



## OPERATIONS MANUAL

# XL CHEATER

**XL Cheater Hydraulic Detachable Gooseneck**



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# 1. SAFETY PRECAUTIONS



**OPERATOR'S RESPONSIBILITY:** MOST ACCIDENTS OCCUR BECAUSE OF NEGLIGENCE OR CARELESSNESS. AVOID NEEDLESS ACCIDENTS BY FOLLOWING ALL OF THE SAFETY PRECAUTIONS LISTED BELOW.

THE USER IS RESPONSIBLE FOR INSPECTING HIS TRAILER AND FOR HAVING PARTS REPAIRED OR REPLACED WHEN CONTINUED USE OF THE PRODUCT WOULD CAUSE DAMAGE OR EXCESSIVE WEAR TO OTHER PARTS. IT IS THE USER'S RESPONSIBILITY TO DELIVER HIS TRAILER TO A X-L DEALER FOR SERVICE OR REPLACEMENT OF DEFECTIVE PARTS, WHICH ARE COVERED BY THE STANDARD WARRANTY. IT IS THE RESPONSIBILITY OF THE USER TO READ THE OPERATOR'S MANUAL AND UNDERSTAND THE SAFE AND CORRECT OPERATING PROCEDURES AS PERTAINS TO THE OPERATION OF THE PRODUCT, AND TO LUBRICATE AND MAINTAIN THE PRODUCT ACCORDING TO THE MAINTENANCE SCHEDULE IN THE OPERATOR'S MANUAL.

1. When performing adjustments or maintenance on a trailer, first lower it to the ground or block it securely at a workable height.
2. Detach a trailer in a safe area..
3. Flags or other warning devices should be used when parked with over width loads.
4. Loose fitting clothing should not be worn, to avoid catching on various parts.
5. Equipment should only be operated by those who are authorized to do so.
6. Make certain everyone is in the clear before starting, raising, or lowering the trailer if the unit is designed to do so.
7. Reduce speed on hillsides or curves so there is less danger of tipping.
8. Avoid driving too close to the edge of ditches or creeks.
9. Stop the engine, lock the brakes, and remove the ignition key before dismounting from the tractor.
10. A first aid kit should be provided for immediate treatment of all scratches, cuts, etc.
11. Never stand between tractor and trailer while tractor is being backed up to trailer hitch.
12. Do not transport wide loads on public roads without proper reflectors. Wide load and slow-moving vehicle emblems must be used in daylight and have approved warning light at night and other periods of poor visibility.
13. Observe all laws and regulations while transporting on public roads. Check the local highway regulations.
14. Carefully maintain control of equipment at all times when traveling on the highway.
15. Due to the width and height of some equipment, use extra caution on highways, farm roads, and when approaching bridges, overpasses, and underpasses

## **2. GENERAL TRAILER INFORMATION**

### **TRAILER INFORMATION SHEET**

*Fill out at time of sale*

MODEL NO:

VIN #:

TRAILER CAPACITY:

DIST:

CONC:

DIMENSIONS:

OAL:

OAW:

DATE:

INSPECTED BY:

## **PARTS ORDERING INFORMATION**

WHEN ORDERING PARTS, PLEASE REFER TO THE VEHICLE ID. NUMBER (VIN), VEHICLE REGISTRATION NUMBERS, PART NUMBER, AND DESCRIPTION OF ITEM.

### **CONTACT:**

**XL SPECIALIZED TRAILERS  
PARTS DEPARTMENT  
PHONE (563) 927-4900  
FAX (563) 927-4883  
[www.xlspecializedtrailer.com](http://www.xlspecializedtrailer.com)**

### **3. OPERATING INSTRUCTIONS**

#### **VEHICLE ALIGNMENT:**

4. Back truck fifth wheel in line with trailer king pin.
5. Visual check to assure trailer height will clear truck fifth wheel.
6. Raise landing gear if necessary.

#### **TRAILER CONNECTION:**

5. Back truck under trailer slowly.
6. Assure king pin is locked.
7. Raise landing gear.
8. Connect the air lines and electrical connections.

#### **INSPECTION:**

4. Accomplish a walk around inspection.
5. Check the tire pressure. If loaded, assure load is secure.
6. Check all lights for proper operation.

Move truck and trailer forward slowly and apply brakes to assure proper braking action.

# **XL CHEATER GOOSENECK OPERATIONS**

## **DIRECTIONS TO DETACH THE CHEATER GOOSENECK**

1. Stop tractor and trailer on level ground.
2. Pull valve (8) to release the cheater lock pins.
3. Turn off air valve (1).
4. Disconnect air and electric between neck and trailer.
5. Start engine or PTO.
6. Pull left lever (2) to raise deck.
7. Move gooseneck adjustment control lever (3) to disengage from block.
8. Insert retaining pin to hold lever in clearance position.
9. Push left lever (2) to lower deck until a 3/8" gap between load pin and stirrup is obtained.
10. Remove pin from lock arm (4).
11. Pull valve (5) to disengage safety lock pin.
12. Push center level (6) until gooseneck support arm starts to take pressure off main deck.



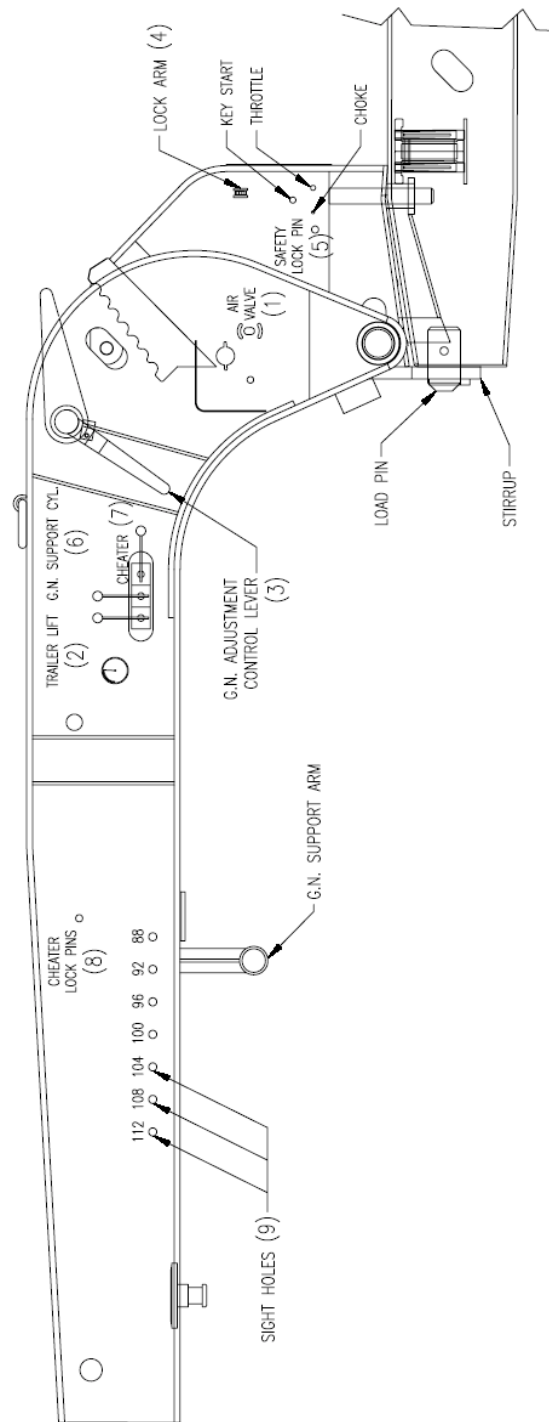
**Caution: Do not raise main deck with the support arm, damage will occur to the gooseneck.**

13. Drive tractor ahead, or use horizontal lever (7) to slide cheater towards tractor.
14. Push valve (8) in the engage cheater lock pins.

## **DIRECTIONS TO REATTACH THE CHEATER GOOSENECK**

1. Push valve (5) to drop safety lock pin.
2. Back tractor up to main deck.
3. With horizontal lever (7), slide cheater towards main deck, until spring loaded safety lock pin drops into place.
4. Put pin back into lock arm (4) to ensure safety lock is secure.
5. With center lever (6), raise gooseneck support arm into stored position.
6. Pull left lever (2) to raise deck.
7. Remove retaining pin from gooseneck adjustment control lever (3).
8. Push left lever (2) to lower deck, and set ride height.
9. Reconnect air and electric between neck and trailer.
10. Turn on air valve (1)
11. Pull valve (8) in to engage cheater lock pins.
12. Check sight holes (9) to ensure that pins are fully engaged.

\*Part numbers are shown in the diagram on the next page.



## BENEFITS OF THE CHEATER GOOSENECK

- Allows the driver to hydraulically slide king pin to change axle weights
- Use gooseneck on 3 or 4 axle tractor
- Attach and detach gooseneck without getting back into the tractor cab
- Slide tractor ahead or back
- Slide trailer ahead or back
- Slide 5<sup>th</sup> wheel on tractor hydraulically
- Easily attach trailer in soft conditions
- Will not tear up asphalt when hooking or unhooking

## **4. USER'S MANUAL:**

### **LOW BED AND HEAVY DUTY PLATFORM TRAILERS**

#### **GENERAL OPERATING RECOMMENDATIONS**

##### **1.0 INTRODUCTION:**

- 1.1 Tractor and low bed or heavy duty platform trailer combinations may have different operational characteristics than typical tractor-trailer combinations due to gross weights, large differences between loaded and unloaded weights, suspension characteristics, and articulation.
- 1.2 Tractor and truck trailer combinations have safe operating limits just as automobiles, trains, and airplanes have operating limits. These limits are affected by the interaction of the vehicle characteristics, maintenance, load, roadway, weather, the skill of the driver, and vehicle speed. Knowledge of how these factors affect the vehicle's operating limits and defensive driving techniques should result in safer driving.

##### **2.0 PURPOSE:**

- 2.1 The purpose of this section is to describe how tractor and truck trailer control and stability limits are affected by the vehicle characteristics, maintenance, roadway, weather, and driver operation and how to compensate for these factors. Knowledge of these factors will assist operators in productive use of this equipment.
- 2.2 The information in this bulletin has been gathered from a number of research reports and accident summaries. These sources of information are referenced in the Bibliography at the end of this manual.
- 2.3 First and foremost, DO NOT operate the trailer until you have read and you fully understand the instruction and operating manual supplied to you by the manufacturer of the trailer. It is also important that each and every person who operates the trailer and/or is responsible for the loading and operating of the trailer be given the opportunity to read the manuals.

##### **3.0 PRE-TRIP INSPECTION:**

There are some items on every vehicle combination that can be and should be inspected prior to every trip that require no special knowledge, training, or sophisticated equipment.



## BRAKES

Function test. Operate the brake pedal and hand control valve to determine if air is being supplied to the brake chambers. Use an observer or place marks on push rods to determine if the brakes are operating. Visually inspect the brake chambers and slack adjusters for problems caused by road hazards.

Keeping brakes in proper adjustment is imperative to stable, straight line braking and maintaining minimum stopping distances. Visually inspect the air brake hoses and glad-hands to determine if air loss is occurring. Air leaks can reduce braking capability. Anti-lock devices, if provided, should be maintained and inspected routinely. Their use can prevent wheel lock-up, improve stopping capability and reduce the probability of jackknife.

### 3.1.1 Automatic Slack Adjusters

As automatic slack adjusters become more widely used, it is important to point out that they do require periodic maintenance. Primarily, they should be greased at specific intervals. When they are being serviced, they should be checked for proper operation by checking the brake adjustment.

## 3.2 TIRES AND WHEELS

Many operators use a tire billy to check air in tires, but the purchase of a good tire gauge would eliminate the guessing. Before moving the trailer, check the air pressure in the tires as a drop of 10 PSI in the tire pressure can reduce the carrying capacity of the tire by as much as 20% on certain tires. This reduced capacity could cause tire failure and loss of control of the trailer. Low tire pressure also is the main cause of poor tire life which can be very costly.

At the same time tires are checked, inspect wheels for cracks around the lugs. These can be observed in most cases by rust lines. These wheels should be replaced immediately.

There is no reason for any set of duals to be wobbling on any vehicle or tractor trailer combination. Installing duals with proper shop techniques will result in wheels running true. The result is increased tire mileage, smoother ride, and less stress on structural components, all providing a safer vehicle.

### 3.3 TOWING DEVICES AND SUSPENSION

Fifth wheels. Be sure the fifth wheel is locked to the king pin before pulling away. Visual inspection of the locking device is better than relying solely on applying air to the trailer brakes, and jerking against the king pin.

Inspect fifth wheel mountings for any tell-tale sign of failure or damage to load bearing components. Inspect the pintle hooks, lunette eyes, and drawbars on connector dollies by visually observing them for any unusual appearances such as bent members, cracks in welds, or chipped paint where structural members have received high load.

Inspect the suspensions by observing if the vehicle is leaning to one side, which may indicate a broken spring or faulty air valve on air suspensions. Visually inspect radius arms to be sure they are in place and look at the spring hangers to see if springs are in the hangers and that the hangers are not bent or otherwise damaged.

### 3.4 FRAME

Before beginning any trip, make a thorough inspection of the trailer for cracks in the structure. Typical locations of cracks are at welds, at changes in beam depths, above suspension components, and at the upper coupler. Experience may also indicate other areas that need to be checked.

### 3.5 SAFETY CHAINS

Check all safety chains and their attachment to both the towed and the towing vehicle. Make certain the chains are of adequate size and are in good condition. Also make certain that all attachment devices are properly installed and all nuts are tight.

### 3.6 STATE LAWS

Before any trip to an area where you are not accustomed to traveling, check the state laws with regard to bridge requirements, especially if the trailer being towed has liftable axles.

## 4.0 VEHICLE:

- 4.1 Tractor and truck trailer combinations are designed to provide maximum directional control and roll stability within the constraints of highway size and weight limits and utility. Any combination can be rolled over by driving too fast around a curve, making too abrupt a maneuver, or by leaving the roadway. Locking up the wheels on an axle of a combination can result in a jackknife or trailer swing out.
- 4.2 Some truck trailer combinations are less resistant to roll during an abrupt lane change due to a "whipping action". The opposite is the case for the tractor semi-trailer combination, which is relatively more roll resistant in abrupt lane changes (the long wheelbase tends to stabilize the combination compared to a steady turning maneuver). (1)
- 36.3 Long wheel base, multi-axle trailers with spread/steering axles present new operational concerns. The rear steering found on these rigs dramatically affects

performance and must be taken into account. Also consult the trailer manufacturer's operating manual.

## **5.0 ACCIDENT PREVENTION:**

### **5.1 MAINTENANCE**

Maintenance is the single most important item that, when neglected, will seriously limit the handling and response characteristics of any vehicle or tractor trailer combination.

Statistics taken by the Office of Motor Carriers of the Federal Highway Administration support the fact that over 10% of interstate truck accidents are related to mechanical defects. These defects have been isolated to include wheels, tires, brakes, and steering. (2)

#### **5.1.1 TIRES**

Insure proper inflation. Low tire pressure can cause sway, uncertain steering, decreased roll resistance of the trailer or combination, decreased effectiveness of brakes at the tire/ground interface and reduced resistance to lateral skidding. Tire under and over inflation has an adverse effect on traction. Therefore, proper inflation is essential for safety.

#### **5.1.2 BRAKES**

Another extremely important item that should be checked is the brakes...are they properly adjusted and are the linings in good condition? Air brakes can easily be checked by simply checking the travel of the slack adjuster. Electric brakes, in most cases, are self-adjusting and therefore generally are in proper adjustment. A routine check for air leaks or worn hoses should be made on air brake trailers whereas on electric brake trailers the wiring should be checked regularly.

