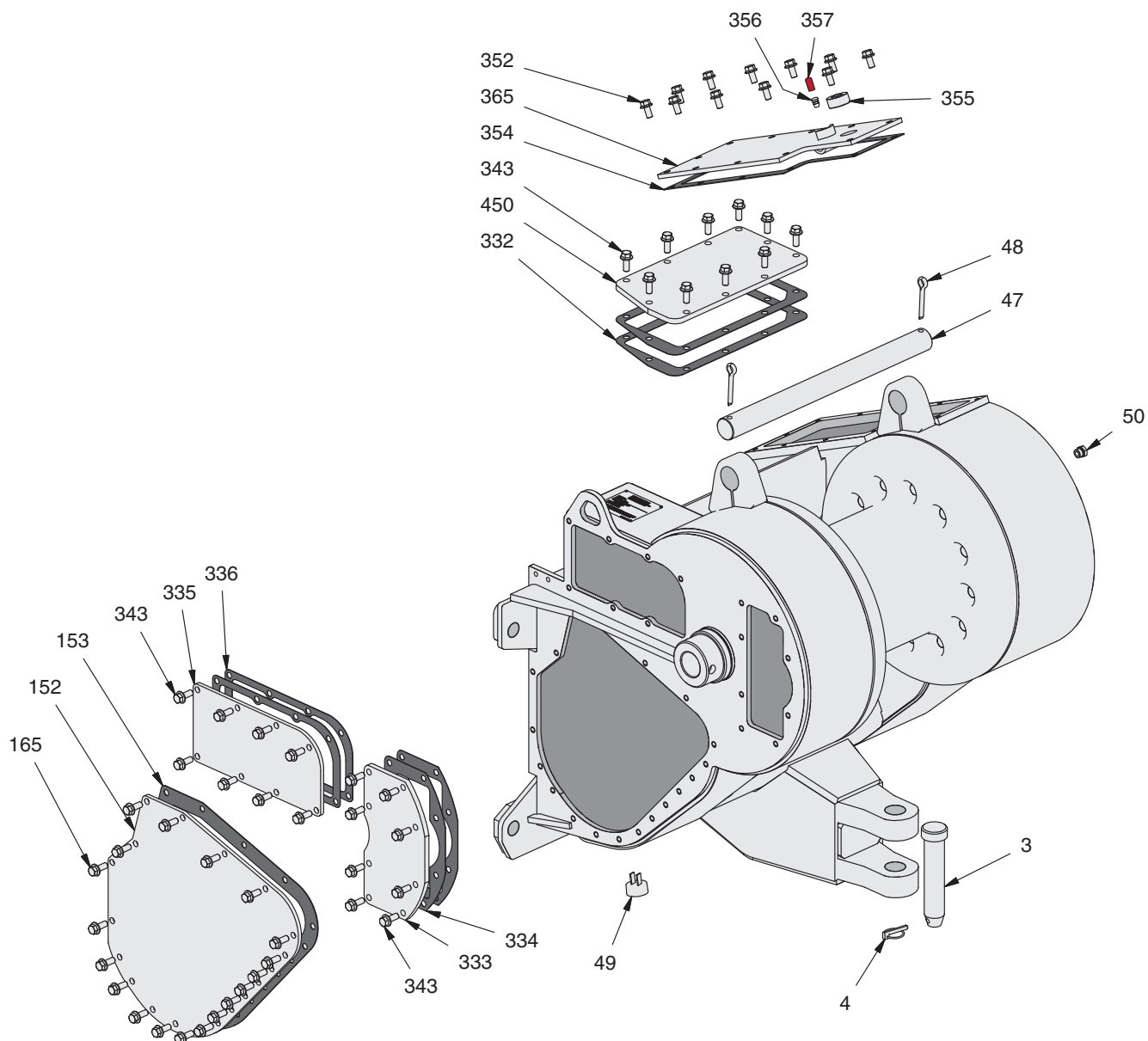
Frame/Covers/Decals/Mounting Parts

Frame/Covers	2 thru 3
Mounting Parts.....	4 thru 9
Nameplate & Decals	10 thru 11

Covers

AW8LP*****C***

(All Installations with Power Controls)

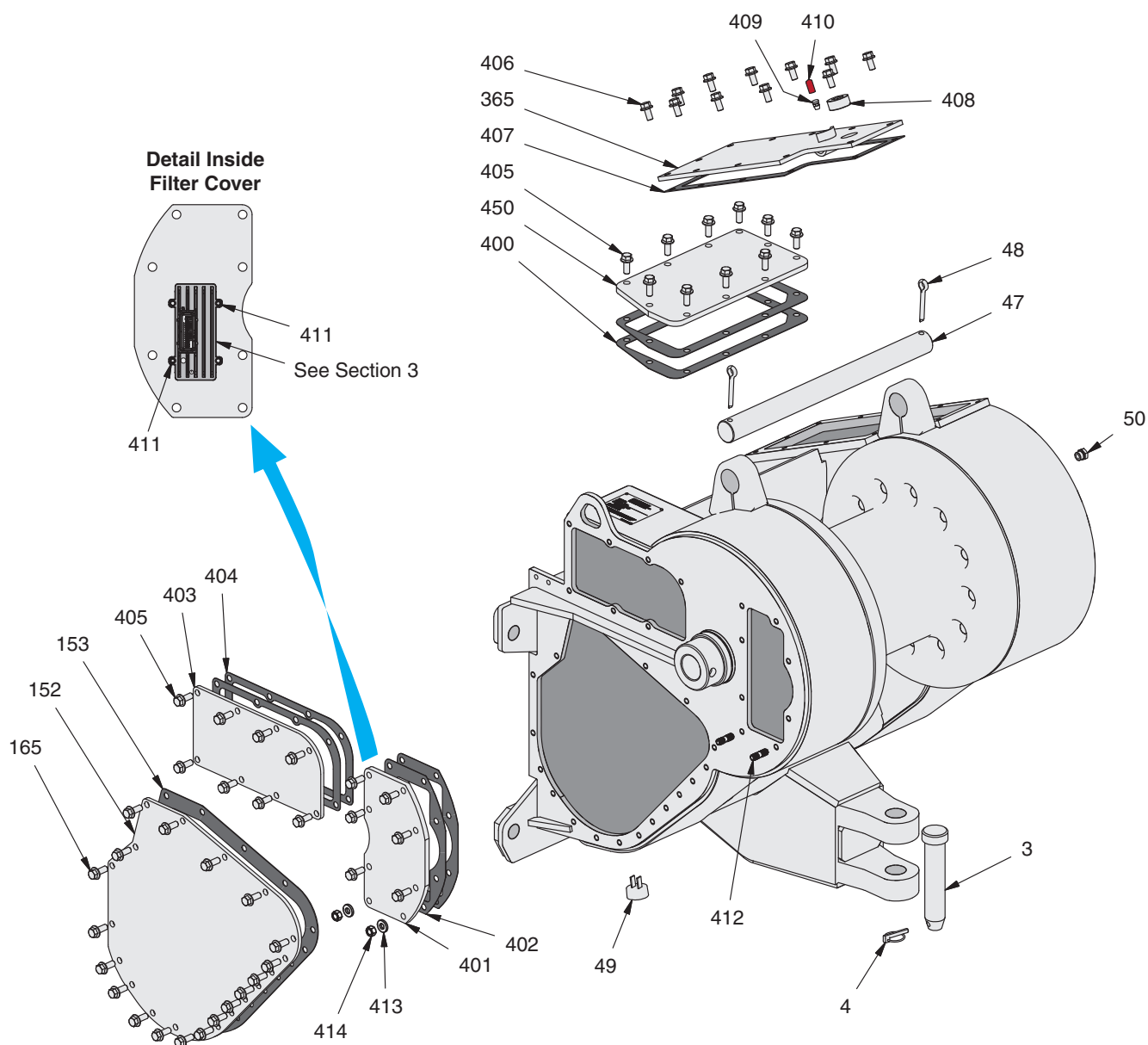


Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
3	95959W	1	Pin, Drawbar	335	2305270W	1	Cover, Valve
4	2303221W	1	Pin, Retaining	336	2314805	2	Gasket
47	196279W	1	Rod, Tie	343	2303848W	26	Screw, Flange
48	15272W	2	Cotter Pin	352	2303902W	11	Screw, Flange
49	222262W	2	Plug	354	142761W	1	Gasket
50	14595W	1	Fitting	355	15319W	1	Fitting
152	286043W	1	Cover, Brake	356	21420W	1	Breather
153	286044W	1	Gasket	357	2300962W	1	Cap, Breather
165	2303848W	25	Screw, Flange	365	192956W	1	Cover, RH Side Frame
332	2314804	2	Gasket	450	253814W	1	Cover, Top
333	2304708W	1	Cover Plate				
334	2314005	2	Gasket, Filter Cover				

Covers

AW8LE*****C***

(All Installations with Electronic Controls)



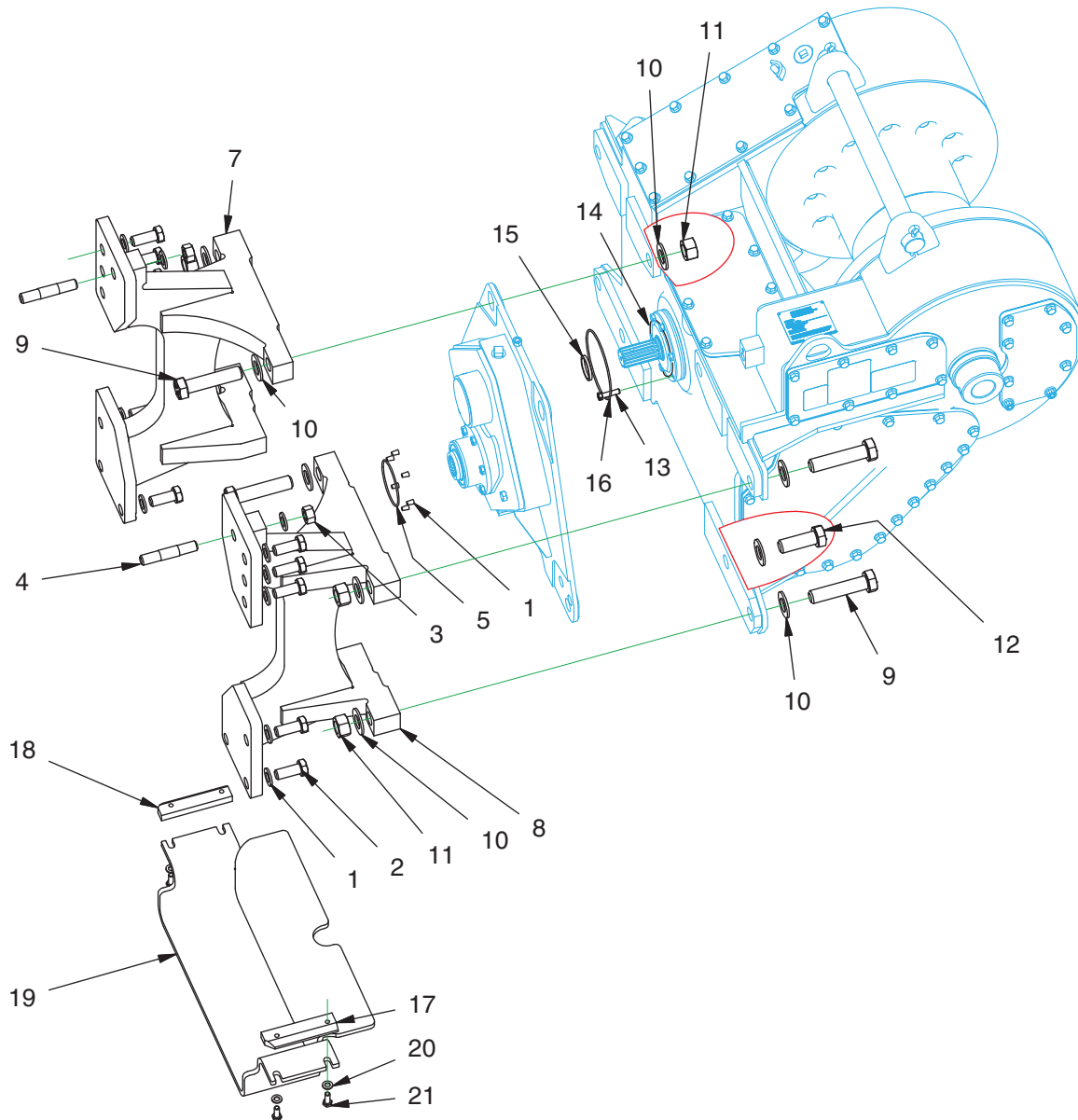
Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
3	95959W	1	Pin, Drawbar	405	2303848W	24	Screw, Flange
4	2303221W	1	Pin, Retaining	406	2303902W	11	Screw, Flange
47	196279W	1	Rod, Tie	407	142761W	1	Gasket
48	15272W	2	Cotter Pin	408	15319W	1	Fitting
49	222262W	2	Plug	409	21420W	1	Breather
50	14595W	1	Fitting	410	2300962W	1	Cap, Breather
152	286043W	1	Cover, Brake	411	Y25G-0416	2	Capscrew
153	286044W	1	Gasket	412	2317364	2	Stud - 0.5 Dia X 1.75
165	2303848W	25	Screw, Flange	413	221771W	2	Washer
365	192956W	1	Cover, RH Side Frame	414	221711W	2	Hex Nut
400	2314804	2	Gasket	450	253814W	1	Cover, Top
401	*a 2317447	1	Cover, Filter (Allied Branded)				
401	*b 2317346	1	Cover, Filter (Unbranded)				
402	2314005	2	Gasket, Filter Cover				
403	2305270W	1	Cover, Valve				
404	2314805	2	Gasket				

*a Used on AW8LE**C721, AW8LE**C72

*b Used on AW8LE**C721N

Mounting Parts

AW8LP**C715 (CAT D7GC with P-Controls)



Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
1	296434W	14	Washer	14	67355W	1'	Lockwire
2	*b 225065W	12	Capscrew	15	383158W	1	Spacer
3	292660W	2	Nut	16	90937W	1	O-Ring
4	*a*b 2315880	2	Stud	17	2315868	1	Pad, Tap
5	15887W	1	O-Ring	18	2315879	1	Pad, Tap
6	2307554W	6	Plug	19	2317399	1	Guard - Bottom
7	2313655	1	Bracket - Mounting, RH	20	296422W	4	Washer
8	2313656	1	Bracket - Mounting, LH	21	293645W	4	Capscrew
9	Y17C-2088	6	Capscrew				
10	225851	14	Washer				
11	221724W	6	Hex Nut				
12	166396W	2	Capscrew				
13	388655W	1	Capscrew				

*a Apply Anaerobic Adhesive / Sealant T70 230064W to threads in tractor rear face

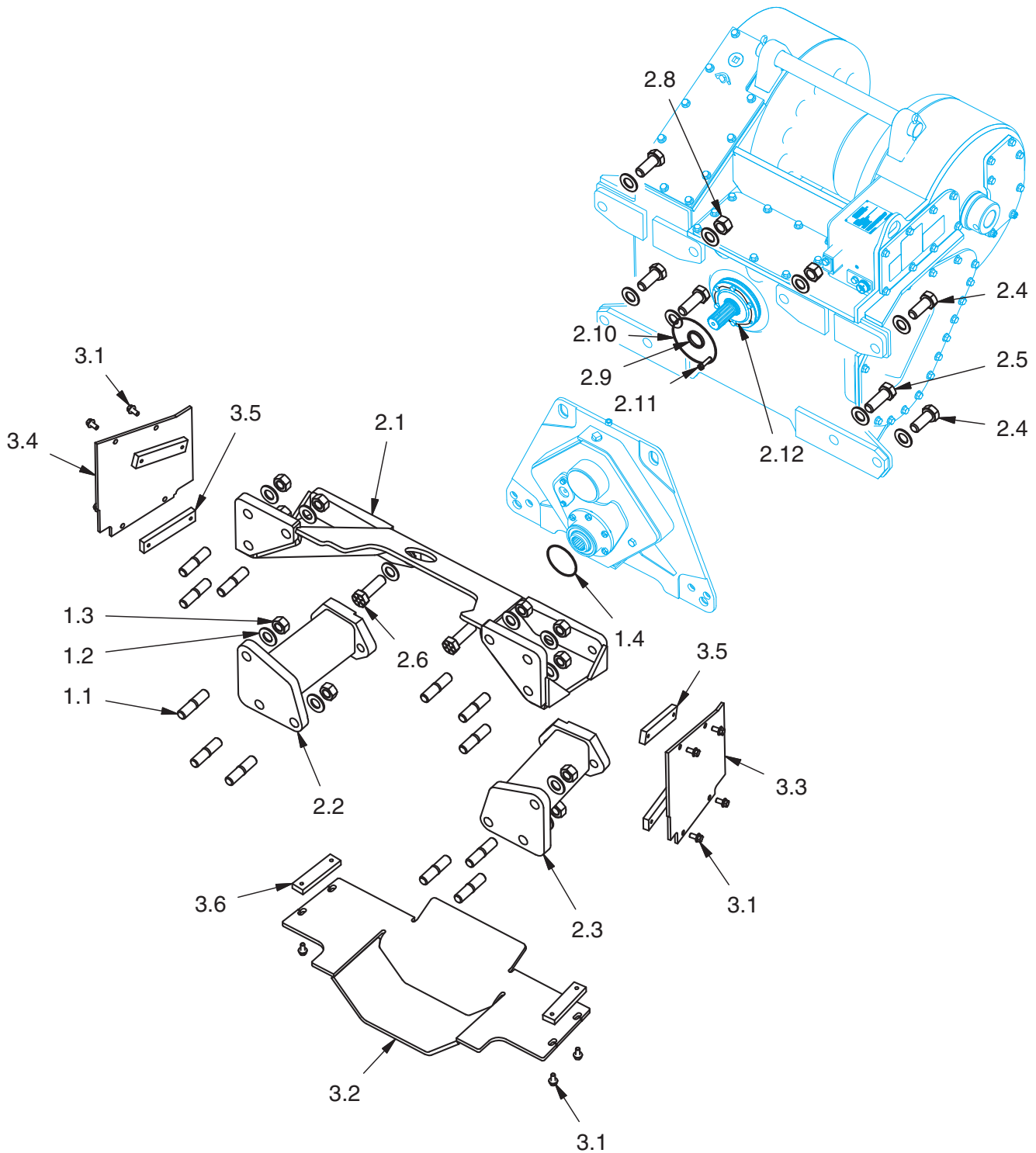
*b Apply threadlocker 318702W to threads

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Mounting Parts

AW8LE**C721 (CAT D7 Build 17A with E-Controls)

Page 1 of 2



Mounting Parts

AW8LE**C721 (CAT D7 Build 17A with E-Controls)

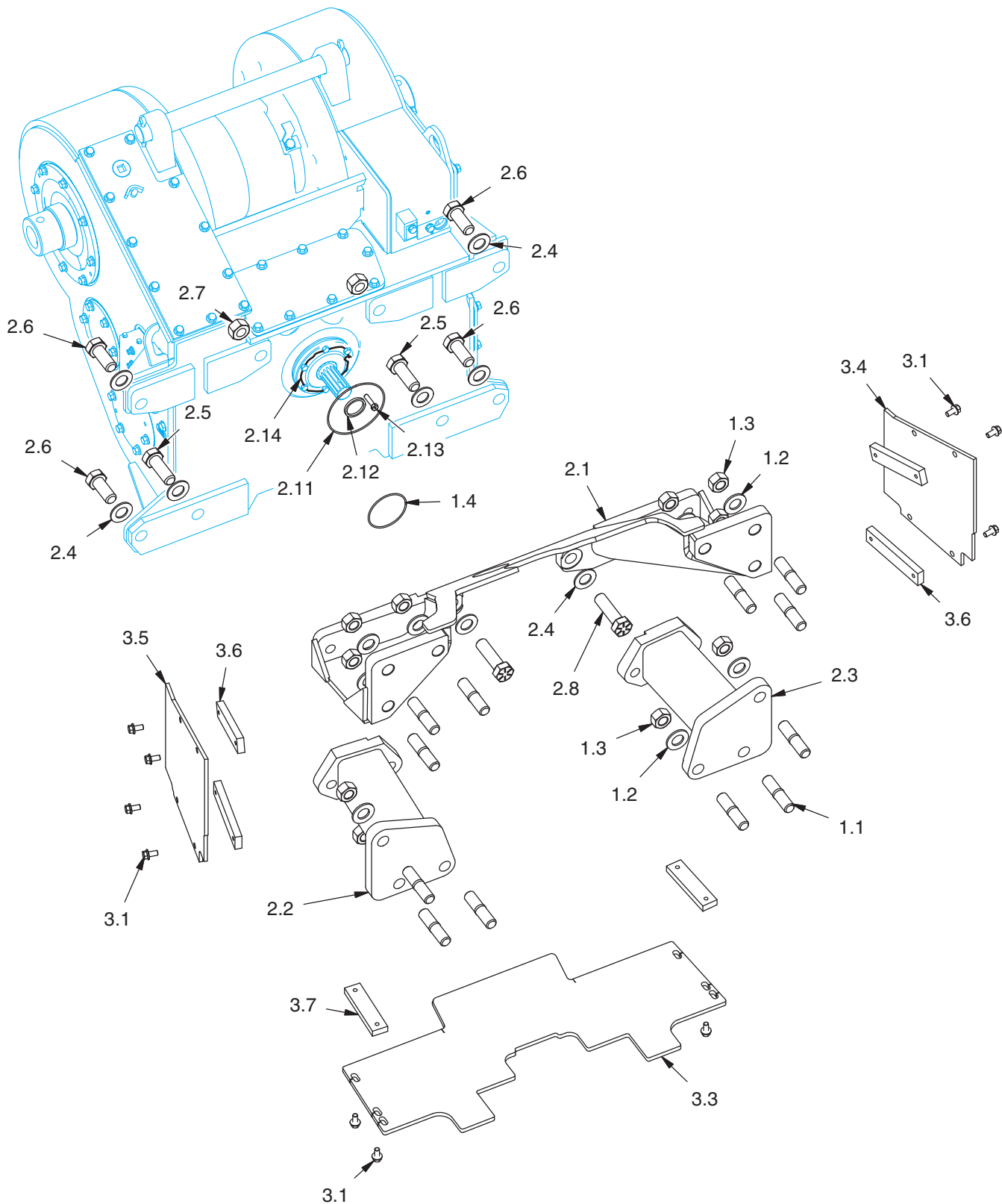
Page 2 of 2

Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
1.1	2315875	12	Stud				
1.2	225851	12	Washer	2.8	15070W	2	Nut
1.3	292661W	12	Nut	2.9	383158W	1	Spacer
1.4	15887W	1	O-Ring	2.10	90937W	1	O-Ring
1.5	*a 381181W	1	Guard, Cable	2.11	388655W	1	Capscrew
1.6	*a 129563W	1	Cable Tie	2.12	67355W	1'	Lockwire (Per Ft)
2.1	2317189	1	Bracket - Mounting, Top	3.1	398817W	12	Screw, Flange
2.2	378237W	1	Bracket - Mounting, RH	3.3	2317193	1	Guard, Bottom
2.3	378238W	1	Bracket - Mounting, LH	3.4	2303661W	1	Plate, LH Guard
2.4	271744W	4	Capscrew	3.5	2303662W	1	Plate - Guard, RH
2.5	166396W	2	Capscrew	3.6	2303664W	4	Plate, Tapped
2.6	1310819W	2	Capscrew	3.7	2314818	2	Tap Pad
2.7	225851	10	Washer				

*a Not Illustrated

Mounting Parts

AW8L***C72 (CAT D7R Series II)
Page 1 of 2



Mounting Parts

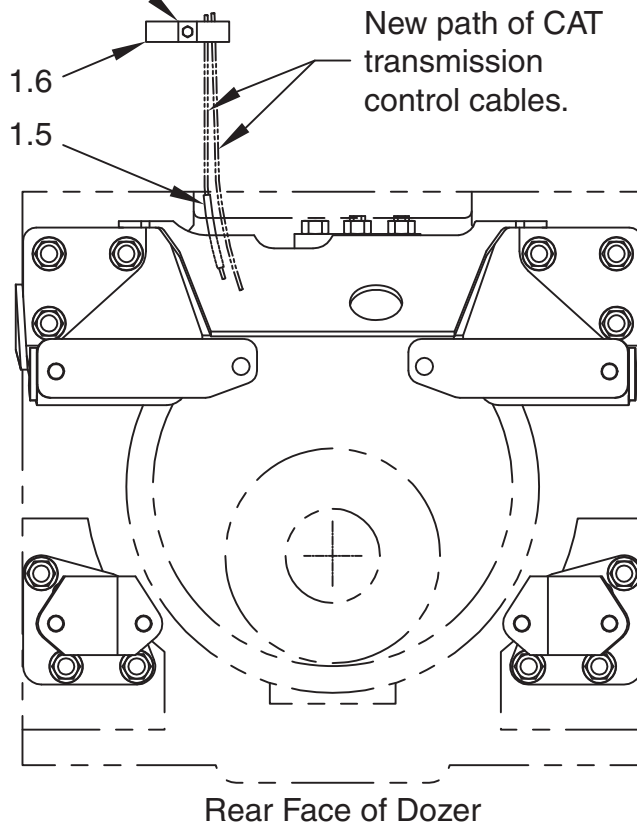
AW8L***C72 (CAT D7R Series II)
Page 2 of 2

Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
1.1	*a 2315875	12	Stud	2.8	1310819W	2	Capscrew
1.1	*b 2306421W	12	Stud	2.11	90937W	1	O-Ring
1.2	225851	12	Washer	2.12	383158W	1	Spacer
1.3	*a 292661W	12	Nut	2.13	388655W	1	Capscrew
1.3	*b 221725W	12	Nut	2.14	67355W	1'	Lockwire (Per Ft)
1.4	15887W	1	O-Ring	3.1	398817W	12	Screw, Flange
1.5	381181W	1	Guard, Cable	3.3	2303660W	1	Guard, Bottom
1.6	129563W	1	Cable Tie	3.4	2303661W	1	Plate, LH Guard
2.1	378235W	1	Bracket - Mounting, Top	3.5	2303662W	1	Plate - Guard, RH
2.2	378237W	1	Bracket - Mounting, RH	3.6	2303664W	4	Plate, Tapped
2.3	378238W	1	Bracket - Mounting, LH	3.7	2314818	2	Tap Pad
2.4	225851	10	Washer				
2.5	166396W	2	Capscrew				
2.6	271744W	4	Capscrew				
2.7	15070W	2	Nut				

*a Used on AW8LP**C72

*b Used on AW8LE**C72

Rotate clamp 180°
to position shown.

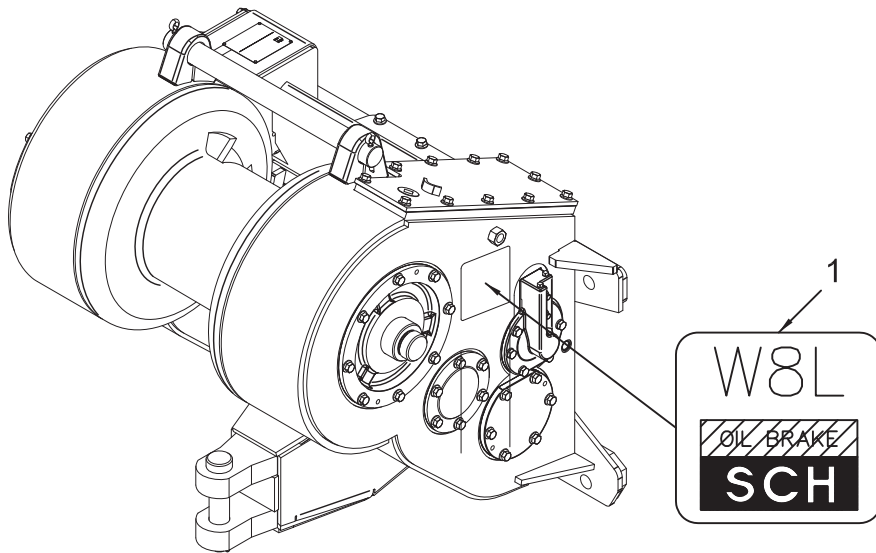


Nameplate & Decals

Page 1 of 2

Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
1	2300008W	1	Decal, RH	6	2314343	1	Tag, Check Dropbox Oil
2	1321665W	1	Decal, Warning	7	137852W	1	Cable Tie
3	*a 2311481	1	Decal, PTO Winch Maintenance	11	16602W	4	Screw
4	2311330	1	Decal, Load & Wire Rope Safety				

*a Reference Parts Marketing bulletin PMB0801



Nameplate & Decals

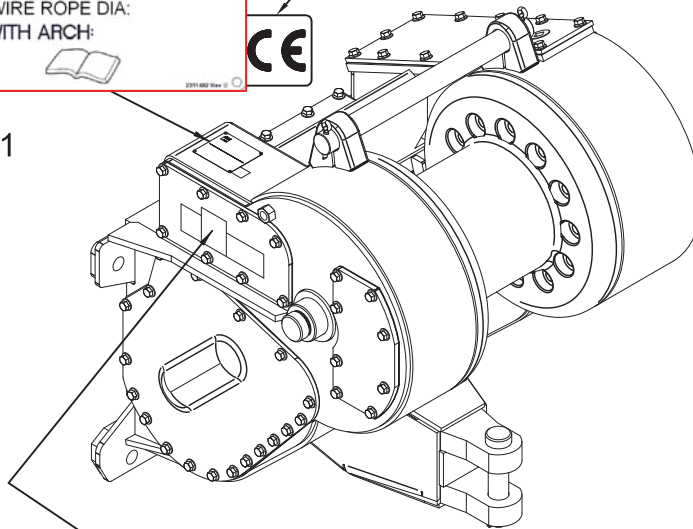
Page 2 of 2

Contact Allied Systems
Winch Department if the
Nameplate Is Broken.

Contact Allied Systems
Winch Department if the
CE Mark Label Is Needed.



11



6, 7



2



PTO Winch Maintenance

Recommended Winch Service Intervals

Hours or **	Months **	Filter ***	Winch Gear Oil	Brake & Clutch	Major Overhaul
First 250	1	Change			
Every 500	3	Change			
Every 1,000	6		Change		
Every 5,000				* Inspect	
Every 10,000					* Evaluate

Lube rollers and check oil level and filter light weekly.

* Evaluate = Service based on average winch use;
- If used more than once a day, perform overhaul.
- If used less than once a day, remove covers and check to determine need.

* Inspect = Disassemble and inspect for wear.

** Service winch using the tractor's hour meter or the length of time the winch is mounted to the tractor, whichever occurs first.

*** Follow tractor schedule if using tractor filter.

IMPORTANT - For best Load Control
Use only the following oils:

Caterpillar	-Multipurpose Tractor Oil (MTO)
John Deere	-Hy-Gard
ExxonMobil	-Mobil Fluid 424 (Factory Fill)
Chevron	-1000 THF

Consult service/operating manual for low temperature oils and other details. Use of non-approved oil may void warranty.

