



The information, specifications, and illustrations in this manual are on the basis of information available at the time it was written. The specifications, torque values, pressures of operation, measurements, adjustments, illustrations, and other items can change at any time. These changes can affect the service of the given product. For the complete and most current information, contact:

> Hogg & Davis, Inc P.O. Box 405 / 3800 Eagle Loop Odell, OR 97044-0405 541-354-1001 541-354-1080 Fax

> > For most recent manual version please visit:

www.hoggdavis.com

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Product Warnings

AN UNTRAINED OPERATOR SUBJECTS HIMSELF AND OTHERS TO

DEATH OR SERIOUS INJURY YOU MUST NOT OPERATE THIS MACHINE UNLESS

You have been trained in the safe operation of this machine.

 You have read, understand and follow the safety and operating recommendations contained in the machine manufacturer's manuals, your employer's work rules and applicable government regulations.

 You are sure the machine is operating properly and has been inspected and maintained in accordance with the manufacturer's manuals.

 You are sure that all safety signs, guards and other safety features are in place and in proper condition.









These warning labels and others like it are placed in critical areas of the machine. The warnings are to be read and fully understood prior to operation of the unit.



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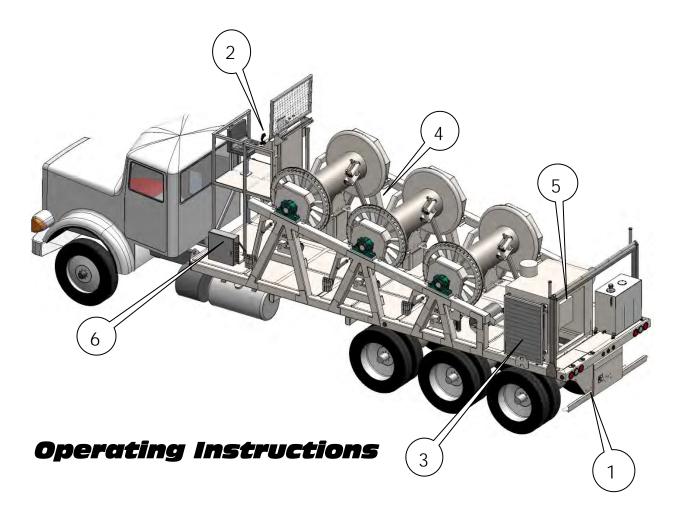
General Specifications

This unit is designed to install / tension overhead cable/conductor.

- Multi- Reel Puller
- Pulling Computer
- Constant Line Pull System
- 10,000 lbs Maximum Line Pull
- 140 hp Tier III Diesel
- 24,000 3/8" swaged wire rope capacity
- (3) Post Style Level wind
- Air Actuated Reel engagement
- Fuel Capacity 60 Gallons
- Hydraulic Oil Capacity 60 Gallons







All persons operating this machine must read and understand this manual as well as the operating, danger, and warning decals placed on the machine. Failure to read and understand these items subjects the operator and others to **DEATH or SERIOUS INJURY**.

Operators shall make themselves familiar with the placement of the following operating and safety features of the machine.





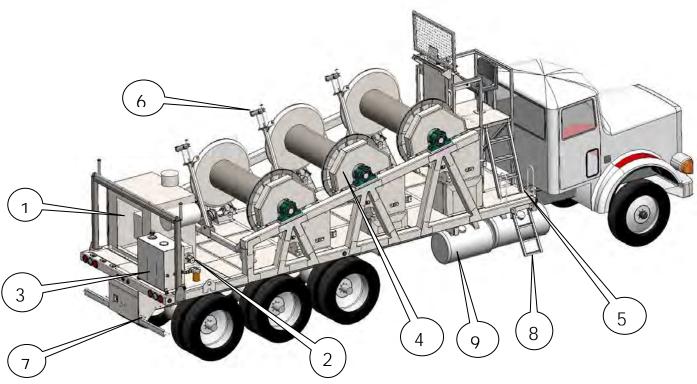
Puller – Main Unit Street Side

- 1. Grounding Lugs. There are two lugs welded to the rear of the unit on the hitch plate section. They are to be used for grounding only.
- 2. Operators Station
- 3. Hydraulic Oil Cooler. This unit transfers the heat from the hydraulic oil during use. It is to be kept clean and clear of dust and debris. Failure to do so may increase hydraulic system operating temperature and may also damage the components in the system.
- 4. Drive Dog Clutches. This unit has three separate drives systems. One for each reel. The drive dogs are actuated from the operator station via air cylinders. During operation the drive dogs must be engaged, no matter what reel is being pulled on. The only time the drive dogs should be disengaged is during the FREEWHEEL Payout operation. It may be necessary for the operator to rotate the reel to allow for the drive dogs to be engaged.
- 5. Engine Access. This door allows for access to the engine from the rear of the unit. Do not operate the unit with this door open. The enclosure has been designed to minimize sound and heat during operation.
- 6. Wiring Box. This centralized wiring box allows for testing and diagnosis of all wiring on the unit. An engraved schematic is provided on the inside of the panel door.



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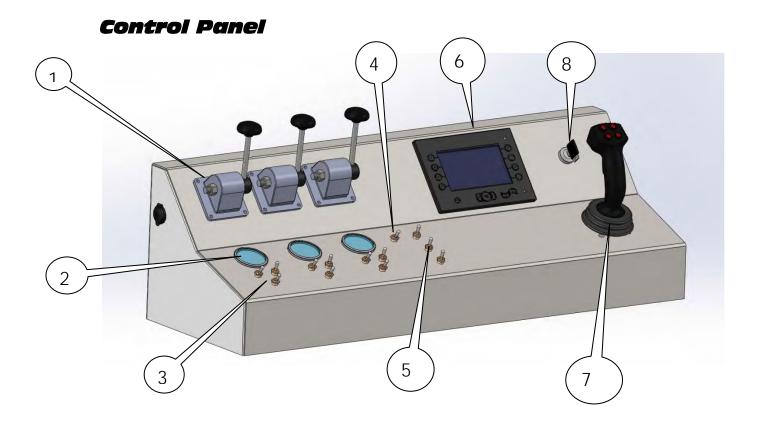


Puller - Main Unit - Street Side

- 1. Engine access cover
- 2. Hydrostatic Pumps
- 3. Hydraulic Tank. 50 Gallon Capacity. ISO 46 or equivalent.
- 4. Chain Guards. Located on all three reel's large secondary sprocket. There are access panels on both guards on the secondary sprocket. Lubricate chains daily. DO NOT OPERATE PULLER WHILE THESE ARE NOT ON THE UNIT.
- 5. Lifting Points. DO NOT USE D RINGS ON REAR DECK
- 6. Level Wind
- 7. Grounding lug location
- 8. Sliding Ladder step. Do not leave step extended during travel
- 9. Puller Fuel Tank







- 1. Over spin Brake Control. There are three levers to each corresponding reel. Operating the lever increases or decreases the desired brake pressure while operating. The gauges below indicate the pressure at which each individual brake is operating
- 2. Over Spin Brake Pressure. These gauges display the current brake pressure. **DO NOT OPERATE PULLER WITH BRAKE APPLIED**
- 3. Reel Controls. These switches control the reel's functions. They are The Reel Brake, Clutch, and lock. The Reel Brake applies and releases the Air Brake System for use of the overspin brake. The Reel Clutch engages and disengages the chain drive to the drive motor. The computer selects the reel that is being operated, so it is best to keep all drives engaged except when using the FREE Wheel function. The Reel Lock



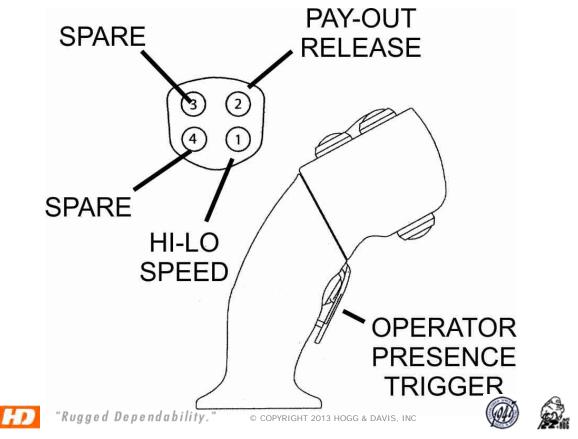
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engages and disengages the pawl brake. THIS IS NOT TO BE USED AS A BRAKE TO STOP UNIT DURING NORMAL OPERATIONS.

- 4. Sensor Heat. This is a small bulb in the sensor box to help warm the sensor when the unit is used in cold to freezing weather
- 5. Level wind control.
- 6. PPS Operating Computer
- 7. Joystick. This joystick is a friction style control. It has a positive stop but releasing control will NOT return control to neutral. In order to stop pull, operator must return joystick to neutral.
- 8. Ignition Switch

Joystick Functions



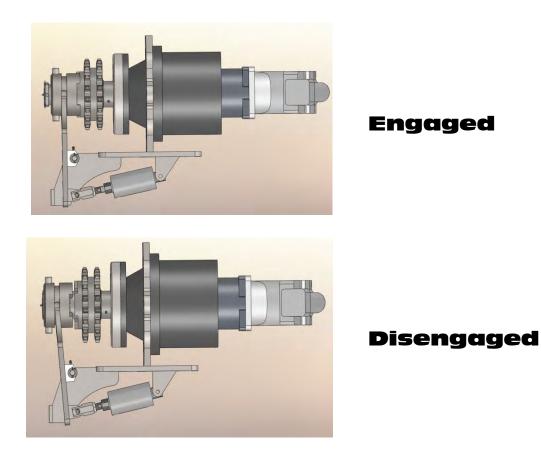
- Pay Out Release. This button must be pressed while attempting to pay out under power. By pressing the Operator Presence Trigger while pressing the Pay Out Release, moving the Joystick towards the Pay Out position will allow the reel to pay out under power. Once the reel begins to pay out, these buttons may be released. The Pay Out Lockout will automatically reset when the Joystick is returned to neutral.
- Hi-LO Speed. Pressing this button during take up or payout will manually shift the pull speed. Although the computer is still in control of the maximum line speed and line pull and it will not be exceeded.
- Operator Presence Trigger. This but be pressed during the beginning of all Joystick functions. Once the unit is working, it may be released. The trigger will reset when the Joystick is returned to neutral.

Warning: These functions are present to protect the operator and the crews on the ground. If any of these are not functioning properly, contact vendor immediately. These are not to be circumvented in any way. Creating shortcuts to control machines of this nature can cause SERIOUS INJURY or DEATH to those operating this machine and those that are working with it.



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Drive Engagement

Above is a top view of the drive dog couplers in their engaged and disengaged state

Setup on the Job

Setup of the unit

Hogg & Davis, Inc. recommends following the methods described in the following publications:



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IEEE Std 524-1992

IEEE Guide to the Installation of Overhead Transmission Line Conductors

IEEE Std 542a-1993 IEEE Guide to Grounding During the Installation of Overhead Transmission Line Conductors

Position of unit

Position the unit with the centerline of the truck in line with the pull. Place the unit at a minimum of two times the height of the first block. Positioning the unit this way decreases the stress on the level wind system.

Tie Down/ Brake/ Chock

Chock all wheels and set brakes (if applicable). It should be noted that the fully loaded puller weight may exceed the tension desired during the pull. As the pull progresses, the weight of the puller may increase or decrease, therefore proper securing procedures should be followed during operation.



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Rope Payout Procedure (Free Wheel)

When beginning the rope payout feature, be sure that the engine is RUNNING for proper air supply to the brake system. Ensure that all tension is removed from the pulling rope before attempting to disengage the drive dog clutches.

Turn the over spin brake on and adjust it to approximately 10 psi. Release the ratcheting pawl, you may have to take up slightly to release the pawl. Disengage the drive clutch. Rotation of the drive assembly may be needed to properly release the drive dog(s). Begin to pull rope through the blocks while continuing to adjust the over spin brake. When the rope install is completed, engage the sprocket drive(s). Rotation of the drive assembly may be needed to properly install drive dog(s).



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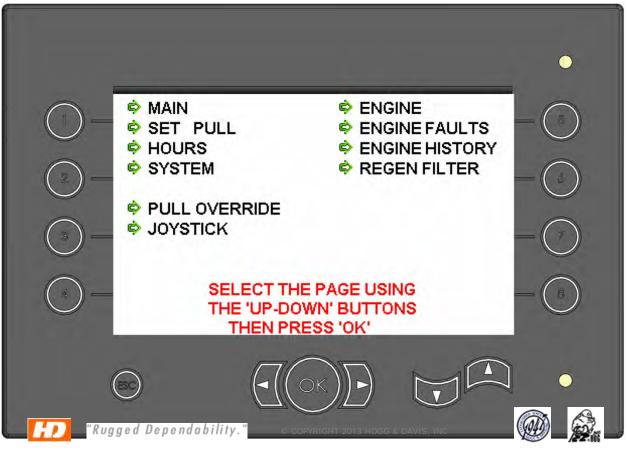


Pulling Computer

This unit is equipped with a computer control that allows the operator to preset the Maximum Line Pull as well as the Maximum Line Speed. During the pull, no matter the length of cable in the air, the computer calculates the drum diameter and adjusts the hydraulic system to provide a constant pulling control. Throughout the pull, the Line Pull and the Line Speed will be maintained at a constant set by the operator. This type of system allows for greater control of the overall pull, as well as eliminating the "estimation process" and constant adjustment of hydraulic system to maintain the maximum preset.

Operation

Setup Screen. Select the page using the "up-down" buttons and then press enter.



Set Pull

There can be up to four preset "Pulls" in the computer at one time. They are labeled, Pull 1-4 and utilize the corresponding buttons on the left hand side of the pulling computer control.

Select the pull you wish to modify and increase the Maximum Pull by using the "up-down" buttons. When the desired Line Pull Max is set, press enter.

The computer can also control the line speed for that set pull. The buttons on the right side of the pulling computer 5-8 correspond with the pulls set 1-4. Pressing the 5-8 buttons will allow the operator to set the maximum Line Speed for the pull. FPM and MPH are both displayed. They are set relevant to the other. Example 352 FPM = 4.0 MPH

When the Maximum Line Pull and Line Speed are set, press the ESC key and return to Pull Screen

Pull Screen - MAIN

The pull screen displays the most needed displays for the pull.

