

\$35.00

**SRS
SIDE RECOVERY
SYSTEM
(CARRIER)**

**OPERATIONS AND MAINTENANCE
MANUAL**

JERR-DAN[®]

An Oshkosh Truck Corporation Company

1080 Hykes Road
Greencastle, PA 17225
Phone (717) 597-7111
www.jerr-dan.com

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FOREWORD

This manual is intended to serve as a guide to the owner and operator in the safe operation and optimum performance of your Jerr-Dan equipment.

Establishment of good operating habits and familiarity with your equipment and its capabilities combined with good judgement are essential.

Before attempting to operate the unit carefully read all sections of this manual.

This manual should be kept with your equipment at all times and referred to whenever in doubt of proper operation.

Information contained in this manual reflects how your vehicle was built at the factory. Modifications or additions by the distributor or owner are not reflected in this manual.

This manual does not include operation and maintenance information for the commercial chassis (International, Ford, GM, etc.). This information is provided by the chassis manufacturer.

When inquiring about operation, maintenance or warranty, please have ready your equipment's Sales Order Number, Serial Number and Model Number. This information can be found on the aluminum tag riveted to the rear of the Side Recovery System frame.



MANUFACTURED BY JERR-DAN <small>CORPORATION</small>			
SERIAL NO.	_____	MODEL NO.	_____
STRUCTURAL CAPACITY:	_____	LBS.	IDENT. NO.
WINCH RATING:	_____	LBS.	WIRE ROPE WORKING LIMIT: _____
DO NOT EXCEED THE ABOVE STRUCTURAL RATINGS AND CAPACITIES. SAFETY IS NO ACCIDENT. FOLLOW ALL INSTRUCTIONS ON CONTROLS AND UNIT. PATENT PENDING			
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Jerr-Dan Corporation strives to provide information that is accurate, complete and useful. All information contained in this manual is as accurate as known at the time of publication and is subject to change, without notice, as a result of continuous product improvements. Jerr-Dan reserves the right to amend the information in this document at any time without prior notice.

Should you find inadequacies in the text, please send your comments to the following address:

Jerr-Dan Corporation
Attn: Technical Publications
1080 Hykes Road
Greencastle, PA 17225

or by e-mail at technicalpublications@jerr-dan.com.

Always keep this manual in your vehicle so the operator can study it as needed before a recovery. Remember to replace the manual if lost.

Additional or replacement manuals or replacement safety warning labels can be ordered by calling Jerr-Dan Parts at 717-597-7111. Price and availability will be quoted at time of the request.

The material in this document is the property of Jerr-Dan Corporation. No part of this document may be photocopied, reproduced or translated to another language without the express written consent of Jerr-Dan Corporation.

Patents Pending.

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WARRANTY

JERR-DAN

An Oshkosh Truck Corporation Company

1080 Hykes Road Greencastle, PA 17225
(717) 597-7111

LIMITED WARRANTY

Manufacturer's Warranty. Manufacturer's sole warranty shall be the following, which Distributor shall make on behalf of Manufacturer by conspicuous notice in writing accompanying each contract or memorandum of sale:

1. Warranty. Jerr-Dan Corporation, ("Manufacturer") warrants each new product made by it to be free from defects in material or workmanship for one year from the date of initial sale, lease, rental, or other disposition of such product, and agrees only to repair or replace at its own expense, f.o.b. the place or places of manufacture, at manufacturer's option, any part or parts of the product found to be defective in material or workmanship, provided Manufacturer is notified of such defect or defects within the one year warranty period and given a reasonable time to correct the defect. In no case, shall the warranty extend to defects in materials, components, or services furnished by third parties. Defects caused by chemical action, or the presence of abrasive materials and defects arising following the operation beyond rated capacity or the improper use or application of any Products shall not be considered defects within the scope of the foregoing warranty. If any repairs or alterations are made or any parts are replaced during the period covered by any warranty above mentioned by other than an authorized Manufacturer's Distributor in accordance with authorized Manufacturer's service manuals or with other than parts, accessories, or attachments authorized by Manufacturer for use in its products, customer shall pay for all such repairs or parts without recourse against Manufacturer, and Manufacturer shall be relieved of responsibility for fulfillment of this warranty with respect to parts or components of all repairs, alterations or replacements so made. No claims for labor shall be considered unless authorized by Manufacturer.

2. Disclaimer as to Consequential or Special Damages. Under no circumstances shall Manufacturer be liable for any consequential or special damage which any person, firm, corporation, or other entity may suffer or claim to suffer or incur or claim to incur as a result of any defect in the product or in any correction or alteration thereof made or furnished by Manufacturer or others. "Consequential" or "special damages" as used herein includes but is not limited to costs of transportation, lost sales, lost orders, lost profits, lost income, increased overhead, labor and material costs and cost of manufacturing variances and operational inefficiencies.

3. Maximum Liability. The maximum liability of Manufacturer under the exclusive warranty set forth herein shall be the amount paid to Manufacturer by the vendor of the component with respect to the product to which such vendor warranty applies.

4. Limitation of Liability. The limitation of liability provisions herein shall apply to any and all claims or suits brought against Manufacturer, including any claim based upon negligence, breach of contract, breach of warranty, strict liability or any other theories upon which liability may be asserted against Manufacturer.

5. Exclusive and Entire Warranty. The warranty constitutes Manufacturer's entire warranty as to the product and it is expressly agreed that the remedies of dealer and those claiming under dealer as stated in this warranty are exclusive. Manufacturer does not assume (and has not authorized any other person to assume on its behalf) any other warranty or liability in connection with any product covered by this warranty.

MANUFACTURER EXPRESSLY DISCLAIMS ANY AND ALL OTHER WARRANTIES OF ANY KIND WHATSOEVER AS TO THE PRODUCT FURNISHED HEREUNDER, INCLUDING BUT NOT LIMITED TO EXPRESS OR IMPLIED WARRANTIES AS TO MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSES SOLD, DESCRIPTION OR QUALITY OF THE PRODUCT FURNISHED HEREUNDER.

6. Notice of Occurrence. This warranty shall be void if, upon the occurrence of any incident involving any product made by Manufacturer, and resulting in any personal injury or property damage, customer shall fail to notify Manufacturer within 24 hours of such occurrence or permit Manufacturer audit representatives to have immediate access to such product and to all records of and within the control of the customer and/or distributor relating to the product and the occurrence.

7. Filing of Warranty Claim. Upon notifying the Manufacturer of a failure, the Manufacturer or its representative will verbally authorize and confirm by letter the repairs to be made. Verbal authorization will require the following information:

- A) Owner's name and telephone number.
- B) The dealer's name from whom it was purchased.
- C) The Manufacturer's unit serial number.
- D) Telephone number of the party making the repairs.
- E) The part numbers needed to make repairs.
- F) Owner to be informed of C.O.D. on parts, 50% to assure return of defective parts.

At this time, the Manufacturer will ship as soon as practical the parts needed to make the repair. Included with the parts will be the invoice for the parts and a Request for Warranty form, with the Warranty Return Tags.

The vehicle owner/dealer will complete the Request for Warranty form and the Warranty Return Tag marked "Return with Shipping Notice". Both documents should be attached to the shipping notice and returned to the Manufacturer by mail. The parts to be returned shall be tagged with the Warranty Return Tag (more than one part pertaining to the same warranty claim shall be identified with the same warranty claim number - see number on Warranty Return Tag). All parts under this claim shall be returned to the Manufacturer prepaid for warranty evaluation.

