

DEMOUNTABLE CONCEPTS

• AMERICA'S SWAP BODY •



Air Line-Haul Trailer Instruction Manual and Maintenance Guide

BWS Components

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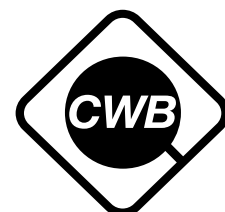
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TABLE OF CONTENTS

QUALITY POLICY	4
COMPLIANCE PLATE	5
HUB ALERT™	6
SAFETY PRECAUTIONS	7
1.1 OPERATING SAFETY	8
1.2 LOADING SAFETY	8
1.3 MAINTENANCE SAFETY	8
1.4 SAFETY DECAL MAINTENANCE	8
1.5 SIGN-OFF FORM	9
2.1 SAFETY DECALS	10
3.1 OPERATING PROCEDURES	11
3.1 BREAK-IN/INSPECTION	11
3.1.1 500 mile / 800 km Inspection	11
3.1.2 10,000 mile / 16,000 km Inspection	11
3.1.3 20,000 mile / 32,000 km Inspection	11
3.2 PRE-OPERATION VEHICLE INSPECTION PROCEDURE	12
Walk Around Sequence	12
3.3 FIFTH WHEEL OPERATING INSTRUCTIONS	15
3.3.1 Coupling Procedure	15
3.3.2 Uncoupling Procedure	16
3.4 LOADING	16
3.4.1 Trailer Weight Distribution	17
3.4.2 Load Restraints	17
3.5 TRANSPORTING	18
3.5.1 Operating Instructions	18
3.5.2 Braking Guidelines	18
3.5.3 Tires	18
4.1 MAINTENANCE AND INSPECTION	19
4.2 KING PIN AND UPPER COUPLER	21
4.3 AXLES	21
4.3.1 Suggested Preventative Maintenance Schedule	21
4.3.2 Axle Alignment	21
4.3.3 Wheels	22
4.3.4 Wheel Hubs	23
4.3.5 Bearing Adjustment Procedure	24
4.3.6 Bearing Adjustment	25
4.4 GREASE RETAINERS OIL SEALS	26
4.4.1 Ring and Seal Type (Oil) Maintenance	26
4.4.2 Ring and Seal Type (Oil) Replacement	26
4.5 SUSPENSION SYSTEM (AIR)	26
4.5.1 Inspection	26
4.6 SUSPENSION SYSTEM	27
4.7 AIR RIDE SUSPENSION	27
4.7.1 Maintenance	28
4.7.2 Pivot Connection	28
4.7.3 Air Control System	28
4.7.4 Height Control Valve	28
4.7.5 Height Control Valve with Dual Ride Height	28
4.7.6 Air Dump Valve	29
4.7.7 Dock Leveling Valve	30
4.7.8 Air Powered Hydraulic Landing Gear	32
4.8 BRAKES	34
4.8.1 Preventative Maintenance	34
4.8.2 Maintenance	35
4.9 TIRES	37
4.9.1 Tire Care and Maintenance	37
4.9.2 Tire Inspection	37
4.9.3 Mechanical Irregularities	37
4.9.4 Radial Tire Application	37
4.9.5 Matching Tires to Rims	37
4.9.6 Tire Wear Patterns:	38
Over-Inflation	38
Under-Inflation	38
Feathering	38
One Side Wear	38
Cupping	38
Second Rib Wear	38

TABLE OF CONTENTS

5.1 AIR SYSTEM COMPONENTS	39
5.1.2 Glad Hands	39
5.1.3 ABS	39
6.1 ELECTRICAL SYSTEM	39
7.1 AIR SCHEMATICS	41
51VT4V DCI	42
53VT2V DCI	43
53VT3V DCI	44
53VT2V CAL	45
53VT2V FL CA-53	46
53VT2V FL CA-97	47
53VT2V FL US-97	48
53VT2V JB HUNT	49
53VT2V PENSKE	50
8.1 ELECTRICAL SCHEMATICS	51
51VT4V DCI	52
53VT2V DCI	53
53VT3V DCI	54
53VT2V CAL	55
53VT2V FL CA-53	56
53VT2V FL CA-97	57
53VT2V FL US-97	58
53VT2V JB HUNT	59
53VT2V PENSKE	60
9.1 TROUBLE SHOOTING	61
10.1 WARRANTY	65



**CERTIFIED
CSA W47.1**



QUALITY POLICY

BWS Manufacturing is totally committed to understanding and meeting the quality needs and expectations of all our customers. Our company has a proud reputation for delivering quality equipment and components.

BWS strives for continuous improvement of our product and meeting the objectives of the company. We are also committed to the continuous improvement of our quality management system to insure its suitability to meet all company, customer, regulatory, legal and ISO requirements.

The entire BWS team will adhere to the spirit and intent of our quality policy, as well as the directives of this quality assurance manual and its supporting quality system documentation. We will continue to aggressively strive to insure that customer satisfaction is achieved at all times, and in all things.



Hugo St-Cyr
CEO



Jamie Merrithew
Systems Manager



COMPLIANCE PLATE

The compliance plate is located on the road side of the trailer frame. The National Safety Mark (NSM) verifies compliance with all applicable Canadian Motor Vehicle Safety Standards (CMVSS) and/or American Federal Motor Vehicle Safety Standards (FMVSS), and records the following information.

V.I.N. Vehicle Identification Number
DATE Date of Manufacture
TYPE (TRA/REM) in Canada only
MODEL BWS Trailer Model
G.V.W.R Gross Vehicle Weight Rating is the sum of the trailer weight and the allowable trailer load.

G.A.W.R Gross Axle Weight Rating is the lowest capacity of all the individual components in the axle assembly. It reflects the "weakest link" in the entire suspension system, whether it be springs, axles, wheels, rims or tires.



RIM Rim Diameter x Width
TIRE Outside Diameter/ Width R Inside Diameter

PRESSURE
COLD Cold tire inflation pressure in psi (US) / kPa and psi (Can.)

It is the practice of BWS to use maximum pressure for tire inflation.

NSM BWS has been assigned a registration number and has been authorized to use the NSM on their products. The NSM signifies conformance with the CMVSS set by transport Canada.

COMPLIANCE PLATE DECAL

MANUFACTURED BY / FABRIQUÉ PAR:  CENTREVILLE NEW/NOUVEAU BRUNSWICK CANADA			TYPE OF VEHICLE / TYPE DE VÉHICULE: TRA / REM MODEL / MODÈLE: 0 GVWR / PNBV: 0 KG 0 LB TARE: 0 KG 0 LB DOM / DDF: 0 M/M 0 Y/A VIN / NIV: 0					
GAWR / PNBE			RIM / JANTE		TIRE / PNEU		COLD INFLATED PRESSURE / PRESS. DE GONFLÉ À FROID	
POSITION	KG	LB	DIMENSION	DIMENSION	S/S	D/J	KPA	PSI / LPC
FR/AV	0	0	0	0			0	0
INT 1:								
INT 2:								
RR/AR								
THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FMVSS AND CANADIAN CMVSS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE. CE VÉHICULE SE CONFORME A TOUS LES ÉTATS-UNIS APPLICABLES FMVSS ET CMVSS CANADIEN EN EFFET LA DATE DE LA FABRICATION MONTRÉE CI-DESSUS.								

HEAT SENSING LABELS IDENTIFY POTENTIAL BRAKE, BEARING OR SEAL ISSUES BEFORE THEY CAUSE COSTLY REPAIRS!

THE NORMAL OPERATING TEMPERATURE OF
HUB/HUBCAP GREASE OR OIL SHOULD NOT
EXCEED 225°F (107°C).

- HUB ALERT™ will alert you to above normal wheel end operating temperature!
- HUB ALERT™ heat sensing label will turn **BLACK** when hub/hubcap surface temperature reaches 250°F (121°C).
- HUB ALERT™ indicates the need for a more detailed inspection of the overheating wheel end.
- New HUB ALERT™ label is applied to the hub/hubcap after resolving overheating issues



SAFETY PRECAUTIONS

SAFETY ALERT SYMBOL

The Safety Alert Symbol identifies important safety messages on the trailer and in the manual. When you see the symbol, be alert to the possibility of personal injury or death. Follow the instructions in the safety message.

WARNING and CAUTION with the safety message. The appropriate signal word for each message has been selected using the following guidelines:

DANGER - An immediate specific hazard which **WILL** result in severe personal injury or death if the proper precautions are not taken.

WARNING - A specific hazard or unsafe practice which **COULD** result in severe personal injury or death if proper precautions are **NOT TAKEN**.

CAUTION - Unsafe practices which **COULD** result in personal injury if proper precautions are **NOT TAKEN**, or as a reminder of good safety practices.

YOU are responsible for the **SAFE** operation and maintenance of your trailer. **YOU** must ensure that you and anyone else who is going to operate, maintain or work around the trailer is familiar with the operating and maintenance procedures and related **SAFETY** information contained in the operator's manual.

Remember, **YOU** are the key to safety. Good safety practices not only protect you but also the people around you. Make these practices a working part of your safety program. Be certain that **EVERYONE** operating this equipment is familiar with the recommended procedures and follows all safety precautions. Do not risk injury or death.

Remember the difference between being a driver and an efficient operator: Drivers may drive but an operator is a very safe, cost efficient and professional person.

Trailer owners must review operating instructions with operators or employees before allowing them to operate the equipment, and review at least annually thereafter.

The most important device on this equipment is a **SAFE** operator. It is the operator's responsibility to read and understand **ALL** Safety and Operating instructions in the manual and to follow them.

Any person who has not read and understood all operating and safety instructions is not qualified to operate the equipment.

Do not modify the equipment in any way. Unauthorized modification may impair the function and/or safety of the equipment and affect trailer life.

This safety alert symbol means

**ATTENTION! BECOME ALERT!
YOUR SAFETY IS INVOLVED!**



NEEDS DETAILED INSPECTION

THINK SAFETY! WORK SAFELY!

1.1 OPERATING SAFETY

1. Read and understand the operator's manual and all safety signs before operating, maintaining or adjusting the trailer.
2. Do not allow riders on any part of the trailer during road or highway travel.
3. Keep hands, feet, clothing and hair away from all moving parts.
4. Tie load before moving or transporting trailer.
5. Check tie-downs frequently during transport to prevent shifting or movement of the cargo.
6. Clear the area of all bystanders, especially children, before starting up and operating the truck, trailer or equipment.
7. Make sure that all lights and reflectors required by local highways and transport authorities are in place, clean and can be seen clearly by all overtaking and oncoming traffic.
8. Before disconnecting the tractor from the trailer unit(s) make sure that the tractor and trailer are on level ground and that the trailer park brakes are applied.

1.3 LOADING SAFETY

1. Do not drop load on trailer in order to prevent damaging the cargo or the trailer.
2. Place concentrated heavy loads over structural beams when loading.
3. Tie load securely before moving or transporting.
4. Check tie-downs frequently when transporting and keep them tight.
5. Do not exceed load concentration and total load carrying specifications for trailer.
6. Install lights or flags on load if it extends beyond deck.
7. Do not side load.

1.2 MAINTENANCE SAFETY

1. Read and understand all the information in the operator's manual regarding maintenance, adjustment and operation of any trailer or unit.
2. Stop the engine, remove ignition key and set the park brake before adjusting, servicing or maintaining any part of the trailer unit.

1.4 SAFETY DECAL MAINTENANCE

1. Keep safety decals and signs clean and legible at all times.
2. Replace safety decals and signs that are missing or have become illegible.
3. When ordering replacement parts that display a safety sign or decal, be sure to order the replacement safety sign or decal also.
4. Safety decals or signs are available from your Dealer Parts Department.

1.5 SIGN-OFF FORM

Anyone operating and/or maintaining a trailer must read and clearly understand ALL safety, operating and maintenance information presented in this manual.

Do not operate or allow anyone else to operate this equipment until such information has been reviewed. Review this information annually.

Make these periodic reviews of SAFETY and OPERATION a standard practice for all of your equipment.

A sign-off sheet is provided for your record keeping to show that all personnel who will be operating or maintaining the equipment have read, and understood, the information in the operator's manual and have been instructed in the operation of the equipment.

1.5 SIGN-OFF FORM

DATE	EMPLOYEE NAME	EMPLOYEE SIGNATURE

SAFETY DECALS

2.1 SAFETY DECALS

The types of decals used on the equipment are shown below. Responsible practices require you to familiarize yourself with the various Safety Decals, the type of warning and the area, or particular function related to that area that requires your SAFETY AWARENESS.

THINK SAFETY! WORK SAFELY!

WARNING	AVERTISSEMENT
115 TO 130 PSI OF UNINTERRUPTED AIR PRESSURE IS REQUIRED TO OPERATE THIS TRAILER.	UNE PRESSION D'AIR ININTERROMPUE DE 115 À 130 PSI EST REQUISE POUR LE FONCTIONNEMENT DE CETTE REMORQUE.
USE OF METHYL HYDRATE OR BRAKE LINE ADDITIVE MAY CAUSE SYSTEM FAILURE AND WILL VOID WARRANTY	L'UTILISATION D'HYDRATE DE MÉTHYLE OU D'ADDITIFS POUR CONDUITE DE FREIN PEUT ENGENDRER UNE DÉFAILLANCE DU SYSTÈME, ET ANNULERA LA GARANTIE.
THIS TRAILER IS EQUIPPED WITH GLADHAND SCREENS WHICH REQUIRE REGULAR INSPECTION AND CLEANING FOR PREVENTION OF BRAKE MALFUNCTION	LES TÊTES D'ACCOUPLEMENT DE CETTE REMORQUE SONT DOTÉES DE CRÉPINES QUI DOIVENT ÊTRE INSPECTÉES ET NETTOYÉES RÉGULIÈREMENT AFIN DE PRÉVENIR TOUTE DÉFAILLANCE AU NIVEAU DES FREINS.
www.bwstrailers.com	#100601

**DO NOT WELD, DRILL
OR CUT HOLES
IN MAIN FRAME RAILS
SERIOUS DAMAGE
MAY OCCUR**

www.bwstrailers.com #100121

CAUTION

**THIS TRAILER IS
NOT
DESIGNED FOR POINT LOADS**

WARNING!

**FAILURE TO RELEASE BRAKES
ON TRACTOR OR TRAILER WHEN
DUMPING MAY RESULT IN
SERIOUS STRUCTURAL DAMAGE
AND POSSIBLY CAUSE INJURY
TO THE OPERATOR**

WARNING!

**OPERATING THIS MACHINERY
ON UNSTABLE TERRAIN MAY
CAUSE SERIOUS DAMAGE TO
EQUIPMENT AND POSSIBLE
INJURY TO THE OPERATOR**

WARNING!

**AIR SUSPENSION MUST BE
DUMPED PRIOR TO
LOADING AND UNLOADING.
FAILURE TO DO SO MAY
RESULT IN SERIOUS DAMAGE.**

BWS Manufacturing Ltd. #100400

WARNING

**FOR MAX. CUBE LOADED TRAILER
THIS UNIT IS DESIGNED TO OPERATE
WITH FULLY CHARGED AIR BAGS
OR SERIOUS DAMAGE WILL OCCUR!**

990301

**RIDEWELL
SUSPENSIONS**

**MONOPIVOT 240 BOLT TORQUE
MINIMUM SPECIFICATIONS**

ECCENTRIC PIVOT BOLT	1,000 FT. LBS. (1350 N.M)
SHOCK BOLT	160 FT. LBS. (220 N.M)
AIR SPRING CONNECTION - 3/4"	50 FT. LBS. (70 N.M)
AIR SPRING CONNECTION - 1/2"	25 FT. LBS. (35 N.M)
BUSHING CLAMP BOLT	190 FT. LBS. (260 N.M)

See Service Manual for Details.

1990003

**RIDEWELL
SUSPENSIONS**

**30,000 LB. CAPACITY
OVERSLUNG/UNDERSLUNG
RAR-240 PSIG SCALE**

ESTIMATED SPRING LOAD PER AXLE	AIR SPRING REQUIRED PSIG
30,000#	90
26,500#	80
20,000#	60
13,500#	40
7,000#	20

RIDEWELL CORP.
P.O. Box 4596, Springfield, MO 65808 USA
PH: 800-641-4122 (417) 833-4565
www.ridewellcorp.com

Estimated values are approximate and include 1,200# for complete axle assembly. Actual values must be verified by certified scales.

REMEMBER

If Safety Decals have been damaged, removed, become illegible or parts are replaced without decals, new decals must be applied. New decals are available from your authorized dealer.

OPERATING PROCEDURES

3.1 BREAK-IN/INSPECTION

Time and distance specify the normal break-in procedure for a BWS trailer:

1. Check slack adjuster function for the first 3 weeks of operation.
2. Check hub oil levels daily for the first 3 weeks of operation.
3. Check tires for proper inflation pressures. Re-torque wheel nuts after 100 km.

3.1.1 500 MILE / 800 KM INSPECTION

After the first 500 miles/800km of service, some "settling in" will have occurred, particularly in the suspension components.

AT THIS TIME:

1. Re-torque all bolts and fasteners paying particular attention to the axle U-bolts, hub studs, upper and lower fifth wheel bolts and the suspension system. Refer to values in the maintenance section when re-torquing.
2. Check tires for proper inflation pressures and rim alignment. Re-torque wheel nuts. Block the axle and spin the wheels. Check for brake drag and wheel bearing adjustment.
3. Check oil levels in hubs. Maintain proper oil level. If any levels are low, check for leaks and repair.
4. Check axle alignment. Refer to maintenance section for procedure.

3.1.2 10,000 MILE / 16,000 KM INSPECTION

1. Check the function and adjustment of the brakes on each axle. No shoes should drag on the drum when the brakes are not applied.
2. Check tire inflation pressures and tread wear. Always match tires with tread wear that is worn to 1/8" in difference. If unusual or excessive tire wear occurs, it indicates something is wrong. Check further to determine the cause and correct it. See tires section for further information.
3. Re-torque all bolts and bolted connections.
4. Visually check all welds and adjacent areas for cracks. Any cracks should be repaired as soon as possible by an authorized BWS dealer.
5. Ensure all suspension hangers and related members are tight and secure.
6. Check axle alignment. Refer to maintenance section for procedure.

3.1.3 20,000 MILE / 32,000 KM INSPECTION

1. Check each brake lining for wear. Replace or adjust as required.
2. Check the axle alignment. Refer to maintenance section for procedure. The operator can then go to the service schedule as defined in the service intervals section on page 20.

3.2 PRE-OPERATION VEHICLE INSPECTION PROCEDURE

The safe and trouble-free use of a trailer requires the operator to maintain the unit in good operating condition. To assist the operator, a pre-operation checklist is provided that should be followed each time before the trailer is used.

WALK AROUND SEQUENCE

STEP 1 – TRAILER FRONTAL AREA

1. Air and Electrical Connections
 - a. Verify that glad hands are properly mounted, free of damage, not leaking and not worn.
 - b. Check electrical line receptacle: Ensure that it is properly mounted, free of damage and the plug is adequately seated with safety catch engaged to prevent accidental disconnection.
 - c. Ensure that air and electrical lines are properly secure against tangling, snagging and chafing with sufficient slack for turns.
2. Lights and Reflectors
 - a. Check front trailer clearance and identification lights clean and operating.
 - b. Ensure reflectors present and clean.

STEP 2 - FIFTH WHEEL COUPLING AREA

1. Fifth Wheel (Lower)
 - a. Secure mount to frame.
 - b. No missing or damaged parts.
 - c. **No visible space between upper and lower fifth wheel.**
 - d. Locking jaws are around the shank and not the head of the kingpin.
 - e. Release lever properly sealed and safety latch lock engaged.
2. Fifth Wheel (Upper)
 - a. Kingpin is not worn, bent or damaged.
3. Air and Electrical Lines Visible From This Point
 - a. Ensure lines are properly secured and are free from tangling, snagging, and chaffing.
 - b. Free of damage, oil and grease.

NOTE!

The tractor items, part of North American Walk Around Sequence have been omitted.

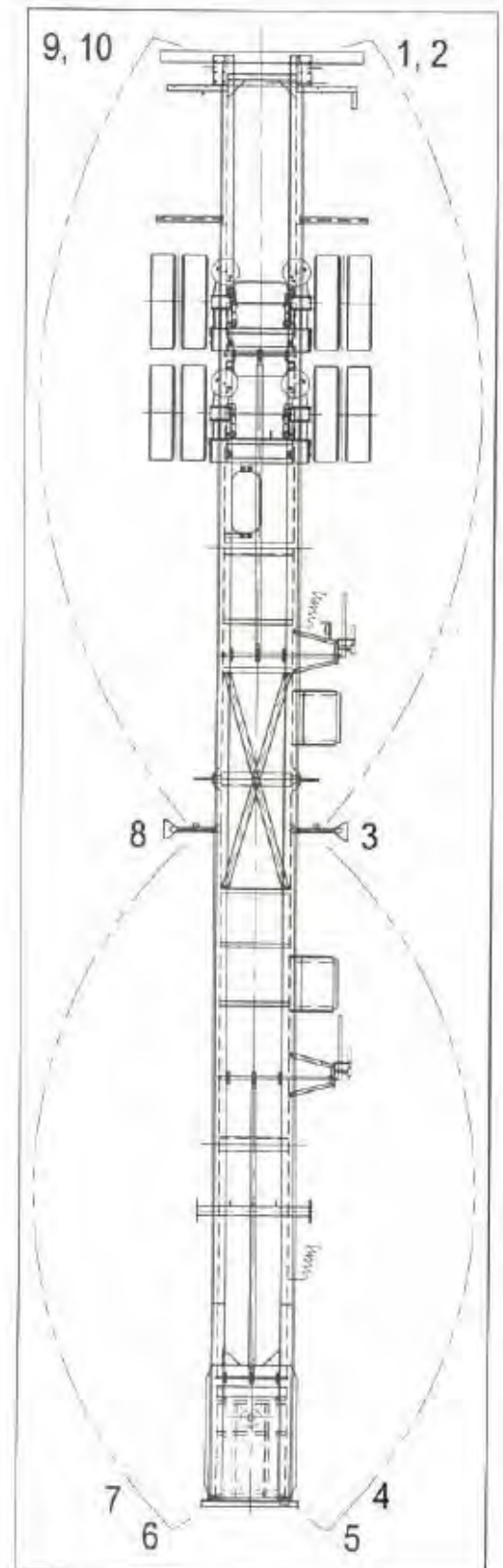


Figure 1

STEP 3 - RIGHT SIDE OF TRAILER AREA

1. Front Trailer Support
 - a. Fully raised, no missing parts, not bent or otherwise damaged.
 - b. Crank handle present and secured (typically on left side).
 - c. If power operated, no air or hydraulic leaks.
2. Lights and Reflectors
 - a. Clearance lights clean, operating and proper color.
 - b. Reflectors clean and proper color.
3. Frame and Body
 - a. Frame and cross members not bent, cracked, damaged or missing.
 - b. Body parts not damaged or missing.
4. Placarding
 - a. Proper identification of trailer load.

