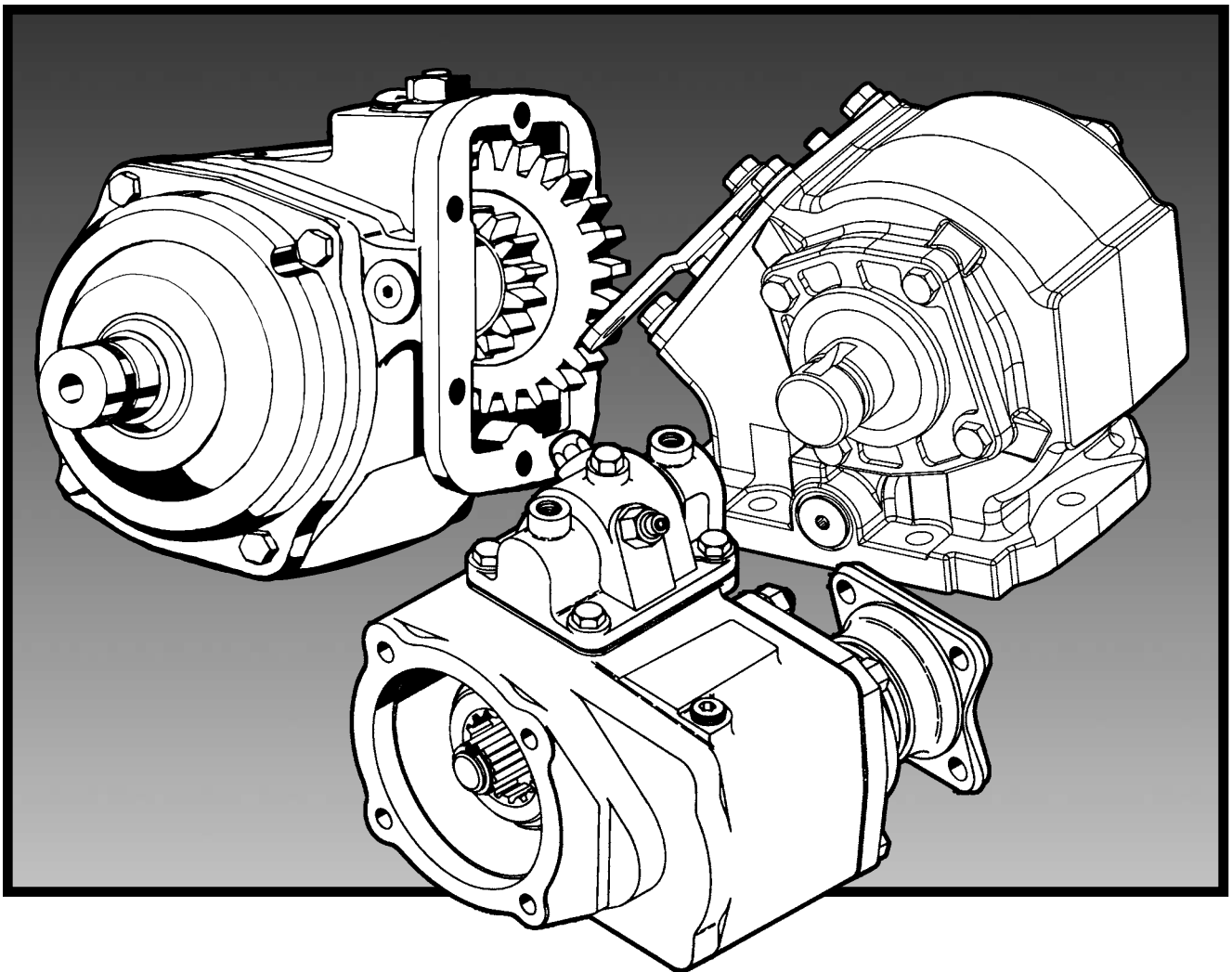


Parts List 2230 Series

Effective: February 9, 2009



 **WARNING**

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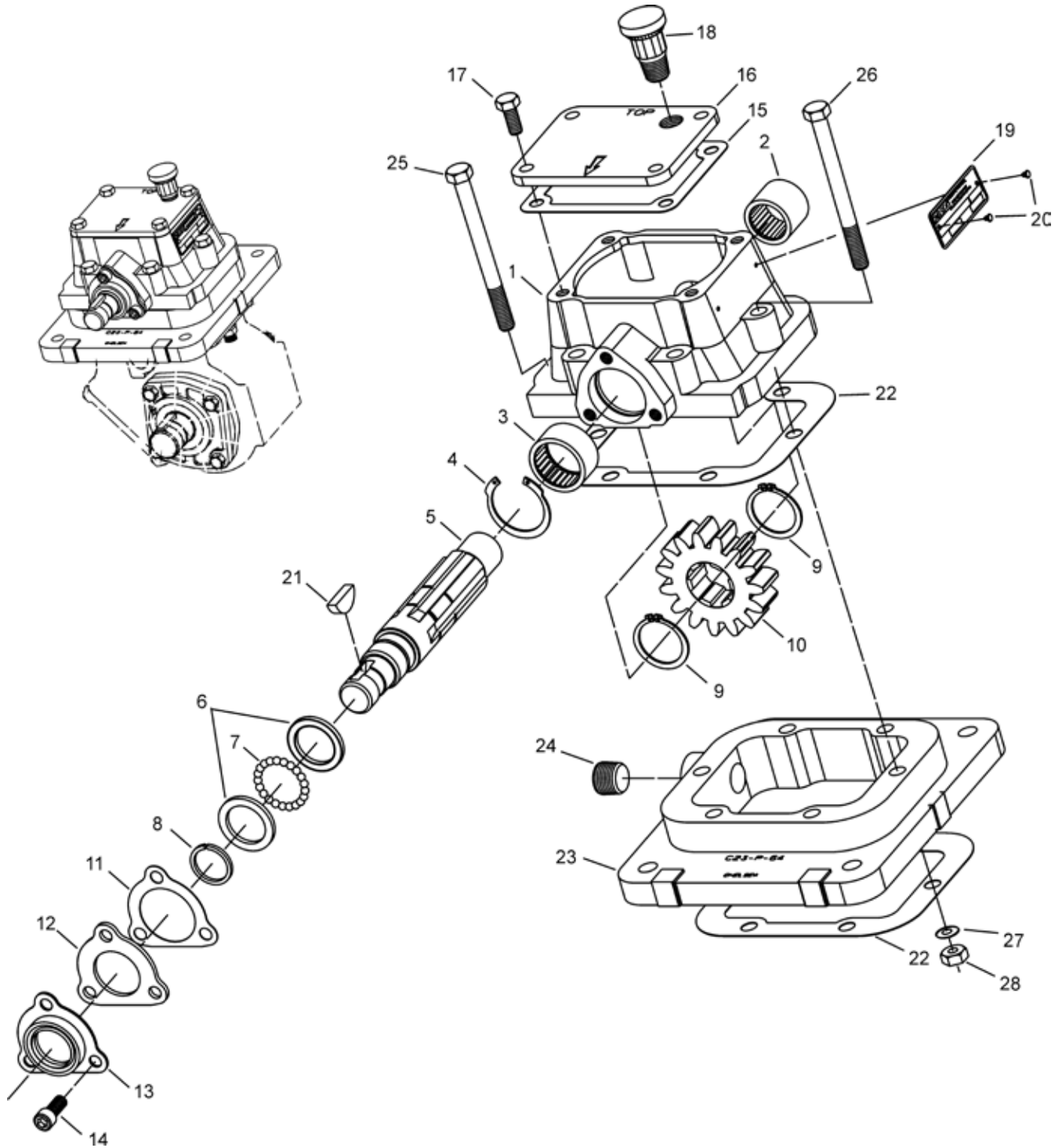