Maintaining brake balance is the key to safe braking and stopping distances. Erratic or unequal brake action from side to side on either tractor or trailer can cause handling problems in braking situations.

Balance between tractor and trailer on application and release brake timing and pressure will reduce push/pull characteristics between tractor and trailer which, when excessive, may result in jackknife. Brake torque is one other important factor in smooth safe braking. The use of properly matched brake lining of identical friction properties is a must.

For additional information on brake balance, see the "Truck Trailer Brake Compatibility" booklet published jointly by the Truck Trailer Manufacturers Association and the Motor Vehicle Manufacturers Association.

### 5.1.3 STEERING AND SUSPENSION

Proper alignment of both tractor and trailer wheels will add significantly to the handling characteristics of the combination and allow the professional driver to utilize all the design responses of the vehicle to make evasive maneuvers in the safest manner.

Replacement of worn parts, weak springs, shock absorbers and bushings will help maintain a vehicle's stability and limit road surface induced sway in both tractor and trailer. Proper cleaning and greasing of fifth wheels will insure smooth steering between tractor or dolly and trailer.

### 5.1.4 LIGHTS

Insurance companies have often stated that the cause of many accidents was not seeing the other vehicle. With this in mind, the lights on the trailer should be checked whenever the trailer is moved and problems should be corrected immediately. Also, all lights and reflectors should be wiped clean before every move so that they will produce the maximum amount of light and reflectivity.

### 5.1.5 STRUCTURAL COMPONENTS

Proper maintenance will not only give the trailer a longer life, but it will be a safer trailer to operate. Follow the service manual faithfully and at least once a year, thoroughly check every weld and beam for cracks or stress marks. If a crack or a broken structure is found, have it repaired by an authorized dealer or technician. If you are in doubt as to how to repair or service the trailer, contact the manufacturer as improper welding could cause future damage to the product. Also, check for worn parts and loose nuts and consult the instruction manual for recommended procedures concerning this matter.



Safety first, last, and always can be accomplished if operators are well informed and when EVERYONE IS AWARE OF THE IMPORTANCE OF THE OPERATING AND SERVICE MANUAL published by the trailer manufacturer.

## 5.2 LOAD

Vehicle handling limits can be greatly affected by the weight of a load, its placement, the amount of weight distributed over the tractor axles, and whether or not the load is secured properly.

Overloading a vehicle should never be permitted. Overloads result in tire blowouts, spring breakage, frame breakage, insufficient braking capacity and will severely alter a vehicle's handling characteristics. All vehicles are designed with a maximum load capability and to best utilize these vehicles in the safest manner, the loads as shown on the certification label should not be exceeded.

One of the major contributing factors to vehicle rollover is a high center of gravity on tall loads. Extreme caution should be used in maneuvering a vehicle, tractor trailer combination, or any unit that has a tall load. This can be done by reducing speed.

Fifth wheel placement on tractors can have an adverse effect on handling characteristics. Avoid moving the fifth wheel behind the centerline of the tandem on the tractor in an attempt to improve the ride. The result will be reduced steering load and loss of steering control. (3,4) Steering control is affected also if the fifth wheel is placed too far forward, since this position places too much weight on the front axle. There are proper ways and positions for utilizing adjustable fifth wheels and their misuse can have adverse effects as has been outlined. The most common operating range is 0 to 24 inches ahead of center of tandem or axle (on single axle tractor). Note that the 24 inch setting is quite common on west coast tractors above 230 inch wheelbase.

Proper position of a load relative to the trailer wheelbase will greatly enhance handling characteristics. For instance, positioning the load to distribute the weight proportionately over the axles of the combination in a fore and aft location as well as balancing the load in a side to side position will enhance directional control, roll stability and braking.

When tying down the load on the trailer, always be sure that you have adequate strength chains. This is to prevent a failure of the chains under severe stress due to sudden stops or quick changes in direction. Many accidents are caused by shifting loads. Always be sure that the equipment is securely tied down on the trailer. Because rubber tied equipment is sometimes difficult to secure to the trailer, chock blocks ahead of and behind the tires is a good safety practice.

When tying down steel coils, refer to the Specialized Carriers and Rigging Association's information on steel securement and Federal Motor Carrier Safety Regulation requirement as specified in 49 CFR 393.100 (5,6,7). Also refer to TTMA TB 94 for more information.

### 5.3 AXLE LOADS

Check axle loads against the GVWR and the GAWR of the power vehicle and the trailer to insure that loading is within the limits of the vehicles being used.



#### **REMEMER:**

IMPROPER LOAD PLACEMENT CAN HAVE A DETRIMENTAL EFFECT ON BRAKING, EVASIVE MANEUVERS, AND HANDLING CHARACTERISTICS OF A VEHICLE COMBINATION TRUCK TRAILER OR COMBINATION TRACTOR TRAILER.

### 5.4 ROAD SURFACE

Uneven terrain, steep grades and crowned roads, especially rural roadways, freeways, exit ramps, curves, bumps and depressions introduce forces into a tractor trailer

combination that could result in an accident if proper precautions and driving techniques are not followed.

Even a vehicle that meets all maintenance and load requirements can become hazardous when excessive speeds and certain roadway characteristics are combined.

#### 5.4.1 GRADES

Trucks are more likely to have accidents on grades than on level terrain. Rural non-freeways have the worst grade accident experience, particularly downgrades. Further, the steeper downgrades have the greatest accident frequency. (8)

On a downgrade, the force of gravity works against the driver in maintaining control of his vehicle, particularly if the road is covered with rain, snow, ice, or loose material. On upgrades, the problem is spinning out due to insufficient traction at the drive wheels, particularly on snow and ice.

Failure to control speed by down shifting has resulted in 6% of the interstate truck accidents. (9) Drivers should use the same gear in descending a long grade as they would in climbing it. Gear selection should be made before descending a grade to minimize the chance of missing a shift. (10)

Great care must be taken to avoid excessive use of brakes on long downgrades, as over-heated brakes are dangerously inefficient. Drivers should use engine compression as the principal means of controlling speed on long grades. (10) Unless the road is slippery, the brakes should not be fanned (alternately applied and released) since fanning brakes on a long downhill grade may reduce air pressure below the minimum pressure needed for proper brake operation. (10)

If the low air pressure warning device operates at any time, drivers must stop immediately in the safest available place and correct the loss of air pressure before proceeding.

It is very dangerous to brake on a downgrade using only the trailer brakes. If this is done, the trailer brakes heat up and fade and the tractor brakes alone will not be able to stop the combination by themselves. Only by downshifting and using all brakes can the brake temperatures be held to a safe level.

#### 5.4.2 EXIT AND ENTRANCE RAMPS

Sixteen (16%) percent of tractor semi trailer overturns occur at exit and entrance ramps of super highways. (11) All exit ramps are not uniform in curvature and banking and may not have a speed advisory sign proper for all truck and load combinations. Recent information indicates that jackknifing can occur without brakes being applied if a tractor semi trailer enters a curved exit ramp at a too high rate of speed. (4)

#### 5.4.3 LEVEL, STRAIGHT ROADS

Many overturns appear to occur due to the driver falling asleep and driving off the pavement. A high crowned road, coupled with excessive speed, can cause trailer sway and loss of stability. Driver attentiveness is essential.

#### 5.4.4 BUMPS AND DEPRESSIONS

Driving over a bump or depression in the road surface or running off the pavement and back on can cause the vehicle to sway and result in momentary reduction of lateral friction. Reduced speed and increased driver attentiveness are best deterrents. VERY LOW VEHICLES CAN BE HUNG UP AT ELEVATED RAILROAD CROSSINGS OR DRIVEWAYS, SO PAY CLOSE ATTENTION TO THE ROAD SURFACE WHEN USING THESE VEHICLES.

#### 5.4.5 CURVES

The forces trying to roll a vehicle over increase according to the square of the speed and are inversely proportional to the radius of a curve, i.e., the smaller the radius, the greater the force trying to pull the vehicle over. Therefore, the tighter the curve, the slower the speed must be in order to avoid rollover. In order to round a curve without skidding, there must be friction keeping the tire from skidding sideways. However, the tire/road interface can generate only so much friction. Part of the friction is used up when the tire is accelerating or braking. Thus, accelerating or braking on a curve can reduce the tire side friction and result in a skid. If the trailer tires skid, trailer swing occurs. If the rear tractor tires skid, tractor swing and jackknifing occur.

### 5.5 WEATHER

A major factor in the causes of accidents is weather. Rain, ice, snow, and high winds can each contribute significantly to an accident when combined with excessive speed, sudden lane changes, or other factors that put lateral forces into a tractor trailer combination.

Slippery roads can increase stopping distances and reduce the ability of a vehicle to perform maneuvers. (12) However, a study has shown that drivers often do not reduce their speed when the pavement is slippery and thus exceed the stopping and maneuvering limits of their vehicle. (13)

A tire's friction must be shared between friction required for braking or accelerating and that required to keep from skidding sideways. When the road is wet, the available tire/road friction may be half that of a dry road. If hard braking or rapid acceleration occurs, there may be little or no friction available to prevent tire lateral movement and skidding results. Many tractors have the capability to rapidly accelerate when coming off a ramp or curve. If this is done on slippery pavement, skidding may occur. On icy roads it is important to avoid deceleration, which can lock up the drive wheels. Avoid backing off the throttle suddenly, down shifting, or use of any engine retarder brake. Sudden deceleration may result in the trailer pushing the tractor around. (12,14)

Properly inflated tires get the best traction on icy roads. Don't attempt to let air out of the tires to gain traction. On ice, proper selection of drive wheel tires can make a

20 percent improvement in traction. Single reinforced chains can increase that traction by 500 percent. The interaxle lock should be used to avoid wheel spin. (14) Cross winds at bridges and near large structures such as grain elevators and passing trucks and buses may cause vehicle sway and sideways movement sufficient to push the combination off a slippery road.

#### 5.5.2 HYDROPLANING

As a result of recent studies (15,16), the National Transportation Safety Board has concluded drivers of heavy trucks need to be made aware of the dangers of hydroplaning in wet weather. Hydroplaning occurs when water on the road builds up under the tires and literally lifts them clear of the pavement. Major contributing factors are: (1) excessive speed; (2) inadequate tread depth, which reduces the dispersion of water between the tire and roadway; and (3) under-inflation, which results in deformation of the tread permitting water buildup. (17)

The Board recommends tires be replaced at a tread depth of 4/32 inch for high-speed operation on wet pavement. Above all, drivers should be made aware hydroplaning can affect large trucks and combinations, and the surest means of prevention is reduced speed on wet pavement. (17)



#### ATTENTION:

THESE ITEMS MENTIONED ARE VERY BASIC TO VEHICLE SAFETY AND ARE ITEMS INSPECTED BY STATE AGENCIES. FOR THE PURPOSE OF THIS DOCUMENT, ATTENTION IS CALLED TO THEM RELATIVE TO A VEHICLE'S STABILITY AND ITS ABILITY TO PERFORM CERTAIN EVASIVE MANEUVERS SAFELY. THE USE OF THESE WILL BY NO MEANS REPLACE A PROPER MAINTENANCE AND PREVENTIVE MAINTENANCE PROGRAM.

## 6.0 OPERATIONAL CRITERIA:

### 6.1 JACKKNIFE

When the tractor's rear wheels are locked up, a jackknife results in the tractor rotating through about 120 degrees in one to two seconds until the cab strikes the trailer. (9) In severe cornering maneuvers, such as exiting a ramp at high speed, a directional instability may occur without tractor rear wheel lockup. This also results in a jackknife motion although the rotational rate is lower than that of a drive axle lockup jackknife. (4)

A jackknife can be prevented by avoiding rapid acceleration and deceleration, by reducing speed on curves, and by controlled braking to avoid wheel lockup. Rolling wheels are necessary to keep control. When brakes are on, they slow the vehicle. When the brakes are off, steering control is maintained. Anti-lock devices automatically fan the brakes. (14) However, most vehicles built before 1975 and after 1979 have not been equipped with anti-lock and therefore fanning the brakes is the best method of avoiding wheel lockup. Brakes should not be fanned except on



slippery pavement where this type of braking gives better control, reduces danger of skidding and gives a shorter stop. Fanning reduces air pressure and serves no useful purpose on dry pavement. (10)

Tests have shown that a driver cannot recover from a jackknife when the angle between tractor and trailer is greater than 15 degrees unless the tractor is equipped with front wheel drive. (14,18)

Vertical hinged-steering and the load divider dolly rear steering trailer combinations are subject to some decrease in roll stability while turning. This is because the rear most axles are swung inboard during a turn, decreasing their contribution to roll resistance. The tighter the turn, the less roll resistance.

This decrease in roll stability is normally very slight and without consequence. However, accidents can occur due to an accumulation of minor negative factors which singly are of no great consequence. Other factors which may contribute to loss of roll stability are:

- A. High center-of-gravity
- B. High speed turns
- C. Side slopes, or super elevations in turns
- D. Emergency braking while turning sharply or during high speed turns

The prudent operator should avoid conditions where several of these factors are combined. The factor under greatest control by the operator is the vehicle's speed.


## **7.0 THE DRIVER**

- 7.1 The driver can compensate for the characteristics and condition of his vehicle, for the road conditions and weather.
- 7.2 Either braking or accelerating while cornering can significantly reduce the controllability and stability of the vehicle and should be avoided. The best driving practice is to decelerate to a safe conservative speed before entering a corner or approaching congested traffic and then apply only moderate power until an essential straight path has been established.
- 7.3 It is imperative that a safe speed always be maintained. The safe speed is that speed at which control can be maintained over the vehicle at all times. This speed will allow an emergency change of lane maneuver, travel off an exit ramp with a tightening radius and recovery from pavement drop-off or wet pavement. This speed will vary from one combination of vehicle to another and takes into consideration such factors as road conditions, weather, traffic, visibility, type of load, and experience of the driver.

## **5. ACCESSORIES**

### **HYDRAULIC RAMPS**

#### **GASOLINE OR DIESEL POWER:**

1. Start power system and let the unit warm up.
2. Pull hydraulic ramp valve up to rotate ramps toward trailer.
3. Disconnect the lock bar from the ramp at the top and position lock bar out of the way.
4.  **STAND CLEAR WHILE FOLDING!**
5. Push handle down to lower ramps to the ground.
6. Reverse procedure to raise ramps.



# **SWINGOUTS / OUTRIGGERS**

1. Lift and rotate swingouts, out away from trailer.
2. Place boards on outriggers according to your safety practices.
3. Load cargo and secure to trailer.
4. Make sure the cargo is not solely on the outrigger.

## **REMOVABLE OUTRIGGERS**

1. Remove outriggers from storage compartment.
2. Place outriggers in pockets provided on the side of the trailer. (Top and bottom pockets are provided on most units)
3. Insert lock pin in bottom pockets.