STEP 4 - BRAKES

- a. Check condition of brake linings and drums.
- b. Check condition of hoses, lines & valves.
- c. Check slack adjusters.
- d. Check air chamber mounting.
- e. Check spring brakes.
- f. Drain moisture from air tank, close petcock

STEP 5 - RIGHT REAR TRAILER WHEEL AREA

1. Wheels/Axles
 - a. Check condition of wheels and rims. Verify that there are – no cracked or bent rims, broken spacers, studs, clamps or lugs.
 - b. Condition of tires – properly inflated, valve stems not touching wheel rims or brake drums, valve caps in place, no serious cuts, bulges, tread wear or any signs of misalignment and no debris stuck between the tires.
 - c. Tires all same type, e.g. DO NOT mix radial and bias types on the same axle.
 - d. Wheel bearings and hub have no obvious leaking.
 - e. Mud flaps in place and in good condition.
 - f. If equipped with sliding axles check position and alignment, look for damaged, worn or missing parts. Check for locking pins in locking position.
 - g. Ensure that air lines are not cracked, cut, crimped or otherwise damaged and secured against tangling, snagging or chafing.
2. Suspension
 - a. Condition of spring(s), spring hangers, equalizers and U-bolts.
 - b. Axle alignment.
 - c. Condition of torque rod arms and bushings.

STEP 6 - REAR OF TRAILER

1. Lights and Reflectors
 - a. Rear clearance and identification lights – clean, operating and proper color.
 - b. Reflectors are clean and proper color.
 - c. Taillights - clean, operating and proper color.

2. Cargo Securement
 - a. Cargo properly loaded side to side and back to front.
 - b. Check cargo tie-downs and ensure they are tight. National Safety Code Standard 10 Cargo Securement.
 - c. Ensure concentrated load is positioned over structural beams.

STEP 7- LEFT REAR TRAILER WHEEL AREA AND BRAKES

Check all items as done on right side (step 5).

STEP 8- LEFT SIDE OF TRAILER AREA

Check all items as done on right side (step 3).

STEP 9- TRAILER(S) FUNCTIONAL CHECK (TRACTOR ATTACHED)

1. Check for proper connection of air brake glad hands, and secure contact of electrical connection.
2. Start engine.
3. Build up air pressure in the tractor-trailer systems.
4. Turn on lights and inspect for proper function of:
 - a. Clearance lights.
 - b. Identification lights.
 - c. Turn signals and 4-way flashers.
 - d. Side marker lights.
 - e. Tail lights.
 - f. Stop lights
5. Check the function of brakes.
 - a. Apply service brakes.
 - b. Apply parking brakes.
 - c. Apply accelerator with brakes in emergency to ensure park brake functions.
 - d. Stop engine.
 - i. Release trailer emergency brakes.
 - ii. Apply service brakes.

IMPORTANT!

Broken or malfunctioning equipment is dangerous and is to be replaced immediately.

AIR LOSS SHOULD NOT EXCEED:

3 psi per minute on single vehicles.

4 psi per minute on combination.

STEP 10- TRANSPORTING HAZARDOUS MATERIAL

- a. Check marking and placards.
- b. Check proper shipping papers.

3.3 FIFTH WHEEL OPERATING INSTRUCTIONS (FIGURE 2)

1. Failure to read, understand and follow the important information contained herein may result in a hazardous condition or cause a hazardous condition to develop.
2. Relative to the tractor trailer operations, there are other checks, inspections and procedures not listed here which are necessary, prudent and/or required by law. The following is in addition to these, and pertains to the fifth wheel only.
3. Perform these procedures with the area clear of obstacles and other personnel.

3.3.1 COUPLING PROCEDURE

1. Visually inspect the equipment before coupling.
 - Make sure the fifth wheel is properly lubricated, the locks are open and the ramps are tilted down in the proper position.
 - Make sure the mounting of the fifth wheel to the tractor or trailer is in good condition and tight.
2. Back up close to the trailer, centering the kingpin in the cradle of the fifth wheel, STOP.
3. Block the trailer wheels, connect the light cord and the brake lines and be sure any slack in the lines is supported and the brake lines do not become tangled. Set the trailer brakes.
4. Check to see that the trailer is at the proper height for coupling. The leading edge of the trailer plate should initially contact the fifth wheel top bearing surface behind its pivot axis as the tractor or trailer backs under the trailer. Raise or lower the deck supports as required to obtain this position.
5. Back under the trailer, keeping the trailer kingpin centered in the crotch of the fifth wheel.
6. After picking up the trailer with the fifth wheel, STOP, then continue backing until the fifth wheel locks firmly on the king pin.
7. Back up tight to the kingpin. Pull forward to test the completeness of the coupling as an initial check.
8. Visually check to see that the kingpin is in the fifth wheel locks, ensure that it is not overhanging the fifth wheel or caught in a grease groove. There should be no gap between the trailer plate and the fifth wheel.
9. If your fifth wheel is equipped with a manual secondary lock, check to see that it is properly engaged.
10. Crank up the landing gear (trailer supports) their full distance. Fold down or remove crank handle and place it in the crank handle holder.
11. Check the brake lights and light cord.
12. Remove the wheel blocks and continue with the pre-trip inspection.



WARNING!

Attempting to couple the trailer at an improper height could result in a false or improper coupling and could cause damage to the fifth wheel or trailer.

FIFTH WHEEL



Figure 2



WARNING!

If you do not obtain a proper coupling, repeat this sequence. Do not use any fifth wheel which fails to operate properly.



WARNING!

A direct visual inspection is required to assure proper coupling. Several types of improper couplings will pass the initial pull test and the sound is unreliable. Do not take for granted it is properly coupled.

3.3.2 UNCOUPLING PROCEDURE

1. Set the emergency brake on the tractor.
2. Set the trailer brakes with the tractor trailer protection switch.
3. Block the trailer wheels.
4. Crank down the landing gear until they touch the ground and give a few extra turns in low gear. Do not raise the trailer off the fifth wheel. It may be necessary to provide a base for the landing gear in poor ground conditions if the trailers are loaded without the tractor attached.
5. Fold down or remove the crank handle and place it in the crank holder.
6. Disconnect the light cord and brake lines.
7. Unlock the fifth wheel, including the manual secondary lock if so equipped.
8. Release the tractor emergency brake and pull out slowly from under the trailer. Let the trailer slide down the fifth wheel and pick up ramps with minimal impact of the trailer landing gears with the ground.
9. If the trailer is equipped with air ride suspension, air should be dumped from the air bags after parking brake is applied and before landing gear is extended.

3.4 LOADING

It is the responsibility of the operator to review and be familiar with the trailer loading capacity specifications and make sure that all loading limitations or restrictions are complied with for each operating jurisdiction. Exceeding the trailer weight specifications can result in damage to the structure. Exceeding the road restrictions is illegal.

- a. Do not drop a load on the trailer. Place it on the floor in a position of equalize load distribution.
- b. Loading without the trailer being coupled to a fifth wheel is not recommended. Dynamic loads encountered during loading can damage the landing gear structure or cause the trailer to nose dive.
- c. Determine the load carrying capacity of your trailer and the proper load position before you start loading.

3.4.1 TRAILER WEIGHT DISTRIBUTION

1. Trailers are designed for uniform load distribution as shown in Figure 4. The load should be distributed equally between the front and the rear of the trailer.
2. Crosswise weights should be equally distributed (Figure 5) . A heavy load should not be placed on one side. This will overload suspensions and tires on that side. Place load so that weight will be equal on rear tires, eliminating possible twisting of the frame and overloading of axle housings and wheel bearings.
3. Loading heavy concentrated loads not occupying full trailer floor area:
 - Do not place heavy concentrated loads on trailer edges.
 - Heavy concentrated loads must be placed on frame rails.

DECK SUPPORTS



Figure 3

NOTE: USE BODY STOPS FOR PROPER PLACEMENT OF CONTAINER.

UNIFORM LOAD DISTRIBUTION FRONT TO BACK

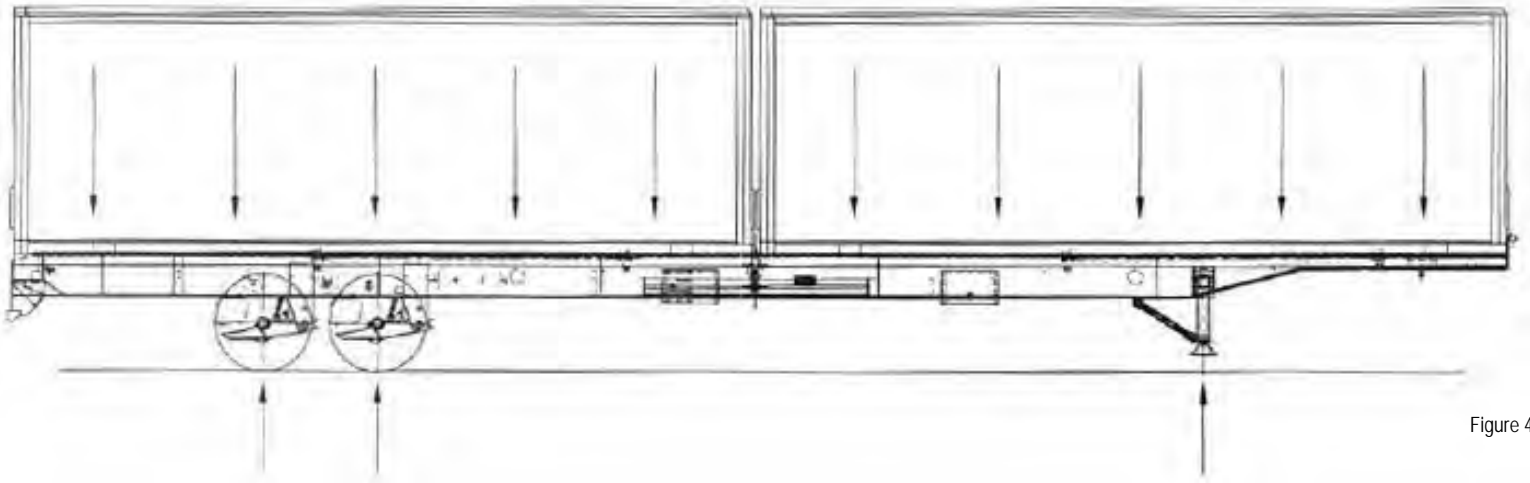


Figure 4

UNIFORM LOAD DISTRIBUTION SIDE TO SIDE

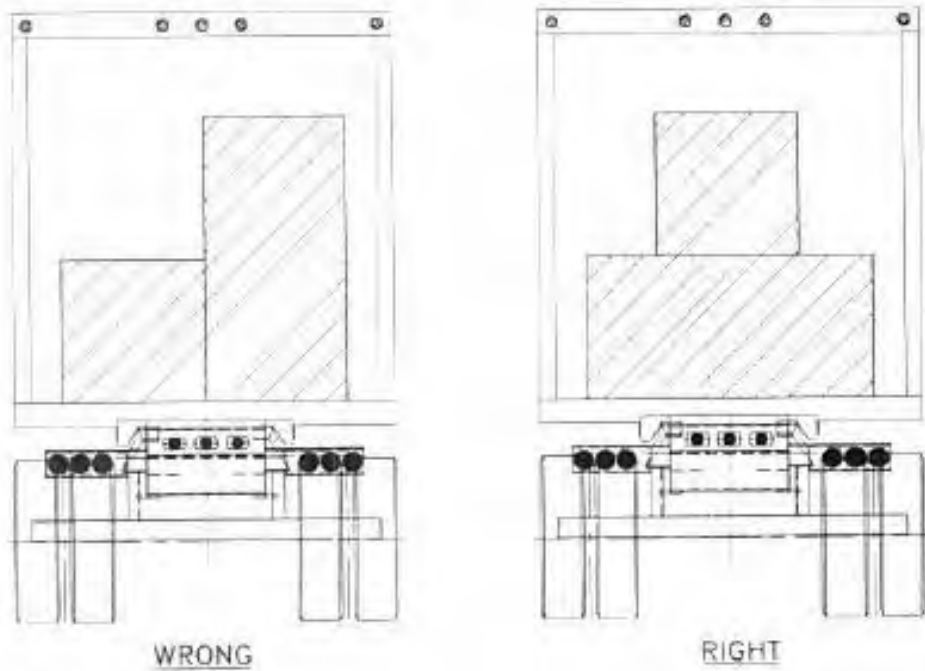


Figure 5

3.4.2 LOAD RESTRAINTS

All loads must be properly secured before moving or transporting the trailer to prevent cargo movement. Attach the load restraints in a crossing pattern to prevent both lateral and longitudinal movement. Do not exceed the working strength of the restraints or the anchor. Check the restraints frequently during transport to ensure they stay tight. If they remain loose, the load can shift or move and lead to an unsafe condition.

See North American Securement Laws.

3.5 TRANSPORTING

After following the preceding instructions, your trailer unit is ready to operate. It is wise to review operating instructions periodically to refresh your memory. Good operation procedures result in a safe work environment for all.

3.5.1 OPERATING INSTRUCTIONS

Since this equipment can be used in a variety of conditions, it is difficult to give instructions appropriate for all applications. The following general guidelines apply to all situations.

1. Ensure the trailer is securely attached and locked into position.
2. Ensure the air lines are securely connected and have sufficient slack for turns.
3. Ensure the brakes are properly adjusted and functioning adequately.
4. Ensure the electrical harness is securely attached and all lights and reflectors are clean and in good working order.
5. Ensure that the mud flaps are in good condition to minimize road splash in wet conditions.
6. Always keep the trailer in good mechanical condition.
7. Ensure the cargo is securely tied down.

NOTE: ALWAYS DOUBLE CHECK YOUR LOCKING HOOKS BEFORE DRIVING. BE SURE HOOKS ARE FULLY ENGAGES ON THE BODY LOCKING BARS BEFORE MOVING TRACTOR.



CAUTION

Before using this trailer, visually check that all locking hooks are fully engaged with body locking bars. Be sure safety pin is in the locking lever and that all lock warning systems are functional.

3.5.2 BRAKING GUIDELINES

Safe, reliable and trouble-free operation of your trailer requires that the brakes be maintained in good operating condition. The improper use of brakes by the driver can contribute to shorter brake component life, result in system malfunctions, and cause poor tire wear patterns. The following list summarizes some basic operational guidelines for the driver.

1. Check the function of the brake system before starting a trip.
2. Maintain a safe speed at all times. Slow down for rough, slippery, congested, or winding road conditions.
3. Always provide sufficient vehicle spacing on the road to allow for safe stopping distance.
4. Apply brakes gradually to produce an even deceleration until the vehicle is stopped.
5. Watch traffic patterns ahead. Anticipate pattern changes that could result in an emergency. Apply the brakes gradually in sufficient time to produce a controlled stop.
6. Shift to a lower gear to use engine compression as the retarding force when going down steep grades.
7. Do not apply brakes for a long period of time such as when traveling on a long downgrade. Light intermittent brake application will result in proper vehicle control and keep brakes from overheating.
8. Dry the brakes by applying them several times after going through water.
9. Release the brakes just before going over railroad tracks or in other rough conditions. By allowing the wheels to turn over rough road surfaces, there will be no shock loads to the brake system components and the possibility of flat spotting tires will be reduced.
10. Wet, icy or snow-packed surfaces require special care. Make sure ABS is functioning properly.
11. Use wheel chocks, apply trailer and tractor parking brakes when parking the unit.
12. When trailer-parking brakes are applied with hot drums, it may result in a cracked drum. Allow drums to cool before applying the brakes.
13. Fanning, or repeated on-and-off applications, will use up the system air reserves. This procedure is not recommended with ABS. The wasting of air pressure reserves could result in insufficient air pressure should an emergency occur.
14. Hard or panic stops can overheat the linings and drums. Overheating will cause brake fade. Severe overheating and fade can result in the complete loss of braking capability. Overheating will also substantially reduce the expected life of brake components.

3.5.3 TIRES

When operating the trailer, it is the responsibility of the driver to check the tires frequently. Inflation pressures, wear patterns and matching are critical parameters that must be monitored. The following factors affect tire life:

1. INSPECTION FREQUENCY

Tires should always be checked before the start of a run, twice during the day or every 4 hours, whichever comes first. It is also good practice to check the tires at each rest period during the day. When a driver hears or feels unusual handling characteristics, the first items to check are the tires. Problems found early can help avoid more serious problems later on. A sample of typical abnormal wear patterns are shown in the maintenance section of the tire wear problem before proceeding.

2. INFLATION PRESSURE

Tires should always be operated at specified pressures. The tire is designed to run with the full width of the tread flat on the contact surface. Operating at other than specified pressures will change the tread contact patterns and dramatically shorten tire life. In addition, the tires will run hotter and can lead to blow-outs.

Check tire pressure when the tire is cold. A hot tire can read as much as 20 psi higher than a cold tire. If tires are over inflated, check for poor load distribution, uneven surface contact, over-loading or poor operating conditions. For inflation pressures, refer to manufacturers' specifications.


3. TIRE MATCHING

Do not mix radial and bias-ply tires on the same axle. Their operating characteristics are different and will lead to uneven tire loading, rapid tire wear and adverse handling characteristics. Matching also includes combining tires that have the same amount of tread remaining. A tire with more tread has a larger rolling radius and will have to carry a heavier load. The best performance will be obtained when the rolling radius is within 1/8" for all tires on the axle.

4.1 MAINTENANCE AND INSPECTION

The safe and efficient operation of your trailer will depend a great deal on your diligence in following the maintenance and adjustment procedures outlined in this section. If you follow these recommendations your trailer will work to its full potential. With adequate attention to regular and preventative maintenance your costs can be reduced significantly.

The various components and systems of your trailer, which will require daily and/or periodic inspections, maintenance and adjustments are presented in this section.

**MAINTENANCE
SAFETY**

1. Set the park brake. Stop engine and remove ignition key before adjusting, servicing or maintaining any components on a trailer unit.
2. Clear the area of bystanders, especially children, when carrying out any maintenance or making adjustments on the system or other components.
3. Keep hands, feet, clothing and hair away from moving and/or rotating parts.

THINK SAFETY! WORK SAFELY!

MAINTENANCE AND INSPECTION SUMMARY

COMPONENT	FREQUENCY	INSPECTION
King Pin	30,000 mile/50,000 km or every 3 months	Kingpin wear and no damage to anchoring
Fifth wheel	30,000 mile/50,000 km or every 3 months	Hardware tight and kingpin lock clearance
Wheel Bearing	25,000 mile/40,000 km or every 3 months	Remove wheel for seal leaks, end play, bearing condition and cleanliness
Hub Oil	Daily	Check oil level
Oil Seals	Daily	Check for leaks and replace seals when leaks occur or wheel removed
Brakes	25,000 mile/40,000 km	Check lining wear. Check brake adjustments.
	1000,000 mile/150,000 km	Re-line as required
Wheels	Daily	Check for wobbles, cracked or bent rims and for loose, missing, broken stripped or otherwise ineffective fasteners.
Tires	Daily	Tire pressure Wear patterns
Axles	As required	Alignment to chassis
SUSPENSION		
Air Ride Suspension	Daily, also see section 4.8	Air leakage Hardware tightness Mechanical Height check
AIR SYSTEM		
Relay Emergency Value	Every 3 to 6 months	Perform operating and leakage tests
Glad Hands	Daily	Check for cracks, worn or damaged components.
Spring Brake Value	Annually or 100,000 mile/150,000 km	Perform operating and leakage tests
Relay Value	Annually or 100,000 mile/150,000 km	Perform operating and leakage tests
Reservoir	Daily Every 6 months	Drain air tanks Integral check valve function
Air Lines / Hoses	Daily	Check for leaks, chafing, kinking or other mechanical damage
Electrical System	Daily	Check for burned out bulbs and loose connections

4.2 KING PIN AND UPPER COUPLER

Inspect the kingpin and its structure on the trailer at regular intervals to be sure that they have not suffered damage or undue wear. The kingpin should not be bent.

The kingpin should be checked for excessive wear, looseness, chipped areas or cracks. Any kingpin bent or showing the above defects should be replaced or repaired at once.

Inspect the upper coupler assembly for any excessive bowing or cracks. Ensure the entire assembly is safely secured to the trailer by checking the condition of the welds, bolts or rivets, as used in the original construction (Figure 6).