Upon receiving the part or parts for warranty evaluation, the part will be inspected and tested. After being inspected and tested, the decision to honor or deny warranty claim shall be based on analysis of all available information.

When warranty is honored, the Manufacturer will reimburse the owner/dealer in the amount agreed to by both parties.

If warranty is denied, the owner and distributor will be notified in writing of the decision and a full explanation for the decision will be given.

8. Manufacturer may at any time amend the foregoing form of warranty without prior notice.

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LIMITED WARRANTY Coverage and Procedures

Like our wheel lift and car carrier products, Jerr-Dan warranty programs are designed for the long haul.

Whether you own a wheel lift or car carrier, you are assured that your equipment is of the highest quality, and is covered under this limited warranty.*

Our one-year unlimited mileage plan is offered for wheel lifts and car carriers. This warranty is designed for the most comprehensive protection of your specific equipment.

WHEEL LIFT:

The Jerr-Dan one-year warranty covers material and workmanship including the following:

- I. Body
- II. Substructure
- III. Wheel lift assembly
- IV. Wrecker boom assembly
- V. Winch and winch components (excluding cable)
- VI. Hydraulics
- VII. Electrical wiring assembly

CAR CARRIERS:

The Jerr-Dan one-year warranty covers material and workmanship including the following:

- I. Deck
- II. Winch and winch components (excluding cable)
- III. Substructure
- IV. Hydraulics
- V. Electrical wiring assembly

Procedures for warranty coverage:

1. Contact your selling distributor.
2. If necessary, contact Jerr-Dan for the distributor nearest you - Call 1-800-926-9666.
3. If necessary, Jerr-Dan may authorize repair by a qualified equipment service center. Under these arrangements, it will be necessary to obtain an estimate of repairs before any work is performed. Send estimate of repair cost to:

Jerr-Dan Corporation
Warranty Department
1080 Hykes Road
Greencastle, PA 17225

Be sure to include your daytime phone number.

4. Authorization for repairs under this limited warranty will be provided by telephone within 24 hours of receipt of valid warranty claims and confirmed by letter or fax.
- *5. This outlines the Jerr-Dan One-Year Warranty Plan. Coverage does not include damages caused by excessive abuse or consequential damages resulting from the lack of proper service, maintenance or need for repairs. All plans begin at original retail purchase date.

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SAFETY

The safe operation of your Jerr-Dan Carrier is your responsibility. Read this manual and the truck manufacturer's manual and thoroughly understand them. You can be held legally responsible for injuries or damage resulting from unsafe operating practices.

Our recommendations for operating your equipment can help you avoid unsafe practices and their bad consequences. These recommendations are contained in this manual.

Jerr-Dan Corporation is not responsible for the results of any unsafe practice of tow operators or for the failure of your equipment or its accessories resulting from improper use or maintenance.

The danger from a vehicle continues after it is disabled or wrecked. Recovering or towing vehicles can be dangerous too! The danger threatens tow operators and everyone else close by. As a tow operator you must develop an awareness of the hazards involved. You must use every safeguard within reason to prevent injuries.

Careful consideration of the immediate surrounding conditions such as the weather, terrain, type or condition of the vehicle to be recovered and the condition and experience of the operator is foremost to the safety and success of the operation.

Tie-down straps are provided for use with your new Jerr-Dan Recovery Vehicle. Periodically inspect all straps for any signs of fatigue or damage. Don't overlook the hooks; be sure they have not been bent or deformed. If strap or hook damage is noted, they must be replaced before being used.

Wire rope cables wear out or can become damaged. Periodically inspect the wire rope cable for any signs of fatigue or damage. Don't overlook the hooks; be sure they have not been bent or deformed. **Refer to the Wire Rope Handling and Inspection Section.**

For each step in operating your equipment develop the habit of asking yourself "is it safe to proceed?" Carefully check your set up before starting a lift or tow.

Because recoveries can be so different, we cannot warn you of all the possible dangers you will encounter, but we will tell you of the most common hazards that we know about. We also recommend that you receive specialized and

advanced training from a professional Towing and Recovery instructor before operating any recovery equipment.

To alert personnel to hazardous operating practices, safety messages are used throughout the manual. Each safety message contains a safety alert symbol and a signal word to identify the hazard's degree of seriousness.



CAUTION:

Identifies when a potentially hazardous situation exists and may result in a minor or moderate injury or property damage.



WARNING:

Identifies when a potentially hazardous situation exists and could result in death or serious injury.



DANGER:

Identifies when an imminently hazardous situation exists and can result in death or serious injury.

DO NOT EXCEED THE FOLLOWING RATINGS:

SRS-8

MAXIMUM STRUCTURAL RATING: 10,000 lbs

WINCH RATING: (Ramsey Planetary Gear)¹

Each Drum (Single Speed, Variable Control) 8,000 lbs

WIRE ROPE: (8,000 lb Winch)

Working Limit Each Line 4,314 lbs

Nominal Breaking Strength 15,100 lbs

Construction 6 x 25 EIPS RRL IWRC

Diameter 3/8 inch

Standard Length 100 Feet

SRS-10

MAXIMUM STRUCTURAL RATING: 10,000 lbs

WINCH RATING: (Ramsey Planetary Gear)¹

Each Drum (Single Speed, Variable Control) 10,000 lbs

WIRE ROPE: (10,000 lb Winch)

Working Limit Each Line 5,828 lbs

Nominal Breaking Strength 20,400 lbs

Construction 6 x 25 EIPS RRL IWRC

Diameter 7/16 inch

Standard Length 75 Feet

¹ SAE J706: Surface Vehicle Recommended Practices - Rating of Winches

NOTE

These ratings apply to the structural design of the Standard Duty Carrier only and may be limited by the axle rating and gross vehicle weight rating of the truck chassis.

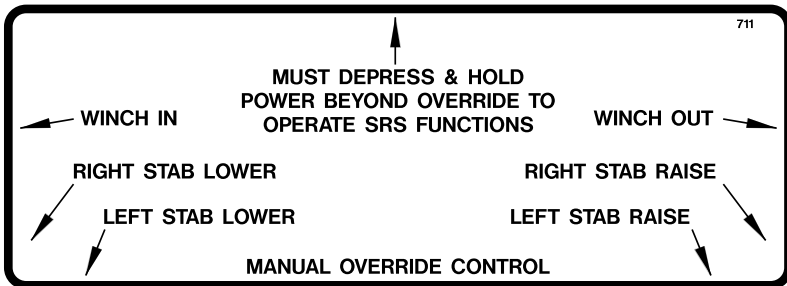
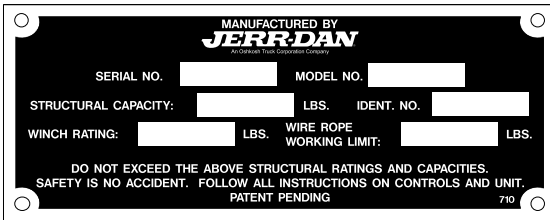
Staying within these ratings is necessary to maintain the safety and performance of the towing vehicle.