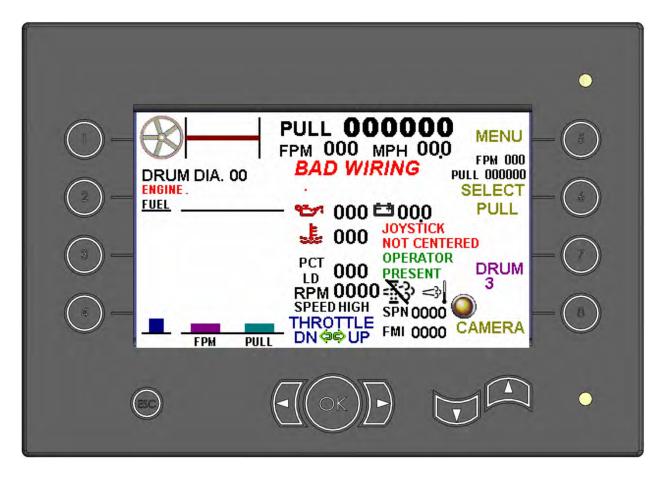
- Pull This displays the Current Line Pull in Ibs. NOT THE MAXIMUM
- Fuel Fuel Level in the Puller tank
- Drum Diameter Current diameter of the drum
- FPM Current FPM
- MPH Current MPH
- Engine Gauges This display's the engine temp, oil pressure, RPM PCT of Load and battery voltage
- Throttle The engine throttle is increased or decreased by using the Left-Right buttons on each side of the OK button



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- Menu Returns to the Main Menu Screen
- Pull and Speed Below the Menu label on the screen, the PRESET Maximum Line Pull and Speed are displayed
- Select Pull This button brings up the Select Pull Screen
- Camera If the unit is equipped, this will allow for remote viewing
- Select Reel -- Button 7 allows the operator to select the reel that is to be used 1-2-3 The number displayed is the reel that is active.





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Hours Screen

This screen displays the current hours on the engine oil filters, hydraulic oil filters, the time the winch has been activated (pay in and pay out time) and engine hours.

				•
\bigcirc –	ENGINE FILTER	HOURS	WINCH 000000	
	HYD FILTER		000000	
3	000000			$-\bigcirc$
	000000	PRESS 'ESC' TO RETURN TO MENU	ENGINE 000000	
(\bigcirc			•



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System Screen

This screen displays the current System Pressure, Charge Pressure, Motor RPM, and the Drum Diameter. This screen is primarily used for troubleshooting.

\bigcirc –	PRESSURE SYSTEM 0000 PSI
2 $-$	CHARGE 0000 PSI
(3) —	MOTOR RPM 0000 DRUM DIA. 0000
(*) —	
)	PRESS 'ESC' TO RETURN TO MENU
(

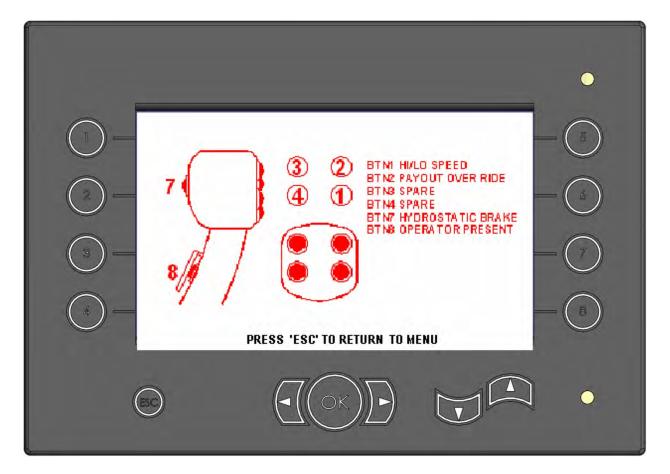


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Joystick

This screen gives a graphic display of the Joystick and its functions





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Engine

This screen displays all current information regarding the engine on the puller

\bigcirc	0000 RPM ENGINE
\bigcirc	0000 % Pct Load 000000 HOURS
\bigcirc	0000 % Torque 0000 g/h Fuel Rate
	0000 psi Oil Pressure 0000 gal Trip Fuel
\bigcirc	0000 °F Oil Temp 0000 Alt Current
\bigcirc –	0000 % Oil Level 0000 Alt Voltage
\bigcirc	0000 °F Coolant Temp 0000 Net Bat Curt
	0000 psi Coolant Press 0000 Battery Volt
	0000 % Coolant Level 0000 McContr Volt

***These instructions assume that the operator has set the proper drive dog(s) for the reel to be pulled in.



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Pulling Control

The Following instructions explain how to properly set up the unit.

- 1. Release the air operated over spin brake
- 2. Set Job Pull Settings on the Pull Computer
- 3. Return computer to Main Screen
- 4. Increase Throttle to desired Throttle
- 5. Squeeze trigger and move Joystick to take up
- 6. Adjust line speed with joystick
- 7. Return joystick to neutral to stop pull and set holding brake

System Brakes

The internal braking system is spring applied / hydraulic release on the drive motors. When the joystick is in neutral, the brakes are automatically applied.

Reel Band Brakes

This unit is equipped with Band style brakes for the over spin and payout features. These brakes are manually applied during the process.

These brakes are operated by a control on the operators station. It is suggested that the control **LEVER** be in the "applied" position during the pulling operation. There is a switch on the control panel that allows for the air supply to be turned off from the brake. During an emergency, if the lever is set to fully applied, the operator can apply full air pressure to the brake.



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Ratcheting Pawls

This unit is equipped with a "pawl" system on each reel. In the event of an emergency or loss of air pressure, the operator can apply to help prevent the reel from reversing due to line tension. The cylinders that actuate these are "air release / spring applied" and will always engage during the absence of air or power. They can also be manually engaged through a switch on the operator's station. These are not designed to be holding brakes. If the unit is to be left for a period of time, it is recommended that they rope be in the "safety off" position. Meaning the pulling rope is securely attached to a point on the truck.

Level wind

This unit is equipped with three (3) post style level winds. Please ensure that it is properly greased at all times. Lubrication of the level winds and their components is critical. Please grease all zerks as well as covering the shafts.



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LUBRICATION AND MAINTENANCE

This unit has no set PM schedule beyond that of the engine manufacturers suggested maintenance schedule. This unit should be visually inspected prior to each use while repairing any and all discrepancies prior to use.

Items to be inspected prior to use are:

- Drive Chains and sprockets for wear and slack
- All welds and seams
- Loose or missing fasteners (bolts, nuts, set screws)
- Loose or leaking hydraulic hoses
- Damaged or worn hydraulic hoses
- Brake calipers (loose fittings, hoses, worn linings)
- Brake Pads (over spin brake)
- Brake rotors / drums
- Tires and brakes
- Engine and hydraulic system fluid levels.
- Set screws (see set screw section)
- Air System including fittings and hoses

Lubrication Schedule

- Drive chain and sprockets (daily)
- Reel Shaft Bearings (as needed)
- Reel Bearings (as needed)
- Engine oil as per manufacturers recommendation
- Idler sprocket (daily)
- Axle Bearings (as needed)
- Level wind grease fittings (as needed)



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Set Screws

Due to the rugged nature of this machine, all set screws on the shafts, reels and bearings have a thread locker and may be double set screwed. Please do not assume that screws are tight when performing maintenance. When checking or tightening these set screws, remove the first and then tighten the first.



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15-15 Warranty

Hogg and Davis, Inc. warrants its trailers against defects in material or workmanship for period of 15 months from the date of shipment from Hogg and Davis, Inc. (see General Conditions & Exceptions). Hogg and Davis, Inc. will replace, free of charge, F.O.B. Hogg and Davis, Inc. factory, such parts or parts thereof, that in their judgement have proven defective. Additionally, Hogg and Davis, Inc. will pay reasonable and customary labor charges when defective part is replaced, installed or repaired by a fully authorized Hogg and Davis, Inc. trailer dealer at his facility.

Warranty credit will be issued only upon receipt and inspection of defective parts of at the Hogg and Davis, Inc. factory. Hogg and Davis, Inc. warrants it's trailer main frame assemblies (except pintle eyes or other towing attachments, spindles and axles) against defects in material or workmanship for a period of **15 years** from the date of shipment from Hogg and Davis, Inc. (see General Conditions & Exceptions). Hogg and Davis, Inc. shall replace or repair, in a manner as it shall determine, free of charge, F.O.B. factory, any parts or parts thereof, that in its judgement have proven defective. Additionally, Hogg and Davis, Inc. will pay reasonable and customary labor charges when defective part is replaces,

installed or repaired by a fully authorized Hogg and Davis, Inc. trailer dealer at his facility

General Conditions & Exceptions

All warranties, options and representations made herein shall apply only provide such equipment shall not have been subject to misuse, negligence or accident and has been operated in accordance with factory approved procedures. This warranty does not obligate Hogg and Davis, Inc. or its authorized dealers to bear the cost of parts obtained from or labor performed by unauthorized sources. Nor does it obligate Hogg and Davis, Inc. or its authorized dealers to bear the cost of parts obtained dealers to bear the cost of transportation of parts or equipment for repair or **replacement purposes**. This warranty is in lieu of any other warranty, expressed **or implied**, or any other obligation or liability on the part of Hogg and Davis, Inc and no persons or entity is authorized to make any representation beyond those stated herein.

Hogg and Davis, Inc. shall not be held liable for consequential damage of any kind. Hogg and Davis, Inc. also reserves the right to make changes and improvements in its products without incurring any obligation to install any such changes or improvements upon its products previously manufactured.

The above warranty shall not be misconstrued to mean warranty of tires, clutch, transmission assemblies or customer requested accessory equipment other than the warranty extended by their respective manufactures to Hogg and Davis, Inc. In addition, friction, drive rollers are warranted only to extent of bonding failure. All warranties, options and representations made herein are applicable to the original end-user of the product and are not sellable or transferable in any manner.



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Parts and other manufacturer manuals

The Following drawings are for part identification only. Please reference the unit V.I.N. number and the corresponding part number when ordering.

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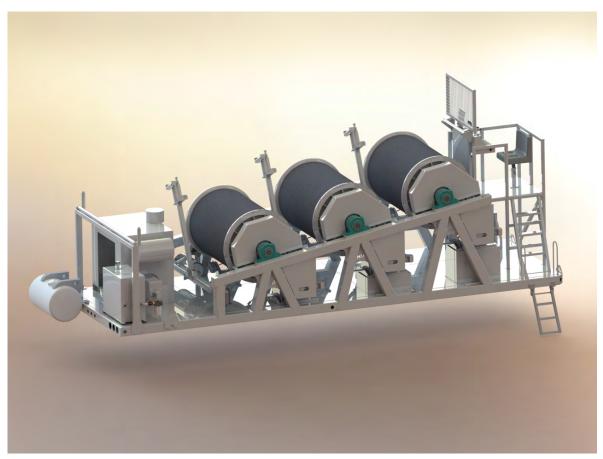


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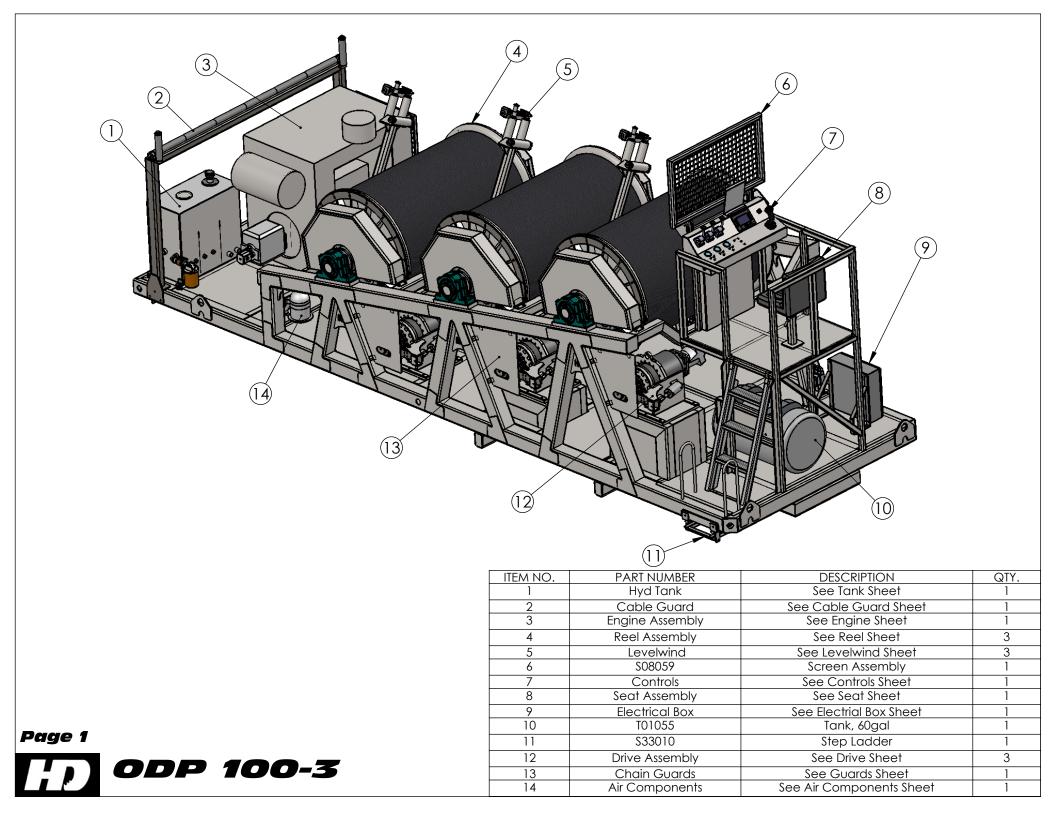
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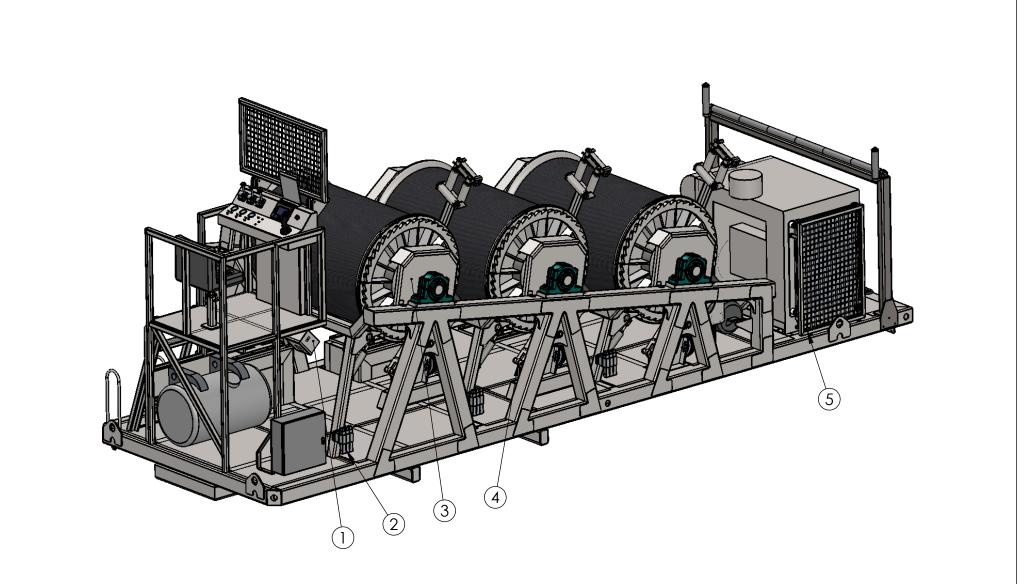
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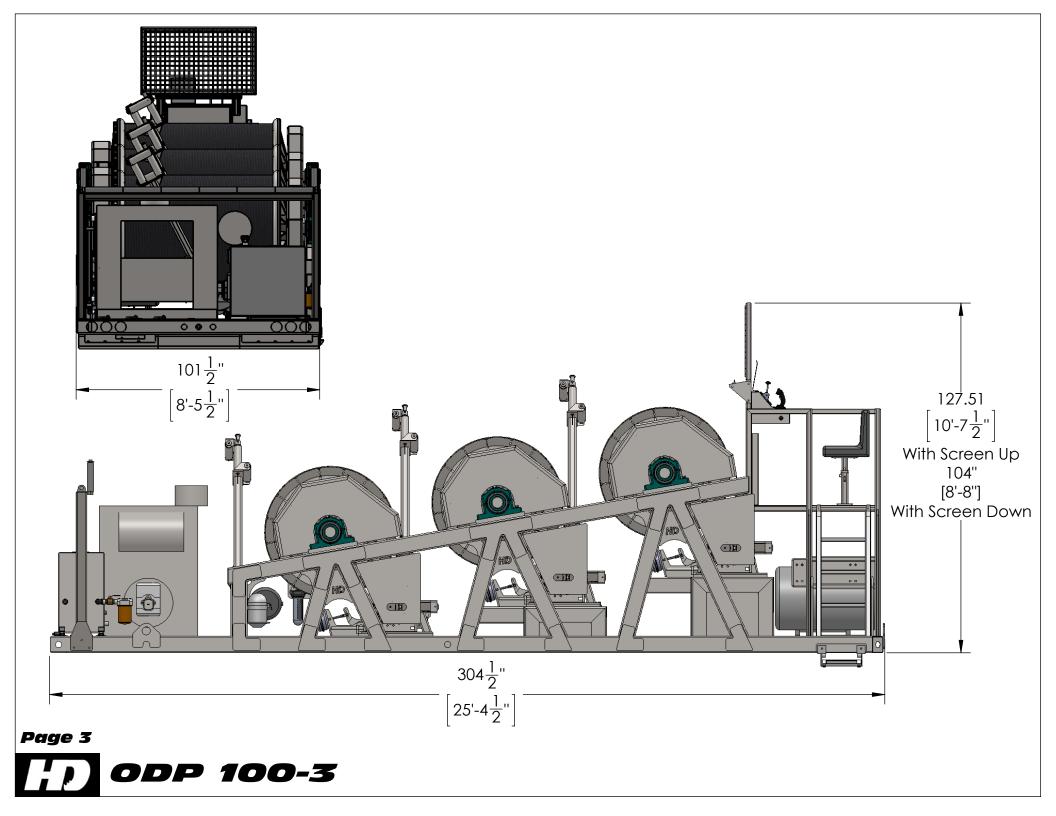