Offer of Sale

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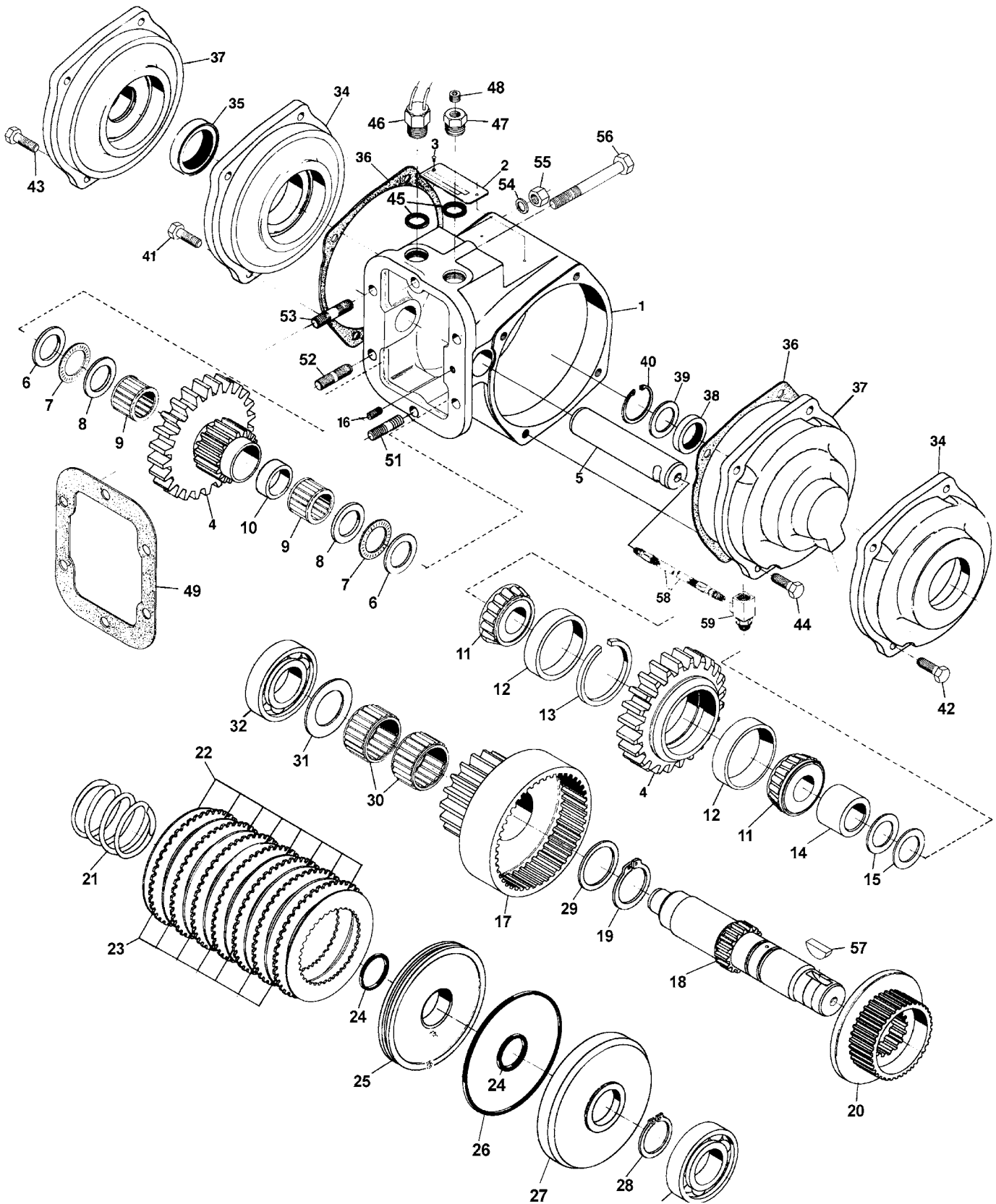
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100 Series Bill of Materials