Allied WINCH

2311481 Rev C

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4



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Section 2

Gear Train/Shaft

Gear Box Assembly	14 thru 15
PTO Shaft	16 thru 17
Clutch/Bevel Gear Shaft.....	18 thru 21
Clutch.....	22 thru 24
Brake Shaft	25 thru 26
Brake.....	27
Intermediate Gear Shaft	28
Drum Shaft Group.....	30 thru 33

Gear Box Assembly

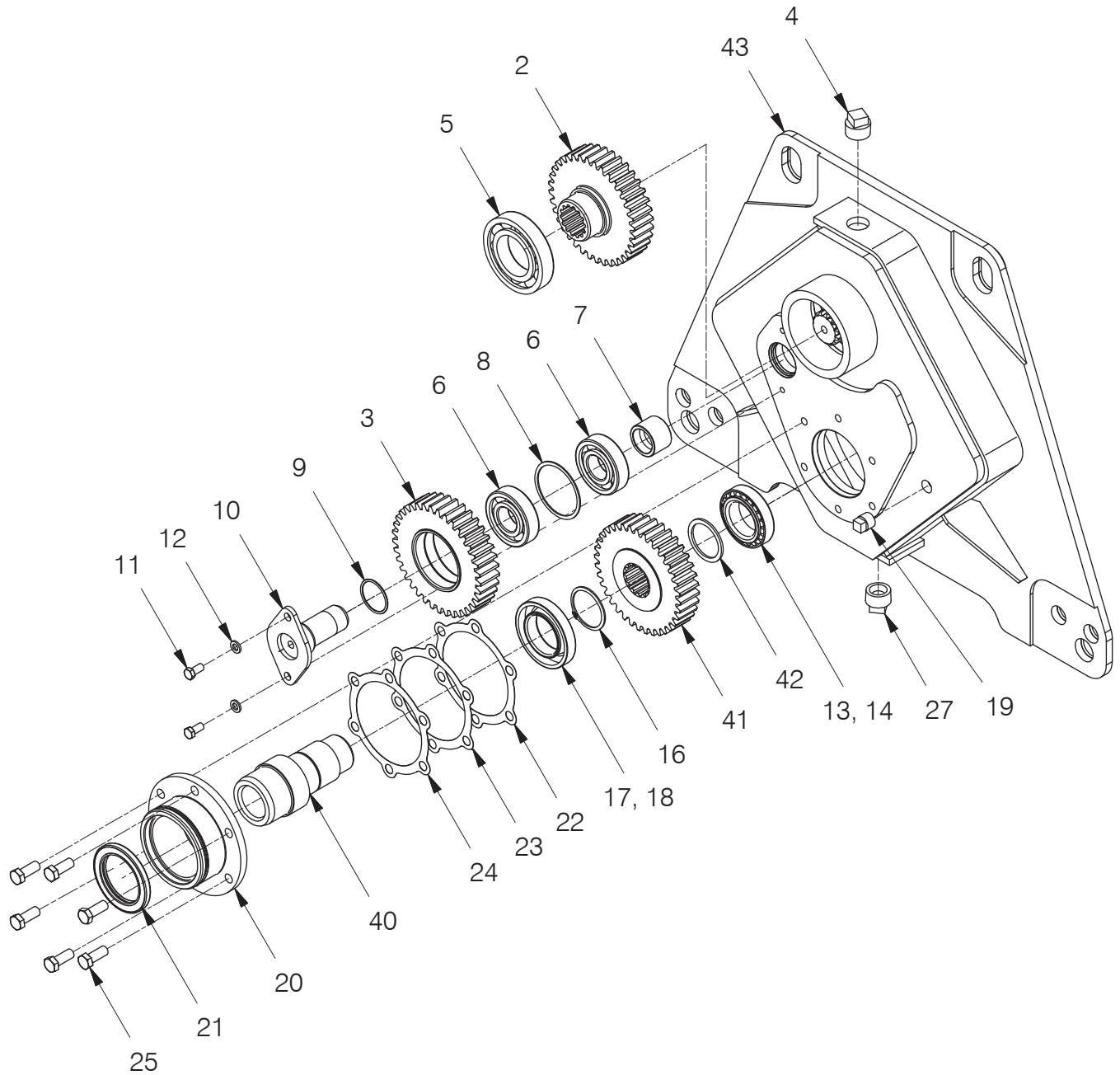
1:1 Ratio
Page 1 of 2

Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
	1308406W		Assembly, Gear Box				
2	383156W	1	. Gear, Top 36T	17	29758W	1	. Cone, Bearing
3	388640W	1	. Gear, Idler 37T	18	45733W	1	. Cup, Bearing
4	15305W	1	. Plug	19	15303W	1	. Fitting
5	41212W	1	. Bearing	20	383167W	1	. Carrier
6	43307W	2	. Bearing	21	123270W	1	. Seal
7	388646W	1	. Race, Inner	22	*a 110931W	AR	. Shim .005
8	58947W	1	. Ring, Snap	23	*a 110932W	AR	. Shim .007
9	16984W	1	. O-Ring	24	*a 110933W	AR	. Shim .020
10	388642W	1	. Pin	25	178402W	6	. Capscrew
11	194090W	2	. Capscrew, Sealing	27	35504W	1	. Fitting
12	15156W	2	. Washer	40	374807W	1	. Shaft, Input
13	374803W	1	. Cup, Bearing	41	374795W	1	. Gear, Input 36T
14	374804W	1	. Cone, Bearing	42	374805W	1	. Washer, Support
16	12963W	1	. Ring, Snap	43	383178W	1	. Gearbox

*a Requires 264159W Sealant

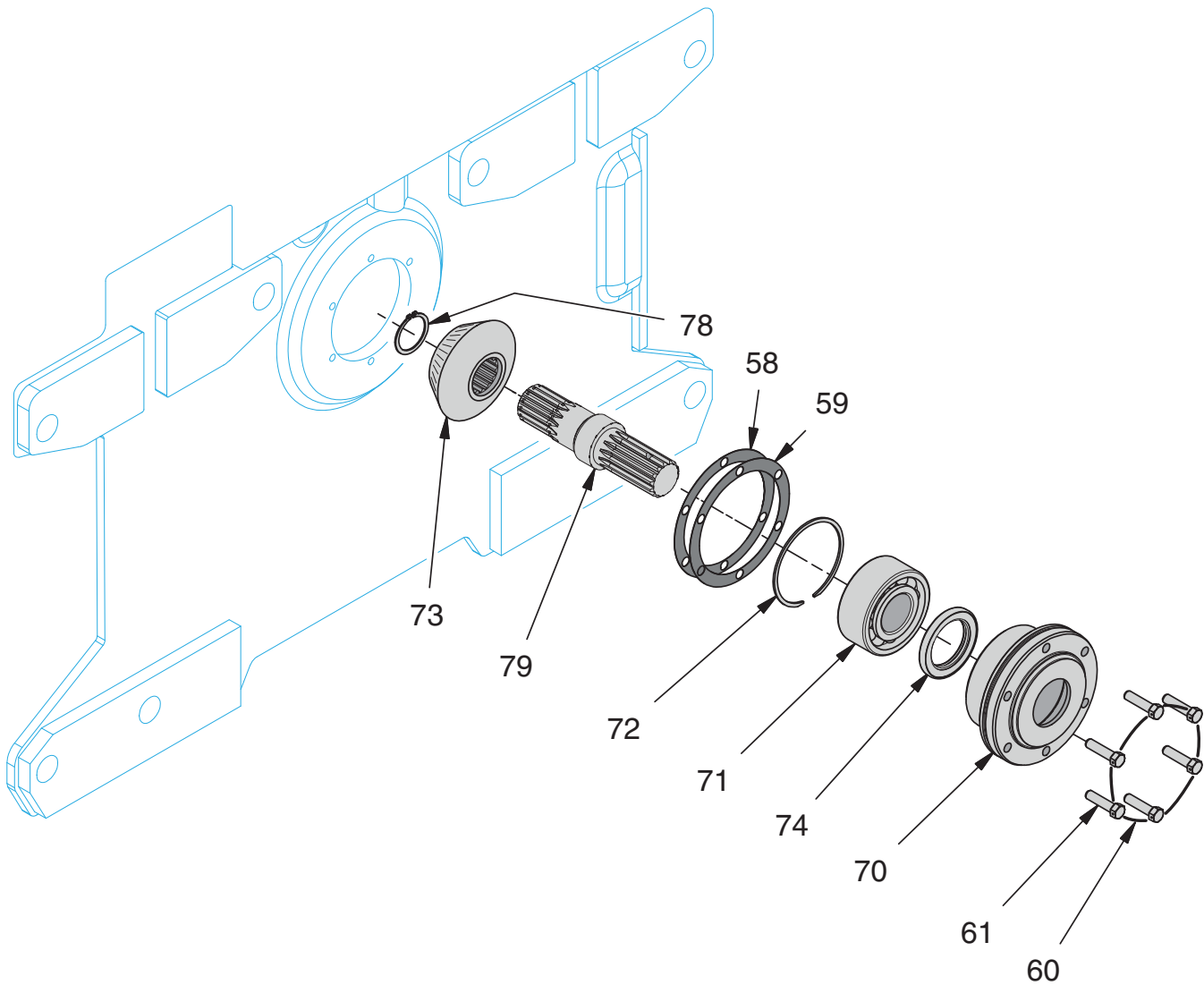
Gear Box Assembly

1:1 Ratio
Page 2 of 2



PTO Shaft

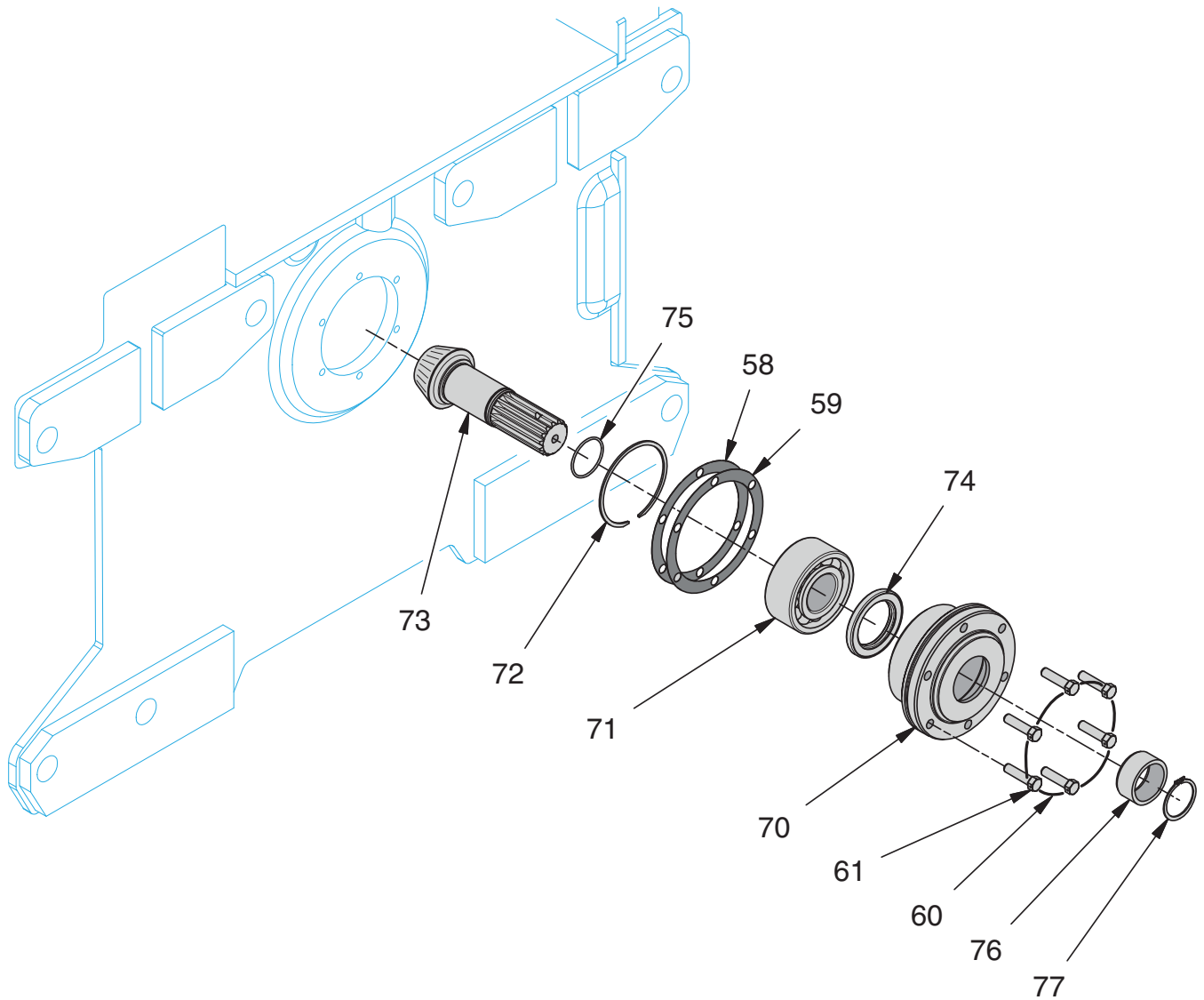
Gear Ratios 1, 6



Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
58	134078W	AR	Shim, 0.005"	72	35573W	1	Snap Ring
59	134079W	AR	Shim, 0.007"	73	381190W	1	Shaft, PTO
60	67355W	AR	Lockwire	74	96020W	1	Gear, Bevel
61	169671W	6	Capscrew	78	79389W	1	Seal, Oil
70	98362W	1	Carrier	79	12916W	1	Snap Ring
71	45310W	1	Bearing - Ball				

PTO Shaft

Gear Ratios 2, 3, 7, 8, 9, 10



Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
58	134078W	AR	Shim, 0.005"	73	285277W	1	Shaft, PTO (GR 2, 7)
59	134079W	AR	Shim, 0.007"	73	313884W	1	Shaft, PTO (GR 3, 8, 9, 10)
60	67355W	AR	Lockwire	74	79389W	1	Seal, Oil
61	169671W	6	Capscrew	75	133898W	1	O-Ring
70	98362W	1	Carrier	76	96524W	1	Spacer
71	45310W	1	Bearing - Ball	77	12944W	1	Snap Ring
72	35573W	1	Snap Ring				

Clutch/Bevel Gear Shaft

Gear Ratios 1, 3

Page 1 of 2

Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
100	*a 287942W	1	Gear, 2nd Reduction Spider				
111	*b 2302623W	1	Gear, 2nd Reduction Spider	224	224791W	1	Carrier - Bearing
180	*c 96021W	1	Bevel Gear	225	35575W	1	Snap Ring - Ext
181	*d 96028W	1	Bevel Gear	226	174561W	1	Lockwasher
182	*e 313883W	1	Bevel Gear	227	21014W	1	Locknut
200	287939W	1	Gear, Clutch	228	224023W	1	Retainer, Bearing
201	96431W	1	Carrier	229	15307W	2	Fitting
202	314848W	1	Clutch Shaft Assembly	230	178402W	5	Capscrew
203	2302938W	1	Gear, Pump	231	15158W	7	Lockwasher
204	256608W	1	Forward Clutch Assy (See pg 34)	232	225264W	2	Capscrew
205	230405W	1	Bearing Cone	233	225259W	AR	Shim, 0.005"
206	174559W	1	Washer	234	225260W	AR	Shim, 0.007"
207	55289W	1	O-Ring	235	225261W	AR	Shim, 0.020"
208	251733W	1	Spacer	236	230351W	2	Bearing Cup
209	2310715	1	Carrier - Bearing	237	196376W	1	Spacer
210	41216W	1	Bearing - Ball	238	225255W	AR	Shim, 0.005"
212	230407W	2	Bearing, Roller	240	225256W	AR	Shim, 0.007"
213	58938W	2	Snap Ring	241	225257W	AR	Shim, 0.020"
220	108877W	2	O-Ring	242	225262W	1	Bearing Cone
221	39674W	2	O-Ring	243	256609W	1	Clutch Assembly (See page 35)
222	224024W	1	Retainer, Bearing	245	2303848W	5	Screw, Flange
223	95581W	4	Ring				

*a Used on Gear Ratio 1, 2, 3

*b Used on Gear Ratio 7

*c Used on Gear Ratio 1

*d Used on Gear Ratio 2, 7

*e Used on Gear Ratio 3

Clutch/Bevel Gear Shaft

Gear Ratio 9

Page 1 of 2

Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
100	287942W	1	Gear, 2nd Reduction Spider	510	55289W	1	O-Ring
182	313883W	1	Bevel Gear	512	*a 214495W	1	Capscrew
220	108877W	2	O-Ring	513	223428	1	Washer
221	39674W	2	O-Ring	521	2303574W	1	Reverse Clutch Assy (See pg 36)
222	224024W	1	Retainer, Bearing	523	2303548W	1	Gear
223	95581W	4	Ring	524	2303612W	1	Plate, Retainer Bearing
224	224791W	1	Carrier - Bearing	525	221771W	2	Washer
225	35575W	1	Snap Ring - Ext	526	221711W	1	Hex Nut
226	174561W	1	Lockwasher	527	200454W	1	Capscrew
227	21014W	1	Locknut	528	*b 2303562W	1	Spacer, 1.430"
228	224023W	1	Retainer, Bearing	528	*b 2303563W	1	Spacer, 1.435"
229	15307W	2	Fitting	528	*b 2303564W	1	Spacer, 1.440"
230	178402W	5	Capscrew	528	*b 2303635W	1	Spacer, 1.445"
231	15158W	7	Lockwasher	528	*b 2303636W	1	Spacer, 1.450"
232	225264W	2	Capscrew	528	*b 2306041W	1	Spacer, 1.455"
233	225259W	AR	Shim, 0.005"	528	*b 2306029W	1	Spacer, 1.460"
234	225260W	AR	Shim, 0.007"	528	*b 2306030W	1	Spacer, 1.465"
235	225261W	AR	Shim, 0.020"	528	*b 2310544	1	Spacer, 1.470"
236	230351W	2	Bearing Cup	528	*b 2310545	1	Spacer, 1.475"
237	196376W	1	Spacer	531	2303565W	1	Spacer, 2.272"
238	225255W	AR	Shim, 0.005"	532	2303554W	4	Bearing Cup
240	225256W	AR	Shim, 0.007"	533	2303555W	4	Bearing Cone
241	225257W	AR	Shim, 0.020"	534	2303556W	1	Bearing Cone
242	225262W	1	Bearing Cone	535	44326W	1	Bearing - Ball
243	256609W	1	Clutch Assembly (See page 35)	539	2303650W	1	Bearing, Needle
245	2303848W	5	Screw, Flange	546	1314435W	2	Shim
501	2303542W	1	Gear, Pump	547	230407W	1	Bearing, Roller
502	2303547W	1	Shaft Assembly	548	58938W	1	Snap Ring
507	2303545W	1	Shaft, Idler	590	2305276W	1	Gear, Clutch, 38T/19T
508	2303651W	4	Washer, Thrust				
509	2303543W	1	Gear, Pump				

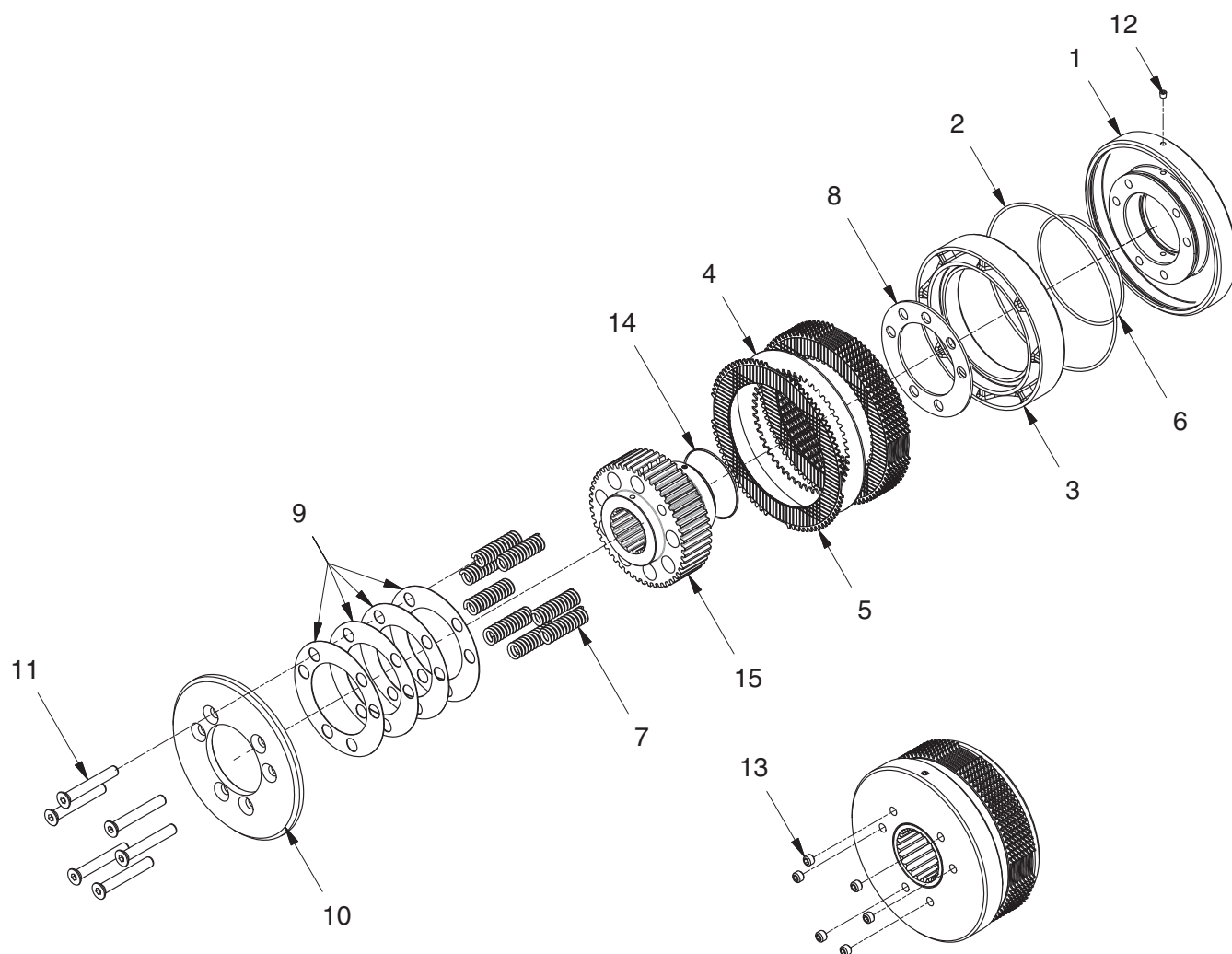
*a Apply Threadlocker (318702W)

*b Select whichever spacer will obtain .003L to .002T bearing setting



Forward Clutch Assembly

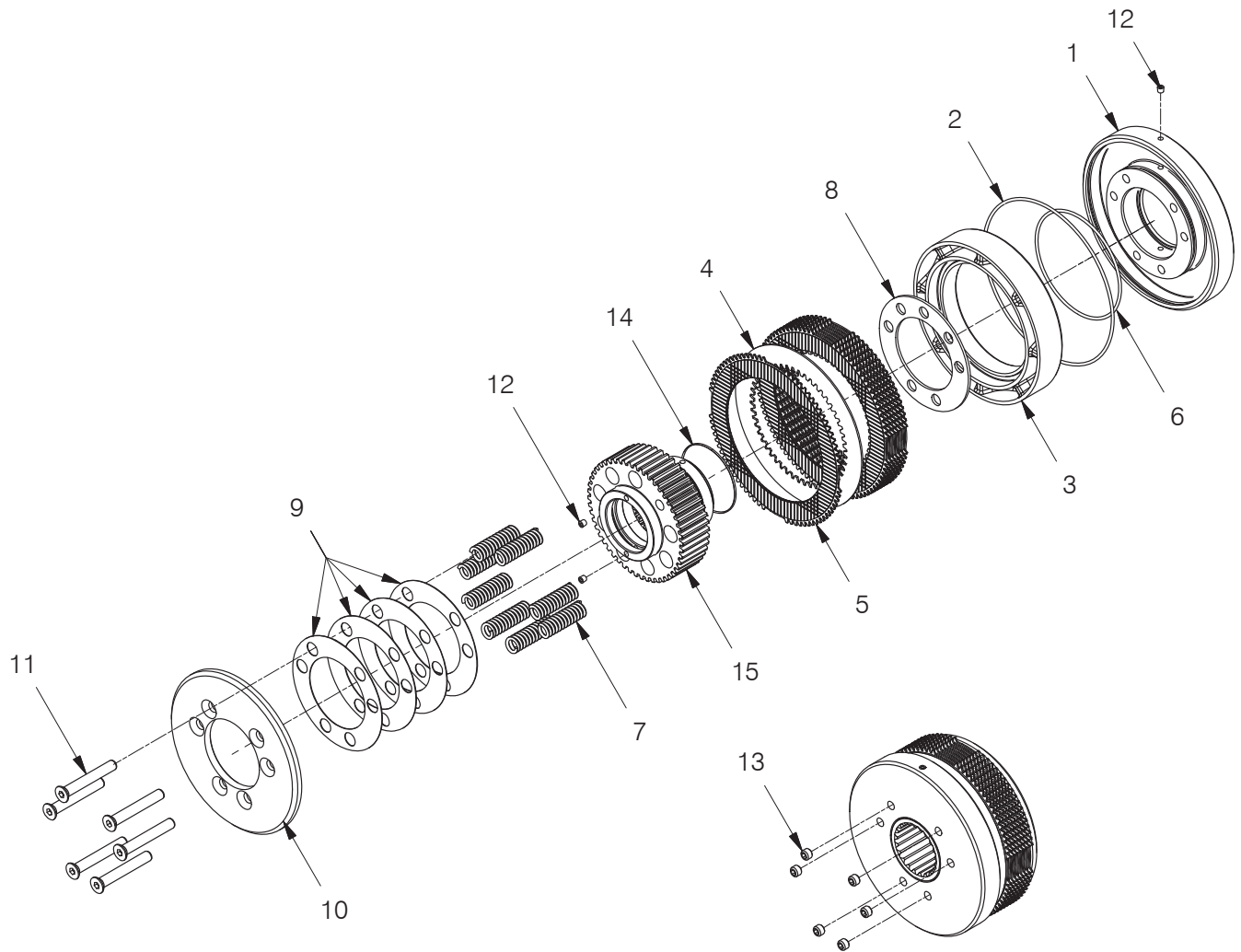
Gear Ratios #1 (49.8:1), #3 (94.1:1)



Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
256608W Assembly, Forward Clutch							
1	224790W	1	. Plate, Retainer	11	96468W	6	. Capscrew
2	*a 79972W	1	. O-Ring	12	141348W	1	. Plug
3	96462W	1	. Piston	13	196435W	6	. Set Screw
4	*a 261542W	8	. Plate, Separator	14	*a 39370W	1	. O-Ring
5	*a 328715W	8	. Disc, Friction	15	267505W	1	. Hub, Forward Clutch
6	*a 89777W	1	. O-Ring		19901W	1	. Pin, Slotted
7	*a 267499W	8	. Spring	*a Included in Service Kit 2310570. Qty 2 of 2310570 Included in Service Kit 2311156 Qty 1 of 2310570 Included in Service Kit 2311157			
8	96461W	1	. Retainer, Spring				
9	*a 224793W	A/R	. Shim .031				
10	224794W	1	. Plate, Clutch				

Clutch Assembly

Gear Ratios #1 (49.8:1), #3 (94.1:1), #9 (94/102:1)



Note: This is the forward clutch assembly for winches with gear ratio #9, and is the reverse clutch for winches with gear ratios 1 and 3.

Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
	256609W		Assembly, Clutch				
1	224790W	1	. Plate, Retainer	11	96468W	6	. Capscrew
2	*a 79972W	1	. O-Ring	12	141348W	3	. Plug
3	96462W	1	. Piston	13	196435W	6	. Set Screw
4	*a 261542W	8	. Plate, Separator	14	*a 39370W	1	. O-Ring
5	*a 328715W	8	. Disc, Friction	15	257791W	1	. Hub, Reverse Clutch
6	*a 89777W	1	. O-Ring				
7	*a 267499W	8	. Spring				
8	96461W	1	. Retainer, Spring				
9	*a 224793W	A/R	. Shim .031				
10	224794W	1	. Plate, Clutch				

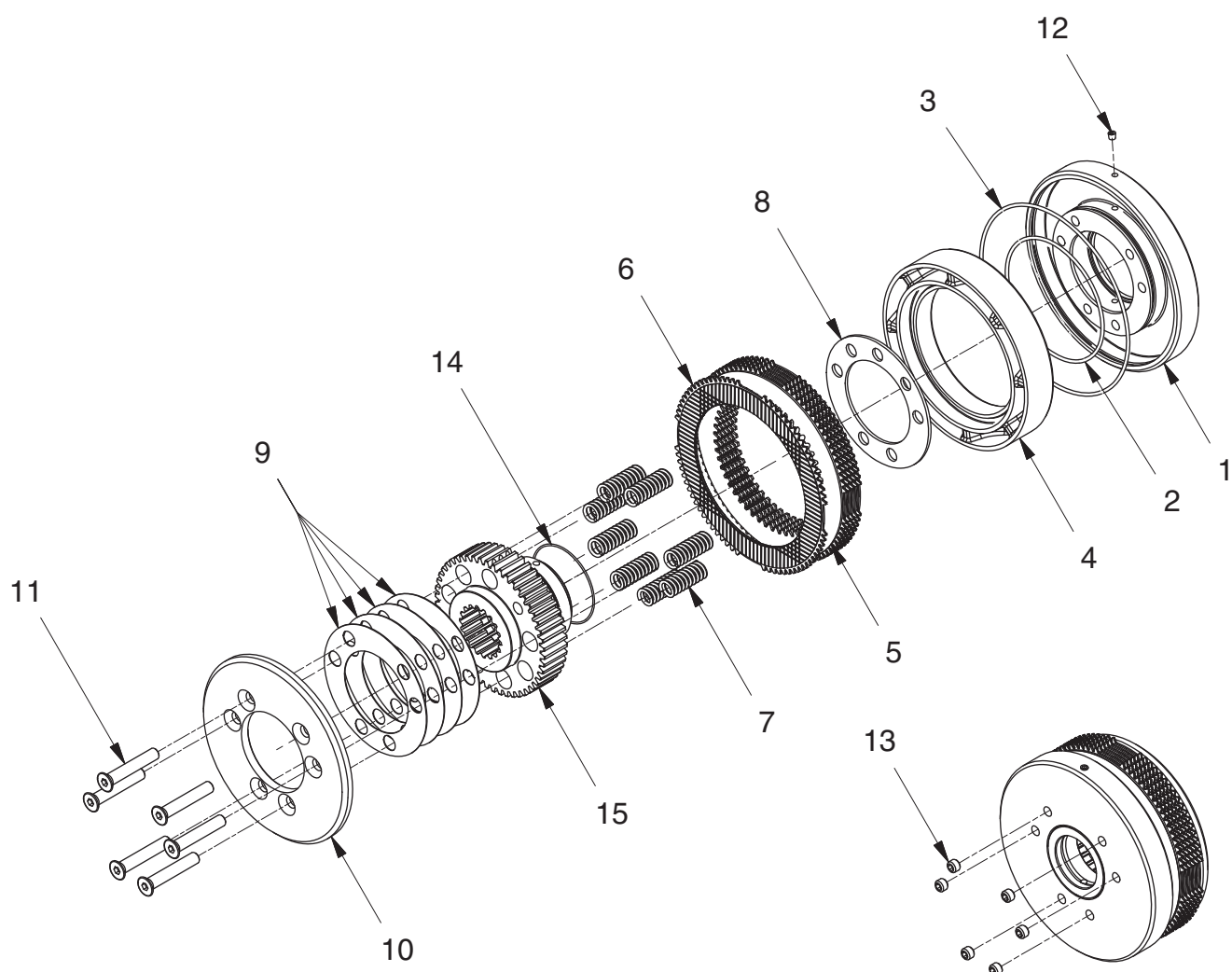
*a Included in Service Kit 2310570.

