

Operation & Service Manual

WARNING!

If used incorrectly, this equipment can cause **severe injury**. Those who use and maintain this equipment should be trained in its proper use and warned of its dangers.

THIS ENTIRE MANUAL SHOULD BE READ BEFORE ATTEMPTING TO SET UP, OPERATE, ADJUST OR SERVICE THE EQUIPMENT.

MAKE COPIES FOR ALL DRIVERS, MECHANICS AND OPERATORS.

THIS MANUAL SHOULD BE INCLUDED WITH THE EQUIPMENT IF IT IS SOLD, LEASED OR OTHERWISE CHANGES OWNERSHIP.

BENLEE

**COMPLETE ROLL-OFF SYSTEMS ♦ TRAILERS ♦ CONTAINERS
DUMP TRAILERS ♦ ROLL-OFF TRUCKS
DUMP TRUCKS ♦ FRAME STRAIGHTENING ♦ REPAIRS & PARTS
30383 Ecorse Road ♦ Romulus, Michigan 48174 ♦ (734) 722-8100
FAX: (734) 722-6662 ♦ Toll Free: 1-800-521-4620
E-Mail: marilyn.osburn@benlee.com ♦ Website: www.benlee.com**

DANGER!

If spring brakes are caged, de-activated or removed, this vehicle will have *no emergency and parking brakes*. It must not be driven or parked without blocking wheels.

To service, the spring brake chamber must be caged or de-activated. Failure to cage could cause an explosion of parts.

Failure to follow these warnings can cause injury or death.

CAUTION!

Units without the stinger tail option are equipped with a hydraulic extending and retracting ICC Bumper.

The bumper must be retracted before picking up, dropping or dumping a container.

It must be extended during travel.

Failure to retract before picking up, dropping or dumping will result in severe damage to the mechanism. It is the operators responsibility to follow this procedure.

ATTENTION

Important Information

Please read carefully

All BENLEE trailers currently produced are in full compliance with FMVSS Regulation No. 224 (Rear Impact Protection), effective January 26, 1998. The new regulation requires that the guard be 88" wide, no more than 22" off the ground with the trailer unladen and no more than 12" forward of the rear most extremity of the trailer. The regulation also requires static load tests at specific points on the guard of 25,000 lbs. And 12,000 lbs. respectively. The BENLEE guard complies with all the aforementioned requirements.

Exercise great care in following the correct operational sequence, or *severe damage may result.*

When backing up and pulling forward, take extra care not to hit or hook nearby objects or damage may result, rendering the guard inoperable.

ABS BRAKES

All of the new BENLEE trailers manufactured after 3-1-98 are equipped with an anti-lock braking system to meet the minimum requirements of F.M.V.S.S. 121. This is a 2S/IM System (2 sensor/1 modulator), which consists of the following parts:

1. FF-ABS Valve with Electronic Control Unit (ECU)
2. Exciter Ring Mounted to the Wheel Hub
3. Sensor Block Fixed to the Axle
4. Wiring Harness

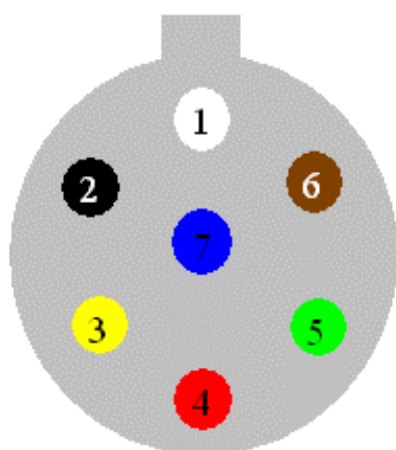
There may be a need for some modifications to the wiring system of the tractor that is going to be pulling your new BENLEE trailer. The tractor ignition switch on the system requires constant power to the blue wire of the wiring pigtail. If your new BENLEE trailer is equipped with any electrical options (i.e. work lights, lift axles, back up alarms, back up lights, etc.), your trailer will include a second 7-way electrical system to power any options. Your tractor must also include this second 7-way plug to run the options. The second 7-way receptacle installed on your trailer will be in accordance with the I.S.O. 3731 recommendation (reverse ground pin connection). Your salesperson can supply you with any necessary wiring schematics for the second 7-way receptacle. A Digital Display Unit (DDU) can be purchased to read any fault codes that may occur during the life of your BENLEE trailer.

The BENLEE parts department can supply you with all required parts to make the necessary modifications to your tractor.

Air System Filtration

Please note that all Benlee trailers manufactured *after 3/1/98* are equipped with screen-type filters located in the glad hands. Trailers manufactured *after 10/18/99* have SealCo Model 2550 in-line filters on the service and emergency lines. These filters should be inspected and cleaned at normal service intervals or a minimum of twice a year. *Failure to service and inspect may affect brake performance.*

ISO 3731 7-WAY CONNECTOR WIRING CIRCUITS



Conductor No.	Color	Lamp and Signal Circuits
1	White	ABS Shared Ground return to towing vehicle
2	Black	Unspecified-Could be used for extra current carrying capacity for marker lights
3	Yellow	ABS Malfunction signal
4	Red	Unspecified-Could be Ignition switch
5	Green	Unspecified-Could be used for SAE J1708 +
6	Brown	Unspecified-Could be used for SAE J1708 -
7	Blue	ABS Continuous Shared Power

SAE J560 7-WAY CONNECTOR WIRING CIRCUITS



Conductor No.	Color	Lamp and Signal Circuits
1	White	Ground Return To Towing Vehicle
2	Black	Side Marker and Identification Lamps
3	Yellow	Left-Hand Turn Signal and Hazard Signal
4	Red	Stop Lamps and ABS (When Installed)
5	Green	Right-Hand Turn Signal and Hazard Signal
6	Brown	Tail, Rear Clearance, and License Plate Lamps
7	Blue	ABS Continuous Shared Power

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The major change to the tractor / trailer electrical system to accommodate ABS is that tractor will have the auxiliary (blue) circuit constantly powered when the ignition switch is “ON”, and trailers will have an electrical system providing ABS constant power through the auxiliary (blue) wire.

GENERAL OPERATING INFORMATION

SAFETY & GOOD JUDGMENT

This section contains guidelines for safely operating your BENLEE roll-off trailer and prolonging equipment life. The impossibility to cover every potential problem situation in this manual does not eliminate the necessity of practicing “good judgment” and “common sense”.

Obvious and/or intentional disregard of these guidelines may result in serious injury, death, government fines and/or forfeiture of any and all warranties and/or liabilities by/of Benlee, Inc.