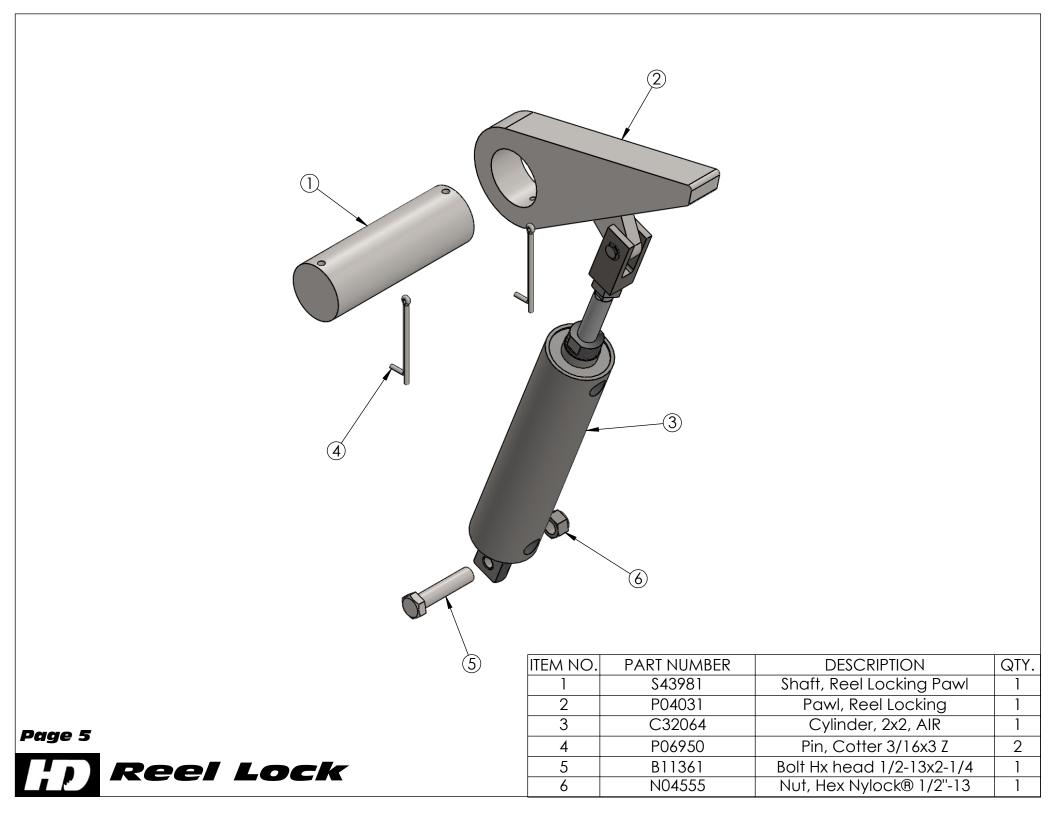


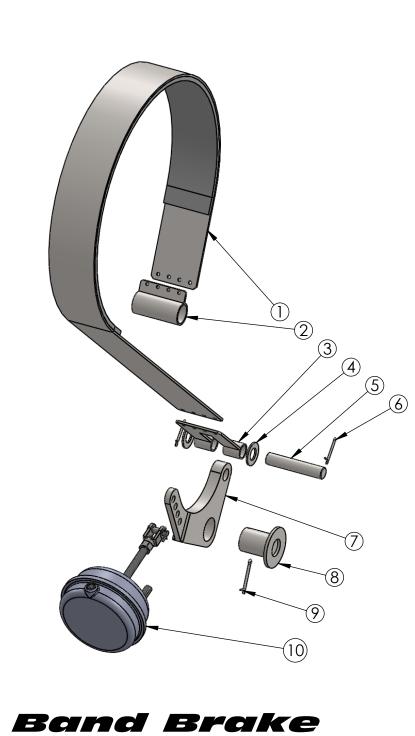


	ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
	1	Sensor Box	See Sensor Box Sheet	3
	2	Air Components	See Air Components Sheet	1
Page 2	3	Chain Guards	See Guards Sheet	1
TODP 100-3	4	Band Brake	See Band Brake Sheet	1
	5	Oil Cooler Assembly	See Oil Cooler Sheet	1



	ITEM PART NUMBER	DESCRIPTION QTY.
	1 S04054	Screw, Set 3/4-10x1 CP 3
	2 \$43082 3 B07190	Shaft, Reel1Bearing, 3-15/16" Pillow Block2
	4 S04369	Screw, Set 5/8-11 x 1 CP 8
	5 W01287	Washer Flat SAE 3/4 Z8 8
	6 W01585	Washer Split Lock 3/4 22
	7 B11465	Bolt Hx head 3/4-10x3 Z8 8
	8 B11386 9 S29170	Bolt Hx head 3/4-16x3-1/4 Z8 6 Sprocket, Driven 1
	10 R07020	Reel, 48(44)OD x 20ID x 62W 1
Page 4	11 D08064	Drum, 20-1/4 Air Overspin 1
	12 N04045	Nut, 3/4-16 RH Lug 2
Reel Assembly	13 B11460 14 B11447	Bolt Hx head 3/4-16x2-1/4 Z8 2 Bolt Hx head 3/4-16x1-3/4 Z8 8
	14 B11447	Bolt Hx head 3/4-16x1-3/4 Z8 8



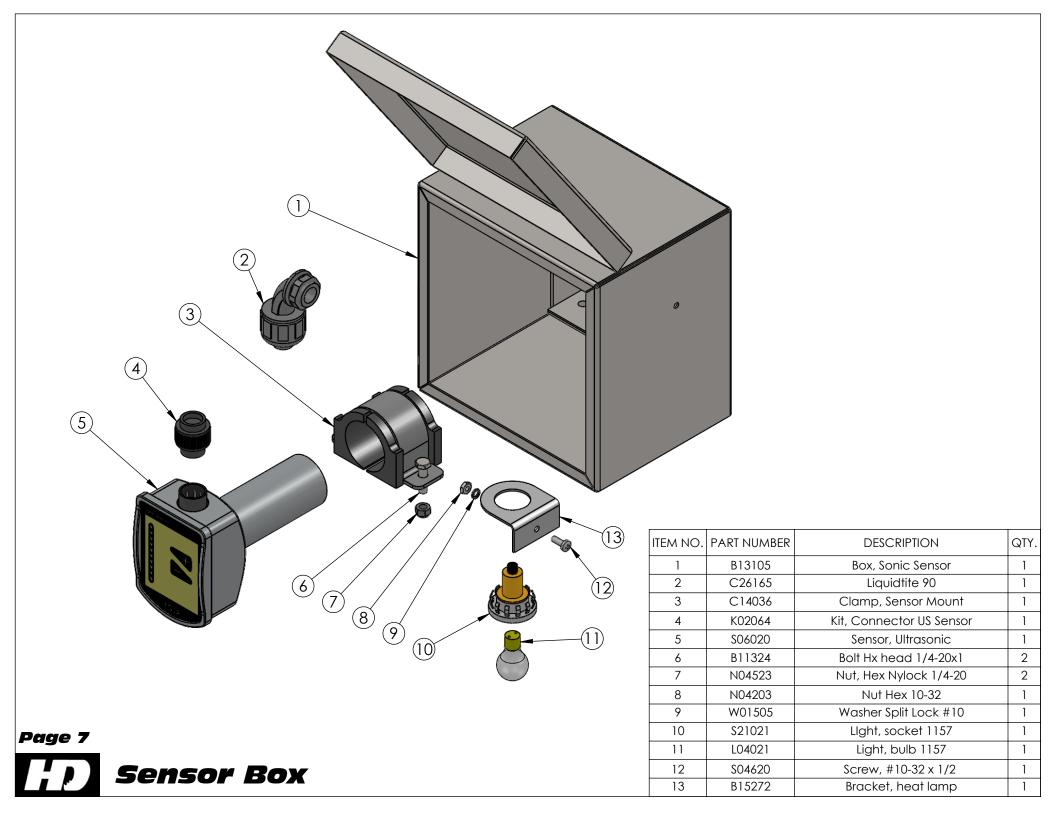


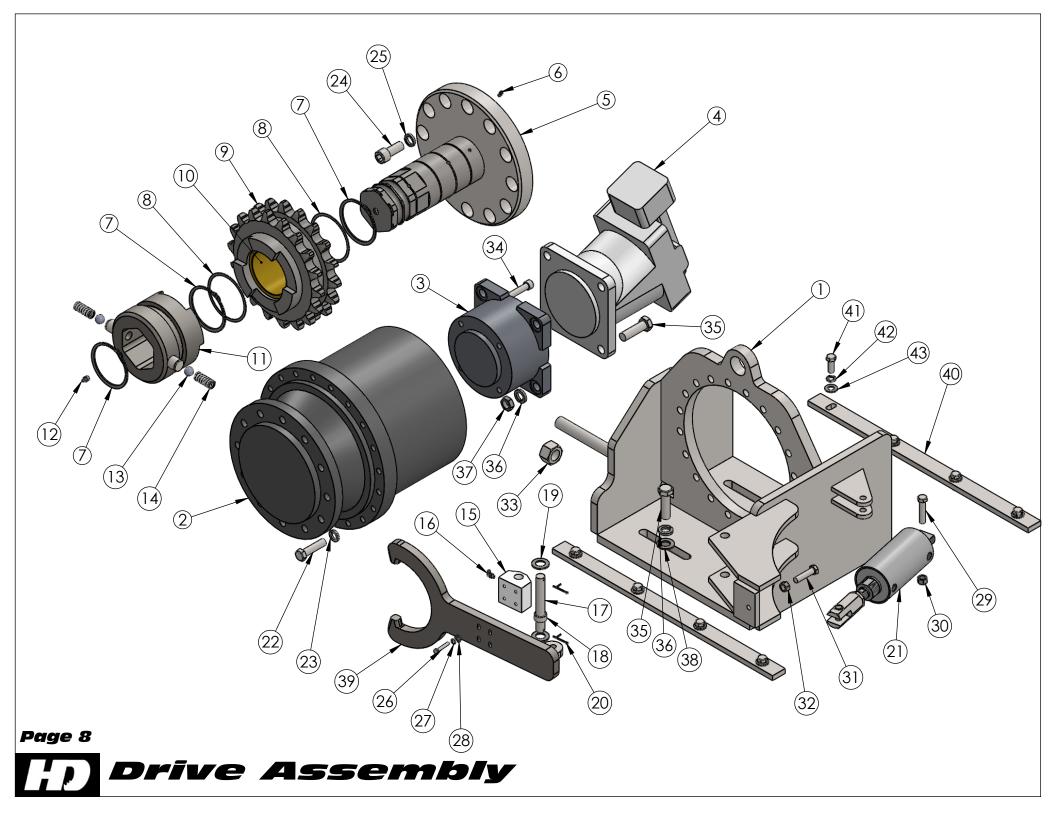
Assembly

Page 6



ITEN	PART NUMBER	DESCRIPTION	QTY.
1	B02030	Band, Brake ODP100-3	3
2	B02031	Band, Brake Mount Anchor End	3
3	B02032	Band, Brake Mount Pivot End	3
4	W01294	Washer Flat SAE 1	6
5	P06098	Pin, Brake Band	3
6	P06948	Pin, Cotter 3/16x2 Z	6
7	P09041	Pivot, Band Brake	3
8	P06097	Pin, Brake Arm Pivot	3
9	P06970	Pin, Cotter 1/4x2 Z	3
10	C36016	Chamber, Service #30	3

