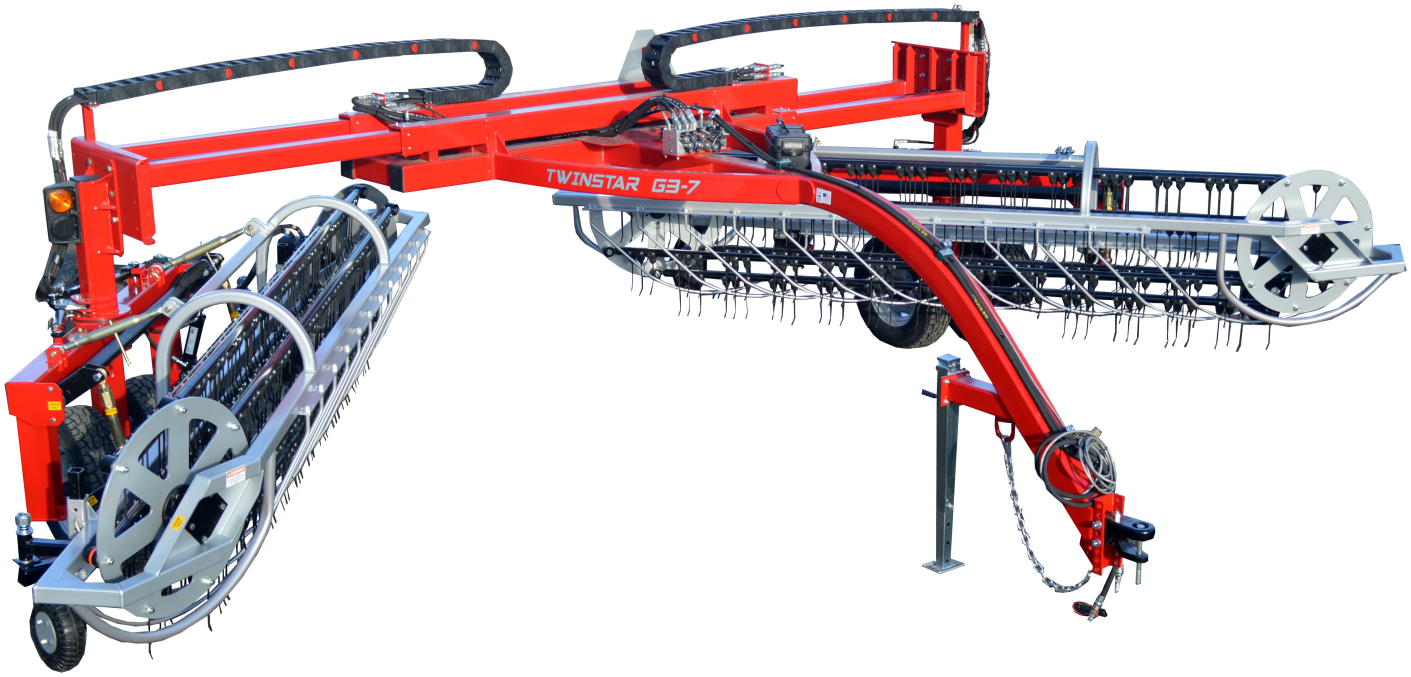
TWINSTAR

GENERATION 3 BASKET RAKE



MODEL 2027/2030G3-7

7-BAR SERIES

Serial #2137000 - 2137999

PARTS MANUAL

2021

NORTHSTAR
ATTACHMENTS, LLC

LIMITED WARRANTY

NORTHSTAR expressly warrants each new Twinstar Rake to be free from defects in material and workmanship under normal use and service for a period of one year after delivery to the original retail purchaser or first user of the product.

Our obligation under this warranty is limited to repairing and/or replacing, at our option, any part or parts within the applicable one year period, as set out above, which shall be returned by the owner to any Twinstar authorized dealer or to the factory and which upon examination shall disclose to our satisfaction to be defective.

We may, as an option, elect to grant adjustments in the field through an authorized representative and may thereby elect to waive the requirement that parts be returned to our factory.

A new warranty period is not established for replacements. Replacements are warranted for the remaining portion of the one-year original warranty period. The repair or replacement of defective parts under this warranty will be made without charge to the owner except for transportation.

Warranty does not cover tires, hydraulic valves, hydraulic cylinders, electric switches, or accessories and other parts not manufactured by us but supplied with or as a part of our product. We will, however, obtain and pass on any adjustments provided by the manufacturers of such parts under those manufacturer's warranties.

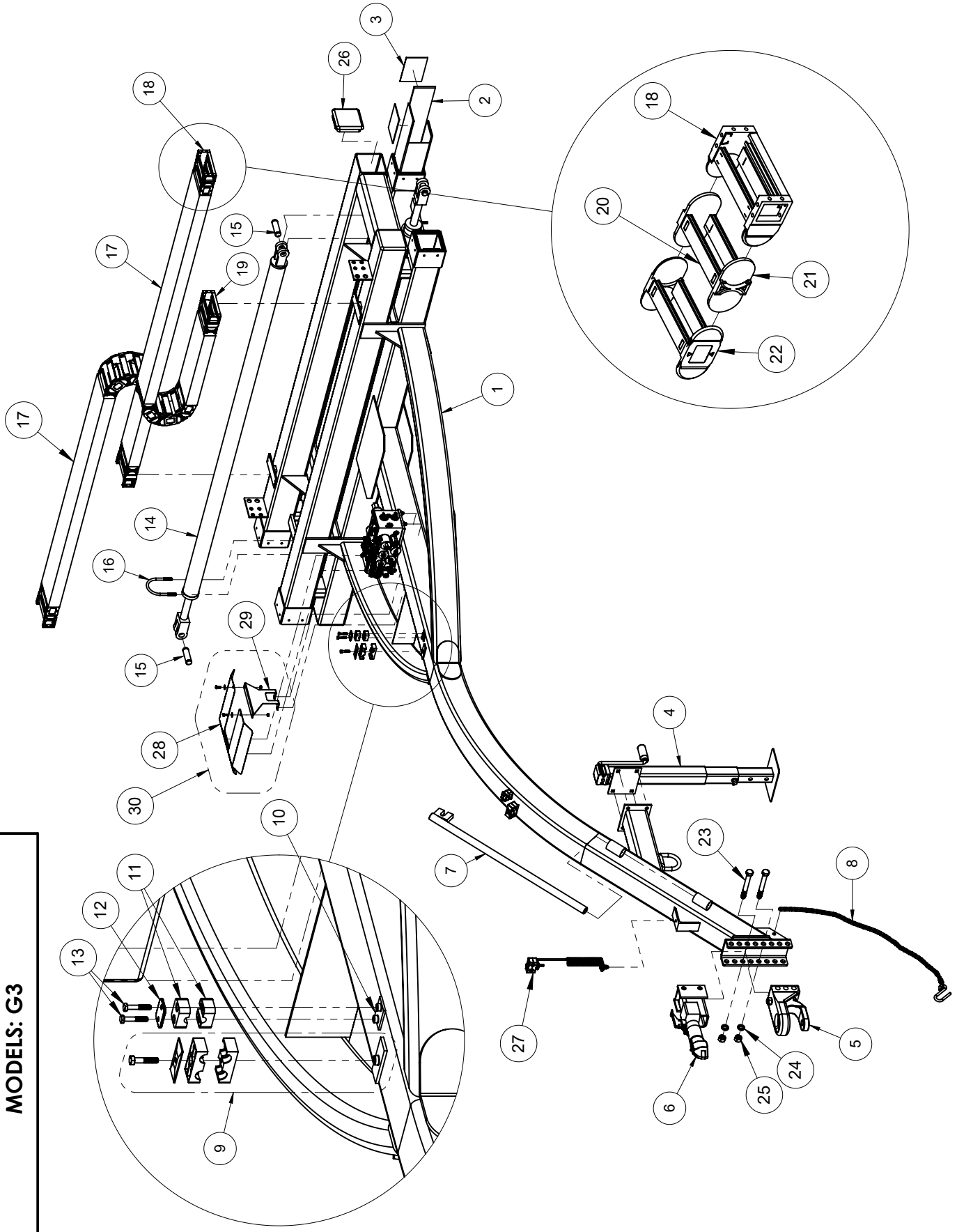
The provisions of this warranty do not apply to any product or parts, which have been subject to misuse, negligence or accident, or which have been repaired or altered outside of an authorized dealer in any way so as in the judgment would adversely affect its performance and reliability. Neither does this warranty apply to normal maintenance service and parts, or to normal deterioration due to wear and exposure.

WARRANTY VOID IF NOT REGISTERED
WITHIN 30 DAYS OF PURCHASE DATE

GENERATION 3 PARTS MANUAL

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MAIN FRAME ASSEMBLY
MODELS: G3