Modifications to BENLEE equipment that are not made at our facility or with written approval from our Engineering or Service Managers will result in nullification of warranty and liability.

1. *All drivers, operators and mechanics should read this manual thoroughly before operating.*
2. Roll-off equipment has numerous pinch points: the tip frame, the reeving system, extendable tails and extending ICC bumpers. Clear all areas of personnel when operating the trailer.
3. *Always check overhead for any obstructions, such as power lines.*
4. The loading and unloading area should be as solid and level as possible. Do not attempt to load an extremely unbalanced, one-sided load. Heavy one-sided loads pose a safety hazard and may cause damage to the tilt frame and container.
5. Always back trailer *squarely* to the container. Pulling up a container at an angle is a safety hazard and may bend or twist the tilt frame.
6. The cable, cable hook and container should be inspected daily. Broken strand(s) on the cable signal it is time to replace the entire cable.
7. Use moderation in engine speeds when operating the P.T.O. **Warning:** Do NOT drive the truck/tractor with the Power Take-Off (P.T.O.) engaged. You can damage the pump or the P.T.O.
8. **The truck/tractor should never be driven while the hoist is in the raised position.** Pulling ahead *a few feet* to help eject the load during the dumping sequence is the exception.
9. Observe and obey all trailer and container warning labels. Never attempt to pick up a container that is damaged or in need of repairs.
10. Never allow anyone to work on tilt frame while in raised position without safety prop engaged and properly placing a minimum 6" x 6" hardwood block at both rear hinges to prevent tilt frame from dropping. Tilt frame safety props are not to be used when a container is on the truck/trailer.
11. Observe caution in load balance. Try to distribute load evenly in the container.
12. Load center must be ahead of rear hinge point before lowering hoist frame or damage to tilt frame will occur – *see Operating Sequence.*
13. Always power up and power down. Lift cylinder(s) are double acting. Use hydraulic power in all phases of the truck and trailer container operation. Especially important is the lowering of the hoist frame when loaded. This must be done under power to prevent loss of control of the load.
14. When loading container, release truck brakes (if possible). This permits the truck to be pulled under the container skids, increasing the life of both truck and container.

15. *Do not dilute oil in cold weather.* In extreme weather changes, replace with the recommended viscosity for operating temperatures. Always allow pump to *operate* in cold weather for a period of time *with the P.T.O. engaged.* This will warm up the hydraulic oil.
16. In transporting containers, it is recommended by the manufacturer, and required in some states, that the container(s) be secured at all four (4) corners by a suitable device. We suggest ratchet binders, chain binders or container hold down straps (the later are standard equipment on all BENLEE trailers manufactured after 1995).
17. Safety glasses and head protection/hard hat should be worn during operation.
18. **Make copies of this manual for all drivers, operators & mechanics.**

GENERAL OPERATING INFORMATION

OPERATING PRINCIPLE

BENLEE systems are designed for use in loading, transporting and unloading complete containers that are in good operating condition. **Any other use is not recommended by BENLEE.**

Essentially, this operation is accomplished by tilting the hoist to a 45-50° angle with the rear end at grade level in front of a properly equipped roll-off container. The unit is drawn up the inclined frame on rollers and, as the operation progresses, the hoist frame is lowered accordingly until the unit is completely loaded and automatically locked in place. Transportation is then accomplished the same as with any conventional truck. Unloading the container or body is simply a reverse of the loading procedure.

Variations in design configuration may be employed, ranging from conventional truck chassis equipped with hoist frames, to semi-trailer units with self-contained power units. Because of the basic operation component parts, and service similarity, this manual applies to all roll-off systems manufactured for BENLEE.

GENERAL OPERATING INFORMATION

CONTROLS

1. Power Supply

Power is required to drive a hydraulic pump which serves the system's cylinder(s) and winch(es). (Most trailers have a reeving cylinder(s) in place of a winch.) On trucks, the pump is driven from a power take-off. If the truck is used as a tractor, hydraulic power supply can be coupled to the trailer by quick disconnects—see *wet kit schematic in General Service Information*. Also, an auxiliary engine can be provided on the trailer. Each is described separately below. (Some applications require an electric motor instead of an industrial engine.)

- A. Power Take-Off (P.T.O.): This control is located inside the truck. Disengage clutch by depressing clutch peddle. Pull out P.T.O. knob slowly. Engage clutch.
- B. Industrial Auxiliary Engine: Refer to engine owner's manual for starting and operating instructions. The P.T.O. is mounted on an adapter directly to the engine. The pump is directly driven by the P.T.O. by a different shaft. Therefore, when the engine is operating, so is the pump, and hydraulic pressure is being generated.

2. Hydraulic Controls

Hydraulic control valve assemblies with pressure relief valve included are used to direct hydraulic pressure to and from each controlled area. Normally, a three bank (three plunger) unit is used. The first handle operates the tilt frame, the second handle operates either the reeving cable or the winch cable. A third handle operates the stinger tail if the unit is so equipped, or the hydraulic extending and contracting ICC bumper. Each plunger has a three-position level with the center as neutral, a built in safety feature. The relief section is set at the factory at 2,000 psi. Changing this setting to a higher pressure may void your warranty. Please consult factory before making adjustments.

- A. Tilt Frame: Pull the lever to extend or raise the tilt frame. Move the lever in the opposite direction to lower the frame. The lever must be held manually to operate. When released, the lever will return to neutral. Always power up and power down.
- B. Cable: Pull the lever to let out cable slack. Move the lever in the opposite direction to take in cable and pull up container. The lever must be held manually to operate. When released, the lever will return to neutral.
- C. ICC Folding Bumper: Pull the lever to extend to the travel position. Push the lever to retract to the work position
- D. Stinger Tail: Pull the lever to extend the tail. Move the lever in the opposite direction to retract the stinger tail. **Warning:** Never use the stinger tail as a lifting device or pry bar.
- E. Winch & Stinger Combination: The stinger tail control lever can be used in combination with the cable control lever to help keep the cable from unspooling around the drum winch, and from crossing over itself.

3. Air Control Flipper Switches:

- A. Trailer Brake Lock: All trailers are equipped with a flipper brake lever on the operating panel. The operator may lock or unlock the trailer brakes, depending on the operating sequence.
- B. Air Bag Dump Switch: Trailers equipped with air ride suspensions have a flipper lever on the operating control panel for releasing the air from the air bags. Before loading, unloading or dumping container, we recommend operator always release air from air bags to enhance stability. Be sure to air up prior to driving away. Flip switch the opposite direction.