4.3 AXLES

4.3.1 SUGGESTED PREVENTATIVE MAINTENANCE SCHEDULE

1. 18,000 Mile/30,000 km to 24,000 Mile/40,000 km
 - Check brake lining wear and re-line as required.
 - Check brake adjustments and inspect roller, roller shafts, anchor pins and bushings.
 - Inspect brake actuator, camshaft, camshaft bushings, camshaft brackets and camshaft bracket bushings for any wear. Lubricate brake actuating components.
2. 60,000 Mile/100,000 km or at Time of Brake Reline
 - Overhaul and lubricate all brake actuating components.
 - Check all brake chambers.
 - Replace oil in wheel bearings.
3. 100,000 Mile/150,000 km or Min. of Twice a Year
 - Inspect wheel bearings. Check all seals for signs of wear.
 - Re-torque suspension pivot bolts and torque rod U-bolts.

4.3.2 AXLE ALIGNMENT

Improper axle alignment with the vehicle frame or chassis will cause excessive tire wear and vehicle dog-tracking. Proper axle alignment is a vital part of your operation (maintenance) and should be checked on a regular basis.

Each trailer is checked for correct alignment before it leaves the factory, but settlement of suspension may necessitate realignment after first 500 miles / 800 km.

The kingpin has a dead-center mark on the bottom side. To ensure proper alignment, a steel tape measure should be run from the center part of the kingpin to an identical location on either side of the front axle.

A small rigid hook in the shape of a question mark made of ¼" bar stock will facilitate this alignment inspection. A steel tape can be attached to the end and this tool hooked over the kingpin. Figure 7 shows another example of a device used for alignment purposes.

**WARNING!**

Do not attempt to build up a worn kingpin by welding. The heat of the weld may weaken the special steel used to make the component. Work must be done by an authorized service technician only.



Figure 6

PROCEDURE:

- Roll the vehicle back and forth over a level floor a few times to permit the connecting linkage to properly position itself and to center front and rear wheel track.
- Center the vehicle across its transverse and longitudinal sections.
- Measure the distances "C" and "D" (Figure 7) from the
- Kingpin to forward axle. These distances must be within $1/8"$ (3.2 mm) of each other.
- Measure the distances "A" and "B" (Figure 8) between the front and rear tandem axles.

These distances must be within $1/8"$ (1.6 mm) of each other.



Figure 7

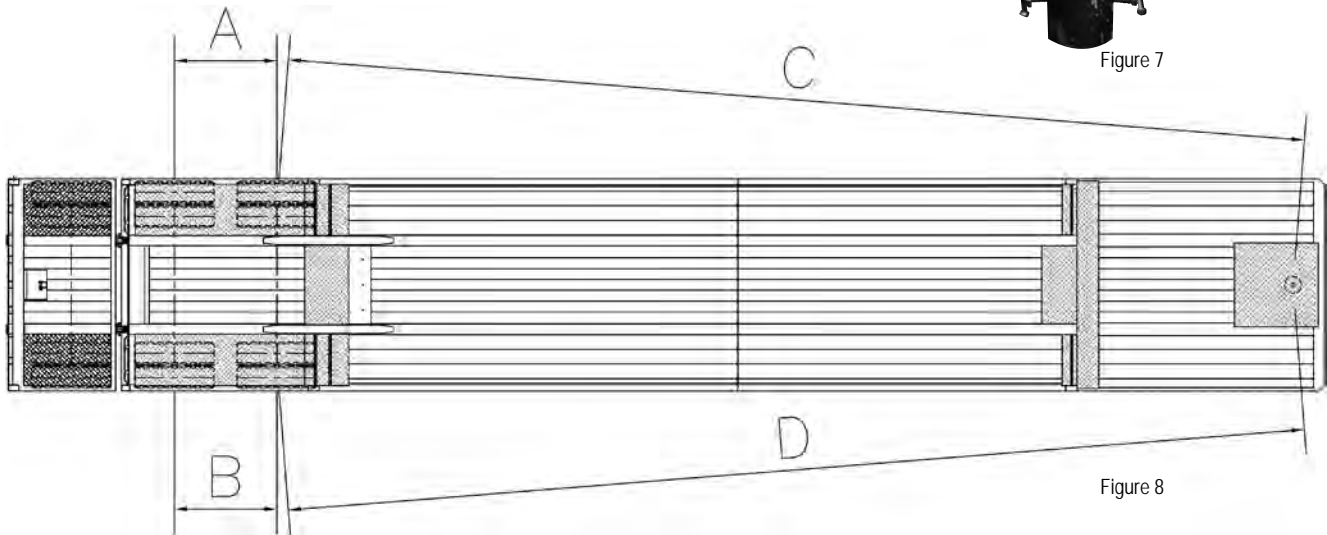


Figure 8

If any of these measurements do not fall within the stated limit, the vehicle suspension should be thoroughly inspected for loose, worn or broken connecting and supporting parts. Adjustments in the suspension and the replacement of broken or worn parts should be made to bring the axles into alignment.

The limits of $1/16"$ and $1/8"$ appear very small in comparison to the overall dimensions of the vehicle, but they are recognized as the maximum permissible variation. The relatively small size of these limits make it important that measurements be accurate.

Failure to keep the axles properly aligned may cause tire scrub and suspension component strain.

4.3.3 WHEELS

Your trailer may be equipped with either steel or aluminum wheels. Check for damaged (bent) and loose wheels, studs, bolts and nuts regularly.



IMPORTANT!

Replace and repair components as required.



CAUTION!

Insufficient mounting torque can cause wheel shimmy, resulting in damage to parts and extreme tire wear. Excessive mounting torque can cause studs and cap nuts to break and discs to crack in stud hole area.

The following procedure is to be used when mounting Hub-piloted Wheels (Disc Wheels) to an axle:

1. Mount both wheels and snug up nuts in sequence shown (Figure 9A & 9B).
2. Torque in the sequence shown to proper torque level.
3. Recommended torque 450-500 ft.-lbs. (Torques are for clean dry threads.)
4. Check tires and wheels for proper seating and alignment.



CAUTION!

Nuts must be kept tight by retorquing on a routine basis and by using the proper torque sequence. Loose nuts could result in loose wheel or premature wheel failure. This can result in an accident or injury.

The wheels should be re-torqued after running for 50 to 100 miles, whenever they have been removed for maintenance, and when they leave the factory.

4.3.4 WHEEL HUBS

The main type of wheel being used on trailers in the commercial trucking industry today is as follows (Figure 10):

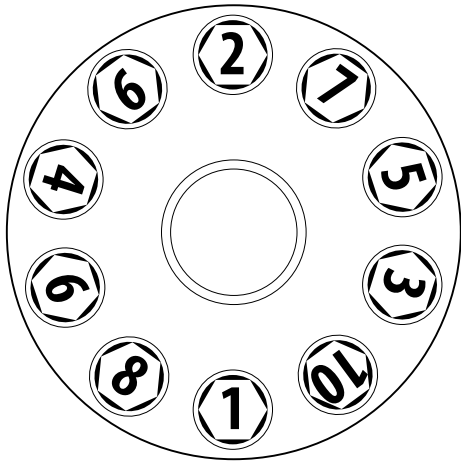


Figure 9A

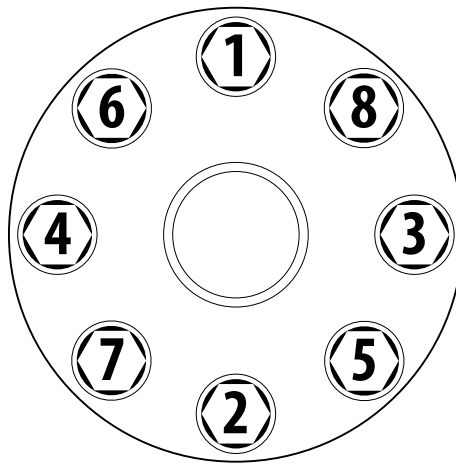


Figure 9B

HUB PILOTED DISC WHEELS:

1. Known as "Motor" wheels or "Unimount" wheels.
2. Have straight through bolt holes, no ball seats.
3. Center large hole of wheel onto pilot guides built on hub.
4. One nut per stud fastens wheels in place.
5. Clamped together with two piece flange nuts and spinning washers.
6. Right hand threads only for left and right sides of the trailer.

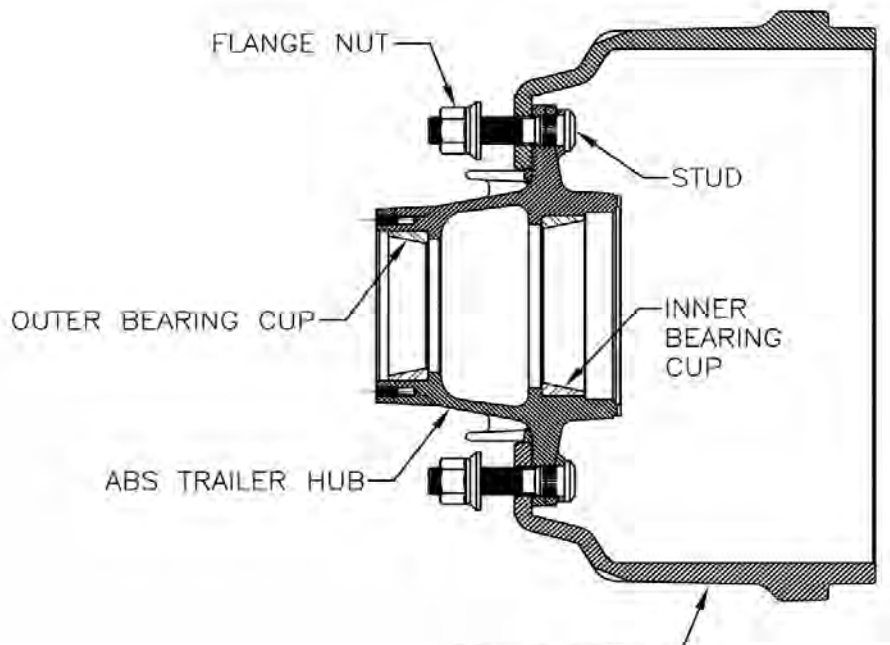


Figure 10

WHEEL BEARING / AXLE DIAGRAM (FIGURE 11)

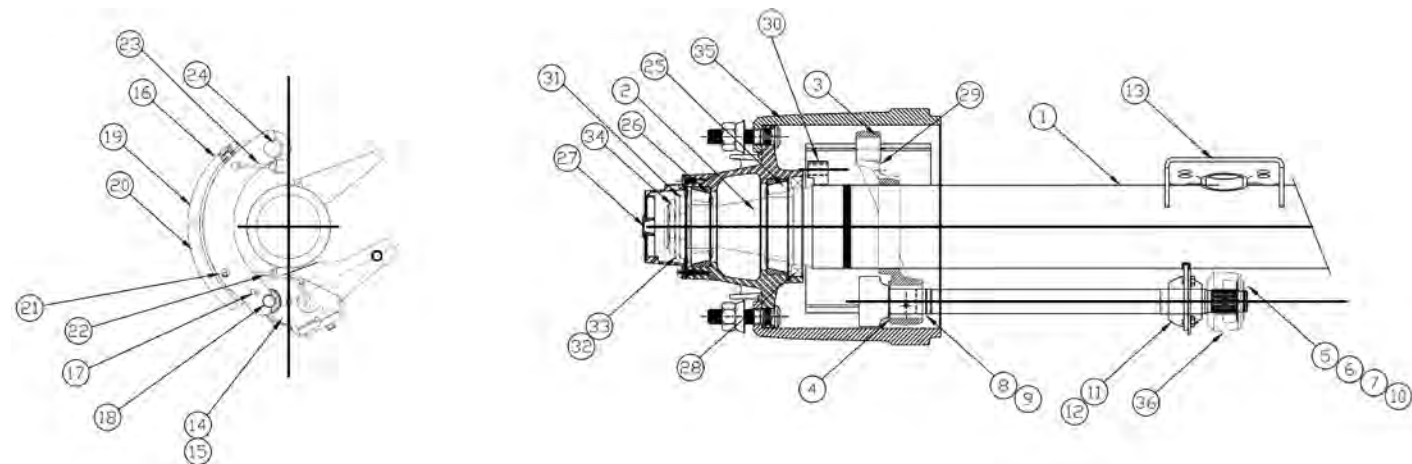


Figure 11

WHEEL BEARINGS PART BREAK DOWN

ITEM	DESCRIPTION	QTY			
1.	TUBE - 0.625 WALL	2	24.	ANCHOR PIN	4
2.	SPINDLE - 0.625 WALL	2	25.	BEARING - INNER	2
3.	SPIDER	2	26.	BEARING - OUTER	2
4.	WASHER - 1 5/8" CAM	2	27.	HUB CAP	2
5.	WASHER - SPLINE END	8	28.	SEAL	2
6.	WASHER - SPLINE END	2	29.	RUBBER GROMMET	2
7.	WASHER - SPLINE END	4	30.	ABS BLOCK	2
8.	WASHER - 1 5/8" SPIDER END	2	31.	SPINDLE NUT - INNER	2
9.	SNAP RING - SPIDER END	2	32.	LOCK WASHER	2
10.	SNAP RING - SLACK END	2	33.	STAR WASHER	2
11.	CAM BRACKET - LH	1	34.	SPINDLE NUT - OUTER	2
12.	CAM BRACKET - RH	1	35.	HUB AND DRUM	1
13.	AIR CHAMBER BRACKET	2	36.	AUTO SLACK	2
14.	CAM - LH	1			
15.	CAM - RH	1			
16.	12.25 FC BRAKE SHOE	4			
17.	ROLLER RETAINER	4			
18.	CAM ROLLER	4			
19.	BRAKE LINING	8			
20.	RIVET	80			
21.	SPRING RETAINER	4			
22.	SPRING - RETURN	2			
23.	SPRING - TENSION	4			

4.3.5 BEARING ADJUSTMENT PROCEDURE

TMC's Wheel End task force (The Maintenance Council task force on tractor-trailer communications) developed the following bearing adjustment recommendations. It represents the combined input of manufacturers of wheel end components.

STEP 1 BEARING LUBRICATION

Lubricate the wheel bearing with clean lubricant of the same type, as used in the axle sump or hub assembly.

STEP 2

Initial Adjusting Nut Torque Adjustment (While Rotating the Wheel) Tighten the adjusting nut to a torque of 200 ft.lbs.

STEP 3 INITIAL BACK-OFF

Back the adjusting nut off one full turn.

STEP 4 FINAL ADJUSTING NUT TORQUE

Tighten the adjusting nut to a final torque of 100 ft.lbs while rotating the wheel.

STEP 5 FINAL BACK-OFF

Back the adjusting nut off 1/8 to 1/4 turn (app. 0.003 inches)

Note: For self-locking nut systems consult manufacturers' specifications. BWS assumes no responsibility for bearing warranty.

Acceptable end play is .001"-.005" As measured with a dial indicator.

Note: Loose wheel bearings are the major cause of seal leakage. Be sure bearing tolerance is correct.

4.3.6 BEARING ADJUSTMENT

Bearings must be correctly adjusted and properly lubricated to achieve maximum bearing life and to prevent damage to wheels, axles, and possibly the trailer. The bearings should be lubricated at regular intervals, depending on vehicle speeds, loads and general operating conditions. Changes of wheel bearing lubricants are recommended every 20,000 – 25,000 miles, or twice a year (Spring & Fall)

Remove wheel assembly and bearing cones. Clean all old lube from hub of wheel bearings & hubcap with a good grade commercial cleaner and a stiff brush, not steel. DO NOT use gasoline or air hose in cleaning operation. Avoid spinning cone while cleaning.

Allow the cleaned parts to dry and wipe them up with a clean, absorbent cloth or paper towel. Clean all tools used in the service operation.

Note: Grease will not adhere to a surface that is wet with solvent because the solvent may dilute the lubricant.

Cleanliness is most important. Contamination may damage the bearing components.

Inspect seals and seal spring surfaces, bearing cups and bearing cones for indications of wear or damage. Handle all parts carefully during inspection and packaging so the cage will not be bent or the rollers and cone damaged.

Place bearing cones in cups and check for proper fit, and proper number.

Oil Lubricated Bearings – Use a gear type oil SAE-90 and spread a light coat of oil on all parts before assembly.

To prevent "Hot" bearings and provide for maximum load carrying capacity, bearings should be kept free of "slack" and "play". For positive close adjustment, a torque wrench should be used to tighten the bearing to the manufacturers' specifications.

Note: It is recommended to replace axle seals each time wheel ends are serviced.

The following procedure will provide for satisfactory bearing adjustment when the torque method is not feasible. It should be noted that whenever wheels, hubs and drums are removed for any purpose, the bearings will require re-adjustment.

With the wheel raised off the ground and the component parts on the spindle, the inner spindle nut should be tightened until there is no "slack" or "play" in the bearings. The inner nut should then be backed-off approximately one-half turn. The lock (thrust) washer is then placed in position. Next, the outer spindle nut is tightened against the washer.

Once the procedure is completed, the bearings should be given a final check for any "play". This condition can be corrected by progressive tightening of the inner nut, followed by a readjustment of the lock washer and outer nut.

NOTE: SPINDLE NUT WRENCHES FOR THE VARIOUS AXLE MODELS CAN BE PURCHASED FROM OUR PARTS DEPARTMENT.

4.4 GREASE RETAINERS / OIL SEALS

4.4.1 RING AND SEAL TYPE (OIL) MAINTENANCE

Whenever the wheels must be removed for any reason, the seals should be replaced.

4.4.2 RING AND SEAL TYPE (OIL) REPLACEMENT

Remove the seal from the hub by tapping on the face of the bearing cone. Care should be taken to avoid bending the cone cage or nicking the cone rollers.

If the axle ring is found to be defective, it can be removed by carefully and lightly tapping the ring all around with a ball peen hammer. Extreme care must be exercised to avoid cutting through the ring and damaging the spindle collar. After properly tapping the seal, it should expand so as to be removed by hand. Do not try to force the ring by hitting it from the axle bar side. There is no collar or lip on this side of the ring sufficient to prevent spindle damage.

1. To install the new ring and seal, it is mandatory that the seal manufacturers' recommended tool be used.
2. Prior to installing the new ring, the spindle should be clean and free from chips, burrs, etc.
3. Apply a thin coating of No. 2 sealer to the spindle axle ring collar.
4. Using the proper tool, install the ring on the spindle. (See manufacturers' recommendations for the proper position on the ring).
5. Apply No. 2 sealer to the seal's outer diameter.
6. Using the proper tool, press the seal into the hub until it is properly seated. (Proper seating specifications are available from the seal manufacturer).
7. Inspect the installation to assure that the seal components have bottomed evenly and are in the proper position.

4.5 SUSPENSION SYSTEM (AIR)

The axles are attached to and carried by the suspension system. The trailer unit uses an air ride suspension system.

Each must be kept tight and in good working order to obtain maximum performance and life. The following are suspension service and maintenance procedures to use:

4.5.1 INSPECTION

1. FREQUENCY

- a. During pre-delivery inspection.
- b. After first 500 miles / 800 km of operation.

2. ACTION

- Check that all fasteners are tightened to their specific torque.
- Check for damaged or broken components.
- Check all suspension system and axle welds or cracks.
- Evaluate tire wear patterns. Use the wear patterns as a guide to determine if maintenance or adjustments are required on the suspension system.
- Check the alignment of the axles.
- Ensure air pressure is being maintained at a pressure greater than 65 p.s.i.

4.6 SUSPENSION SYSTEM

The axles are attached to and carried by the suspension system. BWS trailers use either a mechanical or air ride suspension system depending on the specifications. Each must be kept tight and in good working order to obtain maximum performance and life. Review the section that applies to your trailer to familiarize yourself with the service and maintenance procedures.

1. FREQUENCY

- During pre-delivery inspection.
- After first 500 miles (800 km) of operation.
- Periodically.

2. ACTION

- Check that all fasteners are tightened to their specific torque.
- Check for damaged or broken components.
- Check all suspension system for axle wear or cracks.
- Evaluate tire wear patterns. Use the wear patterns as a guide to determine if maintenance or adjustments are required on the suspension system.
- Check the alignment of axles.

4.7 AIR-RIDE SUSPENSION (FIGURE 12)

Pre-operation Inspection - Before Vehicle is put in Service

- Inspect all welds at hanger to frame connections.
- Inspect for proper installation of cross member between hangers.
- Inspect axle alignment to kingpin (Figure 7)
- Check automatic air control valve and all line and fitting connections.
- Inspect air springs with 65 p.s.i. supply air or greater on a level surface for equal pressure and clearance.
- Inspect for proper mounting height.
- Inspect pivot bolts as per suspension manufactures specifications.

1. DAILY INSPECTION

Visually inspect trailer to be sure it is level and that suspension ride height is correct. Check for loose or broken parts.

2. ROUTINE MAINTENANCE

30 days

- Check clearance around moving parts. Correct signs of interference.
- Check Axle, weld and bolt connections. Correct signs of security and wear.

60 days Check all welds.

- Check all pivot connections, suspension and shock.