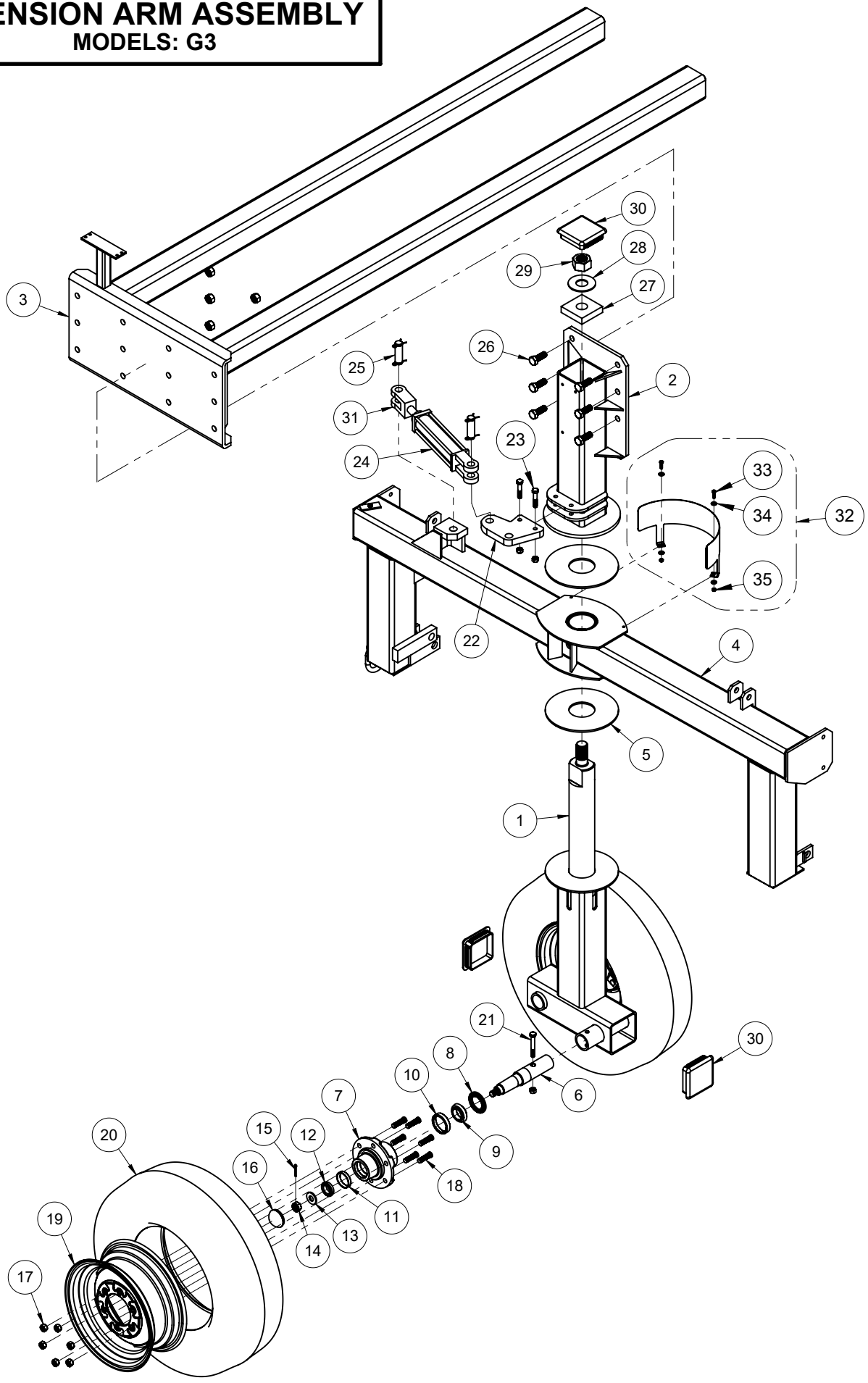


MAINFRAME ASSEMBLY

MODELS: G3

ITEM	QTY	PART NO	DESCRIPTION
1	1	HR-2030-G2-1	Main Frame
2	16	HR-0051-G2	Slide Tube Wear Strip 1/4” x 3 7/8”
3	8	HR-0055-G2	Shim
#	16	133-407-1	1/4" x 1 1/4" Socket Flat Head Machine Screw w/ 1/4" Nylock Nut (Shim Side) (not shown)
#	16	133-406-1	1/4" x 1" Socket Flat Head Machine Screw w/ 1/4" Nylock Nut (not shown)
	Ref	HR-0051HK	Slide Tube Wear Strip Hardware Kit, Includes 16 ea. of the above 2 items
4	1	HR-2052	Tongue Jack
5	1	HR-0490	Clevis Hitch Assembly
6	Ref	HR-2410P-1	2-5/16" Ball Hitch - optional for clevis hitch
7	1	HR-2001	Stripper Bar Adjustment Tool
8	1	HR-0341	Safety Chain - 37"
9	2	HR-0404	1/2” Clamp - Double Hose (w/ Mounting Plate & Top Plate)
10	2	HR-0700	Base Plate (1/2” Clamp - Single Hose)
11	4	HR-0417	1/2” Clamp - Single Hose
12	2	HR-0415	Top Plate (1/2” Clamp - Single Hose)
13	4	HR-0419	1/4” x 1-1/2” HHCS
14	2	HR-0318-1	Spread Cylinder Without External Hydraulic Line, Ram
15	4	HR-0317	Hyd Cyl Pin
16	2	332UB	3/8" x 3 1/2" U-Bolt
REF	1	HR-3200-1	Energy Chain - Set of 2, 6-5/8" Width Assembled Chains (SER# 1937169 & Later)
18	2	HR-3231	Energy Chain - Moving KMA Bracket For 6-5/8"" Width Chain
19	2	HR-3232	Energy Chain - Fixed KMA Bracket For 6-5/8"" Width Chain
20	80	HR-3113	Energy Chain - Crossbar For 6-5/8"" Width Chain
21	80	HR-3238	Energy Chain - Inside Plate For 6 5/8" Width Chain
22	80	HR-3239	Energy Chain - Outside Plate For 6 5/8" Width Chain
#	Ref	HR-3117	Energy Chain - Hose Seperator (not shown)
#	REF	HR-161133	Tie-Wrap Plate (not shown) (SER# 1937169 & Later)
#	1	700-0807-4023	Hydraulic Control Valve
23	2	007-215-1	3/4" x 6" NC Gr. 5 Cap Screw
24	2	072-014-1	3/4" Lock Washer
25	2	059-408-1	3/4" NC Hex Nut
26	4	HSR-0023	5" Plastic Cap
27	1	HR-161139	Hose Saver Spring Assembly
28	1	HR-161170	Valve Shield
29	1	HR-161169	Valve Shield Bracket
30	Ref	HR-161175	Valve Shield Assembly Kit
#	Ref	HR-R3605437	Spread Cylinder Seal Kit (not Shown)
#	1	WES002670	Light Kit
#	1	HR-0343	SMV Sign (not shown)
#	Ref	HR-2009	Slide Assembly Spray Lube
#	1	HR-2006	Tool Box (not shown)
#	Ref	HR-161142	Width Marker Decal Set

EXTENSION ARM ASSEMBLY
MODELS: G3

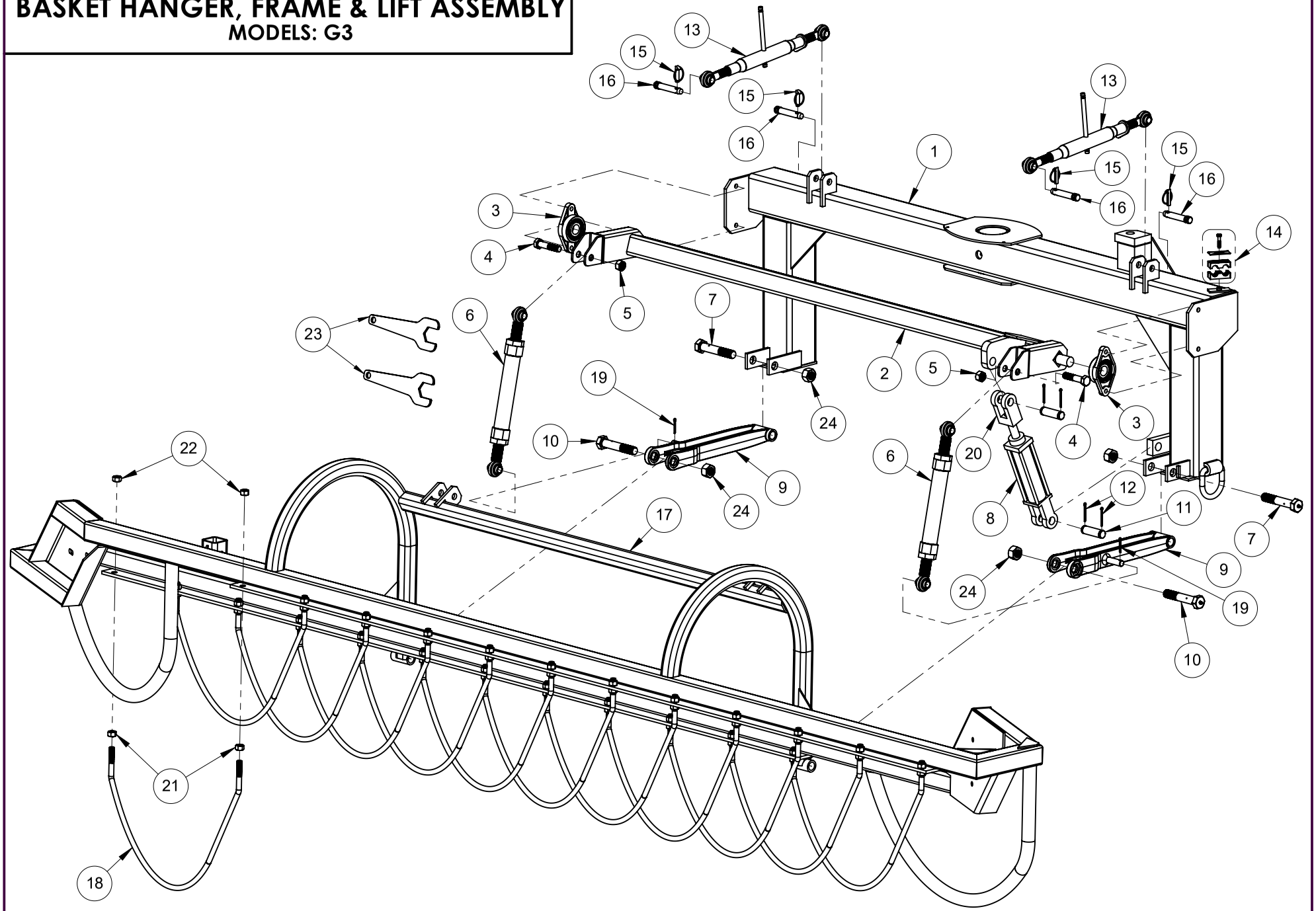


EXTENSION ARM ASSEMBLY

MODELS: G3

ITEM	QTY	PART NO	DESCRIPTION
1	1	HSR-2470	Wheel Tower Weldment - RH
1	1	HSR-2471	Wheel Tower Weldment - LH
2	2	HR-2510-3	Wheel Tower Receiver (with 8 13/16" wide hole spacing)
3	1	HSR-2100-1	Double Slide Weldment - RH
3	1	HSR-2101-1	Double Slide Weldment - LH
4	1	HR-2478-4	Basket Pivot Weldment - RH
4	1	HR-2479-4	Basket Pivot Weldment - LH
5	4	HR-0481	UHMW Pivot Plate
6*	4	HR-0083-1	Spindle RTM (002-328-1)
7*	4	HR-0082	Wheel Hub w/ Bearings & Seal (008-423-04)
8*	4	HR-0383	Spindle Seal 2" (010-162-00) (Cross Ref National 473463)
9*	4	HR-0378	Inner Bearing LM501349 (031-075-02)
10*	4	HR-0379	Inner Race LM501310 (031-075-01)
11*	4	HR-0377	Outer Race LM67010 (031-032-02)
12*	4	HR-0376	Outer Bearing LM67048 (031-032-01)
13*	4	HR-0382-1	Spindle Washer 1" (005-023-00)
14*	4	TR-161121	Spindle Nut 1"-14 (006-191-00)
REF*	4	TR-161120	Spindle Nut Retainer (006-190-00) (not shown)
16*	4	HR-0375-1	Grease Cap (yellow zinc) (021-089-00)
17*	24	HR-0380	Lug Nut 9/16" NF (006-060-00)
18*	24	ST562	9/16" NF - 2 1/4" Stud (007-280-00)
19	4	HR-0085	Wheel
20	4	HR-0707	LT235/75R15 Road Tire
21	4	HR-0704	1/2" x 3 1/2" NC Gr.5 Cap Screw w/ 1/2" Grip Nut
22	2	HR-0066C	Break Away Cylinder Mount
23	4	NA	5/8" x 2 1/2" NC Gr.5 Cap Screw w/ 5/8" Grip Nut
24	2	HR-0106-T	2” x 8” ASAE Hydraulic Cylinder Tuskers (No seal kit available)
25	4	HR-0317	Hydraulic Cylinder Pin
26	12	HR-0706	3/4" x 2 1/2" NC Gr.8 Cap Screw w/ 3/4" Grip Nut
27	2	HR-0472	Washer Plate
28	2	068-015-1	1 ½” USS Flat Washer
29	2	HR-0473	1 ½” SAE Nylock
30	2	HSR-0015	5" Plastic Cap (Modified)
31	2	HR-0314	Hydraulic Cylinder Rod Clevis
32	2	HR-161146	Angle Gauge Assembly Kit
33	4	NA	1/4" x 1" NC Gr. 5 Cap Screw
34	8	NA	1/4" USS Flat Washer
35	4	NA	1/4" NC Nylock Nut
*	2	E-1774	Complete Hub & Spindle Assembly (includes Items with *)

