OPERATION AND MAINTENANCE

CARRIERS

Model(s): 10TB - 20TB - 20TB-DD - 30TB - 40TB - 40TB-DD

April 7, 2022
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Original Instructions

NRC-INDUSTRIES.COM





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PO Box 1130
Jenks, OK 74037-1130
Tel: (918) 298-8300
Fax: (918) 298-8301
Website: www.dovertwg.com

Ramsey Winch Company
PO Box 581510
Tulsa, OK 74158-1510
Tel: (918) 438-2760
Fax: (918) 438-6688
Website: www.ramsey.com

REVISION HISTORY

Revision	Date	Description
1	2022-04-07	Added section 9.19 Safe loader to Section 9: Accessories.
0	2022-03-29	Initial release

CONTENTS

LIMITED WARRANTY

A. GENERAL PROVISIONS - THE WARRANTY DESCRIBED BELOW IS PROVIDED BY INDUSTRIES NRC INC, 2430 PRINCIPALE EST C.P. 160, ST-PAUL D'ABBOTSFORD, QUÉBEC, CANADA, J0E 1A0 ("INDUSTRIES NRC") TO THE ORIGINAL PURCHASER OF NEW TOWING AND RECOVERY EQUIPMENT ("EQUIPMENT") PURCHASED FROM INDUSTRIES NRC OR AUTHORIZED INDUSTRIES NRC DEALERS. UNDER THIS WARRANTY, INDUSTRIES NRC WILL REPAIR OR REPLACE, AT ITS OPTION, ANY PART COVERED UNDER THIS WARRANTY WHICH IS FOUND TO BE DEFECTIVE IN MATERIAL OR WORKMANSHIP DURING THE APPLICABLE WARRANTY TERM. WARRANTY SERVICE MUST BE PERFORMED BY A DEALER OR SALES SERVICE CENTRE AUTHORIZED BY INDUSTRIES NRC TO SELL AND/OR SERVICE THE EQUIPMENT (THE "AUTHORIZED DEALER"). THE AUTHORIZED DEALER WILL USE ONLY NEW OR REMANUFACTURED PARTS OR COMPONENTS FURNISHED OR APPROVED BY INDUSTRIES NRC. WARRANTY SERVICE WILL BE PERFORMED WITHOUT CHARGE TO THE PURCHASER FOR PARTS. HOWEVER, THIS WARRANTY DOES NOT OBLIGATE INDUSTRIES NRC TO BEAR THE COST OF LABOR OR TRANSPORTATION CHARGES IN CONNECTION WITH THE REPAIR OR REPLACEMENT OF ANY PARTS FOUND TO BE DEFECTIVE, NOR SHALL IT APPLY TO A PRODUCT UPON WHICH REPAIRS OR ALTERATIONS HAVE BEEN MADE UNLESS AUTHORIZED BY INDUSTRIES NRC. THE PURCHASER WILL BE RESPONSIBLE FOR SERVICE CALLS AND/OR TRANSPORTATION OF EQUIPMENT TO AND FROM THE AUTHORIZED DEALER'S PLACE OF BUSINESS (EXCEPT WHERE PROHIBITED BY LAW), FOR ANY PREMIUM CHARGED FOR OVERTIME LABOUR REQUESTED BY THE PURCHASER AND FOR ANY SERVICE AND/OR MAINTENANCE NOT DIRECTLY RELATED TO ANY DEFECT COVERED UNDER THIS WARRANTY. THIS WARRANTY IS TRANSFERABLE, PROVIDED AN AUTHORIZED INDUSTRIES NRC DEALER IS NOTIFIED OF THE OWNERSHIP CHANGE, AND INDUSTRIES NRC APPROVES THE TRANSFER.

B. WHAT IS WARRANTED - SUBJECT TO PARAGRAPH C, ALL PARTS, MANUFACTURED BY INDUSTRIES NRC, OF ANY NEW INDUSTRIES NRC EQUIPMENT, ARE WARRANTED FOR THE NUMBER OF MONTHS SPECIFIED BELOW. WARRANTY STATEMENTS COVERING COMPONENTS NOT MANUFACTURED BY NRC ARE FOUND WITH THE OPERATOR'S MANUALS DELIVERED WITH THE EQUIPMENT.

C. WHAT IS NOT WARRANTED - PURSUANT TO THE TERMS OF THIS WARRANTY, INDUSTRIES NRC IS NOT RESPONSIBLE FOR THE FOLLOWING: (1) USED EQUIPMENT (UNLESS IT IS SPECIFICALLY COVERED BY SEPARATE WARRANTY DOCUMENTS); (2) ANY EQUIPMENT THAT HAS BEEN ALTERED OR MODIFIED IN WAYS NOT APPROVED BY INDUSTRIES NRC, INCLUDING, BUT NOT LIMITED TO, HYDRAULIC PRESSURE SETTINGS ABOVE INDUSTRIES NRC SPECIFICATIONS; (3) DEPRECIATION OR DAMAGE CAUSED BY NORMAL WEAR, LACK OF REASONABLE AND PROPER MAINTENANCE, FAILURE TO FOLLOW OPERATING INSTRUCTIONS, MISUSE, LACK OF PROPER PROTECTION DURING STORAGE, VANDALISM, THE ELEMENTS OR COLLISION OR ACCIDENT; (4) THE EQUIPMENT IF USED FOR OVERHEAD LIFTING, CRANE WORK OR ANY OTHER UNAPPROVED ACTIVITY; (5) NORMAL MAINTENANCE PARTS AND/OR SERVICE.

D. SECURING WARRANTY SERVICE - TO SECURE WARRANTY SERVICE THE PURCHASER MUST, (1) REPORT THE EQUIPMENT DEFECT TO AN AUTHORIZED DEALER AND REQUEST WARRANTY SERVICE WITHIN THE APPLICABLE WARRANTY TERM; (2) PRESENT EVIDENCE OF THE WARRANTY START DATE TOGETHER WITH THE VALID PROOF OF PURCHASE; AND, (3) MAKE THE EQUIPMENT AVAILABLE TO AN AUTHORIZED DEALER OR SERVICE CENTRE WITHIN A REASONABLE PERIOD OF TIME.

E. NO IMPLIED WARRANTY, REPRESENTATION OR CONDITION - TO THE EXTENT PERMITTED BY LAW, NEITHER INDUSTRIES NRC NOR ANY COMPANY AFFILIATED WITH IT MAKES ANY WARRANTY, REPRESENTATION, CONDITION OR PROMISE, EXPRESS OR IMPLIED, VERBAL OR OTHERWISE, AS TO THE QUALITY, PERFORMANCE OR FREEDOM FROM DEFECT OF THE EQUIPMENT. NO IMPLIED OR STATUTORY CONDITIONS OR WARRANTIES OF MERCHANTABILITY OR FITNESS (WHETHER PURSUANT TO THE SALE OF GOODS ACT OR ANY OTHER STATUTE OF ANY PROVINCE/STATE OR OTHERWISE) ARE MADE.

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H. WARRANTY TERMS

EQUIPMENT	TERMS
TRUCK MOUNTED RECOVERY EQUIPMENT	12 MONTHS FROM "IN SERVICE" DATE. NO MORE THAN 24 MONTHS.
SLIDING SYSTEM COMPONENTS	10 YEARS FROM DATE OF MANUFACTURING.
TOWING ACCESSORIES MANUFACTURED BY INDUSTRIES NRC	12 MONTHS FROM DATE OF MANUFACTURING.
ACCESSORIES MANUFACTURED BY A THIRD PARTY	THIRD PARTY WARRANTY APPLIES.

WARRANTY REGISTRATION FORM

On the date of sale I have read the NRC Warranty Agreement, I understand its terms & conditions, and acknowledge receipt of my copy of the agreement.
PLEASE PRINT CLEARLY OR TYPE.

INFORMATION ON THE CHASSIS ON WHICH THE NRC UNIT IS INSTALLED																		
IMPERIAL (lbs,mi) ☐				METRIC (kg,km) ☐						Used ☐ New ☐								
GVWR :				FRONT						REAR								
MAKE :				MODEL						YEAR								
VEHICLE IDENTIFICATION NUMBER (CHASSIS)																	MILEAGE	

NRC UNIT
Date of Sale : _____

NRC Serial # _____
Axle-lift
Serial #_____

NRC Model # _____

Date of Delivery to Dealer :
_____

Dealer Name :
_____

Address : _____
_____

Postal / Zip code : _____

Dealer Signature :

Date : _____

First Puschaser's Name

Address : _____
_____
_____
_____

Postal / Zip code : _____

Purchaser's Company Title / Position
_____

Purchaser's Signature :

X _____

Date : _____

Primary Contact-Necessary for Warranty-Admin

Name : _____
Phone : _____

The following items are to be performed by dealer at the time of vehicle delivery. Customer to sign off each item as verification that it was performed.			
	Completed the NRC Warranty Registration Form		Explain required maintenance program to Customer
	Customer instructed on the safe and proper operation of the unit purchased.		
	Explain and demonstrate vehicle and Accessory operation to Customer.		Present completed Warranty registration. Copy to Customer & fax copy to NRC Warranty Deptartment.
	PRE-DELIVERY INSPECTION		Customer Signature

This Warranty is not valid until approved by NRC Industries and all items on this form completed.

ABOUT THIS MANUAL

This manual contains important information about how to safely operate and maintain your NRC carrier. Read it before operating the machine and retain it for reference during the entire lifespan of the machine.

This manual contains the following chapters:

- Chapter 1 presents the carrier models, their components and their technical specifications.
- Chapter 2 provides safety information for operating, maintaining and troubleshooting the carrier.
- Chapter 3 provides operating principles and procedures.
- Chapter 4 provides maintenance information and procedures.
- Chapter 5 provides troubleshooting information and procedures.
- Chapter 6 provides the operating method in case of an accident or equipment breakdown.
- Chapter 7 provides information about taking the carrier in and out of storage.
- Chapter 8 provides information for disassembling and disposing of the carrier.
- Chapter 9 contains information about the accessories that can be used with the equipment.
- Authorized distributors and service providers contains a list of authorized distributors and service providers.

Document conventions

The following conventions are used throughout this document:

> NOTE: We highly recommend that you read this manual in full before using your NRC equipment.

Disclaimer

This manual, including the equipment specifications, is subject to change without notice. Ensure that you have the latest version of this manual before using your equipment.