## LANDING GEAR

- HOLLAND BINKLEY
- BULLDOG



## CONTENDER





## MARK V





# DROP LEG JACK SUPPORT

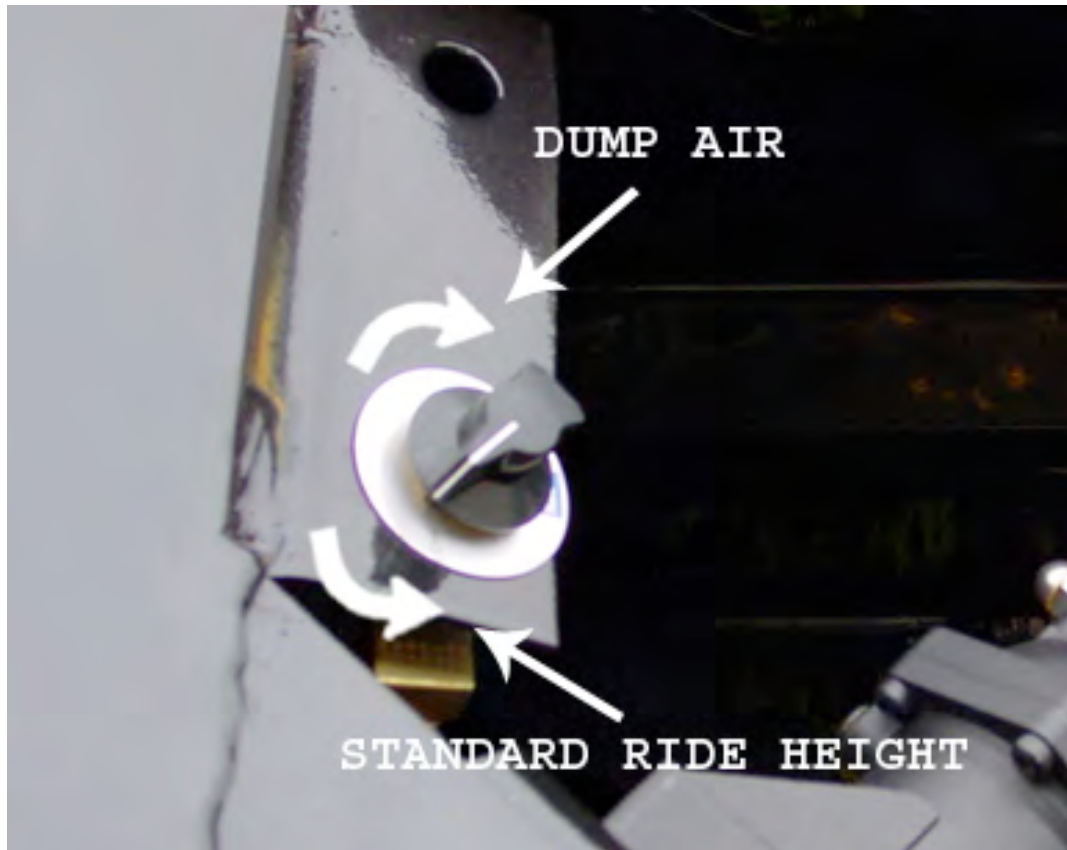




# **BULLDOG**

-Heavy duty jacks

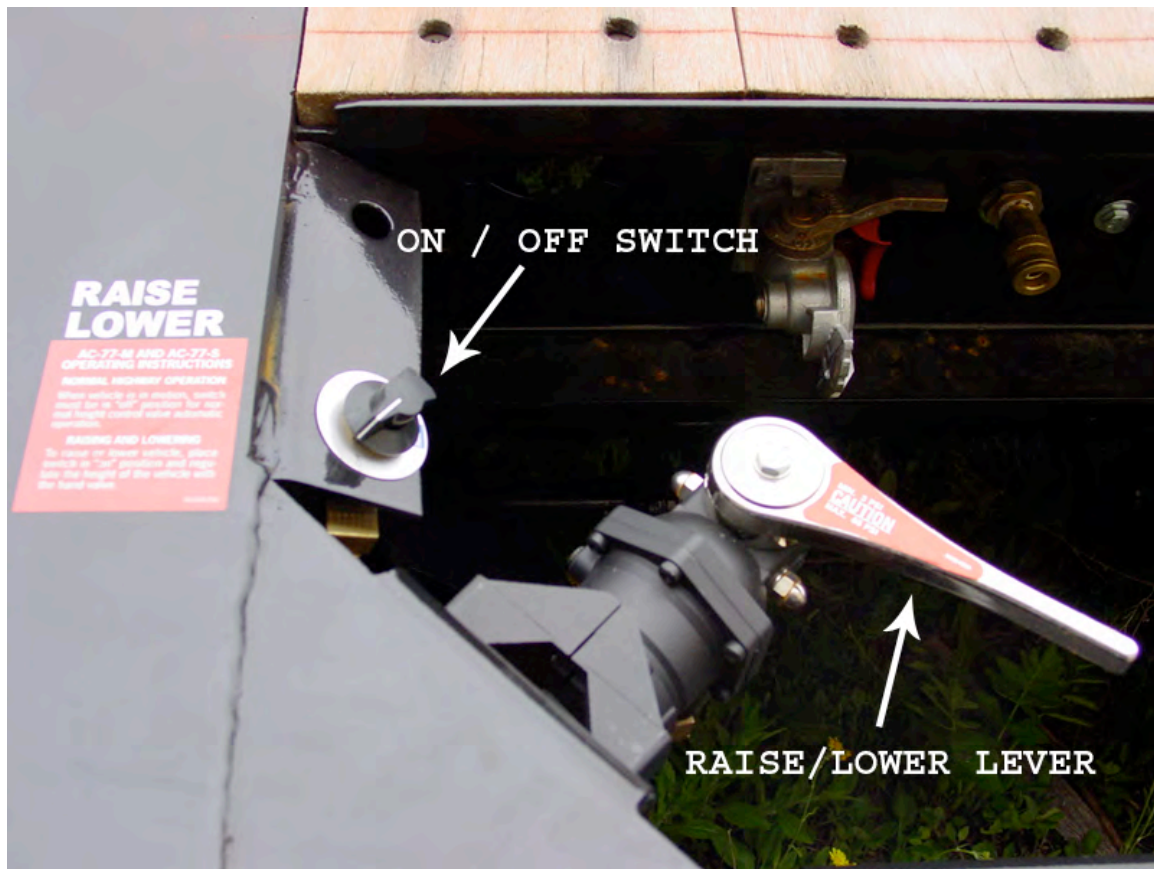
# MANUAL DUMP VALVE



1. To lower trailer, turn knob from Standard Ride Height Position (shown) to Dump Air position.
2. Turn knob back to Standard Ride Height Position once the desired height has been reached.

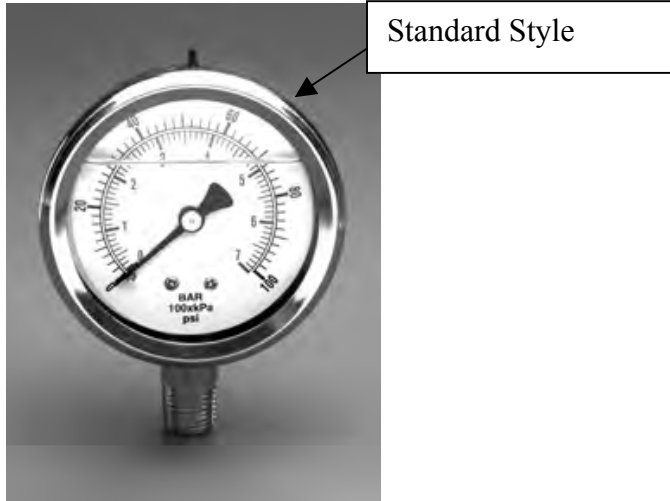


# RAISE AND LOWER VALVE

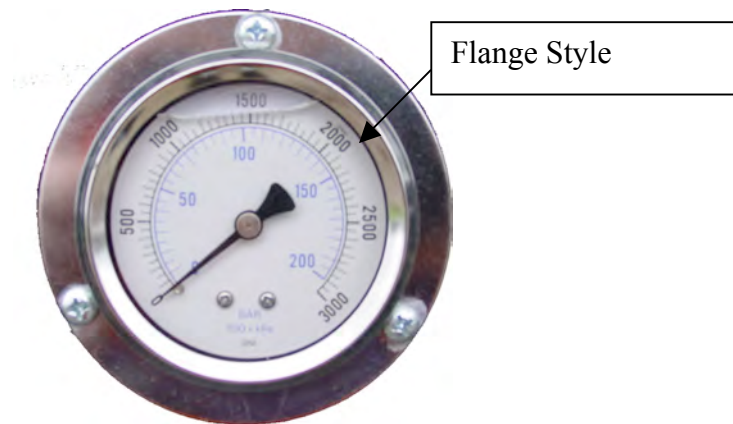


1. Turn On/Off switch to On position.
2. Move Raise/Lower lever clockwise to raise.
3. Move Raise/Lower lever counter-clockwise to lower.
4. Turn On/Off switch to Off position the trailer will return to the set ride height.

# LIQUID FILLED AIR GAUGE



- Reads air pressure in suspension air bags
- Two styles
  - Standard Style: Hooks to end of pressure hose
  - Flange Style: Mount to flat surface



# HONDA POWER UNIT

13 HP UNIT



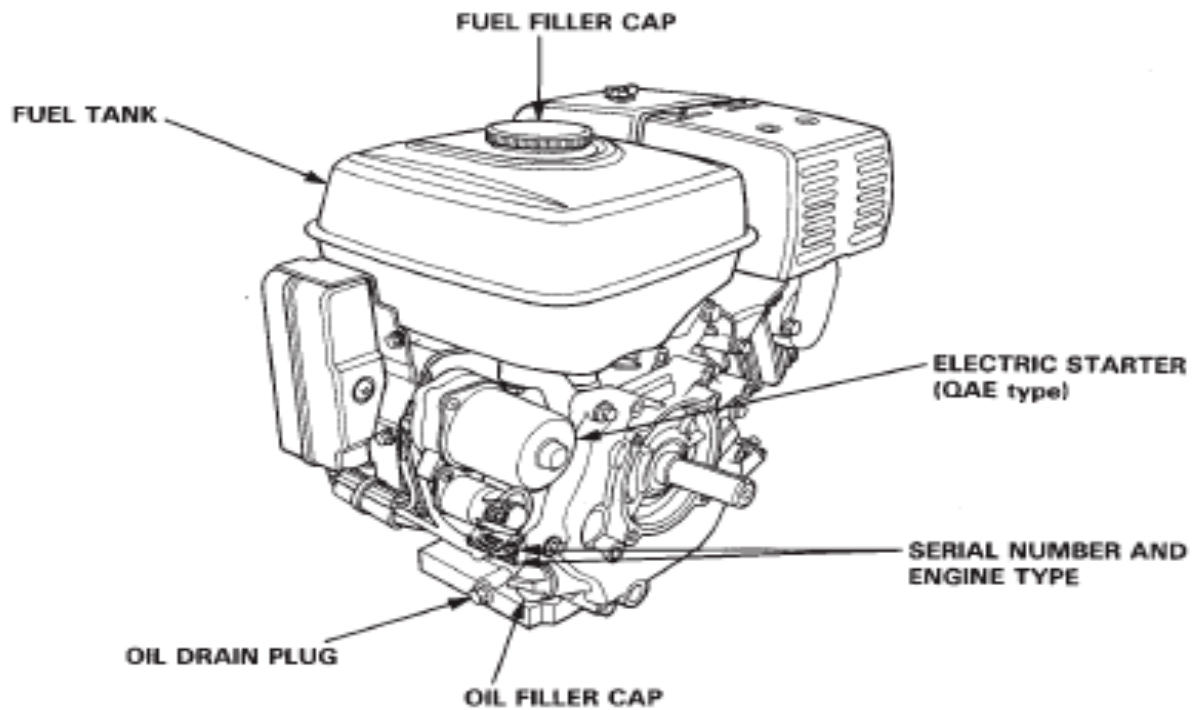
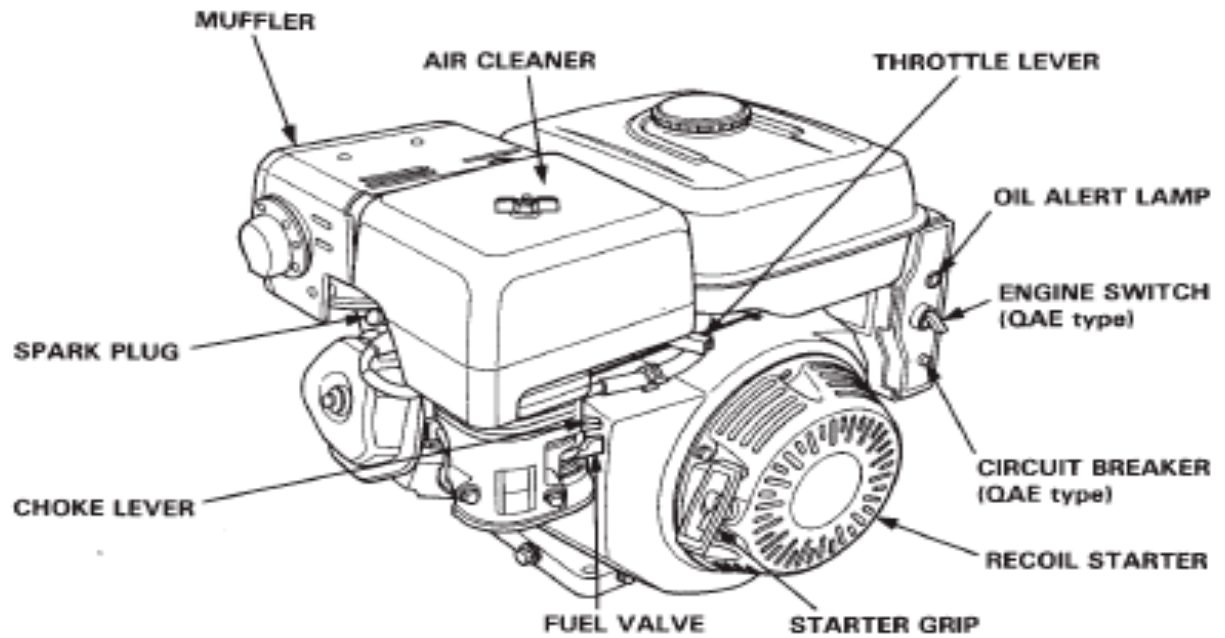
- **Model # GX390**
- 13 HP unit
- Oil alert
- 12 volt starter
- Dual Element air cleaner
- 6.9 QT fuel tank
- Net weight: 75 lbs.

24 HP UNIT



- **Model # GX670**
- 24 HP unit
- Heavy Duty Dual Element Air Cleaner
- Net Weight: 94.8 lbs.