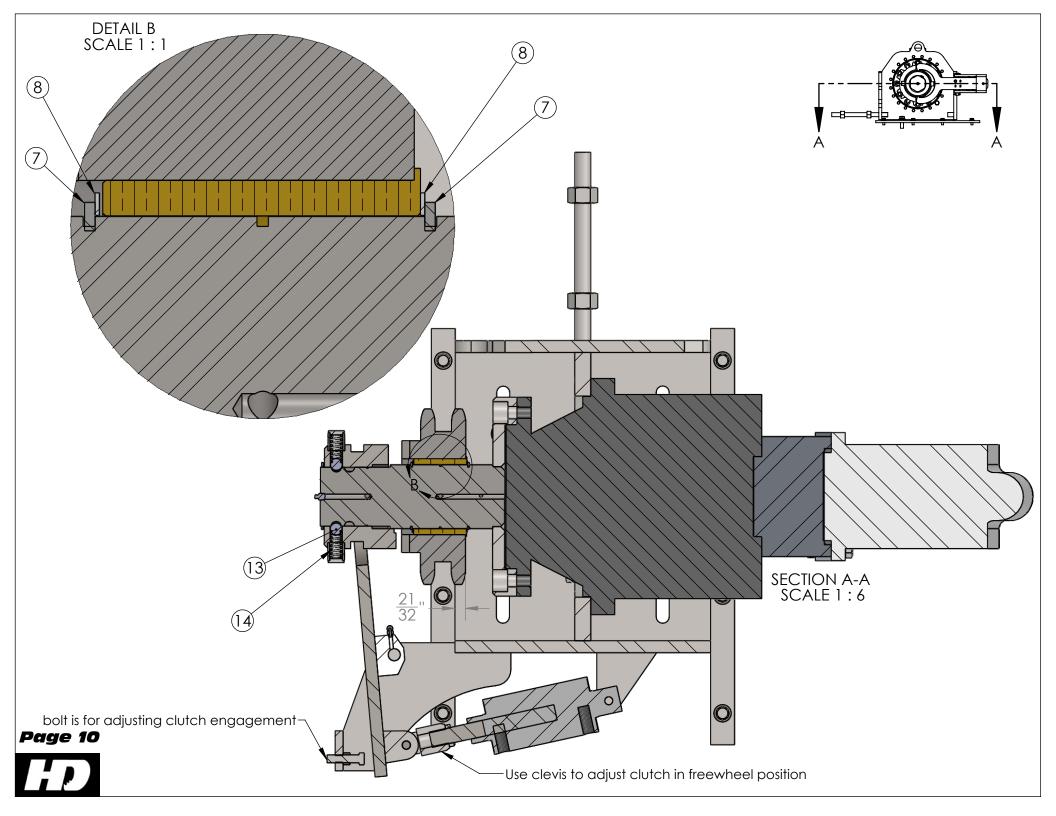


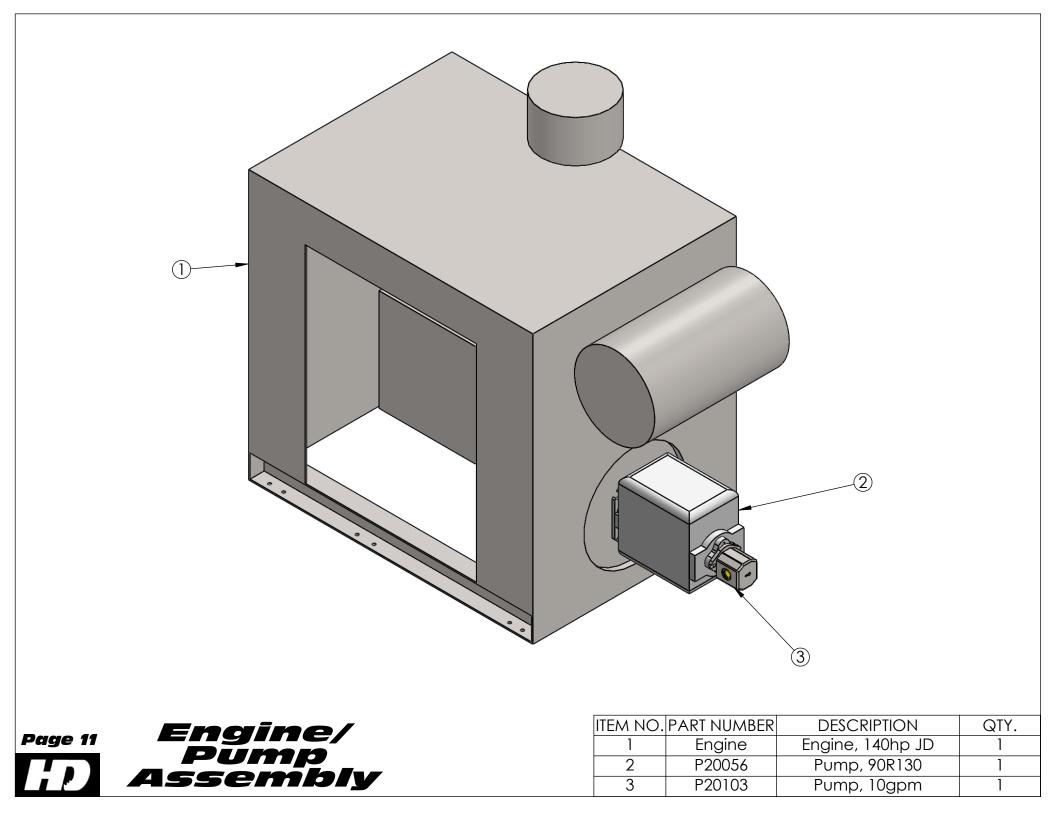


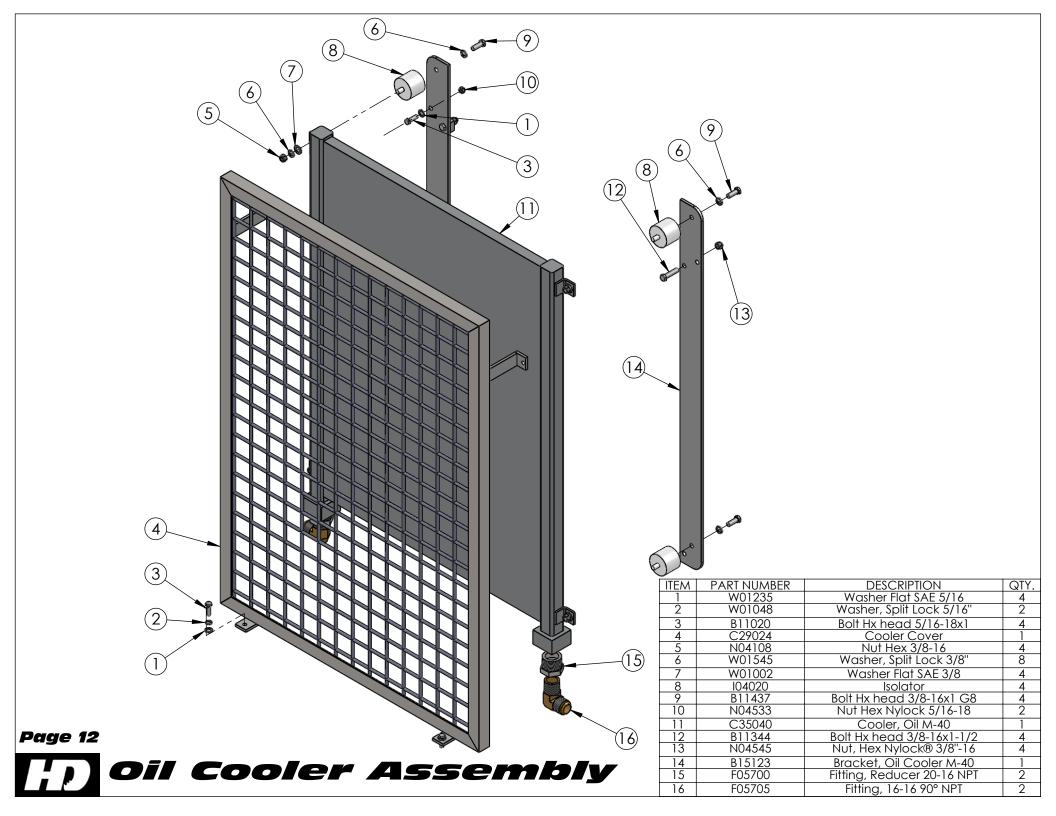
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	M09022	Mount, Planetary	1
2	G12000	Planetary	1
3	B16200	Brake, planetary	1
4	M08111	Motor	1
5	\$43032	Shaft, Hex Drive	1
6	F05630	Fitting, 1/4-28 Zerk	2
7	R18014	Ring, Snap External	3
8	W01014	Washer, Thrust	2
9	S29144	Sprocket, D140B18	1
10	B21022	Bushing, bronze, 4x4.75x3.5	1
11	H09024	Hub, Hex Drive w/ Detent	1
12	Zerk 13-32	Grease Zerk 1/8NPT	1
13	B01180	Ball, Detent 3/4" ODP	2
14	S28036	Spring, Detent OPD	2
15	P25010	Pivot, Clutch ODP	1
16	F05785	Fitting, Zerk 1/4-28 90°	1
17	P25011	Pin, Pivot	1
18	S24041	Spacer, Pivot bracket ODP100-3	1
19	W01285	Washer Flat SAE 3/4	2
20	P06940	Pin, Cotter 1/8x1-1/2 Z	2 2
21	C32063	AIR CYLINDER	1
22	B11476	Bolt Hx head 5/8"-11 x 2-1/2" Z8	20
23	W01040	Washer, Split Lock 5/8"	20
24	S04245	Screw SHCS 3/4-16x1-3/4	12
25	W01586	Washer Split Lock Hi-Collar 3/4	12
26 27	B11011	Bolt Hx head 1/4-20x1-1/2	4
27	W01525	Washer Split Lock 1/4	4
28	W01205	Washer Flat SAE 1/4	4
29	B11361	Bolt Hx head 1/2-13x2-1/4	1
30	N04555	Nut, Hex Nylock® 1/2"-13	1
31	B11366	Bolt Hx head 1/2-13x2	1
32	N04264	Nut Hex 1/2-13	1
33	N04267	Nut, 1-8 Z	2
34	SO4147	Screw SHCS 1/2-13x5	4
35	B11490	Bolt Hx head 3/4-16x3 Z8	8
36	W01585	Washer Split Lock 3/4	8
37	N04475	Nut Hex Jam 3/4-16	4
38	W01287	Washer Flat SAE 3/4 Z8	4
39	Y01071	Yoke, Clutch Shift ODP100-3	1
40	R03006	Rail, ODP100-3 Drive	2
41	B11363	Bolt Hx head 1/2-13x1-1/4	8 8
42	W01565	Washer, Split Lock 1/2"	
43	W01005	Washer, Flat SAE 1/2"	8

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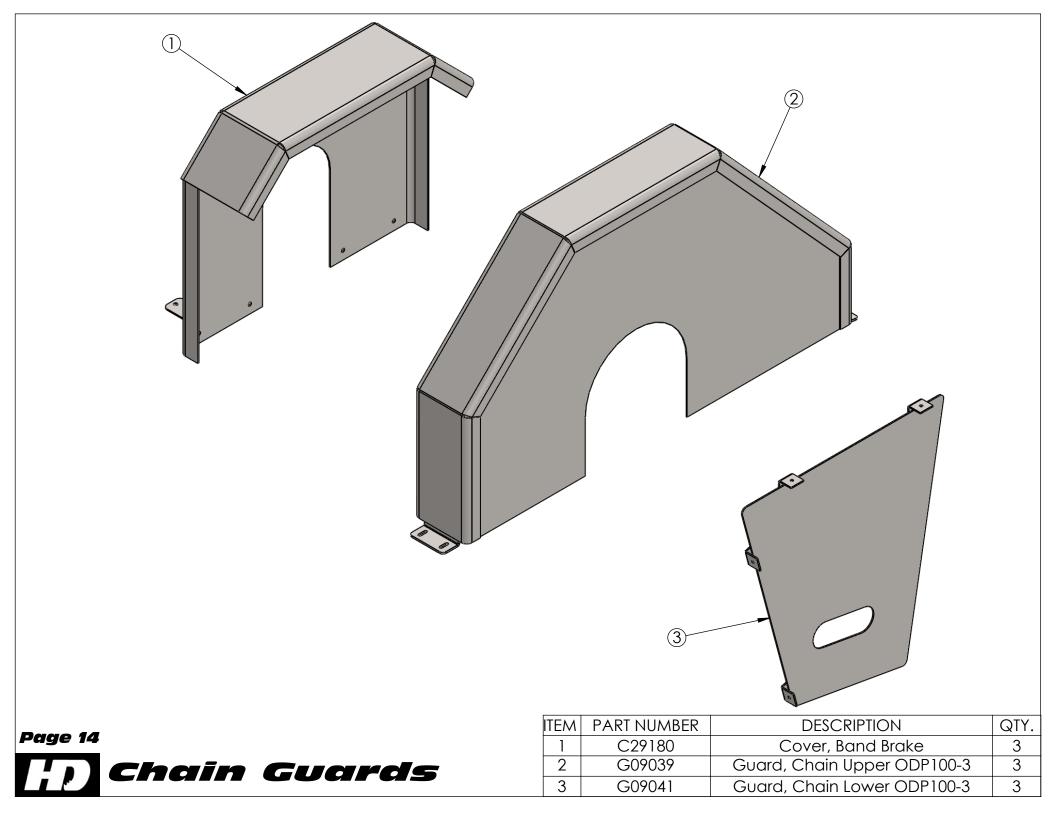