Item	Part Number	Description	Quantity
	328853X	Special 100 Series Sub-Assembly	
		(Include 328852-1X and 328281-73X plus items 9-20)	1
	328852-1X	Housing And Bearing Assembly (Include items 1-4)	1
1	1-P-393	Housing	1
2	550895	Needle Bearing	1
3	550135	Needle Bearing	1
4	379124	Lockring	1
	328281-73X	Drive Shaft Assembly (Includes Items 5-8)	
5	3-P-350	Drive Shaft	1
6	31-P-79	Thrust Washer	2
7	378108	Ball Bearings	21
8	378331	Lockring	1
9	378333	Lockring	2
10	2-P-290	Drive Gear	1
11	22-P-69	Gasket	1
12	378106	Thrust Plate	1
13	28-P-226	Thrust Bearing Cap and Seal	1
14	378447-4	Capscrew, Socket Head w/Patch (.3125" -18 x .750")	3
15	35-P-58	Cover Plate Gasket	1
16	34-P-110	Cover Plate	1
17	378430-6	Capscrew, Hex Head w/Patch (.3125" - 18 x .625")	3
18	378513	Breather	1
19	68-P-2	Name Plate, English	1
20	378422	Drive Screws	2
21	500007-24	Woodruff Key	1
		Spacer Mounting Plate	
22	35-P-9-1	Mounting Gasket (.010 Thick)	A.R.
22	35-P-9-2	Mounting Gasket (.020 Thick)	A.R.
23	23-P-55	Spacer Mounting Plate	1
24	379064	Pipe Plug (Patched) (.500" - 14 N.P.T.)	1
25	500398-39	Hex Cap (.375" - 16 x 6.250")	1
26	378431-31	Capscrew, Hex Head w/ Patch (.375" - 16 x 4.250")	5
27	500357-11	Lockwasher	6
28	500370-3	Hex Nut (.375" - 16)	6