All ratings are based on structural factors only, not vehicle capacities or capabilities.

Applicable models and serial numbers

This manual is intended for use with the following models with serial numbers within the following ranges only:

- 10-230 to ...
- 20-693 to ...
- 30-021 to ...
- 40-268 to ...

WARNING MESSAGES

⚠ DANGER

Indicates a hazardous situation that, if not avoided, will result in serious injury or death. A danger may or may not involve a property damage hazard.

⚠ WARNING

Indicates a hazardous situation that, if not avoided, could result in serious injury or death. A warning may or may not involve a property damage hazard.

⚠ CAUTION

Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury. A caution may or may not involve a property damage hazard.

NOTICE

Indicates information that should be read to avoid equipment damage.

1 DESCRIPTION

NRC carriers are strong, dependable and versatile, which ensures that you will never miss an opportunity.

This chapter describes the components of the 10TB, 20TB, 20TB-DD, 30TB, 40TB and 40TB-DD carrier models and lists their technical specifications.

1.1 Description of the carrier and its components

NRC carriers are manufactured with the same main components. Only their size and capacity are different. See 1.2 Technical specifications for the carrier model specifications.

1.1.1 Overview of your NRC carrier

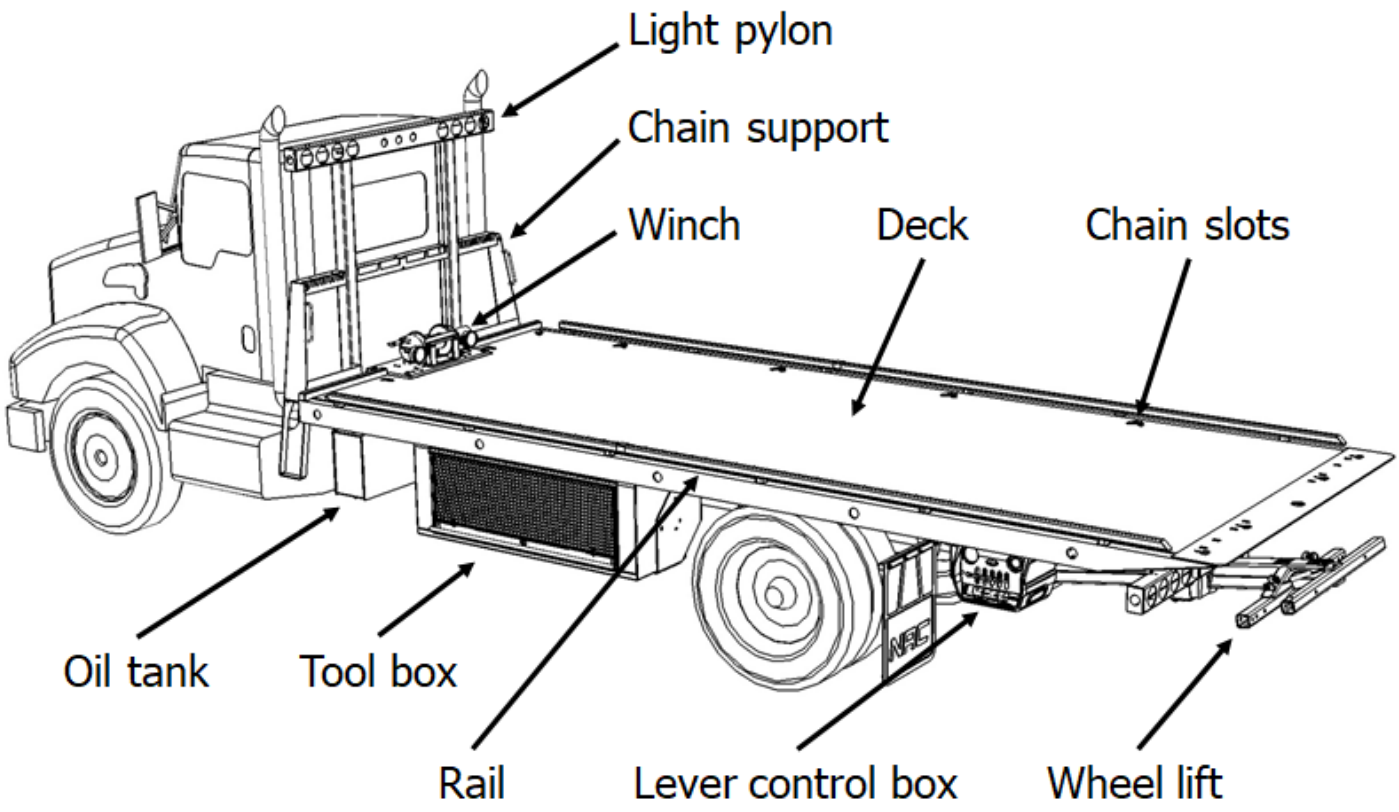


FIGURE 1 – LEFT SIDE OF YOUR CARRIER WITH REMOVABLE RAILS

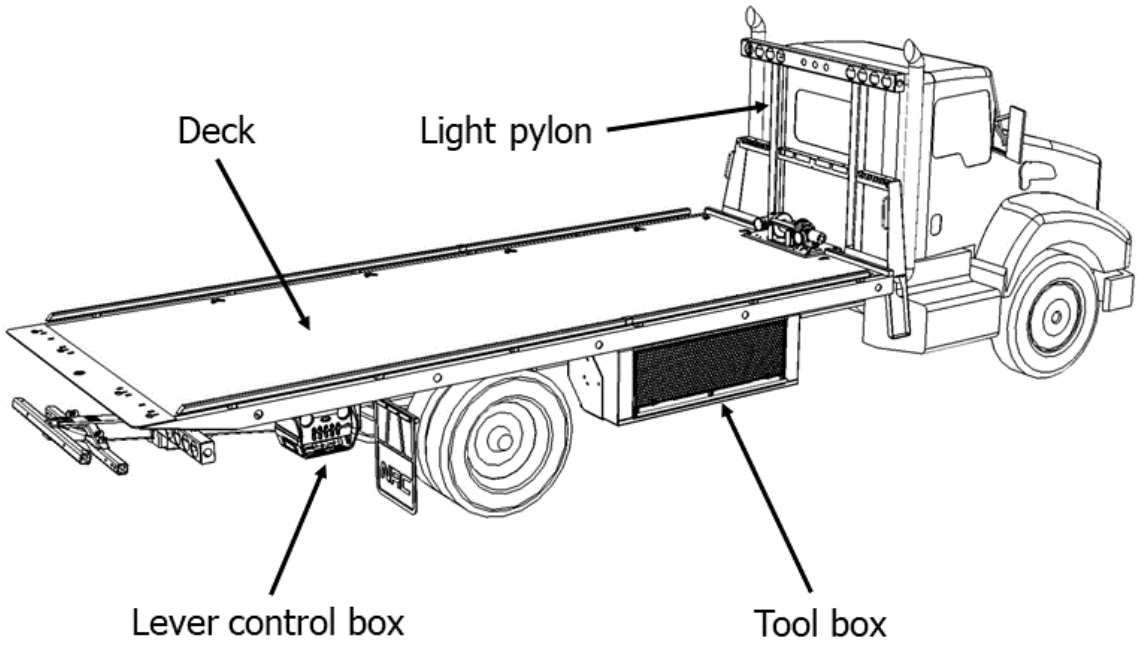


FIGURE 2 – RIGHT SIDE OF YOUR CARRIER WITH TUBULAR SIDES

1.1.2 Chassis

The chassis comes in the following models: 10TB, 20TB, 20TB-DD, 30TB, 40TB and 40TB-DD. See 1.2 Technical specifications for the carrier model specifications.

1.1.3 Winch

The single-deck carrier is equipped with one main winch and one optional auxiliary winch. The double-deck carrier is equipped with one winch per deck, plus an optional auxiliary winch on the lower deck. The carrier models have different winch capacities (see 1.2.3 Winches). Figure 1 shows the location of a carrier equipped with one winch.

1.1.4 Wheel lift

The wheel lift has a telescopic section and a tow bar, as shown in Figure 3. The telescopic section can be extended and retracted to allow the tow bar to reach the vehicle to be towed.

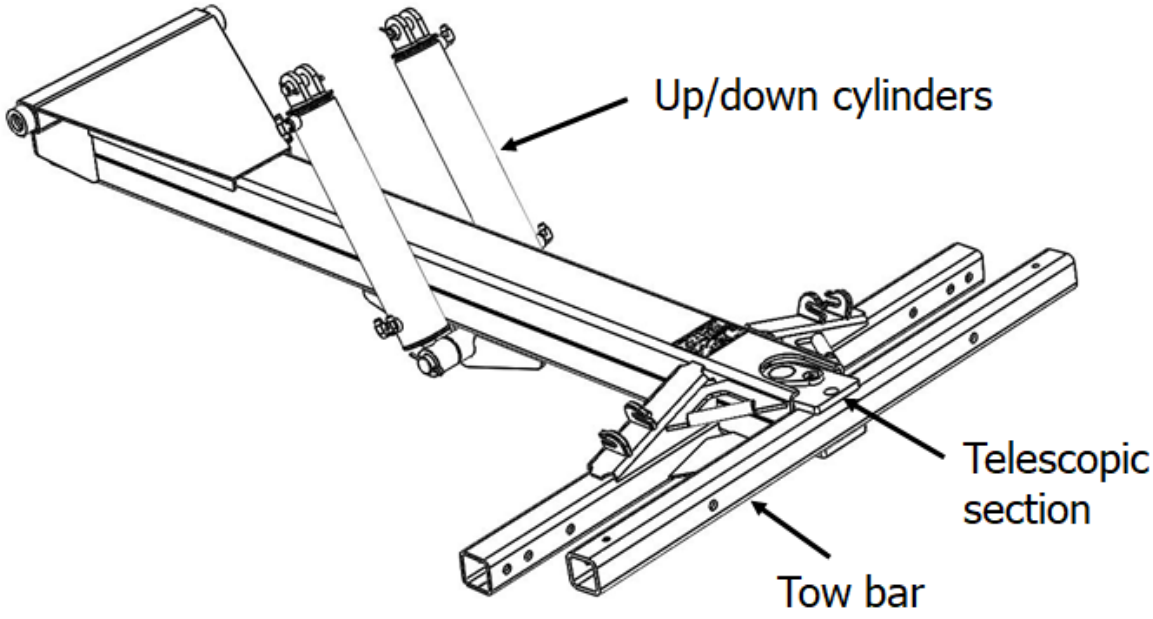


FIGURE 3 – WHEEL LIFT

1.1.5 Control box

The carrier features two control boxes with similar control levers. The main control box is located on the driver side, while the auxiliary control box is on the passenger side. Depending on your carrier model and options, the control box may be equipped with up to eight levers. Your carrier may also be equipped with the dual joystick control box option in place of the standard control box. In this case, see 1.1.6 Dual joystick control box (option).