4. Latch Control:

A. Locking Device: The forward end of the tilt frame has a latch control assembly which receives the container front rollers and locks it in place by throwing the locking arm when the unit is completely loaded. *Release the latch before raising the hoist frame.* Most BENLEE units built after 6/92 are equipped with a spring loaded automatic safety latch which disengages when the tilt frame is raised and latches when the tilt frame is in the horizontal position. *These AUTOMATIC LATCHES may be purchased through BENLEE parts department to update other trailers.*

GENERAL OPERATING INFORMATION

OPERATING SEQUENCE

1. Loading Containers:

- A. Container and truck or trailer with roll-off frame **must be on level site for precaution against tipping**. Raise air lift axle(s), if so equipped. Back up to container. Do not jack knife trailer.
- B. Set tractor/truck brakes and leave in neutral. Exit cab and lock the trailer brakes. Enter cab, engage P.T.O. and unlock tractor/truck brakes. Exit cab.
- C. On trailers equipped with retractable ICC bumpers, fully retract bumper. It may be necessary to walk back and visually check the bumper for full retraction. Failure to fully retract bumper could result in severe damage to the mechanism.
- D. Trailers equipped with air ride suspension, dump air bags. Raise hoist frame to maximum, or until frame end barely clears ground, and back up squarely to front rollers of container. If equipped with stinger tail, extend out enough tail so that when tail barely touches ground, the tilt frame is at an approximately 45-50° angle. On standard dead-lift units, the tail will not touch the ground.
- E. Slack off cable slightly as required, connect to container tow hook and finish raising tilt frame to completely touch the ground.
- F. Use 1600-1900 RPM engine speed and operate slowly to draw container *squarely* up tilt frame.
- G. Lower frame once container has started well and the *load center of the container has passed the hinge point* of the trailer. **Caution:** Keep container rear rollers on the ground as long as possible while loading.
- H. Lower hoist frame and draw container forward at the same time. Lower hoist frame *completely*. Continue to draw container forward until it meets the tilt frame stops at the end of the tilt frame. The automatic style safety latch will pop up behind the container pickup rollers when the tilt frame is lowered into the horizontal position. Additional hold downs (standard on all BENLEE roll-off trailers manufactured after 1995) are recommended, and may be required by law in your state.
- I. When picking up the container, the tractor brakes should, if possible, be released to pull the trailer or truck under the container. On trailers, use flipper brake lever next to hydraulic levers on trailer operating panel.
- J. Trailers equipped with air ride, inflate air bags. Disengage P.T.O. or stop auxiliary engine. Lower air lift axle(s).
- K. Connect hydraulic hoses (if applicable), which serve hydraulically operated doors, packing blade, etc.

2. Unloading Containers

- A. Container and truck or trailer with roll-off frame must unload on a level site for precaution against tipping. Raise airlift axle(s), if so equipped. Back up unit to desired area. Do not jack knife tractor.
- B. Set tractor/truck brakes and leave in neutral. Exit cab and lock the trailer brakes. Enter cab, engage P.T.O. and unlock tractor/truck brakes. Exit cab.

- C. Trailers equipped with air ride suspension, dump air bags. The automatic style safety latch will release when tilt frame is raised.
- D. Raise frame until gravity allows container to roll down rails as you let out cable. Continue to raise frame. The tilt frame, or stinger tail if so equipped, must be touching the ground before the front wheels of the container. On standard dead-lift units, the tail will not touch the ground.
- E. When unloading the container, the tractor brakes should, if possible, be released to push (walk) the trailer/truck away from the container. On trailers, use flipper brake lever next to hydraulic levers on trailer operating panel.
- F. Lock trailer brakes with flipper switch. Unhook cable from container and secure to trailer. Lower tilt frame. Trailers equipped with air ride should air up bags. Retract stinger, if so equipped, or extend ICC bumper to the travel position. Disengage P.T.O. or stop auxiliary engine.

3. Dumping Loads

- A. Container and truck or trailer with roll-off frame must dump on level site for precaution against tipping. Raise airlift axle(s) if so equipped. Back up unit squarely to desired dumping area. **Caution:** Do not jack knife while dumping.
- B. Set tractor/truck brakes, leave in neutral. Engage P.T.O. and exit cab.
- C. Lock trailer brakes on operating panel. If trailer is equipped with air ride suspension, dump air bags. Manually release the locking device. The automatic safety latch will release when tilt frame is raised if so equipped. Retract ICC bumper, if so equipped.
- D. Raise frame until gravity allows container to roll down rails as you pay out cable. *Use extra caution on windy days.* Continue to slide container to the end of tilt frame. If equipped with stinger tail, do not extend stinger for this procedure.
- E. Lower tilt frame to the horizontal position leaving container at the end of the frame. Release ratchet binders, etc. and open and secure door.
- F. Raise tilt frame until load in container is dumped. *If load has not completely dumped, drive truck/tractor slowly and cautiously ahead until load empties.* A stuck load must never be broken loose by backing up and suddenly hitting the brakes or by lowering the upper frame part way then rapidly reversing the valve handle in the up and down position. This results in displacing the area of the largest diameter cylinder. If the load is heavy enough, it may bulge or split the tube at the weakest point, which is in the largest stage/bottom stage. **Caution:** *We do not recommend moving tractor/trailer ahead without driver in cab.*
- G. Lower tilt frame, close and secure container door. Pull container forward to stops. Extend the ICC bumper, if so equipped. Trailers equipped with air ride should air up bags at this time. Disengage P.T.O. or stop auxiliary engine.

4. Intermittent (California) Stops

- A. Longer *conventional* trailers (generally 35' and longer) hauling short, heavy containers may, at times, overload the drive axles of the tractor. BENLEE offers intermittent (California) stops to prevent the container from riding all the way forward. This is not applicable to most drop decks.
- B. California stops may be purchased through BENLEE parts and easily installed on your trailer.

- C. We recommend test scaling a typical loaded container on your trailer. Move the container back from the front stops and check at several locations to determine where individual axle weights are best. Mark the rails.

Note: Trailers manufactured after 1997 are built with intermittent (California) stops that fit over the side rollers.

GENERAL SERVICE INFORMATION

INSPECTION AND MAINTENANCE

Your BENLEE trailer has been prepped at the factory. We ask that you pay close attention to the following items to insure your first experience with your new trailer is safe and positive.