OBSERVE THE FOLLOWING SAFETY POINTS

- Don't use a recovery vehicle that has not been properly maintained. Pay special attention to the mounting bolts, and lubrication of moving parts.
- Read operating and pulling instructions thoroughly.
- NEVER lower the hydraulic stabilizers unless the area under them is clear. Pay particular attention to keeping this area clear.
- Don't operate the engine faster than recommended. Excessive speeds can damage PTO, hydraulic pumps, and winches.
- Don't move the recovery vehicle while hydraulic stabilizers are extended. Damage is very likely to occur.
- Don't travel with the PTO engaged. Damage to the recovery vehicle's transmission and hydraulic components will occur. Engage it only while operating the controls.
- Observe all CAUTION, WARNING, and DANGER decals.
- Make sure you are clear of oncoming traffic.
- Stay clear of equipment to avoid pinching injury.
- NEVER exceed the rated capacity of the body or truck chassis and it's components.
- NEVER permit bystanders in the area while performing a pull. Keep them clear of the danger zone.
- Make sure all brakes and locks are properly set on the recovery vehicle.
- Vehicle must be located on a firm surface that will provide support for the stabilizer loading. Use caution when setting up near overhanging banks or excavations.
- NEVER make a pull or movement while anyone is close to the vehicle to be moved.
- Don't exceed the ratings. Stay within nameplate ratings.
- Maintain winch cable/wire rope in good condition. Replace when worn, kinked or frayed. Do not use cable clamps.
- Know the loads being moved. **DO NOT OVERLOAD!**
- KEEP ALERT! Do not be distracted during any operating sequences.
- Stay clear of equipment to avoid crushing injury.
- Always lower the stabilizers before pulling a load to stabilize the truck.
- NEVER allow riders in the vehicle during pulling.
- Block up the deck before performing any service or maintenance work under the deck.
- DO NOT walk or climb on the deck surface.

DECALS

As an extra safety precaution, your unit has specific decals affixed to prominent locations. These decals describe hazards and what happens if you are careless. These decals must not be obliterated, removed or painted over. They are there to remind and protect the operator. (Not all decals are used on all units) If a decal becomes lost or unreadable, it should be replaced. Replacements are available through the Service Parts Department.



WARNING

WINCH CABLE FAILURE MAY CAUSE INJURY OR DEATH. STAY CLEAR OF CABLE AND LOAD WHEN OPERATING.

BOTH FRONT AND REAR TIE DOWNS MUST BE USED TO SECURE VEHICLE/LOAD TO DECK. DO NOT RELY ON THE WINCH AS THE ONLY MEANS OF HOLDING THE LOAD.

CLUTCH MUST BE TOTALLY ENGAGED BEFORE STARTING THE WINCHING OPERATION.

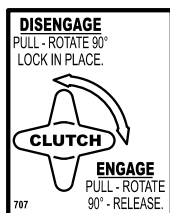
DO NOT DISENGAGE CLUTCH UNDER LOAD.

DO NOT USE WINCH TO LIFT, SUPPORT OR OTHERWISE TRANSPORT PEOPLE.

A MINIMUM OF 5 WRAPS OF CABLE AROUND THE WINCH DRUM IS NECESSARY TO HOLD THE LOAD. CABLE SETSCREW IS NOT DESIGNED TO HOLD LOAD.

DO NOT EXCEED MAXIMUM LINE PULL RATINGS PUBLISHED IN EQUIPMENT OPERATOR'S MANUAL AND/OR WINCH OPERATOR'S MANUAL.

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WARNING

SRS OPERATIONS

- * HEED ALL WARNINGS ON EQUIPMENT.
- * STAND CLEAR OF STABILIZERS WHEN EXTENDING TO WORKING POSITION.
- * BOTH STABILIZERS MUST BE IN FULL CONTACT WITH THE GROUND BEFORE STARTING ANY RECOVERY WORK.
- * PIVOTING RECOVERY BOOM MUST BE PINNED IN WORKING POSITION BEFORE STARTING ANY RECOVERY WORK.
- * STAND CLEAR OF WIRE ROPE WHEN WINCHING.
- * DO NOT EXCEED PUBLISHED WIRE ROPE WORKING LIMIT.
- * ALL STABILIZERS MUST BE STOWED AFTER RECOVERY WORK IS COMPLETE.

FRAME MOUNTING BOLTS
MUST BE TORQUED TO
135 FT-LBS
RE-TORQUE AS REQUIRED
EVERY 90 DAYS

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OPERATION

OPERATION

The safe operation of your Jerr-Dan carrier is your responsibility. You can be held legally responsible for any injuries or damage caused by the unsafe operation of your equipment. We at Jerr-Dan hope that you always operate your towing and recovery equipment in a safe and professional manner, and if you chose to follow our tested and proven procedure you simply won't have the problems other operators have. Remember you alone as a towing and recovery operator are always responsible for your actions.

Always know the weight distribution of your load and ensure you are within your truck's Gross Axle Weight Rating (GAWR), Gross Vehicle Weight Rating (GVWR) and Gross Combination Weight Rating (GCWR) as well as any federal or state roading regulation. In addition, be aware of your truck's overall loaded height to be sure that you are under the federal bridge law height of 13 feet 6 inches.

All of the hydraulic functions of the SRS are conveniently operated by a hand held wireless remote controller .

The following controls are provided:



1. Power (Green) - ON
2. Power (Red) - OFF
3. Indicator Light
4. Winch Controls
5. Stabilizer Up Controls
6. Stabilizer Down Controls

In the event of a remote hand controller malfunction, the SRS hydraulic functions can be operated using the valve manual override buttons. Refer to the decal located on the valve bank cover plate.



Follow these simple steps:

1. Turn on the safety and work lights. (Switches are located on the switch panel in the dash.)



2. Position the carrier on firm ground as close as possible to the vehicle you intend to pull.



3. Place the carrier's transmission gear selector into neutral or park and set the parking brakes.



4. Engage the power take-off (PTO). Refer to PTO operator's manual. **NEVER TRAVEL WITH THE POWER TAKE-OFF CONTROL ENGAGED.** This could result in damage to the PTO unit and the recovery vehicle's transmission.

-
- Adjust the electronic or manual throttle control to elevate the engine speed to approximately 1000-1200 R.P.M. of P.T.O. output shaft speed for optimum performance. Refer to chassis operator's manual for proper operation of the auxiliary throttle. If your chassis is equipped with the remote throttle up option from the chassis manufacturer there is no need to set the throttle up control in the cab because the throttle will automatically increase when any of the carrier hydraulic functions are operated.



CAUTION:

NEVER exceed 1400 R.P.M. When your hook up is complete, reset the engine idle to normal.



- Block the carrier's rear tires with wheel chocks to prevent accidental carrier movement. Check the area around the carrier and the vehicle to be pulled for obstructions or hazards.



- The recovery boom can pivot easily from the left side to the right side or right side to the left side of the vehicle. To pivot the recovery boom, remove the retaining pin.



- Pivot the recovery boom to the other side of the recovery vehicle.



CAUTION:

DO NOT walk or climb on the deck surface.



- Reinstall the retaining pin.



CAUTION:

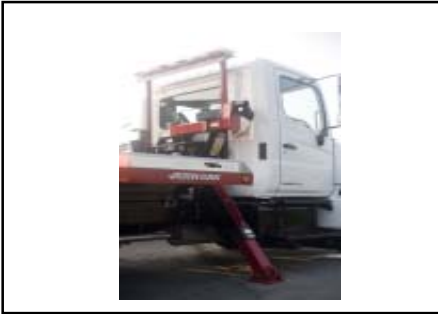
Pivoting recovery boom must be pinned in working position before starting recovery work.



- Depress and release the green button on the hand controller to turn on the hand controller power.



- Next, depress and hold the lower stabilizer buttons on the hand controller to lower the stabilizers to the ground to support the load.