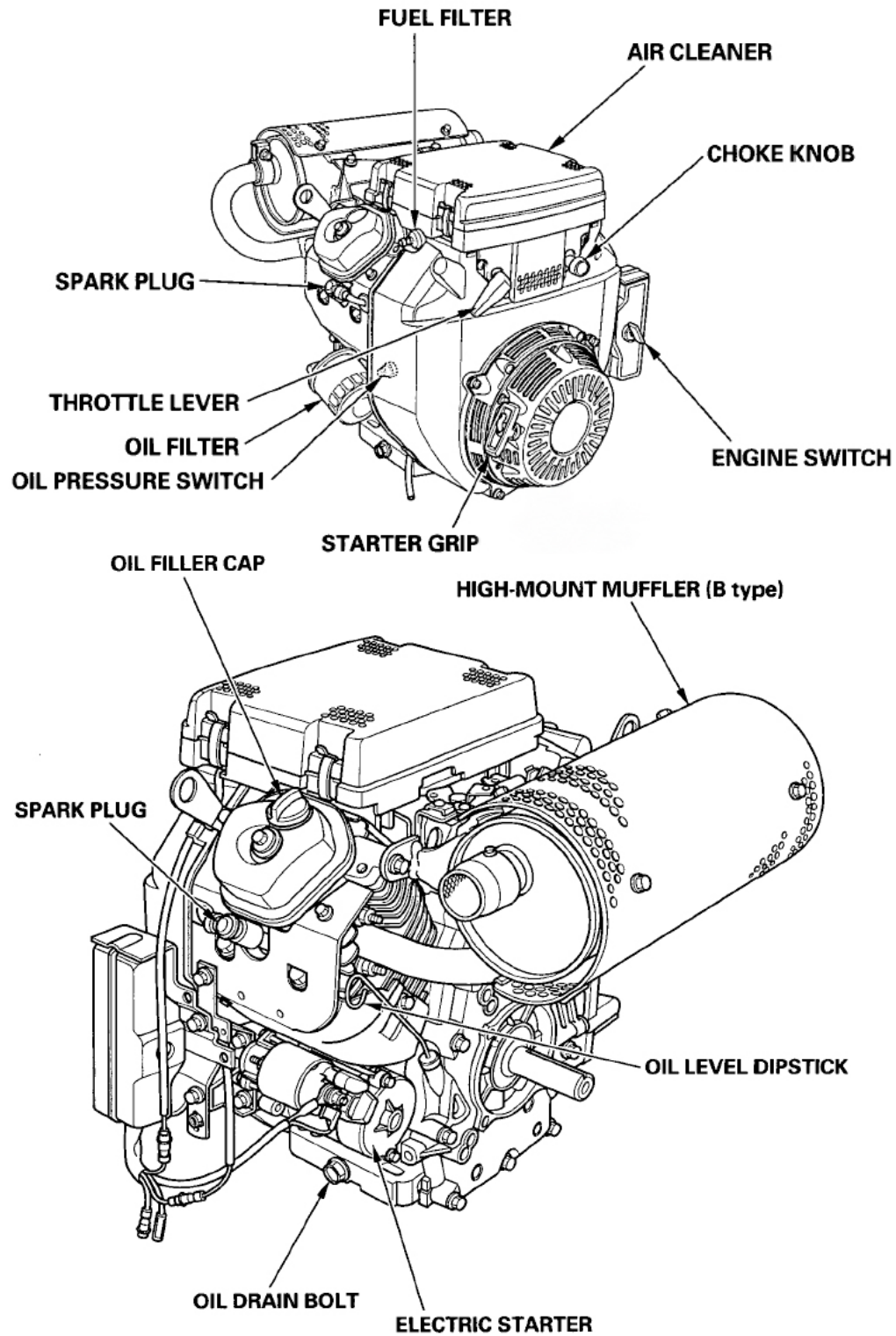
## 2. COMPONENT IDENTIFICATION



# CONTROLS & FEATURES

## COMPONENT & CONTROL LOCATIONS

〈GX610/GX620〉





# SERVICING YOUR HONDA ENGINE

## MAINTENANCE SCHEDULE

REGULAR SERVICE PERIOD (3)		Each use	First month or 20 Hrs.	Every 3 months or 50 Hrs.	Every 6 months or 100 Hrs.	Every year or 300 Hrs.	Refer to page
ITEM Perform at every indicated month or operating hour interval, whichever comes first.							
• Engine oil	Check	○					26
	Change		○		○		27
• Engine oil filter	Change					Every 200 Hrs.	28
• Air filter	Check	○					30
	Clean			○ (1)			31
	Replace					○*	
• Spark plug	Clean-Adjust				○		35
	Replace					○	
• Spark arrester (optional part)	Clean				○		37
• Idle speed	Check-Adjust					○ (2)	—
• Valve clearance	Check-Readjust					○ (2)	—
• Combustion chamber	Clean	After every 500 Hrs. (2)					—
• Fuel filter	Check				○		34
	Change					○ (2)	—
• Fuel tank	Clean	Every year (2)					—
• Fuel tube	Check	Every 2 years (Replace if necessary) (2)					—

- Emission-related items.

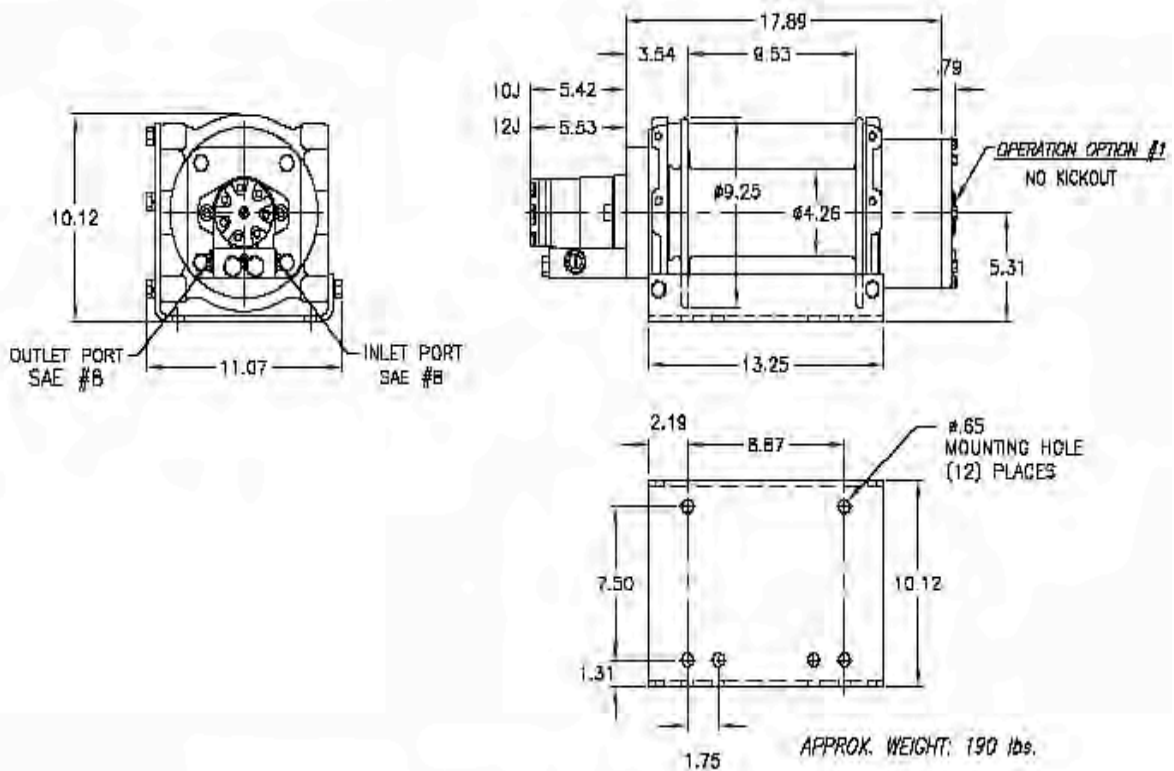
\* Replace the paper air filter element only.

- (1) Service more frequently when used in dusty areas.
- (2) These items should be serviced by your servicing dealer, unless you have the proper tools and are mechanically proficient. Refer to Honda shop manual for service procedures.
- (3) For commercial use, log hours of operation to determine proper maintenance intervals.

# WINCHES

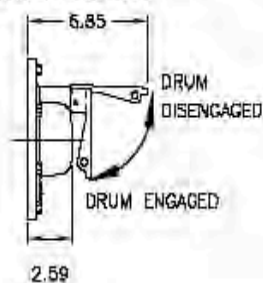


## Models 10J-12J 10,000-12,000 lb.

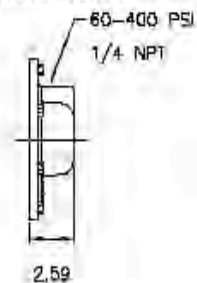


### OPTIONAL FEATURES

#### OPERATION OPTION #5 MANUAL KICKOUT



#### OPERATION OPTION #4 AIR/HYD. KICKOUT



*MODEL 10J*

WIRE ROPE DIA. IN.	LAYER	LINE PULL LB.	LINE SPEED FPM
3/8	1	10000	44
	2	8610	51
	3	7560	58
	4	6730	65
	5	6070	72
	6	5530	79

Model 10J Performance based on 18 GPM @ 2300 PSI

WIRE ROPE DIA. IN.	LAYER	LINE PULL LB.	LINE SPEED FPM
7/16	1	10000	44
	2	8430	53
	3	7290	61
	4	6420	69
	5	5730	77
	6	—	—

*MODEL 12J*

WIRE ROPE DIA. IN.	LAYER	LINE PULL LB.	LINE SPEED FPM
7/16	1	12000	40
	2	10100	48
	3	8750	55
	4	7700	63
	5	6880	70

Model 12J Performance based on 20 GPM @ 2200 PSI

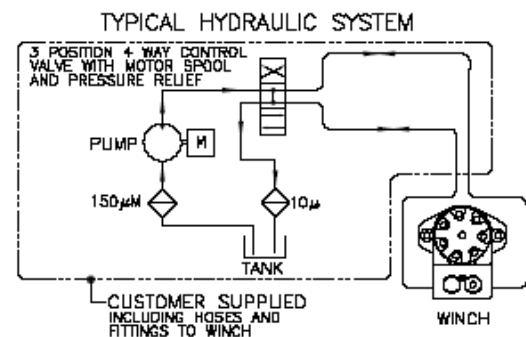
WIRE ROPE DIA. IN.	LAYER	LINE PULL LB.	LINE SPEED FPM
1/2	1	12000	41
	2	9920	49
	3	8450	58
	4	7360	67
	5	—	—

NOTE: The rated line pulls are for the winch only. Consult the wire rope manufacturer for wire rope ratings.  
Flows listed are Maximum for each specific motor.

DRUM CAPACITIES - FT

LAYER	3/8" WIRE ROPE	7/16" WIRE ROPE	1/2" WIRE ROPE
1	28	24	21
2	60	53	47
3	97	86	78
4	138	124	113
5	184	* 166	
6	* 234		

NOTE: Drum capacities are in accordance with SAE J706.  
Actual capacities are usually up to 10% greater than those shown.  
\*Last layer capacity does not meet SAE J706.

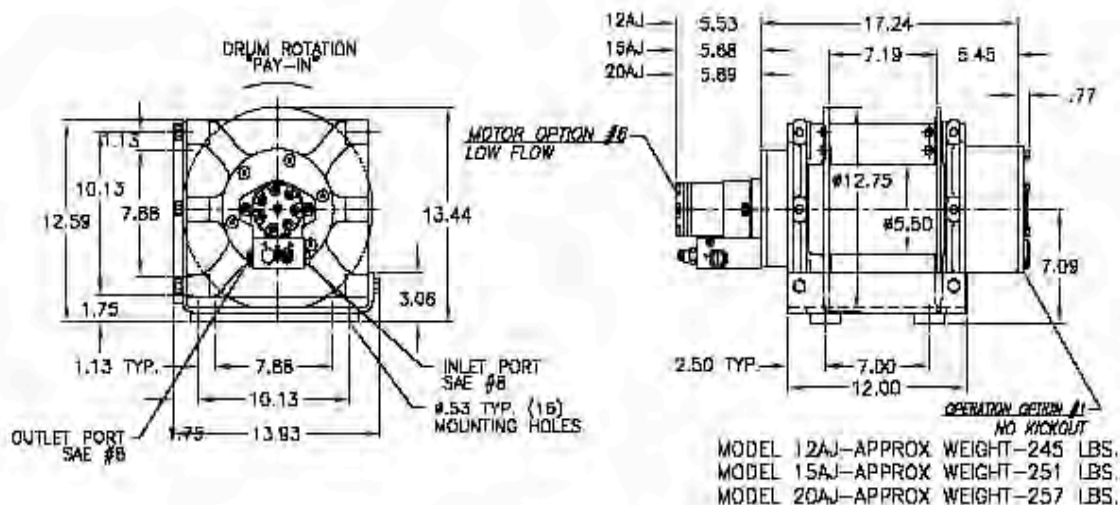






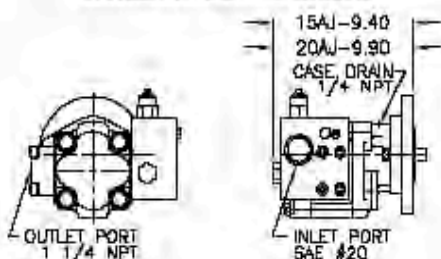
# Models 12AJ-15AJ-20AJ

12,000-20,000 lb.

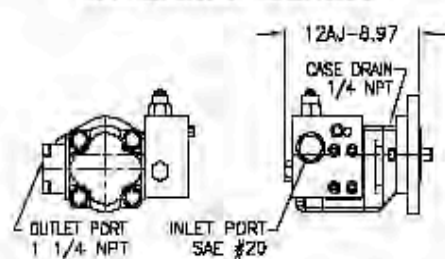


## OPTIONAL FEATURES

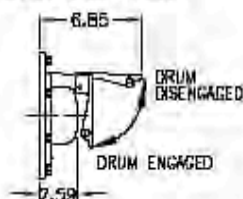
### MOTOR OPTION #1 - HIGH FLOW



### MOTOR OPTION #1 - HIGH FLOW



### OPERATION OPTION #3 MANUAL-LEVER KICKOUT



### OPERATION OPTION #4 AIR/HYDRAULIC KICKOUT



## MODEL 15AJ

WIRE ROPE DIA. IN.	LAYER	LINE PULL LB.	LINE SPEED FPM	
			HIGH FLOW	LOW FLOW
1/2	1	15000	100	35
	2	12900	117	41
	3	11300	134	47
	4	10000	151	53
	5	9000	167	59
	6	8180	184	65
	7	7500	201	71

WIRE ROPE DIA. IN.	LAYER	LINE PULL LB.	LINE SPEED FPM	
			HIGH FLOW	LOW FLOW
9/16	1	15000	101	36
	2	12700	120	42
	3	10900	139	49
	4	9640	158	56
	5	8610	177	62
	6	7780	195	69
	7	—	—	—

Model 15AJ Performance based on 20 GPM @ 2450 PSI (low flow) and 45 GPM @ 2650 PSI (high flow)

## MODEL 20AJ

WIRE ROPE DIA. IN.	LAYER	LINE PULL LB.	LINE SPEED FPM	
			HIGH FLOW	LOW FLOW
9/16	1	20000	107	27
	2	16900	127	32
	3	14600	147	37
	4	12800	167	43
	5	11500	185	48
	6	10400	205	53

WIRE ROPE DIA. IN.	LAYER	LINE PULL LB.	LINE SPEED FPM	
			HIGH FLOW	LOW FLOW
5/8	1	20000	108	28
	2	16600	130	33
	3	14200	152	39
	4	12400	174	45
	5	11000	195	50
	6	—	—	—

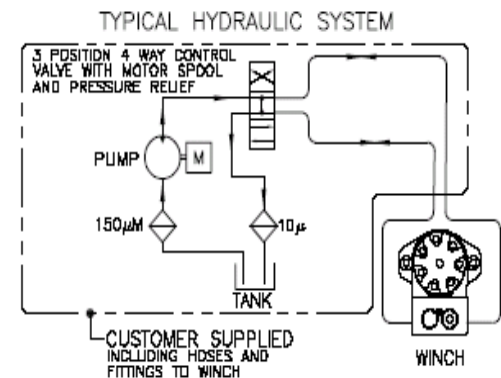
Model 20AJ Performance based on 20 GPM @ 2550 PSI (low flow) and 60 GPM @ 2800 PSI (high flow)

NOTE: The rated line pulls are for the winch only. Consult the wire rope manufacturer for wire rope ratings.  
Flows listed are Maximum for each specific motor.