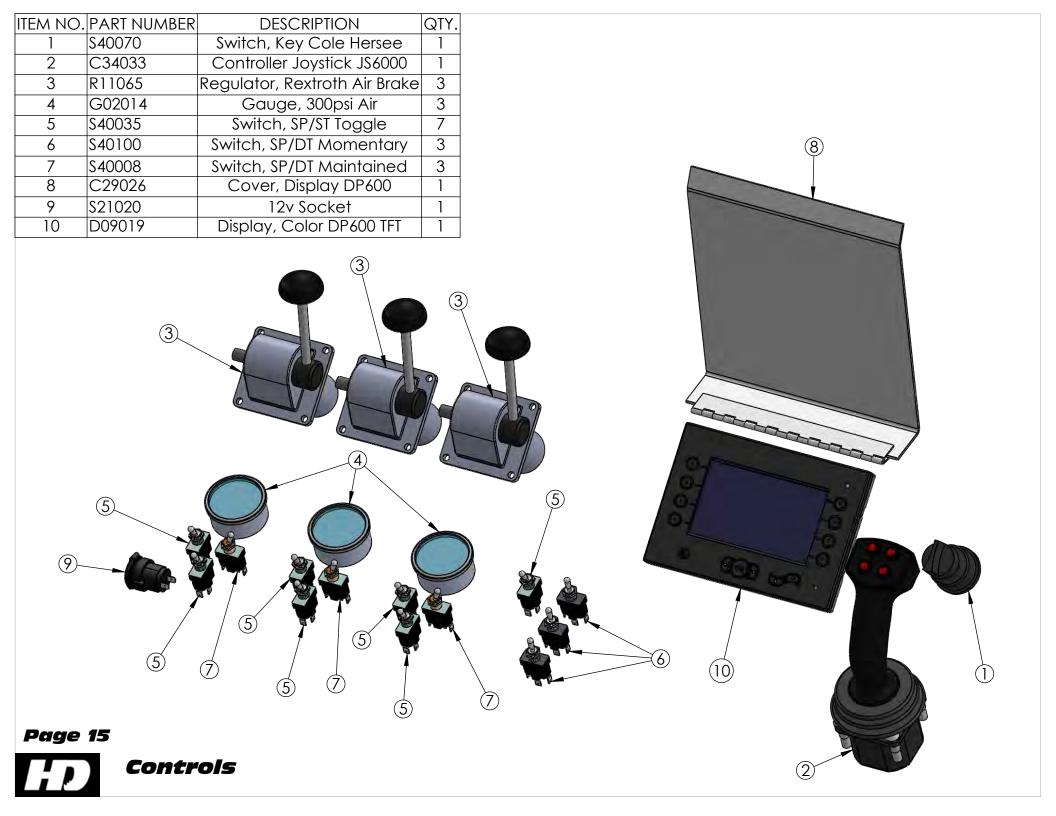


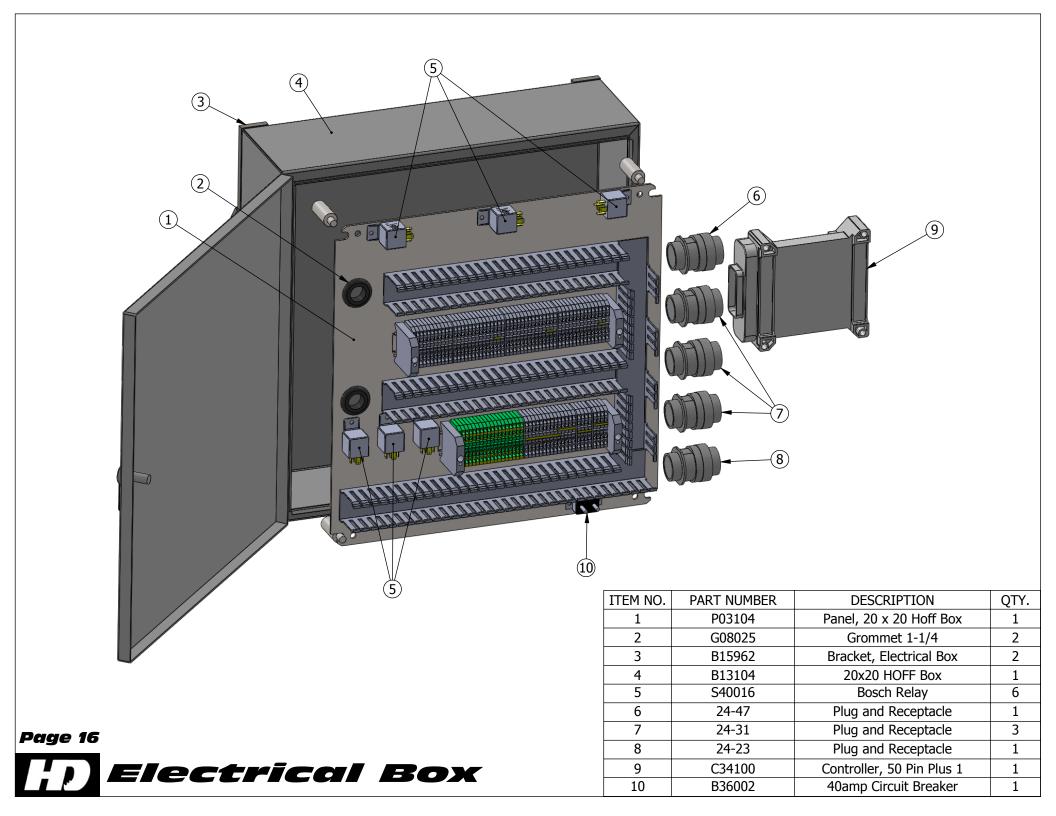


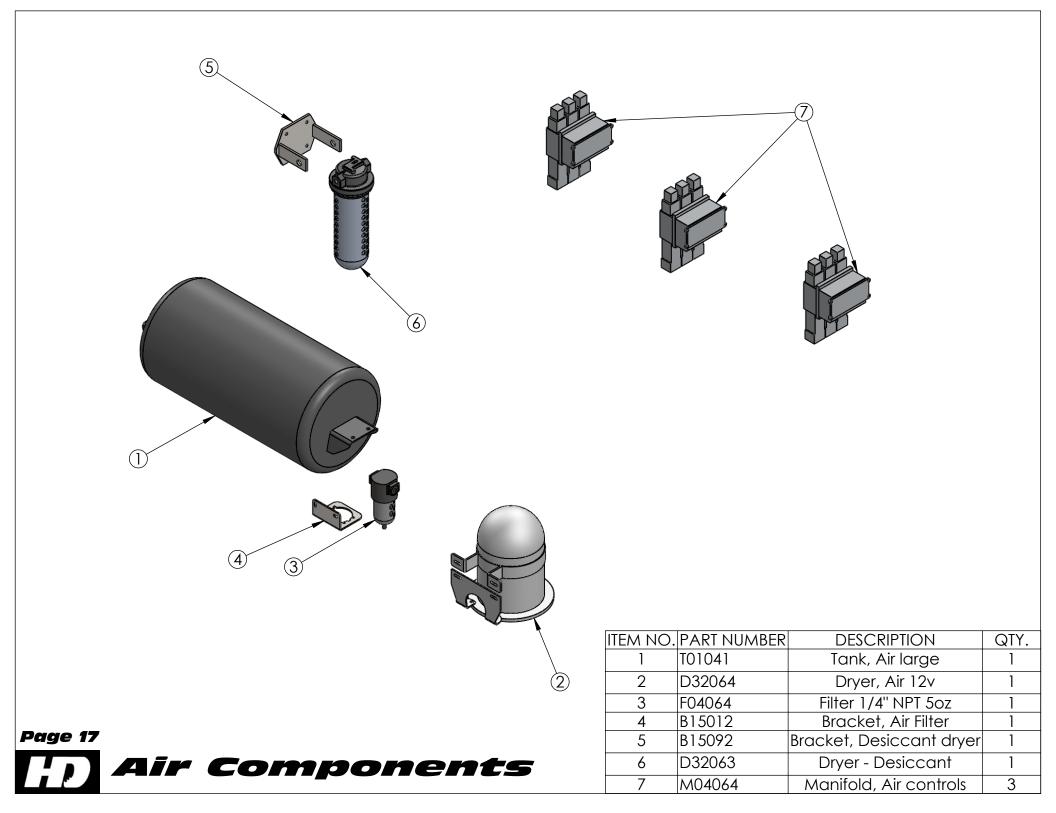


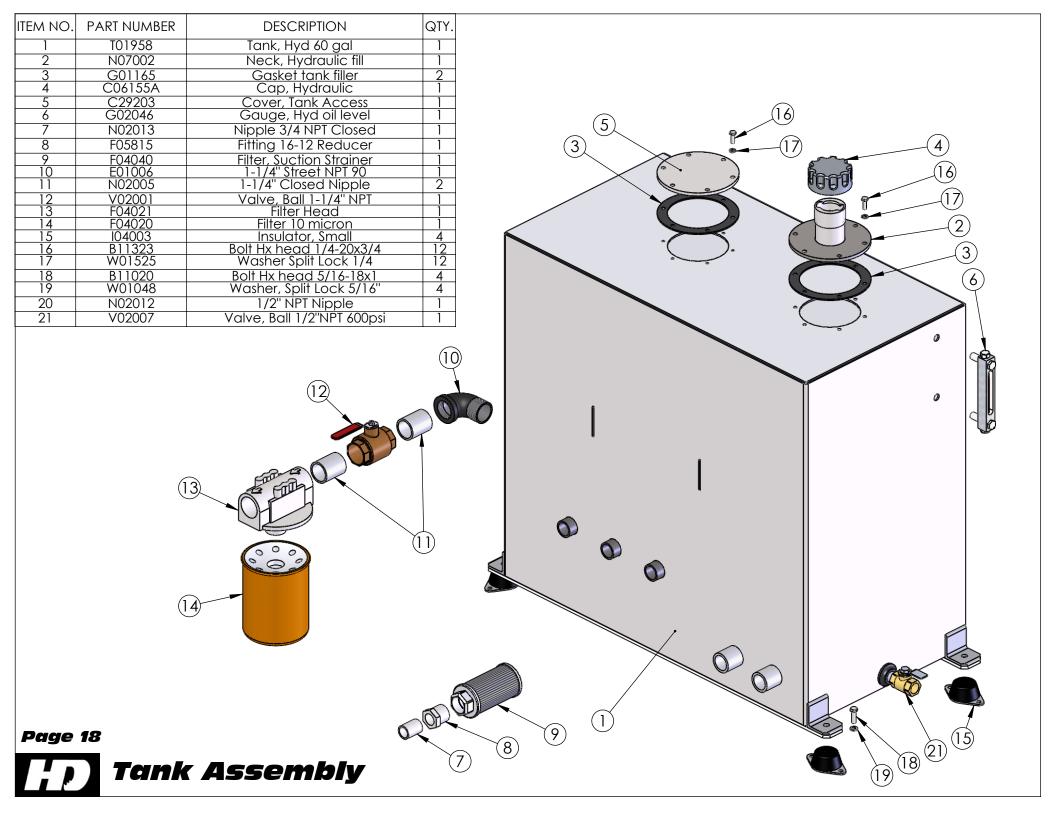
) ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
	1	A08101	Arm, Level wind	1
	2	P06157	Pivot, Level wind	1
	3	N04097	Nut Hex Jam 1-1/4-12	2
	4	F05630	Fitting, 1/4-28 Zerk	1
	5	C32071	Cylinder, Hydraulic 2 x 11	1
	6	R20044	Roller, Painted Steel	4
	7	B07110	Bearing, Roller	8
	8	S43129	Shaft, Roller	2
	9	C06041	Cap, End	5
	10	W01545	Washer, Split Lock 3/8"	5
	11	B11342	Bolt Hx head 3/8-16x1	5
	12	B15897	Bracket, Swing-away Fairlead	1
	10	P06193	Pin, Roll 1/4 x 2-1/2	
	13			2
	13	S04157	Screw, Set Sq Head 1/2 x 1-1/4	2
Page 13 (4) (3)				
Page 13 Levelwind 4 0 3	14	S04157	Screw, Set Sq Head 1/2 x 1-1/4	2