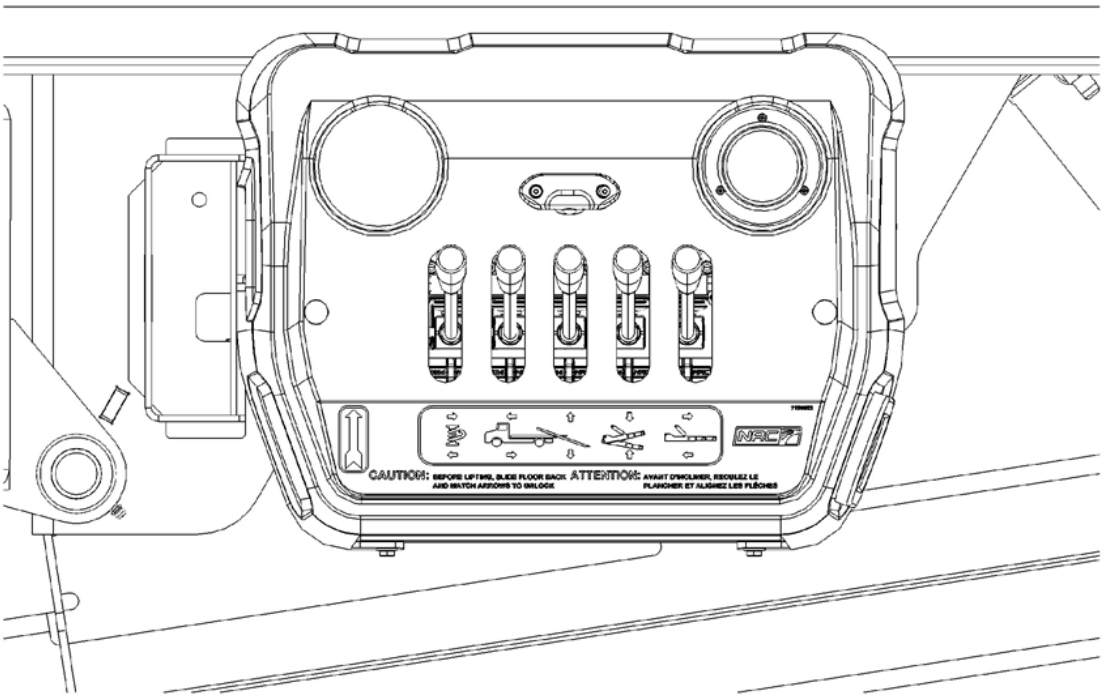


FIGURE 4 – MAIN CONTROL BOX (5 CONTROL LEVERS SHOWN)

The main control box has hydraulic levers that are activated by an upward or downward motion.

The main control box also has a hydraulic pressure gauge (right) and an optional pneumatic winch disengagement control (left).

FIGURE 5 – WINCH DISENGAGEMENT CONTROL

The auxiliary control box has only hydraulic levers. When you are facing the control box, they are in reverse order. The controls are activated by pushing or pulling on the levers.

A label indicates the controls for each of the lever movements.

FIGURE 6 – MAIN CONTROL BOX LABEL (5 LEVERS)

FIGURE 7 – MAIN CONTROL BOX LABEL (6 LEVERS)

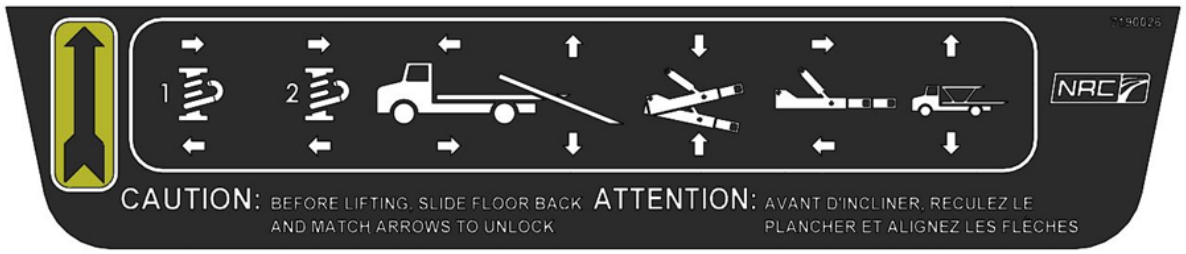
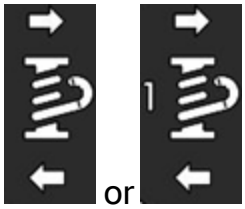
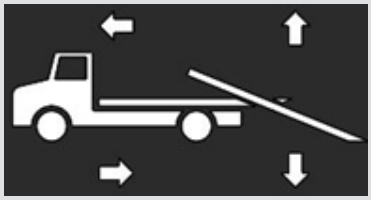
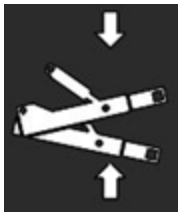


FIGURE 8 – MAIN CONTROL BOX LABEL (7 LEVERS)

FIGURE 9 – MAIN CONTROL BOX LABEL (8 LEVERS)

TABLE 1 – MAIN CONTROL BOX LEVERS

Element	Description
 or	Main winch lever
	For single-deck carriers: Auxiliary winch lever (option) For double-deck carriers with 7-lever control box: Top deck winch lever For double-deck carriers with 8-lever control box: Lower deck auxiliary winch lever
	Top deck winch lever (double-deck models only)
	Carrier slide and tilt levers
	Wheel lift elevation lever

Element	Description
	Wheel lift extension lever
	Top deck elevation lever (double-deck models only)

1.1.6 Dual joystick control box (option)

Your carrier may be equipped with the optional dual joystick control boxes. If so, there will be one on each side, with similar controls. The main dual joystick control box is located on the driver side, while the auxiliary dual joystick control box is on the passenger side.

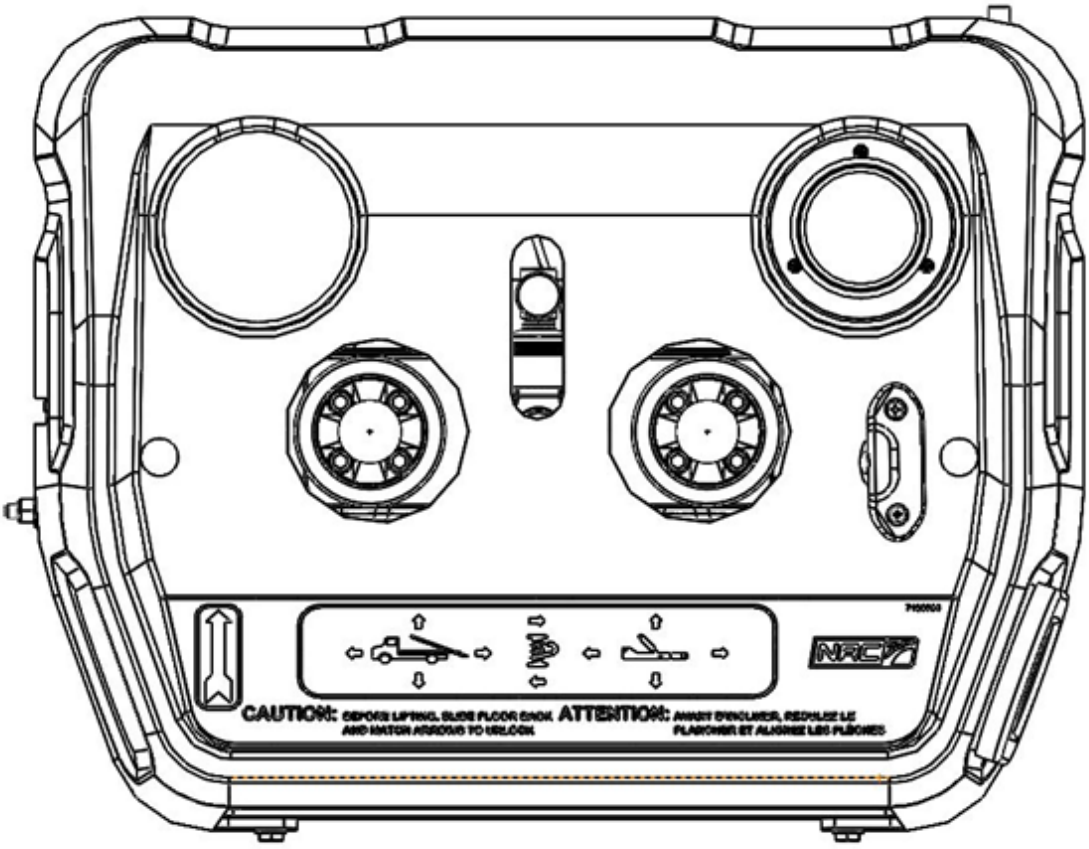


FIGURE 10 – DUAL JOYSTICK CONTROL BOX

The dual joystick control box has two joysticks and one hydraulic lever. The joysticks are activated when moved in any direction, while the lever is activated by an upward or downward motion.

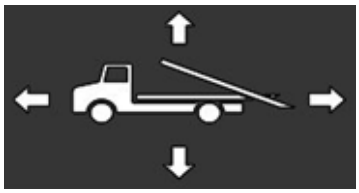
The main control box also has a hydraulic pressure gauge (right) and an optional pneumatic winch disengagement control (left).

The auxiliary control box has only two joysticks and the hydraulic lever. When you are facing the control box, they are in reverse order. The lever control is activated by pushing or pulling on the lever.

A label indicates the controls for each of the joystick and lever movements.