1. Important Checks Before First Operation

- A. Hook up tractor to trailer for proper fifth wheel height and fit. Industry standard height is 48"-50". Unloaded, the trailer should be level, plus or minus 1" end to end. This is required for axles to equalize properly.
- B. Hook up air lines and check brakes.
- C. Hook up electrical and check lights.
- D. ***Be absolutely certain the pressure line of wet kit is hooked to the pressure line of the trailer. Caution: Hooking up hydraulic lines backwards will bulge the cylinder(s).***
- E. Pressurize hydraulic lines and check for leaks.
- F. Check wheel lubrication.
- G. Check proper tire inflation.
- H. *Re-torque all wheel nuts & lugs*

1. Wheel torque values:

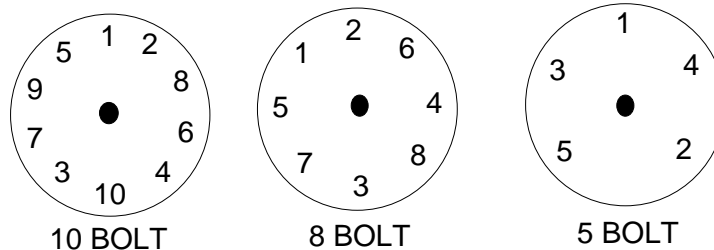
Torque on Dayton nuts 5-spoke wheel:
200-250 Ft. Lbs.

Torque on 10-bolt Bud style ball nut system (stud piloted):
Steel Disc 450-500 Ft. Lbs.
Aluminum Disc 450-500 Ft. Lbs.

Torque on 10-bolt Bud style unimount system (hub piloted):
Steel Disc 450-500 Ft. Lbs.
Aluminum Disc 450-500 Ft. Lbs.

Torque on 8-bolt Motor Wheel style:
Steel Disc 450-500 Ft. Lbs.
Aluminum Disc 450-500 Ft. Lbs.

Tightening Sequence



Note: Trailers that are delivered via transport company and are equipped with air lift axles, have them locked before leaving the factory. You must unlock the axles in order for them to work.

2. Important Checks After the First Week

A. Re-torque all axle u-bolts and all suspension bolts.

1. Standard BENLEE spring suspension torque values:

U-Bolts	360 ft. lbs.
Radius Rods	360 ft. lbs.
Equalizer Nuts	360 ft. lbs.
Radius Rod Clamp Nuts	110 ft. lbs.

B. BENLEE recommends that after one week of operation, the hydraulic system be visually inspected.

1. Check cylinder glands for leakage. If leakage is apparent, the gland nuts may be tightened up to one ½ turn. If the glands continue to weep or leak, contact BENLEE.
2. Check all hoses for leakage and chafing. Adjust lines and tighten fittings as needed.
3. Check all fittings and connections for leakage. Tighten fittings and connections as necessary.

3. Recommended Periodic Maintenance

A. Daily Driver Inspection:

1. Inspect for proper level of oil and water in auxiliary engine, if so equipped.
2. Inspect light equipment for proper operation.
3. Inspect cable for broken strands and flat spots. Replace if defective or worn.
4. Inspect for proper tire inflation.
5. Inspect for possible hydraulic leaks.
6. Inspect hub cap oil level.
7. Inspect trailer control valve for proper function.

B. Weekly Mechanic's Inspection and Maintenance

1. Inspect hydraulic oil tank for proper level.
2. Inspect hydraulic hoses and pipe fittings
3. Inspect cable for broken stands and flat spots. Replace if defective or worn.
1. Grease trailer zerk fittings, including the following points:
 - Rollers
 - Sheaves
 - Rear Hinge
 - Lift Cylinder Lower and Upper Bushing
 - Slack Adjusters
 - Winch (if so equipped)

Grease other areas of trailer, including:

Safety Latch Spring
Slide Plate Bearings (if so equipped)
Slide Plate Track (if so equipped)

C. Monthly Mechanic's Inspection and Maintenance

1. Remove strainer from hydraulic reservoir, clean with solvent and blow out with air.
2. Inspect all air lines. They must be properly secured and not chaffing on anything.

D. Four Month Mechanic's Inspection and Maintenance

1. Inspect pump, P.T.O and valve for loose connections and leakage.
2. Re-torque all axle u-bolts and all suspension bolts.
3. Inspect brakes for wear and proper operation. Readjust if necessary.
4. Inspect seals for oil leaks.
5. Inspect hub caps for leaks.

GENERAL SERVICE INFORMATION

TROUBLE SHOOTING GUIDE

Problem	Possible Cause	Solution
Cylinders fail to operate	Sloppy controls	Adjust control levers; insert new pins
Cylinders fail to operate	Leak in hydraulic line	Tighten or repair fittings or hose
Cylinders fail to operate	Insufficient pressure	Pressure valve in valve assembly may need resetting. Change dirty oil & filter
Cylinders fail to operate	Aerated hydraulic fluid	Check for shaft seal on pump. Tighten pump inlet connections.
Cylinders fail to operate	P.T.O. not engaged	Engage P.T.O.
Cylinders fail to operate	Leakage past piston rings	Repair or replace packing
Cylinders fail to operate	Pump is worn or relief valve is defective	Repair or replace
System operates slow	Foreign object in hydraulic system	Clean and flush entire hydraulic system. (First look in spool valve)
System operates slow	Extremely cold weather	Allow oil to warm up with P.T.O. engaged. Replace recommended viscosity for operating temperature.
System operates slow	Low R.P.M. on tractor	Run at 1600-1900 R.P.M.
Cylinders not staging in sequence or stuck	Cylinder stage(s) have expanded (bulged)	Inspect/clean return line, clean/replace filter. R & R damaged cylinder. See pg. 7 "Dumping Loads", item F.

Problem	Possible Cause	Solution
System stops working in middle or sequence	Low hydraulic oil level	Add hydraulic oil to tank; Tank may be undersized
Two-speed winch not working	Marker lights not on	Turn on before exiting cab
Two-speed winch not working	Broken or damaged electrical cord	Repair or replace as necessary
Two-speed winch not working	Air in pilot line to winch motor	Repair or replace as necessary
Air ride axles will not equalize	Trailer not level	Adjust air ride height in tractor and trailer

GENERAL SERVICE INFORMATION

HYDRAULIC SYSTEM

The hydraulic oil is in constant contact with precision machined surfaces and the oil should be kept as clean as possible to prevent unnecessary wear. Pump failure may create a suspicion of dirt particles in the hydraulic oil. In such instances, the entire hydraulic system must be drained, flushed clean, and any filter screen thoroughly cleaned. New oil should be put into the entire system. The hydraulic oil level should be maintained at approximately 4"-6" from the top of the reservoir when all cylinders are in the collapsed position.