BASKET HANGER, FRAME & LIFT ASSEMBLY
MODELS: G3

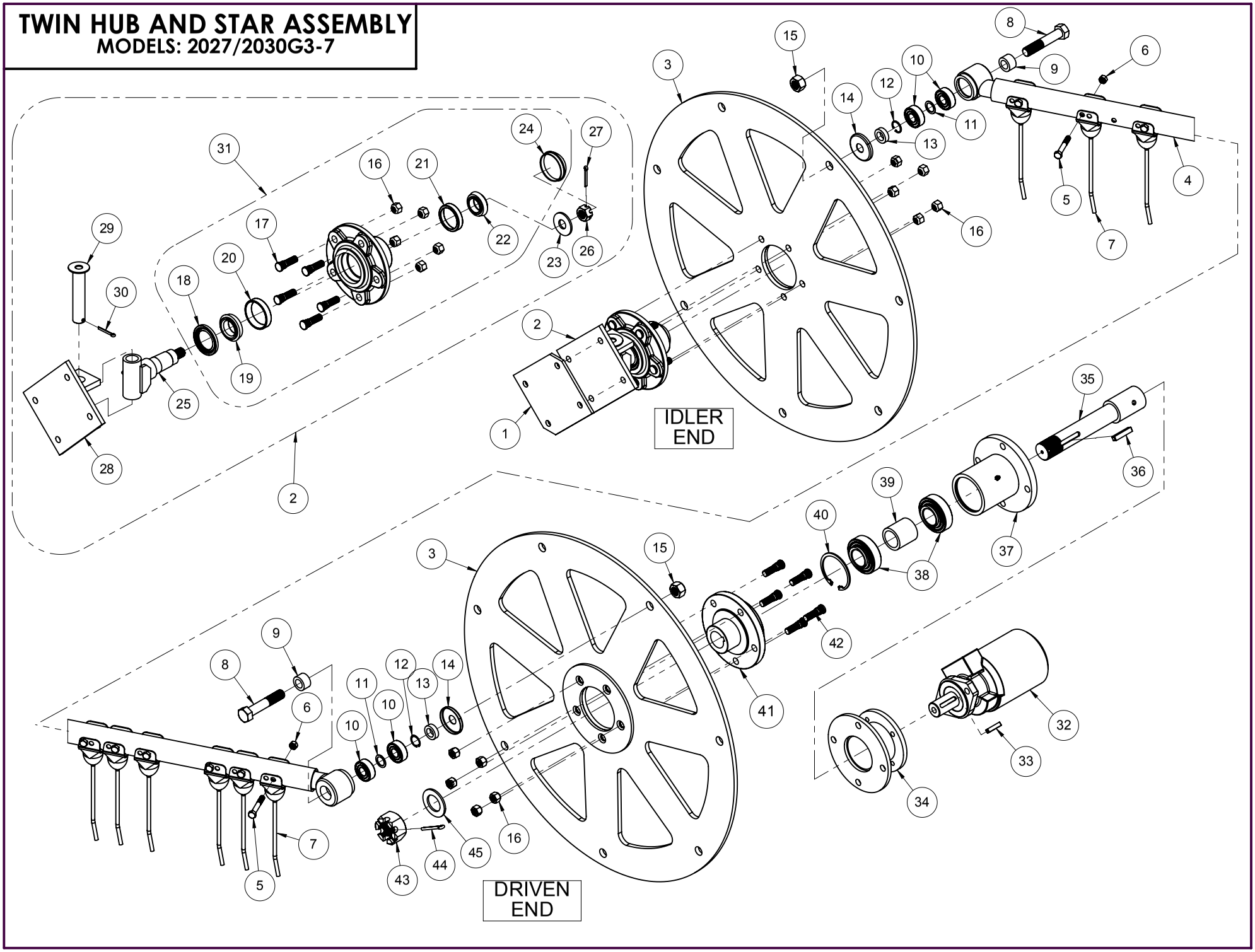


BASKET HANGER, FRAME AND LIFT ASSEMBLY

MODELS: G3

ITEM	QTY	PART NO	DESCRIPTION
1	1	HR-2478-4	Basket Pivot Weldment - RH
1	1	HR-2479-4	Basket Pivot Weldment - LH (Not Shown)
2	1	HR-2450-1	Suspension Axel - RH
2	1	HR-2451-1	Suspension Axel - LH (Not Shown)
3	4	HR-0232	Flange Bearing
4	4	G-75-3.5NCCS	3/4” x 3 1/2” HHCS
5	4	G-75NCHGN	3/4” Hex Grip Nut
6	4	HR-2003-B	Adjustable Link
7	4	HR-11118	Clevis Bolt, Bottom (Greasable)
8	2	HR-0107-T	2” x 6” Hydraulic Cylinder Tuskers (No seal kit available)
9	4	HR-2113-3	Parallel Arm
10	4	HR-11118	Clevis Bolt, Top (Greasable)
11	4	HR-0317	Hydraulic Cylinder Pin
12	12	HR-0159	Cotter Pin 1-1/2” length
13	4	HR-0200	Top Link
14	2	HR-0404	1/2" Double Hose Clamp w/ Mounting Plate
15	8	HR-0198	Lynch Pin - 7/16"
16	8	HR-0105	Pin
17	1	HR-2623-2	Basket Frame - 12' - RH
17	1	HR-2624-2	Basket Frame - 12' - LH (Not Shown)
17	Ref	HR-2621-2	Basket Frame - 10 1/2' - RH (Not Shown)
17	Ref	HR-2622-2	Basket Frame - 10 1/2' - LH (Not Shown)
18	24	HR-2630	Stripper Bar (RH & LH, 10 1/2' & 12' Basket)
19	4	HR-0703	Cotter Pin 1/4" x 1-1/2”
20	2	HR-0314	Hydraulic Cylinder Rod Clevis
21	48	G-625NCHN	5/8" NC Hex Nut
22	48	G-625NCHGN	5/8” Hex Grip Nut
23	2	HR-2004-A	Basket Adjustment Wrench
24	4	064-016-1	1" NC Nylock Nut
#	2	HR-2007	Tooth Tool

TWIN HUB AND STAR ASSEMBLY
MODELS: 2027/2030G3-7



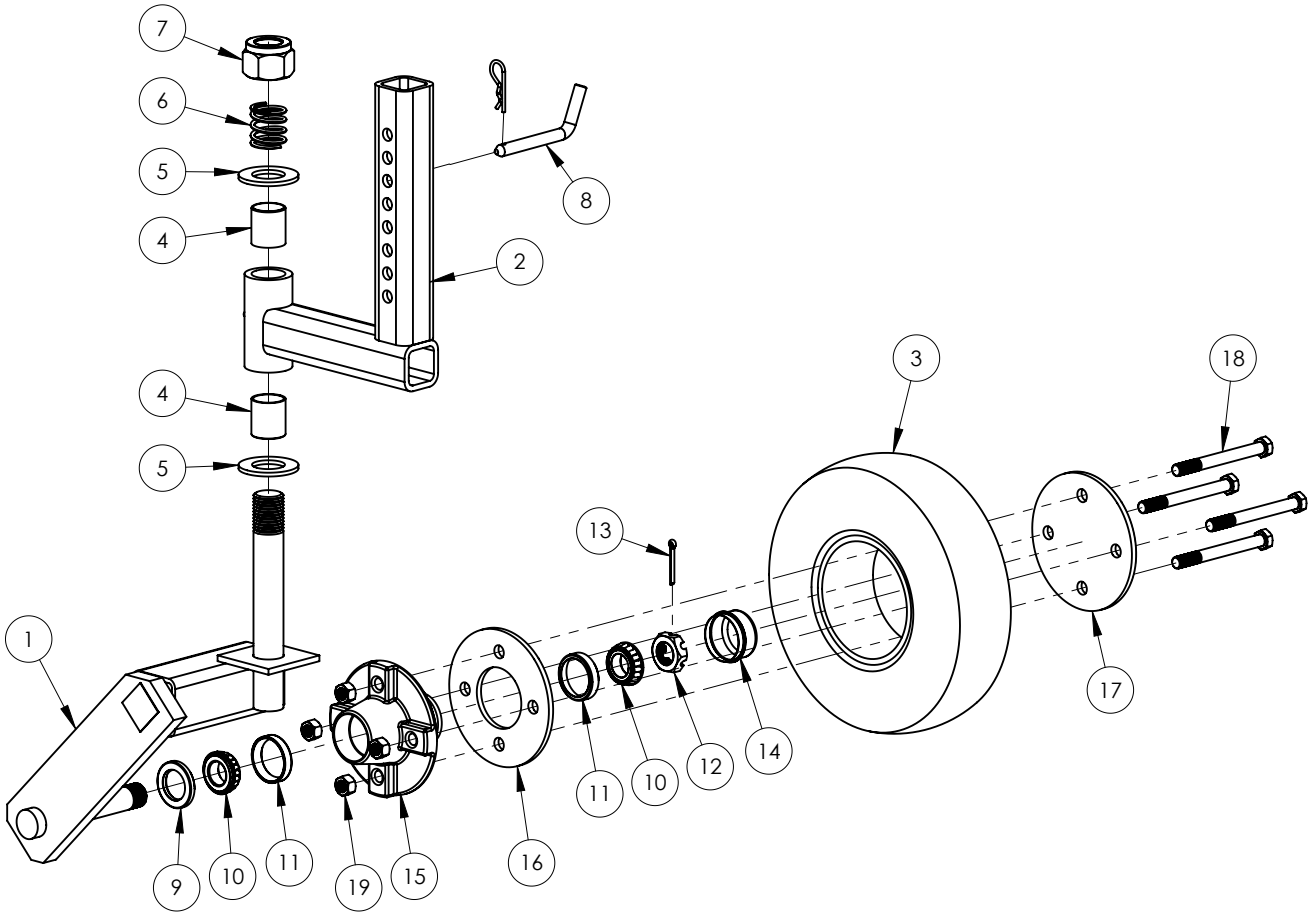
TWIN HUB AND STAR ASSEMBLY

MODELS: 2030G3-7

ITEM	QTY	PART NO	DESCRIPTION
1	2	HR-0647	Reinforcing Plate
2	1	HR-4162	Knuckle Assembly w/Hub - RH
2	1	HR-4163	Knuckle Assembly w/Hub - LH
3	4	HR-2640	G2 Star Wheel (7 Bar)
4	14	HR-4130	Tine Bar - 12 ft w/Bearings
4	Ref	HR-4120	Tine Bar - 10-1/2 ft w/Bearings (Not Shown)
5	350	HR-0181	3/8” x 2-1/2” HHCS
6	350	HR-0182	3/8” Lock Nut
7	175	HR-0168	Right Hand Rake Tooth
7	175	HR-0169	Left Hand Rake Tooth (Not Shown)
8*	28	HR-0176	3/4” NC x 4” HHCS
9*	28	HR-0174	Tine Bar Long Spacer
10*	56	HR-0172	Tine Bar Bearing Z9504
11*	28	HR-0184	Tine Bar Shim Washer
12*	28	HR-0173	Snap Ring
13*	28	HR-0177	Tine Bar Small Spacer
14*	28	HR-0175	Dust Shield
15*	28	HR-0178	3/4” NC Lock Nut
16	20	G-STN-509	1/2"-20 NF Lug Nut
17	10	G-ST-504	1/2"-20 NF - 2 1/4" Stud
18	2	G-SL-175	Bearing Seal (RTM SL-175)
19	2	G-LM48548	Inner Spindle Bearing LM48548
20	2	G-LM48510	Inner Bearing Race LM48510
21	2	HR-0377	Outer Bearing Race LM67010
22	2	HR-0376	Outer Spindle Bearing LM67048
23	2	HR-0382	3/4” Spindle Washer (RTM SW-750)
24	2	HR-0375	Grease Cap
25	2	HR-2652	Knuckle Spindle Weldment
26	2	HR-381	Spindle Nut 3/4” NF Slotted (RTM SN-750)
27	2	HR-0384	Cotter Pin 5/32” x 1 1/2”
28	1	HR-2650	Knuckle Base Plate – RH
28	1	HR-2651	Knuckle Base Plate – LH (Not Shown)
29	2	HR-2653	Knuckle Pin
30	2	HR-0159	Cotter Pin 3/16” x 1-1/2”
31	2	HR-2654	Hub w/Studs, Bearings and Seal
32	2	HR-0709-15	Hydraulic Motor, High Torque, Eaton #184-0131-002
33	2	HR-0357-15	5/16" x 1/4" Key Stock 1 1/4" Long
34	2	HR-2369	Adapter Housing
35**	2	HR-2351-1	Jack Shaft 1-1/4"
36**	2	HR-0356	3/8” Key Stock - 2"
37**	2	HR-2352	Bearing Housing
38**	4	HR-0355	Bearing CSA208-24
39**	2	HR-0363	Spacer
40**	2	HR-0354	Snap Ring
41**	2	HR-2361	Drive Hub Assembly w/Studs
42**	10	G-7-122	1/2"-20 NF - 2" Stud
43	2	HR-0367	1-1/2” Slotted Nut
44**	2	HR-0367-1	Cotter Pin 1/4” x 2”
45**	2	HR-0368	Machined Washer 2-1/2" OD x 1-1/2” ID X 3/16"
*	Ref	HR-4125	Tine Bar Bearing Assembly
**	2	HR-4361	Bearing Housing Assembly
	Ref	HR-0165-3	Seal Kit For Eaton Motors