12. The left and right stabilizers operate independently of each other. The stabilizers only need to touch the ground to support the load. **Do not attempt to use the stabilizers to level or raise the truck.**

 **CAUTION:**

Stand clear of the outrigger/stabilizers to avoid crushing injury. Area should be clear of feet when lowering the stabilizers. Also, never move the recovery vehicle with the stabilizers on the ground or damage to the stabilizers can occur.



13. If you are on gravel or a soft surface the integral spades can be lowered to give you more gripping power.



14. To lower the integral, raise the spade foot slightly off the ground.
15. Pull the hair pin from the spade retaining pin.



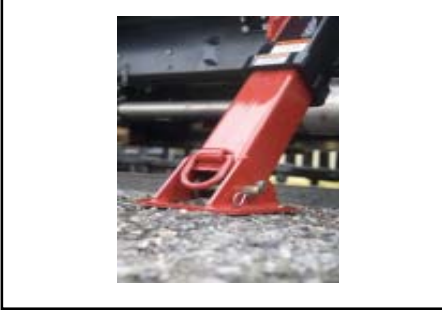
16. Remove the spade retaining pin allowing the integral spade to drop down.



17. Re-insert the spade retaining pin.



18. Secure the spade retaining pin with the hair pin.



19. Lower the stabilizer to the ground.

 **CAUTION:**

Do not use spades on pavement or concrete. Damage to the pavement or concrete may occur.



20. Next, unreel enough of the wire rope/cable from the winch to make your hookup. This can be done by depressing and holding the winch control button on the hand controller and unreeling the wire rope/cable from the winch while keeping the wire rope/cable taut. You can also use the remote winch free spool device. This allows for rapid unspooling of the wire rope/cable from the winch. **(See winch operation)**

 **WARNING:**

Maintain a minimum of five (5) wraps of wire rope/cable on the winch drum at all times. Also maintain a uniform wrap of wire rope/cable on the drum.



21. Attach the wire rope/cable to the vehicle to be pulled. Always use V-straps or hook-up chains to attach the wire rope/cable to the vehicle. **Refer to the AAA or vehicle manufacturer's towing manual for correct attachment points.** A snatch block may be used if required to pull from a lower angle. **(See snatch block operation)**

 **CAUTION:**

Do not connect the wire rope/cable hook directly to vehicle. Do not hook the wire rope/cable back onto itself, damage to the wire rope/cable will occur. Always use V-straps or hook-up chains.

 **CAUTION:**

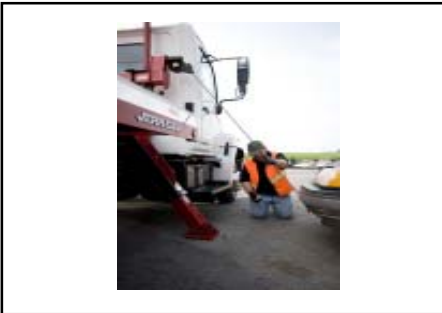
Always attach the wire rope/cable with the hook pointing up.



NOTE:

If the vehicle is parked on an incline, it may be necessary to leave the parking brake partially engaged to prevent it from rolling on its own.

22. Depress and hold and the winch control button on the hand controller and begin winching the load.
23. Continue winching until the load is recovered and in a position where it can be disconnected from the winch wire rope/cable.



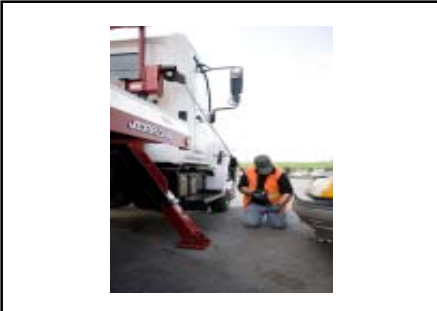


CAUTION:

Remain clear of the load while winching. Never walk between the winch and its load when the winch and wire rope/cable is under tension.



24. Secure the recovered vehicle to prevent it from rolling. Place wheel chock against the tires.



25. Using the remote controller unwind some of the wire rope/cable to relieve the tension on the wire rope.



26. Unhook the wire rope/cable from the recovered vehicle.



27. Reel in any extra wire rope/cable and secure.



28. Retract the stabilizers.



29. Remove the wheel chocks from the carrier's rear tires.



30. Disconnect the power take-off (PTO). Refer to PTO operator's manual. **NEVER TRAVEL WITH THE POWER TAKE-OFF CONTROL ENGAGED.** This could result in damage to the PTO unit and the recovery vehicle's transmission.

WINCH OPERATION - MANUAL REMOTE FREE-SPOOL

Follow these simple steps to disengage the winch:



1. To disengage the winch “free-spool”, pull out on the “T” handle and turn the handle 90°. The handle should remain in the “free-spool” position **Never pull the free spool knob while the wire rope/cable is under load.**



2. Visually verify that the free spool knob is locked in the free spool position. The winch clutch is now locked out and the wire rope/cable may be pulled off by hand.



WARNING:

Maintain a minimum of five (5) wraps of wire rope/cable on the winch drum at all times. Also maintain a uniform wrap of wire rope/cable on the drum.



WARNING:

Always wear gloves when handling wire rope/cable.

Follow these simple steps to re-engage the winch:



1. To re-engage the winch clutch simply pull out on the “T” handle and turn the handle 90° back to the original position. The free spool handle should spring back into the engaged position. Run the winch in reverse until the free spool snaps fully in position or until the winch drum starts turning.
2. Visually verify that the free spool knob is locked in the engaged position. After the winch clutch is fully engaged, the winch is ready for winching.



CAUTION:

Do not attempt to pull a load unless the winch free spool is completely engaged.

SNATCH BLOCK OPERATION

A snatch block is provided as standard equipment with your Side Recovery System. The snatch block can be used to change the angle and/or direction of the pull. The snatch block can easily be attached to the "D" Ring on the bottom of the stabilizer or to one of the holes in the tie back plate on the stabilizer outer frame structure.

Follow these simple steps to use the snatch block:



1. Remove the screw pin from the shackle.



2. Align the hole in the shackle with a hole in the tie back plate or over the "D" Ring.





3. Reinstall the shackle screw pin.



4. Remove the sheave side plate screw pin cotter pin.



5. Remove the sheave side plate screw pin.



6. Rotate the side plate and open up the snatch block to gain access to the wire rope/cable sheave.



7. Attach the snatch block over the shackle.



8. Place the wire rope/cable across the sheave.



WARNING:

Always wear gloves when handling wire rope/cable.



9. Rotate the side plate back to the original position to close up the snatch block.



10. Reinstall the sheave plate screw pin and cotter.



10. The snatch block is ready to be used for pulling.

MAINTENANCE

MAINTENANCE AND LUBRICATION

Your Jerr-Dan equipment has been designed to give you excellent service and long life but like all equipment, it requires proper and periodic maintenance. The truck chassis itself is on a maintenance schedule recommended by the manufacturer. Follow these guidelines and protect your vehicle warranty. There are a number of different lubricants used on your carrier. The following chart details the proper lubricant and the most common brands and specification which meet the requirements.

Use only safe practices when maintaining this equipment. Always shut off the engine before reaching into pinch areas.




Inspect your equipment periodically for damage or evidence of pending failure. Damaged or broken parts should be replaced immediately. Never operate a machine which is known to be defective or operating improperly. The cause of any binding or leakage should be determined immediately and the problem promptly fixed.