Qty 2 of 2310570 Included in Service Kit 2311156

Qty 1 of 2310570 Included in Service Kit 2311157

Reverse Clutch Assembly

Gear Ratio #9 (94/102:1)



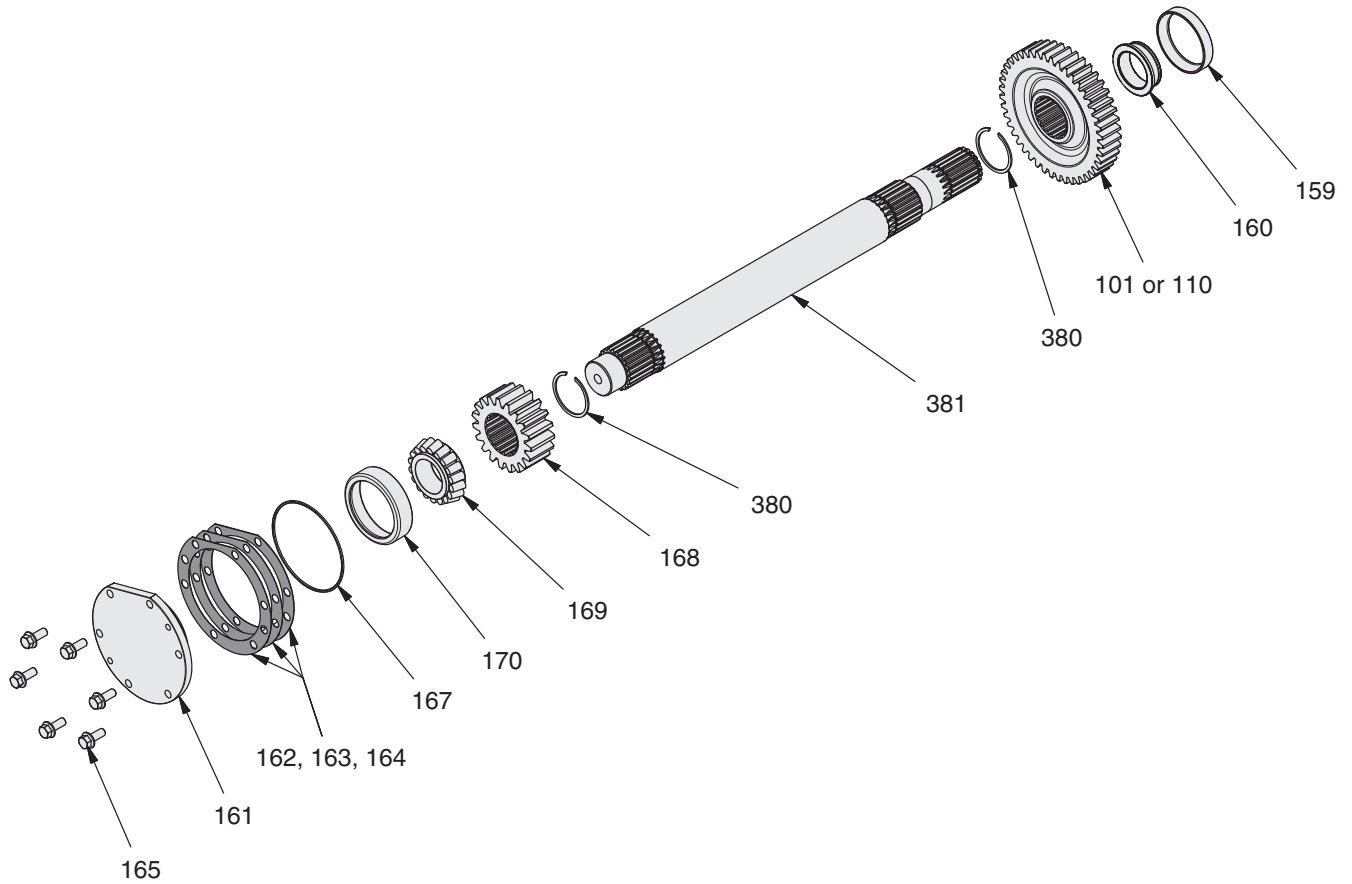
Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
2303574W Assembly, Reverse Clutch							
1	224790W	1	. Plate, Retainer	9	*a 224793W	AR	. Shim .031
2	*a 89777W	1	. O-Ring	10	224794W	1	. Plate, Clutch
3	*a 79972W	1	. O-Ring	11	16373W	6	. Capscrew
4	96462W	1	. Piston, Clutch	12	141348W	1	. Fitting, Pipe
5	*a 261542W	6	. Plate, Separator	13	196435W	6	. Screw, Set - Special
6	*a 328715W	6	. Disc, Friction	14	*a 39370W	1	. O-Ring
7	*a 265407W	8	. Spring	15	2303573W	1	. Hub, Clutch
8	96461W	1	. Retainer, Spring				

*a Included in Service Kit 2300544W

Qty 1 of 2300544W Included in Service Kit 2311157

Brake Shaft

Gear Ratios #1, 2, 3, 7



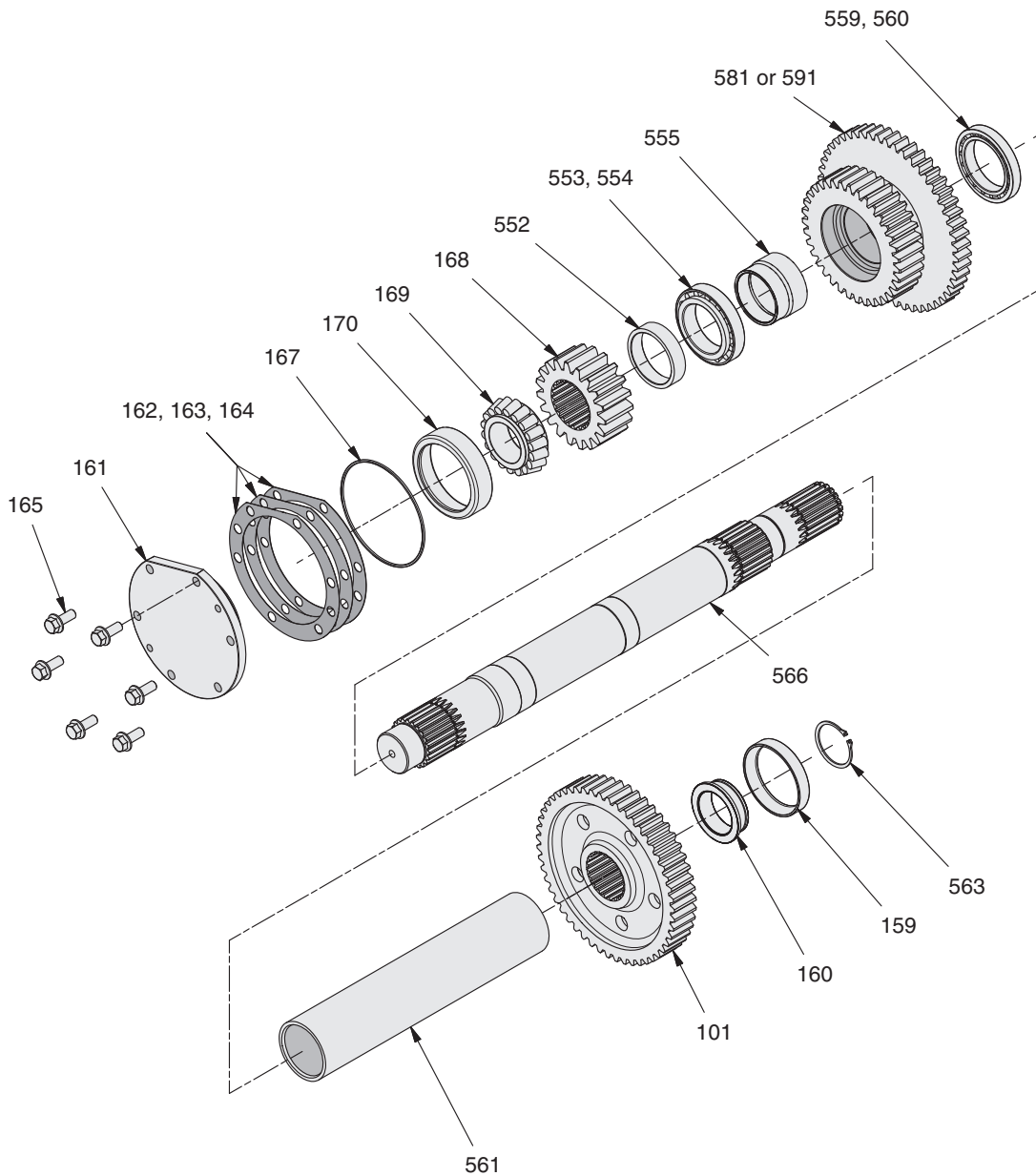
Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
101	*a 95969W	1	Gear, 22T	167	203549	1	O-Ring
110	*b 2302622W	1	Gear, 44T	168	96417W	1	Gear, 19T
159	230311W	1	Bearing Cup	169	30080W	1	Bearing Cone
160	230310W	1	Bearing Cone	170	30059W	1	Bearing Cup
161	96433W	1	Retainer	380	12915W	2	Snap Ring
162	134081W	AR	Shim, 0.005"	381	133918W	1	Brake Shaft
163	134082W	AR	Shim, 0.007"				
164	134083W	AR	Shim, 0.020"				
165	2303848W	6	Screw, Flange				

*a Used with Gear Ratios #1, 2, 3

*b Used with Gear Ratio #7

Brake Shaft

Gear Ratios #8, 9, 10



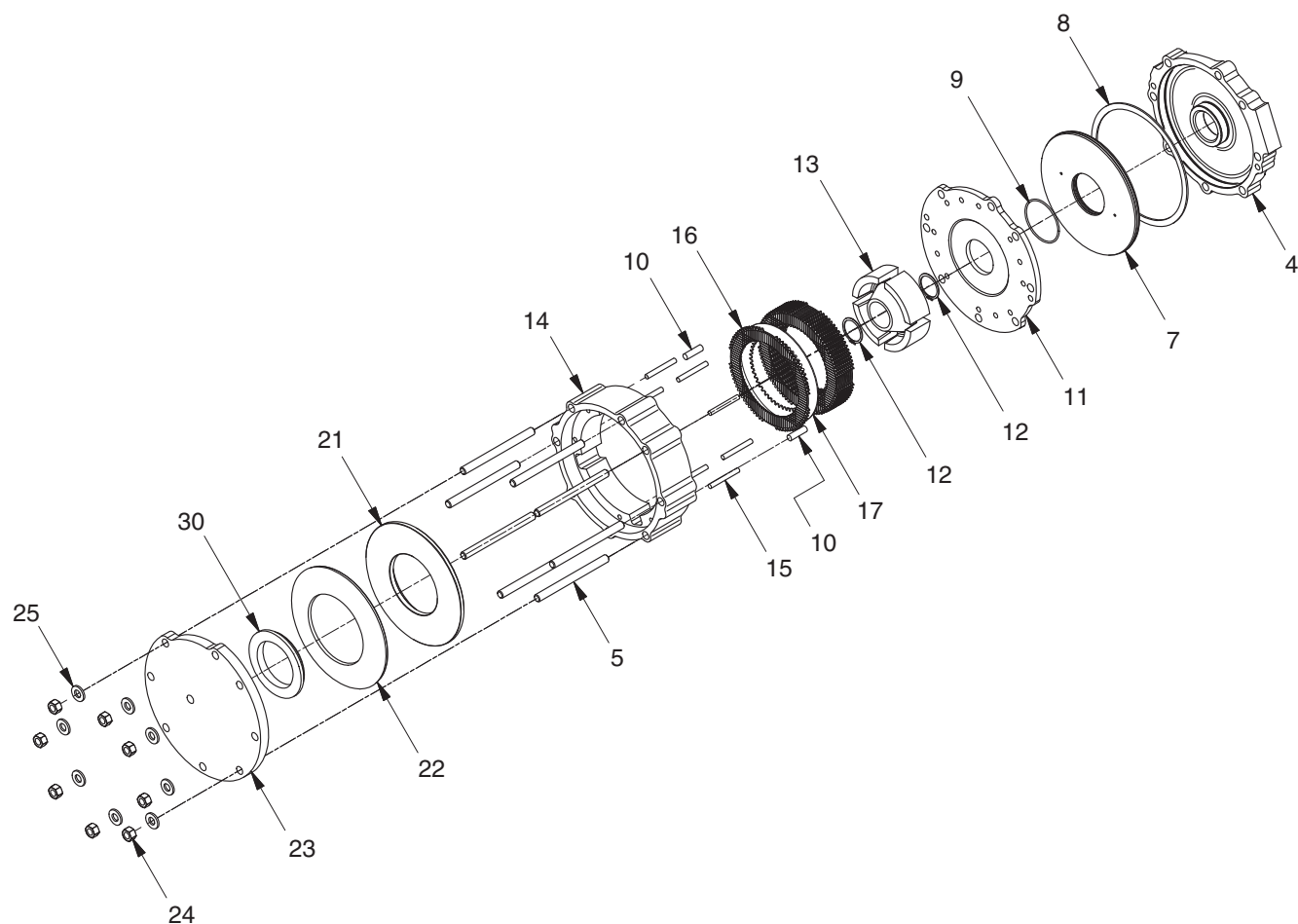
Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
101	95969W	1	Gear, 22T				
159	230311W	1	Bearing Cup	*c	2303637W	AR	Spacer 2.168"
160	230310W	1	Bearing Cone	*c	2303638W	AR	Spacer 2.173"
161	96433W	1	Retainer	*c	2310546	AR	Spacer 2.178"
162	134081W	AR	Shim, 0.005"	*c	2310547	AR	Spacer 2.183"
163	134082W	AR	Shim, 0.007"	*c	2310605	AR	Spacer 2.188"
164	134083W	AR	Shim, 0.020"	*c	2310606	AR	Spacer 2.193"
165	2303848W	6	Screw, Flange	559	2303571W	1	Bearing Cup
167	203549	1	O-Ring	560	2303572W	1	Bearing Cone
168	96417W	1	Gear, 19T	561	2303553W	1	Spacer, Long, Brake Shaft
169	30080W	1	Bearing Cone	563	12940W	1	Snap Ring
170	30059W	1	Bearing Cup	566	2303551W	1	Shaft - Brake
552	2303552W	1	Spacer, Short	581	*a 2303549W	1	Gear, 51T/29T
553	2303557W	1	Bearing Cup	591	*b 2305277W	1	Gear, 51T/35T
554	2303558W	1	Bearing Cone				
555	*c 2303567W	AR	Spacer 2.153"				
	*c 2303568W	AR	Spacer 2.158"				
	*c 2303569W	AR	Spacer 2.163"				

*a Used with Gear Ratio #8

*b Used with Gear Ratios #9, 10

*c Select whichever spacer will obtain .003L to .002T bearing setting

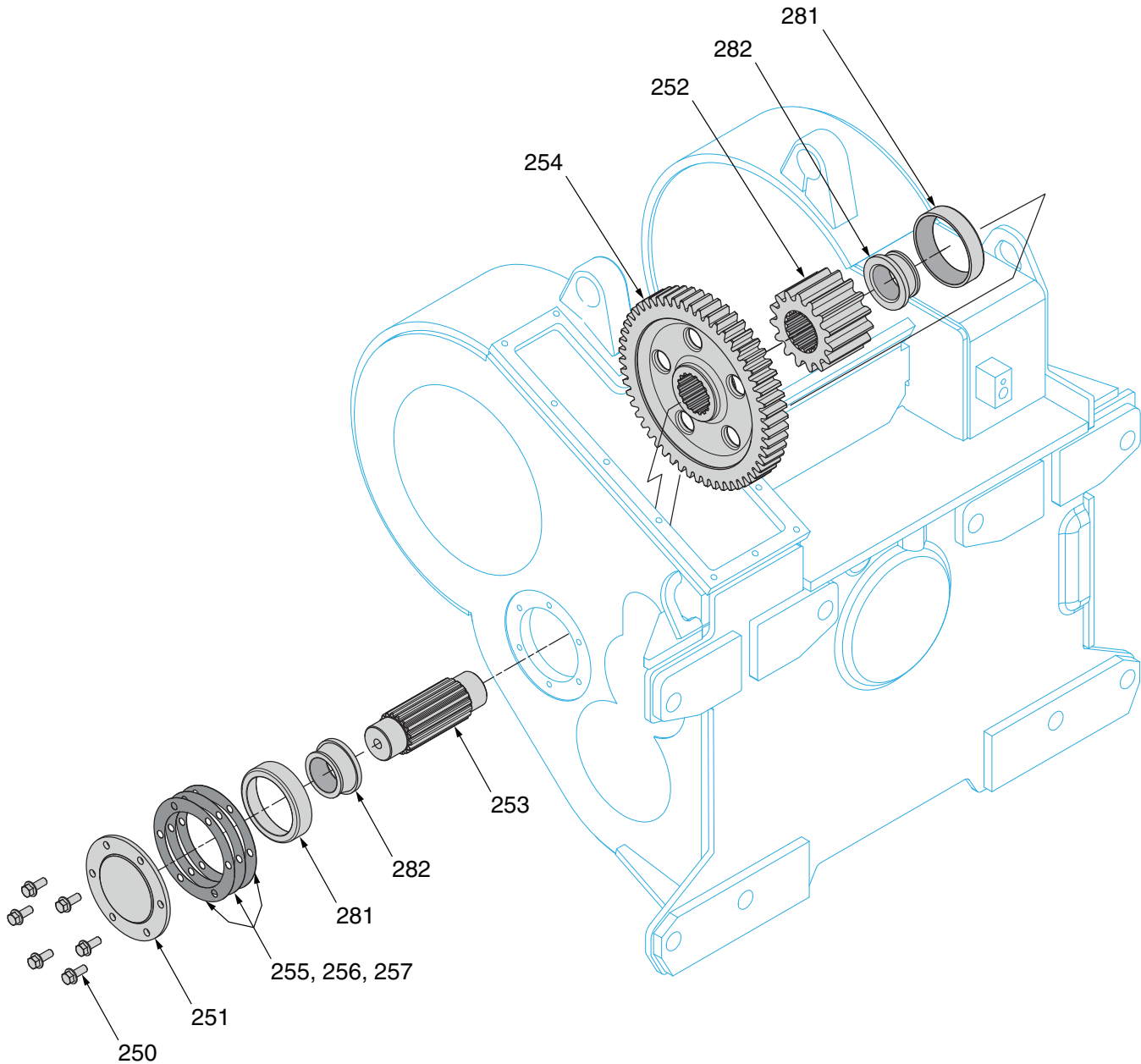
Brake Assembly



Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
4	196025W	1	Housing, Piston	16	328715W	10	Disc, Friction
5	140184W	8	Stud	17	261542W	9	Plate, Separator
7	133926W	1	Piston	21	265401W	1	Ring
8	133927W	1	Ring	22	193912W	1	Spring
9	79979W	1	O-Ring	23	196026W	1	Cover Plate
10	92867W	2	Pin	24	199594W	8	Hex Nut
11	252114W	1	Plate, Pressure	25	234271	8	Washer
12	12940W	2	Snap Ring	30	*a 2310475	1	Stroke Limiter
13	265403W	1	Hub, Brake				
14	265402W	1	Cage				
15	267522W	8	Pin				

*a Not used on installations with power controls.

Intermediate Shaft



Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
250	2303848W	6	Screw, Flange	255	134074W	3	Shim, 0.005"
251	92623W	1	Cover - Intermediate Shaft	256	134075W	5	Shim, 0.007"
252	92621W	1	Gear, Drum Pinion	257	134076W	2	Shim, 0.020"
253	92620W	1	Shaft, Intermediate	281	30091W	2	Bearing Cup
254	96418W	1	Gear	282	230309W	2	Bearing Cone

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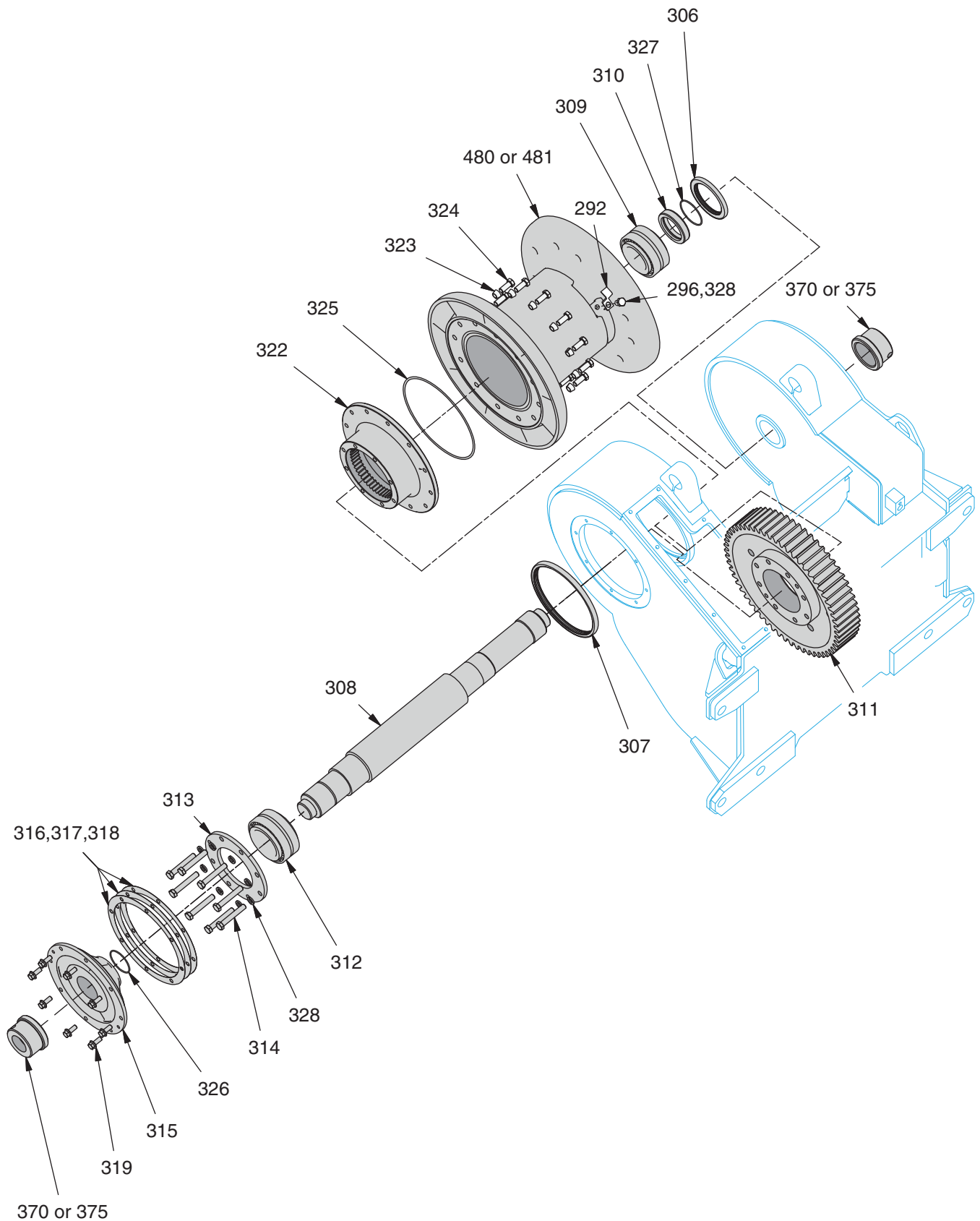
Drum Shaft Group

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Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
292	274464W	1	Keeper, Ferule				
296	12447W	1	Capscrew	319	2303848W	8	Screw, Flange
306	44484W	1	Seal, Oil	322	141325W	1	Adapter
307	141149W	1	Seal, Oil	323	53559W	12	Thimble, Tapered
308	242839W	1	Drum Shaft	324	2310891	12	Capscrew
309	78022W	1	Roller Bearing	325	131982W	1	Ring
310	173604W	1	Spacer	326	15881W	1	O-Ring
311	96436W	1	Gear, Drum	327	46629W	1	O-Ring
312	96437W	1	Roller Bearing	328	15160W	9	Lockwasher
313	96438W	1	Retainer	370	*a 242832W	2	Nut, Drum Shaft, Narrow/Std
314	221641W	8	Capscrew	375	*b 2303654W	2	Nut, Drum Shaft, Wide
315	173606W	1	Retainer	480	*c 141357W	1	Drum, Overwind
316	134070W	AR	Shim, 0.005"				
317	134071W	AR	Shim, 0.007"				
318	134072W	AR	Shim, 0.020"				
				*a Standard			
				*b Used on AW8LP9N****C72			
				*c Used on AW8L **N***** (Internal Option "N")			

Drum Shaft Group

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Drum Shaft Group

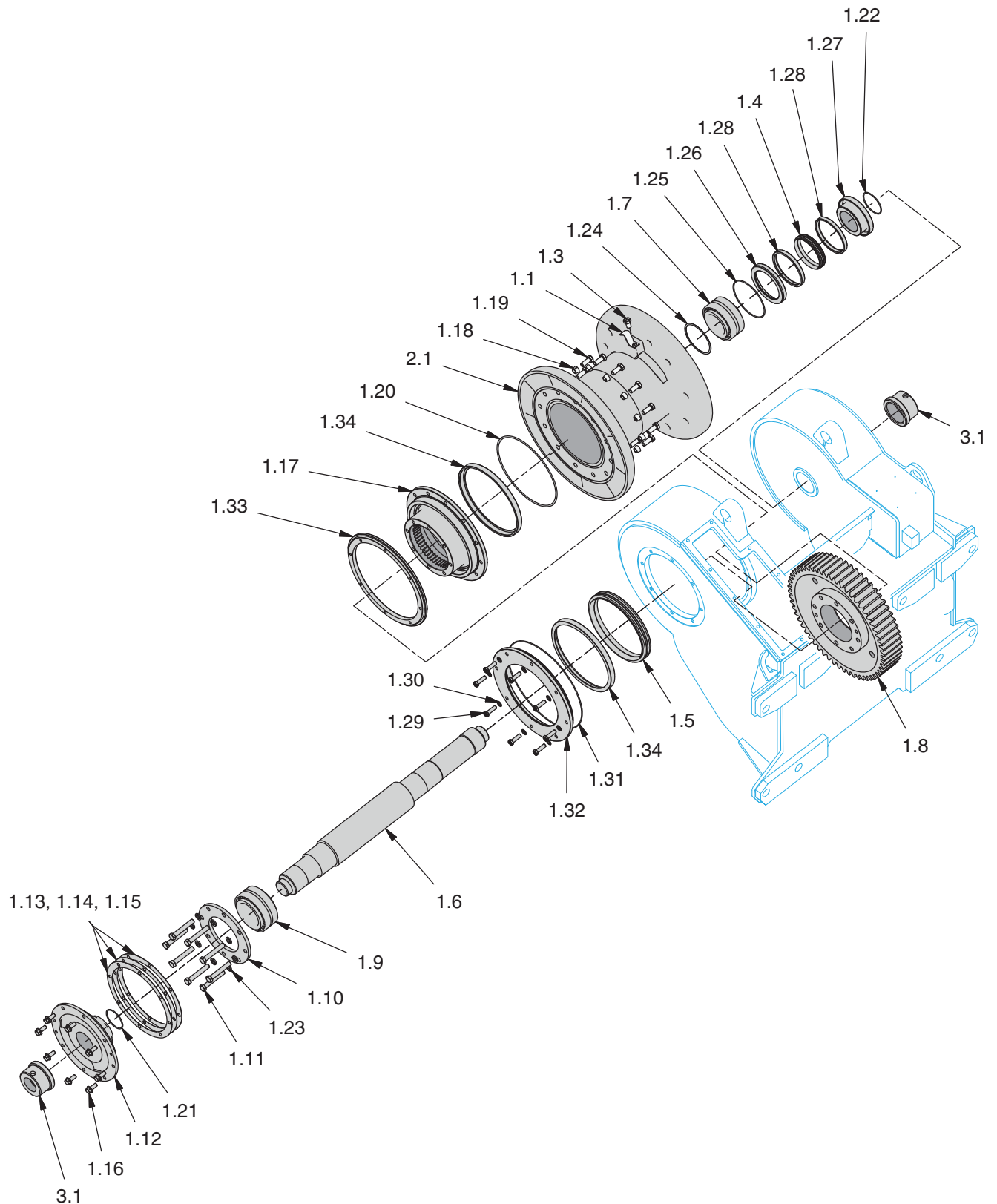
Extreme Seals (AW8L *****S)

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Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
1.1	274464W	1	Keeper, Ferrule				
1.3	12447W	1	Capscrew	1.20	131982W	1	Ring
1.4	2315083	1	Seal, Duo Cone	1.21	15881W	1	O-Ring
1.5	2315084	1	Seal, Duo Cone	1.22	46629W	1	O-Ring
1.6	2316090	1	Shaft, Drum	1.23	15160W	9	Lockwasher
1.7	78022W	1	Roller Bearing	1.24	2302363W	1	Snap Ring
1.8	96436W	1	Gear, Drum	1.25	203550	1	O-Ring
1.9	96437W	1	Roller Bearing	1.26	2316095	1	Retainer - LH Inner
1.10	96438W	1	Retainer	1.27	2316096	1	Retainer - LH Outer
1.11	221641W	8	Capscrew	1.28	2315081	2	Adapter, Ring
1.12	173606W	1	Retainer	1.29	221569W	8	Capscrew
1.13	134070W	3	Shim, 0.005"	1.30	207563	8	Seal
1.14	134071W	3	Shim, 0.007"	1.31	39765W	1	O-Ring
1.15	134072W	1	Shim, 0.020"	1.32	2315067	1	Retainer - RH Outer
1.16	2303848W	8	Screw, Flange	1.33	2315080	1	Ring, Backing
1.17	2316099	1	Adapter	1.34	2315082	2	Adapter, Ring
1.18	53559W	12	Thimble, Tapered	2.1	2316093	1	Drum
1.19	2310891	12	Capscrew	3.1	242832W	2	Nut, Drum Shaft, Narrow/Std