FIGURE 11 – DUAL JOYSTICK CONTROL BOX LABEL

TABLE 2 – DUAL JOYSTICK CONTROL BOX LEVERS

Element	Description
	Carrier slide and tilt joystick
	Winch lever
	Wheel lift elevation and extension joystick

1.1.7 Cabin control panel

A touch control panel is installed inside your vehicle. It is generally located on the dashboard, depending on the configuration of the vehicle, and features the following buttons and lights:

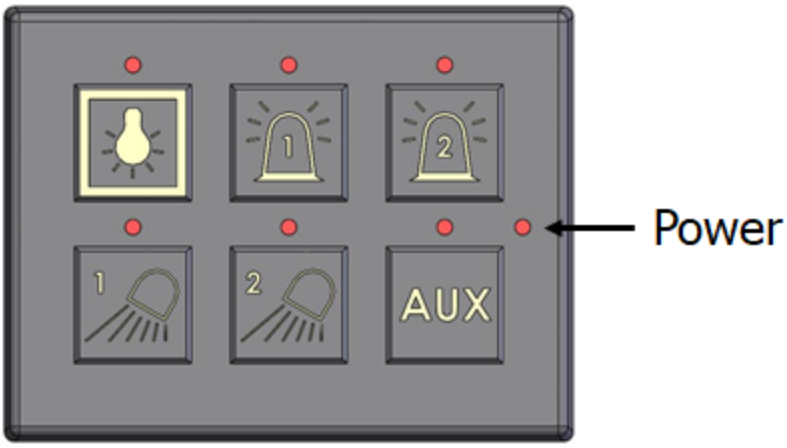


FIGURE 12 – CABIN CONTROL PANEL

TABLE 3 – CABIN CONTROL PANEL BUTTONS AND LIGHTS

Element	Description
	All lights
	Rotating beacon
	Strobe

Element	Description
	Work light 1
	Work light 2
	Toolbox
Power LED	Turn on for 3 seconds when the truck is started

1.1.8 Hydraulic diagrams

See Diagrams.

1.1.9 Pneumatic diagrams

See Diagrams.

1.2 Technical specifications

The following sections list the technical specifications for the components of all carrier models.

1.2.1 General specifications

TABLE 4 – GENERAL SPECIFICATIONS (IN METRIC [IMPERIAL])

Element	10TB	20TB	20TB-DD	30TB	40TB	40TB-DD
Carrier capacity	4,535 kg [10,000 lb.]	9,071 kg [20,000 lb.]		13,607 kg [30,000 lb.]	18,143 kg [40,000 lb.]	
Deck length	5.48-6.40 m [18-21’]	6.09-9.14 m [20-30’]		7.31-9.14 m [24-30’]		
Top deck length	-	-	4.57 m [15’]	-	-	4.57 m [15’]
Deck width	2.540 m or 2.590 m [100” or 102”]		2.540 m [100”]	2.540 m or 2.590 m [100” or 102”]		2.540 m [100”]
Top deck width	-	-	2.159 m [85-1/2”]	-	-	2.159 m [85-1/2”]
Deck thickness	4.76 mm [3/16”]	4.76 mm or 6.35 mm [3/16” or 1/4”]	4.76 mm [3/16”]	6.35 mm [1/4”]	6.35 mm [1/4”]	4.76 mm [3/16”]
Rails	Stationary or removable	Stationary or removable	Stationary	Stationary or removable	Stationary or removable	Stationary

1.2.2 Hydraulic system

TABLE 5 – HYDRAULIC SYSTEM SPECIFICATIONS (IN METRIC [IMPERIAL])

Hydraulic System	10TB	20TB	20TB-DD	30TB	40TB	40TB-DD
Hydraulic pump	61.26 cm^3/rev [3.72 $in.^3$/rev]					
Working hydraulic pressure	172 bar [2,500 psi]			193 bar [2,800 psi]		
Hydraulic tank	49.2 L [13 gal.]					
Slide cylinder I.D.	89 mm [3-1/2”]	101 mm [4”]				
Subframe elevation cylinders I.D.	63 mm [2-1/2”]	89 mm [3-1/2”]		101 mm [4”]		
Wheel lift elevation cylinders I.D.	63 mm [2-1/2”]	89 mm [3-1/2”]		114 mm [4-1/2”]		
Wheel lift extension cylinders I.D.	63 mm [2-1/2”]	63 mm [2-1/2”]		89 mm [3-1/2”]		
Double-deck cylinders I.D.	-	-	76 mm [3”]	-	-	76 mm [3”]

I.D. = Internal diameter

1.2.3 Winches

The following tables list the various winches and cables available for each carrier model, as well as their specifications.

⚠ CAUTION

The rated line pulls shown are for the winch only. See the wire rope manufacturer's manual for wire rope ratings.

TABLE 6 – GENERAL WINCH SPECIFICATIONS (IN METRIC [IMPERIAL])

Capacity kg [lb.]	3,629 [8,000]	4,536 [10,000]	5,443 [12,000]	6,804 [15,000]	9,072 [20,000]	11,340 [25,000]
Type	Planetary					
Standard cable						
Steel wire rope[1]						
mm x m [in x feet]	9.5 x 22.9 [3/8 x 75]	11.1 x 22.9 [7/16 x 75]		12.7 x 22.9 [1/2 x 75]	15.9 x 22.9 [5/8 x 75]	
Optional cable						
Steel wire rope[1]						
mm x m [in x feet]	9.5 x 30.5 [3/8 x 100]	11.1 x 30.5 [7/16 x 100]		12.7 x 30.5 [1/2” x 100]	15.9 x 45.7 [5/8 x 150]	
TuffX-12 HMPE synthetic wire rope[2]						
mm x m [in x feet]	9.5 x 25.9 [3/8 x 85]	11.1 x 25.9 [7/16 x 85][3]	-	12.7 x 25.9 [1/2 x 85]	15.9 x 25.9 [5/8 x 85]	

Note 1: Always be sure that at least five (5) full turns of steel winch cable are wrapped around the winch drum. The friction provided by this wrapped cable allows the drum to pull on the winch cable and move the load.

Note 2: Always be sure that at least eight (8) full turns of synthetic winch cable (black section of the cable) are wrapped around the winch drum. The friction provided by this wrapped cable allows the drum to pull on the winch cable and move the load.

Note 3: The synthetic wire rope option is only available for the 10,000 lb. std. drum winch, not for the 10,000 lb. "Y" drum winch.

TABLE 7 – WINCHES AVAILABLE FOR EACH CARRIER MODEL

	3,629 [8,000]		4,536 [10,000]		5,443 [12,000]		6,804 [15,000]	9,072 [20,000]	11,340 [25,000]
Drum	Std.	"Y"	Std.	"Y"	Std.	"Y"	Std.	Std.	Std.
10TB	S	O	O	O	O	-	-	-	-
20TB	S	O	O	O	O	O	O	-	-
20TB-DD (top deck)	-	S	-	O	-	-	-	-	-
30TB	-	O	-	O	-	O	S	O	O
40TB	-	O	-	O	-	O	-	S	O
40TB-DD (top deck)	-	S	-	O	-	-	-	-	-
S = standard, O = option, - = not available									

TABLE 8 – WINCH SPECIFICATIONS FOR THE 8,000 LB. MODEL (IN METRIC [IMPERIAL])

Element	Specification
Winch capacity	3,620 kg [8,000 lb.]
Wire rope	
Recommended	9.5 mm x 22.9 m [3/8” x 75’]
Working load limit	1,930 kg [4,250 lb.]

Element		Specification				
Breaking load limit		6,860 kg [15,100 lb.]				
Layer of cable*		1	2	3	4	5
Rated line pull per layer	kg lb.	3,620 8,000	3,080 6,800	2,670 5,900	2,350 5,200	2,120 4,700
Cable capacity (std. drum)	m ft.	7 25	16 55	27 90	39 130	51 170
Cable capacity ("Y" drum)	m ft.	4 15	10 35	18 60	25 85	34 115
Line speed (at 15 GPM)	MPM FPM	15.2 50	17.6 58	20.3 67	23.1 76	25.5 84

*These specifications are based on the recommended 3/8” wire rope.

TABLE 9 – WINCH SPECIFICATIONS OF THE 10,000 LB. MODEL (IN METRIC [IMPERIAL])

Element		Specification			
Winch capacity		4,530 kg [10,000 lb.]			
Wire rope					
Recommended		11.1 mm x 22.9 m [7/16” x 75’]			
Working load limit		2,610 kg [5,740 lb.]			
Breaking load limit		9,270 kg [20,400 lb.]			
Layer of cable*		1	2	3	4
Rated line pull per layer	kg lb.	4,530 10,000	3,760 8,300	3,220 7,100	2,810 6,200
Cable capacity (std. drum)	m ft.	6 20	15 50	24 80	35 115
Cable capacity ("Y" drum)	m ft.	4 15	9 30	16 55	22 75
Line speed (at 15 GPM)	MPM FPM	9.8 32	11.6 38	13.4 44	15.5 51

*These specifications are based on the recommended 7/16” wire rope.

TABLE 10 – WINCH SPECIFICATIONS FOR THE 12,000 LB. MODEL (IN METRIC [IMPERIAL])

Element		Specification				
Winch capacity		5,440 kg [12,000 lb.]				
Wire rope						
Recommended		11.1 mm x 22.9 m [7/16” x 75’]				
Working load limit		2,610 kg [5,740 lb.]				
Breaking load limit		9,270 kg [20,400 lb.]				
Layer of cable*		1	2	3	4	5
Rated line pull per layer Low speed	kg lb.	5,440 12,000	4,530 10,000	3,850 8,500	3,400 7,500	2,990 6,600
Cable capacity (std. drum)	m ft.	6 20	15 50	24 80	35 115	48 160
Cable capacity ("Y" drum)	m ft.	4 15	10 34	16 55	24 80	-
Line speed (at 15 GPM) Low speed	MPM FPM	9.7 32	11.5 38	13.4 44	15.5 51	17.3 57

*These specifications are based on the recommended 7/16” wire rope.

TABLE 11 – WINCH SPECIFICATIONS FOR THE 15,000 LB. MODEL (IN METRIC [IMPERIAL])

Element		Specification				
Winch capacity		6,800 kg [15,000 lb.]				
Wire rope						
Recommended		12.7 mm x 22.9 m [1/2" x 75']				
Working load limit		3,325 kg [7,320 lb.]				
Breaking load limit		12,090 kg [26,600 lb.]				
Layer of cable*		1	2	3	4	5
Rated line pull per layer Low speed	kg lb.	6,800 15,000	5,710 12,600	4,890 10,800	4,300 9,500	3,850 8,500
Cable capacity	m ft.	10 35	22 75	38 125	54 180	73 240
Line speed (at 15 GPM) Low speed	MPM FPM	7.6 25	8.8 29	10.3 34	11.8 39	13.4 44

*These specifications are based on the recommended 1/2" wire rope.