AIR RIDE SUSPENSION ASSEMBLY

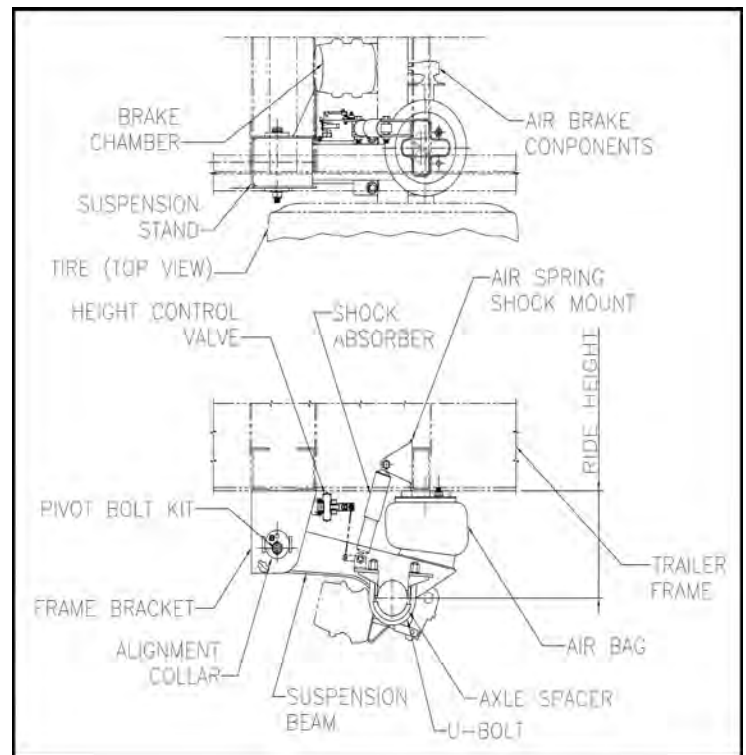


Figure 12

4.7.1 MAINTENANCE

1. AIR SPRING PROBLEMS

These seldom occur with the air springs unless they are rubbed, scuffed or punctured. If they fail, the chassis will settle down on the rubber bumper and you can drive to the next service depot for repairs. Identify and correct the cause of this problem before continuing.

2. AIR SPRING REPLACEMENT

- Exhaust air from system.
- Raise vehicle and support on safety stands.
- Remove air spring.
- Raise new air spring and tighten fasteners to their specified torque.

3. SHOCK ABSORBERS

Shock absorbers absorb vibration energy from the system and act as rebound stops for the suspension.

To replace shock absorber:

- Remove end fasteners.
- Install new shock absorbers using new mounting hardware.
- Tighten fasteners at their specified torque.

4. PIVOT BUSHING

The pivot bushing is a very durable, long lasting component. Failures are rare and replacement should be undertaken only when all other potential problem causes have been eliminated. If replacement is required, obtain the removal/installation tool and replacement kit from your dealer.

4.7.2 PIVOT CONNECTION

The eccentric bolt at the pivot connection should have the anti-turn washer installed. Proper welding can not occur without the washer in place. Check for proper welding as per manufacturer's specifications.

4.7.3 AIR CONTROL SYSTEM

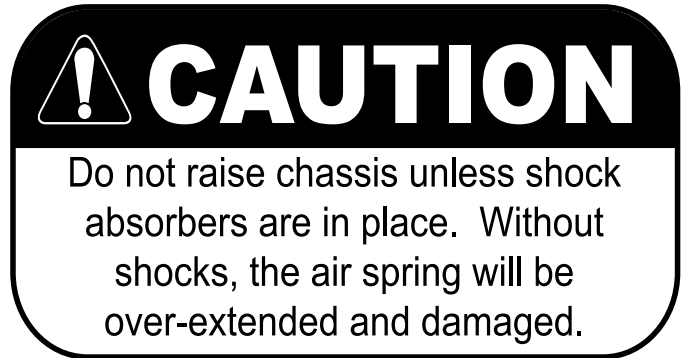
Air is supplied to the air springs by the air supply system from the tractor. A single height control valve on one of the axles monitors the chassis height from the axle and adds or exhausts air from the system as required to maintain a constant distance. The dimension is variable for your trailer and can be controlled by the variable height control adjustment.

4.7.4 HEIGHT CONTROL VALVE

This valve controls the adding or exhausting of air from the air springs. Air is added when the distance between the axle and chassis is decreased. Air is exhausted when the distance increases. A 5 to 15 second time delay is built into the valve to minimize jerking. Replace the valve if it does not function properly (Figure 15)

4.7.5 HEIGHT CONTROL VALVE WITH DUAL RIDE HEIGHT

The use of a single solenoid valve, one or more Height Control Valves can be operated to adjust the air pressure in the spring bellows to a set second position. This valve can also be used to raise and lower crossing uneven surfaces, such as speed bumps in parking lots, or when loading and unloading the vehicle on ferry or transit units. This valve is used to raise the trailer when empty to get more ground clearance. (Figure 14):



4.7.6 AIR DUMP VALVE

All air control systems are equipped with a dump valve that allows the operator to exhaust the air from the system in the following situations (Figure 13):

1. Parking trailer. (loaded or unloaded)
2. Loading or unloading trailers when supported by the deck supports.

AIR DUMP VALVE WITH GAUGE



Figure 13

CAUTION

Always release brakes when exhausting the air from the air system to allow the axles to pivot to their new position; preventing deck support damage.

HEIGHT CONTROL VALVE W DUAL RIDE HEIGHT

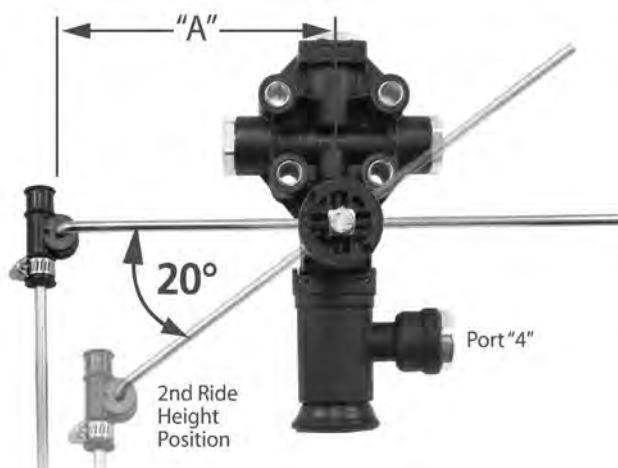


Figure 14

HEIGHT CONTROL VALVE

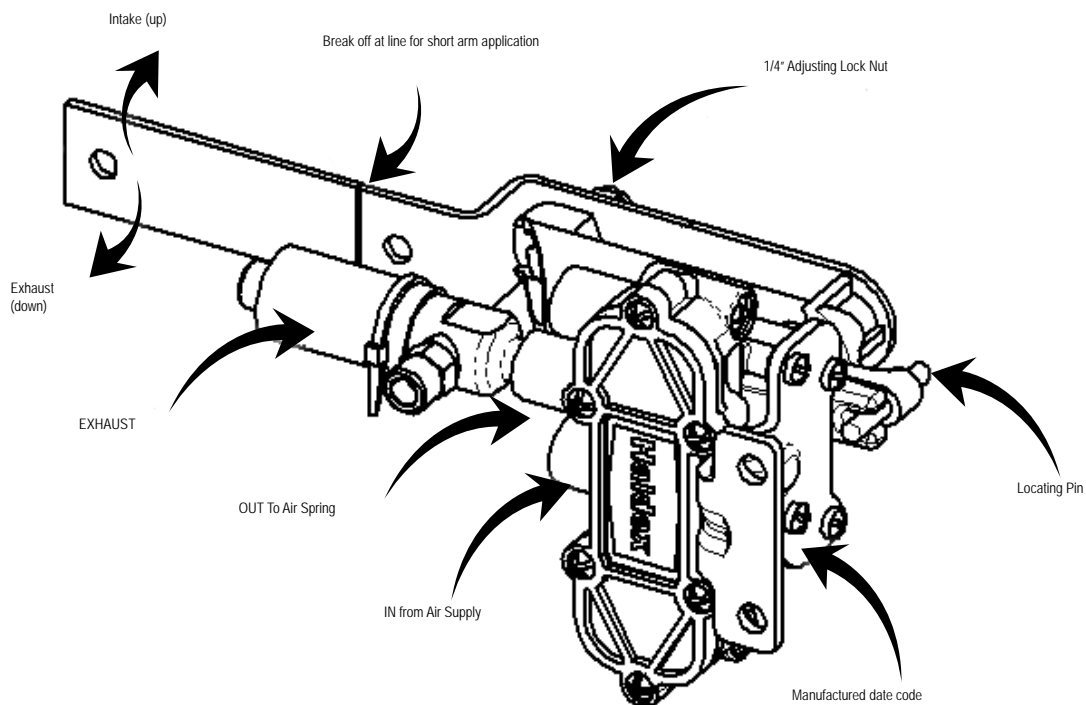
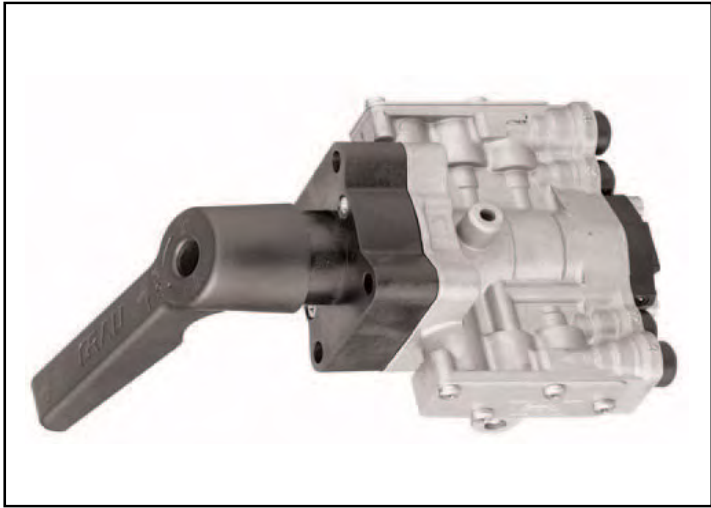


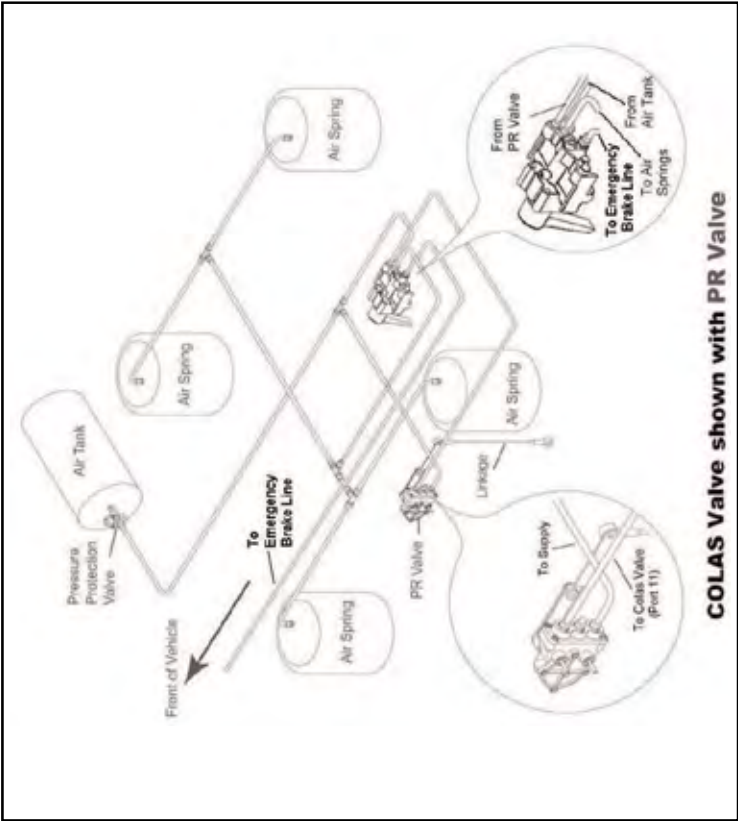
Figure 15

4.7.7 DOCK LEVELING VALVE

L31222
10-05



Installation Instructions
for the Colas Valve



Part Numbers for Components Shown Above

Part #	
90554950	PR Height Control Valve with Dump
90554945	PR Height Control Valve without Dump
90554107	Pressure Protection Valve
48100375	Height Control Linkage
90555270	Colas Raise Lower Valve



Commercial Vehicle Systems

North American Sales Division Haldex Brake Products Corporation 10707 NW Airworld Drive Kansas City, MO 64153-1215 Phone: 816-891-2470 Fax: 816-801-4198 www.haldex.com	North American Sales Division Haldex Limited 525 Southgate Drive, Unit 1 Guelph, Ontario Canada N1G 3W6 Phone: 519-826-7723 Fax: 519-826-9497 www.hbsna.com
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4.7.7 DOCK LEVELING VALVE

General

Information

The Colas Valve is used for manually raising and lowering the deck height of commercial vehicles and trailers.

Operation

Position “drive”

When the lever is in the central position it may be pulled out. In this position the valve can not be turned and the Ride Height Control Valve will maintain vehicle ride height.

Position “stop”

When the lever is in the central position and pushed in the air bags will be isolated from the Ride Height Control Valve and no air will be allowed to flow into or out of the air bags.

Position “raising”

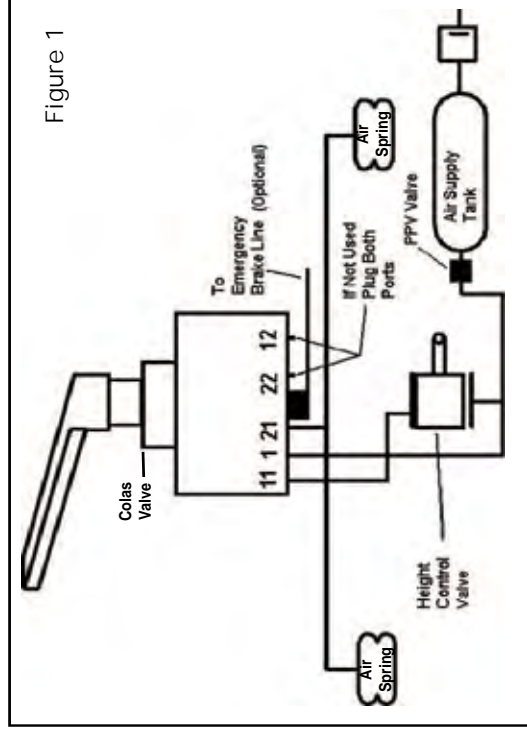
When the lever is in the “stop” position it may be turned in a counterclockwise direction approximately 45°. Connections 21, 22 are linked with connection 1 and the air bags are inflated. On release the lever automatically returns to the “stop” position.

Position “lowering”

When the lever is in the “stop” position it may be turned in a clockwise direction approximately 45°. Connections 21 and 22 are linked with connection 3 (which is the exhaust port) and the air bags are deflated. On release the lever automatically returns to the “stop” position.

Installation Instructions

1. Mount the Colas Valve using at least two of the four mounting holes provided on the valve.
 - a. The valve should be mounted in a location where it is protected from direct road spray.
 - b. The handle of the valve should not protrude past the side of the vehicle.



Note: There are two sets of supply and delivery ports on the Colas Valve. Both may be used at the same time, but if only one set is used the other must be plugged or the valve will not operate properly. Port 11 (from HCV) corresponds with delivery port 21 and Supply port 12 (from HCV) corresponds with delivery port 22 on the Colas Valve.

2. Connect the delivery port(s) of the Height Control Valve to the supply port(s) 11 and/or 12 on the Colas Valve. (See Figure 1)
3. Connect the Corresponding delivery port(s) to the air springs bags. (See Figure 1)
4. Connect port 1 on the Colas Valve directly to the air supply down stream of the PPV. (See Figure 1)
5. Connect the middle port on the Colas Valve to the emergency break line. This feature is optional and is used for automatically resetting the valve back to the “drive” position with release of the emergency brake. (See Figure 1)

[illegible]

The Landing Gear Auto Booster Control Box is an air powered hydraulic power supply designed to operate two Landing Gear Legs. The Control Box will supply high pressure hydraulic energy to extend the legs or lift the trailer and low pressure hydraulic to retract the legs. For best results, lock engine throttle at 1000-1200 ppm. The Control Box has six (6) major components. They are:

- 32

4.7.8 AIR POWERED HYDRAULIC LANDING GEAR CONTINUED

CONTROL BOX HYDRAULIC CIRCUIT OPERATION CONTINUED

EXTEND LEGS: To extend the legs, rotate the Master Valve handle clockwise as far as it will go. Air pressure inside the Retract Oil Tank is vented to atmosphere through the air portion of the Master Valve. Air pressure from the emergency air brake line is connected to the Booster Valve and also to the Main Oil Tank. The oil return passage in the Master Valve is blocked with the Master Valve in the legs extended position, and oil cannot flow through it (flow travels through booster nozzle).

LEGS EXTEND IN TWO PHASES:

PHASE 1: The legs travel rapidly to the ground. At low pressure, no boosting required. The "LEGS EXTENDED, RAPID TO GROUND," oil flows from the main Oil Tank to the Booster Nozzle. The Booster Nozzle has two ball checks. The bottom check allows oil to flow into the Booster but not out. The top ball check allows oil to flow out but not in. This combination allows oil to flow through the Booster Nozzle, to the Leveling Valve and to the legs. The Leveling Valve handle may be turned one way or the other to slow down or completely stop either leg. Oil from the "RETRACT" side of the leg returns to the Retract Oil Tank as the legs extend.

PHASE 2: Once the legs reach the ground, air pressure alone is not enough to lift the trailer. In order to lift the trailer, the Booster Pump must be cycled. This is done by pressing and holding the Logic Valve until the trailer has been raised to the desired height. If the automatic system malfunctions, release the Logic Valve and repress. If the automatic system still does not function, or if manual operation is desired, the Booster Valve may be cycled manually by pushing and holding the Power Valve in and pulling the Power Valve out repeatedly until the trailer is raised to the desired height. Periodically the Power Valve (with black knob) may stick. To correct, push and pull knob out and continue to push the Logic Valve. As the Logic Valve is pushed the following occurs: The blind or back end of the Booster is vented to the atmosphere. Oil, under air pressure, from the Main Tank enters the Booster Nozzle and pushes the piston rod back. The top ball check in the nozzle keeps oil in the legs from "backing up" into the nozzle. Then air pressure is applied to the large area of the Booster Piston. This large volume of low pressure air forces the piston and rod assembly forward, into the nozzle, forcing a small volume of high pressure oil out of the nozzle, through the Leveling Valve and to the legs. This cycle may be repeated as many times as needed to raise the trailer to the desired height. To lower the trailer or to retract the legs, slowly move the Master Valve handle counterclockwise as far as it will go as indicated in Phase 1.

4.8 BRAKES

BRAKE CHAMBER

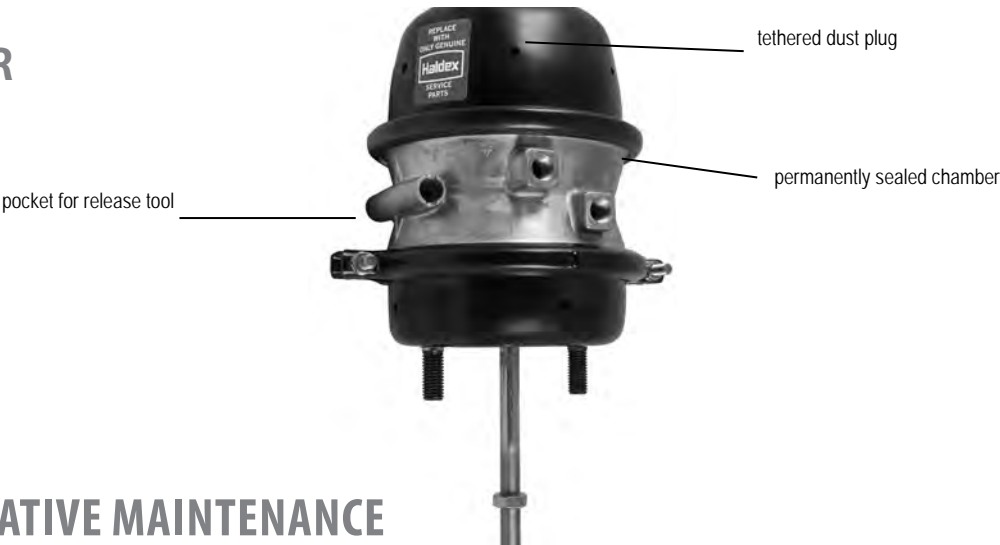


Figure 16

CAUTION:
DO NOT ATTEMPT
TO DISASSEMBLE

4.8.1 PREVENTATIVE MAINTENANCE

The operator, on the basis of past experience and severity of operation, should establish a schedule for the periodic cleaning, adjustment and inspection of brake equipment. Drum and linings are particularly subject to wear.

The air brake system needs to be inspected, cleaned, lubricated and adjusted on a regular basis and each time the hubs are removed.

1. BRAKE DRUMS

Inspect brake drums. Any accumulation of mud, dirt or rust on the drums should be removed. Any broken or cracked drums should be removed from service. Brake drum manufacturers do not recommend re-boring of brake drums because of the reduced strength of refaced drums.

2. BRAKE LINING

Check and determine how much of the lining has been worn. Replace linings as required by current safety legislation.