Most of the pivot joints utilize high strength composite bearings with hardened and plated pins to drastically reduce maintenance, down-time and the cost of lubrication over the life of the product. There are however a few areas that still require some lubrication or maintenance. The following chart and diagram shows the location of these points, and when and what type of lubricant to use.

If a cylinder seal leaks, disassemble the cylinder and find the cause of the leak. Small scores caused by chips or contaminated fluid can usually be worked out with fine emery cloth to avoid repetition of the trouble. Whenever any seal replacement is necessary, it is always advisable to replace all seals in that component. These seals are available in kits. Also, thoroughly clean all components before reassembly.

The Side Recovery System is mounted to the truck chassis by bolts. We recommend that these bolts be inspected within the first 30 days and that a periodic inspection and retorquing of these bolts as required every 90 days. Replace any broken or damaged bolts immediately. **Refer to chart on the following page.**

**TIGHTENING TORQUES (FOOT-POUNDS)
FOR SCREWS AND NUTS**

SIZE INCHES (MM)	 GRADE 2	 GRADE 5	 GRADE 8
1/4 (6.350)	6	8	10
5/16 (7.938)	10	14	19
3/8 (9.525)	17	27	33
7/16 (11.112)	28	45	60
1/2 (12.700)	45	68	90
9/16 (14.288)	63	100	120
5/8 (15.875)	90	135	180
3/4 (19.050)	145	230	310
7/8 (22.225)	145	380	500
1 (25.400)	220	570	760

- All torque values shown are for bolts (cap screws) and nuts that are either zinc-plated or lubricated.
- Torques shown above apply to screws and nuts used for assembly and installation of all carrier components.
- Different torque values may be given in instructions for certain components due to short thread engagement or low-strength internal threads.
- When nuts are used, tighten nuts to torques shown (screws or bolts should be held but not turned).
- Retighten nuts of all mounting screws that secure the carrier and carrier-body within two weeks after they are first installed on the vehicle. Thereafter, inspect such screws and nuts visually once every month and after each job imposing extremely heavy loads on the equipment. Periodically recheck all accessible screws and nuts for proper tightness.
- Converting ft/lbs to Nm (Newton metres) can be accomplished by using the following:

$$\begin{array}{ccccccc}
 \text{Multiply:} & & \text{by:} & & \text{to get:} & & \\
 \text{ft/lbs} & \times & 1.3558 & = & \text{Nm (Newton metres)} & &
 \end{array}$$

OILS AND GREASES

The following oils and greases are suitable for use with your Jerr-Dan Carrier.

Company	Product
HYDRAULIC OILS	
1. Chevron	AW Hydraulic Oil MV
2. Exxon	Univis N32
3. Mobil	DTE13
4. Texaco	Rando DHZ-32
5. Shell	Tellus Oil T 32
6. Citgo	A/W All Temp
7. Amoco	Rycon Oil 32
8. Conoco	AW Hydraulic Fluid MV 46
9. Mobil	DTE11M (for cold weather use)
10. Conoco	AW Hydraulic Fluid MV 32 (for cold weather use)

GREASES

1. Drydene	HD Lithium EP2
2. Gulf	Crown EP2
3. Amoco	Amolith EP2
4. Shell	Alvania EP2
5. Texaco	Marfax EP2
6. Mobil	Mobilux EP2
7. Sunoco	Prestige EP2

WINCH AND GEAR LUBE

1. Phillips	140 wt. EP Gear Lube 93301 (or approved equivalent)
2. Mobil	Mobil SCH624 (or approved equivalent for cold weather use)

WIRE ROPE HANDLING AND INSPECTION



WARNING

Wire Rope WILL FAIL if worn-out, overloaded, misused, damaged, improperly maintained or abused.
Wire rope failure may cause serious injury or death!

Protect yourself and others:

ALWAYS INSPECT wire rope for WEAR, DAMAGE or ABUSE BEFORE USE.

NEVER USE wire rope that is WORN-OUT, DAMAGED or ABUSED.

NEVER OVERLOAD a wire rope.

INFORM YOURSELF: Read and understand manufacturer's literature or "Wire Rope and Sling Safety Bulletin".

REFER TO APPLICABLE CODES, STANDARDS and REGULATIONS for INSPECTION REQUIREMENTS and REMOVAL CRITERIA.

A new wire rope requires a break in period. Run the wire rope through several cycles at low speeds gradually increasing the load on the wire rope. Make sure that the wraps of the wire rope are tight and evenly wound on the winch drum. A loose wire rope on the winch drum will cause crushing of the wire rope when heavy loads are applied.

All wire rope in continuous service should be observed during normal operation and visually inspected on a weekly basis. A complete and thorough inspection of all ropes in use must be made at least once a month and all rope which has been idle for a period of a month or more should be given a thorough inspection before it is put back into service. All inspections should be the responsibility of and performed by an appointed competent person with the training and experience to look for deterioration of the wire rope.

It is good practice , where the equipment is consistently in use, to give the rope a certain length of service, several hundred hours, several weeks or months and then renew the rope regardless of it's condition. This method eliminates the risk of fatigue causing rope failure.

Any deterioration, resulting in a suspected loss of original rope strength, should be carefully examined and a determination made as to whether further use of the wire rope would constitute a safety hazard.

There are certain points along any given rope which should be given more attention than others, since some areas will be subjected to greater stresses, forces, and hazards. Some of these areas include at the winch drum, at the boom sheaves and at the end attachments.

All products are subject to age, wear and deterioration, all of which cause a reduction in the products breaking strength capacity.

Probably the most common sign of rope deterioration and approaching failure is broken wires. Inspection criteria are specific as to the number of broken wires allowable under various circumstances. It is important that a diligent search be made for broken wires, particularly in critical areas. Inspection of wire rope ends should include hooks and thimbles.

Any wire ropes that have been abraded, crushed, kinked or twisted should be replaced.

Wire rope should be routinely cleaned of any and all debris. Grit and gravel can quickly reduce a wire ropes life. A wire rope should be well lubricated so that it can act and perform as it was designed. Lubrication keeps a wire rope flexible and free from rust.

Consult the manufacturer or your local distributor for the proper replacement wire rope.

LUBRICATION POINTS

The following lubrication chart is located on the rear of the Side Recovery System frame.

INTERVAL (HOURS)	REF NO.	IDENTIFICATION	SERVICE	LUBRICANT
50 OR MONTHLY	1	CABLE T - HANDLE	OIL	ENGINE OIL
	2		OIL	ENGINE OIL
100 OR BI-MONTHLY	3	SHEAVE PIN	LUBE	MPG
	4	CABLE GUIDE	LUBE	MPG
	5	BOOM PIVOT	LUBE	MPG
250 OR SEMI-ANNUALLY	6	WINCH GEAR BOX	CHECK	*
1000 OPERATING HOURS	6	WINCH GEAR BOX	DRAIN/FILL	*

LUBRICATION CHART
JERR-DAN
SIDE RECOVERY SYSTEM

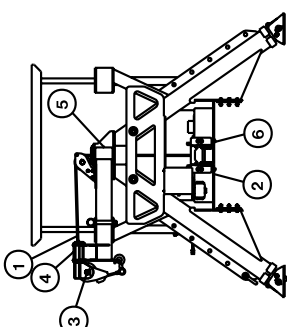


CHART COVERS ONLY
JERR-DAN
COMPONENTS

* CONSULT WINCH MANUAL FOR PROPER GRADE AND TYPE

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TROUBLE SHOOTING

You probably won't require anything but preventive maintenance to keep your equipment running, however, the following chart should help you isolate and correct minor problems if they occur with use. Any service work on the hydraulic system should be performed by qualified mechanics. For a more comprehensive trouble shooting guide refer to Jerr-Dan's "Hydraulic Troubleshooting Guide", part number 5-377-000013, which is available through the Service Parts Department.