GAUGE WHEEL ASSEMBLY (optional)

HR-5612-G3 & HR-5712-G3

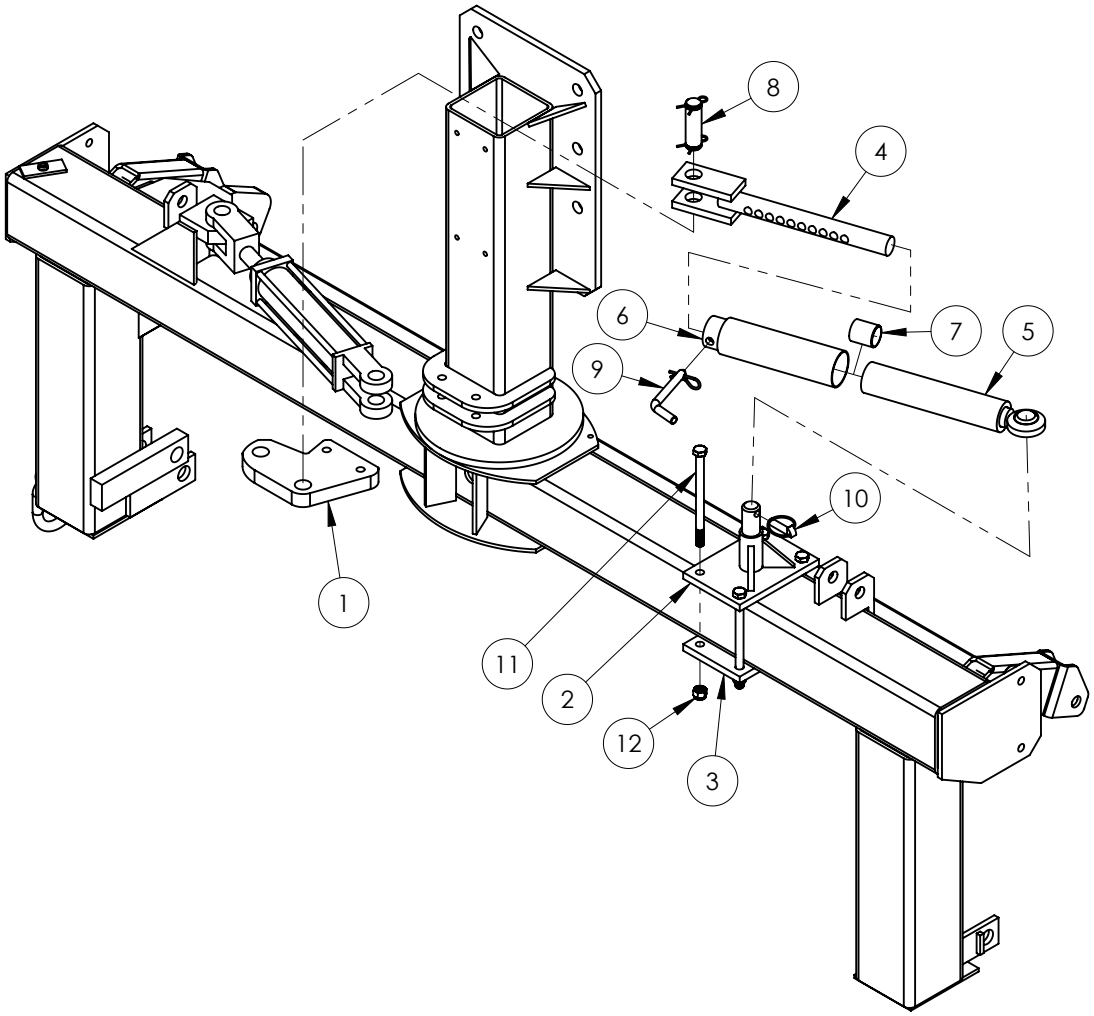


GAUGE WHEEL ASSEMBLY (optional)

HR-5612-G3 & HR-5712-G3

ITEM	QTY	PART NO	DESCRIPTION
1	1	HR-2458-R	Pivot Bracket Assembly - RH
1	1	HR-2457-R	Pivot Bracket Assembly - LH (not shown)
2	2	HR-2660	Pivot Arm Weldment
3	2	HR-2490	Rubber Tire
4	4	HR-0487	Plastic Bearing Insert
5	4	HR-0488	1-1/4" SAE Flat Washer
6	2	HR-0486	Spring
7	2	HR-0489	1-1/4" NC Nylock Nut
8	2	G-P71111	Pin w/Keeper
9	2	HR-0385	Seal - National 471750
10	4	HR-0386	Bearing - L44643
11	4	HR-0387	Race - L44610
12	2	HR-0403	Slotted Nut
13	2	HR-0159	Cotter Pin
14	2	HR-0388	Cap - 21-3
15	2	1-100-04-05	4 on 4 Hub w/Races
16	2	HR-2490-010	Backing Plate
17	2	HR-2490-011	Clamp Plate
18	8	007-015-1	1/2" X 5" Gr. 5 USS HHCS
19	8	067-105-1	1/2" Gr. B USS Lock Nut

HR-5820 ANGLE STOP ASSEMBLY

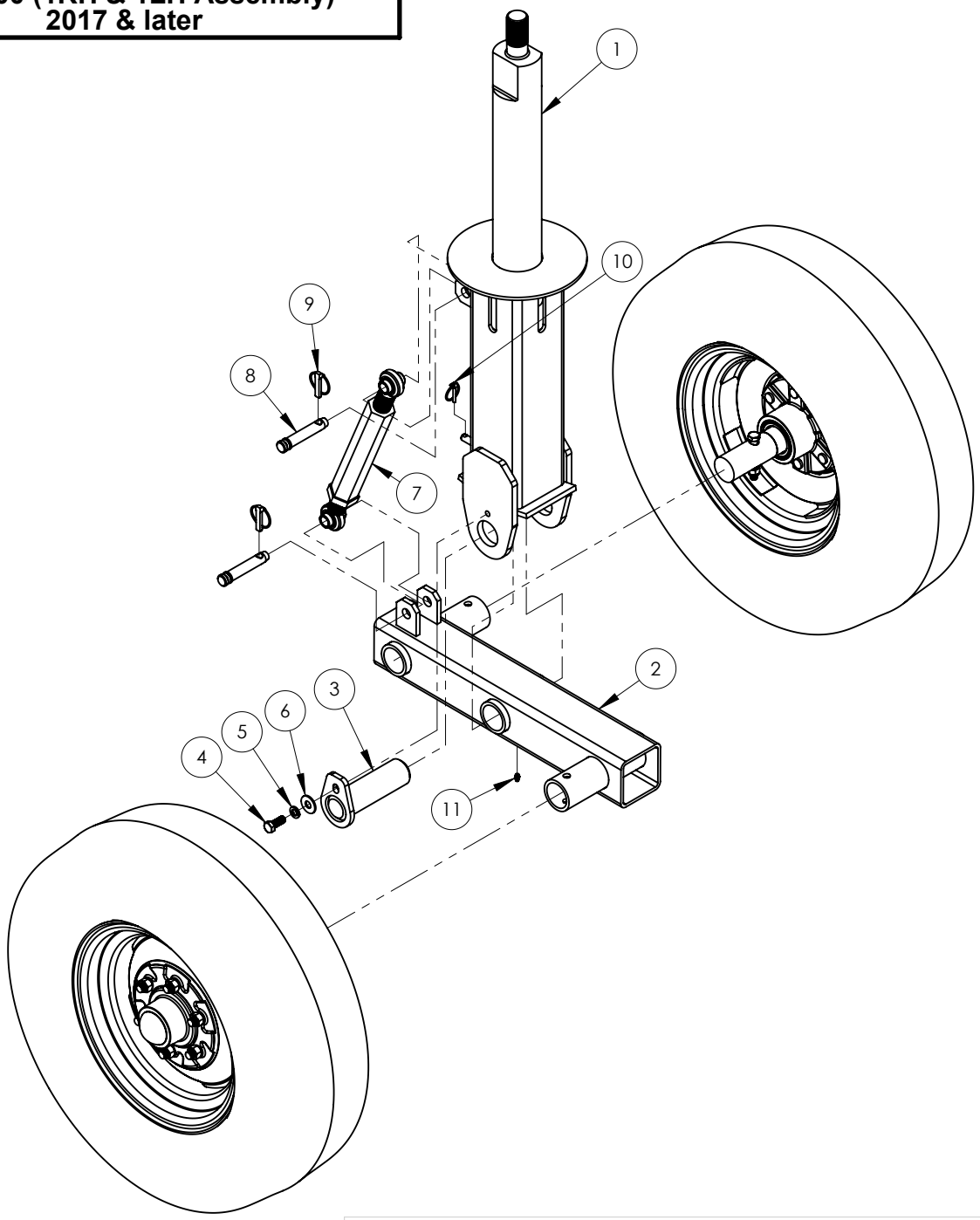


HR-5820 ANGLE STOP ASSEMBLY

FOR MODELS: G2 & G3 HAY RAKES

ITEM	QTY	PART NO	DESCRIPTION
1	2	HR-0066C	Angle Stop Mount
2	2	HR-0850	Bolt On Pivot Base
3	2	HR-0850-A	Clamp Plate
4	2	HR-0851	Inner Slide Shaft
5	2	HR-0852	Outer Slide
6	2	HR-0853	Stop Collar Sleeve
7	2	HR-0487	Plastic Bearing Insert
8	2	HR-0317	1" Pin
9	2	P71111	1/2" Pin w/Keeper
10	2	HR-0198	7/16" Lynch Pin
11	8	007-019-1	1/2" x 7" NC Gr. 5 Cap Screw
12	8	064-011-1	1/2" NC Nylock Nut