A.R. As Required



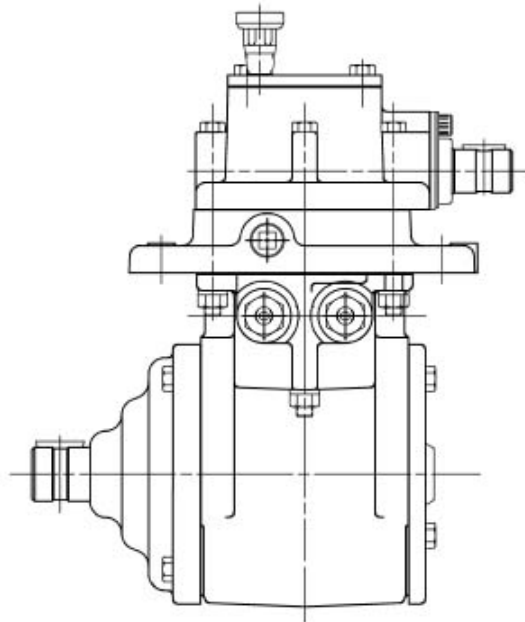
Item	Part Number	Description	Quantity
1	1-P-437	Housing	1
2	68-P-2	Name Plate	1
3	378422	Drive Screw	2
4	5-P-1144	Gear, Input	1
5	9-P-55	Idler Shaft (Standard No pressure Lube)	1
6	31-P-61	Thrust Washer (Idler Shaft .031")	2
7	560920	Needle Thrust Bearing (Idler Shaft)	2
8	31-P-62	Thrust Washer (Idler Shaft .125")	2
9	550886	Needle Bearing Assembly (Idler Shaft)	2
10	14-P-54	Spacer, Needle Bearing (Idler Shaft)	1
(Items 11 thru 15 used in "U" Ratios Only)			
11	560968	Bearing Cone	2
12	550221	Bearing Cup	2
13	379313	Lockring	1
14	4-P-143	Spacer, Input Gear	1
15	14-P-65-1	Bearing Adjusting Spacer (.054"-.056")	A.R.
	14-P-65-2	Bearing Adjusting Spacer (.059"-.061")	A.R.
	14-P-65-3	Bearing Adjusting Spacer (.064"-.066")	A.R.
	14-P-65-4	Bearing Adjusting Spacer (.069"-.071")	A.R.
	14-P-65-5	Bearing Adjusting Spacer (.074"-.076")	A.R.
16	378452-7	Set Screw (.250"-20 x .500")	1
17	2-P-640	Gear, Output	1
	See Chart Pg.8	Driveshaft and Clutch Assembly (Includes items 18 thru 28)	1
	328926-1X	"XD" Output/Ass'y (1.250" round), Ass'y 2	
	328926-2X	"XD" Output/Ass'y (1.250" round), Ass'y 1	
18	3-P-677	Output Shaft ("XD" Ass'y 2)	1 or
	3-P-679	Output Shaft ("XD" Ass'y 1)	1
19	379746	Snap Ring	1
20	2-P-458	Inner Clutch Gear	1
21	37-P-39	Clutch Spring	1
22	379485	Friction Disc	8
23	379595	Clutch Plate	7
24	28-P-244	O-Ring	2
25	379325	Piston	1
26	28-P-178	O-Ring	1
27	379323	Clutch Back-up Cylinder	1
28	378576	Snap Ring	1
29	14-P-49	Spacer	1
30	560918	Roller Bearing	2
31	31-P-57	Thrust Washer	1
32	550010	Ball Bearing	2
34		Bearing Cover, Open End	1
	21-P-451	For Ass'y 1 ("XD") Output	
	21-P-297	For Ass'y 2 ("XD") Output	
35	28-P-225	Oil Seal, Output ("XD")	1
	28-P-230	Oil Seal, Output ("XY")	1
36	22-P-53	Gasket, Bearing Cover	2
		Bearing Cover Assembly, Closed End	1
	328806X	For Ass'y 1 (Includes items 37 thru 40)	
	328807X	For Ass'y 2 (Includes items 37 thru 40)	
37		Bearing Cover, Closed End	1
	21-P-295	For Ass'y 1	
	21-P-299	For Ass'y 2	
38	28-P-119	Oil Seal	1

A.R. — As Required

Continued on next page.

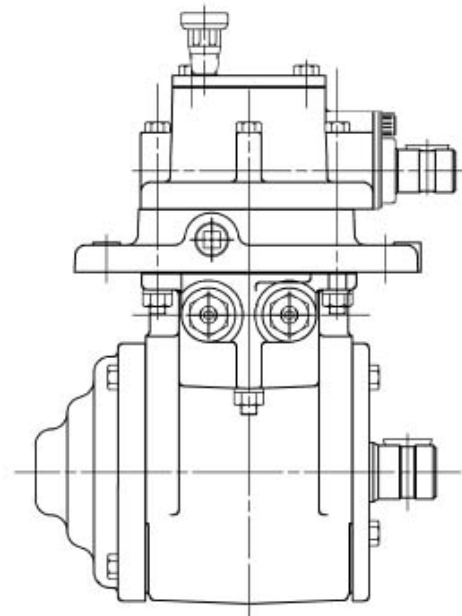
Item	Part Number	Description	Quantity
39	378811	Back-up Plate.....	1
40	378849	Snap Ring	1
41	378430-10	Capscrew, Hex Head (.3125" - 18 x 1.000") (Ass'y 2 "XD")	4
42	378430-12	Capscrew, Hex Head (.3125" - 18 x 1.250") (Ass'y 1 "XD")	4
43	378430-10	Capscrew, Hex Head (.3125" - 18 x 1.000") (Closed Ass'y 3 & 5)	4
44	378430-12	Capscrew, Hex Head (.3125" - 18 x 1.250") (Closed Ass'y 4 & 6)	4
45	28-P-171	O-Ring.....	2
46	379243	Speed Sensor (Transducer) Included w/optional Overspeed Control	1 or
	379917	Speed Sensor (Transducer) Included w/optional Overspeed Control	1
		(Allison 1000, 2000/2400)	
47	379242	Adapter Plug With Speed Limiter	1
		Without Speed Limiter.....	2
48	379231	Pipe Plug (.125" - 27 N.P.T.F.) With Speed Limiter	1
		Without Speed Limiter.....	2
		LOOSE PARTS	
57	500007-24	Woodruff Key ("XD").....	1
58	328075X	Pressure Lube Hose	1