TABLE 12 – WINCH SPECIFICATIONS FOR THE 20,000 LB. MODEL (IN METRIC [IMPERIAL])

Element		Specification				
Winch capacity		9,070 kg [20,000 lb.]				
Wire rope						
Recommended		15.9 mm x 22.9 m [5/8” x 75’] 6X36 IWRC EIPS				
Working load limit		5,275 kg [11,600 lb.]				
Breaking load limit		18,725 kg [41,200 lb.]				
Layer of cable*		1	2	3	4	5
Rated line pull per layer Low speed**	kg lb.	9,070 20,000	7,525 16,600	6,440 14,200	5,620 12,400	4,985 11,000
Cable capacity	m ft.	9.1 30	20.4 67	33.5 110	48.4 159	65.2 214
Line speed (at 20 GPM) Low speed	MPM FPM	8.8 29	10.3 34	12.1 40	14.0 46	15.8 52

*These specifications are based on the recommended 5/8” wire rope.

**Winch performance in high speed yields line speeds 2x those charted above and line pulls 1/2x those charted above.

TABLE 13 – WINCH SPECIFICATIONS FOR THE 25,000 LB. MODEL (IN METRIC [IMPERIAL])

Element		Specification				
Winch capacity		11,340 kg [25,000 lb.]				
Wire rope						
Recommended		15.9 mm x 22.9 m [5/8” x 75’] 6X36 IWRC EIPS				
Working load limit		5,275 kg [11,600 lb.]				
Breaking load limit		18,725 kg [41,200 lb.]				
Layer of cable*		1	2	3	4	5
Rated line pull per layer Low speed**	kg lb.	11,340 25,000	9,430 20,800	8,110 17,900	7,070 15,600	6,300 13,900
Cable capacity	m ft.	35 10	75 22	125 38	185 56	245 74
Line speed (at 15 GPM) Low speed	MPM FPM	27 8.3	31 9.5	36 11.1	41 11.8	46 14.0

*These specifications are based on the recommended 5/8” wire rope.

**Winch performance in high speed yields line speeds 2x those charted above and line pulls 1/2x those charted above.

1.2.4 Wheel lift capacity

TABLE 14 – WHEEL LIFT CAPACITY (IN METRIC [IMPERIAL])

	10TB "Light Duty Carrier Wheel Lift"	20TB / 20TB-DD "Medium Duty Carrier Wheel Lift"	30TB "Super Medium Duty Carrier Wheel Lift"	40TB / 40TB-DD "Heavy Duty Carrier Wheel Lift"
Capacity when cylinder is fully retracted (maximum)	2,268 kg [5,000 lb.]	3,629 kg [8,000 lb.]	7,938 kg [17,500 lb.]	9,072 kg [20,000 lb.]
Capacity when cylinder is fully extended (minimum)	816 kg [1,800 lb.]	1,361 kg [3,000 lb.]	2,948 kg [6,500 lb.]	9,536 kg [10,000 lb.]
Towing capacity (maximum)	4,082 kg [9,000 lb.]	6,804 kg [15,000 lb.]	15,876 kg [35,000 lb.]	22,680 kg [50,000 lb.]

2 SAFETY

2.1 General

⚠ DANGER

Safety must be your top priority when operating and maintaining this equipment. Improper use of this equipment is dangerous. Failure to comply with the safety guidelines in this manual can cause accidents that may result in material damage, injury or even death.

Should you find that this manual contains insufficient or unclear information about equipment operation and maintenance, please contact your nearest NRC distributor for more details (see the Authorized distributors and service providers section).

2.2 Safety labels

Ensure that all DANGER, WARNING, CAUTION and other labels and lifting capacity charts are legible and properly placed. Clean and replace them as needed.

2.3 Intended use

NRC Industries equipment is intended for use only by trained and qualified operators who have carefully read and understood the contents of this manual.

This product was designed to recover and tow vehicles that do not exceed its tow ratings.

This manual explains how to properly use the towing equipment. However, you should also refer to the towing recommendations from the vehicle manufacturer or a certified towing manual to learn about recovery procedures for the vehicle to be towed.

⚠ DANGER

This equipment was not designed for lifting persons and must never be used for that purpose.

2.4 NRC responsibilities

IMPORTANT: NRC Industries Inc. rejects any claim that may result from the incorrect or unlawful application of its equipment.

NRC recommends that carrier mounting plates be regularly inspected by an authorized NRC distributor. Should a visual inspection identify any cracks or structural damage, immediately discontinue use until the equipment is deemed safe.

NRC recommends that the hydraulic system of the carrier be checked at least once a year, ONLY by an authorized NRC distributor.

Carriers must not be modified without prior authorization from NRC Industries. Any unauthorized modifications may void the warranty.

2.5 Supervisory responsibilities

A full understanding of this manual is essential to safely operate and maintain this equipment. Ensure that all operators carefully read and understand this manual before allowing them to operate or maintain the equipment or any of its parts. Once operators have read and understood the manual, have them sign the Operator record at the end of this manual.

Equipment manufactured by NRC Industries is intended for use by towing and recovery professionals, and not unqualified or untrained individuals. The equipment should not be loaned or rented to anyone lacking the required skills.

NRC recommends fitting ALL wreckers with beacons or other lights to signal their presence and comply with local regulations.

2.6 Operator responsibilities

Read and understand this manual before attempting to operate or maintain your equipment. Read all the warning labels and exercise good judgment and common sense while using the wrecker.

Never operate this equipment under the influence of drugs or alcohol.

EMERGENCIES: Use the emergency stop to immediately stop the machine.

2.6.1 Wear protective clothing

Always wear protective gloves.

Wear a hard hat and safety footwear when walking on the carrier deck.

Wear long sleeves, bright-coloured clothing with reflective strips, work gloves, and safety boots.

Wear safety goggles.

2.6.2 Follow safety rules

Before driving the vehicle, check that the power take-off (PTO) is disengaged:

- The control levers should no longer be functional.
- The warning light in the cab should be off.

Never tow a vehicle that has people inside.

Never exceed equipment or chassis ratings. This could cause injury and/or damage the equipment.

Always use safety chains when towing.

Only suspend loads from the winch cables. Applying a load to the vehicle by another means is strictly prohibited.

If the equipment controls are too near traffic or a potential hazard, use the remote control and keep your distance.

When operating the vehicle on the roadside or in any dangerous area, select the controls situated away from the danger or traffic to ensure maximum safety.

When the vehicle is not in use, ensure that the PTO is disengaged.

Inspect the cables regularly and replace any worn or damaged ones.

Never jump off the carrier and never use the control box or wheel lift to climb onto your carrier. If your carrier model is too high to climb, use the side ladders (optional on 10TB models).

When climbing onto the carrier, make sure to wear adequate boots and ensure that there is no ice, cooling liquid, oil, water or any other material that can make the surface slippery.

When placing your carrier back into the transport position, make sure that no one is between the vehicle and the carrier.

Always follow your sector's tie-down procedures and regulations.

2.6.3 Avoid danger zones

Always keep clear of winches and cables. Although the relatively low speed of the winches will keep any risks to a minimum, stay away from cables at all times – regardless of whether they are moving or stationary, taut or loose. Never step over a cable or chain, whether it is taut or not.

Never place yourself behind, in front of, or under a load that is moving or that is not properly secured.

2.6.4 Set up a safety perimeter

Always set up a safety perimeter at least 45 m (150') in diameter around the equipment and any load or vehicle. Do not allow anyone to enter this danger zone when you are using the equipment.

In addition, do not allow anyone within 75 m (250') of a winch cable.

3 OPERATION

This chapter describes how to operate the carrier. Operating a carrier involves the simultaneous use of many functions and components. To take advantage of all the capabilities of your carrier, you must first understand the truck and carrier stability.

⚠ DANGER

Extra caution is required when operating the carrier due to its blind spots.

Before operating the carrier, walk all the way around it to ensure that no people or obstacles are present.

3.1 Truck and carrier stability

⚠ DANGER

Always respect your NRC carrier's capacity and respect the load limits stated in local, regional and national regulations. If you exceed the loading capacity, you may damage some components and put your safety and that of others at risk.

3.1.1 Lengthwise weight distribution

It is important to consider lengthwise weight distribution to ensure stable and adequate control of your truck and to respect loading regulations.

Generally, you will exceed the loading capacity of your truck's front axle if you place the load too far forward. Conversely, if you place the load too far back or pick up a heavy load with the wheel lift, it is likely that you will exceed the rear axle's capacity, reducing steering capabilities and possibly risking loss of control of the truck. Therefore, make sure that the load is well placed and the weight adequately distributed. NRC recommends that you keep at least 50% of the initial load over the front axle.

See your local regulatory documentation to find out how to calculate the weight distribution over your vehicle's axles.