Caution: *Dirty hydraulic oil will lead to expensive repairs!*

The recommended hydraulic oil for use in this system should be equal to the following specifications:

Gravity	31	Pour max. Fahrenheit	35
Flash Fahrenheit min.	360 °	Color max.	2
Viscosity 100 °	21C	SAE	10
Fire Fahrenheit min.	415 °	% Carbon Residue max.	0.05
Viscosity 210 °	48	Neutral #	0.05
V I min.	95	Sulfur	0.02

Oil operating temperatures should not exceed 180 ° F. The oil should have anti-foam and anti-oxidation additives. DO NOT use oils with low viscosity, naphtha base, aircraft hydraulic oil or hydraulic brake fluid. Oil with a low pour point should be used for low temperature operation.

If an auxiliary industrial engine is supplied, refer to the manufacturer's maintenance manual for recommended service information. The hydraulic tank should have clean-out facilities, plus a baffle inside of the tank. The filter should be checked and cleaned whenever possible.

WARNING: Filter is on the suction side of the hydraulic system and can cause severe shortage of oil to the pump is not maintained.

RECOMMENDED HYDRAULIC TANK SIZES FOR BENLEE TRAILERS:

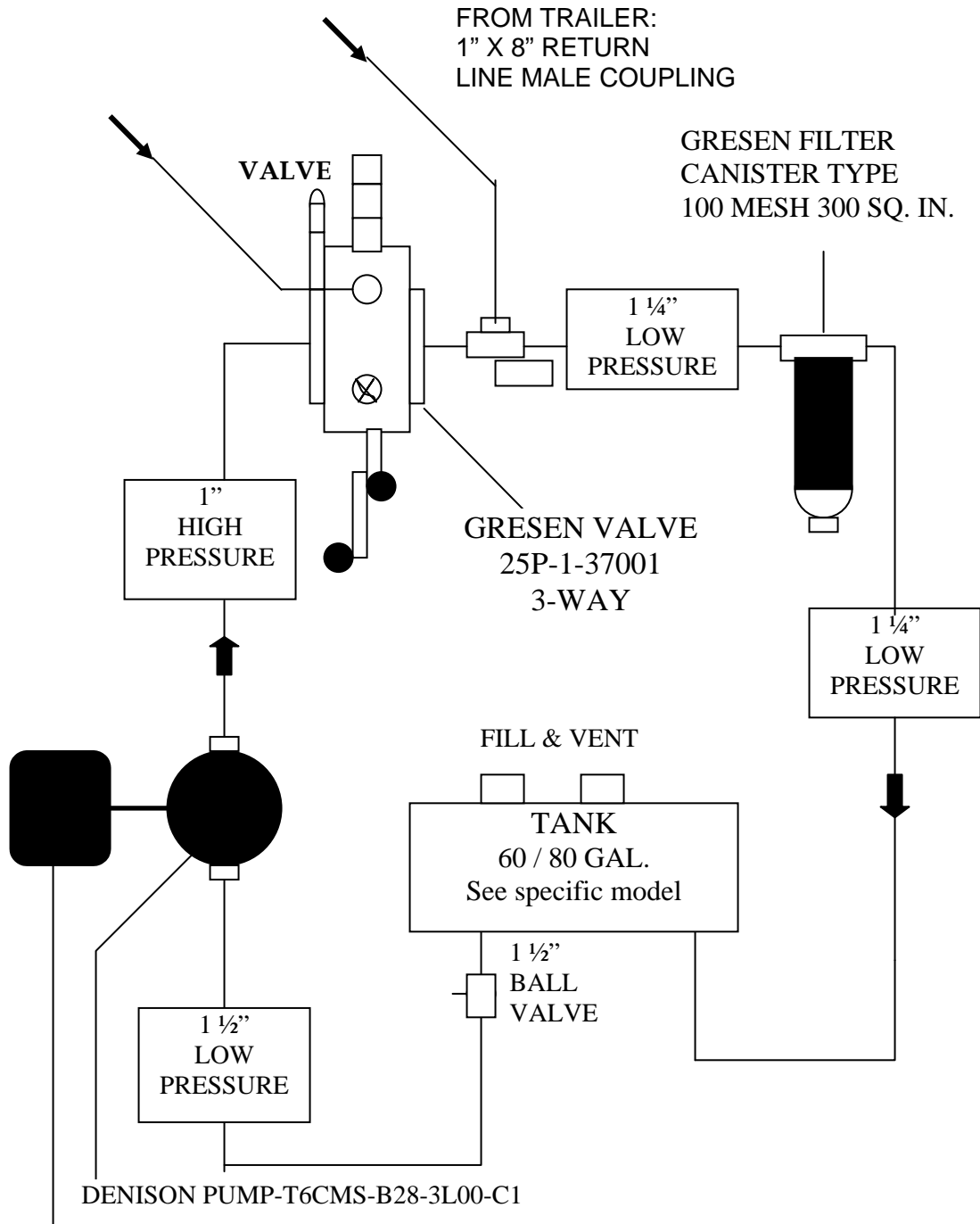
<u>Trailer</u>	<u>Winch/Reeving</u>	<u>Recommended Tank Size</u>
Drop deck	Winch	60 gallons
Drop deck	Double reeving	80 gallons
Drop deck	Single reeving	65 gallons
Conventional	Double reeving	80 gallons*
Conventional	Single reeving	80 gallons
Mini-trailer	Single reeving	50 gallons
Two-box	Winch/reeving	65 gallons

*Michigan 6 or 7 axles may require 100 gallon tanks. Consult manufacturer.

Recommended operating conditions are 2,000 PSI oil operating pressure, 25-30 GPM oil flow rate and 1600-1900 tractor R.P.M. with the P.T.O. engaged. The pressure relief valve on the trailer is factory set at 2,000 PSI. *Do not change this setting without factory approval or you may void your warranty.*

Wet Kit Schematic

Typical wet kit to operate BENLEE roll-off trailer



(CHELSEA PTO) BENLEE RECOMMENDS PTO TO RUN 100% OF ENGINE SPEED

Recommended conditions to operate BENLEE roll-off trailer 25-30 G.P.M. @ 2000 P.S.I.