ITEM	PART NAME
1	Retaining Ring
2	Camshaft Adjusting Washer
3	Steel Spacer
4	Grease Seal
5	Camshaft Bushing
6	Grease Fitting
7	Bracket Mounting Bolt
8	Lock Washer
9	Camshaft Bracket
10	Dust Shield Mounting Bolt
11	Lock Washer
12	Dust Shield (Half)
13	Spider Sub-Assembly
14	Anchor Pin Bushing

ITEM	PART NAME
15	Anchor Pin
16	Steel Spacer Plate
17	Camshaft
18	Cam Roller
19	Shoe and Lining Assembly
20	Return Spring Pin
21	Show Retainer Spring
22	Show Return Spring
23	Lining
24	Brake Lining Rivet
25	Snap Ring
26	Washer
27	Bronze Bushing
28	Brake Roller Spring
29	Matching Screw/Nut Combination

BRAKE COMPONENT IDENTIFICATION

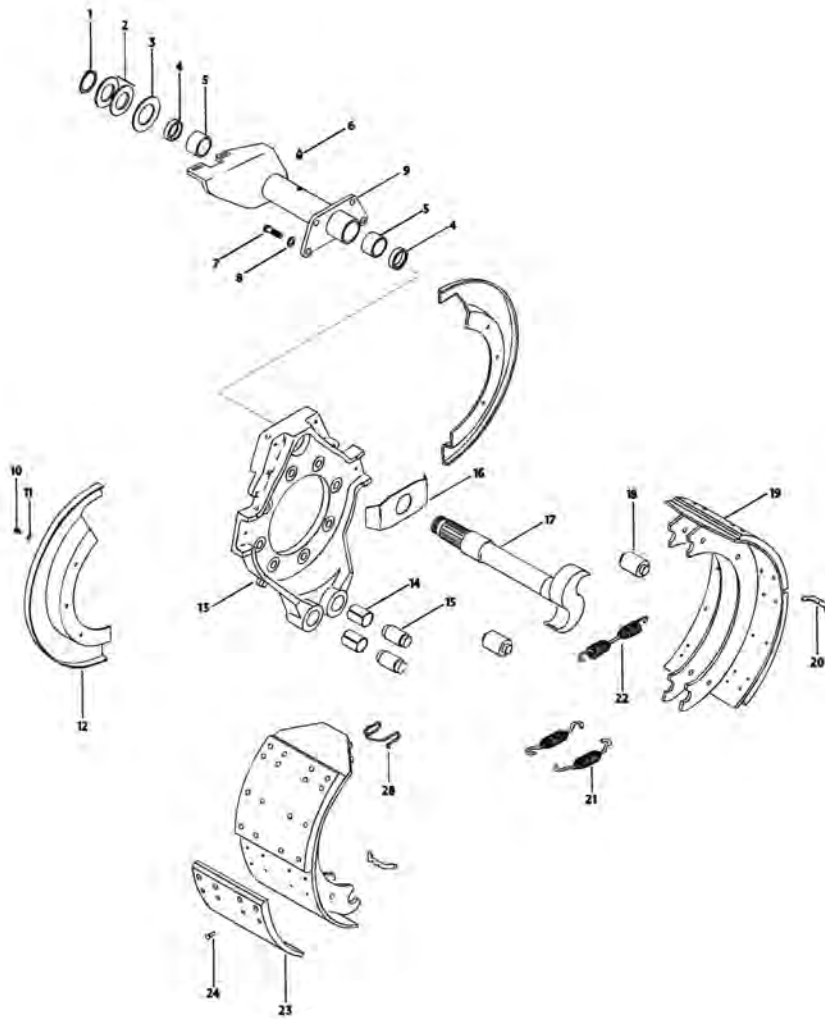


Figure 17

4.8.2 MAINTENANCE

1. BRAKES

Your trailer is equipped with quick change brakes. These brakes require no maintenance unless they have had oil leaking on them and then they must be replaced. Adjustable brakes maintenance and practices can be obtained from your brake manufacture.

2. AUTOMATIC SLACK ADJUSTERS

Trailers are equipped with automatic (self-adjusting) slack adjusters. A self-adjusting slack adjuster should never have to be manually adjusted while in service. The only time it should be adjusted is during installation or at re-line. By constantly manually adjusting, the internal clutch life can be shortened. Consult individual manufacturer for proper adjustment procedure. (Figure 18A, & 18B)

SLACK ADJUSTER SCHEMATIC

**WARNING!**

Do not attempt to repair or disassemble air brake chambers. A spring brake contains a very powerful compression spring. Incorrect handling may result in forceful release of the piggy back spring chamber and it's contents which could cause death, severe personal injury and/or property damage.

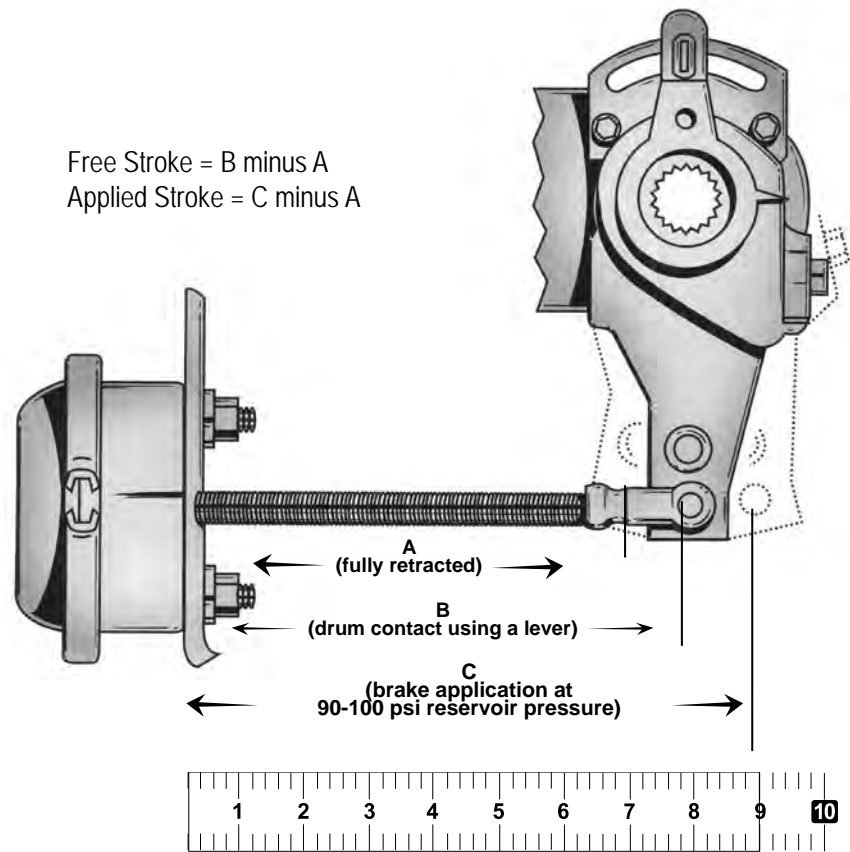


Figure 18A

HALDEX AUTO SLACK ADJUSTER

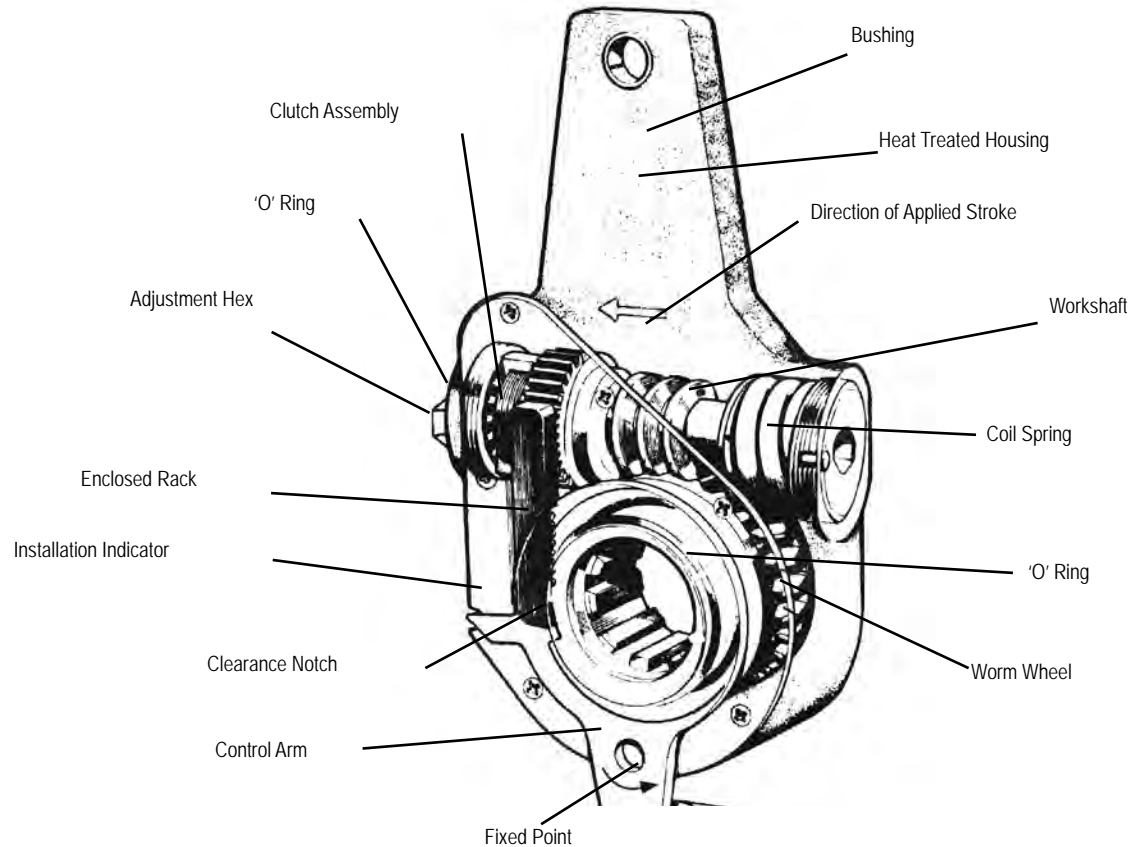


Figure 18B

4.9 TIRES

4.9.1 TIRE CARE AND MAINTENANCE

Although seemingly not requiring instruction, it has been established that through neglect, tires wear fast or fail early, even with the best of maintenance and service that tires deliver.

4.9.2 TIRE INSPECTION

A regular inspection of the tires is the first step in increasing tire mileage. These inspections will help to identify troubles, such as under-inflation, over-inflation and improper alignment. Minor damages, that may be repaired, can be detected during these inspections and save a tire that would otherwise fail.

Inflate tires to manufacturers recommended pressures. Proper inflation costs nothing, but will increase tire mileage. Under-inflation causes abnormal wear at the sides of the tread because the outer edges of the tire carry the load, while the center tends to flex up away from the road. This causes the tire to run hotter.

Tires found to be under-inflated before operation should be returned to the proper pressure. Over-inflation causes abnormal wear at the center of the tread, also shortening the life of the tire. This is caused because the center of the tire tread carries more than its share of the load.

Check for correct pressure when tires are cool. When a tire is in use and becomes heated, the air in the tire expands and the air pressure increases. Normal pressure build up is 20 pounds or less. Never "bleed" the tire to relieve build up pressure. If excessive build up of pressure occurs, load distribution, under-inflation, speed or any combination of these is responsible.

Over-inflation reduces the ability of the tire to absorb ordinary shock and causes fabric or tread separation, or both, resulting in tire failures. It will not compensate for overloading. An over-inflated tire is more vulnerable to snags, cuts and punctures.

4.9.3 MECHANICAL IRREGULARITIES

Mechanical irregularities that will cause excessive wear include a sprung or sagging axle, which will cause the inside dual tire to carry a greater load.

Brakes that are out of adjustment, or out-of-round brake drums will contribute to rapid and spotty tire wear. Improper brake adjustments will lead to spotty tire wear in several places, while out-of-round drums usually wear in a single spot. Improperly adjusted or worn wheel bearings can lead to uneven tire wear. Also improper axle alignment and worn torque rods bushings will cause excessive tire wear.

4.9.4 RADIAL TIRE APPLICATION

Radial and bias-ply tires should never be "mixed" either in dual combination or on the same axle except in an emergency situation. "Mixing" on the same dual combination will result in uneven wear because of different flexing characteristics.

4.9.5 MATCHING TIRES TO RIMS

When mounting tires on rims, be sure the right tires are used on the right rims. Many tire failures can be traced to not having matched the tires properly. In most cases there is a preferred and an alternate rim for the popular tire sizes. The preferred widths are recommended as they provide the optimum rim for the tire ratio. Refer to manufacturer's recommendations.

The tires of each wheel must be matched to within 1/8" of the same rolling radius (3/4" of the same rolling circumference) under normal loading conditions. The tires should have equal pressures.

4.9.6 TIRE WEAR PATTERNS

OVER-INFLATION:

Excessive wear at the center of the tire indicates the air pressure in the tire is consistently too high. The tire is riding on the center tread and wearing it prematurely. Occasionally, this wear pattern can result from extremely wide tires on narrow rims. To correct, replace either the tires or the wheels.

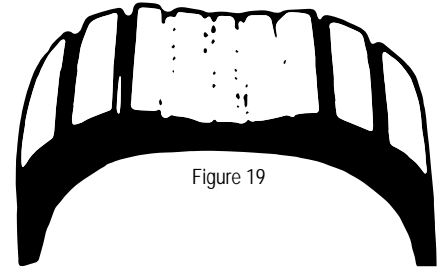


Figure 19

UNDER-INFLATION:

This type of wear usually results from consistent under-inflation. When a tire is under-inflated, there is too much contact with the road by the outer treads, which wear prematurely. When this type of wear occurs and the tire pressure is known to be consistently correct, the need for axle alignment could be indicated.

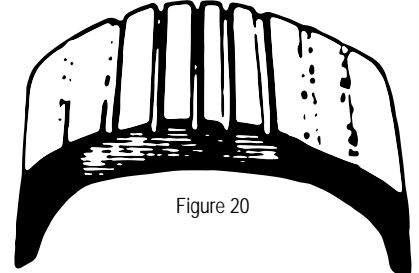


Figure 20

FEATHERING:

Feathering is a condition when the edge of each tread rib develops a slightly rounded edge on one side and a sharp edge on the other. By running your hand over the tire, you can usually feel the sharper edges before you will be able to see them. The most common causes of feathering are an incorrect toe-in setting, deteriorated bushing in the suspension or misalignment.

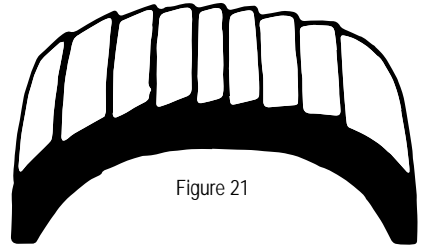


Figure 21

ONE SIDE WEAR:

When an inner or outer rib wears faster than the rest of the tire, the need for axle alignment is indicated. Misalignment could also be due to sagging springs or worn suspension system components.

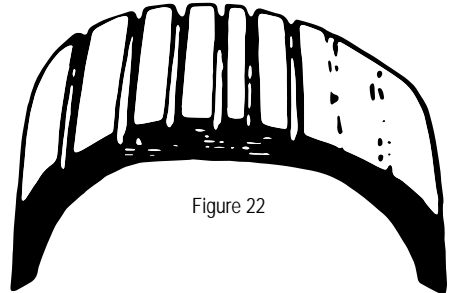


Figure 22

CUPPING:

Cups or scalloped dips appearing around the edge of the tread almost always indicate worn (sometimes bent) suspension parts. Adjustments of axle alignment alone will seldom cure the problem. Any worn component that connects the wheel to the suspension can cause this type of wear. Occasionally, wheels that are out of balance will wear like this, but wheel imbalance usually shows up as bald spots between the outside edges and centre of the tread.

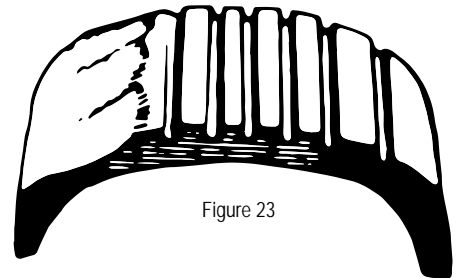


Figure 23

SECOND RIB WEAR:

Second rib wear is usually found only in radial tires, and appears where the steel belts end in relation to the tread. It can be kept to a minimum by careful attention to tire pressure and frequently rotating the tires. This is often considered normal wear but excessive amounts indicate that the tires are too wide for the wheels.

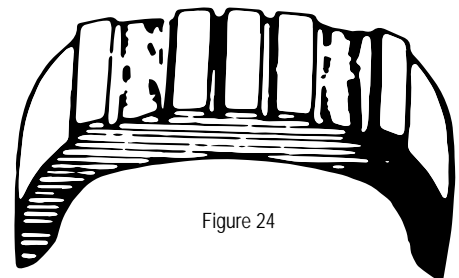


Figure 24

5.1 AIR SYSTEM COMPONENTS

Pressurized air is supplied to the system by the tractor and provides power to release and operate service and parking brakes. A variety of valves can be at various locations in the system and valves must be inspected and functionally checked on a regular basis to insure proper operation.

5.1.1 GLAD HANDS

During the pre-trip inspection, the driver should inspect the glad hands (Figure 26). Check for worn or damaged parts. Replace or repair as required.

5.1.2 ABS

BWS trailers incorporate a Haldex ABS systems. BWS reserves the right to change suppliers at any time. The following web sites contain valuable information including downloadable copies of ABS service and maintenance manuals.

HALDEX:

www.hbsna.com (ABS manual: L30030HBS)

GLAD HANDS - FRONT



Figure 26



IMPORTANT!

The air system works best when clean, dry air is supplied from the tractor. Equipping the system with a dryer and a filter pays dividends by reducing maintenance requirements.

6.1 ELECTRICAL SYSTEM

The electrical system features modular, vapor proof GROTE Ultra Blue system that conforms with LED CMVSS 108/FMVSS 108. The lighting system incorporates LED sealed beam tail-lights and shock resistant clearance lights (Figure 27 through 29).

It is important that all systems are checked each day or before every trip, and that lenses and reflective identification devices are kept clean. The operator should periodically, during night operation, check for lights flickering or momentary outages. This often indicates loose connections, light bulb or lens problems.

TAIL LIGHTS



Figure 27



Figure 28

ELECTRICAL DECAL

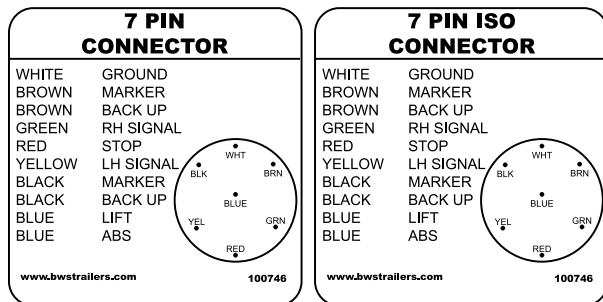
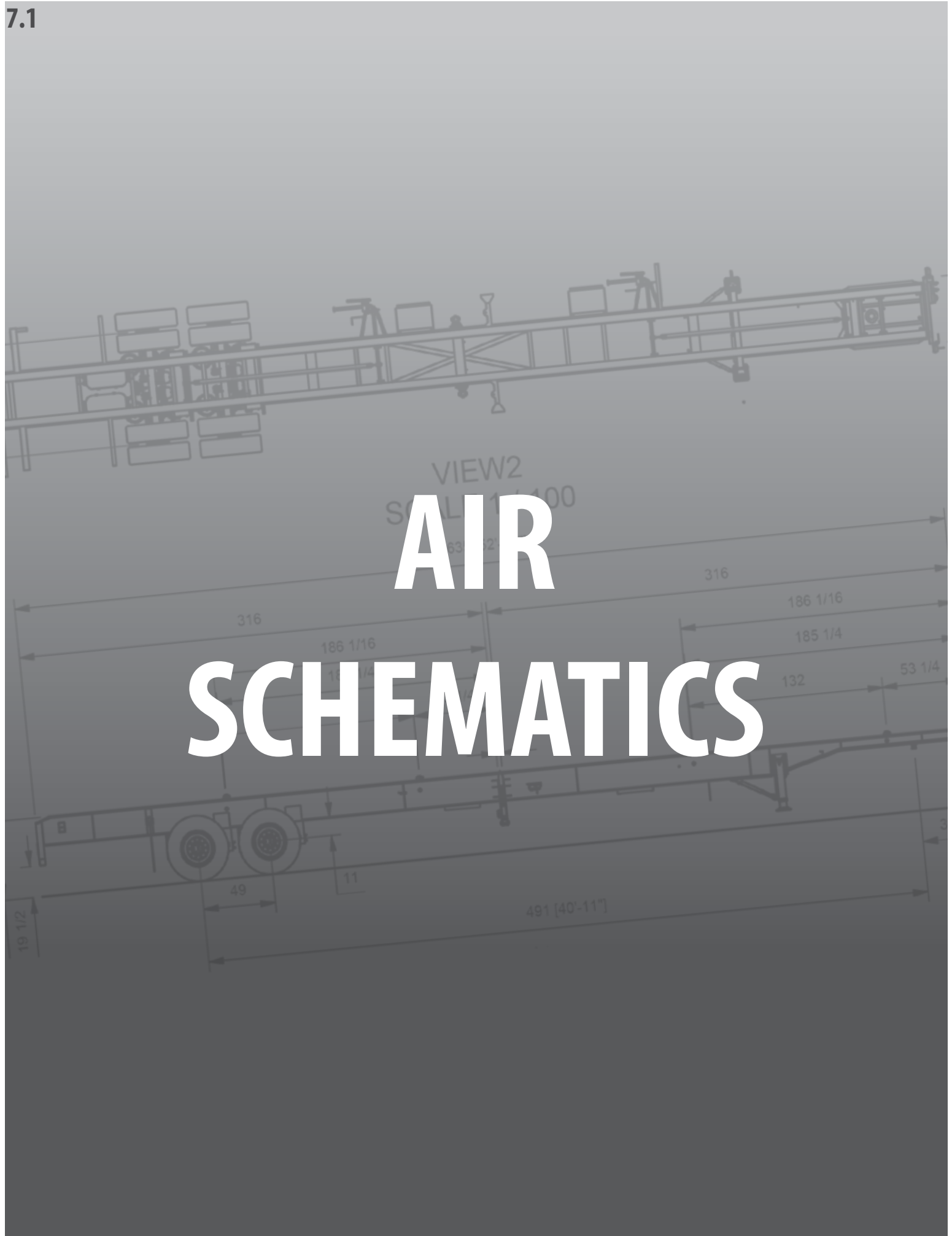