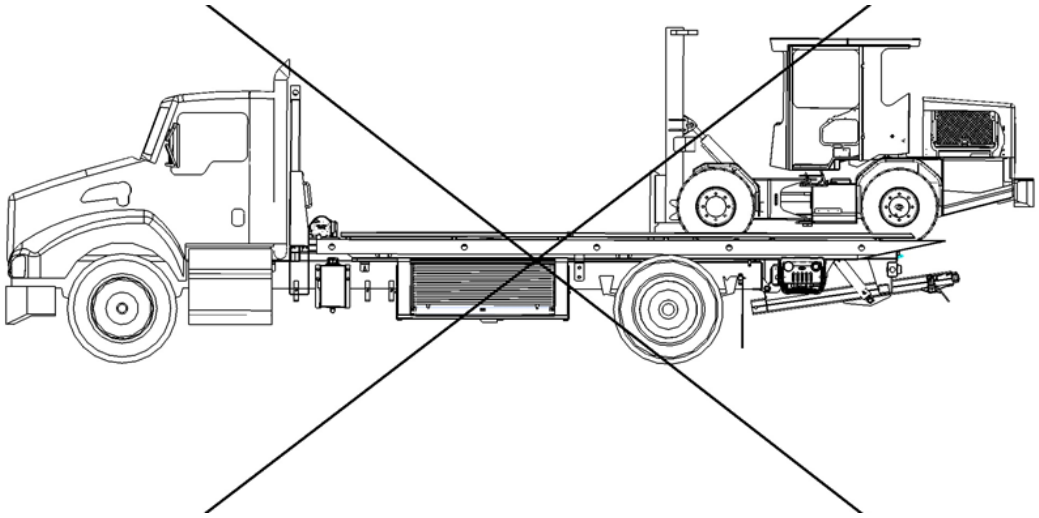


FIGURE 13 – LOAD TOO FAR BACK

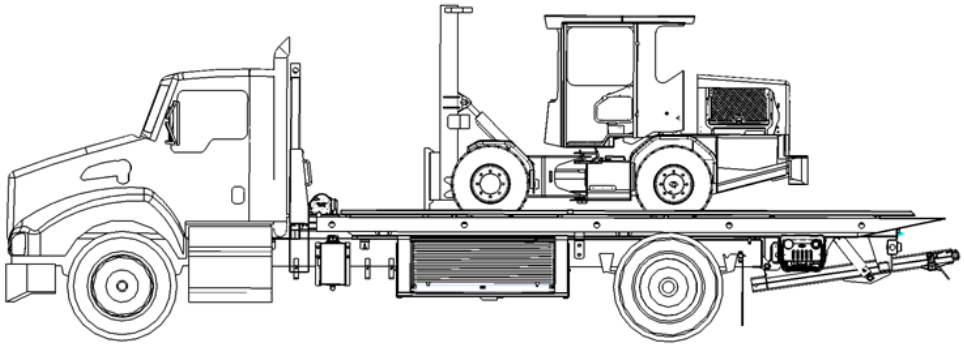


FIGURE 14 – CORRECTLY CENTRED LOAD

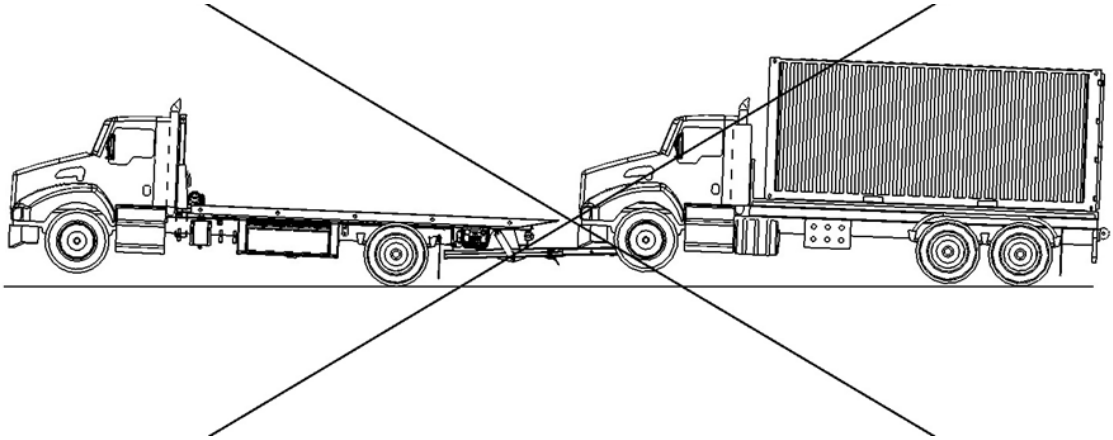


FIGURE 15 – LOAD TOO HEAVY FOR THE WHEEL LIFT

3.1.2 Lateral weight distribution

The load must be centred on your carrier, as much as possible, to prevent the truck from tipping over. The vehicle will tend to rock less, and the weight of your NRC carrier's components will be evenly distributed.

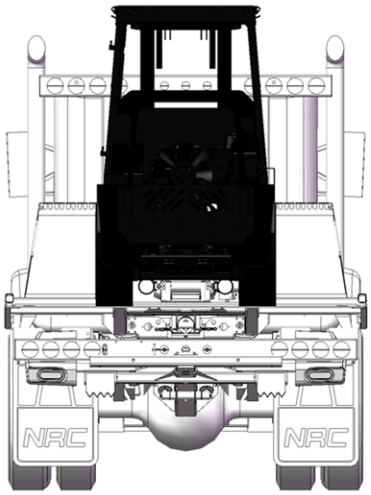


FIGURE 16 – CORRECT LOAD DISTRIBUTION

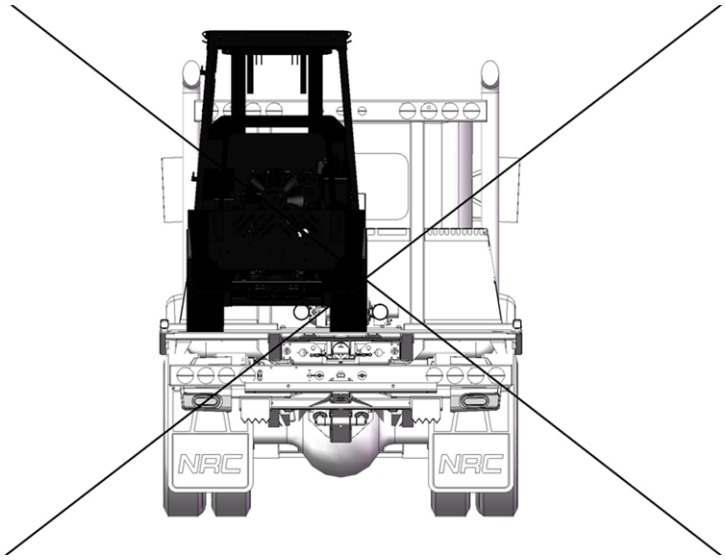


FIGURE 17 – INCORRECT LOAD DISTRIBUTION

3.1.3 Suspension movement

Some vehicles must be braced with devices to block the wheels. If this is the case, keep in mind that the part of the hauled vehicle hung over the suspension may sway on the carrier during transport. You will need to adjust your driving accordingly.

3.2 Common operating procedures

This section explains the procedures for engaging and disengaging the power take-off, as well as putting the carrier into loading position and returning it to transport position.

3.2.1 Engaging the power take-off (PTO)

The power take-off (PTO) transfers power from the engine to your NRC carrier's hydraulic pump. A control in your vehicle allows you to enable or disable the PTO. Depending on the type of vehicle and transmission, the PTO will either be pneumatic or electric.

NOTICE

To prevent mechanical components from wearing or breaking prematurely, never engage the PTO without having first pressed down on the clutch pedal or put the transmission in neutral.

Never drive while the PTO is engaged, as it could damage your NRC carrier's hydraulic pump.

Pneumatic PTO control

Vehicles with a manual transmission generally come with a pneumatic PTO control similar to Figure 18.

NOTE: Your truck may be equipped with a different PTO control switch. The procedure for engaging and disengaging the PTO may vary slightly.

FIGURE 18 – PNEUMATIC PTO CONTROL

To engage a pneumatic PTO:

1. Start the vehicle, put the transmission in neutral and activate the parking brake.
2. Press down on the clutch pedal.
3. Engage the PTO using the control switch on the dash.
4. Release the clutch pedal.
5. Set the rpm as required: see the label on the vehicle.

To disengage a pneumatic PTO:

1. Press down on the clutch pedal.
2. Disengage the PTO using the control switch on the dash.
3. Release the clutch pedal.

Electric PTO control

Vehicles with an automatic transmission or vehicles without a pneumatic circuit generally come with an electric control to activate the PTO. This control may be similar to Figure 19 or may be on a button that is already programmed for this purpose on the vehicle's dashboard.

FIGURE 19 – ELECTRIC PTO CONTROL

If your vehicle has a manual transmission, follow the same steps as for the pneumatic control. If it has an automatic transmission, follow the steps below to engage the PTO:

1. Start the vehicle, put the transmission in neutral and activate the parking brake.
2. Press the electrical control to engage or disengage the PTO.

3.2.2 Putting the carrier in loading position

Your NRC carrier's deck is operated by two hydraulic levers (or one joystick, with the optional dual joystick control box) on the control box. The carrier slide lever moves the deck horizontally back and forth on the carrier, while the carrier tilt lever tilts the deck into its loading position and back to its horizontal position. The optional carrier slide and tilt joystick will do the same.

NOTE: If there is a load on the carrier, you can use the wheel lift to hold the carrier off the ground before initiating the procedure. This will stabilize the truck, preventing the carrier from dragging along the ground and damaging the pavement (see 3.6 Using the wheel lift for the wheel lift procedure).

1. Using the carrier slide lever, slide the deck back until the yellow arrow reaches the control box position. This operation moves the carrier deck away from its front lock.

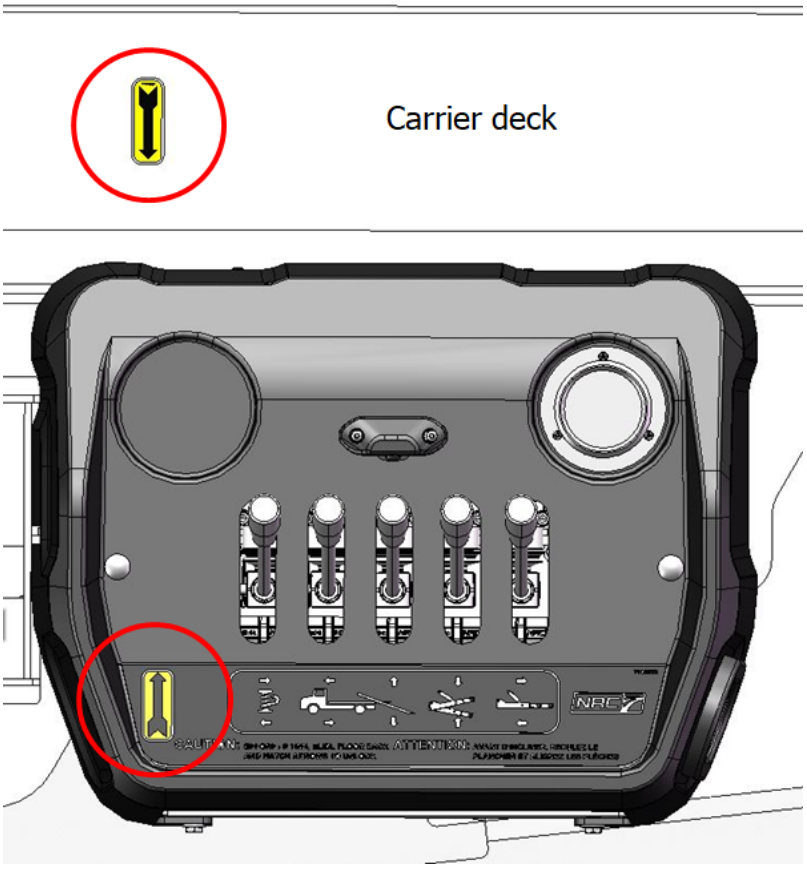


FIGURE 20 – SLIDING BACK THE DECK

2. Using the carrier tilt lever, tilt the deck at a 20-degree angle. Then use the carrier slide lever and continue to slide the carrier deck backward.