GENERAL SERVICE INFORMATION

HYDRAULIC WINCH

APPLICABLE ON TWO-BOX MODEL ONLY

1. Type:

Tulsa Model H-75
Grooved Drum
Hydraulic Driven
70,000 Capacity
Tow Speed with Cable Packer #4073

Caution: *When cable is at its furthest extension for picking up containers, a minimum of five (5) wraps of cable should remain on the winch drum. Operator should take care that when winding cable in (loaded or unloaded), that it wraps evenly and tightly. If allowed to bunch up, damage may result to cable and/or cable packer. See winch & stinger combination under "Hydraulic Controls".*

2. Motor:

Charlynn Model 119-2023 (Tulsa #40425)
Two stage
Gerotor Type

3. Service Requirements:

S.A.E. 140 wt. gear lube in gear case
Check for proper operating level every 25 hours or monthly
Grease fittings monthly
Inspect cable daily

4. Two-Speed Button:

The two-speed winch electrical hook up is pre-wired on the trailer. The hook up is to the brown, 7-way wire (marker lights). To make it function, the operator must turn on the trailer marker lights before leaving the cab. Push button on the trailer control panel *while operating in low speed* to activate high speed operation. Under heavy loads, the high speed will automatically kick down to low speed.

GENERAL SERVICE INFORMATION

ORDERING PARTS

1. General Information

We try to provide quality parts at the lowest possible prices. We ask if, for any reason, our service, quality or pricing does not meet your standard, please call and inform Greg Brown at BENLEE. We will appreciate hearing from you. We can also be reached via E-mail at greg.brown@benlee.com or brian.lucas@benlee.com.

Upon ordering parts, part assemblies and accessories, *provide the BENLEE model and serial number of the trailer.* This information can be found on the metal V.I.N. plate. The V.I.N. is near the nose of the trailer located on passenger side of the trailer. You will also find this data on the first page of this manual. To insure safety, maintain quality and to adhere to factory specifications, always order parts through the BENLEE parts department. Please contact Brian Lucas on our toll free number: 800-521-4620, or at parts@benlee.com.

2. Recommended Spare Parts

Normally, most trailer parts can be shipped from BENLEE the same day. However, we are listing general service parts you may want to keep on the shelf. Please call Brian Lucas at BENLEE parts, fax us at: 734-721-8806 or by e-mail at parts@benlee.com.

See BENLEE card in front cover of manual or visit our website at www.benlee.com.

3. Type of Replacement Cables

A. Reeving Four-Part Lines & Winch : (Standard Cable)

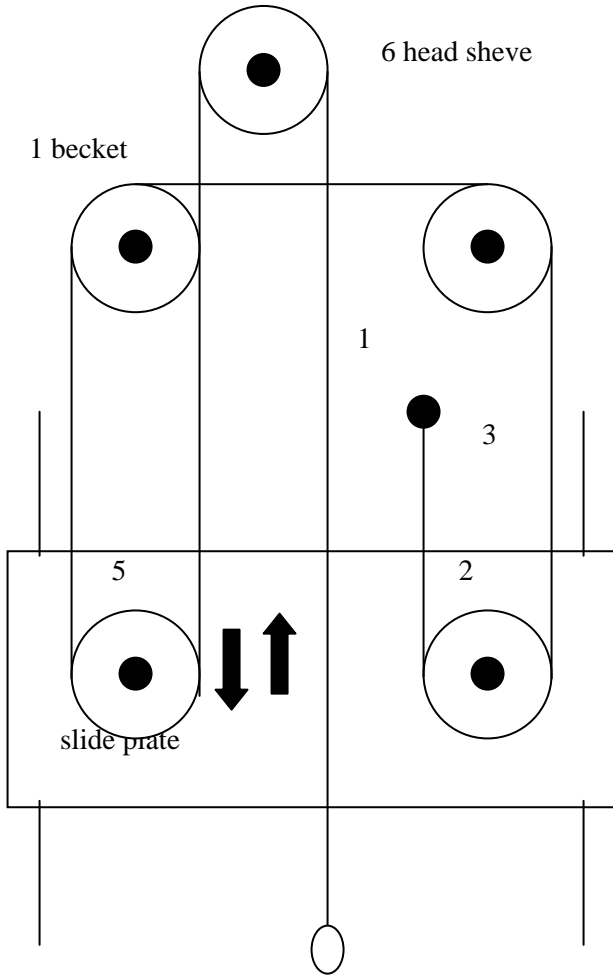
7/8" Diameter
6 x 25
Improved Plow Steel
Right Hand Regular Lay
Wire Rope Pre-formed

B. Reeving Three Part Line: (Special ordered on a few BENLEE trailers Pulls 33% more weight)

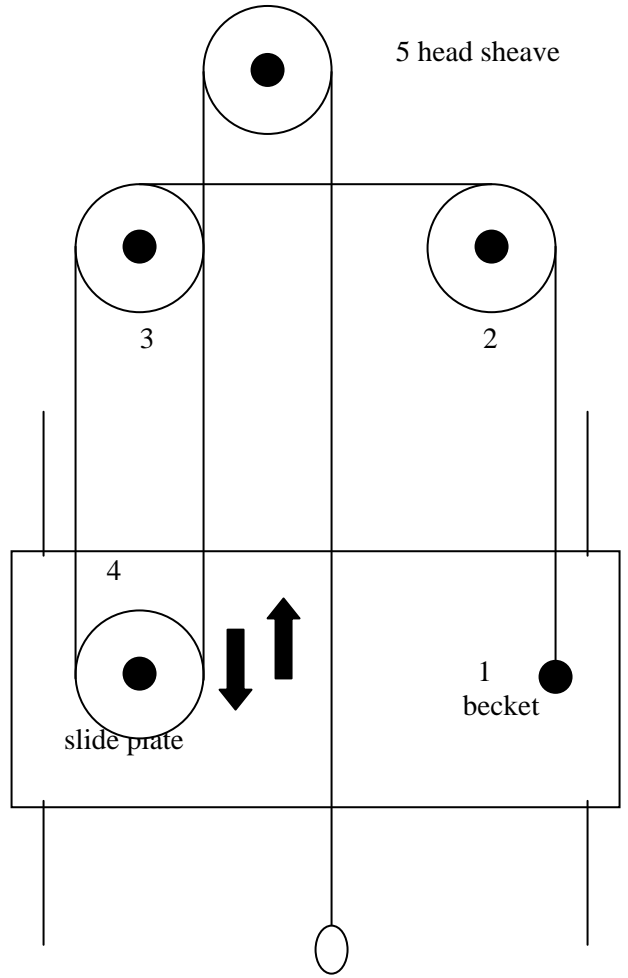
1" Diameter
Flat Wound

Cable Routing Diagram

Four part line



Three part line (dual reeving)