WALKING BEAM ASSEMBLY
HR-6000 (1RH & 1LH Assembly)
2017 & later

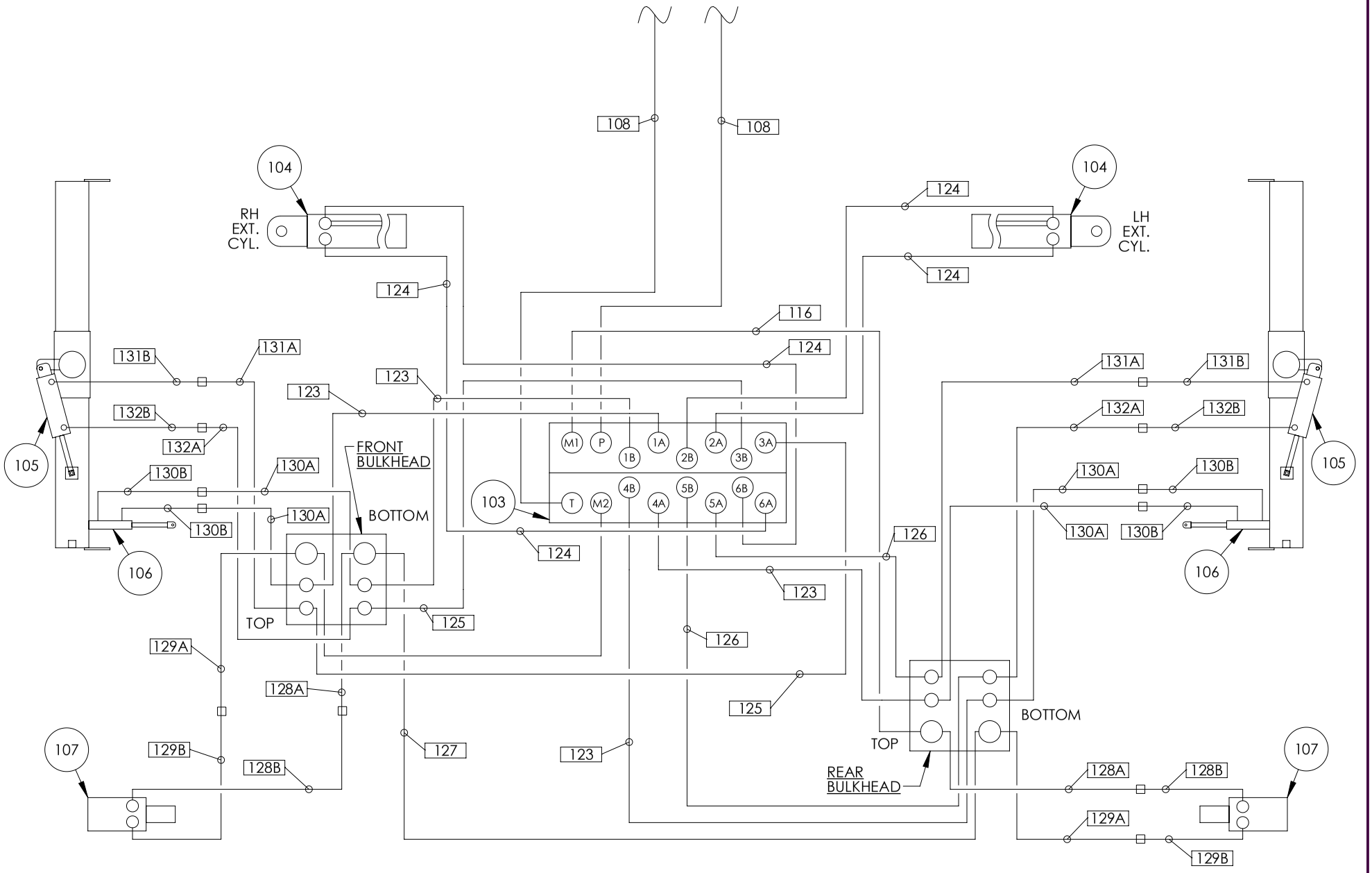


WALKING BEAM ASSEMBLY
HR-6000 (1RH & 1LH Assembly)

ITEM	QTY	PART NO	DESCRIPTION
1	2	HRWB-2470-1	Walking Beam Wheel Tower Weldment
2	1	HRWB-2472	RH Walking Beam Weldment
REF	1	HRWB-2473	LH Walking Beam Weldment
3	2	HRWB-0110-1	Pivot Pin
4	2	007-002-1	1/2" x 1 1/4" NC Gr. 5 Cap Screw
5	2	072-011-1	1/2" Lock Washer
6	2	068-006-1	1/2" USS Flat Washer
7	2	HR-2003-B	Adjustable Link
8	4	HR-0105	Pin
9	4	HR-0198	Lynch Pin - 7/16"
10	2	P7919	Lynch Pin - 3/16"
11	2	652-001	Grease Zirk, 1/4"-28 Straight

For Spindle, Hub and Wheel parts please refer to the Extension Arm Assembly page of the parts manual

HYDRAULIC SCHEMATIC
MODELS: 2030G3



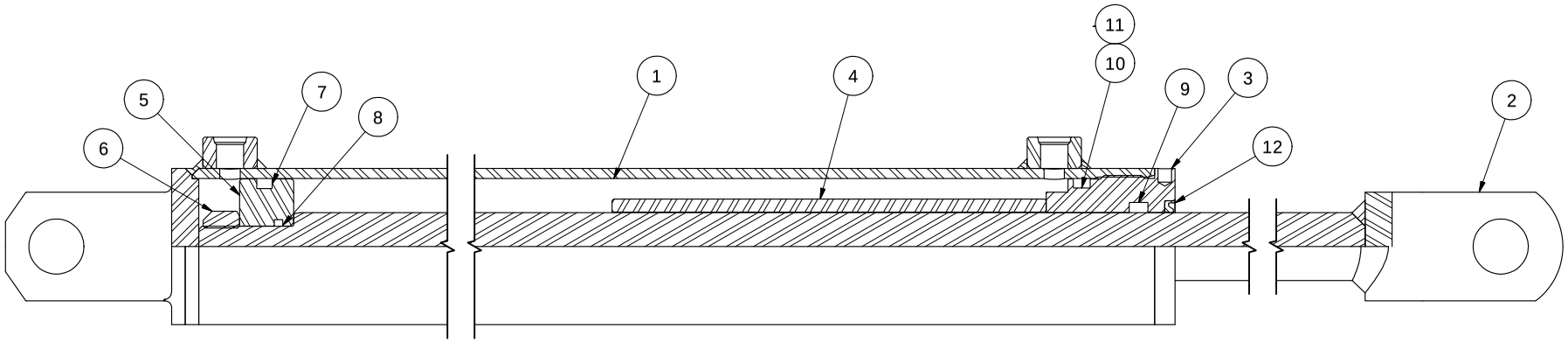
HYDRAULIC SCHEMATIC

MODELS: G3

ITEM	QTY	PART NO	DESCRIPTION
103	1	700-0807-4023	Hydraulic Control Valve
104	2	HR-0318-1	Spread Cylinder Without External Hydraulic Line, Ram
105	2	HR-0106-T	2" x 8" Hydraulic Cylinder Tuskers (No seal kit available)
106	2	HR-0107-T	2" x 6" Hydraulic Cylinder Tuskers (No seal kit available)
	8	HR-0292-1	Cylinder Adapter 2501-6-6 FRG (not shown)
107	2	HR-0709-15	Hydraulic Motor, High Torque, Eaton #184-0131-002
	4	HR-0304	Motor Adapter 6400-8-10 FRG (not shown)
108	2	HR-3150	1/2" Hydraulic Hose - 168"
	2	HR-0276	8010-50P Pioneer Tips (not shown)
115	1	HR-3152	1/2" Hydraulic Hose - 101"
116	1	HR-3151	1/2" Hydraulic Hose - 97"
123	4	HR-3153	3/8" Hydraulic Hose - 106"
124	4	HR-3154	1/4" Hydraulic Hose - 88"
	4	HR-0300-1	1/4" Adapter (not shown) 6400-06-06-0
	8	HR-0289	Bulkhead Adapter 2700LN06FRG (not shown)
	4	HR-0287	Bulkhead Adapter 2700LN08FRG (not shown)
125	2	HR-3155	1/4" Hydraulic Hose - 106"
126	2	HR-3156	1/4" Hydraulic Hose - 87"
127	1	HR-3137	1/2" Hydraulic Hose - 118"
128A	2	HR-3138A	1/2" Hydraulic Hose - 132"
128B	2	HR-3138B	1/2" Hydraulic Hose - 108"
129A	2	HR-3139A	1/2" Hydraulic Hose - 132"
129B	2	HR-3139B	1/2" Hydraulic Hose - 110"
130A	4	HR-3140A	3/8" Hydraulic Hose - 132"
130B	4	HR-3140B	3/8" Hydraulic Hose - 74"
131A	2	HR-3141A	1/4" Hydraulic Hose - 132"
131B	2	HR-3141B	1/4" Hydraulic Hose - 28"
132A	2	HR-3142A	1/4" Hydraulic Hose - 132"
132B	2	HR-3142B	1/4" Hydraulic Hose - 39 1/2"

Part No. HR-0318-1 Seal Kit No. HR-R3605437

BILL OF MATERIALS			
ITEM	QTY	DESCRIPTION	PART NO.
1	1	BARREL WELDMENT	R5507907
2	1	SHAFT WELDMENT	R4207907
3	1	GLAND	R6500013
4	1	STOP TUBE	R4805437
5	1	PISTON	R6400045
6	1	LOCKNUT, 3/4-16 UNF, GRADE C	R3005005
7	1	SEAL, PISTON, PSP-A, #330, 2.500	R3500066
8	1	SEAL, O-RING, NBR70A, #210, 0.750 x 1.000 x 0.125	R3503210
9	1	ROD SEAL, U-CUP, 1.250 x 1.625 x 0.313	R3501011
10	1	SEAL, O-RING, NBR70A, #330, 2.125 X 2.500 X 0.188	R3503330
11	1	SEAL, BACK-UP, URETHANE, #330, 2.125 x 2.500 x 0.055	R3508330
12	1	SEAL, WIPER, CASED, 1.250 x 1.688 x 0.188, NITRILE	R3506016



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TOLERANCES UNLESS OTHERWISE SPECIFIED
DECIMAL X.X ±0.060 STRAIGHTNESS ±.005 IN 5"
X.XX ±0.030 SQUARENESS ±.010 IN 5"
X.XXX ±0.025 PARALLELISM ±.010 IN 5"
FRACTIONS ±1/16 CONCENTRICITY 0.003 TIR
ANGLES ±3° TRUE POSITION ±0.005
SURFACE FINISH 125µIN Ra
FILLETS & ROUNDS R.015 UNLESS SPECIFIED