Drum Shaft Group

Extreme Seals (AW8L *****S)
Page 2 of 2



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Section 3
Hydraulics/Controls

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Hydraulic Group, E-Controls 40 thru 44

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Valve Manifold Assembly46

Pump 47 thru 48

Handlever Installation, Power Controls 49 thru 51

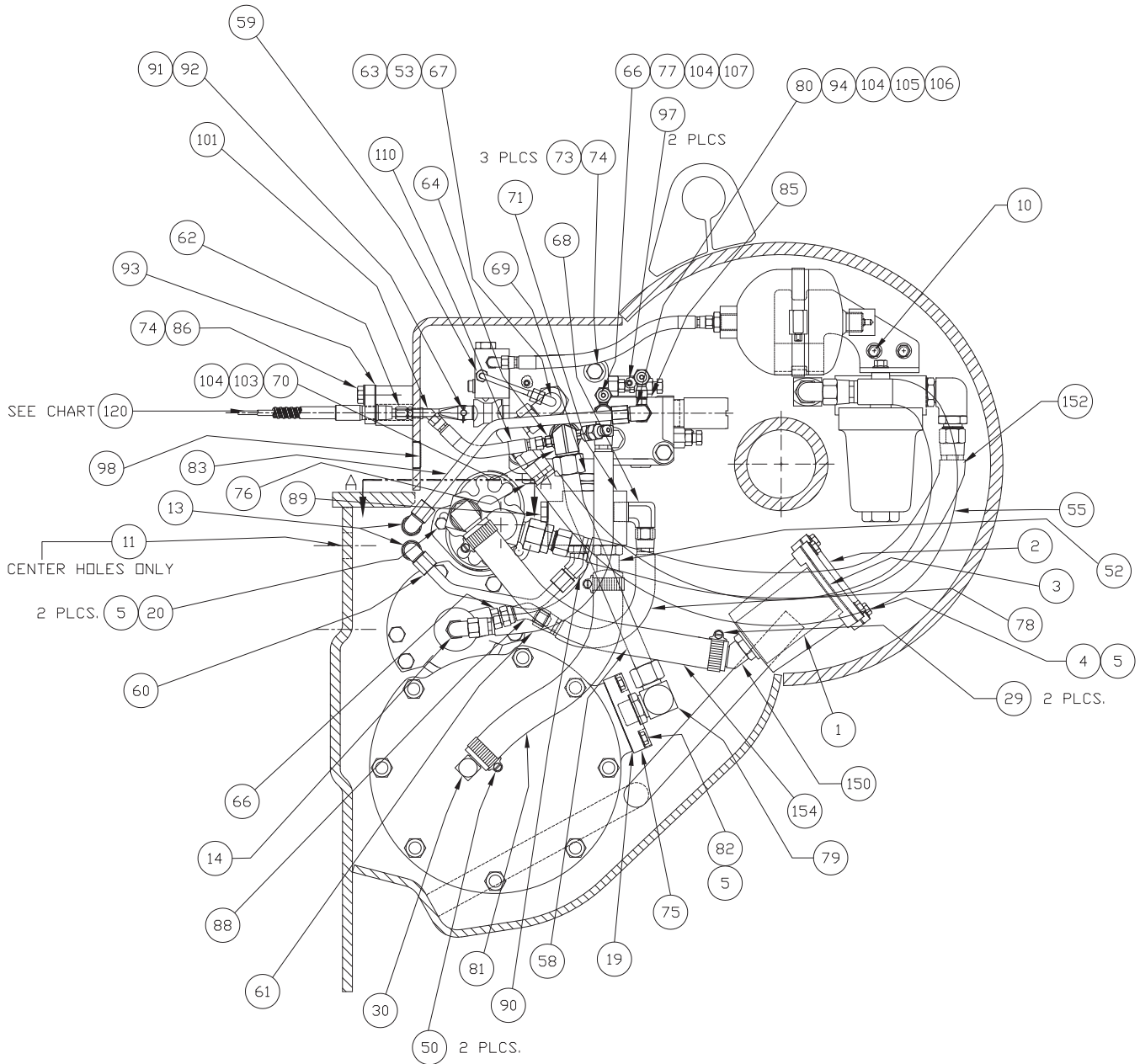
Handlever Assembly52

Handlever.....53

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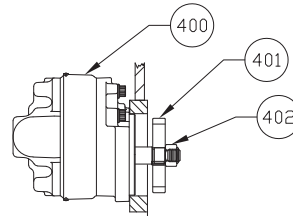
Hydraulic Group

Power Controls (AW8LP*****)
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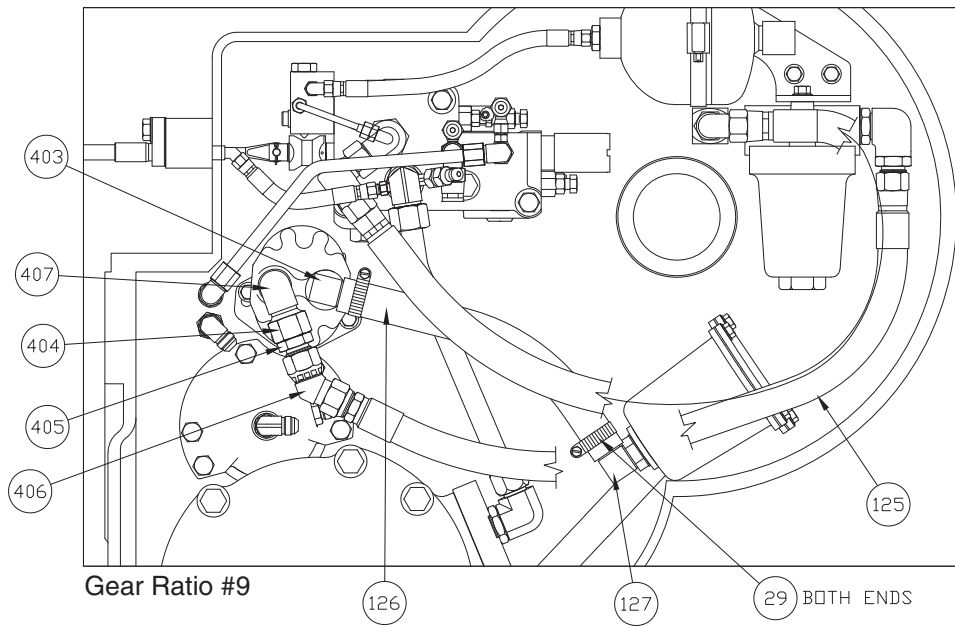


Hydraulic Group

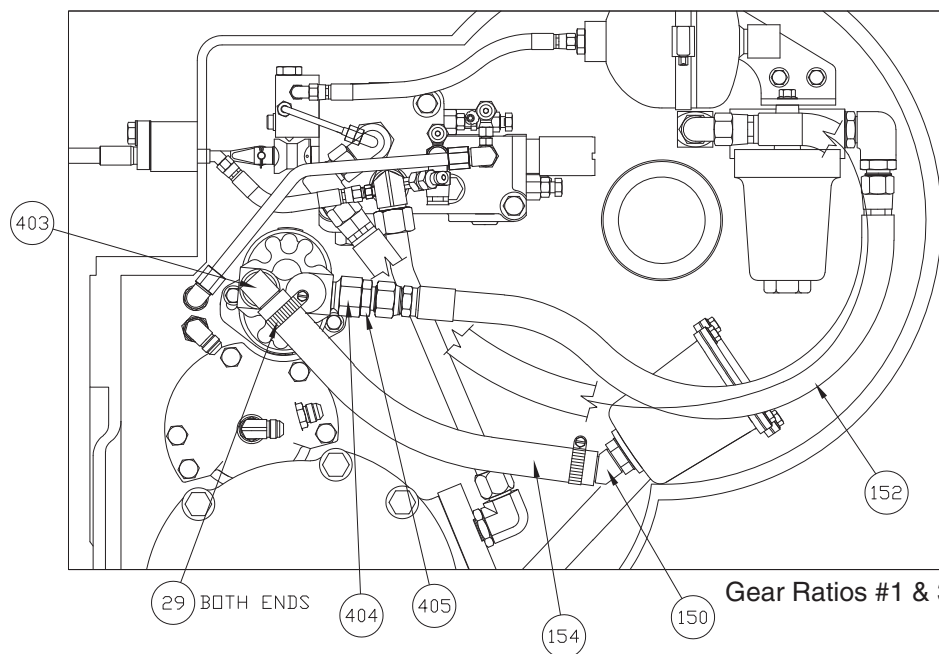
Power Controls (AW8LP*****)
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PUMP SIDE VIEW



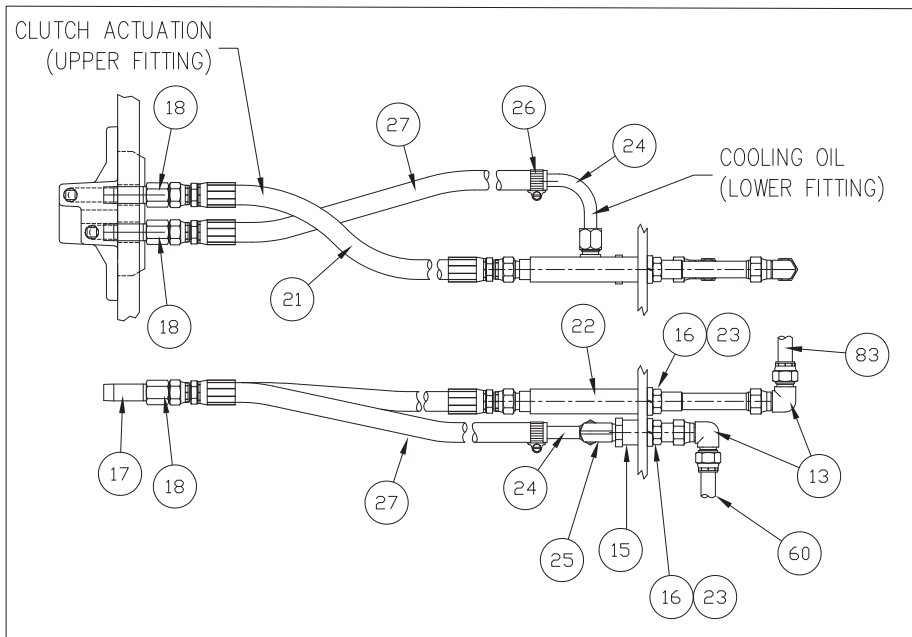
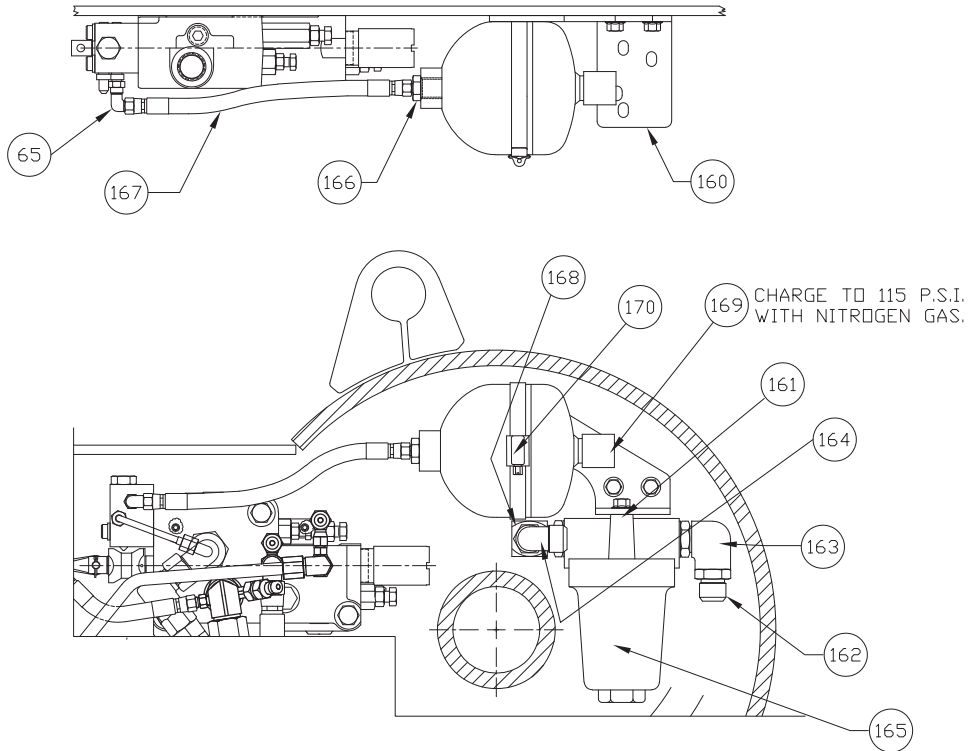
Gear Ratio #9



Gear Ratios #1 & 3

Hydraulic Group

Power Controls (AW8LP*****)
Page 3 of 4



TRANSMISSION CASE PLUMBING
TOP AND FRONT VIEW

Hydraulic Group

Power Controls (AW8LP*****)

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Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
1	219172W	1	Strainer	83	259463W	1	Tube Assembly
2	2300936W	1	Cover	85	*e 2300301W	1	Control Valve Assy (See pg 57)
3	2300935W	1	Gasket	86	16829W	1	Capscrew
4	16805W	4	Capscrew	88	17038W	1	Fitting
5	R13812514	10	Lockwasher	89	14595W	1	Fitting
10	1300780W	2	Screw, Ser Flg	90	16568W	1	Fitting
11	18001W	2	Cork	91	139W	1	Pin
13	16989W	2	Fitting	92	15216W	1	Pin
14	16559W	1	Fitting	93	303946W	1	Gasket
15	255433W	1	Connector	94	2314186	1	Fitting
16	14761W	2	Nut	97	2305986W	2	Set Screw
17	19581W	2	Fitting	98	2304823W	1	Plug
18	14723W	2	Fitting	101	16463W	1	Fitting
19	196022W	1	Gasket	103	209790	1	Fitting
20	16828W	2	Capscrew	104	R330325	3	Coupler, Male
21	276087W	1	Hose Assembly	105	209750	1	Fitting
22	225233W	1	Connector - Special	106	212718	1	Fitting
23	177951W	2	Lockwasher	107	209405	1	Fitting
24	255434W	1	Tube Assembly	110	140288W	1	Hose Assembly
25	17309W	1	Fitting	120	*c 303942W	1	Cable, Push/Pull, 82"
26	201431	1	Hose Clamp	120	*d 303944W	1	Cable, Push/Pull, 96"
27	276097W	1	Hose Assembly	125	2307715W	1	Hose Assembly
29	209639W	2	Clamp	126	225704W	1	Hose Assembly
30	201800W	1	Fitting	127	2304358W	1	Fitting
50	202947	2	Hose Clamp	150	276090W	1	Fitting
52	222505W	1	Fitting	152	2307715W	1	Hose Assembly
53	164703W	1	Fitting	154	276092W	1	Hose Assembly
55	165489W	1	Hose Assembly	160	2305114W	1	Bracket - Mounting
58	259456W	1	Tube Assembly	161	1300780W	2	Screw, Ser Flange
59	277663W	1	Tube Assembly	162	2310015	1	Check Valve
60	276095W	1	Tube Assembly	163	2307740W	1	Fitting
61	R14256	1	Hose Assembly	164	16561W	1	Fitting
62	16923W	1	Fitting	165	2300183W	1	Filter Assembly
63	14500W	1	Fitting		3001363W	1	. Element / O-Ring
64	14668W	1	Fitting		55468W	1	. . O-Ring
65	16987W	1	Fitting	166	222381W	1	Fitting
66	16541W	2	Fitting	167	2304360W	1	Hose Assembly
67	83857W	1	Fitting	168	83857W	1	Fitting
68	17300W	1	Fitting	169	R16271	1	Accumulator
69	225232W	1	Adapter - Union	170	2302109W	1	Clamp
70	2314190	1	Fitting	400	*a*e 2302963W	1	Pump Assembly (See page 59)
71	225701W	1	Manifold, Cooling	400	*b*e 2302989W	1	Pump Assembly (See page 60)
73	198385W	3	Capscrew	401	*a 224796W	1	Gear, Pump, 28T
74	15158W	4	Lockwasher	401	*b 2303541W	1	Gear, Pump, 14T
75	279392W	1	Block	402	138750W	1	Locknut
76	226450W	1	Poppet Valve	403	2303677W	1	Fitting
77	225711W	1	Fitting	404	16543W	1	O-Ring
78	276094W	1	Hose Assembly	405	220153	1	Fitting
79	16948W	1	Fitting	406	17040W	1	Fitting
80	16989W	1	Fitting	407	2307730W	1	Fitting
81	277339W	1	Hose				
82	16828W	2	Capscrew				

*a Used on Winches with Gear Ratios #1 and #3

*b Used on Winches with Gear Ratio #9

*c Used on AW8LP**C72 (CAT D7R Series II with P-Controls)

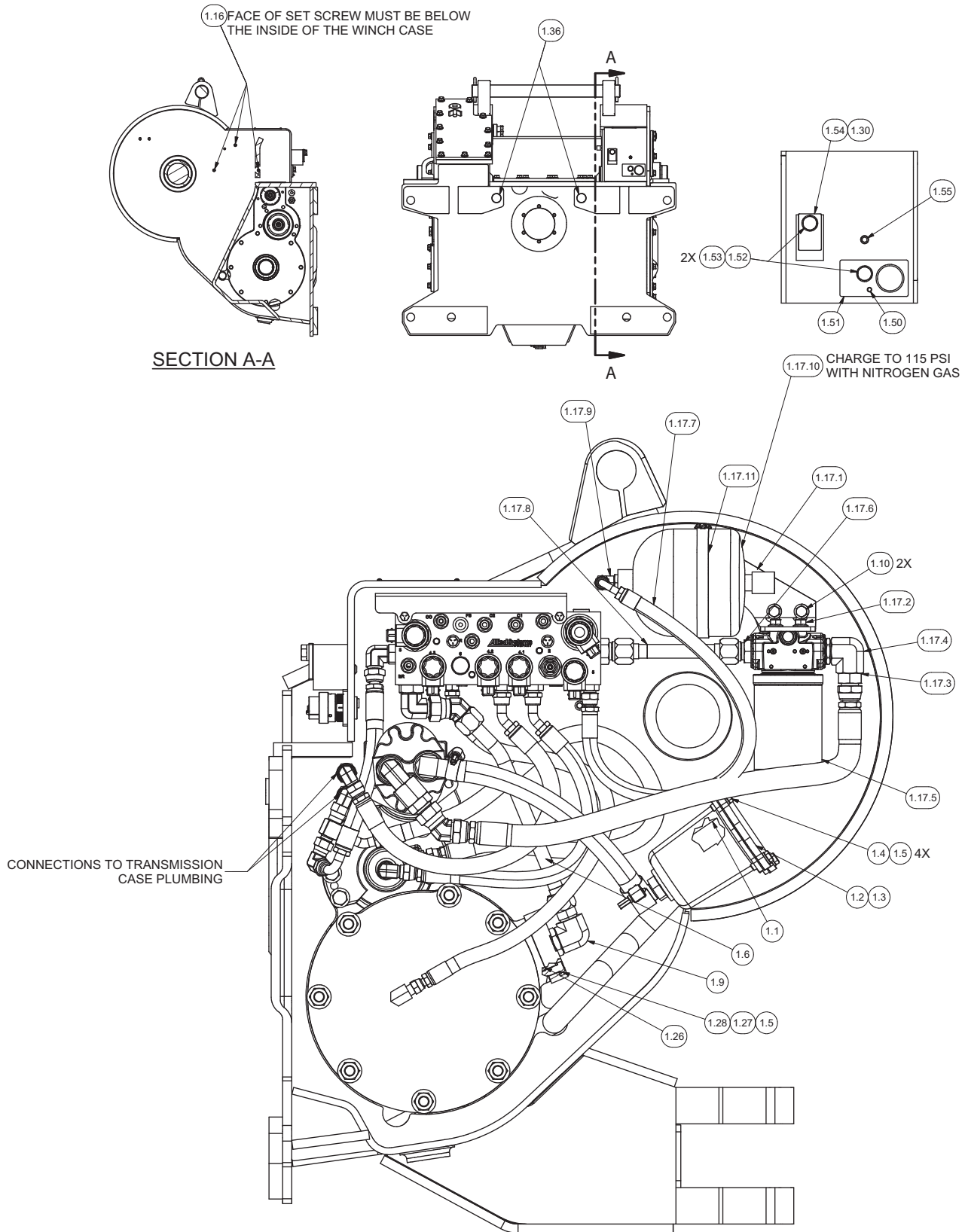
*d Used on AW8LP**C715 (CAT D7GC with P-Controls)

*e See Separate Coverage

Hydraulic Group

E-Controls (AW8LE****)

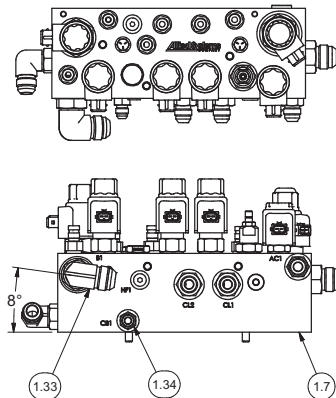
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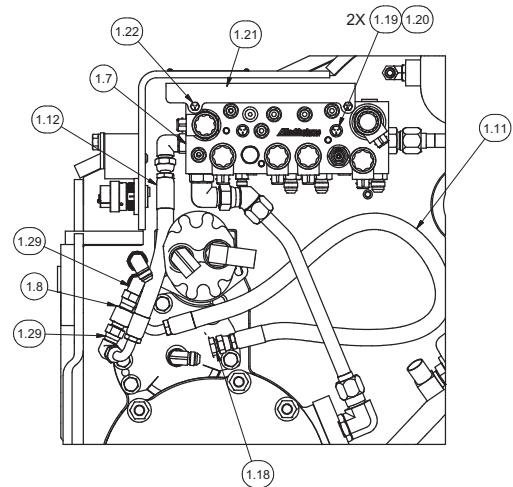
Hydraulic Group

E-Controls (AW8LE****)

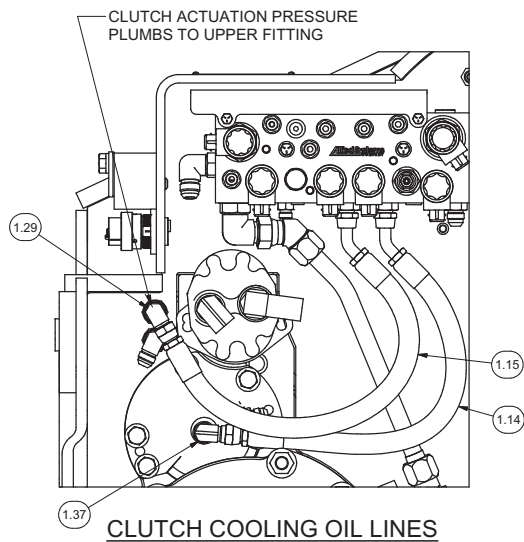
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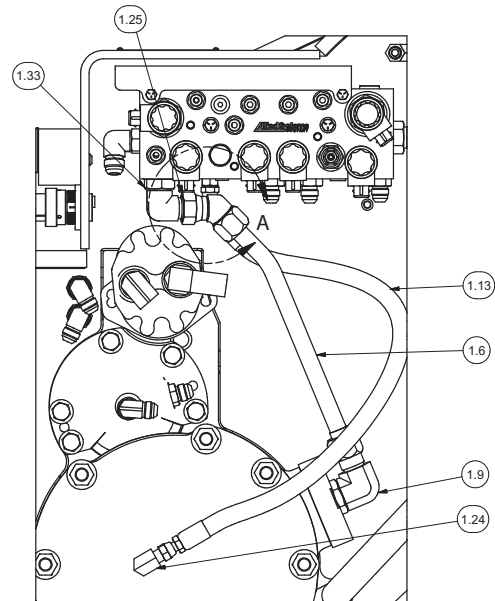
FITTINGS ON MANIFOLD ASSY.



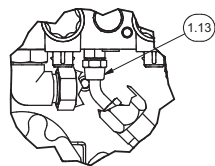
CLUTCH COOLING OIL LINES



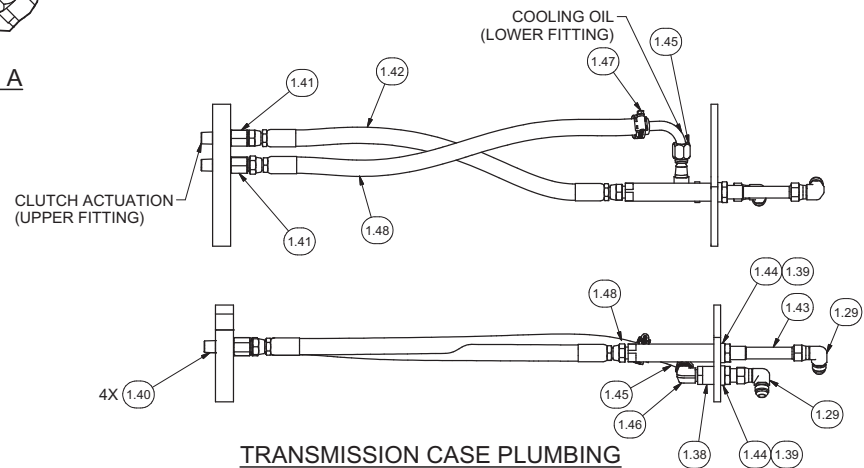
CLUTCH COOLING OIL LINES



BRAKE COOLING OIL LINE



DETAIL A

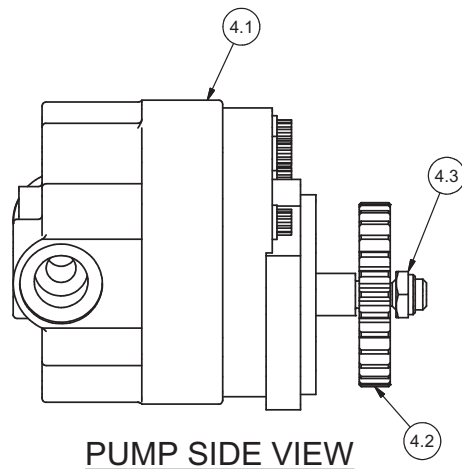
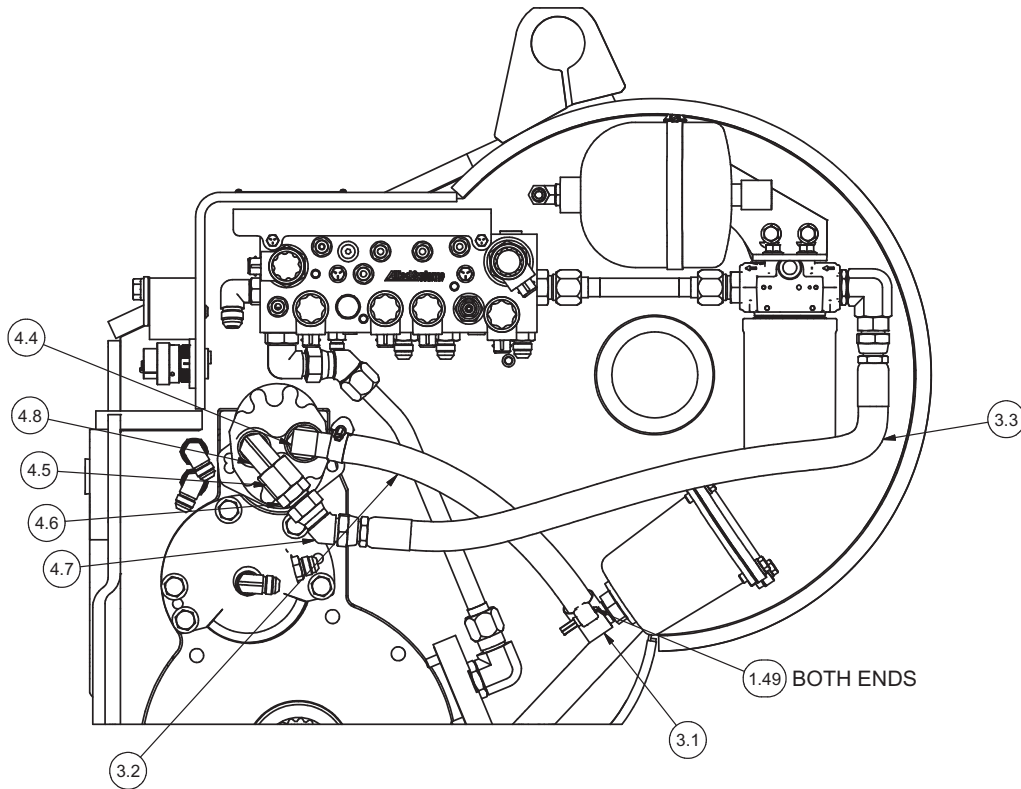


TRANSMISSION CASE PLUMBING

Hydraulic Group

E-Controls (AW8LE*****)