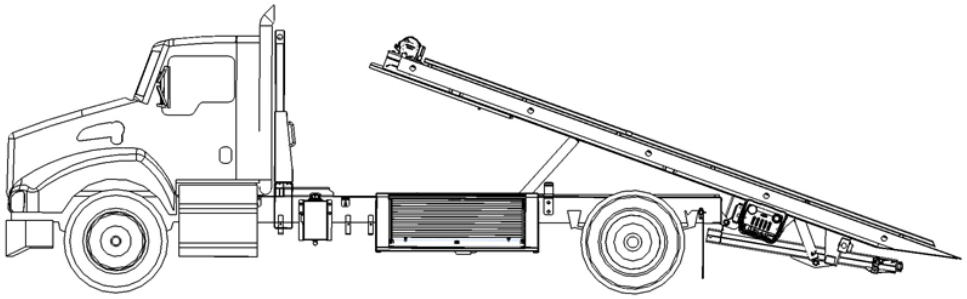


FIGURE 21 – INCLINING THE DECK

3. When the deck has reached the rearmost position, use the carrier tilt lever to tilt the deck so that it touches the ground.

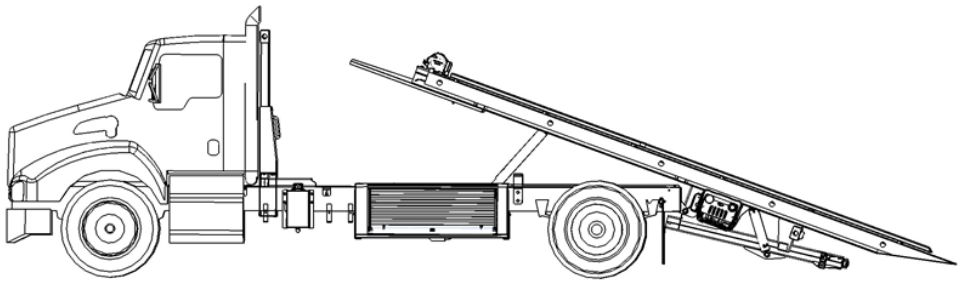


FIGURE 22 – SLIDING THE DECK BACKWARD TO THE GROUND

3.2.3 Returning the carrier to transport position

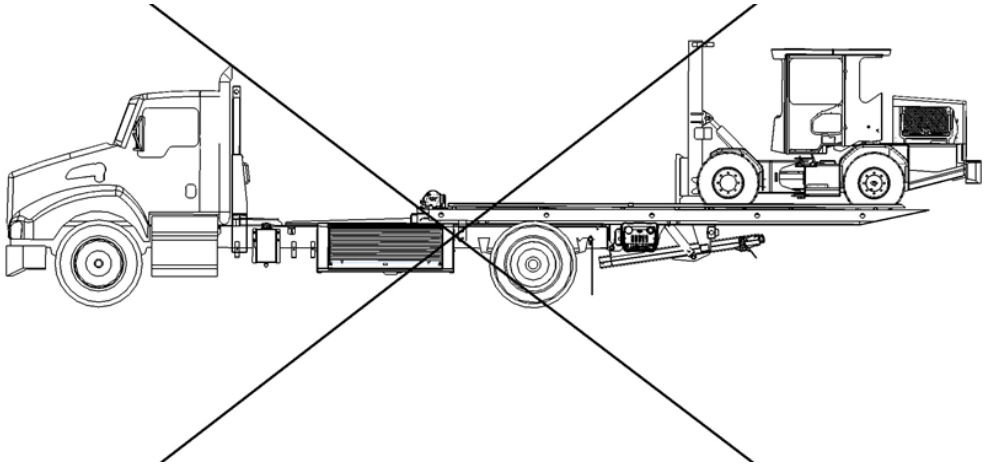
NOTE: If there is a load on the carrier, you can use the wheel lift to hold the carrier off the ground before initiating the procedure. This will stabilize the truck, preventing the carrier from dragging along the ground and damaging the pavement (see 3.6 Using the wheel lift for the wheel lift procedure).

⚠ DANGER

Before moving the deck forward or backward, ensure that there are no chains, hooks or other devices underneath the body. They could collide with the carrier's components and cause serious damage.

If there is a load on the carrier, make sure that it is blocked and braced to prevent movement when it is tilted.

Never fully slide the deck backward prior to tilting it, especially if it is loaded. The carrier is not designed to support or lift heavy loads at its extremity.



1. Using the carrier tilt lever, slightly tilt the deck downward.
2. Slide the deck forward until the arrow is aligned with the control panel.
3. Using the carrier tilt lever, return the deck to a level position.
4. Using the carrier slide lever, slide the deck forward to a locked-in position (at the very front of the carrier).

3.3 Using the winches

⚠ DANGER

Always remember that your NRC carrier winch is powerful and can cause serious damage and injury.

Always use caution when handling a winch. If it is not used properly, serious injury or even death could occur.

Never exceed the capacity authorized by the winch manufacturer.

For more information on how to operate or maintain a winch, see the winch manual.

3.3.1 General procedures

Make sure to operate the winch steadily and gradually. This enables you to ensure that you are rolling and unwinding the cable correctly, limiting the risk of damaging the hauled vehicle. It also increases the life expectancy of the equipment.

For smooth operation, the winch is activated by a directional and proportional hydraulic control. Wind or unwind the cable by moving the control lever in the direction that is indicated on the control box.

NOTICE

When operating a winch, always look at the cable when winding. It should wind in a consistent fashion and never intertwine.

Make sure that no knots form at the drum entrance.

Maintain a minimum of five (5) turns on the drum.

Inspect the cables regularly. Keep the cables clean and well greased at all times.

Replace fraying wire cables with cables that meet the winch manufacturer requirements.

3.3.2 Maximizing the pulling capacity of the winch

Winches have more pulling force when more cable is unwound. To maximize the pulling force, unwind the cable so that only one layer remains on the winch drum. This will give you the maximum pulling force.

NOTE: See Section 1.2.3 Winches or the manual provided by the winch manufacturer for information about pulling force versus the number of layers of cable remaining on the drum.

3.3.3 Increasing winch capacity with pulleys

If you need to pull a load that exceeds the capacity of your winch, you can increase pulling capacity by using pulleys. To do so, use one or more pulley and an anchor to pull the load as shown in Figure 23. Using one pulley approximately doubles the winch capacity. You also need to consider the friction effect, which reduces the pulling force of a pulley by approximately 10%.

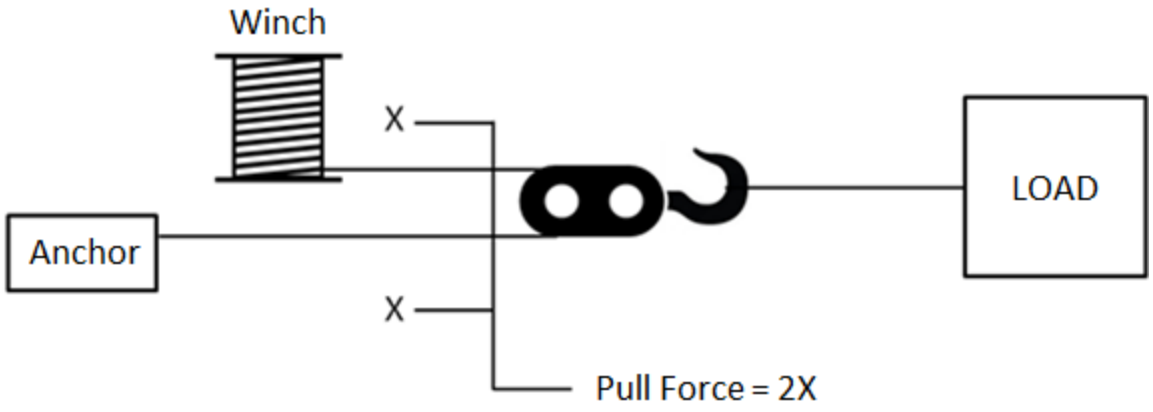


FIGURE 23 – CALCULATING INCREASED WINCH CAPACITY

You can calculate the total winch-pulley-anchor capacity using this formula:

Winch-pulley-anchor pull force = 90% of (2 x X)

Where X = winch capacity

For X = 20,000 lb.
Total pull force = 90% of (2 x 20,000 lb.) = 36,000 lb.

3.3.4 Disengaging the winch

To allow the cable to unwind quicker, you have to disengage the winch drum. There are two devices that disengage the winch drum. Your NRC carrier will be equipped with one of these devices, depending on the type of vehicle and options selected.

⚠ DANGER

Before disengaging the drum from the winch, release the tension on the cable by slightly unwinding it using the hydraulic control.

Never re-engage the drum on the winch when unwinding the cable.

Never disengage the drum to get the hauled vehicle off the carrier quicker.

Using the winch handle

To manually disengage the winch, pull directly on the winch handle; shapes and positions may vary depending on the model. An example of a handle is shown in the next figure.

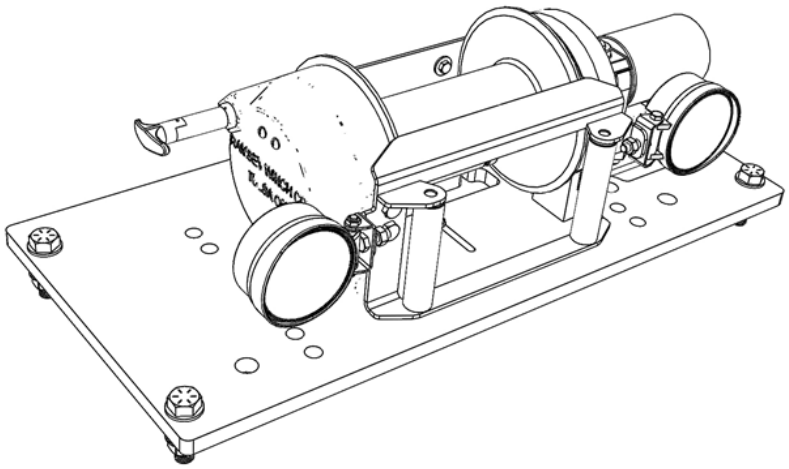


FIGURE 24 – WINCH WITH THE MANUAL DISENGAGEMENT HANDLE

Using the winch disengagement switch

Pneumatic disengagement can be done using the toggle switch found at the top left corner of the main control panel. Move the switch up to disengage the winch and move the switch down to engage it again.