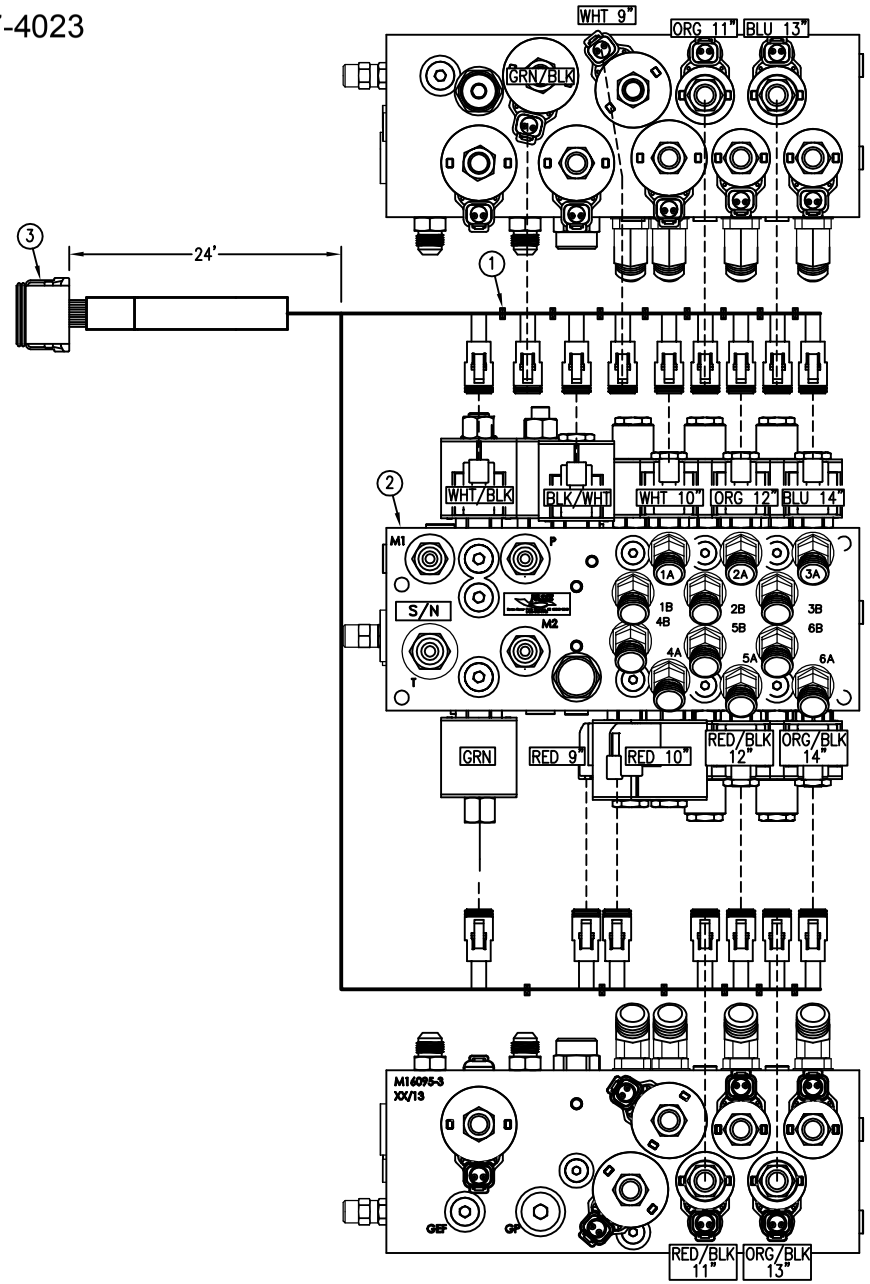
DRAWN BY: KStrelioff	1/3/2013	
CHECKED BY: DLammers	1/3/2013	
APPROVED DLammers	1/3/2013	

RAM INDUSTRIES INC.
YORKTON, SASKATCHEWAN, CANADA
www.ramindustries.com

TITLE: PARTS
SIZE: B | 3RD ANGLE PROJECTION | PART NO: R4507907 - PARTS | REV: 0
SCALE | SHT 1 of 1

CREATED in AUTODESK INVENTOR 2010

Part No. 700-0807-4023



PARTS LIST

REF.	PART NO.	QTY.	DESCRIPTION
1	214-002	18	CABLE TIE BLK 8.5"
2	302-586	1	MANI ASSY VERSA 7CIR 6DA 1MTR CLSD E-INTG DTR 10V
3	312-071	1	HRN ASSY 12CON 18GA DTP 12P(12)-16DTP 2P(2) 24'

USE (HR-) AS PREFIX WHEN ORDERING THESE PARTS:
EXAMPLE (HR-214-002)

NOTE:
1. USE 2 CABLE TIES TO COIL HRN

REVISIONS					
REV	DESCRIPTION	FORM #	DATE	APPROVED	
	RELEASED DRAWING	12-0046	02/25/13	DLG	BWL
A	REVISED DRAWING	12-0046	06/10/13	DLG	BWL
B	REVISED TO MATCH 302-586 DWG.	15-0046	07/06/15	LFL	BWL
C	REVISED TO MATCH 302-586 DWG.	15-0074	10/1/15	LFL	BWL

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON:
2 PL DECIMALS
3 PL DECIMALS
ANGLES
FRACTIONS

SIGNATURES		DATE
DRAFTER	DLG	02/25/13
ENGRG	BWL	02/25/13

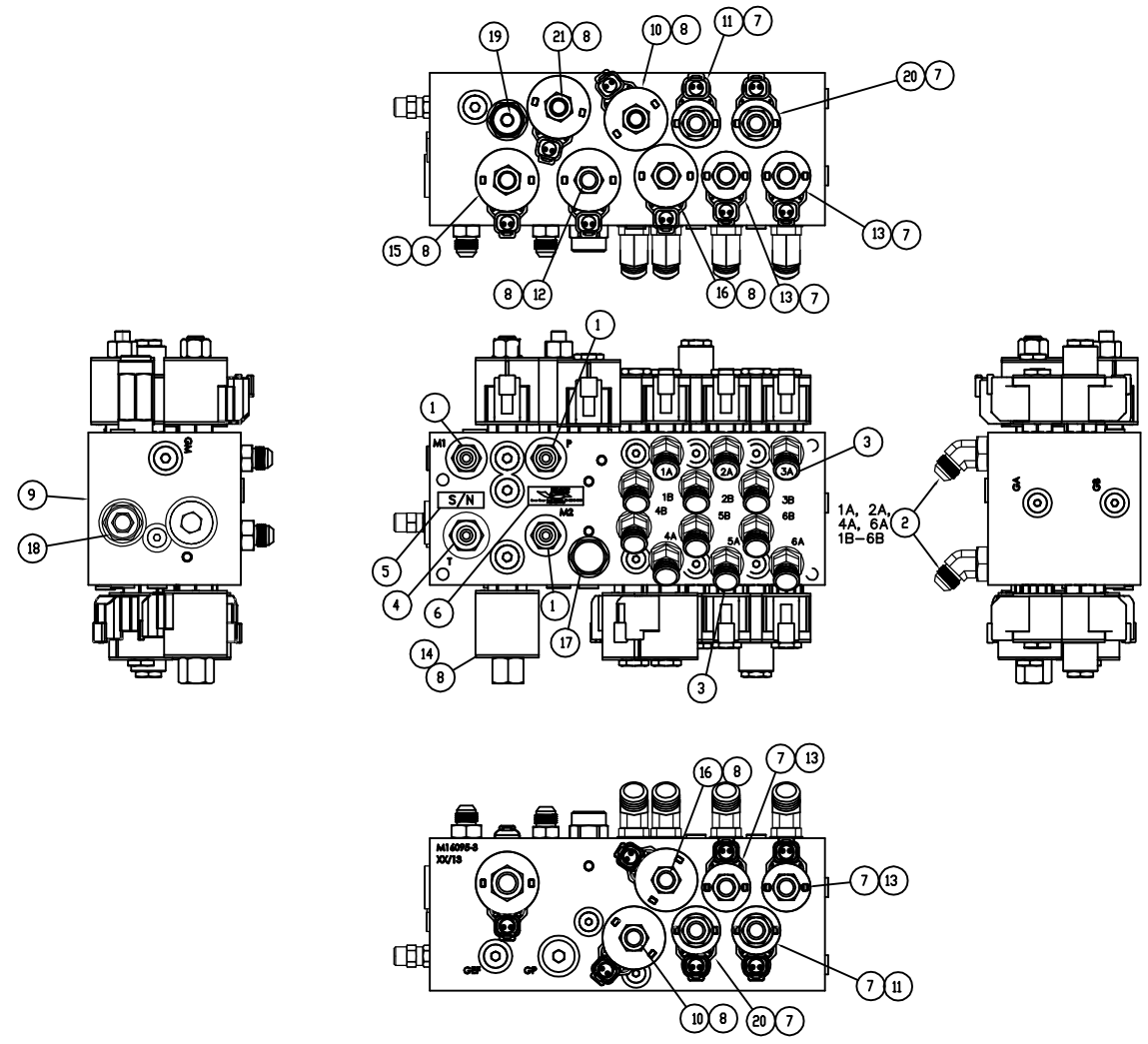
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FASSE VALVES
SEVEN ROVAR PARK
KEARNEY, NE 68848-2348

MANI/HRN ASSY VERSA 7CIR 6DA 1MNTR CLSD E-INTG DTR 10V 12CON DTP 12P(12) 24'

FSCM NO
DWG NO 303-159
SCALE
SHEET

USE (HR-) AS PREFIX WHEN ORDERING THESE PARTS: EXAMPLE (HR-214-002)



PARTS LIST

REF.	PART NO.	QTY.	DESCRIPTION
1	210-117	3	FTG 6400-8-8/S-MJ-MO
2	210-187	10	FTG 6802-6-6/E45-MJ-MO
3	210-455	2	FTG 6802-6-6-R.031/E45-MJ-MO
4	210-496	1	FTG 6400-8-10/S-MJ-MO
5	232-050	1	DECL S/N (SILVER)
6	232-058	1	DECAL FASSE BLK/GOLD 1"X.75" RND CRNR
7	253-071	8	COIL H/F 4304010 E-8 INTG DEUT 10V ZENER DIODE
8	253-800	8	COIL H/F 4304110 E-10 INTG DEUT DTR 10V
9	270-194	1	MANI S16095-3 6DA 1MTR AL
10	273-173	2	CART H/F SV10-28-0-V-00 POP 2W 2P
11	273-436	2	CART H/F SV08-28-0-V-00
12	273-437	1	CART H/F SV10-40-0-V-00
13	273-438	4	CART H/F SV08-24-0-V-00
14	273-439	1	CART H/F SV10-21-0-V-00
15	273-467	1	CART H/F SV10-23-0-V-00
16	273-468	2	CART H/F SV10-24-0-V-00
17	273-475	1	CART H/F FR10-20F-0-V-6.0
18	273-476	1	CART H/F FR10-39C-0-V
19	273-477	1	CART H/F RV10-22H-0-VC-35/20 DIFF AREA POP 2000PSI
20	273-478	2	CART H/F SV08-26-0-V-00
21	273-594	1	CART H/F SV10-22M-0-V-00 POP 2W NC

NOTES:

1. APPLY LOCTITE 545 TO ALL CARTRIDGE THREADS.
2. TORQUE CARTRIDGES TO THE TORQUE SETTINGS ON THIS CHART.

TORQUE CHART

CARTRIDGE	FT-LBS
FR10-20F	45-50
FR10-39C	45-50
RV10-22H	45-50
SV08-24	40
SV08-26	40
SV08-28	19-21
SV10-22M	24-26
SV10-21	50
SV10-23	50
SV10-24	45
SV10-28	50
SV10-40	40

REVISIONS

REV	DESCRIPTION	FORM #	DATE	APPROVED	
	RELEASED DRAWING	12-0046	02/25/13	DLG	BWL
A	UPDATED DRAWING	12-0046	06/10/13	DLG	BWL
B	UPDATED DRAWING	14-0018	4/9/14	DLG	BWL
C	DELETED P/N 213-516 & 273-984 QTY 1	15-0046	6/23/15	LFL	BWL
D	P/N 273-380 WAS 273-308	15-0061	8/14/15	LFL	BWL
E	210-117 WAS QTY 4, DEL 273-44 & 273-380, ADD 273-450, 210-161 & 210-211	15-0074	10/1/15	LFL	BWL
F	210-496 WAS 210-211	15-0093	12/2/15	LFL	BWL
G	DEL 210-161, 232-050 WAS QTY 2, UPDATED CARTRIDGES	16-0035	10/27/16	LFL	BWL
H	CARTRIDGES CHANGED TO VITON SEALS	17-0010	2/21/17	LFL	BWL
I	273-594 WAS 273-469	18-0051	9/20/18	LFL	BWL
J	210-187 WAS QTY 12, ADD 210-455 QTY 2	19-0004	10/23/19	LFL	BWL