## DRUM CAPACITIES – FT

LAYER	7/16" WIRE ROPE	1/2" WIRE ROPE	9/16" WIRE ROPE	5/8" WIRE ROPE
1	23	20	18	17
2	49	44	40	37
3	79	71	65	60
4	112	102	93	87
5	149	135	125	117
6	189	173	*160	—
7	232	*213	—	—
8	*279	—	—	—

NOTE: Drum capacities are in accordance with SAE J706.  
Actual capacities are usually up to 10% greater than those shown.  
\*Last layer capacity does not meet SAE J706.



# DIGITAL SCALES



The Air-Weigh Trailer Scale Kit consists of the scale, the air suspension pressure sensor assembly, sensor and power cables, and mounting fasteners. One kit is installed on each trailer suspension. The pressure sensor is installed in the suspension air line. Air-Weigh's patented technology accurately indicates the weight by precisely calibrating, then measuring the suspension air pressure.



## **How to Check-Weigh with your own on-board truck and trailer scales**

With the Air-Weigh scale installed on your truck and trailer's suspension, your entire vehicle becomes the scale. When you want to weigh, remember that you need to operate the vehicle the same way every time you weigh.

It is most important that the air suspension be inflated to its factory-specified ride height without any binding or torque on the suspension. So, park on a level surface. Coast to a stop, if possible, or use the brakes gently. Make sure you release the brakes when you weigh, because the brakes will bind the air springs and make the scale display a heavier weight than you actually have. Chock the wheels if you leave the cab, or weigh the tractor and the trailer separately if necessary.

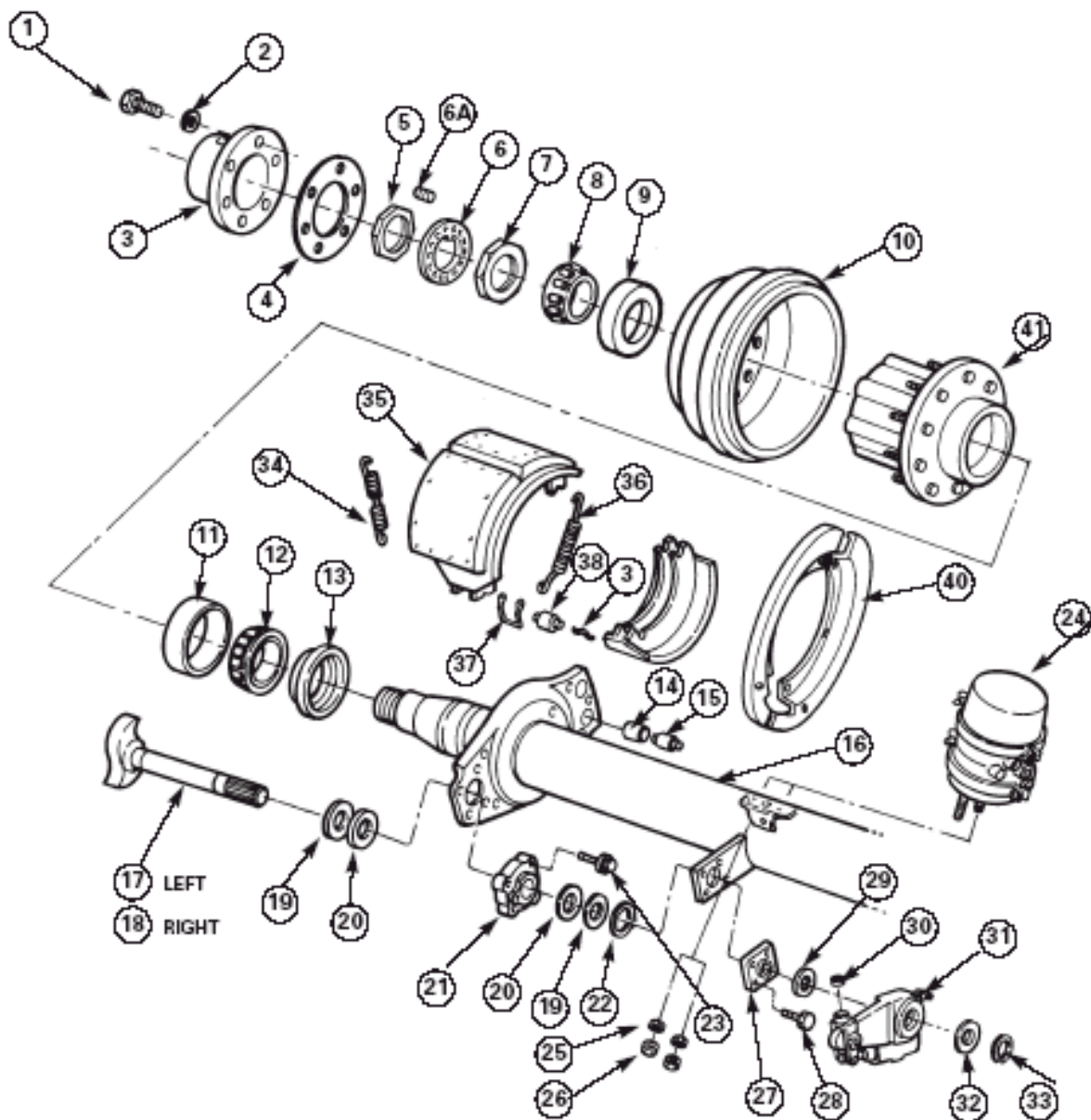
If your suspension is equipped with a dump valve, briefly exhaust the air pressure (5 to 10 seconds), and then let it re-inflate again. When the scale weights stop changing, the suspension is fully inflated and the weight displayed will be accurate to within 300-pounds of a DOT scale.

It may take a few loads to learn how to weigh accurately, but with a little practice you'll be able to get within 100 lbs. on a regular basis.

**When operated properly, Air-Weigh will be accurate to within 300 lbs. of a DOT scale.**

## 6. AXLES





**TYPICAL 16.5" x 7" Q SERIES BRAKE INSTALLATION**

Item	Description	Item	Description	Item	Description
1	Capscrew	14	Bushing anchor pin	28	Capscrew
2	Lockwasher	15	Pin anchor	29	Slack adjuster washer
3	Hubcap	16	Beam axle	30	Slack adjuster locknut
4	Gasket	17	Camshaft (left)	31	Automatic slack adjuster
5	Wheel bearing jam nut	18	Camshaft (right)	32	Slack adjuster washer
6	Lockwasher	19	Washer	33	Slack adjuster snap ring
6A	Setscrew	20	Seal	34	Brake shoe return spring
7	Wheel bearing adjusting nut	21	Bushing	35	Brake shoe and lining assy.
8	Outer wheel bearing cone	22	Snap ring	36	Brake shoe retaining spring
9	Outer bearing cup	23	Capscrew	37	Brake shoe roller retainer
10	Brake drum	24	Air chamber	38	Brake shoe roller
11	Inner bearing cup	25	Lockwasher	39	Shoe return spring pin
12	Inner bearing cone	26	Locknut	40	Dust shield
13	Wheel bearing seal	27	Camshaft bushing assembly	41	Hub

# **SERVICE AND MAINTENANCE**

## **GREASE RETAINERS/OIL SEALS**

### **A. MAINTENANCE**

1. Felt-Type Retainer (Grease)
  - A. Felt should be replaced every 30,000 to 40,000 miles.
2. Ring and Seal Type (oil)
  - A. Every 30,000 to 40,000 miles or whenever the wheels must be removed for any reason, the seals should be inspected for knicks, etc., which could result in a leak.

### **B. REPLACEMENT**

1. Felt-Type Retainer
  - A. With a wheel puller, remove the entire retainer assembly.
  - B. Separate the inner and outer ring of the assembly (usually, hand pressure is sufficient).
  - C. Remove the old felt.
  - D. Inspect the inner and outer rings for excessive damage (bent, knicked, etc.) and replace as required.
  - E. Install new felt.
  - F. Assemble inner ring, felt, washer and outer ring.
  - G. Install assembly on spindle by tapping the assembly until it is seated against the rear shoulder of the spindle grease retainer collar.
2. Ring & Seal Type
  - A. 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 knocking the cone rollers.
  - B. If the axle ring is found to be defective, it can be removed by carefully and lightly tapping the ring all around with a blunt cold chisel. Extreme caution 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.

- C. To install the new ring and seal it is mandatory that the seal manufacture's recommended tool be used.
- D. Prior to installing the new ring the spindle should be clean and free from chips, burrs, etc.

- E. A thin coating of the No. 2 Sealer is first applied to the spindle axle ring collar.
- F. Using the proper tool, the ring is installed on the spindle. (See special manufacturer's recommendations for the proper position of the ring.)
- G. Apply No. 2 Sealer to the outer seat diameter.
- H. Using the proper tool, press the seal into the hub until it is properly seated. (Proper seating specifications are available from the specific seal manufacturer.)
- I. Inspect the installation to assure that the seal components have bottomed evenly and are in the recommended position.



# **SERVICE AND MAINTENANCE**

## **BEARING ADJUSTMENT**

The 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 to 25,000 miles or twice a year, spring and fall.

1. Remove wheel assembly and bearing cones. Clean all old grease from hub of wheel, bearings and hub cap with a good grade commercial cleaner and a stiff brush, NOT STEEL. DO NOT use gasoline and DO NOT use air hose in cleaning operation. Avoid spinning cone while cleaning.
2. Allow the cleaned parts to dry and wipe them with a clean absorbent cloth or paper. Clean and dry hands and all tools used in the service operation. Grease will not adhere to a surface which is wet with solvent, and the solvent may dilute the lubricant. CLEANLINESS IS MOST IMPORTANT.
3. Inspect seals and seal spring surfaces, bearing cups, and bearing cones for indications of wear or damage. Handle all parts carefully during inspection and packing so the cage will not be bent or the rollers and cone damaged.
4. Place bearing cones in cups and check for proper fit and proper number. The bearings must mate as follows:

### **CUPS**

553X

653

HM212011

HM218210

### **CONES**

560

663

HM212049

HM218248

5. (A) Grease lubricated bearings - pack the bearings with a pressure packer if possible using an approved lubricant of medium consistency, ASTM penetration 265-295. See bulletin 5492-Rev. 1, Timken Roller Bearings. If a pressure packer is not available, pack bearings by hand by forcing the grease into the cavities between the rollers and cage from the large end of the cone. Coat the hub cap with a light coat of grease.  
(B) 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 manufacturer's specification.

The following procedure, however, 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.

- (1) 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.
- (2) The inner nut should then be backed-off approximately one-half turn.
- (3) The lock (thrust) washer is then placed in position.
- (4) Next, the outer spindle nut is tightened against the washer. Once this procedure is completed, the bearings should be given a final check for any "play" and this condition corrected by progressive tightening of the inner nut followed by a re-adjustment of the lock washer and outer nut.

NOTE:

Spindle nut wrenches for the various axle models can be purchased from our Parts Department.

## 7. ABS

### Anti-Lock Braking System (ABS)

- 2S/1M
- 4S/2M

### Sealco Air Brake Systems

## Section 5 Diagnostics

**MERITOR WABCO**

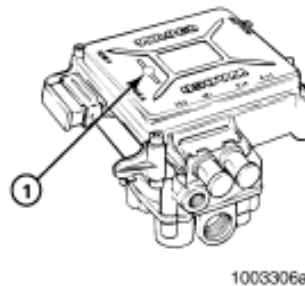
### Using the Blink Code

For ECU Part Number 472 500 011 0 *without* diagnostic connector:

1. Make sure the vehicle is stationary:
  - Emergency brake **ON**
  - Wheels properly chocked
2. Provide 12 volts DC power (9.5 to 14 volts is acceptable range) to the ECU/Valve Assembly.
3. Check the ABS warning lamp on the trailer. If:
  - The warning lamp comes **ON** briefly, then goes **OFF**: There is no fault in system.
  - The warning lamp comes **ON** and stays **ON**: There is an existing fault. Go to Step 4.
4. Check the blink code lamp on the ECU. See Figure 5.1.
  - If blink code lamp is **OFF**, there is no system fault.

- If the blink code lamp is flashing, count the number of flashes to identify the fault. Check Table D — ECU Part Number 472 500 011 0 Blink Codes to determine the problem. Follow the suggested corrective action.

Figure 5.1



1 Blink Code Lamp

Table D — ECU Part Number 472 500 011 0 Blink Codes

Blink Code	Problem Area	Action
4	Sensor YE1 (curbside sensor)	Check sensor installation and connections. Verify proper sensor resistance and air gap. Make necessary repairs.
6	Sensor YE2 (roadside sensor)	Check sensor installation and connections. Verify proper sensor resistance and air gap. Make necessary repairs.
10	ECU/Valve Assembly	Verify proper installation. Make sure all connections are secure. If code continues, contact Meritor WABCO for assistance.
14	Power Supply	Verify proper electrical installation and connections. Check power supply. Make necessary corrections.
15	ECU Failure	Verify proper installation. If code continues, contact Meritor WABCO for assistance.

## Section 5 Diagnostics

**MENTOR MARCO**

### How to Test for Existing Faults Using the Normal Mode

When you use **Normal Mode** diagnostics, the blink code lamp displays a numerical fault code sequence for each existing fault, one at a time. If the ECU stores more than one existing fault in memory, you must repair the first fault before Normal Mode diagnostics will display the second existing fault. In the **Normal Mode**, the lamp only identifies the component that needs repair; for example, **THREE FLASHES = SENSOR BU1**. To identify and display intermittent faults, use **Expert Mode** diagnostics. (See Appendix A.)

The ECU stores existing faults into memory in the order in which they occur, but the blink code lamp displays the most recent fault first. To identify and display intermittent stored faults (such as a loose cable or wire) from ECU memory, you must use **Expert Mode** diagnostics.

To activate Normal Mode diagnostics:

1. The vehicle must be stationary. Power the ECU with 12 volts DC (9.5–14 is an acceptable range). The warning lamp on the trailer will come ON.
2. Locate the diagnostic tool: Plug the diagnostic tool into the diagnostic cable socket located usually on the right side of the trailer sub-frame.

Figure 5.4



- 1 Blink Code Switch
- 2 LED Lamp

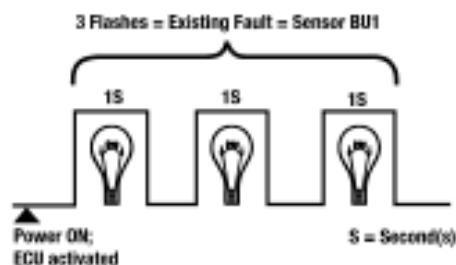
3. Press the blink code switch once for one second and release the switch.
4. If there are no existing faults in the system: When activated, the blink code lamp will
  - Come ON
  - Go OFF
  - Remain OFF
5. When there is an existing fault: The blink code lamp will flash between three and fifteen times to identify the existing fault. Refer to **Table E — Normal Mode Fault Code Table**, below, for Normal Mode fault codes. See Figure 5.5.