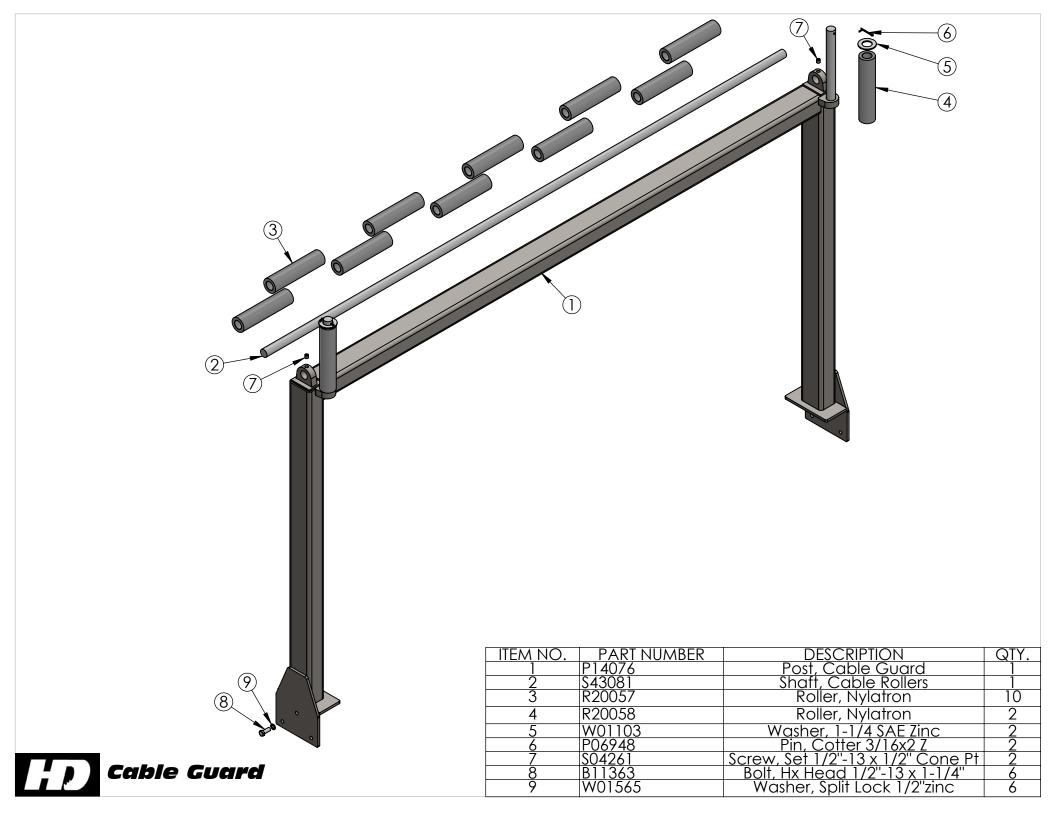


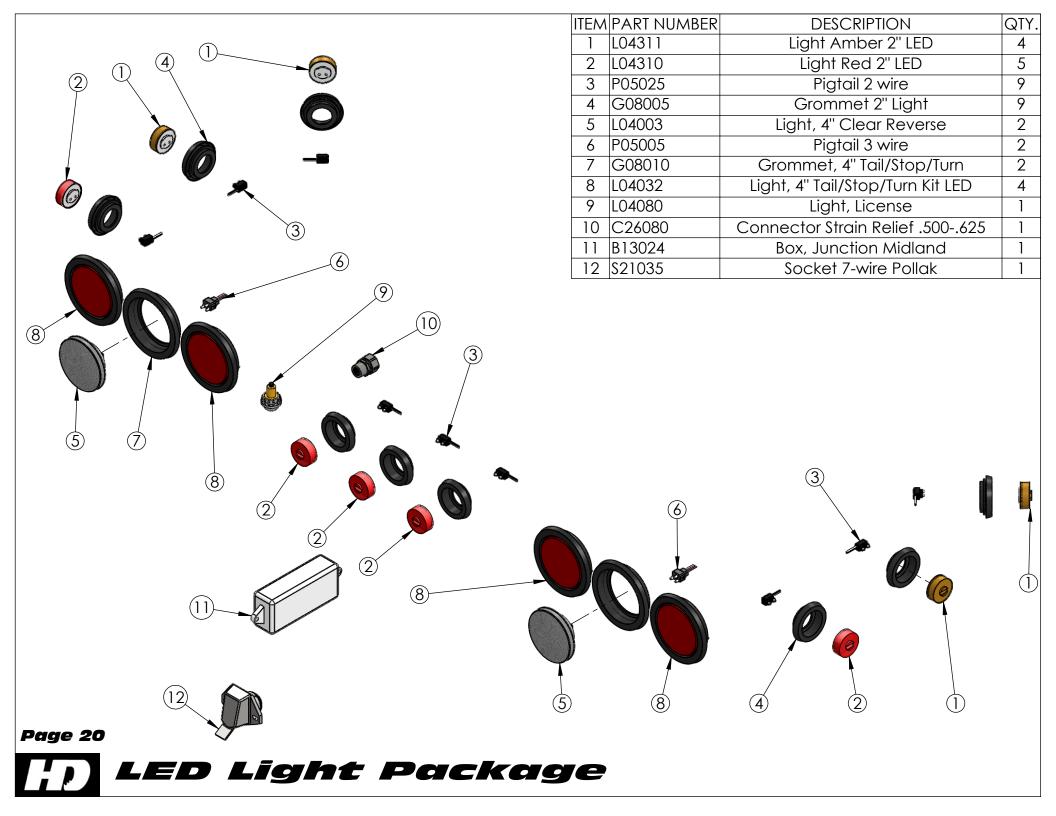


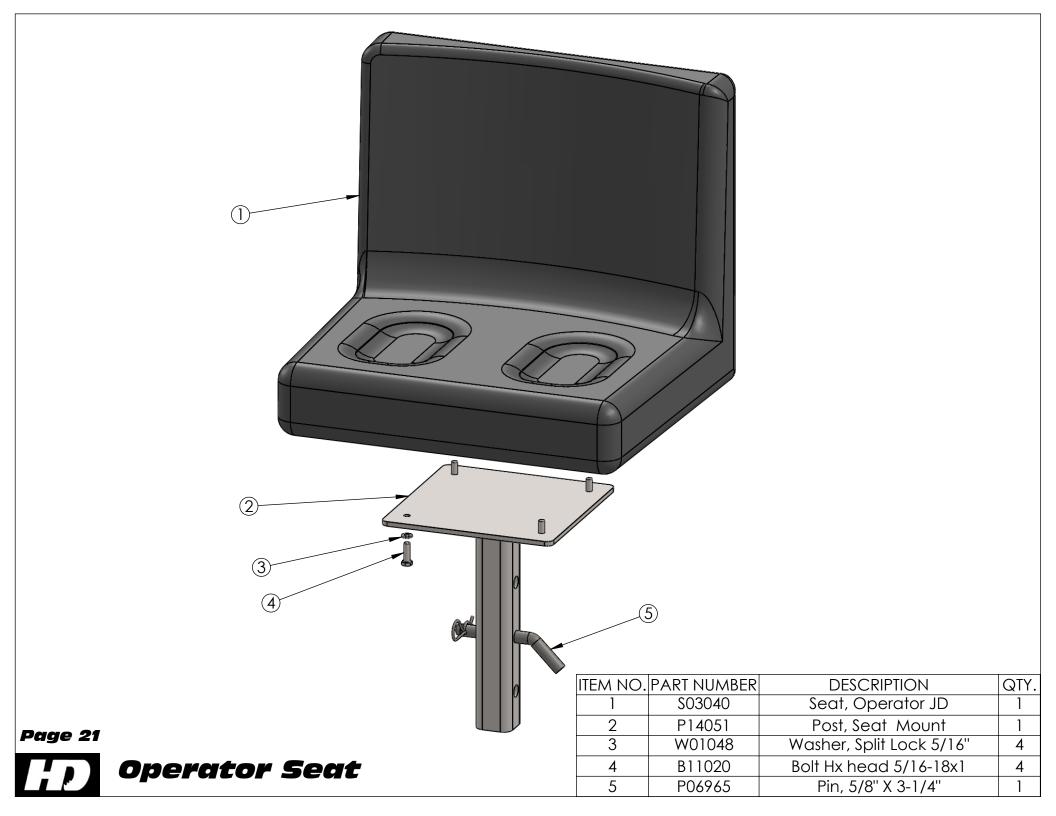


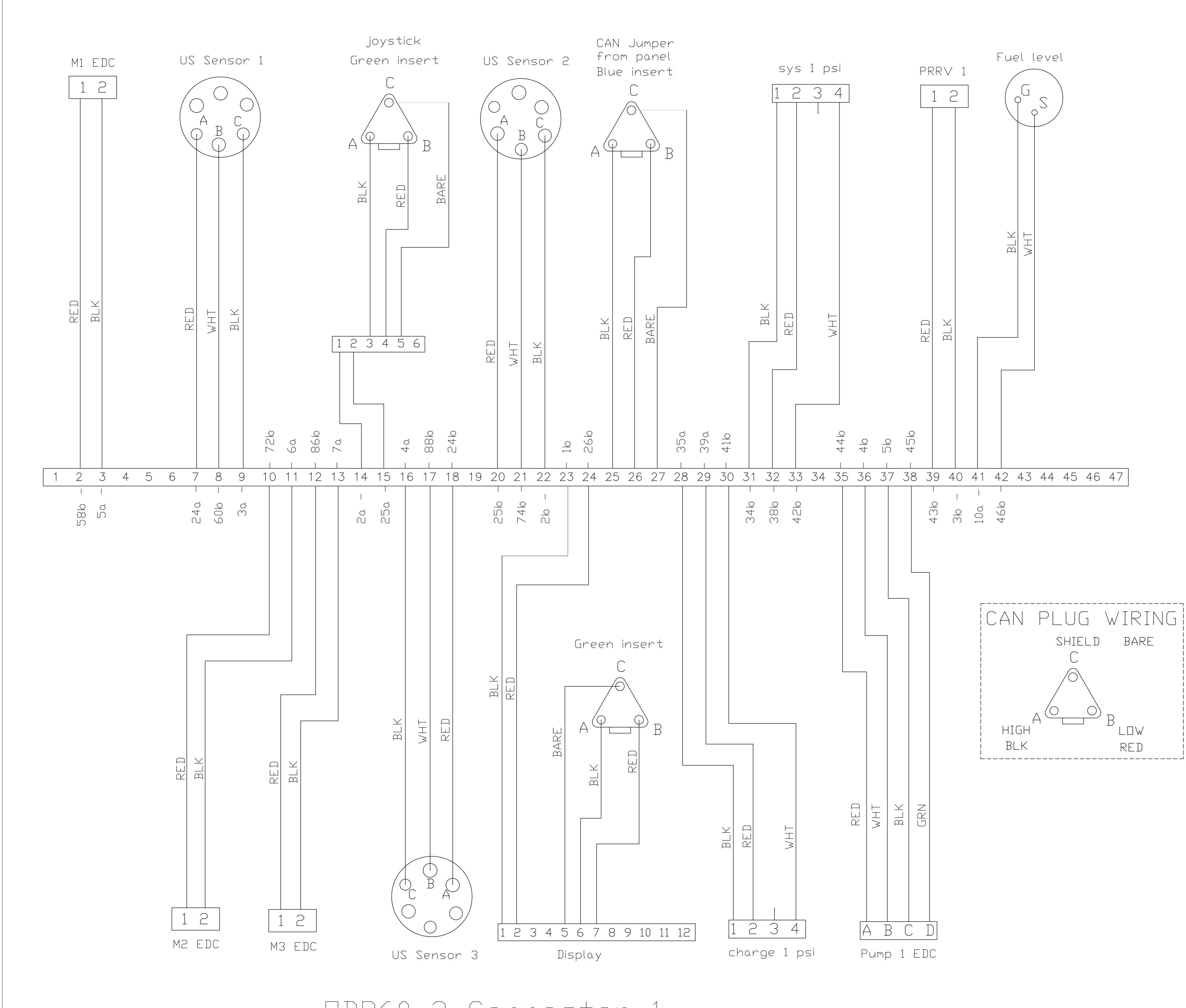








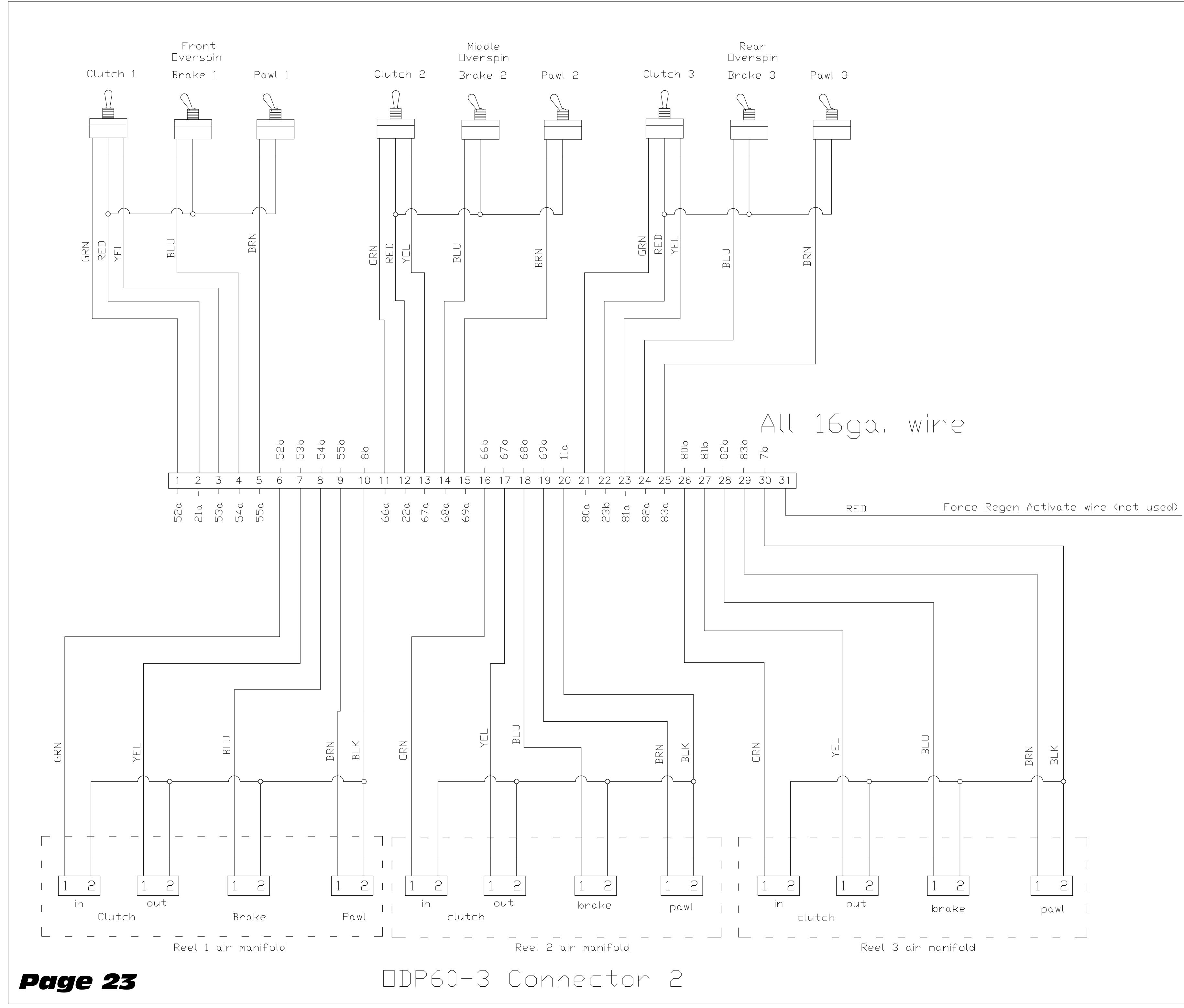






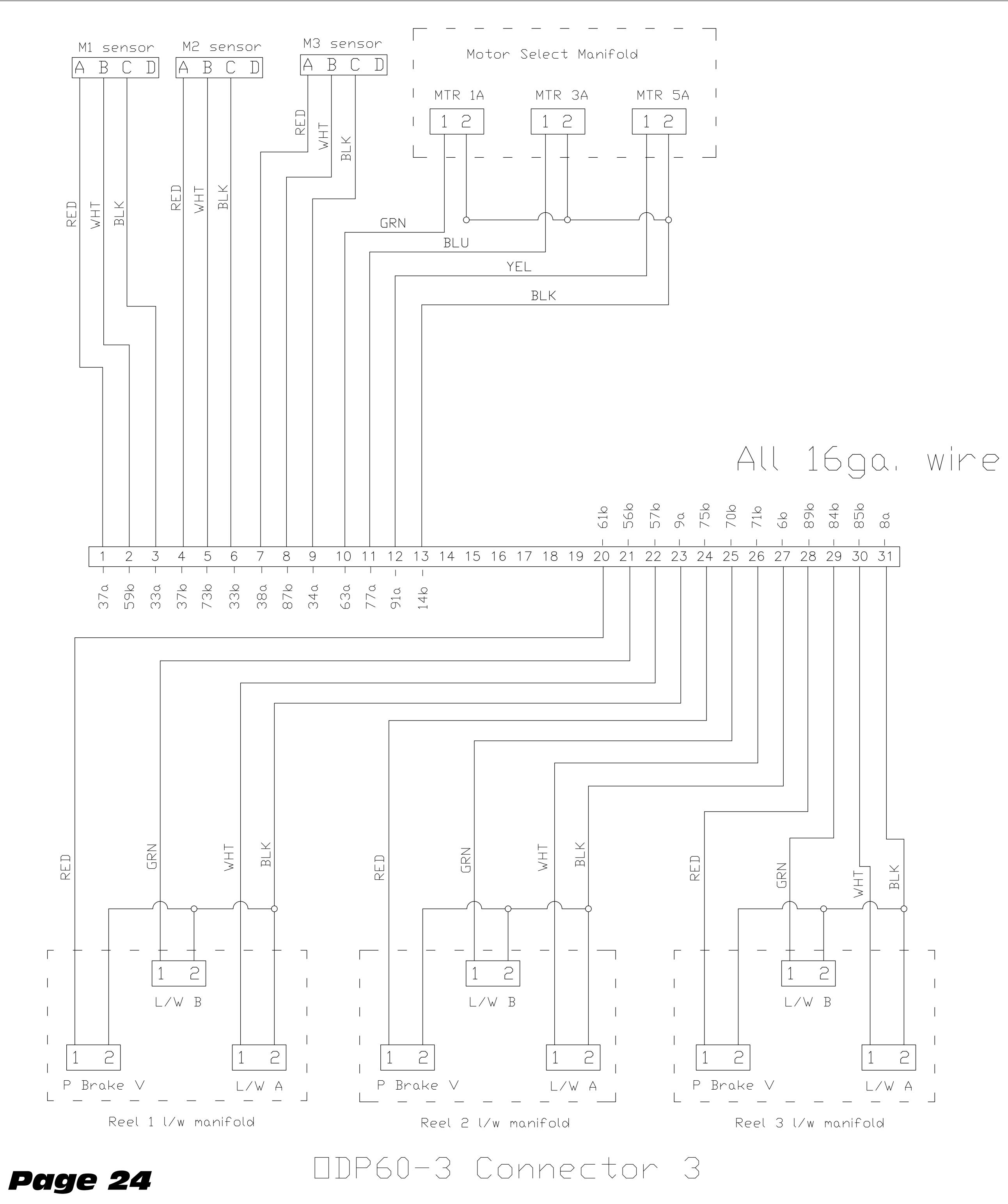
DP60-3 Connector 1

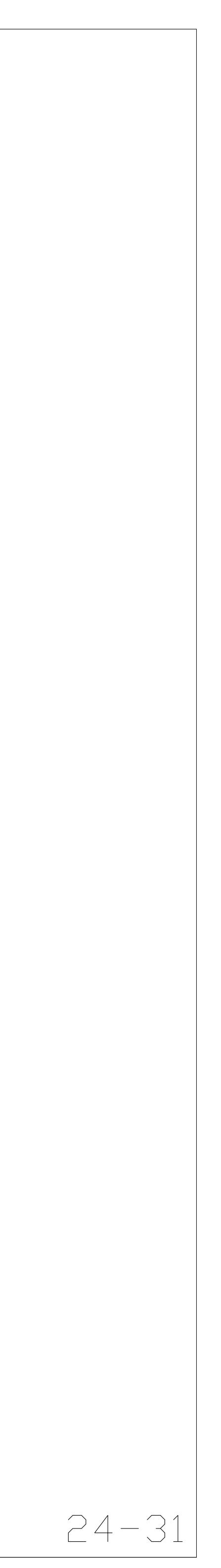
24 - 47