Figure 29



MAINTENANCE SAFETY

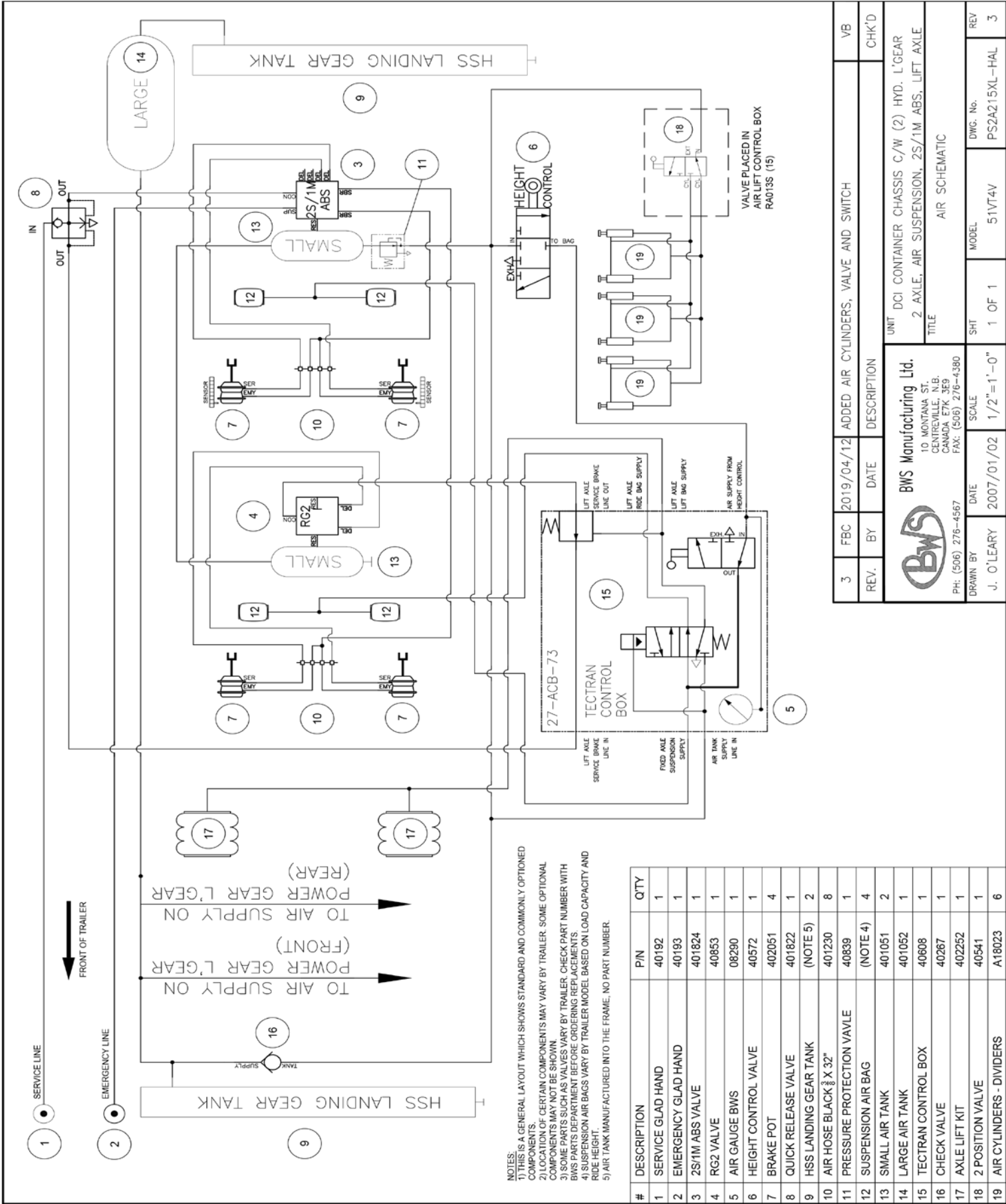
1. Always block vehicle wheels. Stop engine when working under a vehicle. Depleting vehicle air system pressure may cause a vehicle to roll. Keep hands away from chamber push rods and slack adjusters; they may automatically apply as system pressure drops.
2. Never connect or disconnect a hose or line containing air pressure. It may whip as air escapes. Never remove a component or pipe plug unless you are certain all system pressure has been depleted.
3. Never exceed recommended air pressure and always wear safety glasses when working with air pressure. Never look into air jets or direct them at anyone.
4. Never attempt to disassemble a component until you have read and understood recommended procedures. Some components contain powerful springs and injury can result if not properly disassembled. Use only proper tools and observe all precautions pertaining to use of those tools.
5. Use original manufacturer replacement parts and components.
 - Only components, devices, mounting and attaching hardware specifically designed should be used.
 - Replacement hardware, tubing, hose fittings, etc. should be the equivalent size, type, length and strength as the original equipment.
 - Make certain that when replacing tubing or hose, all supports, clamps or suspending devices that were originally installed by the vehicle manufacturer are reinstalled.
 - Devices with stripped threads or damaged parts should be replaced. Repairs requiring machining should not be attempted.



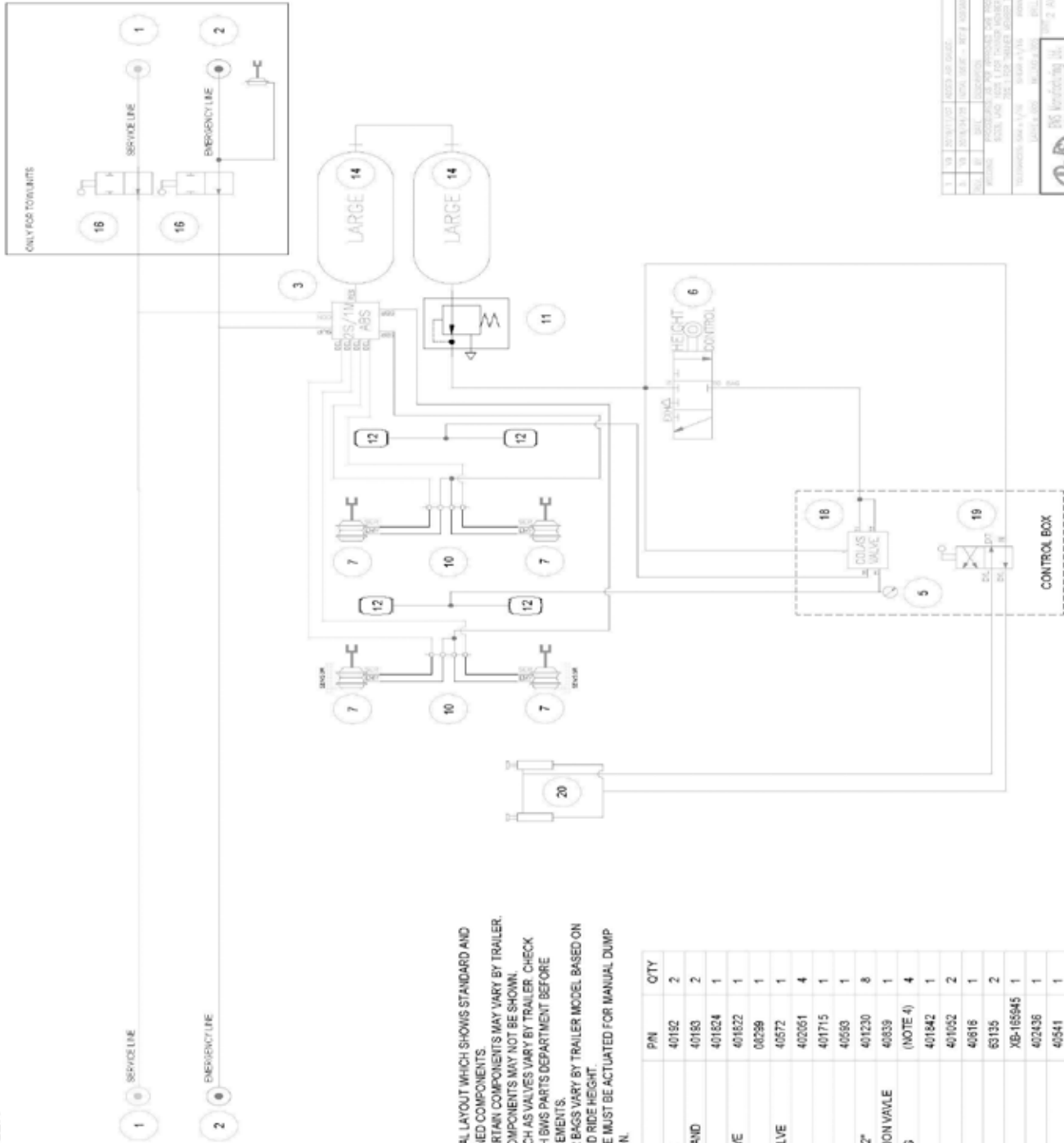
VIEW2
SCALE 1/4"=1'-0"

AIR SCHEMATICS

Technical drawing of a truck chassis, showing dimensions and components. The drawing includes a side view of the chassis with various parts labeled and dimensions provided. Key dimensions include 316, 186 1/16, 185 1/4, 132, 53 1/4, 49, 11, 19 1/2, and 491 [40'-11"]. The drawing is labeled 'VIEW2' and 'SCALE 1/4"=1'-0"'. The text 'AIR SCHEMATICS' is overlaid on the drawing.



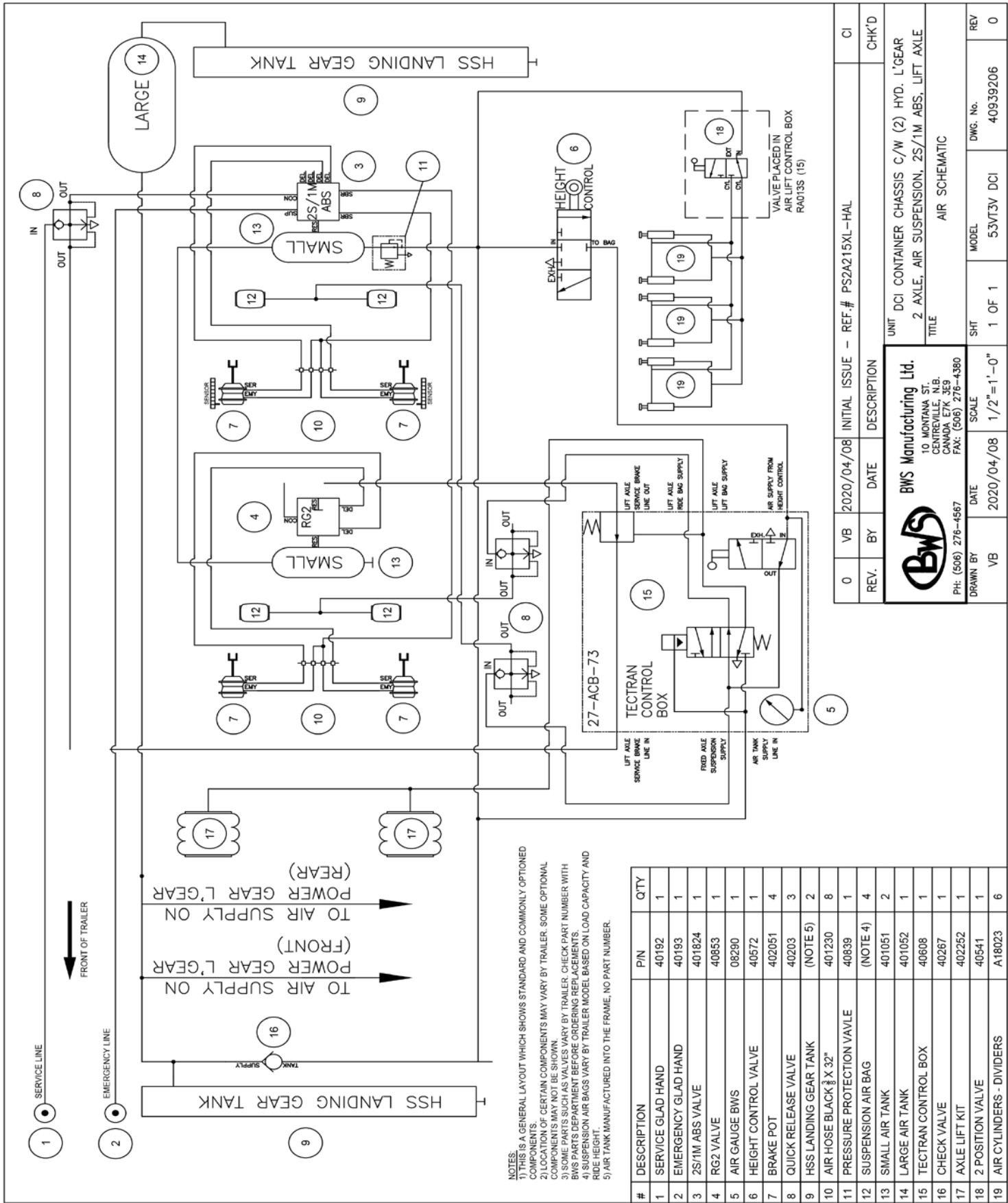
FRONT OF TRAILER



NOTES:
1) THIS IS A GENERAL LAYOUT WHICH SHOWS STANDARD AND COMMONLY OPTIONED COMPONENTS.
2) LOCATION OF CERTAIN COMPONENTS MAY VARY BY TRAILER. SOME OPTIONAL COMPONENTS MAY NOT BE SHOWN.
3) SOME PARTS SUCH AS VALVES VARY BY TRAILER. CHECK PART NUMBER WITH BWS PARTS DEPARTMENT BEFORE ORDERING REPLACEMENTS.
4) SUSPENSION AIR BAGS VARY BY TRAILER MODEL BASED ON LOAD CAPACITY AND RIDE HEIGHT.
5) OVER RIDE VALVE MUST BE ACTUATED FOR MANUAL DUMP VALVE TO FUNCTION.

#	DESCRIPTION	P/N	Q'TY
1	SERVICE GLAD HAND	40182	2
2	EMERGENCY GLAD HAND	40183	2
3	2S/M ABS VALVE	401824	1
4	QUICK RELEASE VALVE	401822	1
5	AIR GAUGE	00299	1
6	HEIGHT CONTROL VALVE	40572	1
7	BRAKE POT	402061	4
8	3 POSITION VALVE	401715	1
9	OVER RIDE VALVE	40563	1
10	AIR HOSE BLACK 3/4" X 32"	401230	8
11	PRESSURE PROTECTION VALVE	40839	1
12	SUSPENSION AIR BAG	(NOTE 4)	4
13	REGULATOR	401842	1
14	LARGE AIR TANK	401052	2
15	N.O. PILOT VALVE	40616	1
16	SHUT OFF VALVE	63135	2
17	SERVICE POT	XB-165945	1
18	COLAS VALVE	402436	1
19	2 POSITION VALVE	40541	1
20	AIR CYLINDER	A18023	2

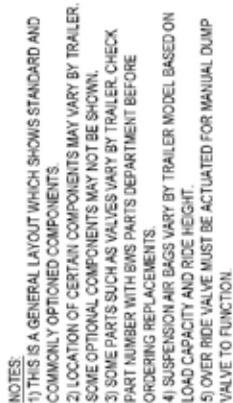
MACHINE SHOP									
1	53	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI
2	53	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI
3	53	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI
4	53	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI
5	53	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI
6	53	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI
7	53	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI
8	53	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI
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13	53	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI
14	53	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI
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20	53	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI	53VT2V DCI



NOTES:
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2) LOCATION OF CERTAIN COMPONENTS MAY VARY BY TRAILER. SOME OPTIONAL COMPONENTS MAY NOT BE SHOWN.
3) SOME PARTS SUCH AS VALVES VARY BY TRAILER. CHECK PART NUMBER WITH BWS PARTS DEPARTMENT BEFORE ORDERING REPLACEMENTS.
4) SUSPENSION AIR BAGS VARY BY TRAILER MODEL BASED ON LOAD CAPACITY AND RIDE HEIGHT.
5) AIR TANK MANUFACTURED INTO THE FRAME, NO PART NUMBER.

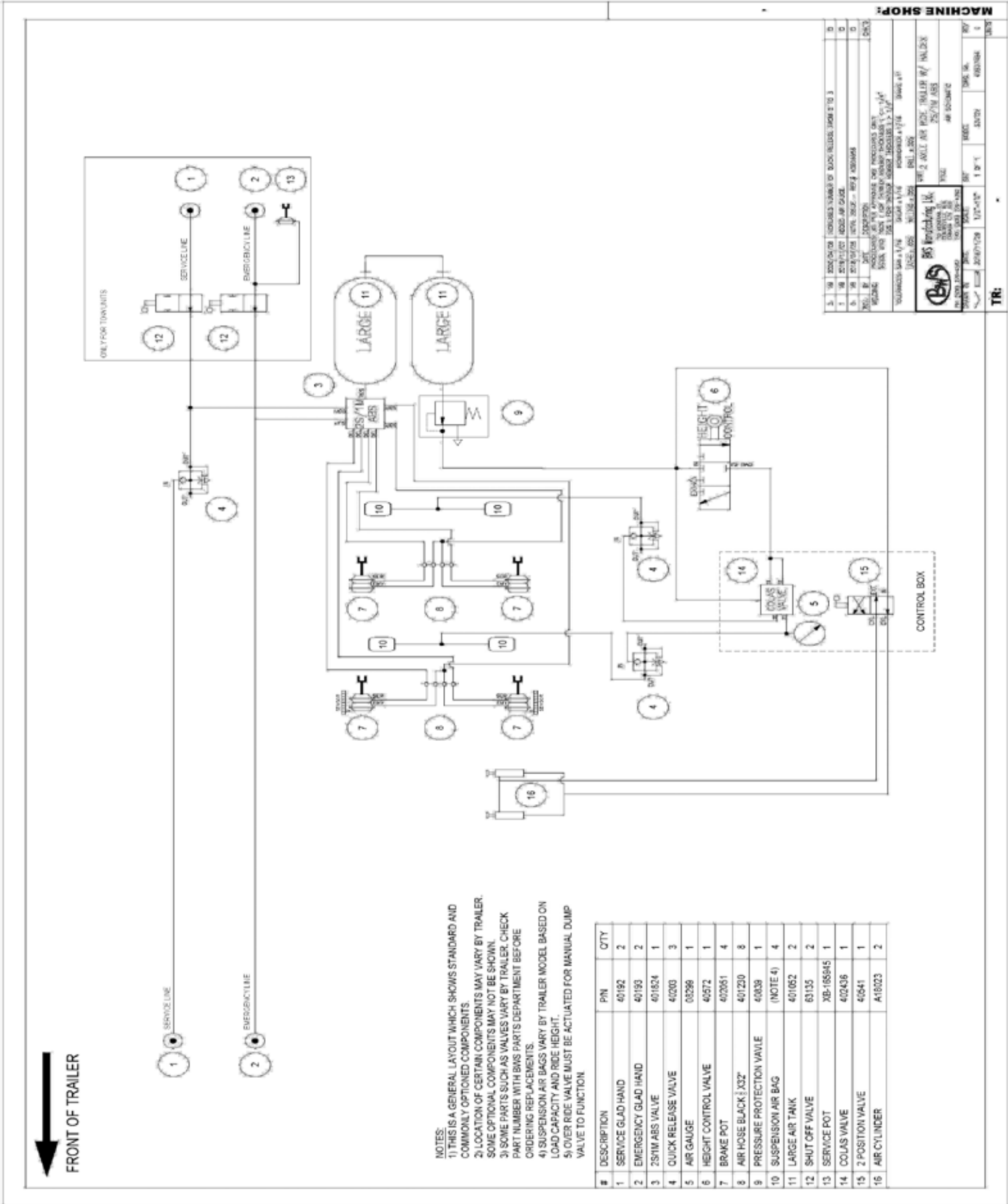
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1	SERVICE GLAD HAND	40192	1
2	EMERGENCY GLAD HAND	40193	1
3	2S/1M ABS VALVE	401824	1
4	RG2 VALVE	40853	1
5	AIR GAUGE BWS	08290	1
6	HEIGHT CONTROL VALVE	40572	1
7	BRAKE POT	402051	4
8	QUICK RELEASE VALVE	40203	3
9	HSS LANDING GEAR TANK	(NOTE 5)	2
10	AIR HOSE BLACK 3/4 X 32"	401230	8
11	PRESSURE PROTECTION VALVE	40839	1
12	SUSPENSION AIR BAG	(NOTE 4)	4
13	SMALL AIR TANK	401051	2
14	LARGE AIR TANK	401052	1
15	TECTRAN CONTROL BOX	40808	1
16	CHECK VALVE	40267	1
17	AXLE LIFT KIT	402252	1
18	2 POSITION VALVE	40541	1
19	AIR CYLINDERS - DIVIDERS	A18023	6