6. When there are existing faults: You must repair existing faults.
7. After you identify an existing fault, turn the power to the ECU OFF. Repair the fault. Turn the power to the ECU back ON.
8. ECU Part Number 472 500 001 0: Repeat Steps 3, 5, 6, and 7 until the blink code lamp goes OFF, comes back ON and remains ON. This sequence signals that there are no other existing faults.  
ECU Part Numbers 472 500 012 0 and 472 500 013 0: Repeat Step 3. If there are no other existing faults in the system, the blink code lamp will come ON, go OFF and remain OFF.
9. If you have just repaired a sensor fault, the ECU is “waiting” to see a 4-mph signal on sensed wheels. Until this 4 mph is sensed by the ECU, the ABS warning lamp on the trailer will remain ON.

Table E — Normal Mode Fault Code Table

Blink Code	Location
0	No Faults
3	Sensor BU1
4	Sensor YE1
5	Sensor BU2
6	Sensor YE2
7	Ext. Modulator (Red) 4S/3M Only
9	Ext. Modulator (BU)
10	ECU Modulator (YE)
14	System Configuration/Power Supply
15	ECU Failure

Figure 5.5



1002095a

**MERITOR WABCO**

## Figure 4.2



- A Service/Control Lines
  - B Sensor Cables
  - C Service to Brake Lines (Delivery Lines)
  - D Air Supply/Emergency Lines
- 
- 1 ECU/Valve Assembly (YE)
  - 2 Air Tanks

**NOTE**

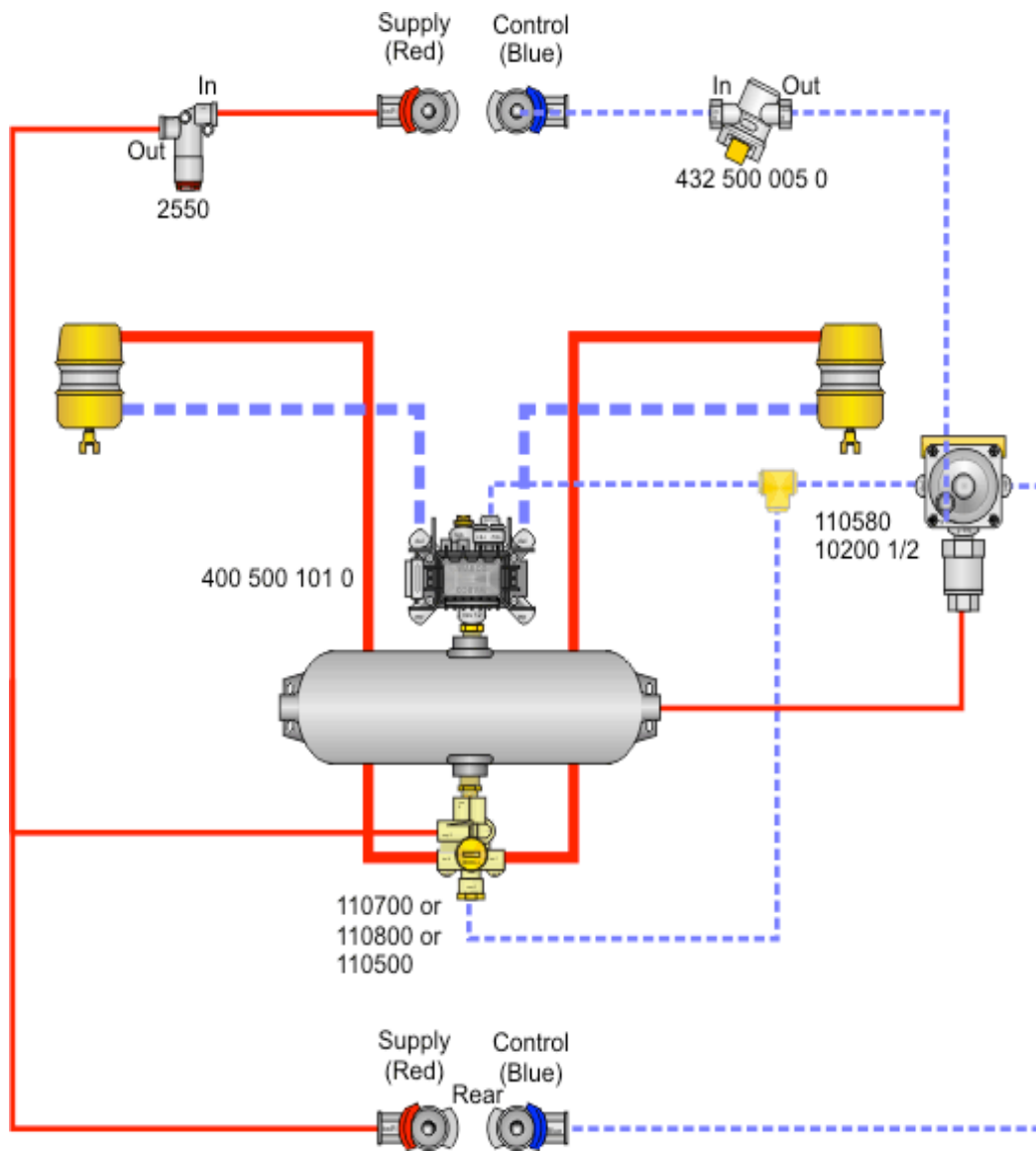
**Typical Application:**

- Single-Axle Dolly
- Single- and Tandem-Axle Semi-Trailer



## SEALCO AIR SYSTEMS

# ABS Single Axle Lead Semi Trailer

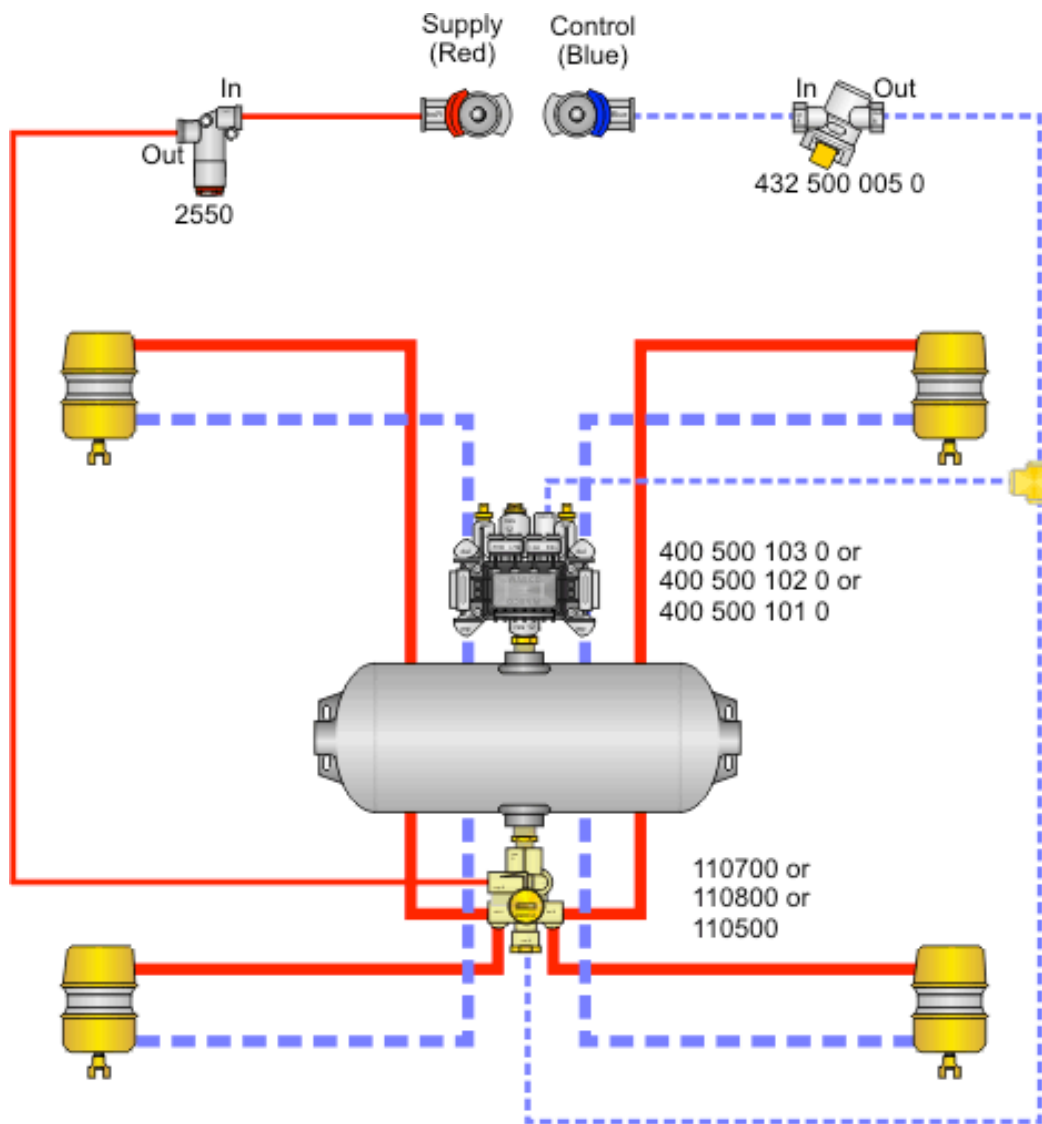




## SEALCO AIR SYSTEMS

# Tandem Axle Trailer

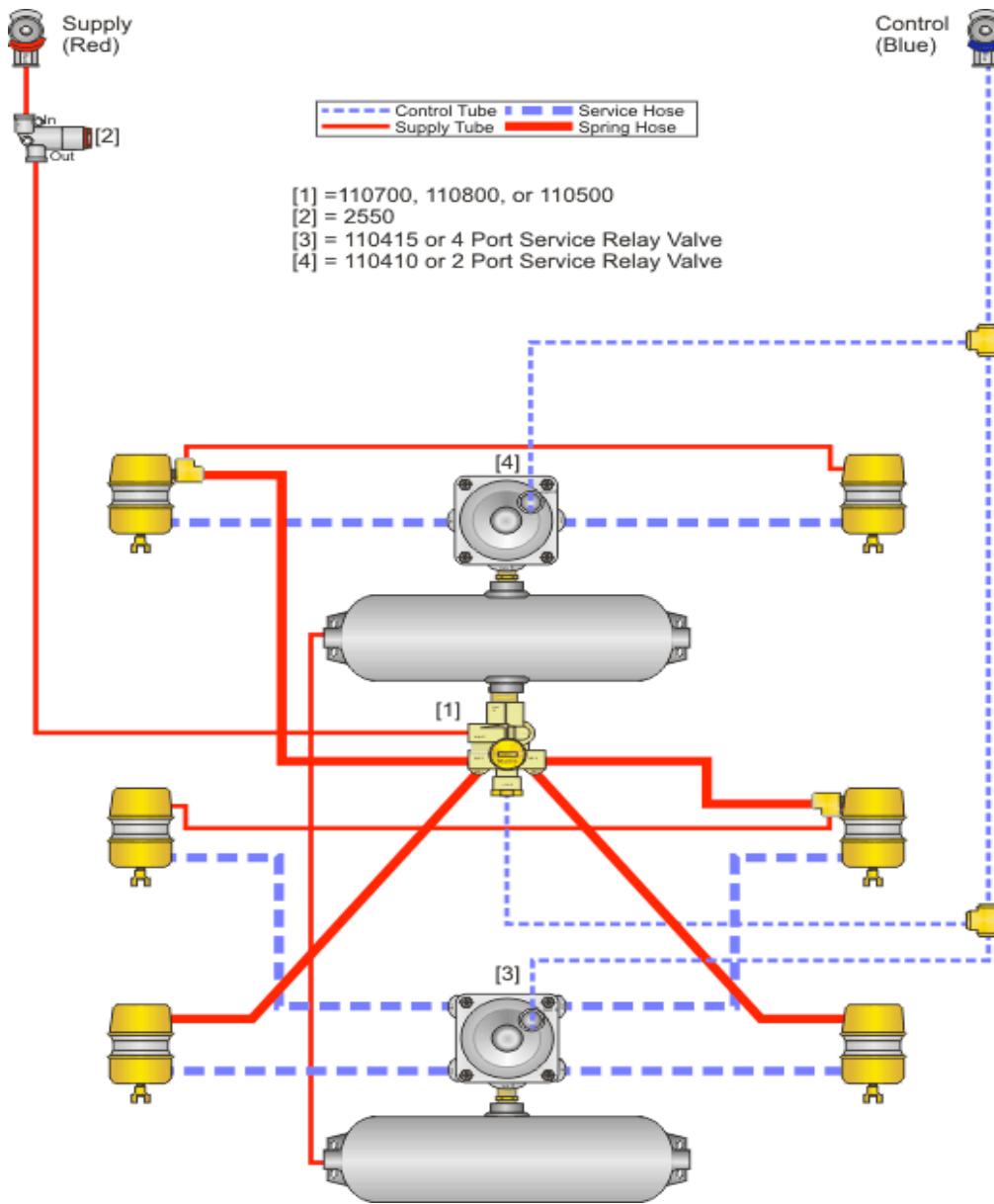
(Spring Brake Priority 110500 or 110800 / Service Reservoir  
Priority 110700)