Assembly Arrangements



Ass'y 1

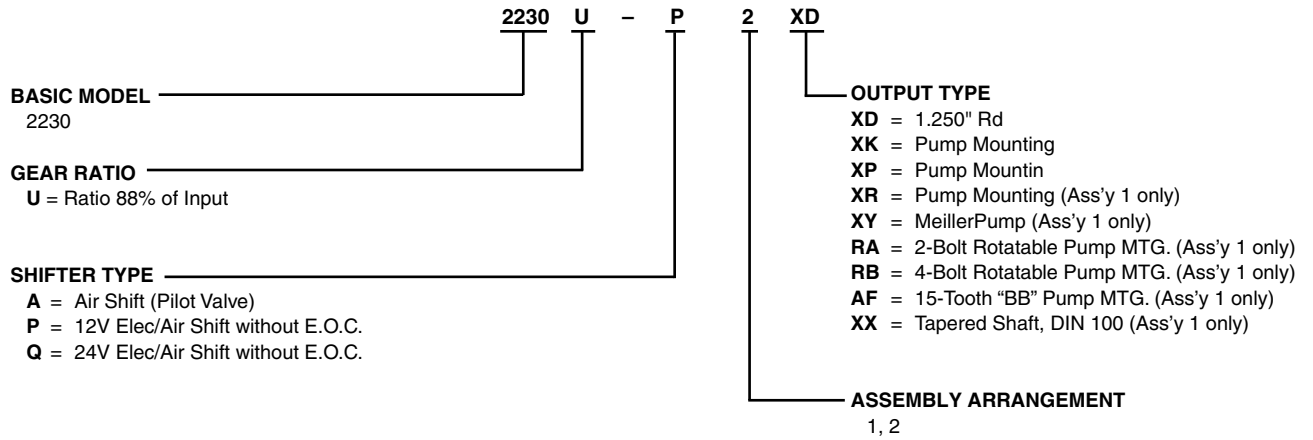
NOTE: 2230 Ass'y-1 uses 230 Ass'y-3



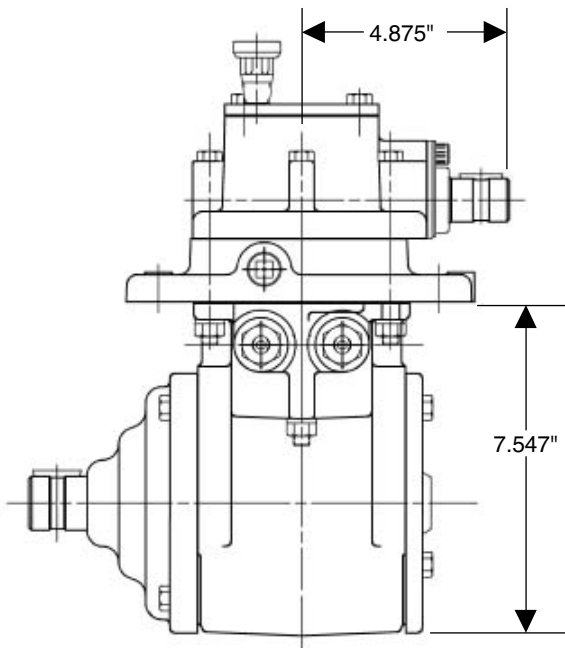
Ass'y 2

NOTE: 2230 Ass'y-2 uses 230 Ass'y-6

230 Model Number Designation

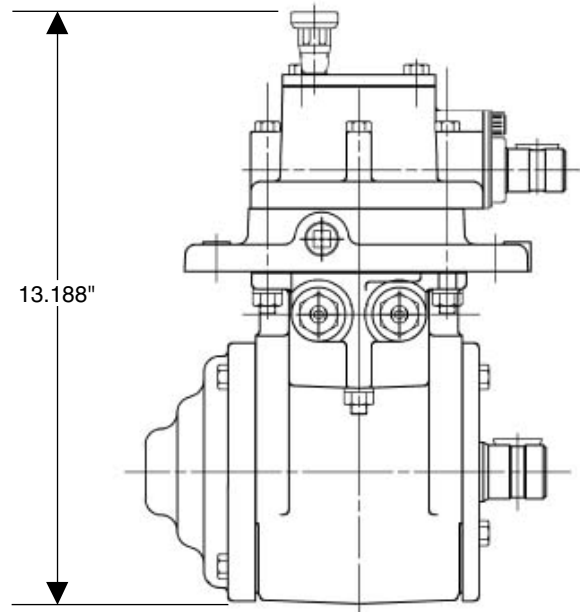


Case Dimensions



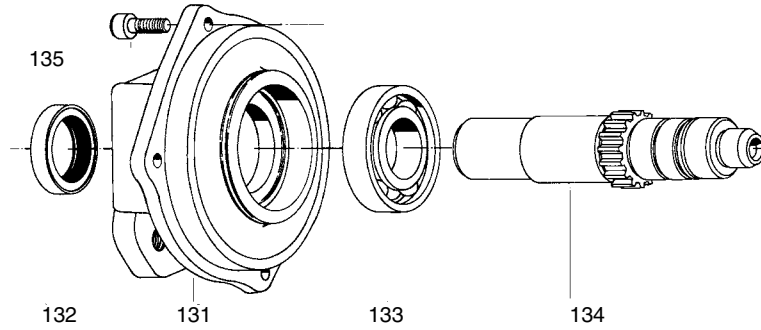
Ass'y 1

NOTE: 2230 Ass'y-1 uses 230 Ass'y-3



Ass'y 2

NOTE: 2230 Ass'y-2 uses 230 Ass'y-6



Pump Mounting Suffix (See Note)	Flange Item 131	Bearing Cap Gasket	Seal Item 132	Bearing Item 133	Driveshaft & Clutch		Output Shaft Spacer	Hex Socket Head Screw Item 135
					Assembly Number	Output Shaft Item 134 **		
XK Assembly 1 Assembly 2	21-P-445	22-P-53 (2)	28-P-225	550010	328926-4X	3-P-686		378447-7
	21-P-303	22-P-53 (2)	28-P-225	550010	328926-3X	3-P-678		378447-6
XP Assembly 2 Assembly 1	21-P-443	22-P-53 (2)	28-P-225	550010	328926-4X	3-P-686		378447-7
	21-P-301	22-P-53 (2)	28-P-225	550010	328926-3X	3-P-678		378447-6
XR Assembly 1	21-P-447	22-P-53 (2)	28-P-225	550010	328926-5X	3-P-703		378447-7
XX Assembly 1	21-P-297	22-P-53 (2)	28-P-225	550010	328926-6X	3-P-787		378430-12
XY Assembly 1	21-P-468	22-P-53 (2)	28-P-230	550010	328926-8X	3-P-825		378447-7
AF Assembly 1	21-P-445	22-P-53 (2)	28-P-225	550010	328926-9X	3-P-896		378447-7
RA Assembly 1	21-P-628	22-P-53 (2)	28-P-225	550010	328926-5X	3-P-703		378447-6
RB Assembly 1	21-P-572	22-P-53 (2)	28-P-225	550010	328926-5X	3-P-703		378447-6
AF Assembly 2	21-P-628	22-P-53 (2)	28-P-225	550010	328926-10X	3-P-957		378447-7

The Rotatable Flanges attach to the 21-P-447 Flange

* - 328748X Pump to Flange Mounting Kit Must Be Used with "R" Suffix

Kit Contains: (4) 378430-11 Hex Head Capscrews (.3125" - 18 x 1.125")

(4) 378919 Washers (Special)

(4) 45-P-11 Bushing Guide

** - Assembly Includes the Pump Shaft Shown Plus Items 19 thru 29 on page 3

Pump Flange Conv. Kits Bill of Materials

2230 Series

Conversion Kit Number	Ass'y	Flange Type	Shaft Type