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON:
2 PL DECIMALS
3 PL DECIMALS
ANGLES
FRACTIONS

SIGNATURES		DATE
DRAFTER	DLG	02/25/13
ENGRG	BWL	02/25/13

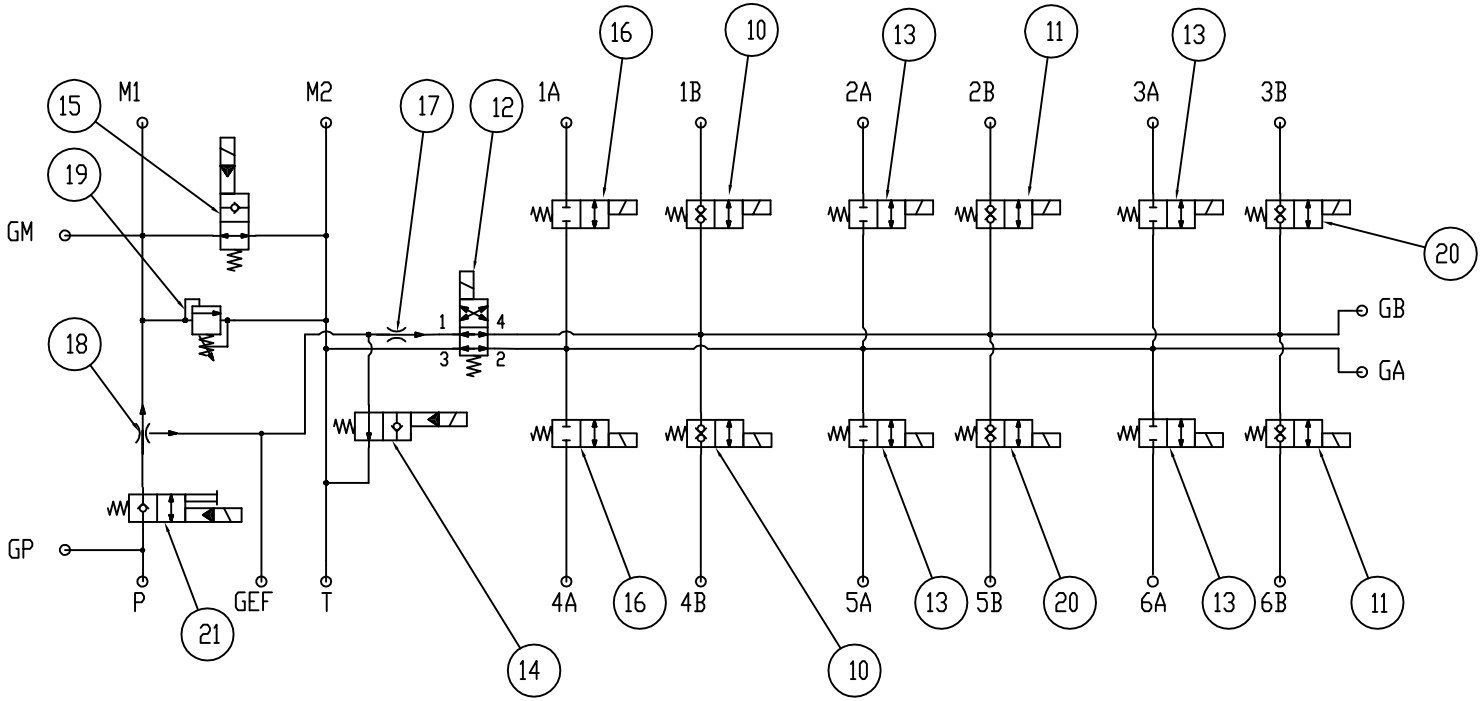
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FASSE VALVES
SEVEN ROVAR PARK
KEARNEY, NE 68848-2348

MANI ASSY VERSA 7CIR 6DA 1MTR CLSD E-INTG DTR 10V
PT6400-8 WP6802-6

FSCM NO
DWG NO 302-586
SCALE
SHEET 1 OF 2

HYDRAULIC SCHEMATIC



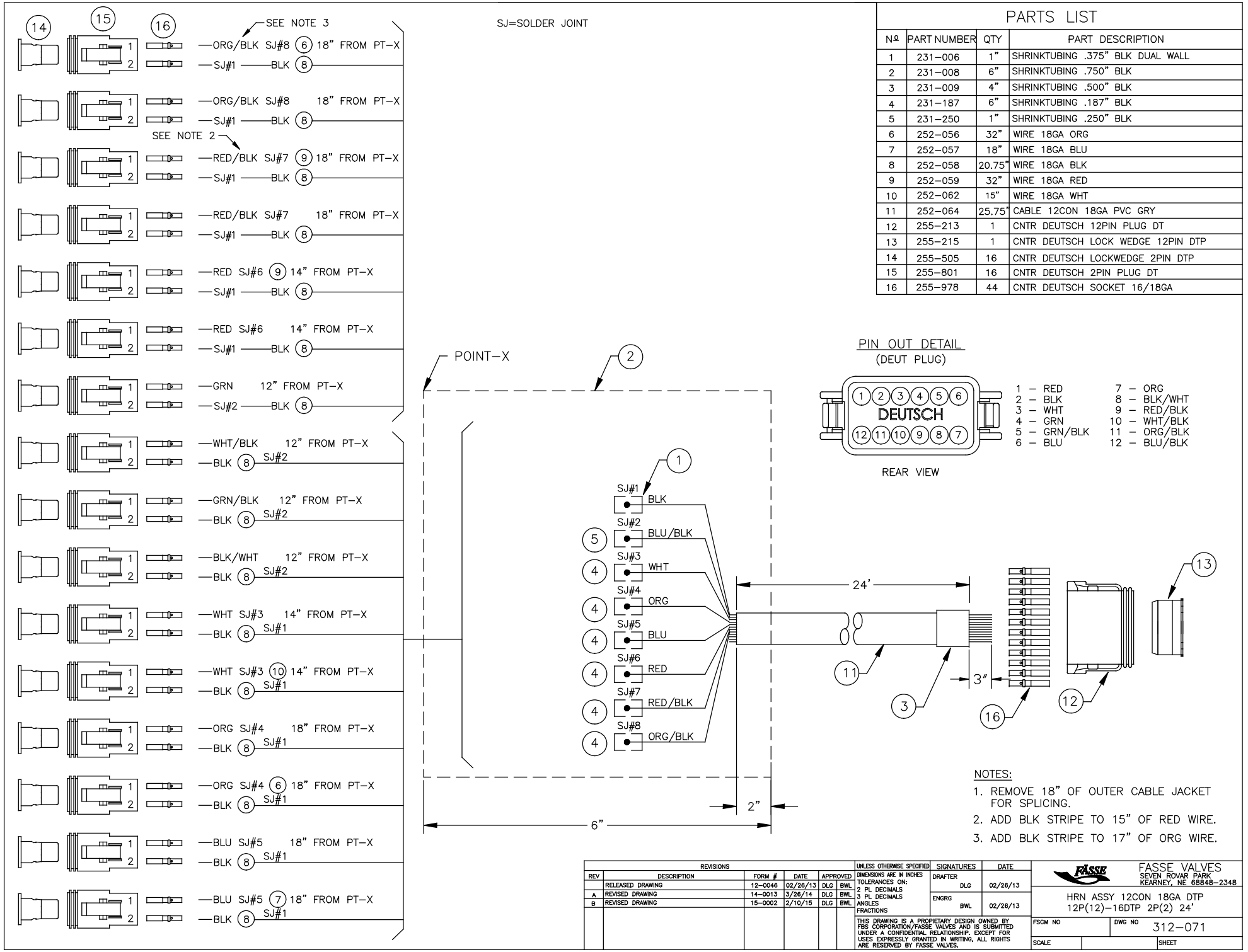
UNLESS OTHERWISE SPECIFIED	SIGNATURES	DATE
DIMENSIONS ARE IN INCHES TOLERANCES ON: 2 PL DECIMALS 3 PL DECIMALS ANGLES FRACTIONS	DRAFTER DLG	02/25/13
	ENGRG BWL	02/25/13

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FASSE VALVES
SEVEN ROVAR PARK
KEARNEY, NE 68848-2348

MANI ASSY VERSA 7CIR 6DA 1MTR CLSD E-INTG DTR 10V
PT6400-8 WP6802-6

FSCM NO	DWG NO 302-586
SCALE	SHEET 2 OF 2



PARTS LIST

№	PART NUMBER	QTY	PART DESCRIPTION
1	231-006	1"	SHRINKTUBING .375" BLK DUAL WALL
2	231-008	6"	SHRINKTUBING .750" BLK
3	231-009	4"	SHRINKTUBING .500" BLK
4	231-187	6"	SHRINKTUBING .187" BLK
5	231-250	1"	SHRINKTUBING .250" BLK
6	252-056	32"	WIRE 18GA ORG
7	252-057	18"	WIRE 18GA BLU
8	252-058	20.75"	WIRE 18GA BLK
9	252-059	32"	WIRE 18GA RED
10	252-062	15"	WIRE 18GA WHT
11	252-064	25.75"	CABLE 12CON 18GA PVC GRY
12	255-213	1	CNTR DEUTSCH 12PIN PLUG DT
13	255-215	1	CNTR DEUTSCH LOCK WEDGE 12PIN DTP
14	255-505	16	CNTR DEUTSCH LOCKWEDGE 2PIN DTP
15	255-801	16	CNTR DEUTSCH 2PIN PLUG DT
16	255-978	44	CNTR DEUTSCH SOCKET 16/18GA

PIN OUT DETAIL
(DEUT PLUG)

REAR VIEW

1 – RED
2 – BLK
3 – WHT
4 – GRN
5 – GRN/BLK
6 – BLU
7 – ORG
8 – BLK/WHT
9 – RED/BLK
10 – WHT/BLK
11 – ORG/BLK
12 – BLU/BLK

NOTES:

1. REMOVE 18" OF OUTER CABLE JACKET FOR SPLICING.
2. ADD BLK STRIPE TO 15" OF RED WIRE.
3. ADD BLK STRIPE TO 17" OF ORG WIRE.