## SEALCO AIR SYSTEMS

# Tri Axle Trailer – ABS Exempt (2 Tanks / 2 Valves)





## 8. AIR CONTROL KITS

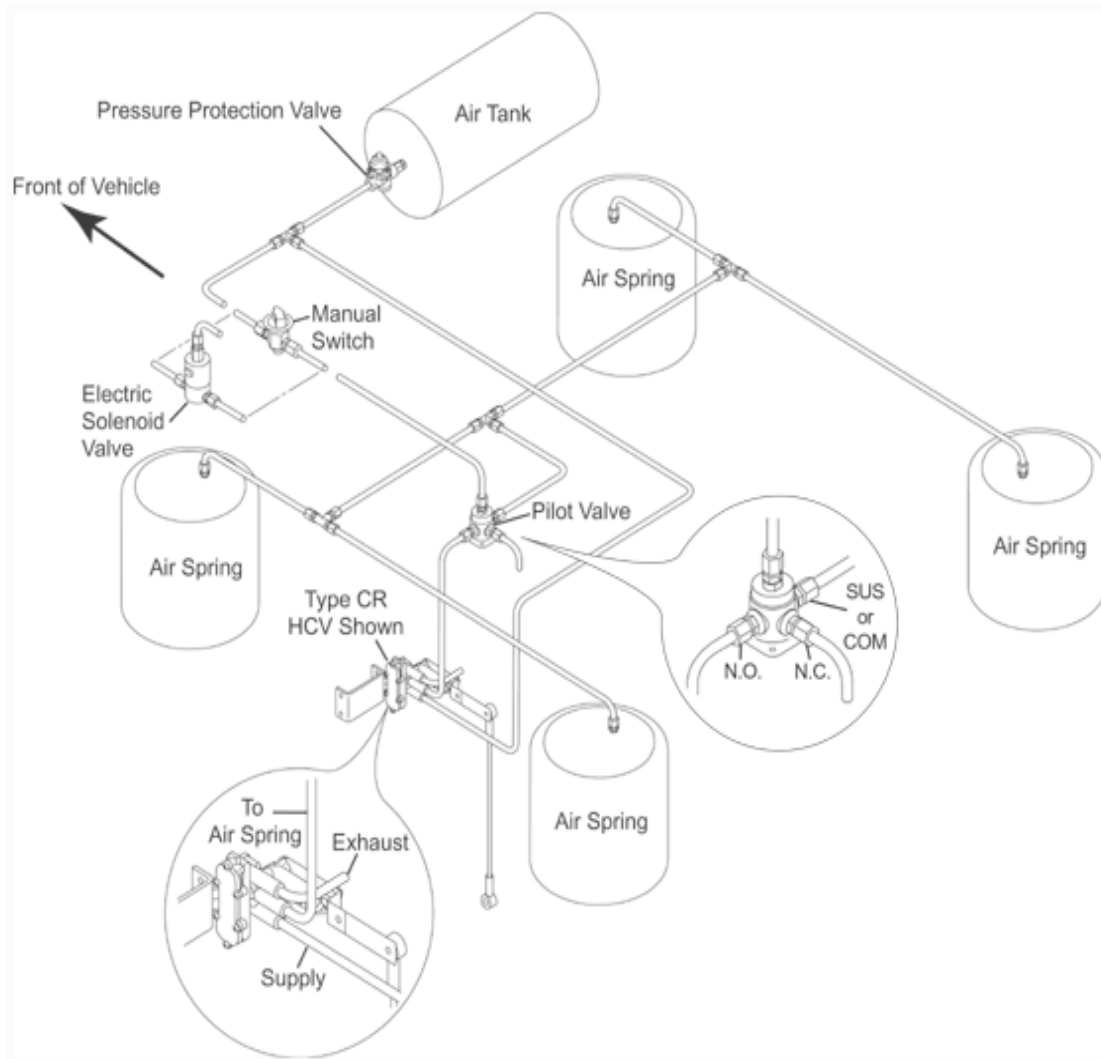


### HALDEX AIR CONTROL KITS

## AC-78-1 Series

Function – Lowering (Exhausting) Systems from Ride Height

Application – Truck or Trailer with One Height Control Valve



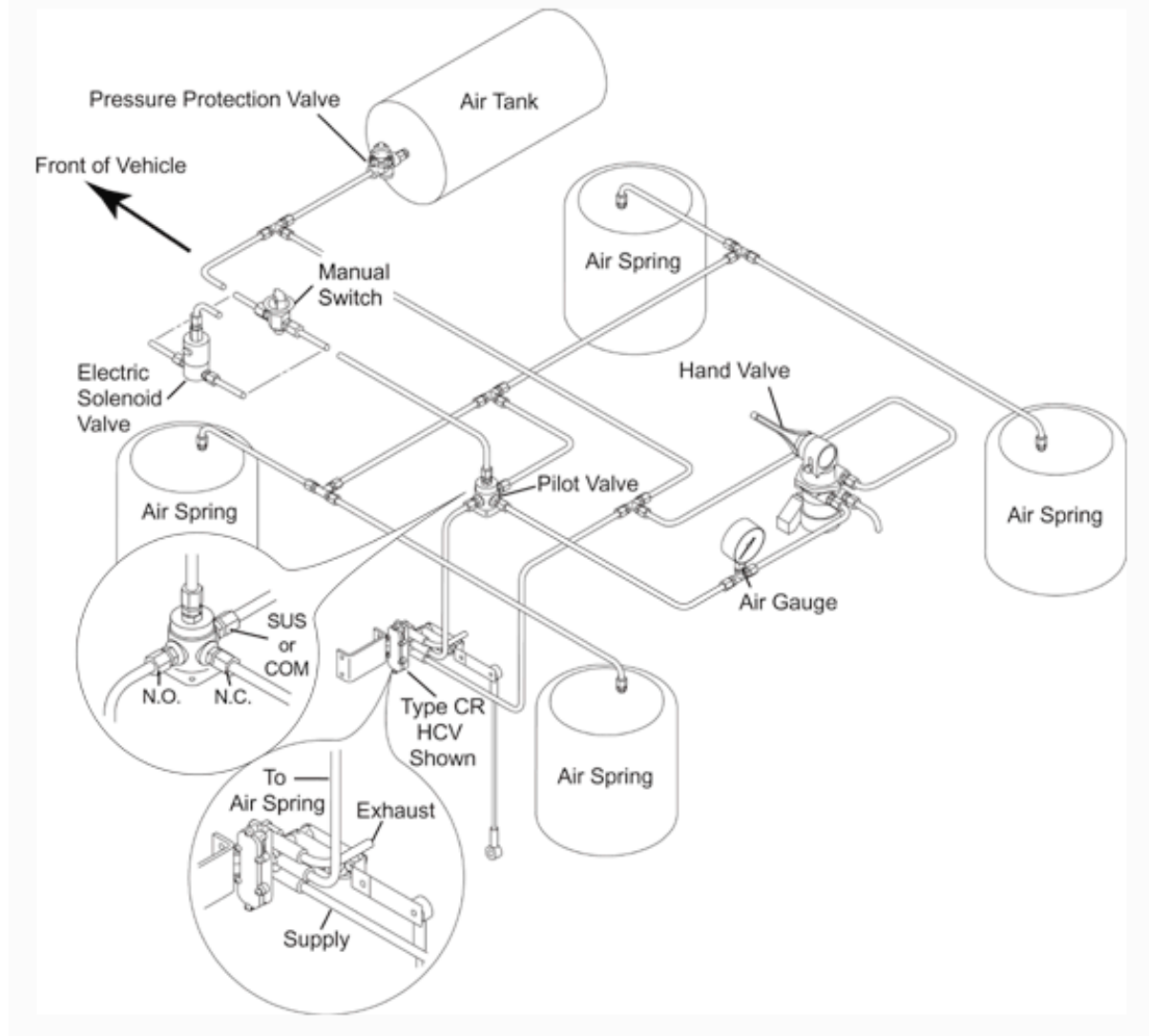


## HALDEX AIR CONTROL KITS

### AC-78-M Series

Function – Lowering (Exhausting) Systems from Ride Height

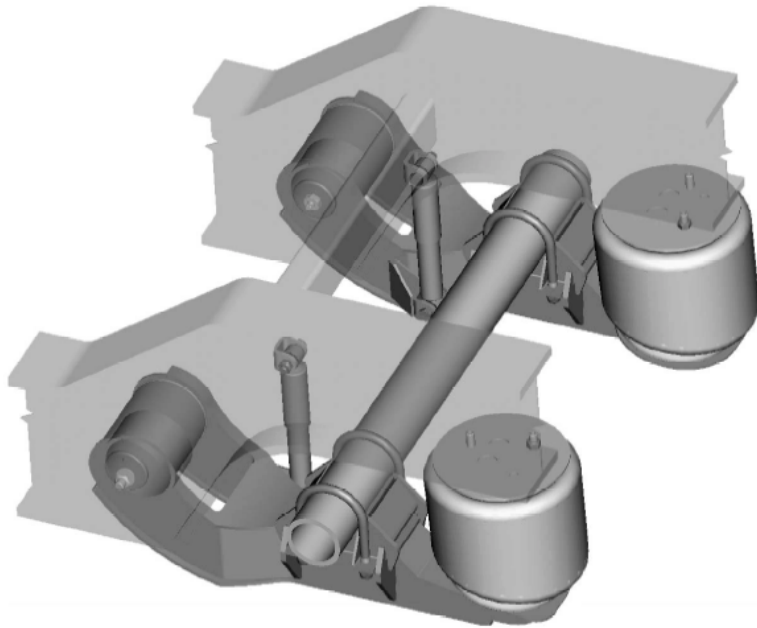
Application – Truck or Trailer with One Height Control Valve



## **9. SUSUPENSIONS**

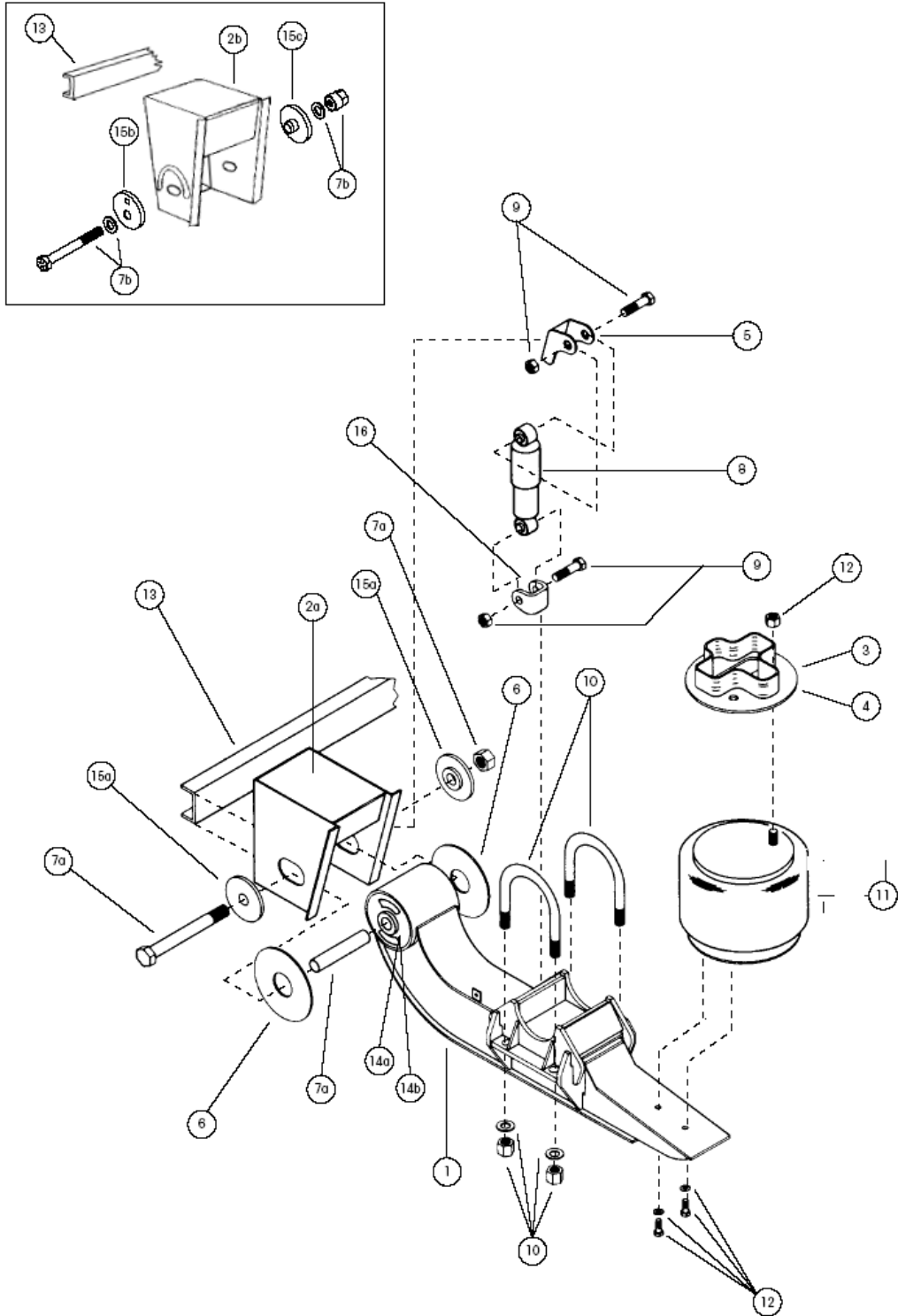


### **HENDRICKSON TURNER SUSPENSION**



PARTS LIST

**MODEL HT250U (UNDERSLUNG STYLE)**



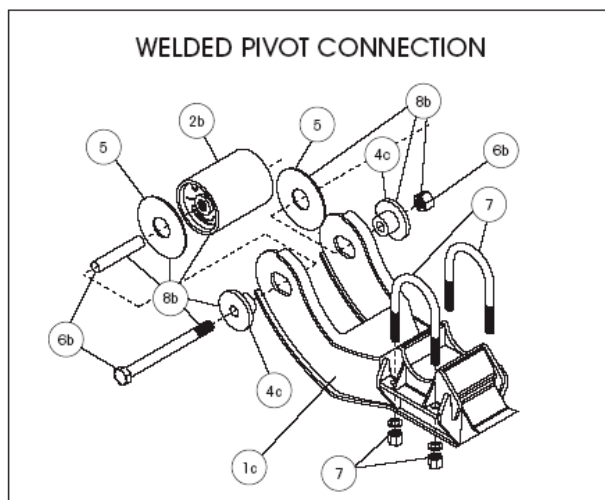
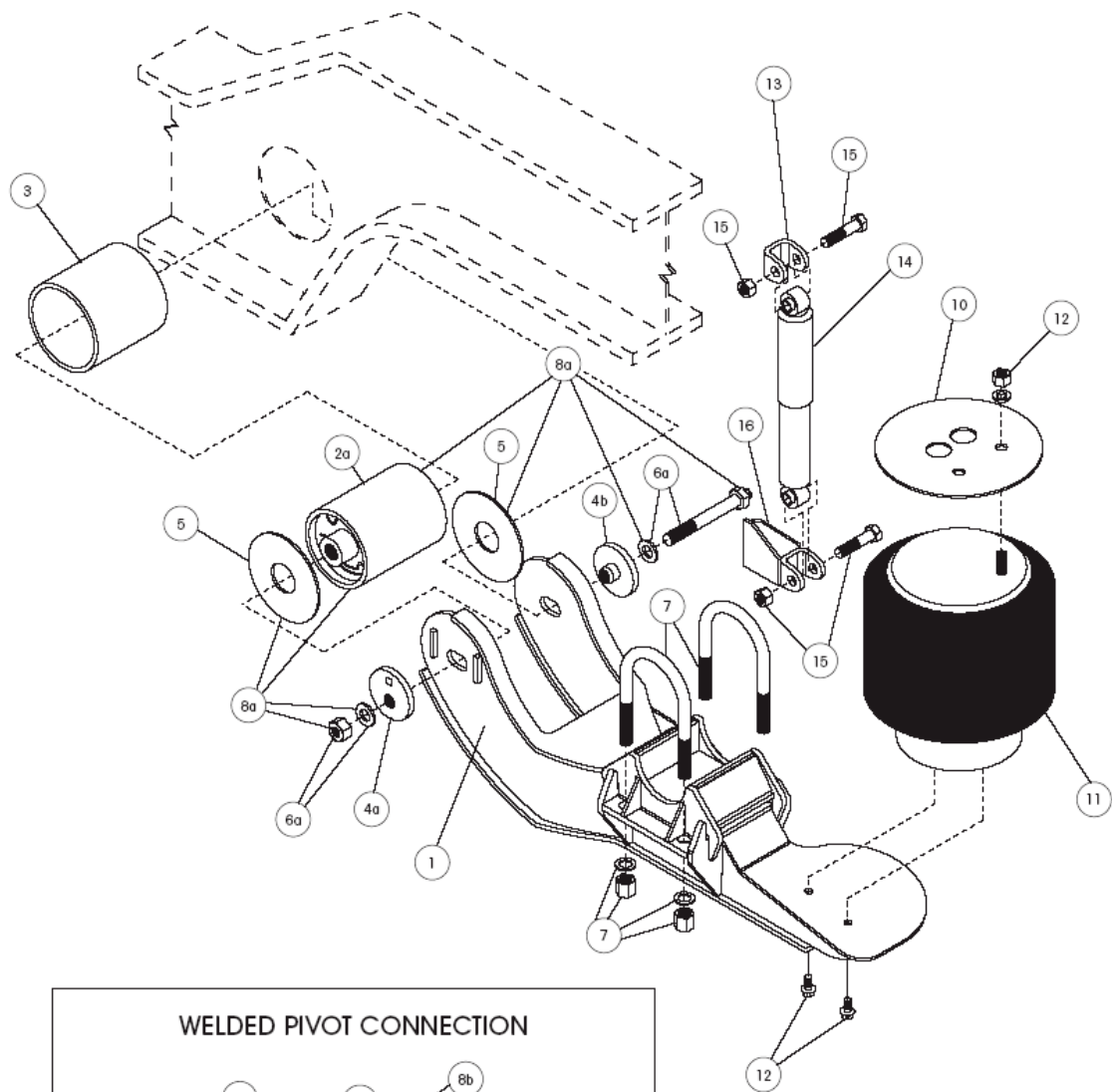
ITEM	DESCRIPTION	PART NO.	QTY	MODEL NO. (HT250U ? or N-HT250U ?)		
<b>1</b>	<b>BEAM ASSEMBLY</b>					
	Roadside	C-20335-1	1	ALL		
	Curbside	C-20335-2	1	ALL		
<b>2</b>	<b>FRAME BRACKET</b>					
<b>2a</b>	<b>Wingless, Welded Alignment, Roadside, Weld-on</b>	D-20321-1	1	-6.5-001 -7.5-005	-6.5-008	-6.5-011
		D-20322-1	1	-7.5-001 -9-003	-9-001 -9-006	-9-002 -9-010
		D-20324-1	1	-14-001		
		D-20323-1	1	-12-001		
		D-20717-1	1	-6.5-002		
	<b>Wingless, Welded Alignment, Curbside, Weld-on</b>	D-20321-2	1	-6.5-001 -7.5-005	-6.5-008	-6.5-011
		D-20322-2	1	-7.5-001 -9-003	-9-001 -9-006	-9-002 -9-010
		D-20324-2	1	-14-001		
		D-20323-2	1	-12-001		
		D-20717-2	1	-6.5-002		
<b>2b</b>	<b>Wingless, QUIK-ALIGN®, Roadside, Weld-on</b>	D-21926-1	1	B9-010		
		D-21927-1	1	B6.5-001		
	<b>Wingless, QUIK-ALIGN®, Curbside, Weld-on</b>	D-21926-2	1	B9-010		
		D-21927-2	1	B6.5-001		
<b>3</b>	<b>AIR SPRING SPACER ASSEMBLY</b>	C-21210-4	2	-14-001		
		C-21210-3	2	-9-002	-12-001	
<b>4</b>	<b>AIR SPRING PLATE<sup>1</sup></b>	B-21209	2	-6.5-001 -6.5-008 -7.5-005 -9-010	B6.5-001 -6.5-011 -9-001 B9-010	-6.5-002 -7.5-001 -9-006 -14-001
<b>5</b>	<b>UPPER SHOCK CLEVIS</b>	C-20113	2	-6.5-001 -6.5-008	B6.5-001 -6.5-011	-6.5-002 -7.5-005
		S-2592	2	-7.5-001 -9-003 B9-010	-9-001 -9-006 -12-001	-9-002 -9-010 -14-001
<b>6</b>	<b>BUSHING WEAR PAD</b>	S-11613	4	ALL		
<b>7</b>	<b>PIVOT BOLT KIT</b>					
<b>7a</b>	<b>Welded Alignment</b>	S-3646	2	-6.5-001 -6.5-011 -9-001 -9-006 -14-001	-6.5-002 -7.5-001 -9-002 -9-010	-6.5-008 -7.5-005 -9-003 -12-001
<b>7b</b>	<b>QUIK-ALIGN®</b>	S-21052	2	B6.5-001	B9-010	
<b>8</b>	<b>SHOCK ABSORBER</b>	S-20002	2	ALL		
<b>9</b>	<b>SHOCK ABSORBER BOLT KIT</b>	S-2157/2	2	ALL		
<b>10</b>	<b>U-BOLT KIT</b>	S-3650/4	4	ALL		