329160-11X	XD to XK	3 & 5	S.A.E. "B" 2 or 4 Bolt Flange
329160-12X	XD to XP	3 & 5	S.A.E. "A" 2 Bolt (4.188 BC) w/ S.A.E. "B" 4 Bolt (5.0" BC)
329160-13X	XD to XR	3 & 5	For Parker P16 "S" Flange Pumps
329160-14X	XD to XY	3 & 5	DIN 5462
329160-15X	XD to XK	4 & 6	S.A.E. "B" 2 or 4 Bolt Flange
329160-16X	XD to XP	4 & 6	S.A.E. "A" 2 Bolt (4.188 BC) w/ S.A.E. "B" 4 Bolt (5.0" BC)
329160-33X	XD to RA	3 & 5	S.A.E. "B" 2 Bolt Rotatable Flange
329160-34X	XD to RB	3 & 5	S.A.E. "B" 4 Bolt Rotatable Flange
329160-35X	XR to RA	3 & 5	S.A.E. "B" 2 Bolt Rotatable Flange
329160-36X	XR to RB	3 & 5	S.A.E. "B" 4 Bolt Rotatable Flange
329160-43X	XD to XX	All	DIN 100
329160-50X	XD to AF	3 & 5	S.A.E. "B" 2 or 4 Bolt Flange
329160-51X	XD to AF	4 & 6	S.A.E. "B" 2 or 4 Bolt Flange

Bills of Material for Pump Flange Conversion Kits

Part Number	Description	Quantity
329160-11X	Conversion Kit (XD to XK)	
378576	Snap Ring.....	1
378849	Retainer Ring	1
379688	Grease Packet.....	1
379746	Lock Ring	1
21-P-445	Bearing Cap	1
22-P-53	Bearing Cap Gasket.....	2
28-P-178	O-Ring	1
28-P-179	Oil Seal.....	1
28-P-225	Oil Seal.....	1
28-P-244	O-Ring.....	2
378447-7	Socket Head Capscrew (.312" - 18 x 1.250").....	4
3-P-686	Pump Shaft.....	1
329160-12X	Conversion Kit (XD to XP)	
378576	Snap Ring.....	1
378849	Retainer Ring	1
379688	Grease Packet.....	1
379746	Lock Ring	1
21-P-443	Bearing Cap	1
22-P-53	Bearing Cap Gasket.....	2
28-P-178	O-Ring	1
28-P-179	Oil Seal.....	1
28-P-225	Oil Seal.....	1
28-P-244	O-Ring.....	2
378447-7	Socket Head Capscrew (.312" - 18 x 1.250").....	4
3-P-686	Pump Shaft.....	1
329160-13X	Conversion Kit (XD to XR)	
378576	Snap Ring.....	1
378849	Retainer Ring	1
379688	Grease Packet.....	1
379746	Lock Ring	1
21-P-447	Bearing Cap	1
22-P-53	Bearing Cap Gasket.....	2
28-P-178	O-Ring.....	1
28-P-179	Oil Seal.....	1
28-P-225	Oil Seal.....	1
28-P-244	O-Ring.....	2
378447-7	Socket Head Capscrew (.312" - 18 x 1.250").....	4
3-P-703	Pump Shaft.....	1