HYDRAULIC SYSTEM

Problem	Cause	Solution
Slow operation	<ul style="list-style-type: none"> a. Low engine RPM b. Low oil level c. Blocked or restricted hoses d. Dirty hydraulic oil e. Hydraulic pump worn f. Clutch Pump belt slipping 	<ul style="list-style-type: none"> a. Speed up engine b. Check dipstick and fill with the specified oil c. Inspect: remove blockage d. Drain, flush and refill with clean oil, replace filter e. Rebuild or replace f. Tighten or Replace belt
Valve Solenoid(s) sticking or frozen	<ul style="list-style-type: none"> a. Broken centering spring or clogged with foreign material b. Low Amperage/Voltage at Solenoid 	<ul style="list-style-type: none"> a. Inspect, clean or replace b. Check Amperage/Voltage
Valve leaks	<ul style="list-style-type: none"> a. Defective seals 	<ul style="list-style-type: none"> a. Replace
Cylinder leaks	<ul style="list-style-type: none"> a. Defective seals or rods b. Dirty or Defective CounterBalance Valve 	<ul style="list-style-type: none"> a. Inspect and replace b. Clean or Replace CounterBalance Valve
Erratic cylinder function	<ul style="list-style-type: none"> a. Air in the system b. Defective pump (pulsating) 	<ul style="list-style-type: none"> a. Cycle hydraulic system 10 to 15 times to remove air b. Replace if necessary
Remote hand controller fails to respond	<ul style="list-style-type: none"> a. Electric power turned off b. Bad or discharged battery c. Faulty Remote Hand d. Loss of program memory 	<ul style="list-style-type: none"> a. Turn on controller power on controller b. Replace battery c. Use Manual override Controls d. Reprogram memory

HYDRAULIC CLUTCH PUMP

Problem	Cause	Solution
No oil flow from pump	a. No oil in reservoir b. Pump not "primed" c. Clutch not engaging	a. Fill hydraulic reservoir b. Fill inlet hose from pump end c. Check wiring/fuse
Pump will not build or hold pressure	a. Relief valve improperly set b. Relief valve stuck open	a. Adjust relief valve to manufacturer's specification b. Remove, clean and reset
Pump is noisy - whines	a. Air in the system b. Cavitation	a. See "Oil Foaming" b. Check Hoses, Reservoir breather or strainer
Pump is noisy - squeals	a. Belts are worn/loose b. System horsepower demand exceeds belt capacity c. Clutch is slipping	a. Inspect, adjust and/or replace b. Review application c. Check voltage/ground
Pump "throws" belts	a. Engine and pump pulley alignment b. System horsepower demand exceeds belt capacity c. High-speed engagement	a. Check installation b. Review application c. Reduce start-up RPM
Pump leaks at shaft seal	a. Damaged seal b. Damaged pump body	a. Replace seal b. Replace pump body
Pump leaks at body section	a. Damaged seal b. Damaged pump body c. Body section bolt torque	a. Replace seal b. Replace pump body c. Torque to specification
Pump leaks at fittings	a. Loose fitting b. Damaged fitting c. Damaged pump body	a. Inspect and/or tighten b. Replace fitting c. Replace pump body
Pump is overheating	a. Low oil level b. Dirty oil c. Relief valve stuck open d. Relief valve improperly set e. Improper weight oil	a. Fill hydraulic reservoir b. Replace oil and filter c. Remove, clean and reset d. Adjust relief valve to manufacturer's specification e. Replace with correct oil
Oil foaming	a. Low oil level b. Improper oil	a. Fill hydraulic reservoir b. Fill with correct oil

P.T.O. FUNCTIONING IMPROPERLY

Problem	Cause	Solution
Cable tight or frozen	a. Cable kinked or bent b. Cable and P.T.O. connection not adjusted properly c. Mounting bracket nuts are over tightened at P.T.O.	a. Straighten or replace b. Inspect and adjust c. Loosen if necessary
Rattling noise in P.T.O.	a. P.T.O. backlash too loose (Consult P.T.O. Manual)	a. Shims must be removed
Howling Noise in P.T.O.	a. P.T.O. backlash too tight (Consult P.T.O. Manual)	a. Shims must be added
Gear oil leak between P.T.O. and pump	a. Defective shaft seal	a. Remove and replace
P.T.O. will not engage or disengage	a. Cable and P.T.O. connection not adjusted properly b. Defective shifter cover plate	a. Inspect and adjust b. Inspect and replace

HYDRAULIC PUMP

Problem	Cause	Solution
Pump noisy (Cavitation)	a. Low oil supply b. Heavy oil c. Dirty oil filter d. Restriction in suction line e. Pump worn	a. Fill to proper level b. Fill with proper oil (See chart) c. Replace filter d. Clean out and remove e. Repair or replace
Pump/Clutch Pump slow or fails to respond	a. Low oil supply b. Worn or Loose Belt(s)	a. Fill to proper level b. Tighten or Replace Belt(s)
Oil heating up	a. Foreign material lodged in relief valve b. Using too light oil c. Dirty oil d. Oil level too low e. Pump worn (slippage)	a. Inspect and remove/replace filter b. Drain and refill with clean oil c. Drain, flush and refill with clean oil/replace filter d. Fill to proper level e. Repair or replace

HYDRAULIC PUMP - con't

Problem	Cause	Solution
Oil foaming	a. Air leaking into suction line b. Wrong kind of oil c. Oil level too low	a. Tighten all connections b. Drain and refill with non-foaming type of hydraulic oil (See lube chart) Replace filter c. Refill to proper level
Hydraulic oil leak between P.T.O. and pump	a. Defective shaft seal	a. Replace shaft seal
Clutch Pump leaks at Pulley Shaft	a. Defective Shaft Seals b. Hydraulic Supply/Return lines connected incorrectly	a. Replace seals or Pump b. Check hydraulic line connections
Pump leaks at front and rear covers	a. Defective seals	a. Replace seals

WINCH FUNCTIONING IMPROPERLY

Problem	Cause	Solution
Winch screeches during operation	a. Insufficient lubrication	a. Lubricate per lube chart
Winch will not pull load or take in cable	a. Free spooling device not engaged b. Sheared keys or broken coupling c. Hydraulic pump worn d. Insufficient pump pressure e. Overload	a. Engage b. Inspect or replace c. Inspect and replace d. Check hydraulic pump and hydraulic fluid level e. Install snatch block in the rigging line

GLOSSARY OF TERMS

A

Anchoring Device - Used to attach cable ends, snatch blocks, safety chains, and tie-down assemblies to the towing vehicle.

Approach Angle - Angle between the plane of the platform and the ground.

Attachment - Any device that can be added to a basic unit or assembly.

Auxiliary Braking Device - A device which attaches to the disabled vehicle to assist the tow truck's brakes in retarding or stopping both vehicles.

Auxiliary Equipment - Equipment that is not necessary to perform the basic function of the primary equipment.

Auxiliary Towing Lights - Stop, tail, and turn signal lights attached to the trailing end of the towed vehicle and operated as part of the towing vehicle lighting system.

B

Bending Moment - The force times the distance from a reference point to the point the force is applied causing bending.

Bird Nesting - The tangling and intertwining of wraps and layers on a drum.