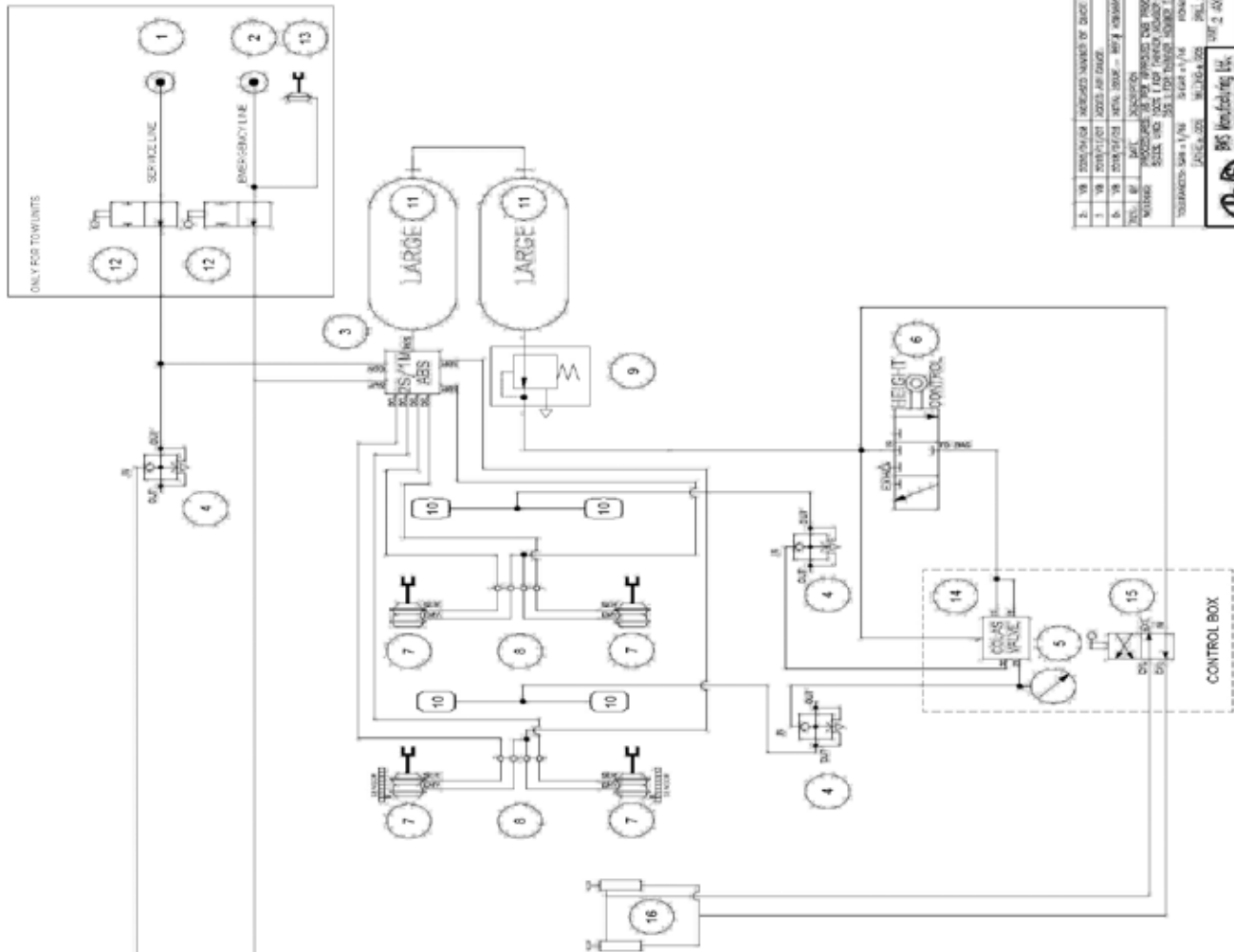
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2 AXLE, AIR SUSPENSION, 2S/1M ABS, LIFT AXLE				
TITLE				
AIR SCHEMATIC				
BWS Manufacturing Ltd.				
10 MONTANA ST.				
CENTREVILLE, N.B.				
CANADA E7K 3E9				
PH: (506) 276-4567				
FAX: (506) 276-4380				
DRAWN BY	DATE	SCALE	SHT	OF
VB	2020/04/08	1/2" = 1'-0"	1	1
REV	DWG. No.	MODEL	53VT3V DCI	40939206
0				



#	DESCRIPTION	P/N	QTY
1	SERVICE GLAD HAND	40192	2
2	EMERGENCY GLAD HAND	40193	2
3	25MM ABS VALVE	401924	1
4	QUICK RELEASE VALVE	40203	3
5	AIR GAUGE	08399	1
6	HEIGHT CONTROL VALVE	40572	1
7	BRAKE POT	402651	4
8	AIR HOSE BLACK 3/32"	401230	8
9	PRESSURE PROTECTION VALVE	40839	1
10	SUSPENSION AIR BAG	(NOTE 4)	4
11	LARGE AIR TANK	401052	2
12	SHUT OFF VALVE	53135	2
13	SERVICE POT	XB-168945	1
14	COLAS VALVE	402438	1
15	2 POSITION VALVE	40841	1
16	AIR CYLINDER	A160202	2

[illegible]

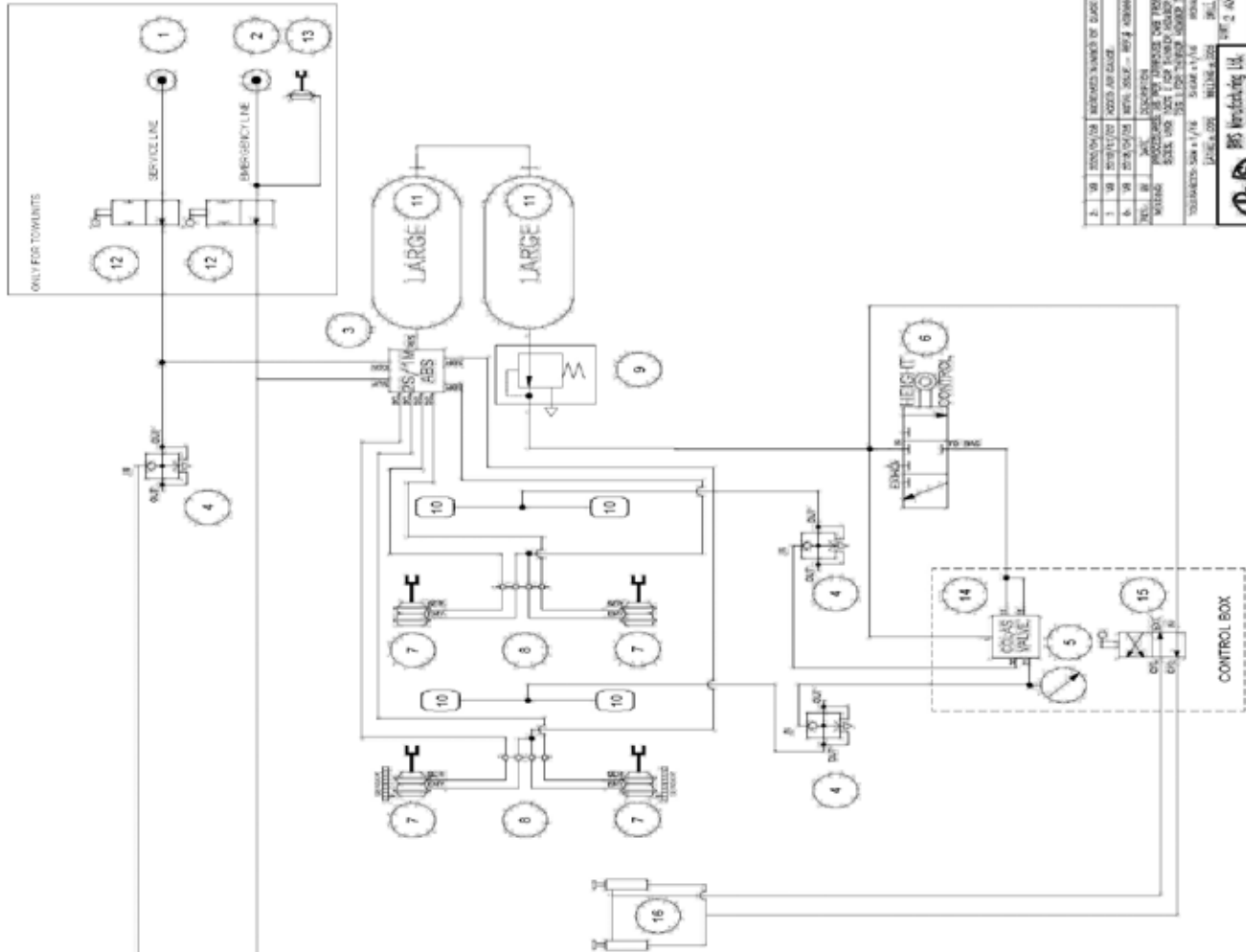




NOTES:
1) THIS IS A GENERAL LAYOUT WHICH SHOWS STANDARD AND COMMONLY OPTIONED COMPONENTS.
2) LOCATION OF CERTAIN COMPONENTS MAY VARY BY TRAILER. SOME OPTIONAL COMPONENTS MAY NOT BE SHOWN.
3) SOME PARTS SUCH AS VALVES VARY BY TRAILER. CHECK PART NUMBER WITH BNS PARTS DEPARTMENT BEFORE ORDERING REPLACEMENTS.
4) SUSPENSION AIR BAGS VARY BY TRAILER MODEL BASED ON LOAD CAPACITY AND RIDE HEIGHT.
5) OVER RIDE VALVE MUST BE ACTUATED FOR MANUAL DUMP VALVE TO FUNCTION.

#	DESCRIPTION	PIN	QTY
1	SERVICE GLAD HAND	40192	2
2	EMERGENCY GLAD HAND	40193	2
3	25MM ABS VALVE	401824	1
4	QUICK RELEASE VALVE	40003	3
5	AIR GAUGE	00289	1
6	HEIGHT CONTROL VALVE	40572	1
7	BRAKE POT	402051	4
8	AIR HOSE BLACK 1/2 X 32'	401230	8
9	PRESSURE PROTECTION VALVE	40639	1
10	SUSPENSION AIR BAG (NOTE 4)	401052	4
11	LARGE AIR TANK	401052	2
12	SHUT OFF VALVE	63135	2
13	SERVICE POT	X5-185545	1
14	COLAS VALVE	402456	1
15	2 POSITION VALVE	40641	1
16	AIR CYLINDER	A18023	2

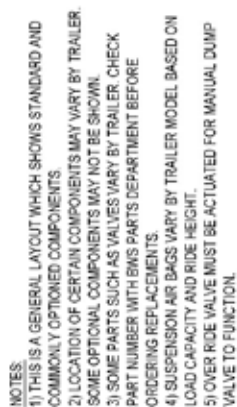
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NOTES:
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5) OVER RIDE VALVE MUST BE ACTUATED FOR MANUAL DUMP VALVE TO FUNCTION.

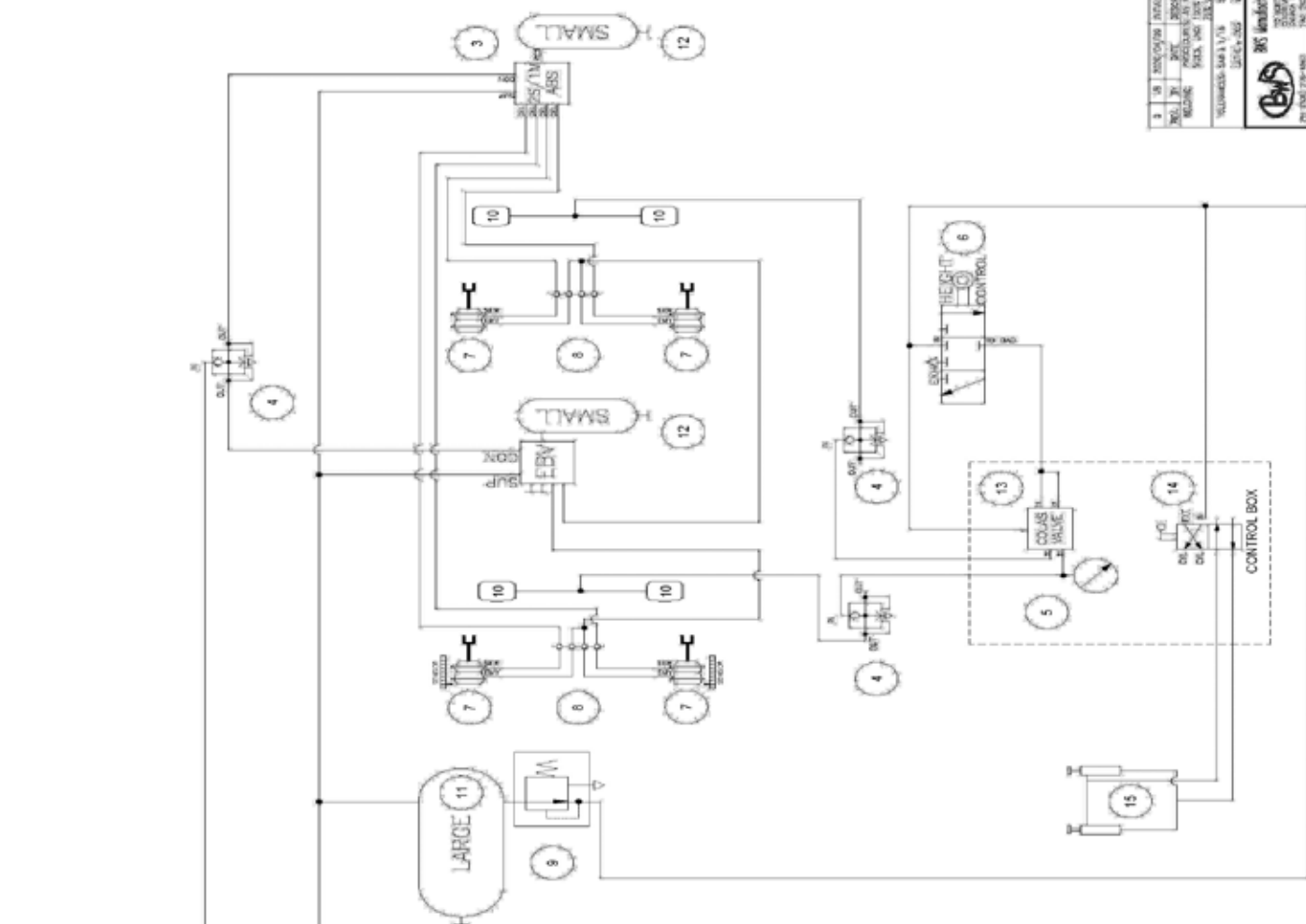
#	DESCRIPTION	PIN	QTY
1	SERVICE GLAD HAND	40162	2
2	EMERGENCY GLAD HAND	40163	2
3	25NM ABS VALVE	401624	1
4	QUICK RELEASE VALVE	40003	3
5	AIR GAUGE	05289	1
6	HEIGHT CONTROL VALVE	40372	1
7	BRAKE POT	402051	4
8	AIR HOSE BLACK 1/2X32	401230	6
9	PRESSURE PROTECTION VALVE	40839	1
10	SUSPENSION AIR BAG (NOTE 4)		4
11	LARGE AIR TANK	401052	2
12	SHUT OFF VALVE	63135	2
13	SERVICE POT	XB-163945	1
14	COLAS VALVE	402408	1
15	2 POSITION VALVE	40641	1
16	AIR CYLINDER	A18023	2

MACHINE SHOP:									
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#	DESCRIPTION	PIN	QTY
1	SERVICE GLAD HAND	40182	2
2	EMERGENCY GLAD HAND	40193	2
3	2S/IM ABS VALVE	401824	1
4	QUICK RELEASE VALVE	40200	3
5	AIR GAUGE	00269	1
6	HEIGHT CONTROL VALVE	40572	1
7	BRAKE POT	402051	4
8	AIR HOSE BLACK 3/32"	401200	8
9	PRESSURE PROTECTION VALVE	40339	1
10	SUSPENSION AIR BAG	(NOTE 4)	4
11	LARGE AIR TANK	401062	2
12	SHUT OFF VALVE	63135	2
13	SERVICE POT	XB-160945	1
14	COUS VALVE	402038	1
15	2 POSITION VALVE	40641	1
16	AIR CYLINDER	A18023	2

2	18	20/04/08	INCREASED NUMBER OF SLIGHT BULLETS FROM T.V. 3	D
3	18	20/04/08	RECV. AIR FORCE	D
4	18	20/04/08	RECV. AIR FORCE	D
5	18	20/04/08	RECV. AIR FORCE	D
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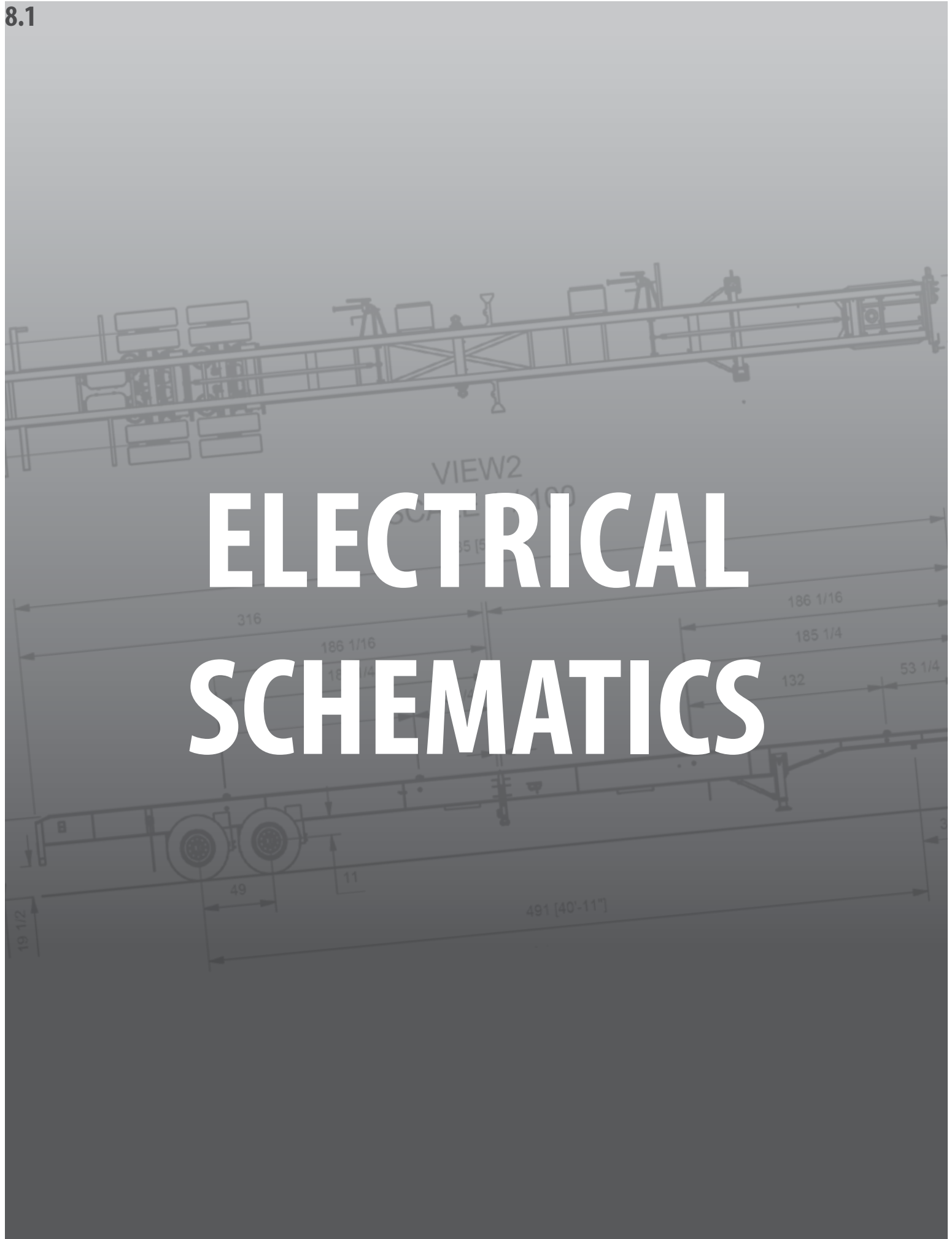


NOTES:

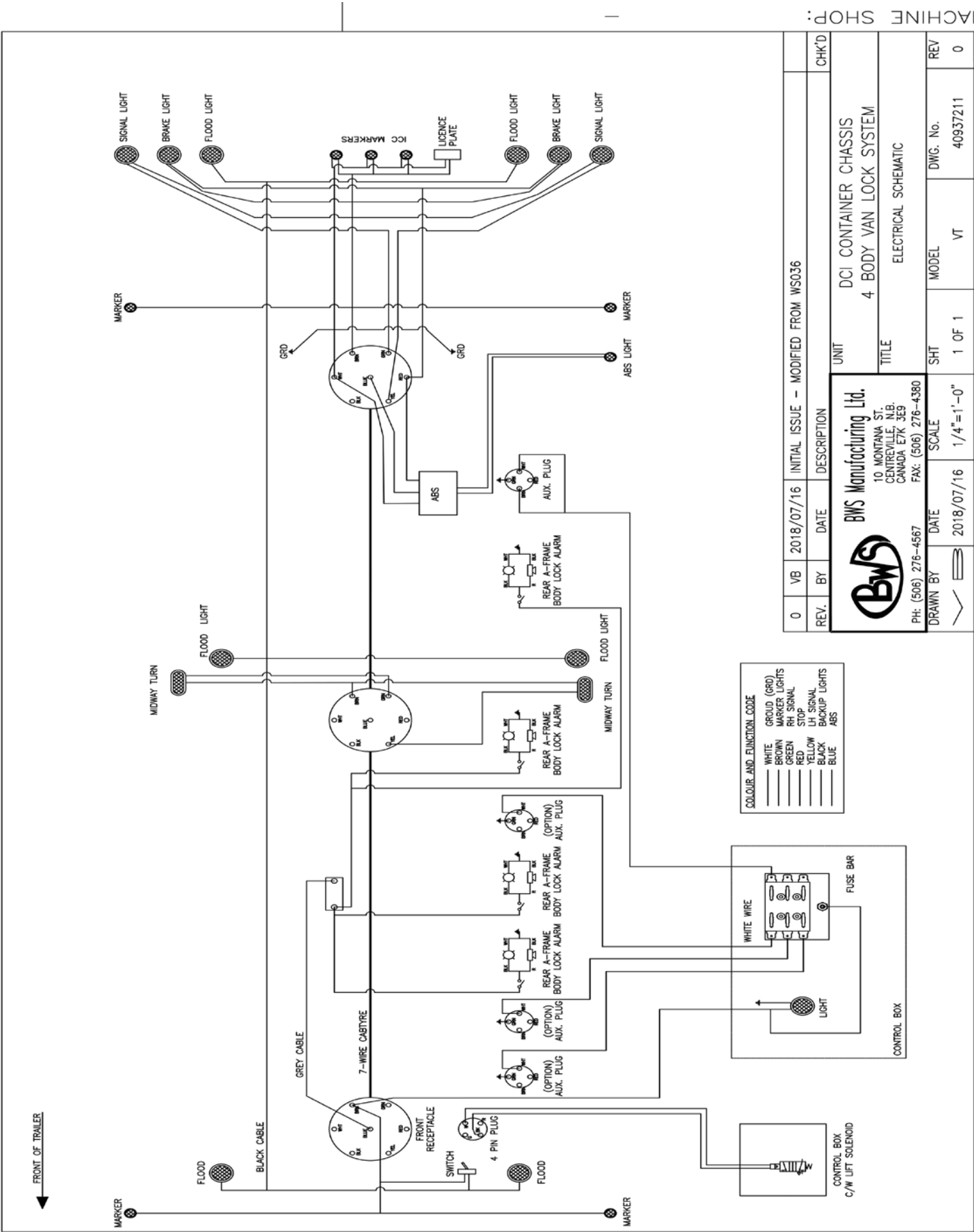
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- 3) SOME OPTIONAL COMPONENTS MAY NOT BE SHOWN.
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- 5) SUSPENSION AIR BAGS VARY BY TRAILER MODEL BASED ON LOAD CAPACITY AND RIDE HEIGHT.
- 6) OVER RIDE VALVE MUST BE ACTUATED FOR MANUAL DUMP VALVE TO FUNCTION.