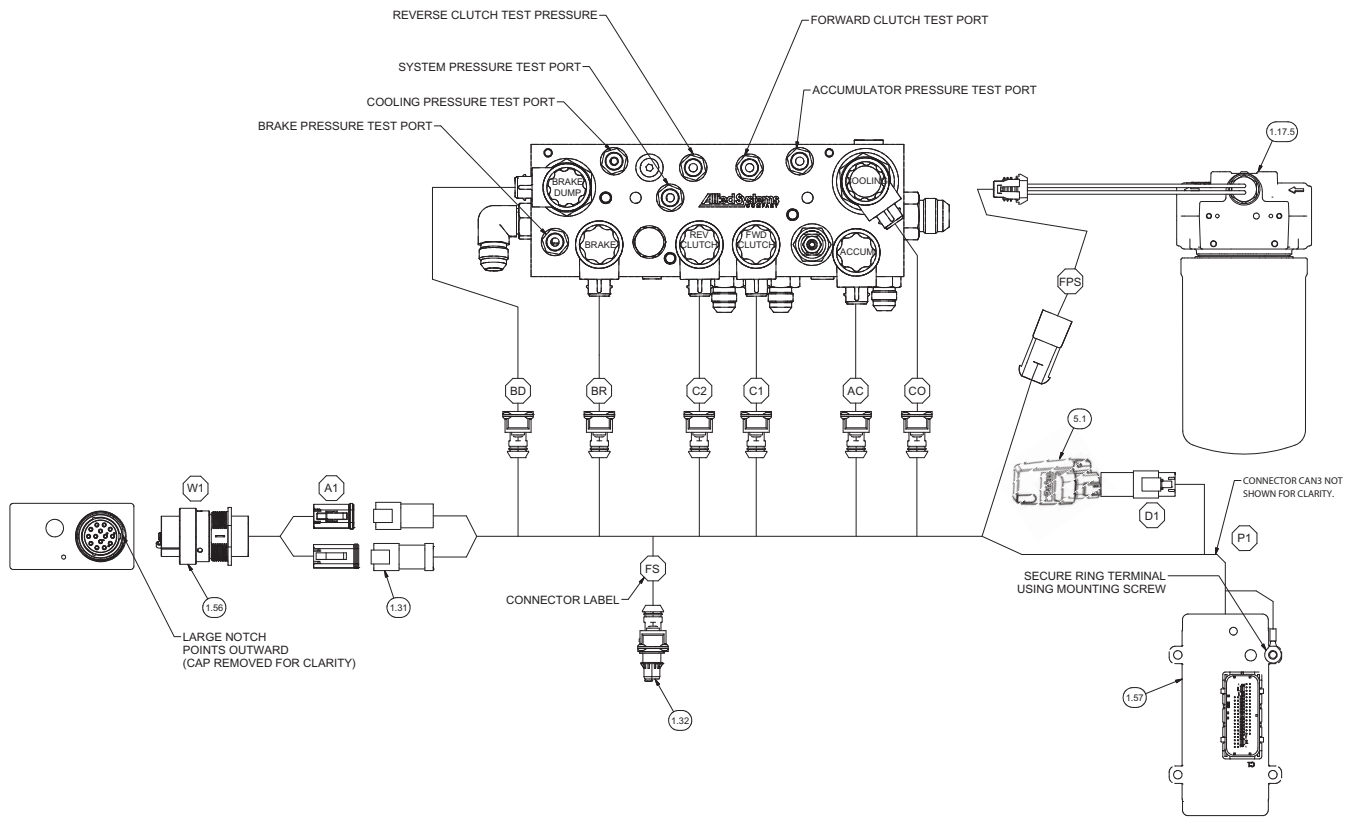
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Hydraulic Group

E-Controls (AW8LE****)

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CONNECTION	WIRE COLORS	WINCH FUNCTION
BD	ORG & BLK	BRAKE DUMP
BR	PUR & TAN	BRAKE RELEASE
FS (PLUGGED)	GRN & BLK	FREESPOOL
C2	BRN & YEL	REVERSE
C1	BLU & YEL	FORWARD
AC	PINK & BLK	ACCUMULATOR
CO	GRAY & BLK	COOLING
FPS	RED & WHT	PR. SWITCH

Hydraulic Group

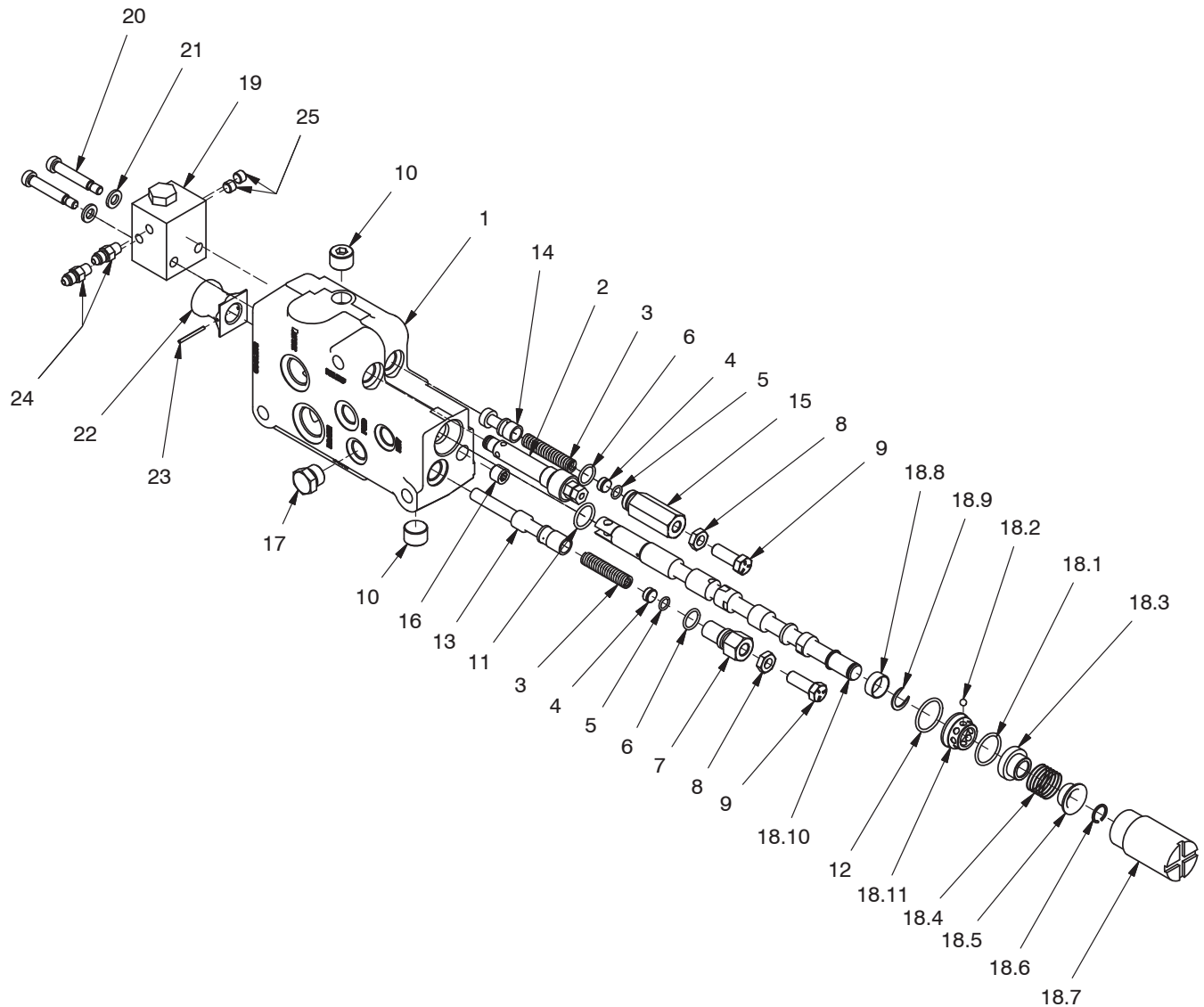
E-Controls (AW8LE*****)

Page 5 of 5

Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
1.1	219172W	1	Strainer	1.29	210769	3	Fitting
1.2	2300936W	1	Cover	1.30	303946W	1	Gasket
1.3	2300935W	1	Gasket	1.31	2317615	1	Wiring Harness, Internal
1.4	16805W	4	Capscrew	1.32	2312259	1	Plug, Counter
1.5	R13812514	6	Lockwasher	1.33	16561W	1	Fitting
1.6	2316175	1	Tube Assembly, Brake	1.34	211560	1	Fitting
1.7	* 2315717	1	Assembly, Manifold (See page 58)	1.35	129563W	1	Cable Tie
1.8	214316	1	Fitting	1.36	18001W	2	Cork
1.9	222402W	1	Fitting	1.37	16559W	1	Fitting
1.10	1300780W	2	Screw, Ser Flg	1.38	255433W	1	Connector
1.11	236018	1	Hose Assembly	1.39	14761W	2	Nut
1.12	2316948	1	Hose Assembly	1.40	19581W	2	Fitting
1.13	255785	1	Hose Assembly	1.41	14723W	2	Fitting
1.14	253117	1	Hose Assembly	1.42	276087W	1	Hose Assembly
1.15	2316947	1	Hose Assembly	1.43	225233W	1	Connector - Special
1.16	2305987W	3	Setscrew	1.44	177951W	2	Lockwasher
1.17	2312809	1	Kit, Filter & Acc, E-Controls	1.45	255434W	1	Tube Assembly
1.17.1	2305114W	1	. Bracket - Mounting	1.46	209411	1	Fitting
1.17.2	1300780W	2	. Screw, Ser Flg	1.47	201431	1	Clamp, Hose
1.17.3	2310015	1	. Check Valve	1.48	276097W	1	Hose Assembly
1.17.4	2307740W	1	. Fitting	1.49	209639W	2	Clamp
1.17.5	2317441	1	. Assembly, Filter	1.50	16602W	1	Screw
	2305132W	1	. . Filter Head	1.51	2311807	1	Retainer, Connector
	2304112W	1	. . Element, Filter	1.52	178403W	2	Capscrew
	2317424	1	. . Switch, Pressure	1.53	15158W	2	Lockwasher
1.17.6	16543W	1	. O-Ring	1.54	2304366W	1	Plate - Cover
1.17.7	2316749	1	. Hose Assembly	1.55	2305988W	1	Set Screw
1.17.8	2307758W	1	. Tube Assembly	1.56	2317616	1	Adapter Harness
1.17.9	110174W	1	. Fitting	1.57	2317626	1	Programmed Control Module
1.17.10	2305418W	1	. Accumulator	3.1	2304358W	1	Fitting - Hose
1.17.11	2305504W	1	. Clamp	3.2	225704W	1	Hose Assembly
1.18	16541W	1	Fitting	3.3	2307715W	1	Hose Assembly
1.19	18526W	2	Capscrew	4.1	* 2302989W	1	Pump (See page 60)
1.20	18515W	2	Washer	4.2	2303541W	1	Gear, Pump
1.21	2315822	1	Plate, Splash Guard	4.3	138750W	1	Locknut
1.22	133469W	2	Capscrew	4.4	2303677W	1	Fitting
1.23	137852W	2	Cable Tie	4.5	16543W	1	O-Ring
1.24	209412	1	Fitting	4.6	220153	1	Fitting
1.25	214219	1	Fitting	4.7	17040W	1	Fitting
1.26	196022W	1	Gasket	4.8	2307730W	1	Fitting
1.27	279392W	1	Block	5.1	2317456	1	Bluetooth Transmitter (Optional)
1.28	16828W	2	Capscrew				

Control Valve Assembly

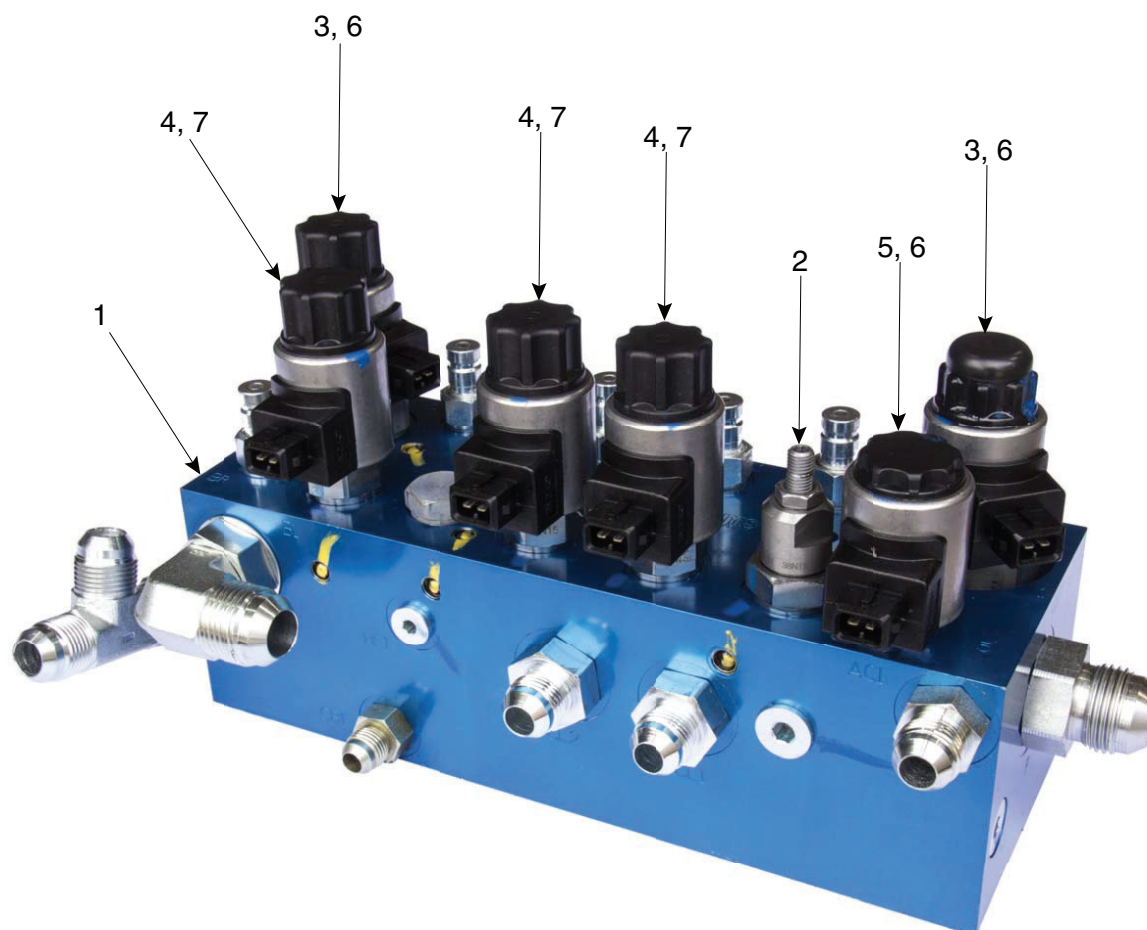
Power Controls



Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
	2300301W		Control Valve Assembly				
1	2303001W	1	. Valve Body	18	262088W	1	. Spool Assembly
2	2300308W	1	. Cartridge - Relief	18.1	118365W	1	. . O-Ring
3	195992W	3	. Spring, Relief	18.2	170987W	8	. . Ball, Steel
4	195993W	2	. Plug, O-Ring	18.3	238992W	1	. . Spacer Selector
5	15860W	2	. O-Ring	18.4	2303923w	1	. . Spring
6	16484W	2	. O-Ring	18.5	166905W	1	. . Retainer, Spring
7	196004W	2	. Fitting	18.6	196002W	1	. . Snap Ring
8	15027W	2	. Jam Nut	18.7	196009W	1	. . Cap
9	195995W	2	. Capscrew	18.8	258220W	1	. . Ring
10	15962W	2	. Fitting	18.9	196000W	1	. . Ring
11	118361W	1	. O-Ring	18.10	258217W	1	. . Spool
12	39376W	1	. O-Ring	18.11	195997W	1	. . Retainer - Detent
13	196003W	1	. Spool	19	267018W	1	. Valve
14	196006W	1	. Spool	20	241778W	2	. Bolt
15	226445W	1	. Fitting	21	R13812514	2	. Lockwasher
16	15314W	1	. Fitting	22	279397W	1	. Cam
17	14595W	1	. Fitting	23	68370W	1	. Spring, Pin
				24	14668W	2	. Fitting
				25	15483W	2	. Fitting

Valve Manifold Assembly

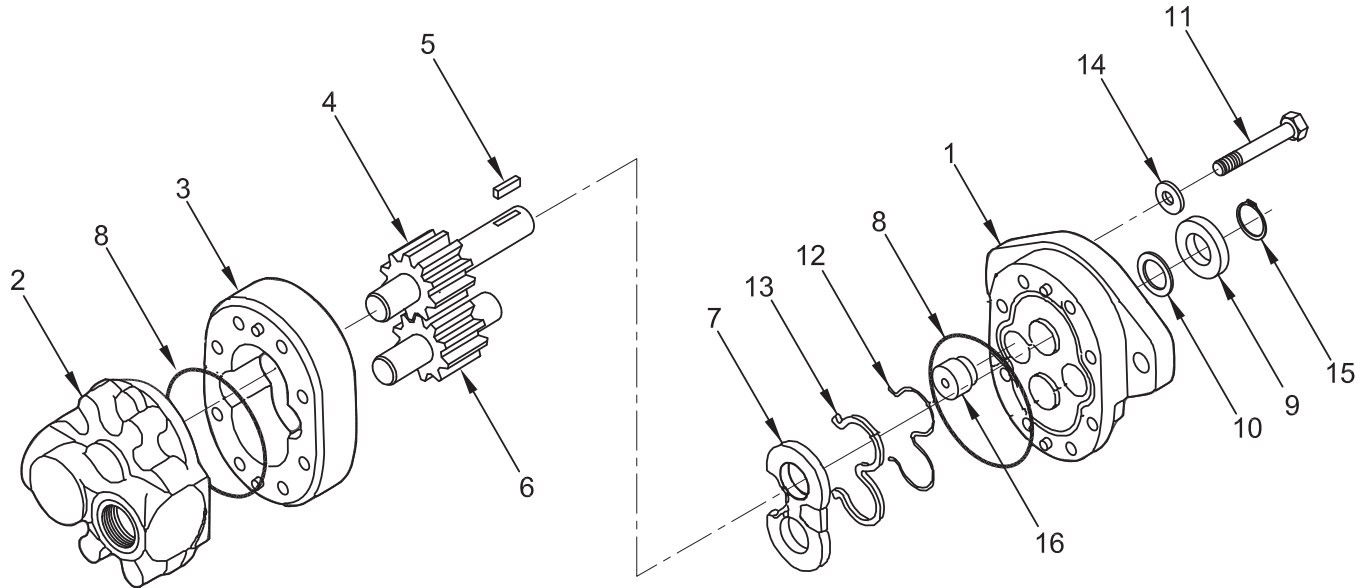
E-Controls (AW8LE*****)



Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
	2315717		Assembly, Valve Manifold				
1	NSS	1	. Block (Blue Color)	5	2310253	1	. Valve, Cartridge
2	2315807	1	. Valve, Relief		254400	1	. . Kit, Seal
	2310260	1	. . Kit, Seal	6	2311558	3	. Coil, 24 VDC Valve
3	2310252	2	. Valve, Cartridge	7	2315811	3	. Coil, 24 VDC Prop. Valve
	2310258	1	. . Kit, Seal				
4	2315808	3	. Valve, Proportional				
	254396	1	. . Kit, Seal				

Pump - Hydraulic

Gear Ratios #1 thru #7

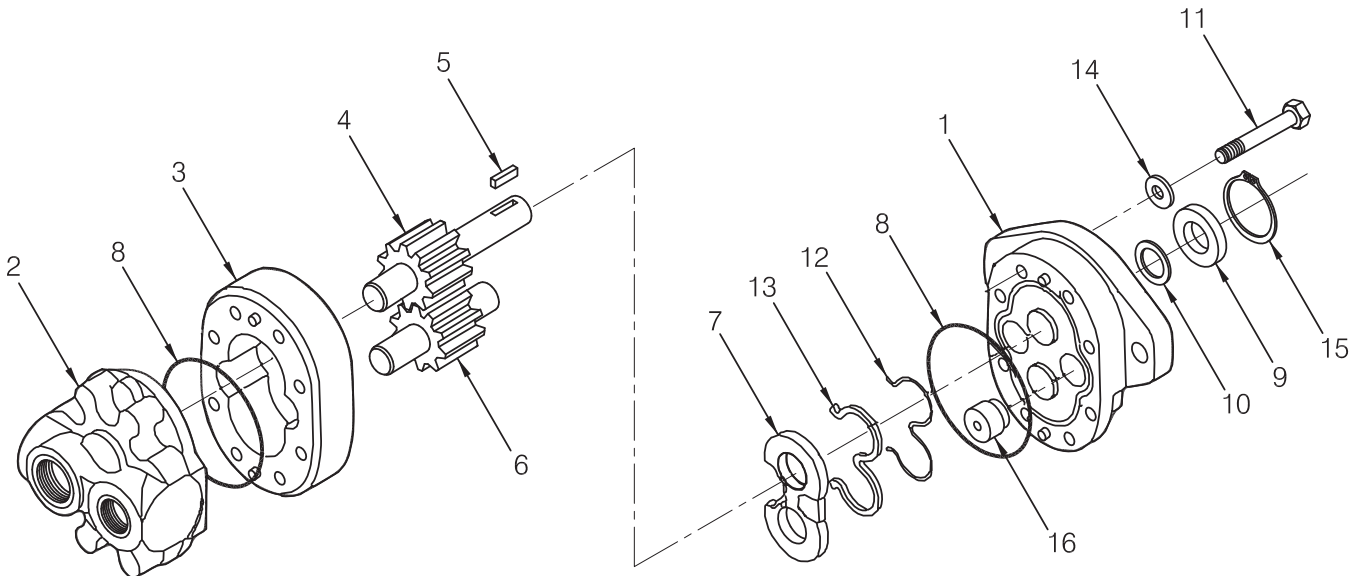


Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
2302963W Pump, Hydraulic							
1	NSS	1	. Plate, Front	10	*a NSS	1	. Washer
2	NSS	1	. Plate, Back	11	NSS	4	. Capscrew
3	NSS	1	. Body	12	*a NSS	1	. Gasket
4	NSS	1	. Gear, Drive	13	*a NSS	1	. Seal
5	316823W	1	. Key	14	NSS	4	. Washer
6	NSS	1	. Gear, Idler	15	NSS	1	. Ring, Retaining
7	*a NSS	1	. Plate, Wear	16	NSS	1	. Plug
8	*a NSS	1	. O-Ring				
9	*a NSS	1	. Seal				

*a Included in Repair Kit 2302937W

Pump - Hydraulic

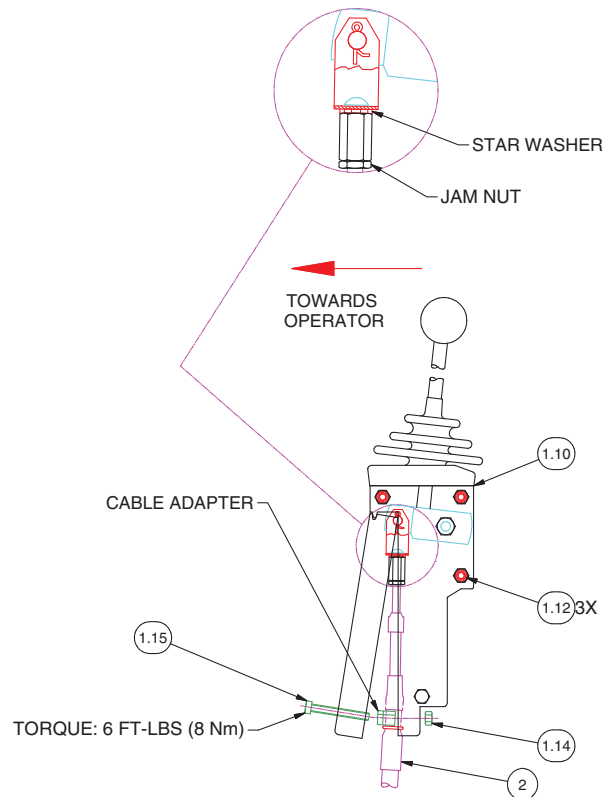
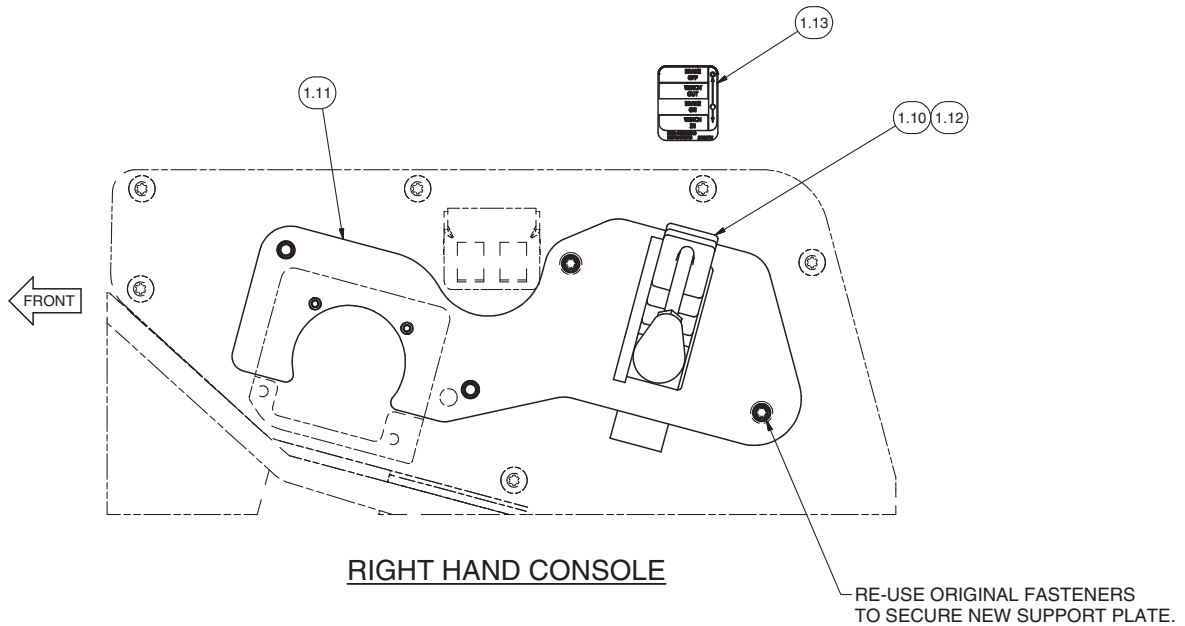
Gear Ratios #8, #9, and #10



Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
			2302989W				
			Pump, Hydraulic				
1	NSS	1	. Plate, Front	10	*a NSS	1	. Washer
2	NSS	1	. Plate, Back	11	NSS	4	. Capscrew
3	NSS	1	. Body	12	*a NSS	1	. Gasket
4	NSS	1	. Gear, Drive	13	*a NSS	1	. Seal
5	316823W	1	. Key	14	NSS	4	. Washer
6	NSS	1	. Gear, Idler	15	NSS	1	. Ring, Retaining
7	*a NSS	1	. Plate, Wear	16	NSS	1	. Plug
8	*a NSS	1	. O-Ring				
9	*a NSS	1	. Seal				
				*a Included in Repair Kit 2302937W			

Handlever Installation - Power Controls

AW8LP**C715 (CAT D7GC with P-Controls)

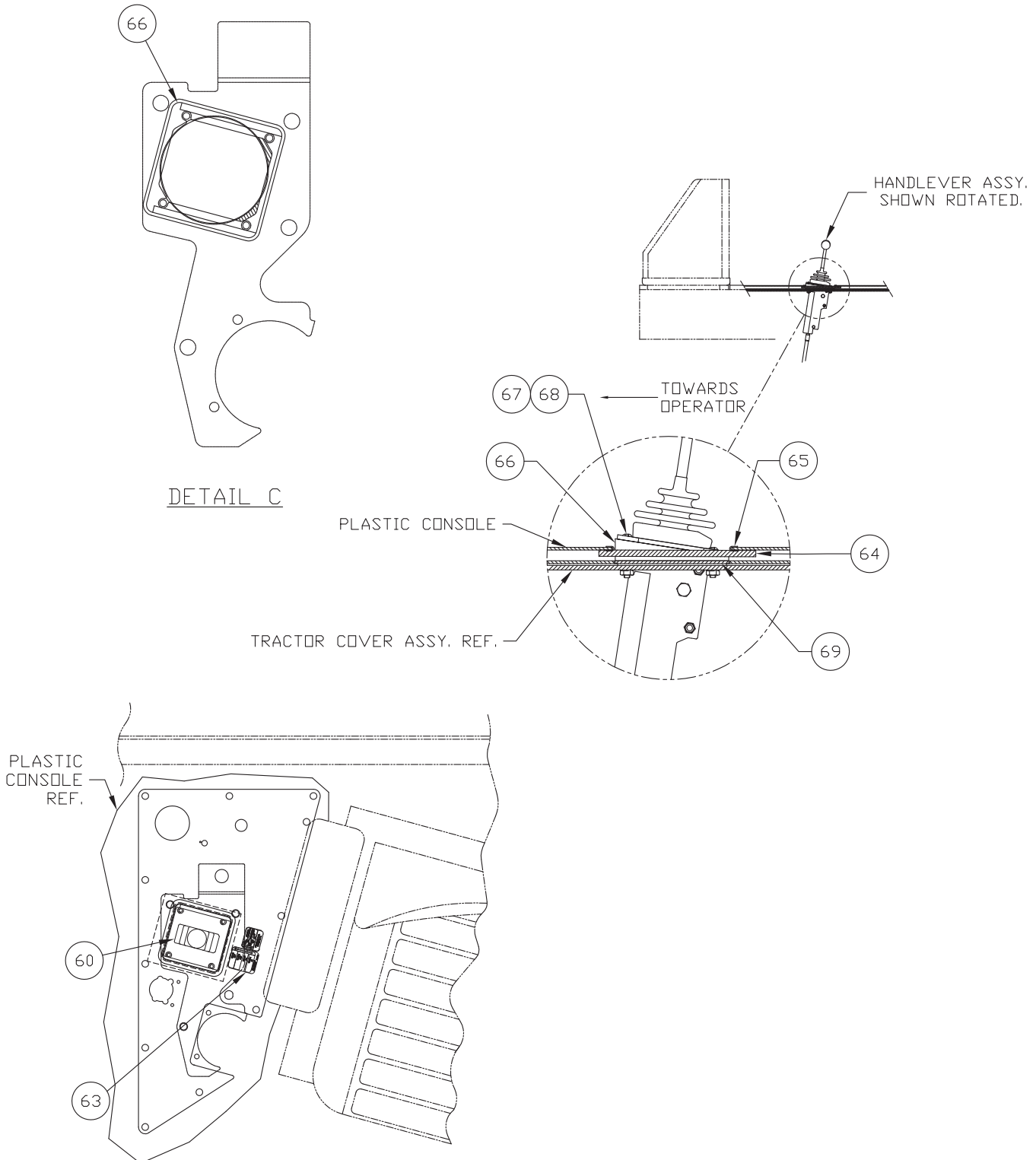


Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
1.10	* 2306703W	1	Handlever (See page 65)	1.14	383881W	1	Nut, Tall
1.11	2317308	1	Lever Mounting	1.15	18717W	1	Capscrew
1.12	232987	3	Capscrew	2	303944W	1	Cable, Push/Pull
1.13	277276W	1	Decal - Handlever				

Handlever Installation - Power Controls

AW8LP**C72 (CAT D7R Series II with P-Controls)