Body - The structure mounted on a chassis cab or that portion of the vehicle that carries the load.

Body Hinge - The attachment mechanism connecting the body to the hinge pin at the pivot axis about which the body rotates into the tilt position.

Body Subframe - Another term for body understructure or mounting frame.

Body Weight - Unmounted weight of a body with applicable options.

Boom - The structure member that supports the load.

Boom Angle - The boom angle is measured between a horizontal line and a line through the boom pivot and center of sheave.

Boom Head - The structural member at one end of the boom which can swivel and support the load lifted through the sheave and sheave support device.

Boom Length - The straight line distance from center of the revolving base to the center of the boom head.

Brakes - Parking - A system used to hold a stopped machine in a stationary position.

Brakes - Service - A primary brake system used for retarding and stopping the truck.

Bumper - DOT - A bumper designed to provide rear-end protection that meets the requirements of FMCSR 393.86.

Bus Bar Grid - A device used for towing vehicles by lifting one end of the towed vehicle by the wheels.

C

CA (Cab to Axle) - The distance from the back of the truck cab to the center of the rear axle.

CG (Center of Gravity) - The point at which the weight of the chassis, body/equipment and payload, if collectively or individually supported, would balance vertically, horizontally, and laterally.

CT (Cab to Tandem) - The distance from the back of the truck cab to a point midway between the tandem axles.

Cable - Steel wire rope used for pulling.

Car Carrier - Vehicles equipped to transport other vehicles mounted on a flat platform and/or with an additional assembly attached to the rear to facilitate towing a second vehicle. These units are also known as slidebacks, rollbacks, transporting equipment carriers and flatbeds. See Carrier.

Carrier - A platform body with a winch for loading.

Casualty Vehicle - The damaged or disabled vehicle.

Capacity - The load that a machine can lift at any given point.

CAUTION - A signal word used when a potentially hazardous situation exists that might result in minor injury or property damage.

Certification Label - Required by Public Law 89-563, which states that a motor vehicle or item of motor vehicle equipment complies with all applicable Federal Motor Vehicle Safety Standards (FMVSS) in effect on the date of manufacture.

Chain Assemblies - Chain with all hardware and coupling devices.

Chassis Cab - A vehicle consisting of a chassis upon which is mounted a cab; capable of being driven by the addition of wheel or other items of running gear, but lacking a body or load-carrying structure.

Completed Vehicle - A vehicle that requires no further manufacturing operations to perform its intended function, other than minor finishing operations such as painting.

Component - Any part of an assembly on a machine when referred to individually.

Control - A device used to control the functions of a unit.

Control Lever- A device for imparting motion into a control linkage.

Crossbar - A transverse horizontally pivoting member attached to the boom of a wheel-lift or underlift for attaching towing accessories.

Curb Side - The right or passenger side of the vehicle when viewed from the rear, opposite side from *ROADSIDE*.

Curb Weight - The weight of a vehicle in operational status, with all standard and commonly installed equipment and the fuel tank(s) filled to capacity.

Cylinder - A device which converts fluid power into a linear mechanical force and motion usually consisting of a movable piston and piston rod within a cylinder bore.

D

DANGER - A signal word used when an imminently hazardous situation exists that can result in death or serious injury.

Disabled Vehicle - Any vehicle that cannot operate under its own power.

Dolly - A four-wheeled carriage used in towing to support the trailing end of the towed vehicle.

DOT (Department of Transportation) - A federal agency dealing with regulations concerning both the manufacture and operation of motor vehicles and motor vehicle equipment. See NHTSA.

Driveline - The driveshaft and associated joints.

Drum - Any spool on which are wrapped ropes used in machine operation.

E

Extend Cylinder - Cylinders used to extend or retract boom structures.

F

Filter- A device whose primary function is the retention by a porous media of insoluble contaminants from a fluid.

Final Stage Manufacturer - A person, firm, or corporation who performs such manufacturing operations on an incomplete vehicle that it becomes a completed (end-user) vehicle.

FMVSS (Federal Motor Vehicle Safety Standards) - Regulations promulgated by NHTSA under Public Law 89-563, which are mandatory and must be complied with when motor vehicles or items of motor vehicle equipment are manufactured and certified thereto.

Frame - Structure on which either the upper or lower equipment is located.

Frame Cutoff - Centerline of rear axle(s) to the rearmost point of the chassis frame as modified for body installation.

Frame Lift - See Underlift.

Frame Section Modulus - The engineering term that indicates the relative strength of frames as it relates to shape. It takes into account frame depth, flange width, and material thickness. All other things being equal, the frame with the largest section modulus will have the greatest strength and stiffness, i.e., the ability to more effectively resist deflection under load.

Free Spool - The operation of unspooling wire rope from a drum by pulling on the end of the wire rope while the winch is stationary. The drum is disconnected (declutched) from its powertrain during this operation.

Forks - A device attached to the lift bar for lifting a vehicle by the tires, axle, frame, or structural member. May be classified as chain, axle, or frame forks.

FW (Frame Width) - The overall width of the chassis frame measured outside to outside behind the cab.

G

GAWR (Gross Axle Weight Rating) - The value specified by the manufacturer as the load-carrying capacity of a single-axle system as measured at the tire-roadway interface.

GCWR (Gross Combination Weight Rating) - Represents the entire weight of a vehicle on the ground with a trailer or trailers including vehicle, equipment, driver, fuel, and payload (everything that moves with the vehicle.) Gross combination weights published represent maximum allowed.

Grab Hook - For use with chains and some tow-sling hookups.

Grid - A device that attaches to the lift bar for engaging the tires of a towed vehicle.

GVWR (Gross Vehicle Weight Rating) - The maximum total vehicle rated capacity, measured at the tire ground interface, as rated by the chassis manufacturer.

GVW (Gross Vehicle Weight) - Value specified by the manufacturer as the maximum loaded weight of a single vehicle including all equipment, fuel, body, payload, driver, etc.

H

Headboard - Structure on which an emergency light bar is mounted.

Hook-up Chains - Length of chain used to connect a recovery vehicle to a casualty vehicle.

Horizontal Center of Gravity (HCG) - The point at which half of the gross weight is forward and half is aft.

Hydraulic Control Valve - A mechanical device to divert or control the flow of fluid in a hydraulic system.

Hydraulic Hose - Flexible oil lines used to transmit fluid.

Hydraulic Oil - Fluid used in operation of hydraulic systems.

Hydraulic Relief Valve - A mechanical device used to limit the pressure in a hydraulic circuit.

I

Incomplete Vehicle - As assemblage consisting, as a minimum, of a frame and chassis structure, powertrain, steering system, suspension system and braking system to the extent that those systems are to be part of the complete vehicle that requires further manufacturing operations.

Independent - The Wrecker Boom and Underlift Boom are separate (independent) from each other.

Integrated - The Wrecker Boom and Underlift Boom are combined together as a complete unit.

J

J-Hook - Attachment device used for towing/recovery.

L

L-Arm - See Wheel Arm

Layer - All wraps of the same diameter on a drum.

Lift Bar - A traverse horizontally pivoting member attached to the boom of a wheel-lift or underlift for attaching towing accessories.

Lift Cylinder - Cylinders used to raise or lower boom structures.

Lift Forks - See Forks.

Lifting Capacity - The load that a machine can lift at any given point.

Lift Tow Rating - Maximum Steering Towing Load.

Light Bar (Emergency) - An array of lamps used in accordance with local ordinances.