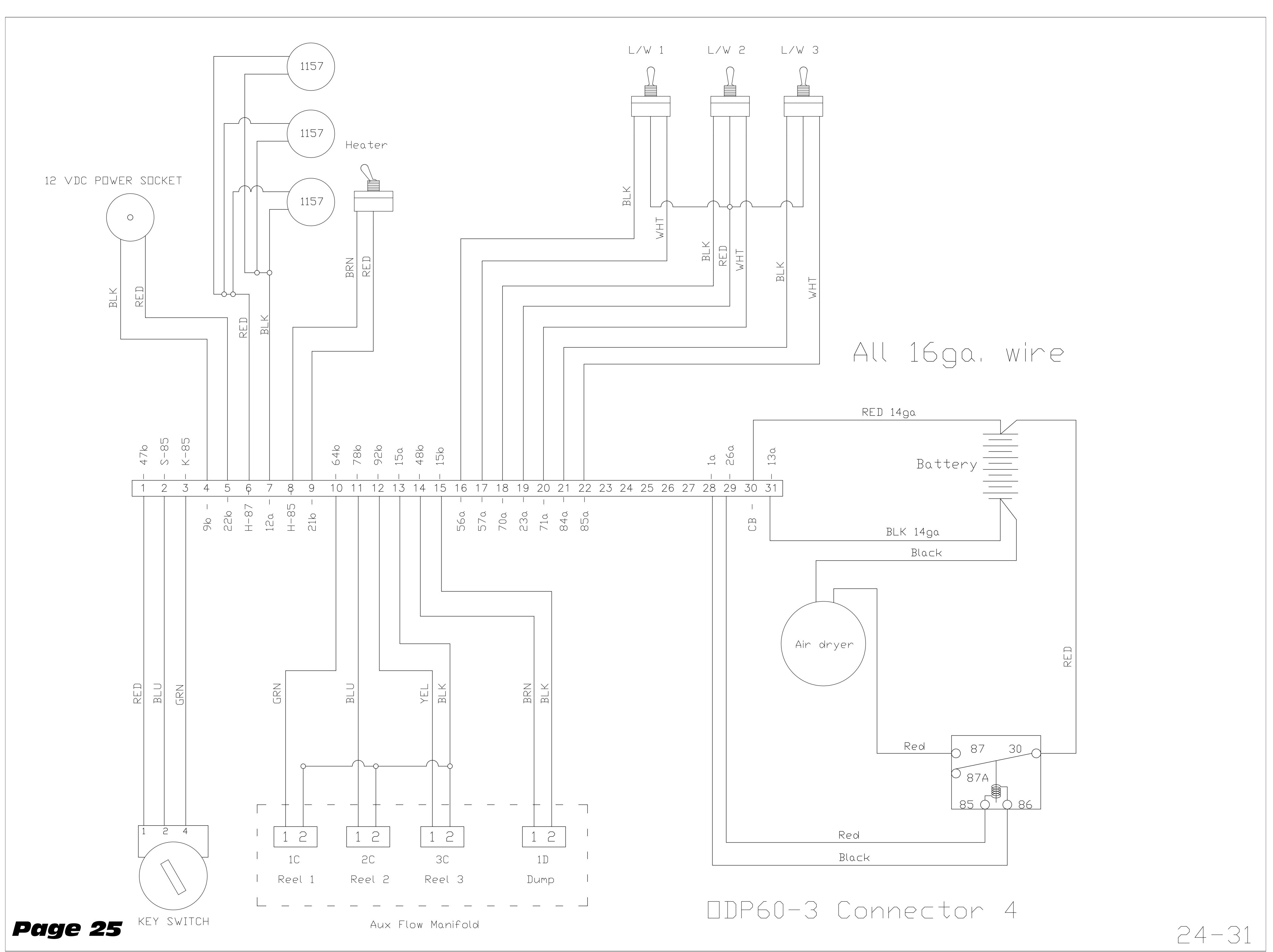




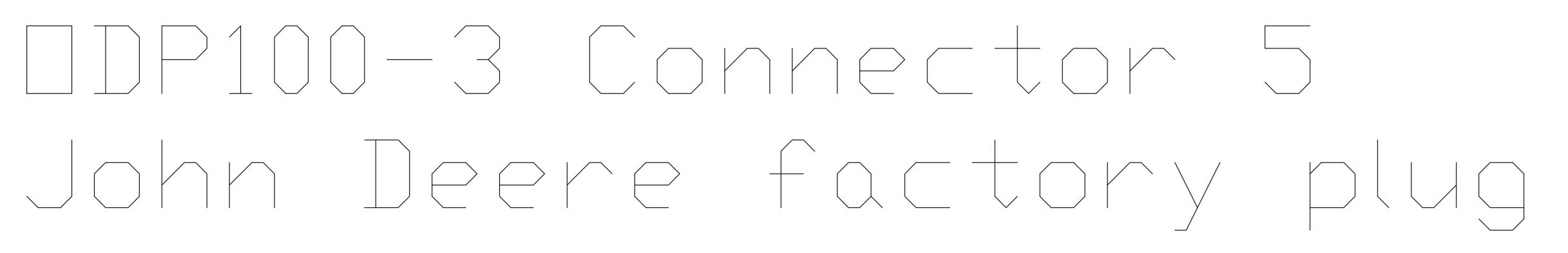
24 - 31





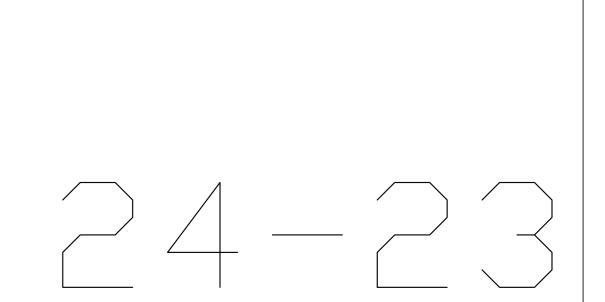


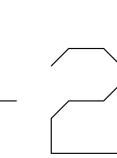


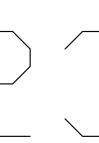


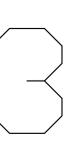
RED	D	
YELLOW/RED	\square	
BLACK	-	
CAN SHIELD		
BROWN/RED		
LIGHT BROWN		
CAN LD-		
CAN HI+		