REVISIONS					
REV	DESCRIPTION	FORM #	DATE	APPROVED	
	RELEASED DRAWING	12-0046	02/26/13	DLG	BWL
A	REVISED DRAWING	14-0013	3/26/14	DLG	BWL
B	REVISED DRAWING	15-0002	2/10/15	DLG	BWL

UNLESS OTHERWISE SPECIFIED
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3 PL DECIMALS
ANGLES
FRACTIONS

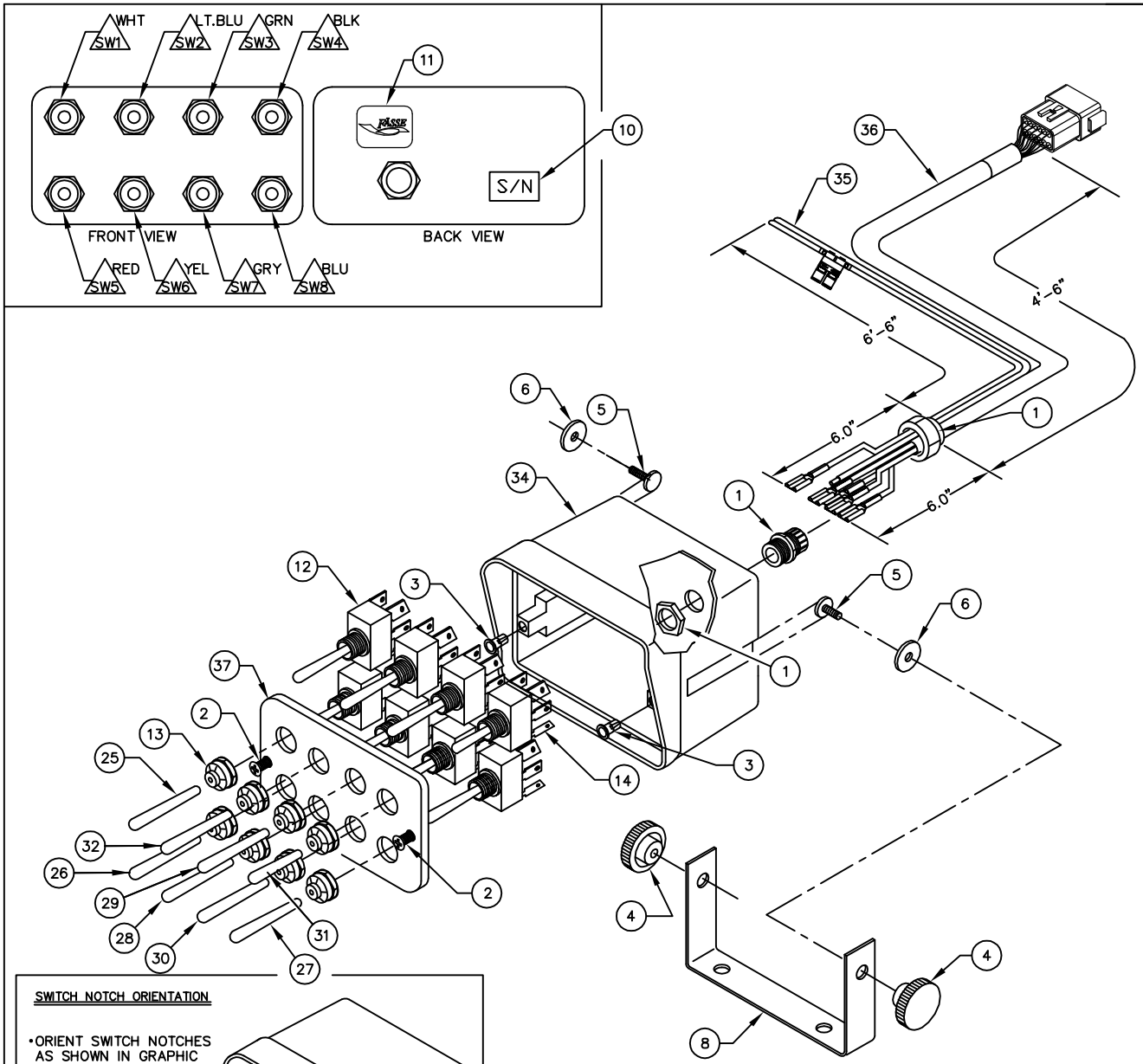
SIGNATURES	DATE
DRAFTER DLG	02/26/13
ENGRG BWL	02/26/13

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FASSE VALVES
SEVEN ROVAR PARK
KEARNEY, NE 68848-2348

HRN ASSY 12CON 18GA DTP
12P(12)-16DTP 2P(2) 24'

FSCM NO
DWG NO 312-071
SCALE
SHEET

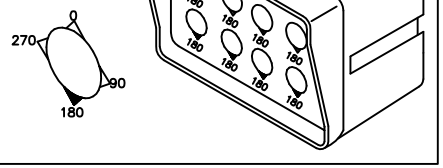


PARTS LIST

Nº	PARTNUMBER	QTY	PART DESCRIPTION
1	210-710	1	STR RLF HEYCO .23"-.53"ID HOLE DIA .886"
2	212-184	2	SCREW 6-32 X 3/8 OVAL HD BLK
3	212-202	2	INSERT 6-32X3/8 BRASS
4	212-215	2	KNOB 1/4-20 FEMALE
5	212-231	2	SCREW WELDED 1/4-20 X .500
6	213-335	2	WASHER NYLON .257X.875X.060
7	214-002	14	CABLE TIE BLACK 7"
8	219-300	1	BRKT HSNG MONITOR
9	230-057	1	BAG POLY CLR 14 X 18 2MIL W/LOGO
10	232-050	2	DECL S/N (SILVER)
11	232-058	1	DECAL FASSE BLK/GOLD 1"X.75" RND CRNR
12	250-013	7	SW TOG DPDT 3P MOM LONG
13	250-023	8	SW TOG BOOT OPN GRY
14	250-701	1	SW TOG DPDT 2POS STAT SHORT
15	252-058	1'	WIRE 18GA BLK
16	252-059	1.5'	WIRE 18GA RED
17	252-060	1'	WIRE 18GA GRN
18	254-001	1	DIODE D116A2 6AMP
19	255-002	32	TRM T-TAP F PO BLU
20	255-006	11	TRM PO F INS 22/18GA
21	255-030	3	TRM SPLICE CLOSED END
22	255-070	2	TRM PO M/F 16-14GA
23	255-119	3	TRM PO F INS 16-14GA
24	255-285	1	TRM SPLICE CLOSED END LRG 14-16GA
25	259-004	1	SW TOG GRIP VNYL WHT .187
26	259-005	1	SW TOG GRIP VNYL RED .187
27	259-015	1	SW TOG GRIP VNYL BLU .187
28	259-022	1	SW TOG GRIP VNYL YEL .187
29	259-023	1	SW TOG GRIP VNYL GRN .187
30	259-027	1	SW TOG GRIP VNYL GRY .187
31	259-031	1	GRIP TOG VNYL BLK .187"
32	259-044	1	SW TOG GRIP VNYL MNLGHT BLU .187/1.5"
33	300-327	3	DIODE ASSY 6A05/1/INTERNAL
34	304-086	1	ENCL DRILL MNTRBX -7/8" STR RLF
35	304-594	1	HRN 2CON 16GA R/B ZIP 10A FUSE 7'
36	309-436	1	HARNESS 12CON DTR 12PN(12)/5'
37	312-073	1	ENCL DRILL FP MNTR SW8 L00261

SWITCH NOTCH ORIENTATION

- ORIENT SWITCH NOTCHES AS SHOWN IN GRAPHIC
- USE THE ANGLE VALUES SHOWN AS REFERENCE



NOTES:

1. USE 2-CABLE TIES TO COIL UP HARNESS
2. PUT REMAINING CABLE TIES IN BAG
3. NOT SHOWN: (7) (9)

REVISIONS					
REV	DESCRIPTION	FORM #	DATE	APPROVED	
	RELEASED DRAWING	12-0046	02/25/13	DLG	BWL
A	304-594 WAS 300-271, 304-086 WAS 319-725, DEL 319-769	15-0085	10/28/15	LFL	BWL

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DIMENSIONS ARE IN INCHES
TOLERANCES ON:
2 PL DECIMALS
3 PL DECIMALS
ANGLES
FRACTIONS

SIGNATURES		DATE
DRAFTER	DLG	02/25/13
ENGRG	BWL	02/25/13

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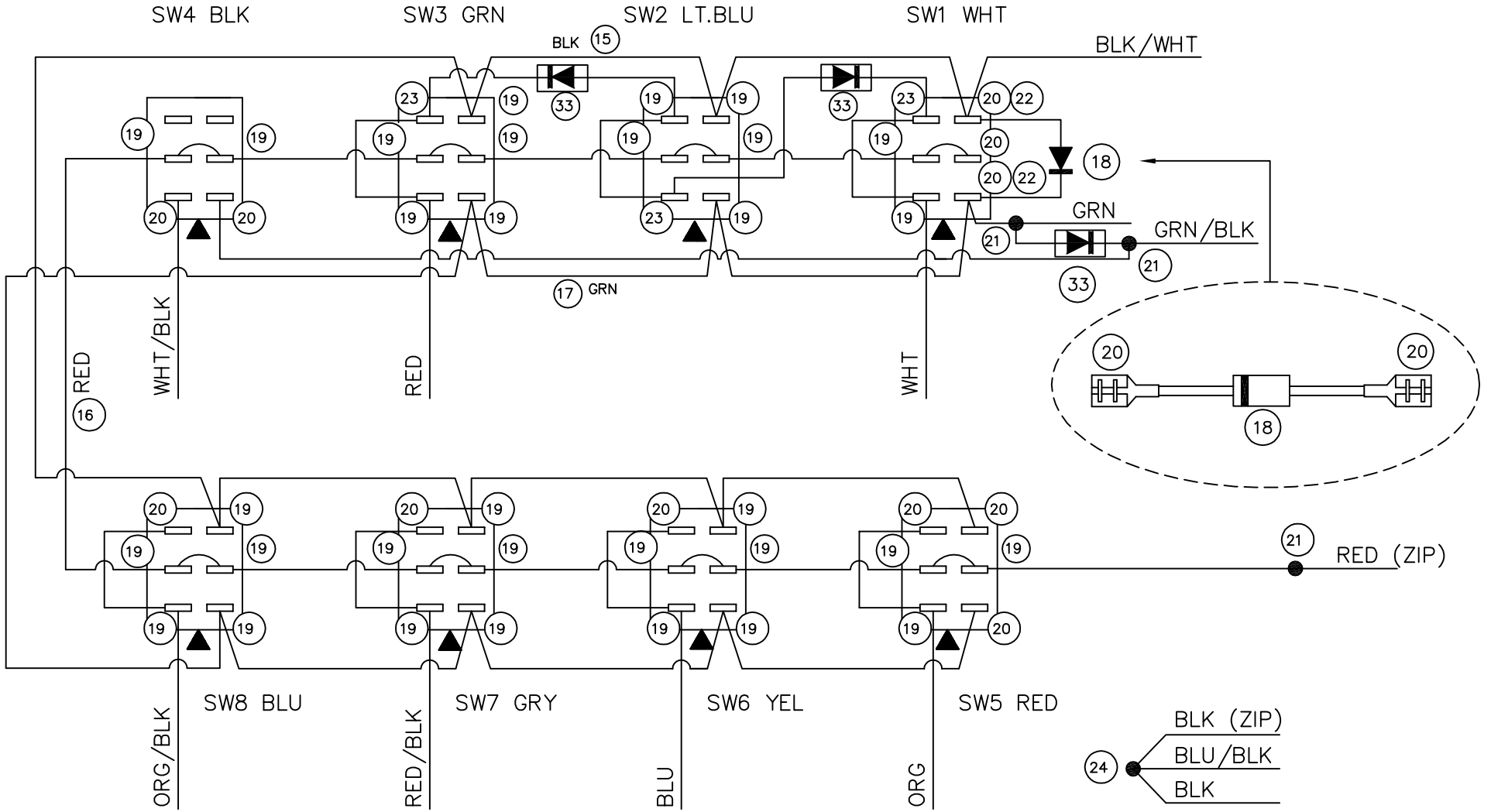
FASSE VALVES
SEVEN ROVAR PARK
KEARNEY, NE 68848-2348

MNTR TOG8 DTR 12P(12) 4.5'

FSCM NO | DWG NO 312-072

SCALE | SHEET 1 OF 2

SWITCH WIRING DIAGRAM



UNLESS OTHERWISE SPECIFIED	SIGNATURES	DATE	FASSE VALVES SEVEN ROVAR PARK KEARNEY, NE 68848-2348
DIMENSIONS ARE IN INCHES TOLERANCES ON: 2 PL DECIMALS 3 PL DECIMALS ANGLES FRACTIONS	DRAFTER DLG	02/25/13	MNTR TOG8 DTR 12P(12) 4.5'
	ENGRG BWL	02/25/13	
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	SCALE	SHEET 2 OF 2	



ATTACHMENTS, LLC

3205 Bay Street
Union Gap, WA
98903

P.O. Box 1937
Yakima, WA
98907-1937

Phone: (509) 452-1651

Fax: (509) 457-6601