4. Replacement Cables Continued

A. Conventional Trailers Manufactured After 9/94

<u>Length</u>	<u>Model Number</u>	<u>Cable Length</u>
34' Tandem	TA60TC34 Dual reeving, 4-part line	95'
37' Tandem	TA60TC37 Dual reeving, 4-part line	105'
40' Tandem	TA60TC40 Dual reeving, 4-part line	115'
45' Tandem Light Weight	TALWC45 Single reeving, 3-part line	85'
34' Tri-Axle	TRA60TC34 Dual reeving, 4-part line	95'
37' Tri-Axle	TRA60TC37 Dual reeving, 4-part line	105'
40' Tri-Axle	TRA60TC40 Dual reeving, 4-part line	115'
42' Tri-Axle Light Weight	TRALWC42 Single reeving, 3-part line	77'
37' 4-Axle	QUA60TC37 Dual reeving, 4-part line	105'
42' 5-Axle	5A60TC42 Dual reeving, 4-part line	115'
43' 5-Axle (5 to 6)	5A60TC43 Dual reeving, 4-part line	120'
46' 5-Axle (5 with 9' spread)	5A60TC46 Dual reeving, 4-part line	125'
43' 6-Axle	6A60TC43 Dual reeving, 4-part line	120'
47' 6-Axle (6 to 7)	6A60TC47 Dual reeving, 4-part line	125'
47' 7-Axle	7A60TC47 Dual reeving, 4-part line	125'

B. Drop Deck Trailers Manufactured After 9/94

<u>Length/Axle</u>	<u>Model Number</u>	<u>Reeving/Winch</u>	<u>Cable Length</u>
41' Tandem	TA60DD41	Single reeving	77'
41' Tandem	TA60DD41	Winch	65'
41' Tandem	TA60DD41	Dual reeving	110'
43' Tandem	TA60DD43	Single reeving	77'
43' Tandem	TA60DD43	Winch	65'
43' Tandem	TA60DD43	Dual reeving	110'
45' Tandem	TA60DD45 w/Stinger	Single reeving	85'
45' Tandem	TA60DD45 w/Stinger	Winch	70'
45' Tandem	TA60DD45 w/Stinger	Dual reeving	105'
38' Tri-Axle	TRA60DD38 w/Stinger	Single reeving	72'
38' Tri-Axle	TRA60DD38 w/Stinger	Winch	65'
38' Tri-Axle	TRA60DD38 w/Stinger	Dual reeving	105'
42' Tri-Axle	TRA60DD42	Single reeving	77'
42' Tri-Axle	TRA60DD42	Winch	55'
42' Tri-Axle	TRA60DD42	Dual reeving	110'
45' Tri-Axle	TRA60DD45 w/Stinger	Single reeving	85'
45' Tri-Axle	TRA60DD45 w/Stinger	Winch	70'
45' Tri-Axle	TRA60DD45 w/Stinger	Dual reeving	115'
45' Tri-Axle	TRA60DD45 w/o Stinger	Single reeving	85'
45' Tri-Axle	TRA60DD45 w/o Stinger	Winch	70'
45' Tri-Axle	TRA60DD45 w/o Stinger	Dual reeving	115'

C. Mini-Trailers Manufactured After 9/94

<u>Length</u>	<u>Model Number</u>	<u>Cable Length</u>
32' Tandem	TADDM32	75'

D. Two-Box Trailers Manufactured

<u>Length/Axle</u>	<u>Model Number</u>	<u>Quantity</u>	<u>Cable Length</u>
48' Tandem (Fixed tail)	TATBF48	1 Main reeving	60'
(Reeving & 2 winches/3 cables)		2 Front & Rear winches	50'
48' Tandem (Stinger tail)	TATBS48	1 Main reeving	65'
(Reeving & 2 winches/3 cables)		2 Front & Rear winches	50'

(Main winch or dual cylinder reeving use 85')

NOTE:

The tables for replacement cable and cylinders are to be used as a guide. A few BENLEE trailers have been ordered and assembled using special cables, cylinders and other parts that may not be included in these tables. If in doubt, contact Brian with BENLEE parts: 800-521-4620, parts@benlee.com.

5. Replacement Hydraulic Cylinders

A. Conventional Trailers Manufactured After 9/94

<u>Length/Axle</u>	<u>Model Number</u>	<u>Lift Cylinders</u>	<u>Reeving Cylinders</u>
34' Tandem	TA60TC34	3 stage-120	7 x 108
37' Tandem	TA60TC37	4 stage-144	7 x 108
40' Tandem	TA60TC40	4 stage-144	7 x 131
45' Tandem Lt. Wt.	TALWC45	5 stage-220(single)	3 stage 165(single)
34' Tri-Axle	TRA60TC34	3 stage-120	7 x 108
37' Tri-Axle	TRA60TC37	4 stage-144	7 x 108
40' Tri-Axle	TRA60TC40	4 stage-144	7 x 131
42' Tri-Axle	TRALWC42	5 stage-220(single)	3 stage 165(single)
37' 4-Axle	QUA60TC37	4 stage -144	7 x 108
42' 5-Axle	5A60TC42	4 stage-144	7 x 131
43' 5-Axle (5 to 6)	5A60TC43	5 stage-220	7 x 131
46' 5-Axle (with 9' spread)	5A60TC46	5 stage-220	7 x 152
43' 6-Axle	6A60TC43	5 stage-220	7 x 152*
47' 6-Axle (6 to 7)	6A60TC47	5 stage-220	7 x 152*
47' 7-Axle	7A60TC47	5 stage-220	7 x 152*

* In cases where a six or seven axle has a three-part line, a 7 x 165 reeving cylinder was used.