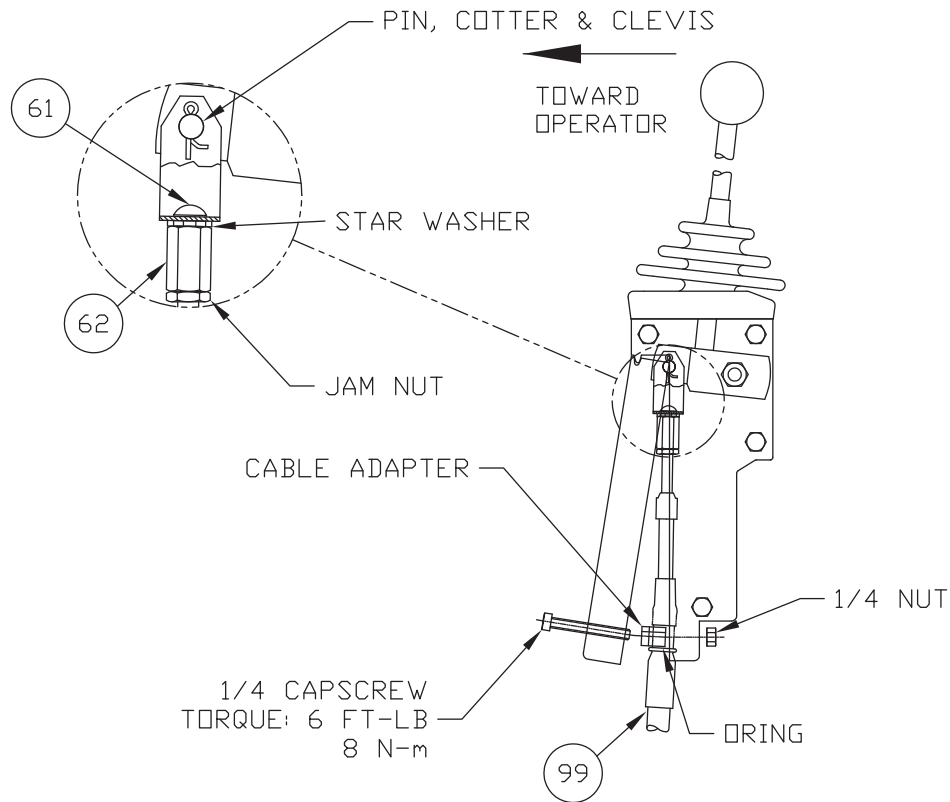
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Handlever Installation - Power Controls

AW8LP**C72 (CAT D7R Series II with P-Controls)

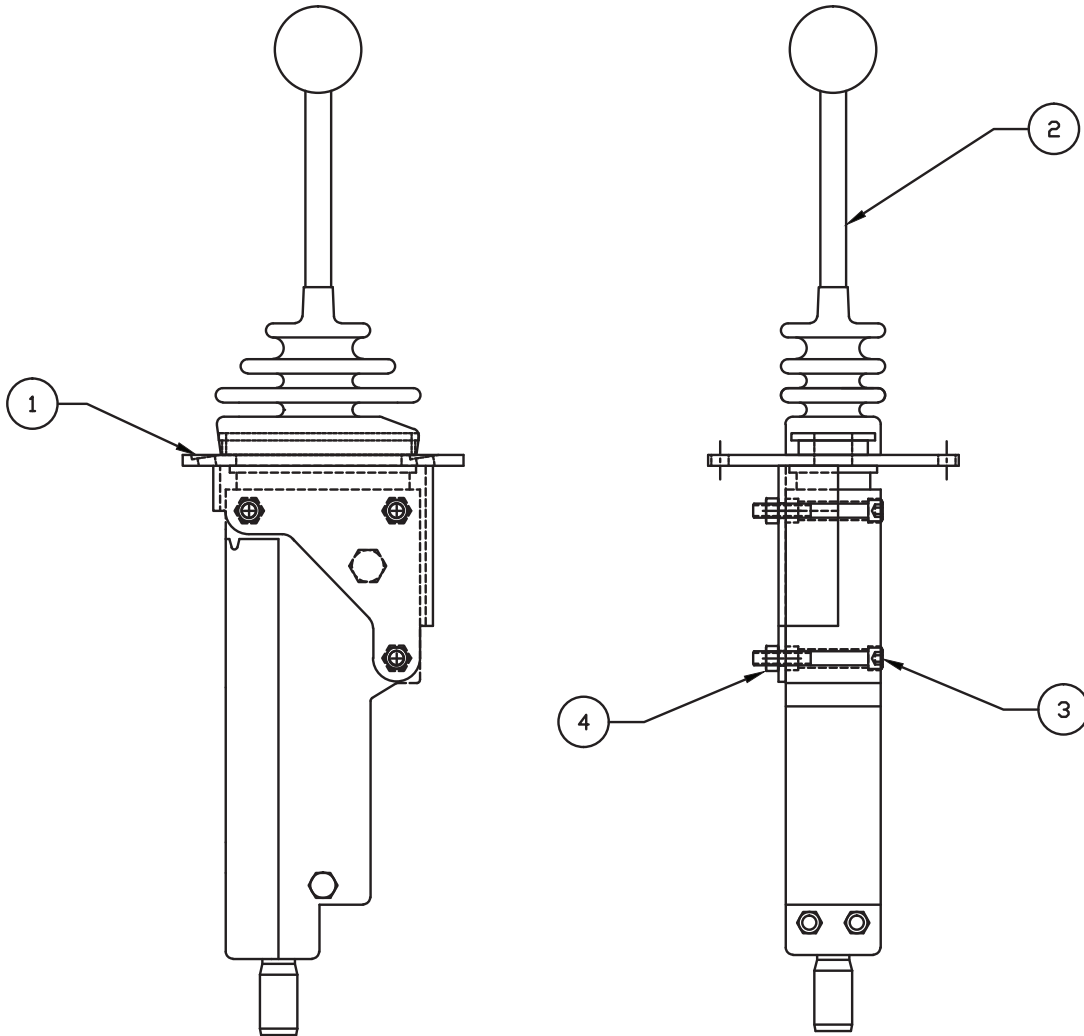
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Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
60	* 2305202W	1	Handlever Assembly (See pg 64)	66	2304879W	1	Spacer
61	18717W	1	Capscrew	67	296162W	2	Capscrew
62	383881W	1	Nut, Tall	68	2305199W	2	Capscrew
63	277276W	1	Decal - Handlever	69	2305203W	1	Gasket
64	2304569W	1	Gasket	99	303942W	1	Cable, Push/Pull
65	2301055W	2'	Trim (Per Ft)				

Handlever Assembly

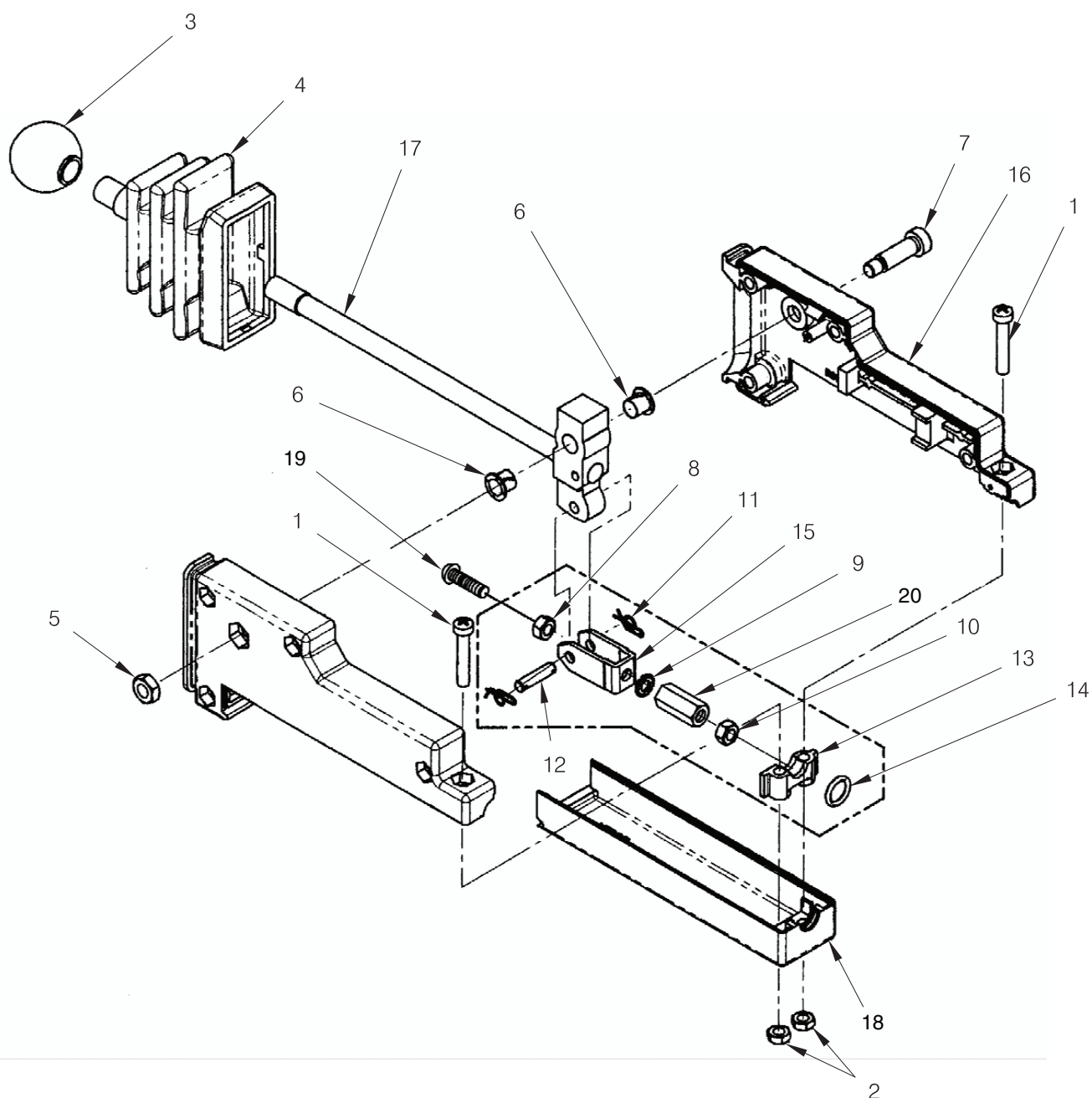
AW8LP**C72 (CAT D7R Series II with P-Controls)



Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
	2305202W		Handlever Assembly				
1	2305201W	1	. Bracket - Handlever, W/O FS	3	18127W	3	. Capscrew
2	* 2303982W	1	. Handlever (See page 65)	4	15113W	3	. Locknut

Handlever

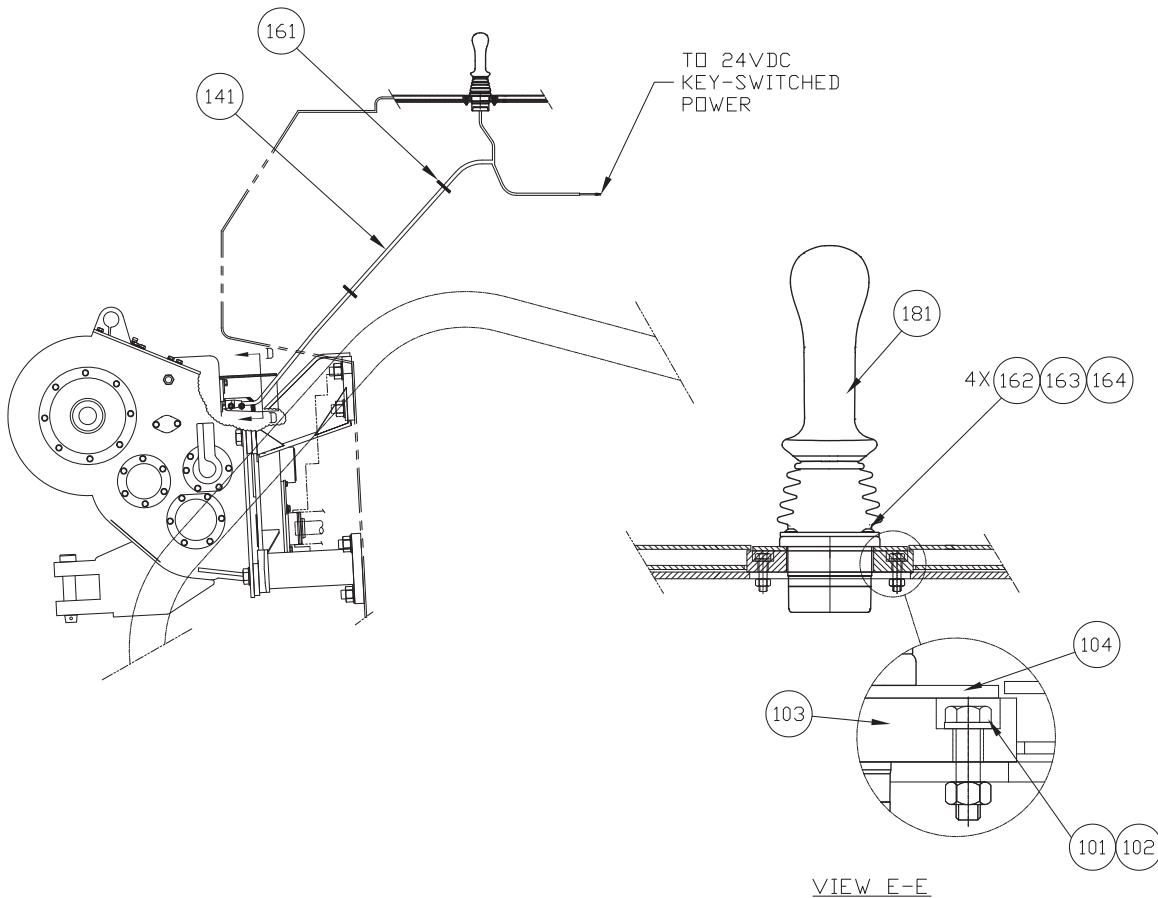
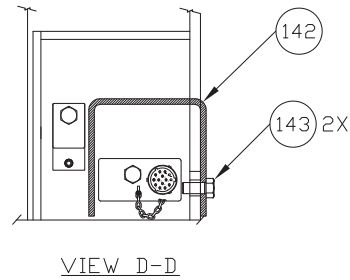
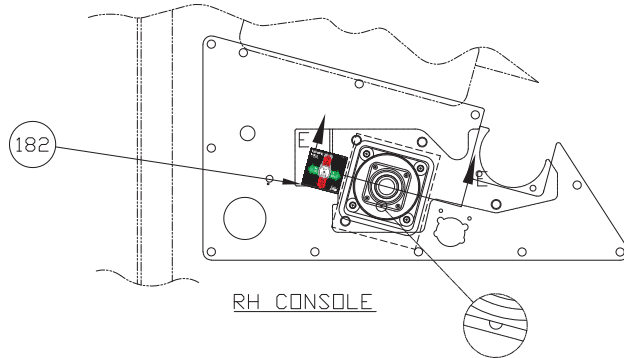
Tractor Codes C715, C72



Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
	2303982W	1	Handlever, C72				
	2306703W	1	Handlever, C715				
1	*a -----	2	. Screw	13	*b -----	1	. Adapter, Cable
2	*a -----	2	. Nut	14	*b -----	1	. O-Ring
3	2304339W	1	. Knob	15	*b -----	1	. Clevis
4	2304340W	1	. Boot	16	NSS	1	. Cover
5	2304341W	1	. Nut, Jam	17	NSS	1	. Lever
6	2304342W	2	. Bearing, Plastic	18	2304604W	1	. Cover
7	2304343W	1	. Screw, Shoulder	19	*c 18717W	1	Capscrew
8	*b -----	1	. Nut	20	383881W	1	Nut, Tall
9	*b -----	1	. Washer				
10	*b -----	1	. Nut		*a	Included in 2304338W Cover Attaching Hardware Kit	
11	*b -----	2	. Pin, Cotter		*b	Included in 2305023W Cable Attaching Hardware Kit	
12	*b -----	1	. Pin		*c	Use 318702W Thread Lock	

Joystick Installation

AW8LE**C72 (CAT D7R Series II with E-Controls)



Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
101	292680W	4	Washer	163	*b Y35E-#10	4	Washer
102	287816W	4	Capscrew	164	*b 224191	4	Nut, Esna
103	2315078	1	Mounting Plate	165	*b 2304112W	1	Element, Filter
104	2305412W	1	Plate, Joystick Cover	181	2317565	1	Assembly, Joystick
141	2317359	1	Wiring Harness, External		2317612	1	. Decal, Faceplate, Top
142	2307919W	1	Guard, Cable		2317613	1	. Decal, Faceplate, Bottom
143	*a 398817W	2	Screw, Flange	182	2317564	1	Decal, Console
161	137852W	10	Cable Tie				
162	Y25G-(1024)16	4	Capscrew				

*a Apply Threadlock 318702W

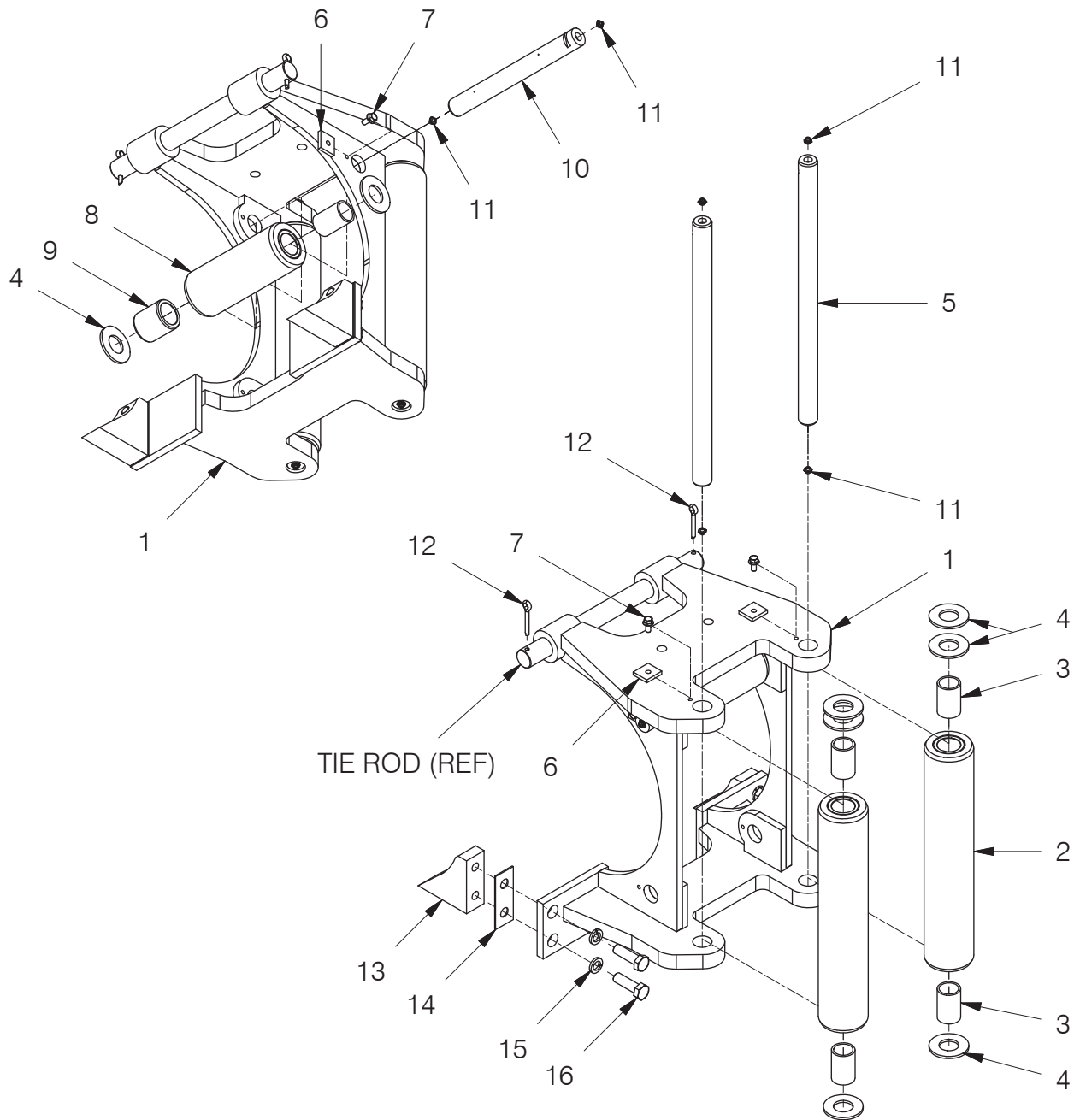
*b Not Illustrated

Section 4
Optional Equipment

Fairlead 56 thru 57

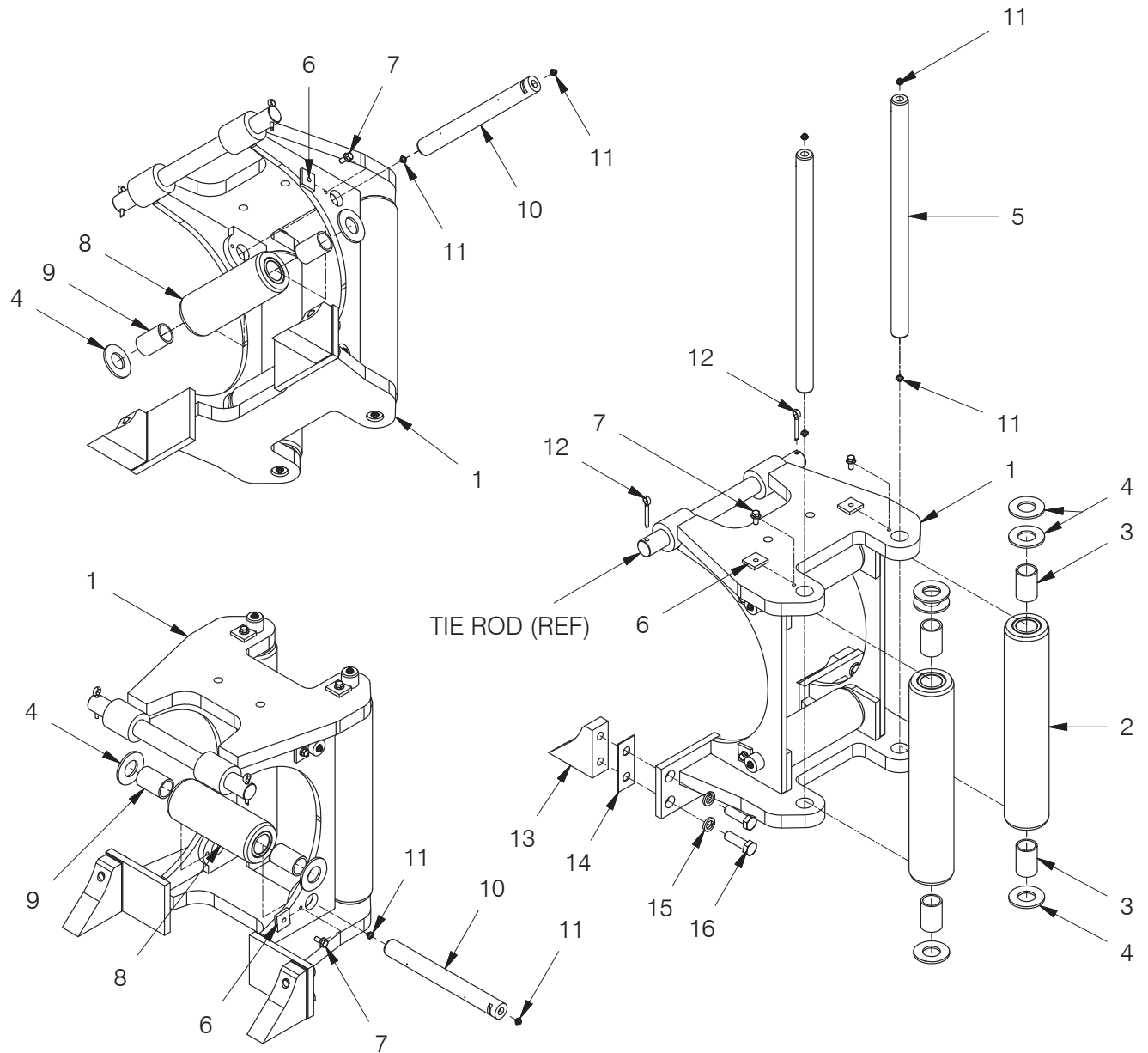
Wire Rope Assemblies.....58

Fairlead, 3-Roller



Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
	2301944W		3-Roller Fairlead				
1	2301934W	1	. Frame	10	2301942W	1	. Shaft
2	2301726W	2	. Roller	11	16001W	6	. Fitting, Lube
3	2570W	4	. . Bushing	12	15272W	2	Pin
4	2314097	8	. Washer	13	142809W	2	Bracket
5	2301943W	2	. Shaft	14	93985W	AR	Shim .134
6	2301706W	3	. Keeper	15	15166W	4	Washer
7	398817W	3	. Capscrew	16	18671W	4	Capscrew
8	2301727W	1	. Roller				
9	2570W	2	. . Bushing				

Fairlead, 4-Roller



Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
2301945W 4-Roller Fairlead							
1	2301934W	1	. Frame	10	2301942W	2	. Shaft
2	2301726W	2	. Roller	11	16001W	8	. Fitting, Lube
3	2570W	2	. . Bushing	12	15272W	2	Pin
4	2314097	10	. Washer	13	142809W	2	Bracket
5	2301943W	2	. Shaft	14	93985W	AR	Shim .134
6	2301706W	4	. Keeper	15	15166W	4	Washer
7	398817W	4	. Capscrew	16	18671W	4	Capscrew
8	2301727W	2	. Roller				
9	2570W	2	. . Bushing				

Wire Rope Assemblies

Wire Rope Drum End



Junior Ferrule

Wire Rope Loose End Options



Tail Chain & Hook (TC)



Wedge Socket (WS)



Open Spelter Socket (OS)

Part Number	Wire Rope Diameter	Wire Rope Type	Loose End Type	Loose End Rating (lbs)	Length (ft)	Weight (lbs)	Drum Fill	Wire Rope Breaking Strength (lbs)
WR7-234J	7/8"	EIPS	TC	34,200	234	351	2/3	79,600
WR7-354J					354	522	Full	
YS7-234JWS		EEIPS	WS	70,800	234	351	2/3	87,600
YS354JWS					354	522	Full	
WR8-182J	1"	EIPS	TC	47,700	182	358	2/3	103,400
WR8-275J					275	531	Full	
YS8-182JWS		EEIPS	WS	91,040	182	358	2/3	113,800
YS8-275JWS					275	531	Full	
WR9-145J	1-1/8"	EIPS	TC	47,700	145	363	2/3	130,000
WR9-220J					220	538	Full	
YS9-145JWS		EEIPS	WS	114,400	145	363	2/3	143,000
YS9-220JWS					220	538	Full	
YS9-145JOS			OS	143,000	145	363	2/3	
YS9-220JOS					220	538	Full	

Section 5

Recommended Service Kits

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Recommended Winch Service Intervals

Allied Systems Company is pleased to announce an additional tool to keep your customer's winch serviced and functioning properly. Following this recommended service schedule will help keep tractor winch downtime to a minimum, optimize winch operation, and extend the life of your investment. See Table 1 on this page for recommended service intervals, and Table 2 on the next page for recommended service kits.

PTO Winch Maintenance

Recommended Winch Service Intervals					
Hours or **	Months **	Filter ***	Winch Gear Oil	Brake & Clutch	Major Overhaul
First 250	1	Change			
Every 500	3	Change			
Every 1,000	6		Change		
Every 5,000				* Inspect	
Every 10,000					* Evaluate

Lube rollers and check oil level and filter light weekly.

* Evaluate = Service based on average winch use;
 - if used more than once a day, perform overhaul.
 - if used less than once a day, remove covers and check to determine need.

* Inspect = Disassemble and inspect for wear.

** Service winch using the tractor's hour meter or the length of time the winch is mounted to the tractor, whichever occurs first.

*** Follow tractor schedule if using tractor filter.

IMPORTANT - For best Load Control
Use only the following oils:

Caterpillar	-Multipurpose Tractor Oil (MTO)
John Deere	-Hy-Gard
ExxonMobil	-Mobil Fluid 424 (Factory Fill)
Chevron	-1000 THF

Consult service/operating manual for low temperature oils and other details. Use of non-approved oil may void warranty.



2311481 Rev C

Table 1 Recommended Winch Service Intervals

Recommended Service Kits

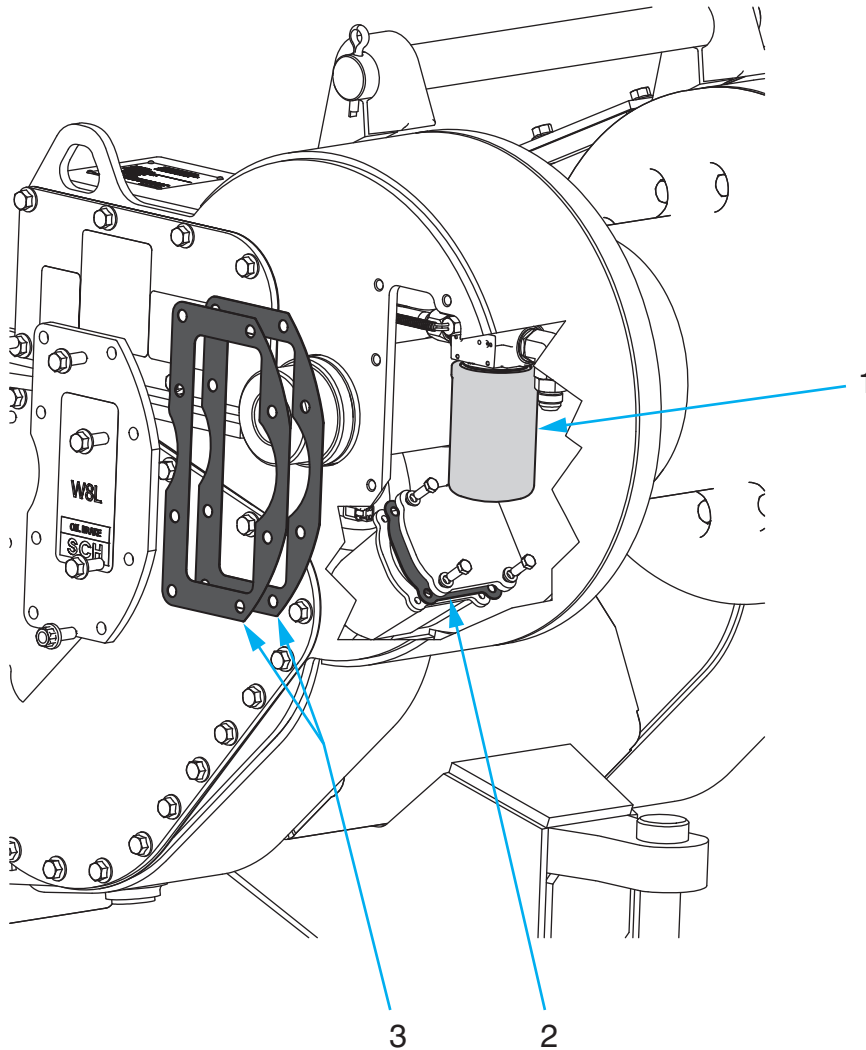
SERVICE KITS FOR W8L WINCHES			
Service Description	Kit Description		Kit Part No.
Filter Change (First 250, then every 500 Hours)	Filter Kit	P-Controls	2311167
		E-Controls	2311168
Complete Oil Change (Every 1,000 hours)	-N/A-		Check our Website for Current Operator's and Service Manuals for Appropriate Oils
Clutch and Brake Overhaul (Every 5,000 hours)	Gasket Kit		277341W
	Clutch Shaft Kit*	Gear ratios 1, 3	2311156
		Gear ratio 9	2311157
	Brake Assembly Kit		2311155
	Pump Assembly	Gear ratios 1, 3	2302963W
		Gear ratio 9	2302989W
Major Overhaul (Every 10,000 hours)	Brake Shaft Bearing Kit	Gear ratios 1, 3	2311158
		Gear ratio 9	2311159
	Clutch Shaft Bearing Kit	Gear ratios 1, 3	2311162
		Gear ratio 9	2311163
	Drum & Intermediate Shaft Bearing and Seal Kit		2311164

* Services both clutches. Includes all parts necessary on the clutch shaft; dropbox and PTO bearings and seals must be ordered separately.