Light Pylon - Structure on which an emergency light bar is mounted.

Line Pull - The maximum wire rope pull, in pounds, at the drum, at full-load engine speed, with specified lagging diameter.

Line Speed - Speed in feet per minute of a single rope, based on full load engine speed with specified lagging diameter.

M

Marker Lights - Small amber and red lights attached to bodies to indicate overall clearance at night.

Maximum Loaded Vehicle Weight - The sum of curb weight, passengers and cargo.

Motor - A rotary motion device which changes hydraulic energy into mechanical energy.

Motor Vehicle Safety Standards - See FMVSS.

Mud Flap - Splash-Deflecting shields at rear of wheel.

N

NHTSA (National Highway Traffic Safety Administration) - The federal agency responsible for promulgating and insuring compliance of regulations dealing with the manufacture and certification of motor vehicles or items of motor vehicle equipment. See DOT.

O

Outriggers - A beam type device attached to frame of a truck or rubber tired carrier, to provide maximum stability by reducing load on tires and increasing width of operating base.

Overall Vehicle Height - Distance from the ground to the highest point on the vehicle with equipment in stowed position.

Overall Vehicle Width - The design dimension of the widest part of the vehicle, exclusive of signal lamps, outside rearview mirrors, flexible fender extensions, and mud flaps, determined with doors and windows closed and the wheel in the straight ahead position.

Overhang - The horizontal distance for the centerline of a single rear axle or center point of a tandem rear axle to a point where the vertical component is imposed.

P

Payload - The weight of the commodity being hauled. Payload capacity is computed by subtracting the completed weight of the vehicle (including driver and passengers) from the GVWR.

Pintle Hook - Hook mounted on a truck or semitrailer used to couple a full trailer.

PTO (Power Takeoff) - Mechanical device used to transmit engine power to auxiliary equipment. Power takeoffs can be mounted on either a main or auxiliary transmission. Front mounted and flywheel mounted power takeoffs are also used in various applications.

Push Bumper - Device used to push a vehicle, sometimes equipped with a rubber face.

R

Rating - The specified design operating limit of a device.

Rear Jack - One or more devices designed, when used, to stabilize chassis.

Recovery - Act of moving a vehicle to a position from which it can be driven or towed.

Recovery Vehicle - Vehicle to retrieve and if necessary lift and tow other vehicles.

Resisting Bending Moment (RBM) - A calculation used to compare frames of different section modulus and of different material. It is the product of the section modulus times the yield strength of the frame material.

Roadside - The left or driver's side of the vehicle when viewed from the rear, opposite side from *Curbside*.

Rolling Resistance - The restraining forces contributed to the load when rolling on wheels.

Rollback - See Car Carrier

Rope - See Wire Rope

Rub Rail - Member running longitudinally providing rub service on side of body.

S

SAE - Society of Automotive Engineers.

Safety Chain(s) - Used to connect the towing and towed vehicle as a secondary coupling system to prevent separation of a vehicle trailer, converter dolly, or towed vehicle, should the primary coupling become detached.

Safety Wrap - Wrapping the tow chain(s) around the grab hooks of the tow bar inboard of chain.

Scotch Blocks - A device used to prevent chassis movement.

Serial Number - An identification number stamped on a metal plate by the passenger car, van, or truck manufacturer (see VIN), or the towing equipment manufacturer, and placed on chassis, body, or components for identification purposes.

Sheave - A wheel grooved for a wire rope to transfer power.

Shipping Weight - The dry weight of a complete truck with all standard equipment including grease and oil but without and fuel or coolant.

Side Rail - Horizontal extensions of the body sides, either sheet or tubular metal.

Slew - A rotating super structure about a vertical axis.

Snatch Block - A single or multiple pulley used to reduce line tension or change cable direction.

Spacer Blocks - Used in conjunction with wood beams to provide additional clearance between the tow bar, chains, and the body of the casualty vehicle.

Spade - One or more ground penetrating devices designed primarily, when used, to stabilize rearward chassis movement.

Stabilizers - A hydraulic or manually operated leg device (i.e., outboard legs, outriggers, or jack legs) attached to trucks to give additional support down to the ground for improved stability.

Steering Wheel Securing Device - Used to secure front wheels in lieu of standard steering column lock.

Stroke - The length of travel of a cylinder rod or piston.

Suction Line - A tubular connection line to convey fluid between a reservoir or tank and the inlet of a hydraulic pump.

Supply Tank - An oil reservoir used in the hydraulic system.

Swivel Head - See Boom Head.

T

T-Hook - Attachment device used for towing.

Tail Plate - Rearmost part of the towing vehicle body.

Tail Swing - Clearance distance from center of rotation to the extreme rear extension of the revolving superstructure.

Tie-Down Assemblies - Device(s) used to restrain cargo or vehicles (i.e., strap, bridle, chain, or cable.)

Tie-Down Chains - Chains used to restrain cargo or vehicles.

Tilt Cylinder - Cylinders used to change the attitude of a structure or body.

Tire Clearance - Necessary space between tires and the nearest component to allow operation of truck without damage to tires.

Tire Lift - A device used for towing vehicles by lifting one end of the towed vehicle by the wheels.

Tow - Act of transporting a vehicle from one point to another by a second vehicle.

Towed Vehicle - The vehicle being towed.

Towing - See Tow.

Tow Bar - A device for positioning a towed vehicle behind a towing vehicle.

Tow Chain - Length of chain used to connect the sling with the towed vehicle.

Tow Sling - A device used for lifting and towing vehicles with a partial load supported on rubber straps.

Tow Vehicle - Vehicle used to lift-tow other vehicles.

Towing Light/Bar - See Auxiliary Towing Lights.

Trailer 5th Wheel Plate - A plate attached to a tow truck-lifting device that captivates the kingpin on trailers allowing a trailer to be towed in the same manner as intended by the trailer manufacturer.

U

Underlift - A device used for towing vehicles by lifting one end of the towed vehicle from under the axle or structural member.

Unloaded Vehicle Weight - The weight of a vehicle with maximum capacity of all fluids necessary for operation of the vehicle, but without cargo or occupants. Also referred to as curb weight.

V

Valve - A device which controls fluid flow direction, pressure, or flow rate.

VIN (Vehicle Identification Number) - The number assigned to a vehicle by the manufacturer primarily for registration purposes. It may consist of numerals, letters, or a combination thereof.

W

WARNING - A signal word used when a potentially hazardous situation exists and could result in death or serious injury.

Weight Distribution - The portion of total weight of the vehicle on each axle.

Wheel Arm - A device that attaches to the lift bar for engaging the tires of a towed vehicle.

Wheelbase - Horizontal dimension from centerline of front axle to the effective centerline of the rear axle(s).

Wheel Chock - A device used to prevent chassis movement.

Wheel Fork - See Wheel Arm.

Wheel-Lift - A device used for towing vehicles by lifting one end of the towed vehicle by the wheels.

Wheel Securing Device - A strap or mechanical device, when attached to the lift-bar, which limits the potential for separation of the towed vehicle from the underlift, during operating conditions.

Wheel Straps - Used to tie down wheels of the towed vehicle when using wheel-lift, car carrier, or dolly towing equipment to limit the potential for separation of the towed vehicle from the towing apparatus.

Winch - A device for winding and unwinding cable.

Wire Rope - See Cable

Working Load Limit - Minimum breaking strength divided by the factor of safety.

Wrap - A single coil of wire rope wound on a drum.

Wrecker - See Tow Vehicle, or Recovery Vehicle.