B. Drop Deck Trailers Manufactured After 9/94

<u>Length/Axle</u>	<u>Model Number</u>	<u>Single Lift Cylinders</u>	<u>Reeving Cylinders**</u>
41' Tandem	TA60DD41	5 stage-95-220	Dual 7 x 108
41' Tandem	TA60DD41	5 stage-95-220	Single 3 stage 165
43' Tandem	TA60DD43	5 stage-95-220	Dual 7 x 108
43' Tandem	TA60DD43	5 stage-95-220	Single 3 stage 165
45' Tandem	TA60DD45	5 stage-95-220	Dual 7 x 131
45' Tandem	TA60DD45	5 stage-95-220	Single 3 stage 165
38' Tri-Axle	TRA60DD38	5 stage-38-174	Dual 7 x 108
38' Tri-Axle	TRA60DD38	5 stage-38-174	Single 3 stage 165
42' Tri-Axle	TRA60DD42	5 stage-38-174	Dual 7 x 108
42' Tri-Axle	TRA60DD42	5 stage-38-174	Single 3 stage 165
45' Tri-Axle	TRA60DD45	5 stage-95-220	Dual 7 x 131
45' Tri-Axle	TRA60DD45	5 stage-95-220	5 stage-95-220

** A few drop decks are built with winches. Reeving cylinders are not required.

B. Mini-Trailers Manufactured After 9/94

<u>Length/Axle</u>	<u>Model Number</u>	<u>Lift Cylinders</u>	<u>Reeving Cylinders</u>
32' Tandem	TADDM32	5 stage 168	70 x 108

C. Two-Box Trailers Manufactured after 9/94

<u>Length/Axle</u>	<u>Model Number</u>	<u>Lift Cylinders</u>	<u>Reeving Cylinders***</u>
48' Tandem (fixed tail)	TATBF48	5 stage 168	3 stage 120
48' Tandem (stinger tail)	TATBS48	5 stage 168	3 stage 120

*** A few two-box trailers are built with winches. Reeving cylinders are not required.

NOTE:

The tables for replacement cable and cylinders are to be used as a guide. A few BENLEE trailers have been ordered and assembled using special cables, cylinders and other parts that may not be included in these tables. If in doubt, check with Brian at BENLEE parts: 800-521-4620, or parts@benlee.com.

BENLEE STANDARD TERMS OF SALE

Trailers & Parts

1. Acceptance

All orders are subject to acceptance by BENLEE, INC. in Romulus, Michigan, and shall not be considered binding unless confirmed or acknowledged in writing. Orders for special or non-catalog items accepted by BENLEE, INC. are not subject to cancellation. All purchase orders must be in writing. BENLEE, INC. will accept verbal purchase orders, but must have a written confirmation. If written confirmation is not received within seven (7) days of the verbal purchase order, the order will be canceled.

6. Confirmation of Order

Confirmation from BENLEE, INC. will reflect either the requested shipment date or the projected shipment date, whichever is later. Any specification change to an existing order must be made no later than thirty (30) days prior to the projected delivery date. On change orders made within thirty (30) days of the scheduled shipment, Benlee, Inc. reserves the right to either reschedule shipment, or assess a monetary penalty to leave the order as scheduled.

7. Prices

All prices and shipments are F.O.B. Romulus, Michigan.

8. Taxes

Prices do not include City, County or State Taxes. Applicable Sales Tax and Federal Excise Tax (FET) shall be paid by the buyer unless a proper exemption certificate is furnished with the order.

9. Routing

All shipments are F.O.B. the factory of manufacturer unless specifically indicated otherwise. Routing instructions detailed in the order will be followed whenever practical, otherwise routing is our choice. BENLEE, INC. cannot guarantee freight charges in advance of shipment. Freight charges at time of shipment will prevail.

10. Shipping Dates

Shipping dates are estimated contingent upon receipt of a formal purchase order with complete instructions and credit approval. BENLEE, INC. assumes no responsibility or liability for delays in shipment. All purchase orders should reflect a requested delivery date. When an order is built and ready for shipment, based either on requested delivery date or the ability of BENLEE, INC. to fill the order, whichever is later, BENLEE, INC. will contact the customer to arrange for receipt of shipment. If the customer refuses to accept the shipment, BENLEE, INC. reserves the right to cancel the order and return the purchase order to the customer. On any non-standard orders, BENLEE, INC. reserves the right to assess monetary penalties on the customer. If, at a later date, the customer wishes to re-submit the order, current pricing will prevail.

11. Claims

Claims for merchandise lost or damaged during transit must be made against the carrier by the consignee. Claims for shortages will not be considered unless they are submitted in writing within ten (10) days after receipt of the merchandise. Such claims should be submitted to:

BENLEE, INC.
30383 Ecorse Road
Romulus, MI 48174

12. Returns

Written permission must be obtained from BENLEE, INC. before merchandise may be returned for credit. All transportation charges for returned merchandise must be prepaid by the shipper. Returned sellable merchandise accepted by BENLEE, INC. for credit is subject to a 30% restocking charge.

13. Terms

Invoice is considered delinquent if not paid within terms.

14. Warranty

All BENLEE equipment is guaranteed in accordance with its standard warranty. **All warranty work and claims must be authorized by BENLEE, INC.** Call and ask for Brian Lucas or Greg Brown.

All pricing and specifications are subject to change without prior notice. The right is reserved by the Company to substitute material and modify specifications without prior notification.

BENLEE, INC.

"WARRANTY"

BENLEE, INC. warrants each new Roll-off Truck and/or Trailer to be free from defects in material and workmanship, under normal use and service, to the original purchaser only, for a period of three (3) months, subject to conditions outlined below. Our obligation under this warranty is limited to repair, or replacement (with similar genuine part) of any part of the product that we manufactured which is returned to us within thirty (30) days after discovery of the defect, properly identified with transportation charges prepaid, and not more than three (3) months after purchase by the original user, provided that, in our judgment, the part is defective.

BENLEE, INC. will furnish without charge, F.O.B. our plant, a similar genuine part to replace any part of a product of our manufacture, which proves to be defective in normal use and service during this period.

The manufacturer's warranty or obligation in connection with the sale of this equipment:

Shall be expressly limited to repair or replacement of defective parts, as stated above, and covers only those labor charges specifically authorized by the manufacturer. All other damages and claims, statutory or otherwise, being hereby expressly waived by the purchaser.

BENLEE will warrant each new piece of equipment manufactured by us to be free from defects in material and/or workmanship under normal use and service and with loads not exceeding the trailers rated capacity. The frames shall carry a three (3) year warranty.

Does not cover products of other manufacturer beyond such warranty as is made by such manufacturer.

No claim under this warranty shall be valid unless such claim is submitted within three (3) months after date of sale or within fifteen (15) days after the discovery of the defect, which is the basis for such claim; whichever event shall occur first.

BENLEE, INC. does not assume liability for loss of product, time or any other consequential damages.

***FACTORY AUTHORIZATION MUST BE
OBTAINED BEFORE MAKING WARRANTY
REPAIRS OR REPLACEMENTS***