Table 2 Routine Maintenance Kits

Filter Kit: 2311167

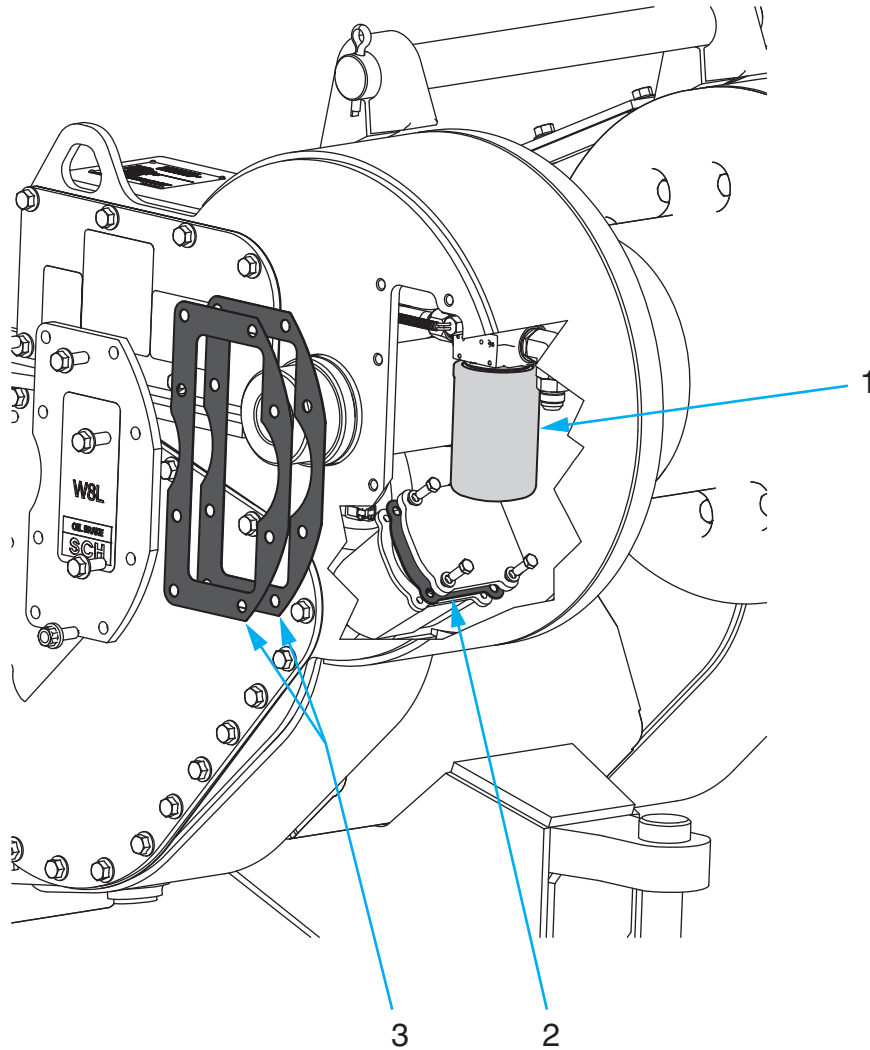
Unit with P-Controls



Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
	2311167		Filter Kit				
1	3001363W	1	. Element, Filter				
2	2300935W	1	. Gasket				
3	2314005	2	. Gasket, Filter Cover				

Filter Kit: 2311168

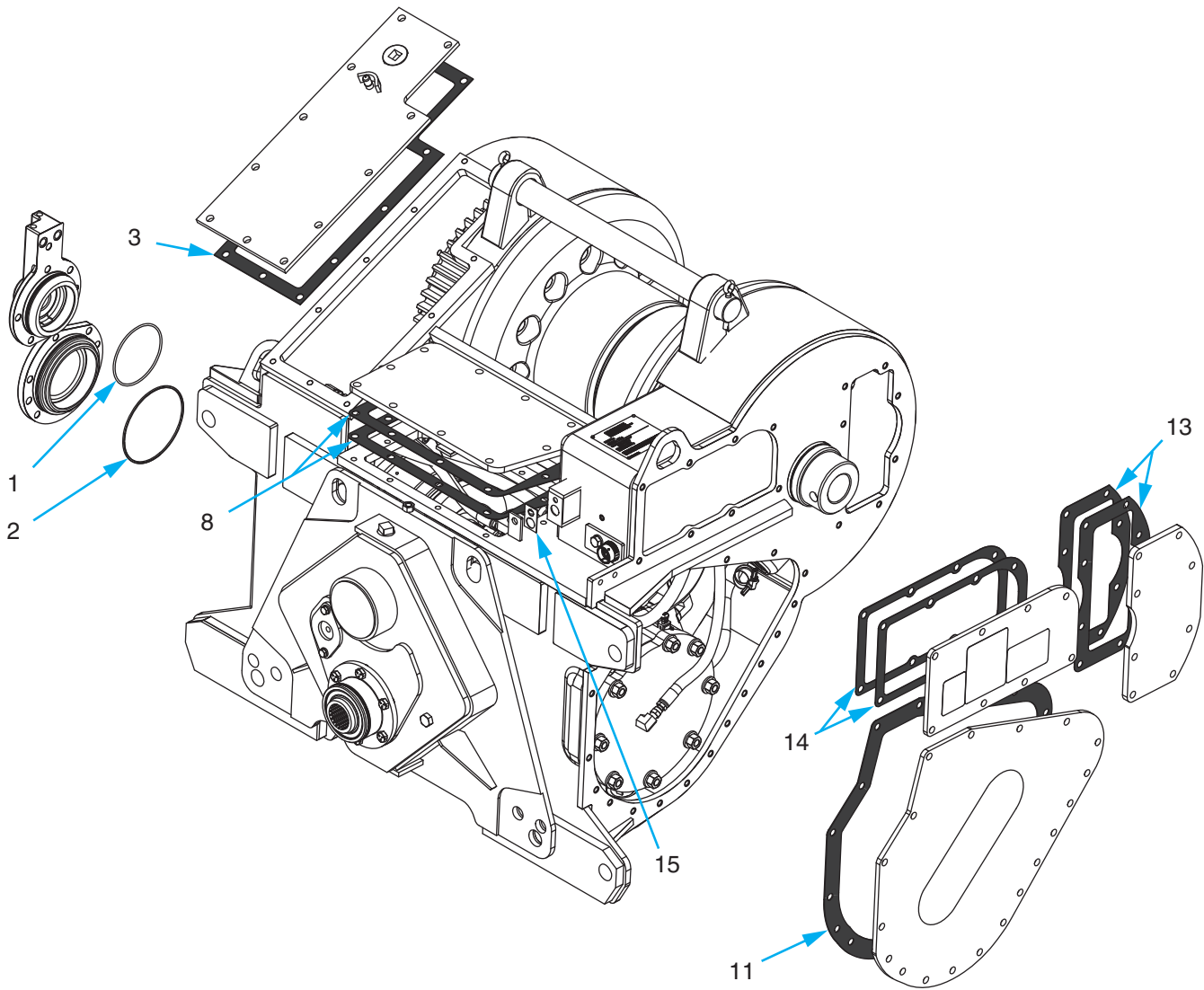
Unit with E-Controls



Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
	2311168		Filter Kit				
1	2304112W	1	. Filter, Element				
2	2300935W	1	. Gasket				
3	2314005	2	. Gasket, Filter Cover				

Gasket Kit: 277341W

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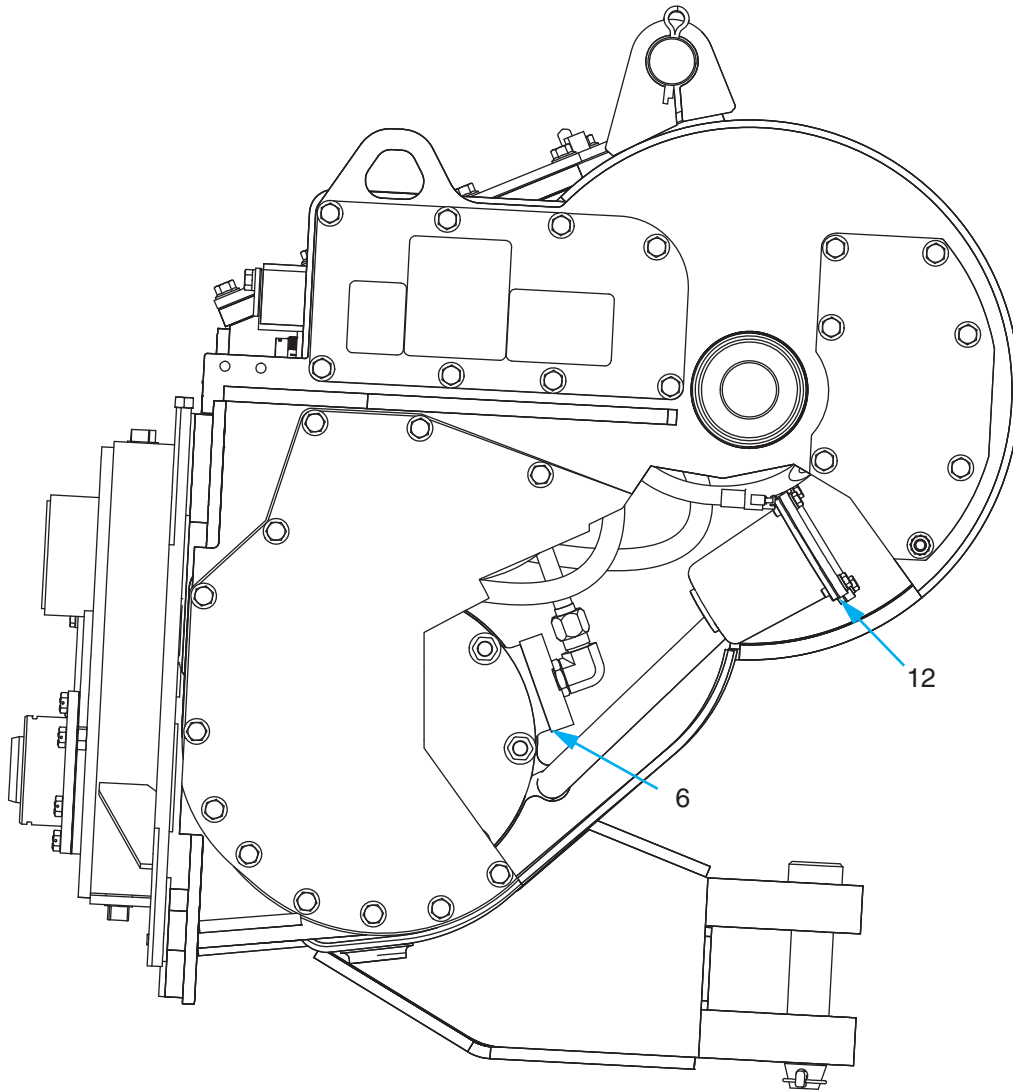


Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
277341W Kit, Gasket							
1	55289W	1	. O-Ring	9	* 257779W	1	. Gasket
2	203549	1	. O-Ring	10	* 265332W	1	. Gasket
3	142761W	1	. Gasket	11	286044W	1	. Gasket
4	* 151646W	2	. Gasket	12	2300935W	1	. Gasket
5	* 186460W	1	. Gasket	13	2314005	2	. Gasket
6	196022W	1	. Gasket	14	2314805	1	. Gasket
7	* 226359W	1	. Gasket	15	303946W	1	. Gasket
8	2314804	2	. Gasket				

* Not Illustrated. Not applicable for your winch.

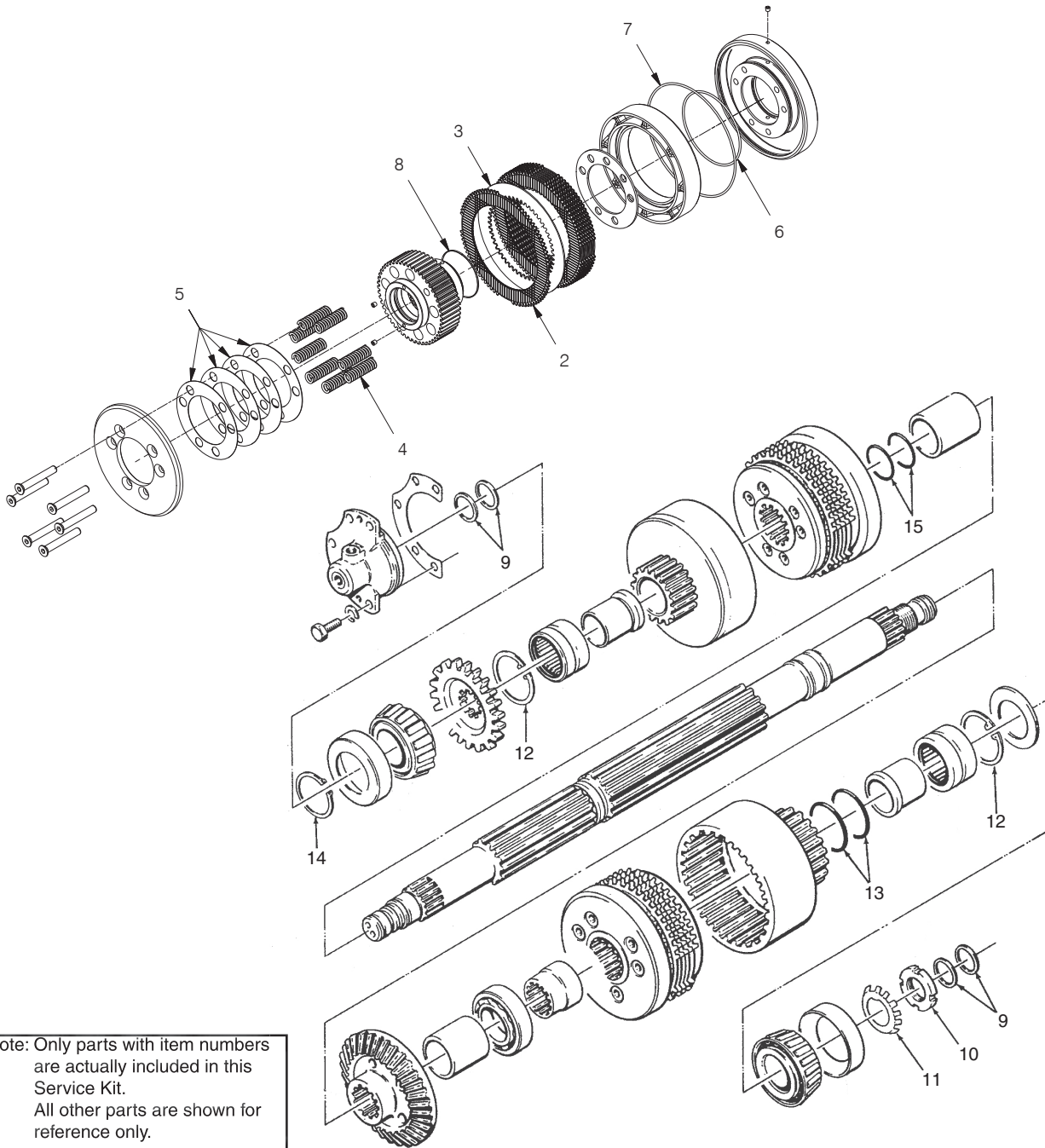
Gasket Kit: 277341W

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Clutch Shaft Kit: 2311156

Gear Ratios #1 and #3

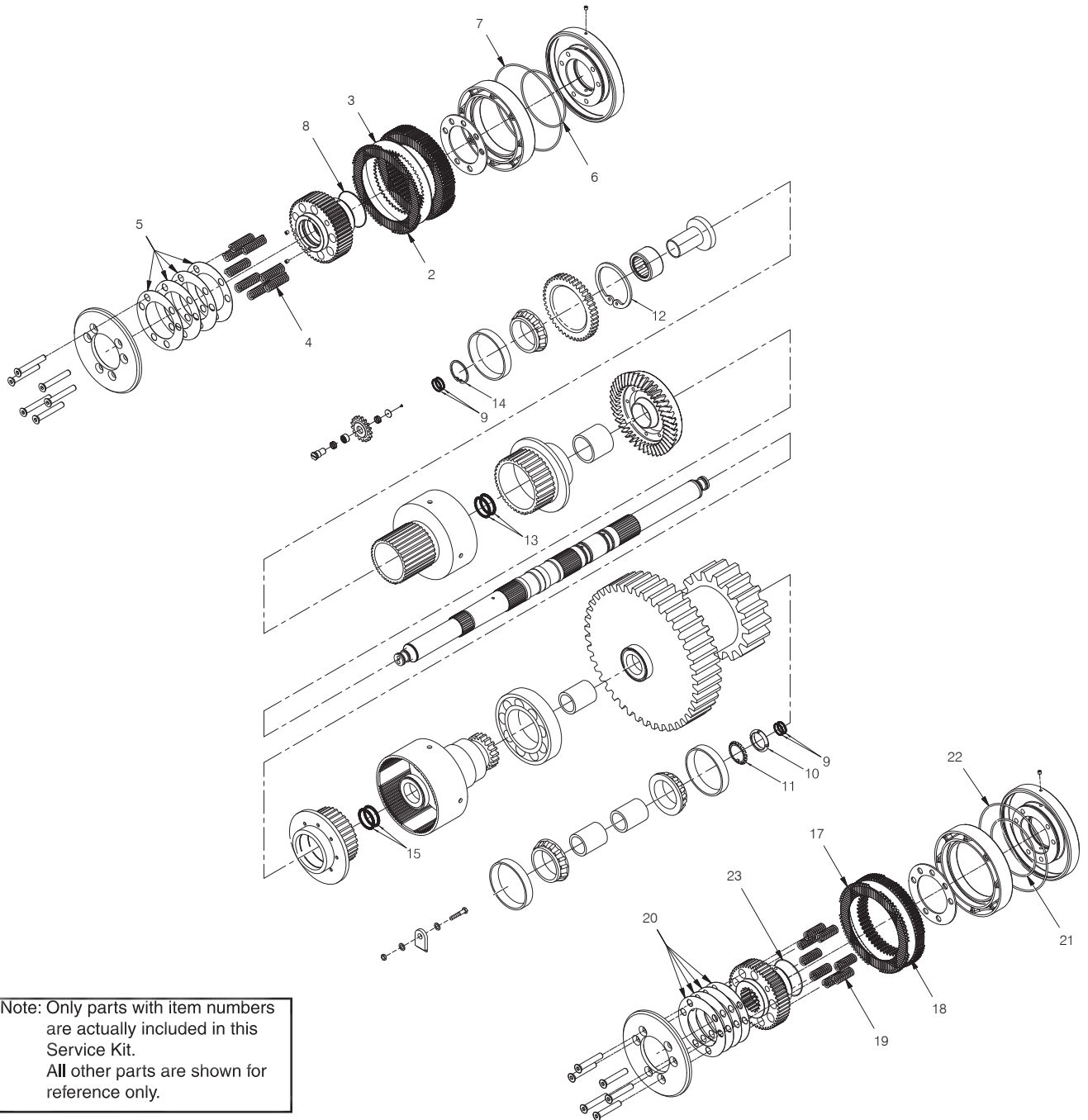


Note: Only parts with item numbers are actually included in this Service Kit. All other parts are shown for reference only.

Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
	2311156		Clutch Shaft Kit, G/R 1 & 3				
1	2310570	2	. Kit, Clutch Service	9	95581W	4	. Ring, Seal
2	328715W	8	. Disc, Friction	10	21014W	1	. Nut, Lock
3	261542W	8	. Plate, Separator	11	174561W	1	. Lockwasher
4	267499W	8	. Spring	12	58938W	2	. Ring, Snap
5	224793W	4	. Shim .031	13	39674W	2	. O-Ring
6	89777W	1	. O-Ring	14	35575W	1	. Ring, Snap
7	79972W	1	. O-Ring	15	108877W	2	. O-Ring
8	39370W	1	. O-Ring				

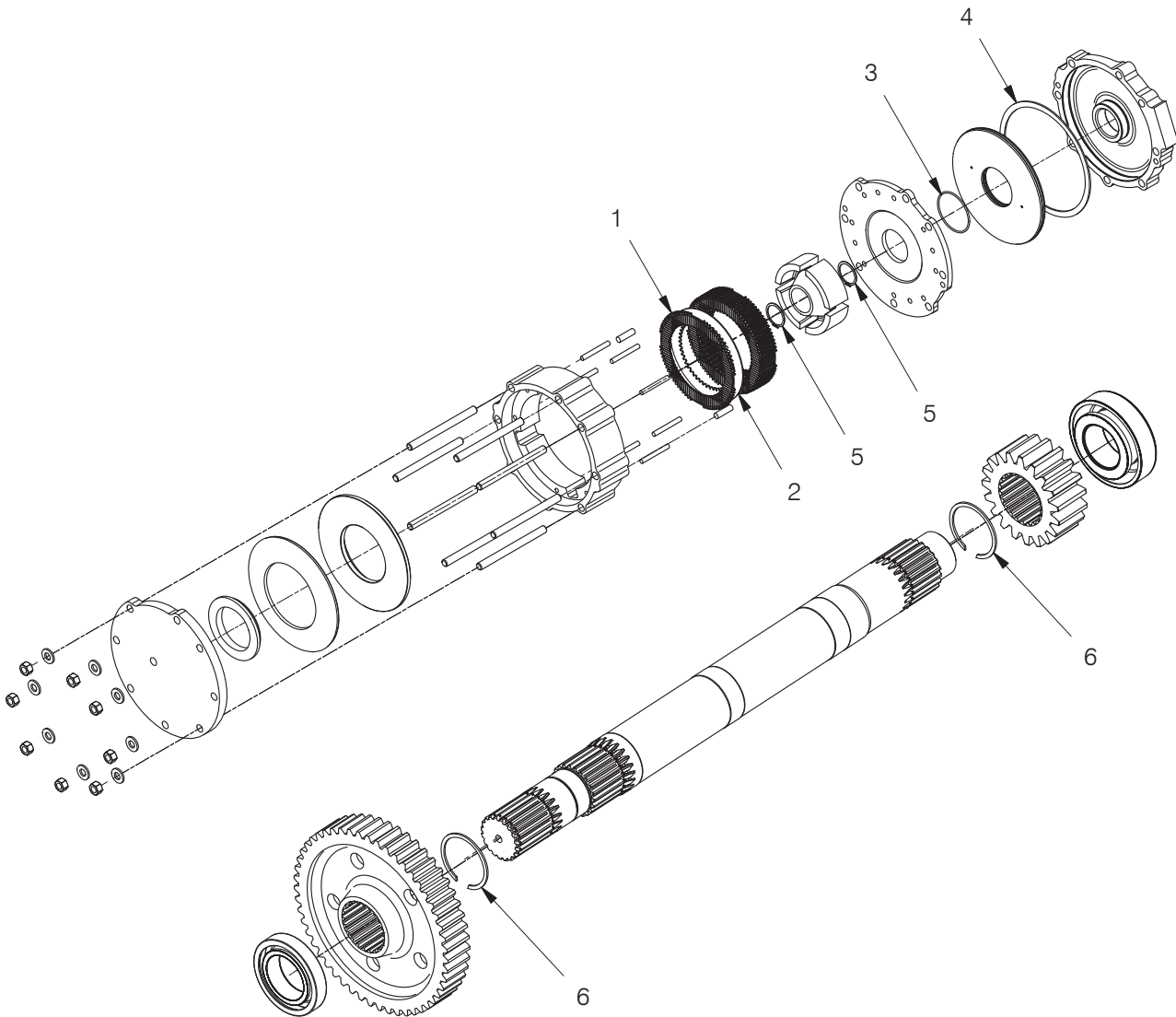
Clutch Shaft Kit: 2311157

Gear Ratio #9



Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
	2311157		Clutch Shaft Kit, G/R 9				
1	2310570	1	. Kit, Clutch Service	13	39674W	2	. O-Ring
2	328715W	8	. . Disc, Friction	14	35575W	1	. Ring, Snap
3	261542W	8	. . Plate, Separator	15	108877W	2	. O-Ring
4	267499W	8	. . Spring	16	2300544W	1	. Kit, Clutch Service
5	224793W	4	. . Shim .031	17	328715W	6	. . Disc, Friction
6	89777W	1	. . O-Ring	18	261542W	6	. . Plate, Separator
7	79972W	1	. . O-Ring	19	265407W	8	. . Spring
8	39370W	1	. . O-Ring	20	224793W	4	. . Shim .031
9	95581W	4	. Ring, Seal	21	89777W	1	. . O-Ring
10	21014W	1	. Nut, Lock	22	79972W	1	. . O-Ring
11	174561W	1	. Lockwasher	23	39370W	1	. . O-Ring
12	58938W	2	. Ring, Snap				

Brake Assembly Kit: 2311155

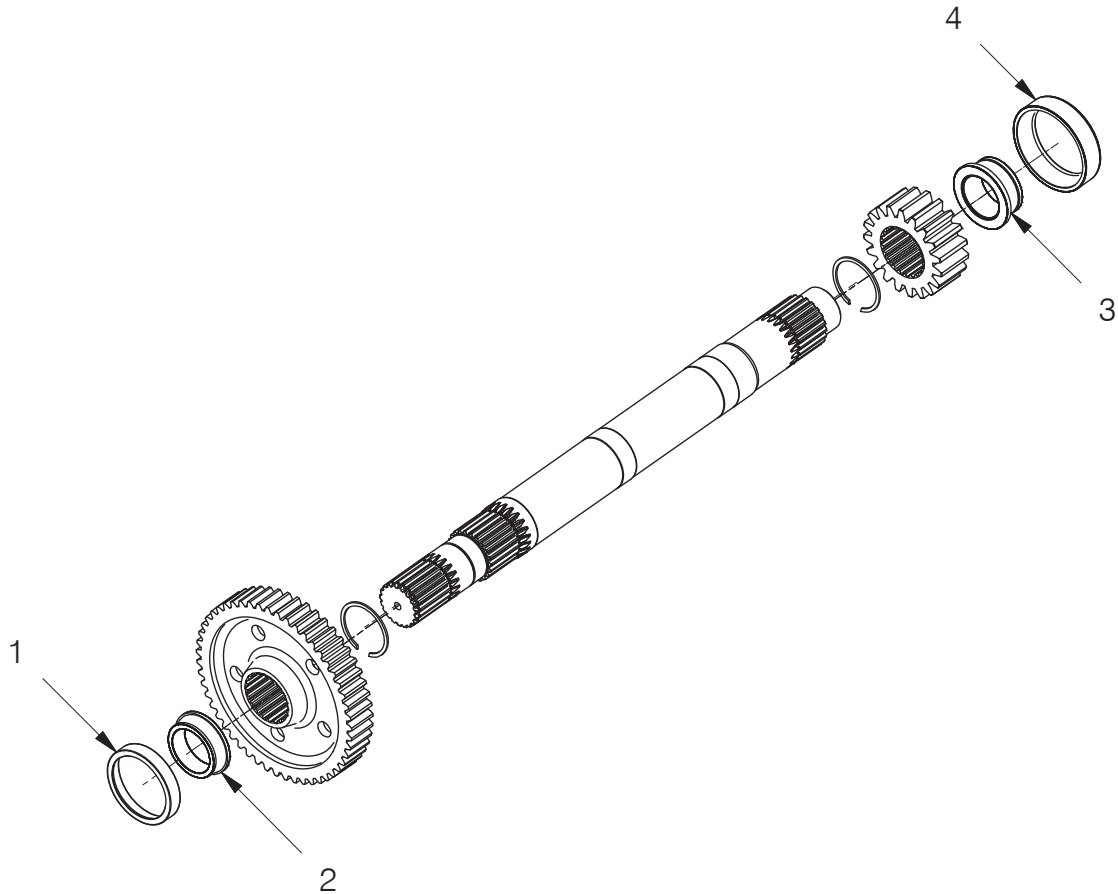


Note: Only parts with item numbers are actually included in this Service Kit.
All other parts are shown for reference only.

Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
	2311155		Brake Assembly Kit				
1	328715W	10	. Disc, Friction	4	133927W	1	. Ring, Piston Seal
2	261542W	9	. Plate, Separator	5	12940W	2	. Snap Ring
3	79979W	1	. O-Ring	6	12915W	2	. Snap Ring

Brake Shaft Bearing Kit: 2311158

Gear Ratios #1, #3

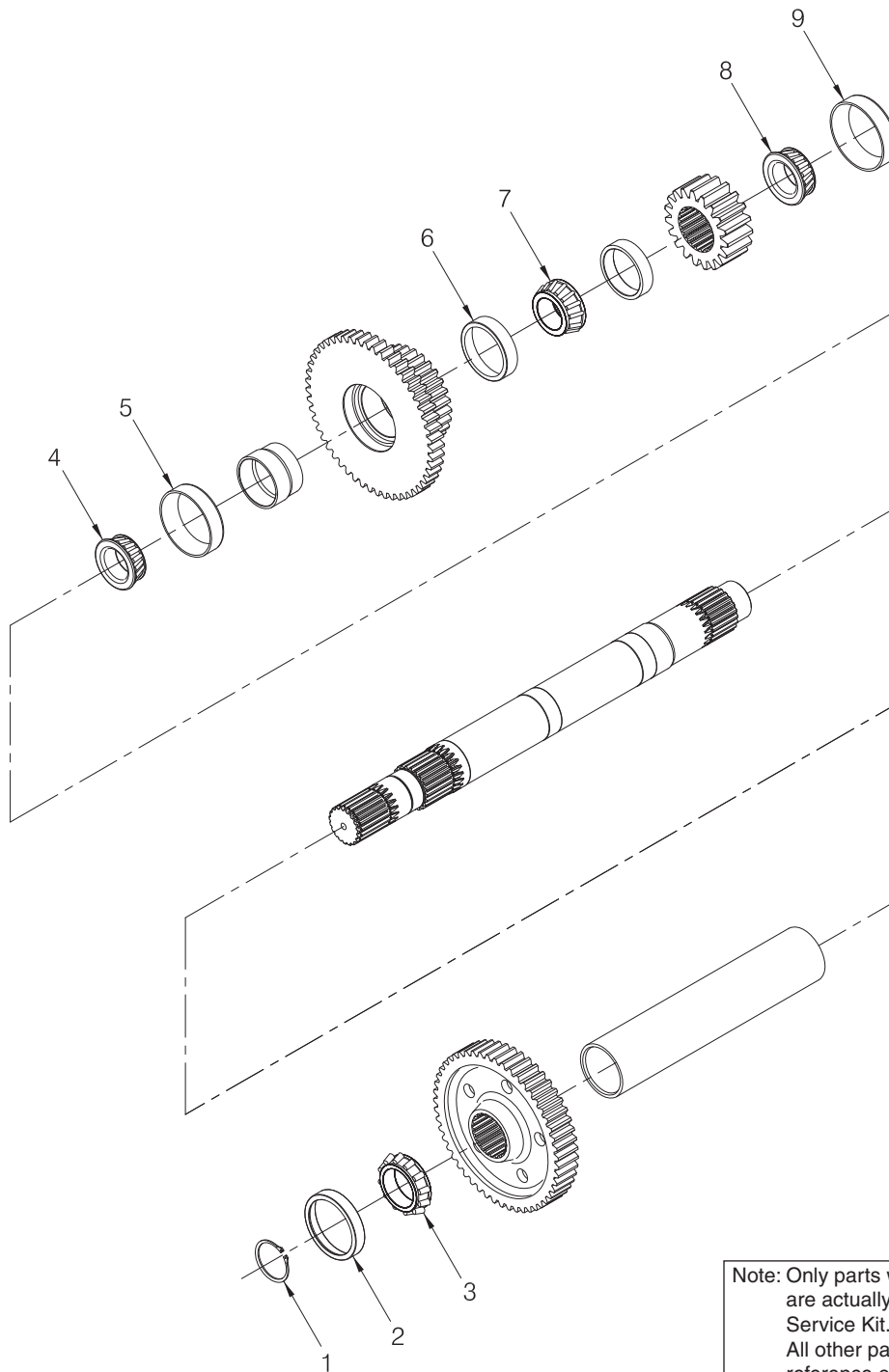


Note: Only parts with item numbers
are actually included in this
Service Kit.
All other parts are shown for
reference only.

Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
	2311158		Brake Shaft Bearing Kit				
1	230311W	1	. Cup, Bearing	3	30080W	1	. Cone, Bearing
2	230310W	1	. Cone, Bearing	4	30059W	1	. Cup, Bearing

Brake Shaft Bearing Kit: 2311159

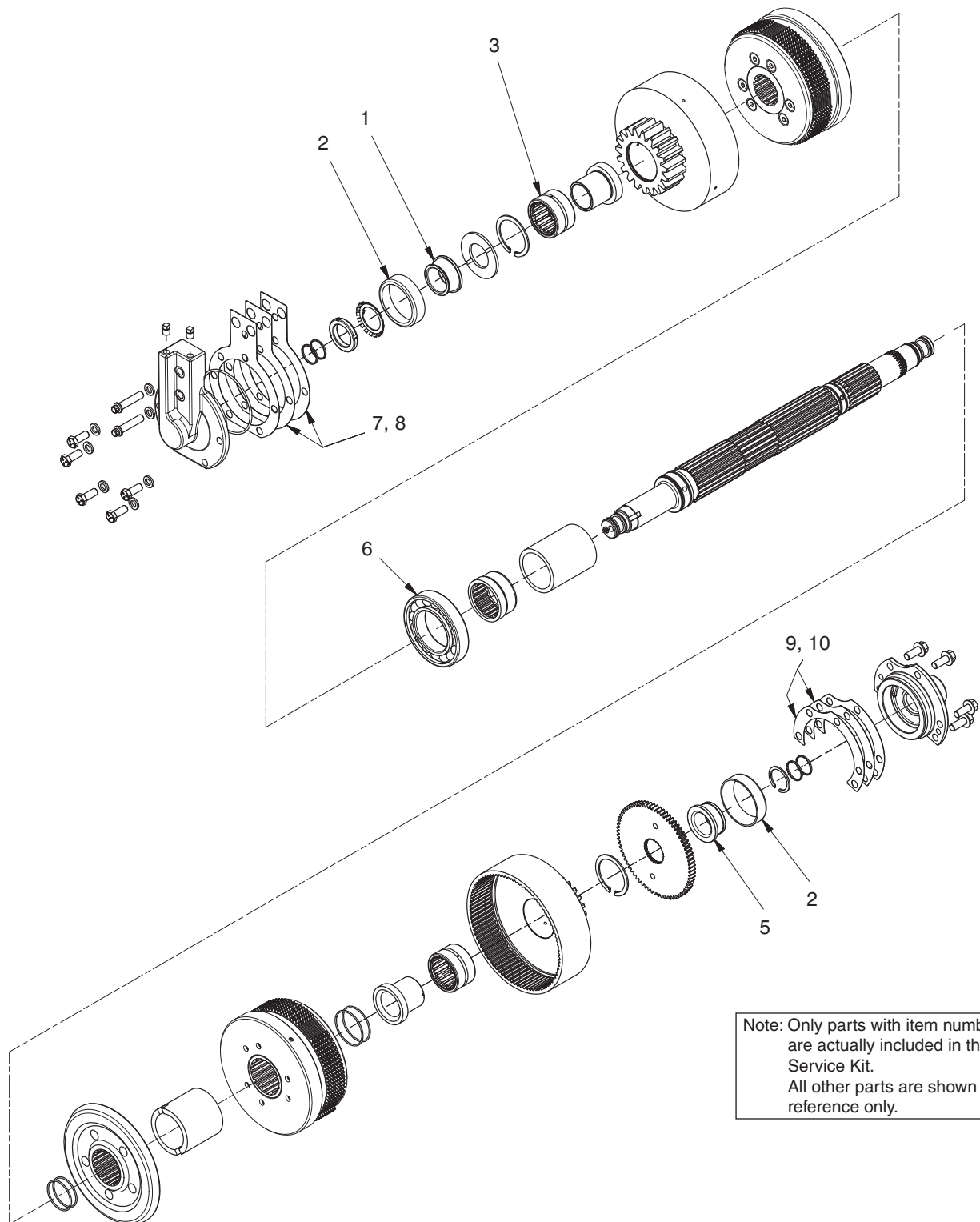
Gear Ratio #9



Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
2311159 Brake Shaft Bearing Kit							
1	12940W	1	. Snap Ring	6	2303557W	1	. Cup, Bearing
2	230310W	1	. Cone, Bearing	7	2303558W	1	. Cone, Bearing
3	230311W	1	. Cup, Bearing	8	30080W	1	. Cone, Bearing
4	2303572W	1	. Cone, Bearing	9	30059W	1	. Cup, Bearing
5	2303571W	1	. Cup, Bearing				

Clutch Shaft Bearing Kit: 2311162

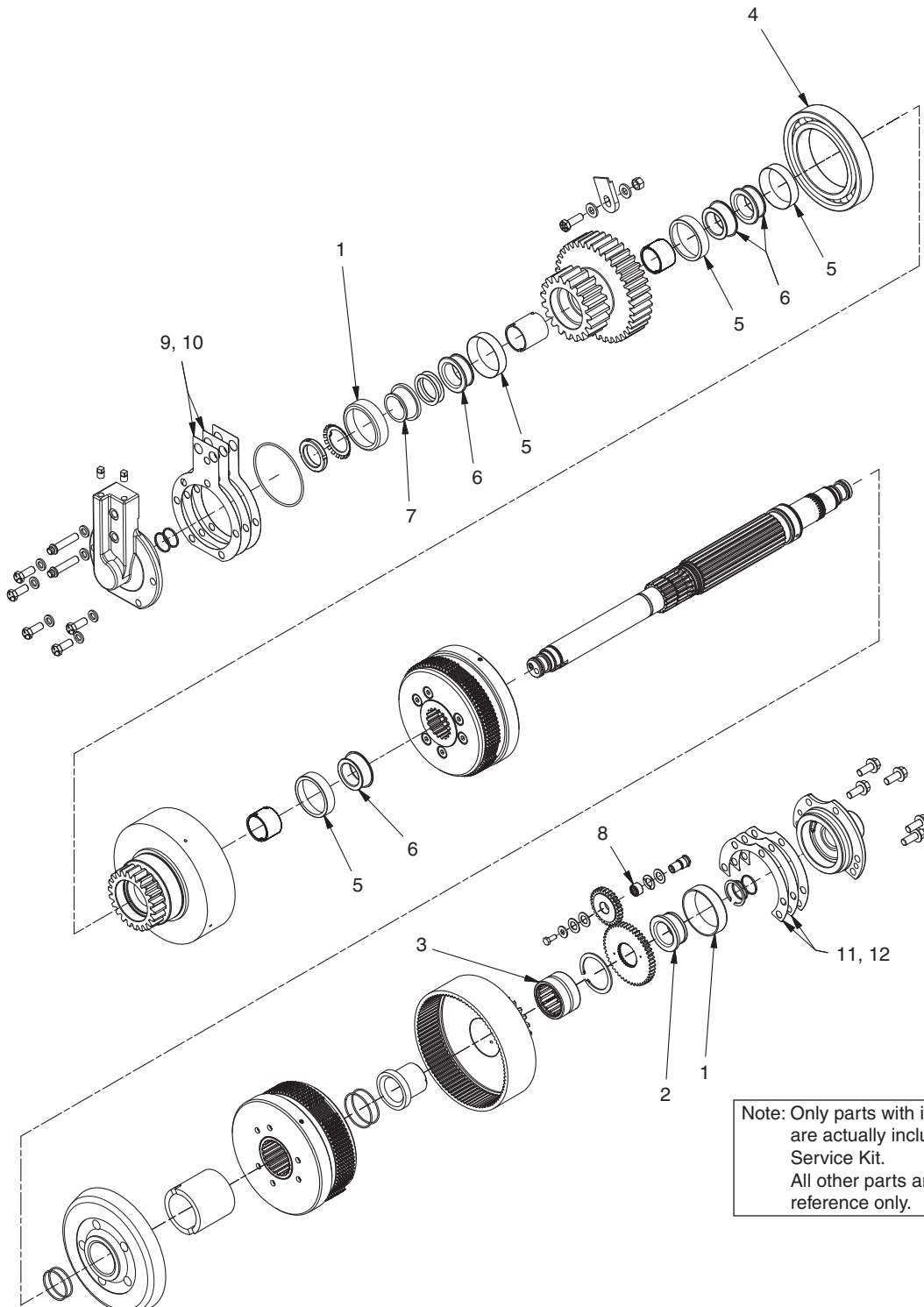
Gear Ratios #1, #3



Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
	2311162		Clutch Shaft Bearing Kit				
1	230405W	1	. Bearing Cone	7	225255W	2	. Shim, .005"
2	230351W	2	. Bearing Cup	8	225256W	2	. Shim, .007"
3	230407W	2	. Bearing, Roller	9	225259W	2	. Shim, .005"
5	225262W	1	. Bearing Cone	10	225260W	2	. Shim, .007"
6	41216W	1	. Bearing - Ball				

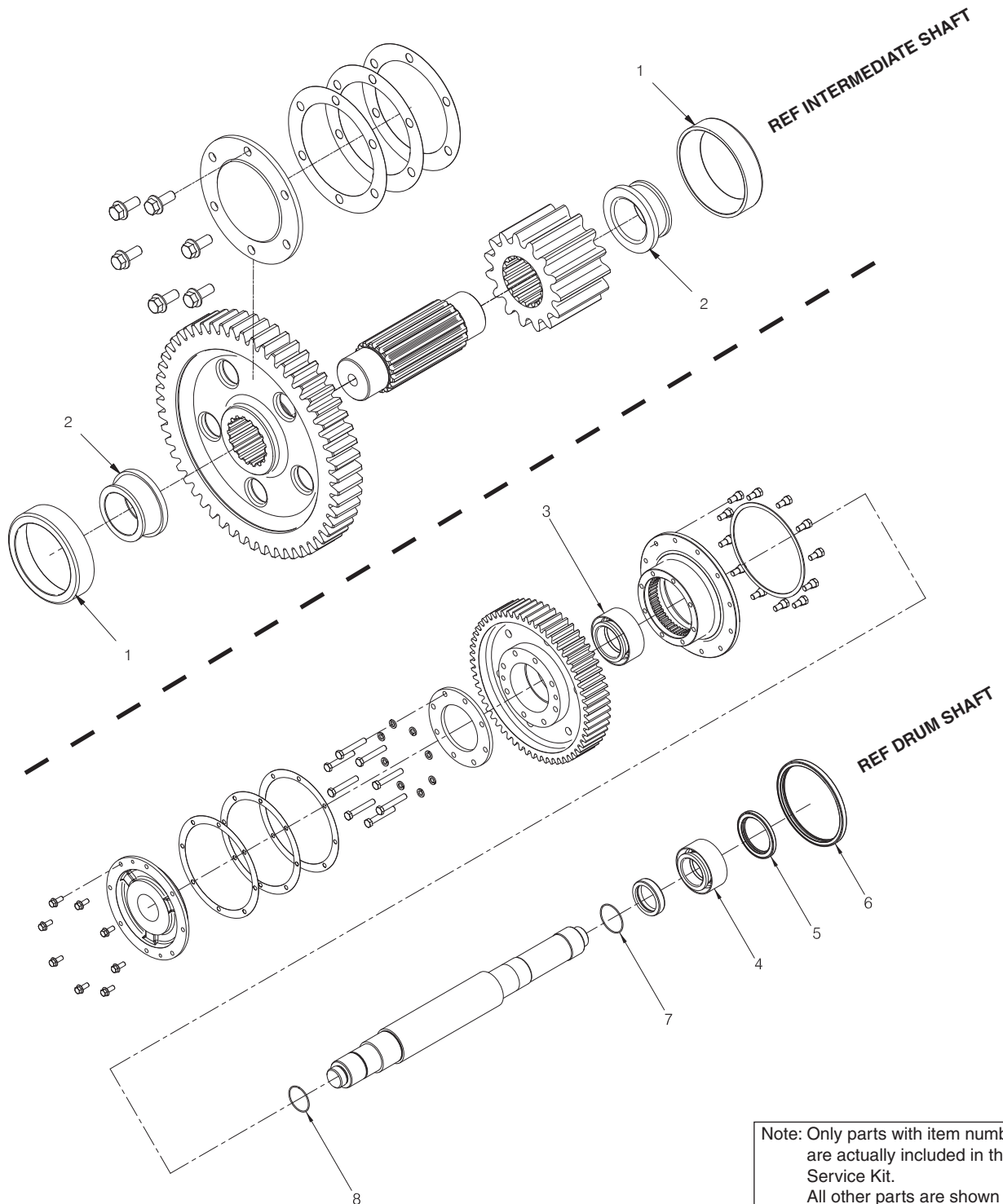
Clutch Shaft Bearing Kit: 2311163

Gear Ratio #9



Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
2311163 Clutch Shaft Bearing Kit							
1	230351W	2	. Bearing Cup	7	2303556W	1	. Bearing Cone
2	225262W	1	. Bearing Cone	8	2303650W	1	. Bearing, Needle
3	230407W	1	. Bearing, Roller	9	225255W	2	. Shim, .005"
4	44326W	1	. Bearing - Ball	10	225256W	2	. Shim, .007"
5	2303554W	4	. Bearing Cup	11	225259W	2	. Shim, .005"
6	2303555W	4	. Bearing Cone	12	225260W	2	. Shim, .007"

Drum & Intermediate Shaft Bearing and Seal Kit



Item	Part No.	Qty	Description	Item	Part No.	Qty	Description
Drum & Int Shaft Bearing and Seal Kit							
1	2311164			5	44484W	1	. Seal, Oil
2	30091W	2	. Cup, Bearing	6	141149W	1	. Seal, Oil
3	230309W	2	. Cone, Bearing	7	46629W	1	. O-Ring
4	96437W	1	. Bearing, Roller	8	15881W	1	. O-Ring
	78022W	1	. Bearing, Roller				

Miscellaneous Parts

In addition to the kits listed on the previous pages, Allied Systems Company recommends that you stock the following items.

Allied P/N	Description	Quantity	Order Quantity
2302963W	Assembly, Gear Pump - Ratios 1, 3	1	
2302989W	Assembly, Gear Pump - Ratio 9	1	
2315807	Valve, Relief	1	
2310260	. Kit, Seal	1	
2310252	Valve, Cartridge	2	
2310258	. Kit, Seal	1	
2315808	Valve, Proportional	3	
254396	. Kit, Seal	1	
2310253	Valve, Cartridge	1	
254400	. Kit, Seal	1	
2311558	Coil, Valve - 24VDC	3	
2310259	. Kit, Seal	1	
2315811	Coil, Proportional - 24VDC	3	
95959W	Pin, Drawbar	1	
2303221W	Pin, Retaining	1	

Wire Rope Assemblies

In addition to the kits listed on the previous pages, Allied Systems Company recommends that you stock the following items.

Allied P/N	Description	Length	Will Fill Drum To:	Order Quantity
WR7-234J	Wire Rope Assembly, 7/8", EIPS	234 ft	2/3 Capacity (Recommended)	
WR7-354J	Wire Rope Assembly, 7/8", EIPS	354 ft	Full Capacity	
YS7-234JWS	Wire Rope Assembly, 7/8", EEIPS	234 ft	2/3 Capacity (Recommended)	
YS354JWS	Wire Rope Assembly, 7/8", EEIPS	354 ft	Full Capacity	
WR8-182J	Wire Rope Assembly, 1", EIPS	182 ft	2/3 Capacity (Recommended)	
WR8-275J	Wire Rope Assembly, 1", EIPS	275 ft	Full Capacity	
YS8-182JWS	Wire Rope Assembly, 1", EEIPS	182 ft	2/3 Capacity (Recommended)	
YS8-275JWS	Wire Rope Assembly, 1", EEIPS	275 ft	Full Capacity	
WR9-145J	Wire Rope Assembly, 1-1/8", EIPS	145 ft	2/3 Capacity (Recommended)	
WR9-220J	Wire Rope Assembly, 1-1/8", EIPS	220 ft	Full Capacity	
YS9-145JWS	Wire Rope Assembly, 1-1/8", EEIPS	145 ft	2/3 Capacity (Recommended)	
YS9-220JWS	Wire Rope Assembly, 1-1/8", EEIPS	220 ft	Full Capacity	
YS9-145JOS	Wire Rope Assembly, 1-1/8", EEIPS	145 ft	2/3 Capacity (Recommended)	
YS9-220JOS	Wire Rope Assembly, 1-1/8", EEIPS	220 ft	Full Capacity	

Specialized Tools

Order these specialized tools for installation, maintenance and service of your winch(es).

Allied P/N	Description	Order Quantity
X-201962	Lifting Device	
X-203345	Clutch Shaft Locknut Socket	
X-203346	Clutch Shaft Driver	
X-203348	Lifting Eye	

Section 6
Numerical Index

108877W - 224023W76

224024W - 231115777

2311157 - 41216W78

41216W - YS9-220JWS79

Part No.	Page No.	Item	Part No.	Page No.	Item	Part No.	Page No.	Item	Part No.	Page No.	Item
108877W	18	220	141149W	30	307	165489W	39	55	196003W	45	13
108877W	20	220	141149W	73	6	16559W	39	14	196004W	45	7
108877W	66	15	141325W	30	322	16559W	44	1.37	196006W	45	14
108877W	67	15	141348W	22	12	16561W	39	164	196009W	45	18.7
110174W	44	1.17.9	141348W	23	12	16561W	44	1.33	196022W	39	19
110931W	14	22	141348W	24	12	16568W	39	90	196022W	44	1.26
110932W	14	23	141357W	30	480	16602W	10	11	196022W	64	6
110933W	14	24	142761W	2	354	16602W	44	1.5	196025W	27	4
118361W	45	11	142761W	3	407	166396W	4	12	196026W	27	23
118365W	45	18.1	142761W	64	3	166396W	7	2.5	196279W	2	47
123270W	14	21	142809W	56	13	166396W	9	2.5	196279W	3	47
12447W	30	296	142809W	57	13	166905W	45	18.5	196376W	18	237
12447W	32	1.3	14500W	39	63	16805W	39	4	196376W	20	237
12915W	25	380	14595W	2	50	16805W	44	1.4	196435W	22	13
12915W	68	6	14595W	3	50	16828W	39	20	196435W	23	13
12916W	16	79	14595W	39	89	16828W	39	82	196435W	24	13
12940W	26	563	14595W	45	17	16828W	44	1.28	198385W	39	73
12940W	27	12	14668W	39	64	16829W	39	86	19901W	22	
12940W	68	5	14668W	45	24	16923W	39	62	199594W	27	24
12940W	70	1	14723W	39	18	16948W	39	79	200454W	20	527
12944W	17	77	14723W	44	1.41	169671W	16	61	201431	39	26
129563W	7	1.6	14761W	39	16	169671W	17	61	201431	44	1.47
129563W	9	1.6	14761W	44	1.39	16984W	14	9	201800W	39	30
129563W	44	1.35	15027W	45	8	16987W	39	65	202947	39	50
12963W	14	16	15070W	7	2.8	16989W	39	13	203549	25	167
1300780W	39	10	15070W	9	2.7	16989W	39	80	203549	26	167
1300780W	39	161	15113W	52	4	17038W	39	88	203549	64	2
1300780W	44	1.1	15156W	14	12	17040W	39	406	203550	32	1.25
1300780W	44	1.17.2	15158W	18	231	17040W	44	4.7	207563	32	1.3
1308406W	14		15158W	20	231	170987W	45	18.2	209405	39	107
1310819W	7	2.6	15158W	39	74	17300W	39	68	209411	44	1.46
1310819W	9	2.8	15158W	44	1.53	17309W	39	25	209412	44	1.24
1314435W	20	546	15160W	30	328	173604W	30	310	209639W	39	29
131982W	30	325	15160W	32	1.23	173606W	30	315	209639W	44	1.49
131982W	32	1.2	151646W	64	4	173606W	32	1.12	209750	39	105
1321665W	10	2	15166W	56	15	174559W	18	206	209790	39	103
133469W	44	1.22	15166W	57	15	174561W	18	226	21014W	18	227
133898W	17	75	15216W	39	92	174561W	20	226	21014W	20	227
133918W	25	381	15272W	2	48	174561W	66	11	21014W	66	10
133926W	27	7	15272W	3	48	174561W	67	11	21014W	67	10
133927W	27	8	15272W	56	12	177951W	39	23	210769	44	1.29
133927W	68	4	15272W	57	12	177951W	44	1.44	211560	44	1.34
134070W	30	316	15303W	14	19	178402W	14	25	212718	39	106
134070W	32	1.13	15305W	14	4	178402W	18	230	21420W	2	356
134071W	30	317	15307W	18	229	178402W	20	230	21420W	3	409
134071W	32	1.14	15307W	20	229	178403W	44	1.52	214219	44	1.25
134072W	30	318	15314W	45	16	18001W	39	11	214316	44	1.8
134072W	32	1.15	15319W	2	355	18001W	44	1.36	214495W	20	512
134074W	28	255	15319W	3	408	18127W	52	3	219172W	39	1
134075W	28	256	15483W	45	25	18515W	44	1.2	219172W	44	1.1
134076W	28	257	15860W	45	5	18526W	44	1.19	220153	39	405
134078W	16	58	15881W	30	326	186460W	64	5	220153	44	4.6
134078W	17	58	15881W	32	1.21	18671W	56	16	221569W	32	1.29
134079W	16	59	15881W	73	8	18671W	57	16	221641W	30	314
134079W	17	59	15887W	4	5	18717W	49	1.15	221641W	32	1.11
134081W	25	162	15887W	7	1.4	18717W	51	61	221711W	3	414
134081W	26	162	15887W	9	1.4	18717W	53	19	221711W	20	526
134082W	25	163	15962W	45	10	192956W	2	365	221724W	4	11
134082W	26	163	16001W	56	11	192956W	3	365	221725W	9	1.3
134083W	25	164	16001W	57	11	193912W	27	22	221771W	3	413
134083W	26	164	16373W	24	11	194090W	14	11	221771W	20	525
137852W	10	7	16463W	39	101	19581W	39	17	222262W	2	49
137852W	44	1.23	164703W	39	53	19581W	44	1.4	222262W	3	49
137852W	54	161	16484W	45	6	195992W	45	3	222381W	39	166
138750W	39	402	16541W	39	66	195993W	45	4	222402W	44	1.9
138750W	44	4.3	16541W	44	1.18	195995W	45	9	222505W	39	52
139W	39	91	16543W	39	404	195997W	45	18.11	223428	20	513
140184W	27	5	16543W	44	1.17.6	196000W	45	18.9	224023W	18	228
140288W	39	110	16543W	44	4.5	196002W	45	18.6	224023W	20	228

Part No.	Page No.	Item	Part No.	Page No.	Item	Part No.	Page No.	Item	Part No.	Page No.	Item
224024W	18	222	2300935W	63	2	2303556W	72	7	2304360W	39	167
224024W	20	222	2300935W	64	12	2303557W	26	553	2304366W	44	1.54
224191	54	164	2300936W	39	2	2303557W	70	6	2304569W	51	64
224790W	22	1	2300936W	44	1.2	2303558W	26	554	2304604W	53	18
224790W	23	1	2300962W	2	357	2303558W	70	7	2304708W	2	333
224790W	24	1	2300962W	3	410	2303562W	20	528	2304823W	39	98
224791W	18	224	2301055W	51	65	2303563W	20	528	2304879W	51	66
224791W	20	224	2301706W	56	6	2303564W	20	528	2305114W	39	160
224793W	22	9	2301706W	57	6	2303565W	20	531	2305114W	44	1.17.1
224793W	23	9	2301726W	56	2	2303567W	26	555	2305132W	44	
224793W	24	9	2301726W	57	2	2303568W	26	555	2305199W	51	68
224793W	66	5	2301727W	56	8	2303569W	26	555	2305201W	52	1
224793W	67	5	2301727W	57	8	2303571W	26	559	2305202W	51	60
224793W	67	20	2301934W	56	1	2303571W	70	5	2305202W	52	
224794W	22	10	2301934W	57	1	2303572W	26	560	2305203W	51	69
224794W	23	10	2301942W	56	10	2303572W	70	4	2305270W	2	335
224794W	24	10	2301942W	57	10	2303573W	24	15	2305270W	3	403
224796W	39	401	2301943W	56	5	2303574W	20	521	2305276W	20	590
225065W	4	2	2301943W	57	5	2303574W	24		2305277W	26	591
225232W	39	69	2301944W	56		2303612W	20	524	2305412W	54	104
225233W	39	22	2301945W	57		2303635W	20	528	2305418W	44	1.17.10
225233W	44	1.43	2302109W	39	170	2303636W	20	528	2305504W	44	1.17.11
225255W	18	238	2302363W	32	1.24	2303637W	26	555	2305986W	39	97
225255W	20	238	2302622W	25	110	2303638W	26	555	2305987W	44	1.16
225255W	71	7	2302623W	18	111	2303650W	20	539	2305988W	44	1.55
225255W	72	9	2302938W	18	203	2303650W	72	8	2306029W	20	528
225256W	18	240	2302963W	39	400	2303651W	20	508	2306030W	20	528
225256W	20	240	2302963W	47		2303654W	30	375	2306041W	20	528
225256W	71	8	2302963W	61		2303660W	9	3.3	2306421W	9	1.1
225256W	72	10	2302963W	74		2303661W	7	3.4	2306703W	49	1.1
225257W	18	241	2302989W	39	400	2303661W	9	3.4	2306703W	53	
225257W	20	241	2302989W	44	4.1	2303662W	7	3.5	2307554W	4	6
225259W	18	233	2302989W	48		2303662W	9	3.5	2307715W	39	125
225259W	20	233	2302989W	61		2303664W	7	3.6	2307715W	39	152
225259W	71	9	2302989W	74		2303664W	9	3.6	2307715W	44	3.3
225259W	72	11	2303001W	45	1	2303677W	39	403	2307730W	39	407
225260W	18	234	230309W	28	282	2303677W	44	4.4	2307730W	44	4.8
225260W	20	234	230309W	73	2	2303848W	2	165	2307740W	39	163
225260W	71	10	230310W	25	160	2303848W	2	343	2307740W	44	1.17.4
225260W	72	12	230310W	26	160	2303848W	3	165	2307758W	44	1.17.8
225261W	18	235	230310W	69	2	2303848W	3	405	2307919W	54	142
225261W	20	235	230310W	70	2	2303848W	18	245	2310015	39	162
225262W	18	242	230311W	25	159	2303848W	20	245	2310015	44	1.17.3
225262W	20	242	230311W	26	159	2303848W	25	165	2310252	46	3
225262W	71	5	230311W	69	1	2303848W	26	165	2310252	74	
225262W	72	2	230311W	70	3	2303848W	28	250	2310253	46	5
225264W	18	232	2303221W	2	4	2303848W	30	319	2310253	74	
225264W	20	232	2303221W	3	4	2303848W	32	1.16	2310258	46	
225701W	39	71	2303221W	74		2303902W	2	352	2310258	74	
225704W	39	126	230351W	18	236	2303902W	3	406	2310259	74	
225704W	44	3.2	230351W	20	236	2303923w	45	18.4	2310260	46	
225711W	39	77	230351W	71	2	2303982W	52	2	2310260	74	
225851	4	10	230351W	72	1	2303982W	53		2310475	27	30
225851	7	1.2	2303541W	39	401	230405W	18	205	2310544	20	528
225851	7	2.7	2303541W	44	4.2	230405W	71	1	2310545	20	528
225851	9	1.2	2303542W	20	501	230407W	18	212	2310546	26	555
225851	9	2.4	2303543W	20	509	230407W	20	547	2310547	26	555
226359W	64	7	2303545W	20	507	230407W	71	3	2310570	66	1
226445W	45	15	2303547W	20	502	230407W	72	3	2310570	67	1
226450W	39	76	2303548W	20	523	2304112W	44		2310605	26	555
2300008W	10	1	2303549W	26	581	2304112W	54	165	2310606	26	555
2300183W	39	165	2303551W	26	566	2304112W	63	1	2310715	18	209
2300301W	39	85	2303552W	26	552	2304339W	53	3	2310891	30	324
2300301W	45		2303553W	26	561	2304340W	53	4	2310891	32	1.19
2300308W	45	2	2303554W	20	532	2304341W	53	5	2311155	68	
2300544W	67	16	2303554W	72	5	2304342W	53	6	2311155	61	
2300935W	39	3	2303555W	20	533	2304343W	53	7	2311156	66	
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2311162	71		2317308	49	1.11	267499W	22	7	316823W	47	5
2311162	61		2317346	3	401	267499W	23	7	316823W	48	5
2311163	72		2317359	54	141	267499W	66	4	328715W	22	5
2311163	61		2317364	3	412	267499W	67	4	328715W	23	5
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2311167	62		2317441	44	1.17.5	271744W	7	2.4	328715W	66	2
2311167	61		2317447	3	401	271744W	9	2.6	328715W	67	2
2311168	63		2317456	44	5.1	274464W	30	292	328715W	67	17
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2312259	44	1.32	2317626	44	1.57	276095W	39	60	35575W	66	14
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2314804	64	8	254400	46		286044W	3	153	383158W	4	15
2314805	2	336	254400	74		286044W	64	11	383158W	7	2.9
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