Pump Flange Conv. Kits Bill of Materials

2230 Series

Part Number	Description	Quantity
329160-14X	Conversion Kit (XD to XY)	
378576	Snap Ring.....	1
378849	Retainer Ring	1
378898	Flat Head Socket Capscrew (.438" - 14 x 1.00").....	1
379335	Coupling, Splined	1
379688	Grease Packet.....	1
379746	Lock Ring	1
21-P-468	Bearing Cap	1
22-P-53	Bearing Cap Gasket.....	2
28-P-178	O-Ring.....	1
28-P-179	Oil Seal.....	1
28-P-230	Oil Seal.....	1
28-P-244	O-Ring.....	2
378447-7	Socket Head Capscrew (.312" - 18 x 1.250").....	4
3-P-825	Pump Shaft.....	1
329160-15X	Conversion Kit (XD to XK)	
378576	Snap Ring.....	1
378849	Retainer Ring	1
379688	Grease Packet.....	1
379746	Lock Ring	1
21-P-303	Bearing Cap	1
22-P-53	Bearing Cap Gasket.....	2
28-P-178	O-Ring.....	1
28-P-179	Oil Seal.....	1
28-P-225	Oil Seal.....	1
28-P-244	O-Ring.....	2
378447-6	Socket Head Capscrew (.312" - 18 x 1.00").....	4
3-P-678	Pump Shaft.....	1
329160-16X	Conversion Kit (XD to XP)	
378576	Snap Ring.....	1
378849	Retainer Ring	1
379688	Grease Packet.....	1
379746	Lock Ring	1
21-P-301	Bearing Cap	1
22-P-53	Bearing Cap Gasket.....	2
28-P-178	O-Ring.....	1
28-P-179	Oil Seal.....	1
28-P-225	Oil Seal.....	1
28-P-244	O-Ring.....	2
378447-6	Socket Head Capscrew (.312" - 18 x 1.00").....	4
3-P-678	Pump Shaft.....	1
329160-33X	Conversion Kit (XD to RA)	
378576	Snap Ring.....	1
378849	Retainer Ring	1
379688	Grease Packet.....	1
379746	Lock Ring	1
21-P-447	Bearing Cap	1
21-P-628	Pump Flange.....	1
22-P-53	Bearing Cap Gasket.....	2
28-P-178	O-Ring.....	1
28-P-179	Oil Seal.....	1
28-P-225	Oil Seal.....	1
28-P-244	O-Ring.....	2
378447-6	Socket Head Capscrew (.312" - 18 x 1.00").....	4
378447-7	Socket Head Capscrew (.312" - 18 x 1.250").....	4
3-P-703	Pump Shaft.....	1

Pump Flange Conv. Kits Bill of Materials

2230 Series

Part Number	Description	Quantity
329160-34X	Conversion Kit (XD to RB)	
378576	Snap Ring.....	1
378849	Retainer Ring	1
379688	Grease Packet.....	1
379746	Lock Ring	1
21-P-447	Bearing Cap	1
21-P-572	Pump Flange.....	1
22-P-53	Bearing Cap Gasket.....	2
28-P-178	O-Ring	1
28-P-179	Oil Seal.....	1
28-P-225	Oil Seal.....	1
28-P-244	O-Ring	2
378447-6	Socket Head Capscrew (.312" - 18 x 1.00").....	4
378447-7	Socket Head Capscrew (.312" - 18 x 1.250").....	4
3-P-703	Pump Shaft.....	1
329160-35X	Conversion Kit (XR to RA)	
21-P-628	Pump Flange	1
378447-6	Socket Head Capscrew (.312" - 18 x 1.00").....	4
329160-36X	Conversion Kit (XR to RB)	
21-P-572	Pump Flange	1
378447-6	Socket Head Capscrew (.312" - 18 x 1.00").....	4
329160-43X	Conversion Kit (XD to XX)	
378576	Snap Ring.....	1
378849	Retainer Ring	1
379111	Square Key.....	1
379746	Lock Ring	1
501181	Hex Nut	1
22-P-53	Bearing Cap Gasket.....	2
28-P-178	O-Ring	1
28-P-179	Oil Seal.....	1
28-P-225	Oil Seal.....	1
28-P-244	O-Ring	2
378430-10	Hex Capscrew (.312" - 18 x 1.00").....	4
378430-12	Hex Capscrew (.312" - 18 x 1.25").....	4
3-P-787	Pump Shaft.....	1
3-1-604	Companion Flange (Sold Separately).....	1
329160-50X	Conversion Kit (XD to AF)	
378576	Snap Ring.....	1
378849	Retainer Ring	1
379688	Grease Packet.....	1
379746	Lock Ring	1
21-P-445	Bearing Cap	1
22-P-53	Bearing Cap Gasket.....	2
28-P-178	O-Ring	1
28-P-179	Oil Seal.....	1
28-P-225	Oil Seal.....	1
28-P-244	O-Ring	2
378447-7	Socket Head Capscrew (.312" - 18 x 1.250").....	4
3-P-896	Pump Shaft.....	1