20a 20b 

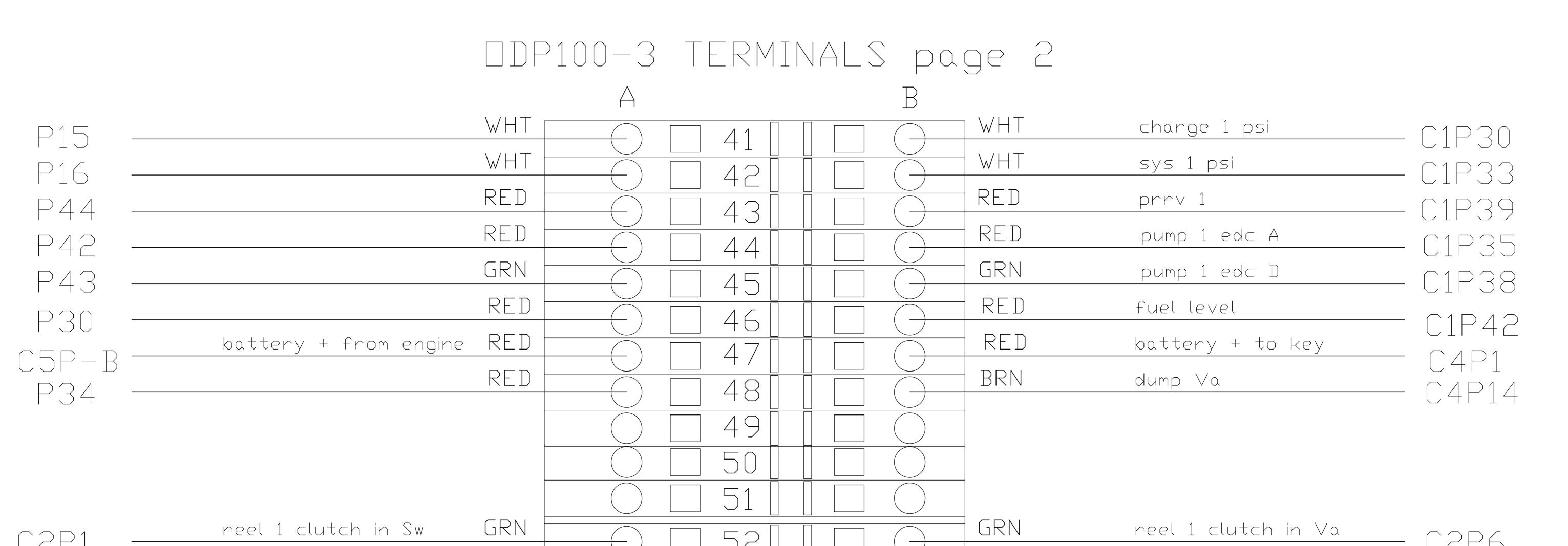




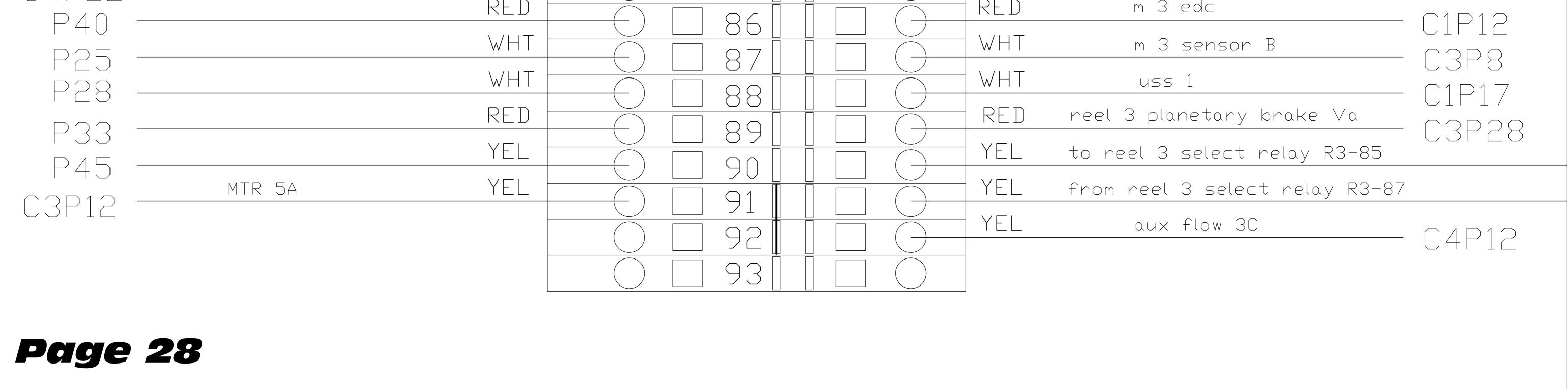


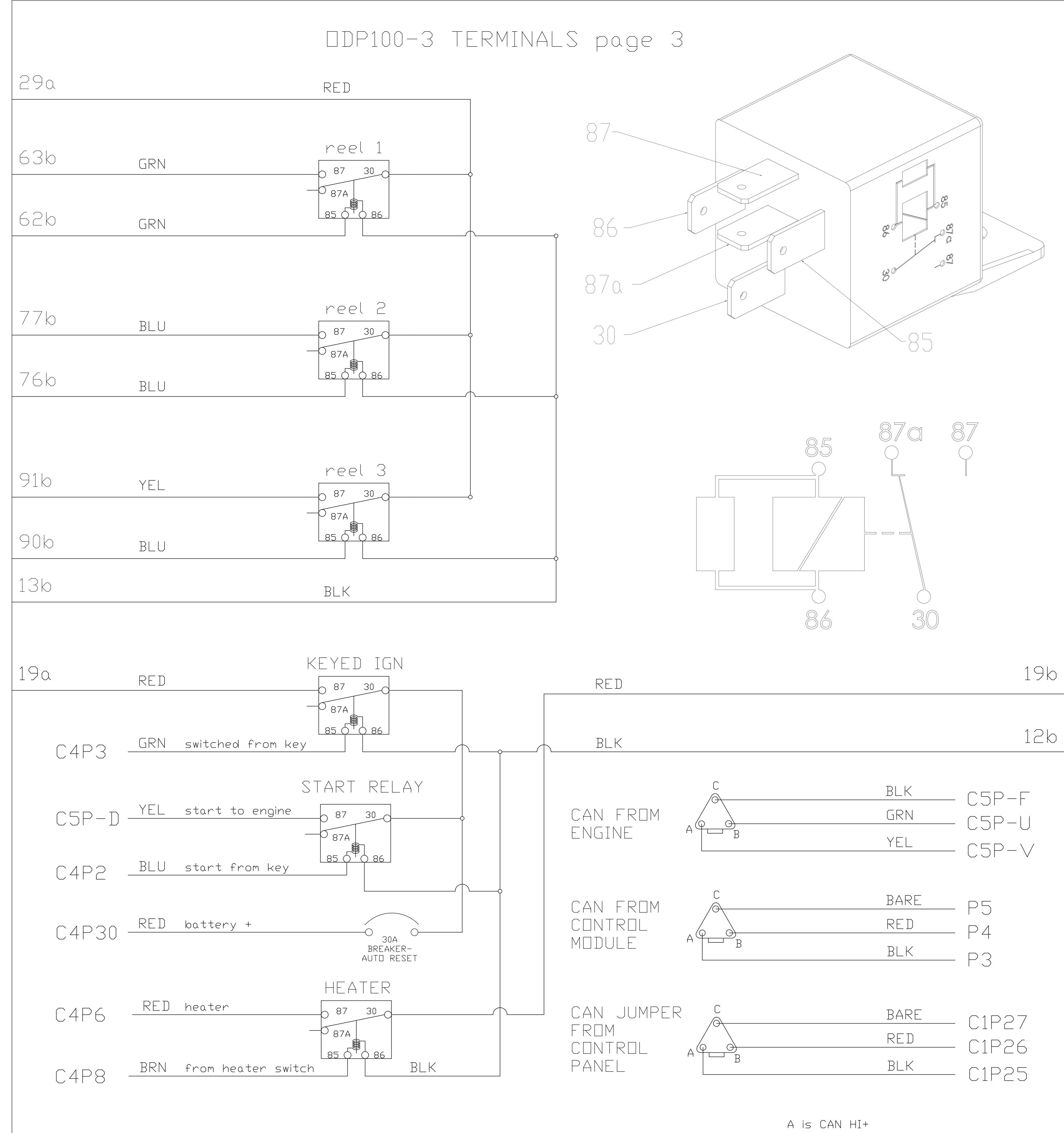
			\triangle	TERMINAL	Ř			
C4P28 —	air dryer -	BLK _		1		– BLK	display -	- C1P2
_1P14 —	jorstick -	BLK –				BLK	uss 2 -	- $C1P2$
_1P9 —	uss 1 -	BLK –				BLK	prrv 1 -	- C1P4
_1r	uss 3 -	BLK –				- WHT	pump 1 edc B -	- C1F4 - C1P3
$ 1 \Gamma 1 O $	m1 edc -	BLK -				BLK	pump 1 edc C -	- $CIF3 C1P3$
	m2 edc -	BLK –				BLK	reel 2 l/w manifold -	$\bigcirc \bot \downarrow \downarrow \bigcirc$
$\sum_{n=1}^{n} P_{n} = 1$	m3 edc -	BLK –				BLK	reel 3 air manifold -	- C1P2
C1P13 - COOO1	reel 3 l/w manifold -	BLK –				BLK	reel 1 air manifold -	-C2PG
C3P31 —	reel 1 l/w manifold -	BLK –				BLK	12v socket -	- C2P1
C3P23 —	fuel sender -	BLK –				BLK	controller -	-C4P4
C1P41 —	reel 2 air manifold -	BLK –				BLK	JD engine -	-P1
22P20 —	heater -	BLK –				BLK	start/key/heat relays -86	- C5P-
24P7 —	battery -	BLK –		12		BLK	reel select relays -86)
24P31 —	Nuttery			<u> 13 </u>		BLK	select manifold odd	
				14				- C3P1
24P13 —	aux flow select -	BLK		15		BLK DLK	dump V -	-C4P1
				16		BLK	reel select relays -	- C1P2
				17				
				18				
	from Key relay K-87	RED				RED	to Heat relay H-30	
25P-G —	engine run/stop BRN	I/RED –				RED	Alt excite	- C5P-
22P2 —	front air switches +	RED —				- RED	heater switch +	-C4PS
2P12 -	middle air switches +	RED				RED	12v socket +	-C4P5
24P19 —	l/w switches +	RED				RED	rear air switches +	- C2P2
1P7 -	uss 1 +	RED —				RED	uss 3 +	-C1P18
21P15 -	joystick +	RED –				RED	uss 2 +	-C1P2
24P29 -	air dryer relay +	RED -				- RED	display +	-C1P2
247 <u> </u>	+	RED -		$\square 26 \square \Box$		- RED	controller +	-P2
	+	red –				- RED	+	- P48
4 /	+ reel select relays -30	red —				— RED	+	-P50
				320				
C3P3 —	m1 sensor 5v-	BLK –		33		BLK BLK	m2 sensor 5v-	- C3P6
22P19 —	m3 sensor 5v-	BLK –		34		BLK	sys 1 psi 5v-	- C1P3
1P28 —	chrg 1 spi 5v-	BLK –		35 [BLK	controller 5v-	- P9
				36 [
C3P1 —	m1 sensor 5v+	RED		$ \boxed{} 27 \boxed{} 7$		RED	m2 sensor 5v+	- C3P4
 	m3 sensor 5v+	RED				RED	sys 1 psi 5v+	- C1P3
	chrg 1 psi 5v+	RED -				RED	controller 5v+	

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		()						C2P6
reel 1 clutch out Sw	YEL					YEL	reel 1 clutch out Va	C2P7
reel 1 overspin Sw	BLU					BLU	reel 1 overspin Va	C2P8
reel 1 pawl Sw	BRN					BRN	reel 1 pawl Va	C2P9
reel 1 l/w B Sw	BLK					GRN	reel 1 l/w B Va	C3P21
reel 1 l/w A Sw	WHT		$\neg $			WHT	reel 1 l/w A Va	
	RED					RED	m 1 edc	C3P22
	WHT					- WHT	m 1 sensor B	C1P2
	WHT					- WHT	uss 1	C3P2
								C1P8
			61 [C3P20
			620					7
			63					/
			64			UKN	aux flow Il	C4P10
			65					
reel 2 clutch in Sw	GRN					GRN	reel 2 clutch in Va	C2P16
reel 2 clutch out Sw	YEL					YEL	reel 2 clutch out Va	C2P17
reel 2 overspin Sw	BLU					BLU	reel 2 overspin Va	CP18
reel 2 pawl Sw	BRN					BRN	reel 2 pawl Va	CP19
reel 2 l/w B Sw	BLK					GRN	reel 2 l/w B Va	C3P25
reel 2 l/w A Sw	WHT					- WHT	reel 2 l/w A Va	
	RED					RED	m 2 edc	C3P26
	WHT					WHT	m 2 sensor B	C1P10
	WHT		\neg \Box			- WHT		C3P5
								C1P21
								C3P24
MTP 2A			/6[
	_		_ 78					C4P11
			79					
reel 3 clucth in Sw	GRN		80			GRN	reel 3 clutch in Va	C2P26
reel 3 clutch out Sw	YEL					YEL	reel 3 clutch out Va	C2P27
reel 3 overspin Sw	BLU					BLU	reel 3 overspin Va	C2P28
reel 3 pawl Sw	BRN					BRN	reel 3 pawl Va	C2P29
reel 3 l/w B Sw	BLK					GRN	reel 3 l/w B Va	C3P29
reel 3 l/w A Sw	WHT					- WHT	reel 3 l/w A Va	
	RED					RED	m 3 edc	C3P30
	reel 1 overspin Sw reel 1 pawl Sw reel 1 I/w B Sw reel 1 I/w A Sw MTR 1A MTR 1A reel 2 clutch in Sw reel 2 overspin Sw reel 2 l/w B Sw reel 2 I/w A Sw reel 2 I/w A Sw reel 3 clutch out Sw reel 3 clutch out Sw reel 3 overspin Sw reel 3 pawl Sw reel 3 pawl Sw reel 3 I/w B Sw	reet 1 overspin Sw BLU reet 1 powt Sw BRN reet 1 I/w B Sw BLK reet 1 I/w A Sw WHT RED WHT RED GRN MTR 1A GRN reet 2 clutch in Sw GRN reet 2 clutch out Sw YEL reet 2 overspin Sw BLU reet 2 pawl Sw BLK reet 2 I/w B Sw BLK reet 2 I/w A Sw WHT RED WHT RED WHT RED BLU MTR 3A BLU reet 3 clutch in Sw GRN reet 3 clutch in Sw GRN reet 3 clutch in Sw GRN reet 3 clutch in Sw HLU RED BLU MTR 3A BLU	reel 1 overspn S* BLU reel 1 powl S* BRN roel 1 U/* A S* BLK reel 1 U/* A S* WHT RED WHT RED WHT RED MIR 1A reel 2 clutch in S* GRN reel 2 clutch in S* GRN reel 2 clutch out S* FLL reel 2 overspin S* BLU reel 2 l/* B S* BLK reel 2 U/* A S* WHT RED WHT RED 0 0 0 0 0 0 0 0 0 0 0 0 0	ree. 1 overspin Sw BLU 0 53 ree. 1 nowl Sw BRN 0 55 ree. 1 1/w A Sw WHT 0 57 RED 0 58 WHT 0 59 WHT 0 59 WHT 0 59 WHT 0 60 RED 0 61 GRN 0 63 MIR IA GRN 0 63 ree. 2 cutch in Sw GRN 0 66 ree. 2 cutch nut Sw YFL 0 66 ree. 2 cutch nut Sw BLU 0 67 ree. 2 cutch nut Sw BLU 0 67 ree. 2 cutch nut Sw BLU 0 70 ree. 2 cutch nut Sw BLU 0 71 ree. 2 cutch nut Sw BLU 0 71 ree. 2 cutch nut Sw BLU 0 72 ree. 2 cutch nut Sw BLU 72 72 ree. 2 cutch nut Sw BLU 74 73 ree. 3 cutch i	reel 1 cutch out Sw YLL 53 54 reel 1 oversph Sw BLU 54 55 55 reel 1 pawl Sw BK 55 56 56 reel 1 1/w 4 Sw WH1 57 56 57 reel 1 1/w 4 Sw WH1 57 56 56 reel 1 1/w 4 Sw WH1 57 57 57 WH1 57 57 57 57 57 WH1 57 57 57 57 57 57 WH1 57	rest 1 overspin Sw 3_U 53 0 rest 1 overspin Sw 3RN 54 0 rest 1 overspin Sw 3RN 0 554 0 rest 1 overspin Sw 3RN 0 554 0 0 rest 1 overspin Sw 3LK 0 554 0 0 rest 1 overspin Sw 3LK 0 557 0 0 rest 1 overspin Sw 3LK 0 577 0 0 WHT 0 59 0 0 0 0 WHT 0 59 0 0 0 0 WHT 0 59 0 0 0 0 WHT 0 60 0 0 0 0 MR 1A GRN 0 63 0 0 0 rest 2 outca cut Sw YFI 0 66 0 0 0 rest 2 outca cut Sw YFI 0 668 0 0 0 0 rest 2 outca cut Sw YFI 0	meel 1 clutch out Xw YEL 3/3 YEL mod 1 powl Sw BLU 3/3 BLU mod 1 powl Sw BRN 3/3 BRN mod 1 powl Sw BLK 3/3 GRN mod 1 fue B Sw BLK 3/3 GRN mod 1 fue B Sw WHT 3/3 GRN mod 1 fue B Sw WHT 3/3 GRN read 1 fue B Sw WHT 3/3 GRN wHT 3/3 GRN WHT RED 3/3 GRN WHT WHT 5/3 GRN WHT WHT 5/3 GRN GRN WHT 5/3 GRN GRN WHT 5/3 GRN GRN RED 5/3 GRN GRN mod 2 clutch purs Sw BLU 5/3 GRN mod 2 clutch purs Sw BLU S/3 GRN mod 2 clutch purs Sw BLU GRN GRN mod 2 clutch purs Sw BLU GRN GRN mod 2 clutch purs Sw BLU	And IL output out Der Will 52 YEL And IL output version And IL averagin version BUU 54 3UU Seal Laveragin Version And IL averagin version BUU 56 3UU Seal Laveragin Version And IL averagin Version BUU 56 GRN Added to the Version And IL averagin Version BUU 56 GRN Added to the Version And IL averagin Version BUU 56 GRN Added to the Version And IL averagin Version BUU 56 GRN Added to the Version WHI 57 State GRN Added to the Version WHI 57 GRN Added to the Version GRN WHI GRN GRN GRN Added to the Version WHI GRN GRN GRN Added to the Version WHI GRN GRN GRN Added to the Version WHI GRN GRN Added to the Version GRN WHI GRN GRN Added to the Version GRN WHI GRN GRN Ad





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