<sup>1</sup> Supplied by the slider manufacturer on Model HT250U-9-003 suspension.

ITEM	DESCRIPTION	PART NO.	QTY	MODEL NO. (HT250U ? or N-HT250U ? )		
11	AIR SPRING	S-20124	2	-6.5-001	B6.5-001	-6.5-008
				-7.5-001	-7.5-005	-9-001
				-9-002	-9-003	-12-001
				-14-001		
		S-20127	2	-9-006		
		S-20413	2	-6.5-011		
		S-20414	2	-9-010	B9-010	
		S-20716	2	-6.5-002		
12	AIR SPRING BOLT KIT	S-20033/2	2	ALL		
13	FRAME BRACKET CHANNEL	A-1631-19	1	-6.5-001	B6.5-001	-6.5-002
				-6.5-008	-6.5-011	-7.5-001
				-7.5-005	-9-001	-9-002
				-9-006	-9-010	B9-010
				-12-001	-14-001	
14	TRI-FUNCTIONAL® II BUSHING KIT <sup>2</sup>					
14a	Welded Alignment	A-6914	2	-6.5-001	-6.5-002	-6.5-008
				-6.5-011	-7.5-001	-7.5-005
				-9-001	-9-002	-9-003
				-9-006	-9-010	-12-001
				-14-001		
14b	QUIK-ALIGN®	S-21166	2	B6.5-001	B9-010	
15	ALIGNMENT COLLARS					
15a	Welded Alignment	S-2770	4	-6.5-001	-6.5-002	-6.5-008
				-6.5-011	-7.5-001	-7.5-005
				-9-001	-9-002	-9-003
				-9-006	-9-010	-12-001
				-14-001		
15b	Eccentric, QUIK-ALIGN®	S-20925	2	B6.5-001	B9-010	
15c	Concentric, QUIK-ALIGN®	S-20924	2	B6.5-001	B9-010	
16	LOWER SHOCK CLEVIS <sup>3</sup>	S-2592	2	ALL		

<sup>2</sup> The Tri-Functional® II Bushing Kit includes Item #7 (Pivot Bolt Kit) and Item #6 (Bushing Wear Pad). Bushing Tool, S-21307, is required to correctly re-bush the suspension.

<sup>3</sup> Lower Shock Clevis is included when ordering Item #1 (Beam Assembly).



**HT250U "Y" BEAM PARTS LIST**

ITEM	DESCRIPTION	PART NO.	QTY.	MODEL NO./DESCRIPTION
<b>1</b>	<b>BEAM ASSEMBLY</b>			
<b>1a</b>	Standard, Roadside, QUIK-ALIGN®	C-22350-1	1	
	Standard, Curbside, QUIK-ALIGN	C-22350-2	1	
<b>1b</b>	For Use with Shock Straps (not shown)			
	Roadside, QUIK-ALIGN	C-23365-1	1	
	For Use with Shock Straps			
	Curbside, QUIK-ALIGN	C-23365-2	1	
<b>1c</b>	Standard, Roadside, Welded Alignment	C-20131-1	1	6.5Y-001, 6.5Y-006, 9Y-001, 9Y-006 9Y-010, 9Y-027, 9Y-037
		C-21076-1	1	9Y-021, 9Y-031
	Standard, Curbside, Welded Alignment	C-20131-2	1	6.5Y-001, 6.5Y-006, 9Y-001, 9Y-006 9Y-010, 9Y-027, 9Y-037
		C-21076-2	1	9Y-021, 9Y-031
<b>2</b>	<b>BUSHING ASSEMBLY</b>			
<b>2a</b>	Bushing Assembly, QUIK-ALIGN	B-23349		
<b>2b</b>	Bushing Assembly, Welded Alignment	B-7343	2	
<b>3</b>	<b>TUBE SLEEVE</b>	A-7342	2	
<b>4</b>	<b>ALIGNMENT COLLAR</b>			
<b>4a</b>	Eccentric Washer, QUIK-ALIGN	S-20925	2	Pivot bolt hole is offset from center of collar
<b>4b</b>	Concentric Washer, QUIK-ALIGN	S-20924	2	Pivot bolt hole is in center of collar
<b>4c</b>	Welded Alignment	B-7349	4	
<b>5</b>	<b>BUSHING TUBE SPACER</b>	S-11613	4	
<b>6</b>	<b>PIVOT BOLT KIT</b>			
<b>6a</b>	QUIK-ALIGN	S-25948	2	Includes shear-type bolt, hex nut & hardened steel washers
<b>6b</b>	Welded Alignment	S-7345	2	Includes bolt, cap screw, hex nut & liner
<b>7</b>	<b>U-BOLT KIT</b>	S-3650/4	4	
<b>8</b>	<b>TRI-FUNCTIONAL® II BUSHING KIT</b>			
<b>8a</b>	QUIK-ALIGN	S-26000	2	Includes bushing, beam tube, bushing tube spacers, shear-type bolt & nut
<b>8b</b>	Welded Alignment	A-13136	2	Includes alignment collars, bushing, beam tube, bushing tube spacers, bolt, nut & liner
<b>9</b>	<b>BUSHING TUBE SPACER KIT (not shown)</b>	S-26371		Includes shear-type 12-in. bolt, nut, hardened washers & 3 bushing tube spacers
<b>10</b>	<b>AIR SPRING PLATE</b>	B-21209	2	
<b>11</b>	<b>AIR SPRING</b>			
	Standard	S-20127	2	For QUIK-ALIGN & Welded Alignments 6.5Y-006, 7.5Y-006, 9Y-006, 9Y-031
	Rotated Stud	S-20414	2	For QUIK-ALIGN & Welded Alignments 9Y-010
	High Pressure, Standard	S-20124	2	For QUIK-ALIGN & Welded Alignments 6.5Y-001, 7.5Y-001, 9Y-001, 9Y-021
	High Pressure, Rotated Stud	S-20413	2	
<b>12</b>	<b>AIR SPRING BOLT KIT</b>	S-20033/2	2	
<b>13</b>	<b>UPPER SHOCK CLEVIS</b>			
	Standard	S-2592	2	
	For Use with Shock Straps	C-20113	2	
<b>14</b>	<b>SHOCK ABSORBER</b>			
	Standard, QUIK-ALIGN or welded	S-20002	2	
	Ext. Service, High Damping, QUIK-ALIGN	B-21553	2	
<b>15</b>	<b>SHOCK ABSORBER BOLT KIT</b>	S-2157/2	2	
<b>16</b>	<b>LOWER SHOCK CLEVIS</b>	C-20145-1		
<b>17</b>	<b>SHOCK STRAP KIT (not shown)</b>	C-14587-8		Includes strap & nylon tie



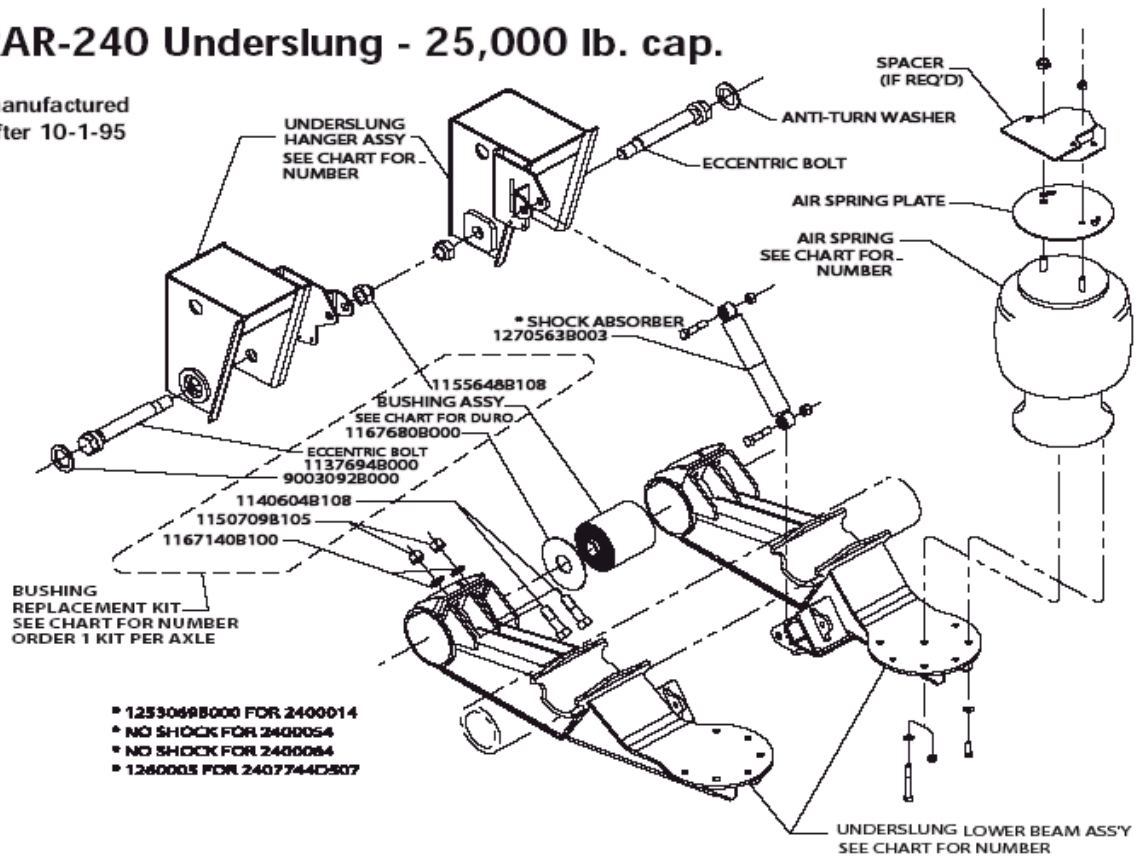


## RIDEWELL SUSPENSION



## RAR-240 Underslung - 25,000 lb. cap.

manufactured  
after 10-1-95



SUSPENSION PART NUMBER	HANGER ASSY. LH/RH	BUSHING/BEAM ASSY. LH/RH	BUSHING REPLACEMENT KIT	AIRSPRING REPLACEMENT
2400014	3267738C100/200	5970019/20	6040029 (60 DURO)	1003588802X
2400048	3260044/45	5970027/28	6040029 (60 DURO)	1000001
2400054	3267738C100/200	5970050/51	6040029 (60 DURO)	1000003
2400057	3260050/51	5970019/20	6040029 (60 DURO)	1003588802X
2400058*	3260054/55	5970073/74	6040029 (60 DURO)	1000001
2400061	3267744C112/212	5970095/96	6040029 (60 DURO)	1003589320C
2400064	3267738C100/200	5970109/10	6040029 (60 DURO)	1003588802X
2400071	3267744C105/205	5970003/04	6040029 (60 DURO)	1003589334C
2400072	3267744C106/206	5970003/04	6040029 (60 DURO)	1003588802X
2400306	3267744C106/206	5970027/28	6040029 (60 DURO)	1000003
2400308	3267744C108/208	5970027/28	6040029 (60 DURO)	1000001
2400336	3260110/11	5970027/28	6040029 (60 DURO)	1000003
2400614	3260056/57	5970075/76	6040029 (60 DURO)	1003589101C
2400708	3267744C108/208	5970080/79	6040029 (60 DURO)	1000001
2400712	3267744C112/212	5970091/92	6040029 (60 DURO)	1003589101C
2404105	3267744C105/205	5977744B100/200	6040029 (60 DURO)	1003589334C
2404106	3267744C106/206	5977744B100/200	6040029 (60 DURO)	1003588802X
2404107	3267744C107/207	5977744B100/200	6040029 (60 DURO)	1003589010C
2404108	3267744C108/208	5977744B100/200	6040029 (60 DURO)	1003589082C
2404110	3267744C110/210	5977744B100/200	6040029 (60 DURO)	1003589082C
2404112	3267744C112/212	5977744B100/200	6040029 (60 DURO)	1003589101C
2407744D507	3267744C107/207	5977744B100/200	6040029 (60 DURO)	1003589010C

\*\*\* OR STRAIGHT AXLE \*\*\*

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