Pump Flange Conv. Kits Bill of Materials

2230 Series

Part Number	Description	Quantity
329160-51X	Conversion Kit (XD to AF)	
378576	Snap Ring.....	1
378849	Retainer Ring	1
379688	Grease Packet.....	1
379746	Lock Ring	1
21-P-303	Pump Flange.....	1
22-P-53	Bearing Cap Gasket.....	2
28-P-178	O-Ring.....	1
28-P-179	Oil Seal.....	1
28-P-224	Oil Seal.....	2
28-P-225	Oil Seal.....	1
378447-6	Socket Head Capscrew (.312" - 18 x 1.00").....	4
3-P-895	Pump Shaft.....	1

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2. Payment: Payment shall be made by Buyer net 30 days from the date of delivery of the items purchased hereunder. Amounts not timely paid shall bear interest at the maximum rate permitted by law for each month or portion thereof that the Buyer is late in making payment. Any claims by Buyer for omissions or shortages in a shipment shall be waived unless Seller receives notice thereof within 30 days after Buyer's receipt of the shipment.

3. Delivery: Unless otherwise provided on the face hereof, delivery shall be made F.O.B. Seller's plant. Regardless of the method of delivery, however, risk of loss shall pass to Buyer upon Seller's delivery to a carrier. Any delivery dates shown are approximate only and Seller shall have no liability for any delays in delivery.

4. Warranty: Seller warrants that the items sold hereunder shall be free from defects in material or workmanship for a period of:

(A) All Power Take-Off units 18 months from date of sale.

(B) Except 267, , 269, 277, 278, 246, 247, 250 and 859 series two (2) years from date of installation. **THIS WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO ITEMS PROVIDED HEREUNDER. SELLER MAKES NO OTHER WARRANTY, GUARANTEE, OR REPRESENTATION OF ANY KIND WHATSOEVER. ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO, MERCHANTABILITY AND FITNESS FOR PURPOSE, WHETHER EXPRESS, IMPLIED, OR ARISING BY OPERATION OF LAW, TRADE USAGE, OR COURSE OF DEALING ARE HEREBY DISCLAIMED. NOTWITHSTANDING THE FOREGOING, THERE ARE NO WARRANTIES WHATSOEVER ON ITEMS BUILT OR ACQUIRED WHOLLY OR PARTIALLY, TO BUYER'S DESIGNS OR SPECIFICATIONS.**

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6. Changes, Reschedules and Cancellations: Buyer may request to modify the designs or specifications for the items sold hereunder as well as the quantities and delivery dates thereof, or may request to cancel all or part of this order, however, no such requested modification or cancellation shall become part of the contract between Buyer and Seller unless accepted by Seller in a written amendment to this Agreement. Acceptance of any such requested modification or cancellation shall be at Seller's discretion, and shall be upon such terms and conditions as Seller may require.

7. Special Tooling: A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture items sold pursuant to this contract. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the items sold hereunder, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller shall have the right to alter,

discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

8. Buyer's Property: Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer or any other items which become Buyer's property, may be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer placing an order for the items which are manufactured using such property, Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

9. Taxes: Unless otherwise indicated on the face hereof, all prices and charges are exclusive of excise, sales, use, property, occupational or like taxes which may be imposed by any taxing authority upon the manufacture, sale or delivery of the items sold hereunder. If any such taxes must be paid by Seller or if Seller is liable for the collection of such tax, the amount thereof shall be in addition to the amounts for the items sold. Buyer agrees to pay all such taxes or to reimburse Seller therefore upon receipt of its invoice. If Buyer claims exemption from any sales, use or other tax imposed by any taxing authority, Buyer shall save Seller harmless from and against any such tax, together with any interest or penalties thereon which may be assessed if the items are held to be taxable.

10. Indemnity For Infringement of Intellectual Property Rights: Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Part 10. Seller will defend and indemnify Buyer against allegations of infringement of U.S. Patents, U.S. Trademarks, copyrights, trade dress and trade secrets (hereinafter 'Intellectual Property Rights'). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that an item sold pursuant to this contract infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If an item sold hereunder is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using said item, replace or modify said item so as to make it noninfringing, or offer to accept return of said item and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to items delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any item sold hereunder. The foregoing provisions of this Part 10 shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

If a claim is based on information provided by Buyer or if the design for an item delivered hereunder is specified in whole or in part by Buyer, Buyer shall defend and indemnify Seller for all costs, expenses or judgments resulting from any claim that such item infringes any patent, trademark, copyright, trade dress, trade secret or any similar right.

11. Force Majeure: Seller does not assume the risk of and shall not be liable for delay or failure to perform any of Seller's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter 'Events of Force Majeure'). Events of Force Majeure shall include without limitation, accidents, acts of God, strikes or labor disputes, acts, laws, rules or regulations of any government or government agency, fires, floods, delays or failures in delivery of carriers or suppliers, shortages of materials and any other cause beyond Seller's control.

12. Entire Agreement/Governing Law: The terms and conditions set forth herein, together with any amendments, modifications and any different terms or conditions expressly accepted by Seller in writing, shall constitute the entire Agreement concerning the items sold, and there are no oral or other representations or agreements which pertain thereto. This Agreement shall be governed in all respects by the law of the State of Ohio. No actions arising out of the sale of the items sold hereunder or this Agreement may be brought by either party more than two (2) years after the cause of action accrues.

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