#	DESCRIPTION	PIN	QTY
1	SERVICE GLAD HAND	40192	1
2	EMERGENCY GLAD HAND	40193	1
3	25MM ABS KIT	401503	1
4	QUICK RELEASE VALVE	40203	3
5	AIR GAUGE	05269	1
6	HEIGHT CONTROL VALVE	40372	1
7	BRAKE POT	402651	4
8	AIR HOSE BLACK 1/2x32"	401230	8
9	PRESSURE PROTECTION VALVE	40339	1
10	SUSPENSION AIR BAG	(NOTE 4)	4
11	LARGE AIR TANK	401052	1
12	SMALL AIR TANK	401051	2
13	COLAS VALVE	402438	1
14	2 POSITION VALVE	40541	1
15	AIR CYLINDER	415023	2

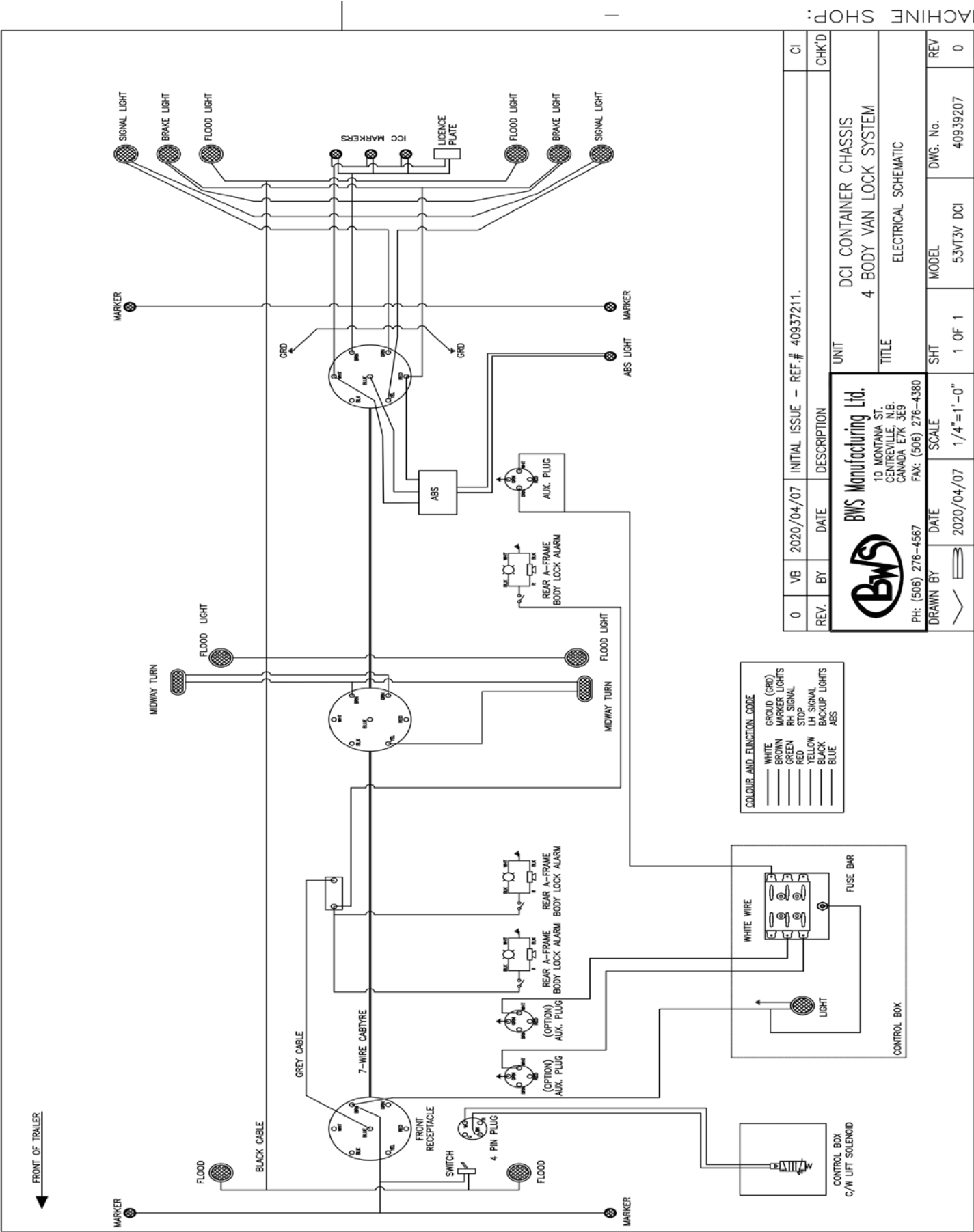
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80	10	1000/10/00		0

A technical drawing of a mechanical assembly, likely a conveyor system, shown in a perspective view. The drawing includes various components such as rollers, structural frames, and mounting brackets. Numerous dimensions are provided in inches and feet, including 316, 186 1/16, 185 1/4, 132, 53 1/4, 49, 11, 19 1/2, and 491 [40'-11"]. The text "VIEW2" is visible above the main title. The title "ELECTRICAL SCHEMATICS" is overlaid in large, bold, white capital letters.

ELECTRICAL SCHEMATICS





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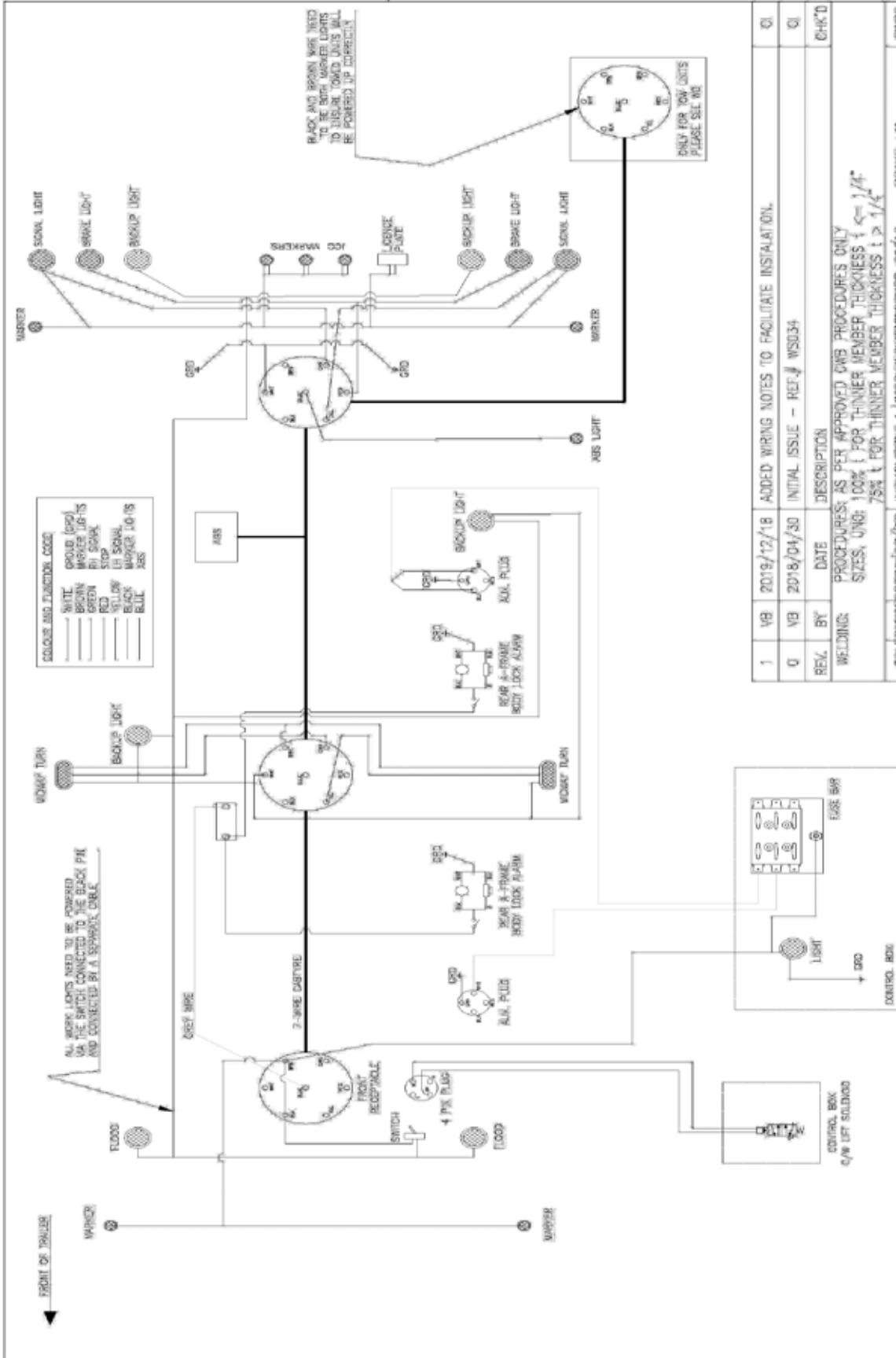



MACHINE SHOP:





1	VB	2019/12/18	ADDED WIRING NOTES TO FACILITATE INSTALLATION.	Q1
Q	VB	2018/04/30	INITIAL ISSUE - REF. # WSD34	Q1
REV. BY	DATE	DESCRIPTION		CHK'D
WELDING		PROCEDURES: AS PER APPROVED CWB PROCEDURES ONLY SIZES, UNO: 100% (FOR THINNER MEMBER THICKNESS $t < 1/4"$ 75% (FOR THINNER MEMBER THICKNESS $t \geq 1/4"$		
COL. #	REVISIONS	DATE	INITIALS	FRAME #17
205	205	2018/04/30	205	205
LATHE ± .005 MILLING ± .005 UNIT				
 BWS Manufacturing Ltd. 10 MONTANA ST. CENTREVILLE, ALB. CANADA T7P 3J9 FAX: (506) 276-4380				
P/N: (506) 276-4567 DRAWN BY: 		DATE: 2018/04/30	SCALE: 1/4"=1'-0"	SHT: 1 OF 1
REV. NO.			MODEL	DWG. NO.
409369558			VT	409369558
ELECTRICAL SCHEMATIC				UNITS



1	VB	2018/12/18	ADDED WIRING NOTES TO FACILITATE INSTALLATION.	Q1
Q	VB	2018/04/30	INITIAL ISSUE - REF. J WS034	Q1
REV.	BY	DATE	DESCRIPTION	CH'D
WELDING			PROCEDURES AS PER APPROVED CWB PROCEDURES ONLY SIZES, UNITS: 100% t FOR THINNER MEMBER THICKNESS t < 1/4" 75% t FOR THINNER MEMBER THICKNESS t > 1/4"	
COLLIGATOR'S 225344/104/006			INITIALS: 45894.1/1000 FIELDING WIRE 4042/18	SWPS
		LATHE ± .005	MILLING ± .005	DRILL ± .005
UNIT				
DCI CONTAINER CHASSIS				
2 BODY VAN LOCK SYSTEM				
TITLE				
ELECTRICAL SCHEMATIC				
DRAWN BY		DATE	SCALE	REV
P16 (506) 276-4567		2018/04/30	1/4"=1'-0"	Q
 BWS Manufacturing Ltd. 10 MONTANA ST. CENTREVILLE, NB. CANADA E7R 3J9 TEL: (506) 276-4567		DATE	MODEL	DWG. NO.
		2018/04/30	VT	40836958
				UNITS

[illegible]

REV.0 40936958

22

22

9.1 TROUBLE SHOOTING

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
COUPLER LOCK DOES NOT FULLY ENGAGE	Dirt or gravel contamination.	Wash and inspect.
	Worn parts.	Check fifth wheeling locking adjustment (see Maintenance Section).
	Mechanism improperly adjusted.	Check for excessive wear.
EXCESSIVE OR UNEVEN TIRE WEAR	Over or under inflation.	Inflate to recommended pressure.
	Loose wheel nuts or clamps.	Tighten wheel nuts or clamps to recommended torque.
	Loose or tight wheel bearing.	Adjust bearings.
	Axle bent or out of alignment.	Straighten, align or replace axle.
	Tires not properly matched.	Match tires.
	Improper acting brakes.	Correct brakes as required.
	Rapid stopping.	Apply brakes slowly when approaching stops.
	Excessive speed on turns.	Reduce speed.
*See your tire dealer for any tire issues.		
SCUFFED TIRES	Over or under inflation.	Inflate to recommended pressure.
	Excessive speed on turns.	Reduce speed.
WOBBLY TIRES	Tire wobble due to uneven rim clamping.	Torque tighten all rim clamps.
	Worn or damaged wheel bearings.	Replace bearings.
	Broken or bent wheel or rim.	Replace wheel or rim.
	Bent axle.	Replace or straighten axle.
	Broken wheel studs.	Replace wheel studs.
DOG TRACKING	Blown air bag.	Replace air bag.
	Bent axle.	Replace or straighten axle.
	Frame or suspension (axles) out of alignment.	Straighten frame or align axles.

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
	Worn or damaged torque arms or bushings.	Check or replace.
LOSS OF TIRE AIR PRESSURE	Puncture in tire.	Repair or replace tire.
	Faulty valve or valve core.	Replace valve assembly or core.
	Wheel or rim damage.	Replace wheel or rim.
BRAKES DO NOT APPLY EVENLY	Brake valve(s) not operating correctly.	Check brake adjustment and related items.
	Loading of trailer not proportional.	Redistribute load.
BRAKES DO NOT RELEASE	Brake shoe bound up at anchor pins.	Lubricate brake operating parts.
	Brake hoses restricted.	Replace hoses.
	Brakes out of alignment.	Adjust brakes.
	Damaged brake assembly.	Replace damaged parts.
	Contaminated air valves.	Clean or replace.
	Tractor lines crossed.	Attach properly.
NO BRAKES OR INSUFFICIENT BRAKES	Source of air supply shut off at tractor.	Open cutout cocks at rear of tractor cab or push control valve "IN".
	Disconnected or not properly coupled glad hands.	Connect or properly couple glad hands.
	Lower brake line pressure.	Check air pressure gauge on tractor or for inoperative compressor.
	Brake pads worn or glazed.	Replace pads.
	Reservoir drain valve open.	Close drain valve.
GRABBING BRAKES	Oil, grease or foreign material on brake lining.	Reline brakes.
	Brakes out of adjustment.	Adjust brakes.
	Brake drum out-of-round.	Replace brake drum.

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
	Damaged brake chamber or internal assembly.	Replace complete brake chamber.
	Leaking or broken hose between valve and brake chamber.	Replace or repair as required.
BRAKES DRAGGING	Brakes set too tight.	Adjust brakes (slack adjuster).
	Binding cam, anchor pins or chamber rod end pin.	Lubricate and free up.
	Diaphragm is leaking in brake chamber.	Replace broken chamber.
	Air valve contamination.	Clean and replace.
	Damaged brake assembly or brake drum out of round.	Replace.
SLOW BRAKE APPLICATION OR RELEASE	Lack of lubrication.	Lubricate brake operating parts.
	Excessive travel in brake chamber push rod.	Adjust brakes.
	Restriction in hose or lines.	Repair or replace.
	Defective brake valve (s).	Replace defective valve(s).
ALL AIR SPRINGS FLAT	Insufficient air supply.	Build up and maintain tractor air pressure at least 85 psi.
		Check couplings and valves from tractor and trailer.
	Air spring leaking or punctured	Replace air spring.
	Leaking or broken air line in air suspension system.	Inspect and test for leaks or pinched lines, repair.
	Malfunctioning height control valve.	Inspect, test and replace as required.
ONE AIR SPRING FLAT	Air spring leaking or punctured.	Replace air spring.
	Supply lines pinched or broken.	Repair or replace.
AIR SUSPENSION DEFLATES RAPIDLY WHEN PARKED.	Leak in air system.	Locate and repair leak(s).

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
TRAILER RIDES TOO HIGH OR TOO LOW.	Improperly adjusted height control valve.	Check height and readjust height control valve.
	Faulty valve.	Inspect and repair.
	Control valve linkage broken or disconnect.	Inspect and repair.
EXCESSIVE SHOCK ABSORBER WEAR.	Defective height control valve.	Replace valve.
	Damaged air spring.	Replace air spring(s).
HEIGHT CONTROL VALVE NOT FUNCTIONING.	Dirt or foreign matter in air supply line.	Check and clean air filter. Inspect, clean or replace height control valve.
DIM OR FLICKERING LIGHTS.	Battery on tractor not sufficiently charged.	Charge battery.
	Bad connection.	Check electrical system circuits.
	Damaged wire in jumper cable.	Repair or replace cable.
	Poor ground sockets.	Repair as necessary.
COMPLETE LOSS OF TRAILER LIGHTS.	Broken main harness.	Repair or replace.
	Frayed wires.	Check circuit breaker at front.

10.1 WARRANTY

BWS Manufacturing Ltd. - Warranty Procedures

FOR ASSISTANCE, PLEASE CALL SERVICE

Monday - Friday

8:00am-5:00pm AST

Toll Free:1-888-896-5777

Local:1-506-276-4567

Email: warranty@bwstrailers.com

****No warranty what-so-ever on tires or ABS Sensor Alignment.**

STRUCTUAL & COMPONENT WARRANTY

1 YEAR BUMPER TO BUMPER	Warrants that the specified BWS equipment will be free from defects in materials and workmanship, under normal use and service, for the period of the first 12 months or regular service post the date-in-service. This warranty extends only to the original first owner. It is not transferable and applies only to OEM installed components and equipment.
3 YEAR PAINT AND FINISH	Steel Shot Blast Industrial top coat and oven baked finish is warrantied against defects in materials and workmanship (140 degrees for 75 minutes) Custom colours are subject to a 1 year warranty only Does not cover against general wear and tear such as stone chips or fade as of 2016.
5 YEAR SUPER STRUCTURE	Warrants the trailer main frame beams or "super structure" (consisting of the top and bottom flanges, and their connecting web) to be free from defects in materials and workmanship, under normal use and service for a period of 5 years from the date-in-service only to the original first owner.
SUSPENSION	Ridewell holds a 5 year warranty on all beams and bushings. Hutch has a 5 year warranty on manufacturer defects.
6 YEAR BRAKES	Haldex Platinum Warranty to the 1st owner Life Seal equipped Haldex ABS component brake system slack adjusters/brake chambers (Haldex LifeSeal)/ABS system ECM & control valve. 6 year or one (1) million mile warranty against defects in material or workmanship.
7 YEARS LIGHTING	Grote Ultra Blue 7 year warranty on the male pin harness 10 year warranty on tail lights

For more information, contact the nearest BWS Manufacturing Ltd. authorized dealer or visit www.bwstrailers.com

HALDEX WARRANTY

The Haldex warranty information can be found at www.haldex.com and then searching warranty, for your convenience.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



For Service and Parts:

Tel: 844-364-4021

Local: 856-863-0900

Fax 856-863-6704

E-mail: sales@demount.com

Web: demount.com



To preview, or order parts online visit
dcixpress.com Click on the
Demountable Parts link.



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Glassboro, NJ 08028