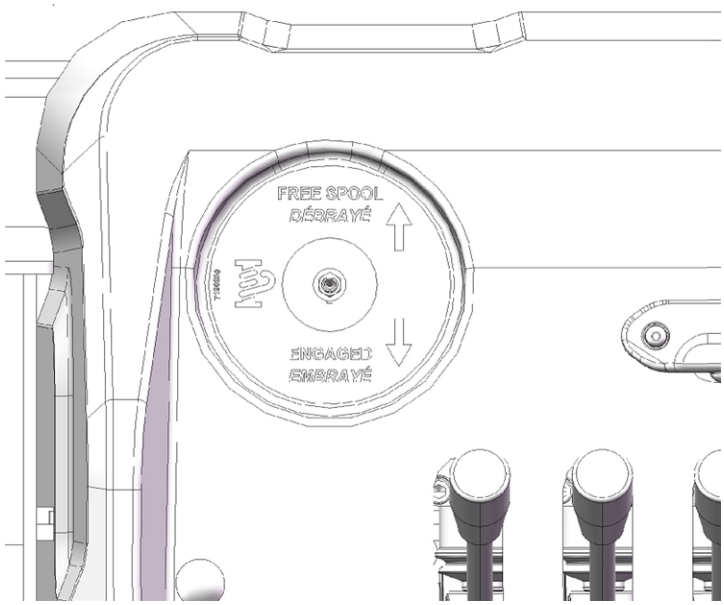


FIGURE 25 – SWITCH USED TO DISENGAGE OR ENGAGE THE WINCH

3.3.5 Using the winch in movement

Winches are not designed to retain or secure the load during transport; therefore, a winch should never be overextended during transport. Shocks and after-effects of a restrained load may damage the winch. Keep slight tension on the cable when your vehicle is in movement. Use adequate devices to secure the load on the carrier (see 3.5 Bracing the load).

3.3.6 Using the winch for recovery

The carrier's winch can be used for certain recovery operations; however, note that a NRC carrier is not a wrecker and is not intended for such activity.

The following procedure is for using the winch for recovery operations. Recovery operations can be successful only when proper procedures are followed.

NOTICE

For side recovery, always use the roller-guide or pulley when you use the winch.

Never haul a load unless the carrier deck is in a locked-in position (at the very front of the carrier). Otherwise, you could severely damage your carrier.

⚠ WARNING

Recovery operations are delicate procedures. Safe recovery operations can only be conducted with vehicles for which you have received adequate training.

Never use the carrier to lift a load vertically from a bridge or onto a steep slope. NRC carriers are not designed to be used as cranes.

1. Verify that the carrier deck is in a locked-in position (at the very front of the carrier).

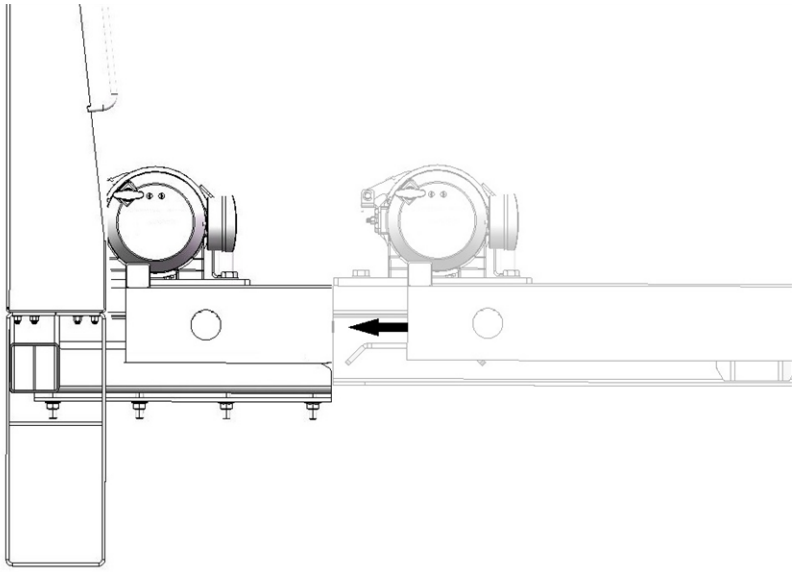


FIGURE 26 – CARRIER DECK IN LOCKED-IN POSITION

2. For side recovery, insert the roller-guide or the pulley at the back of the carrier into the provided anchor. Insert the retaining pin and hair pin under the deck to secure the roller-guide or pulley in place.

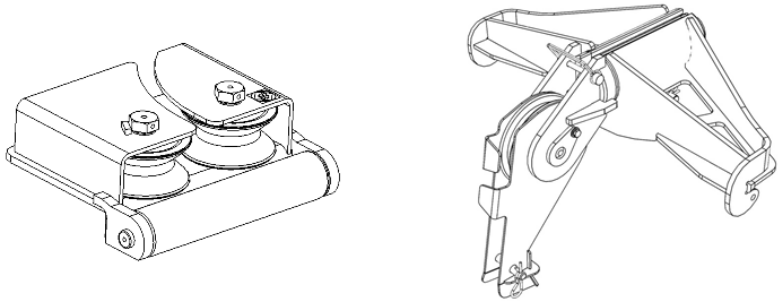


FIGURE 27 – ROLLER-GUIDE AND PULLEY

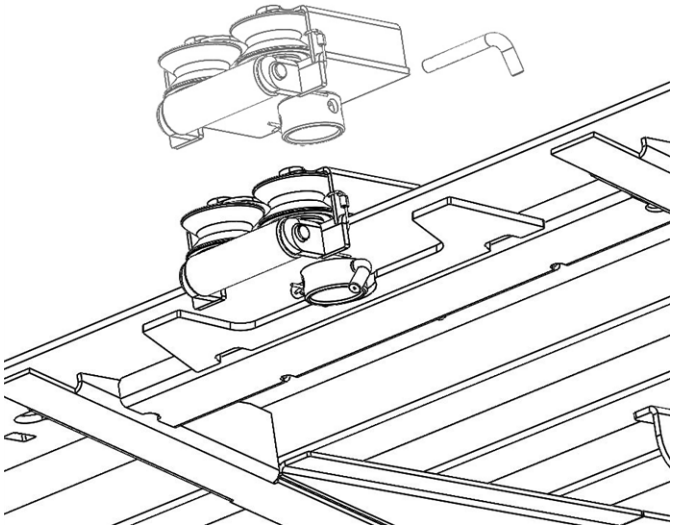


FIGURE 28 – RETAINING PIN

3. When on a slippery surface, attach the spades onto the wheel lift.

4. Lower the wheel lift to the ground to stabilize and slightly raise the truck.

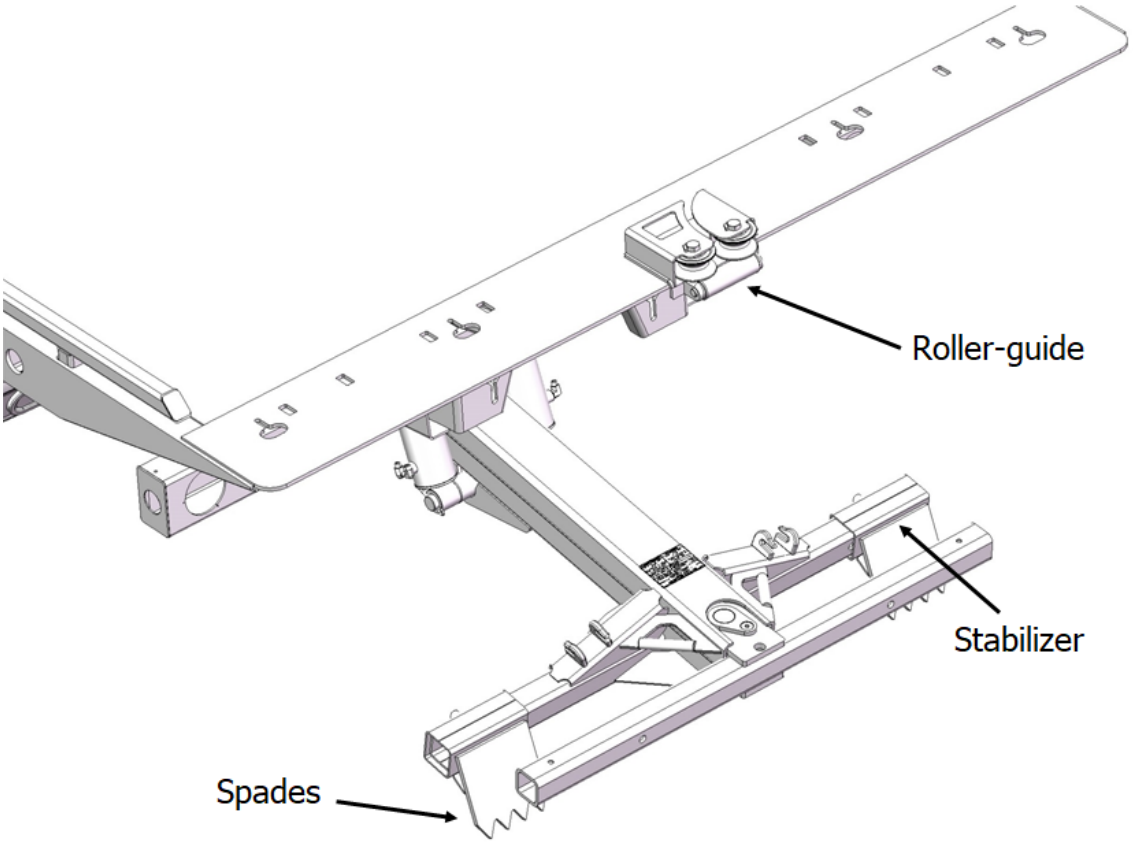


FIGURE 29 – USE THE WHEEL LIFT TO STABILIZE THE TRUCK

5. Disengage the winch and pass the cable through the roller-guide.

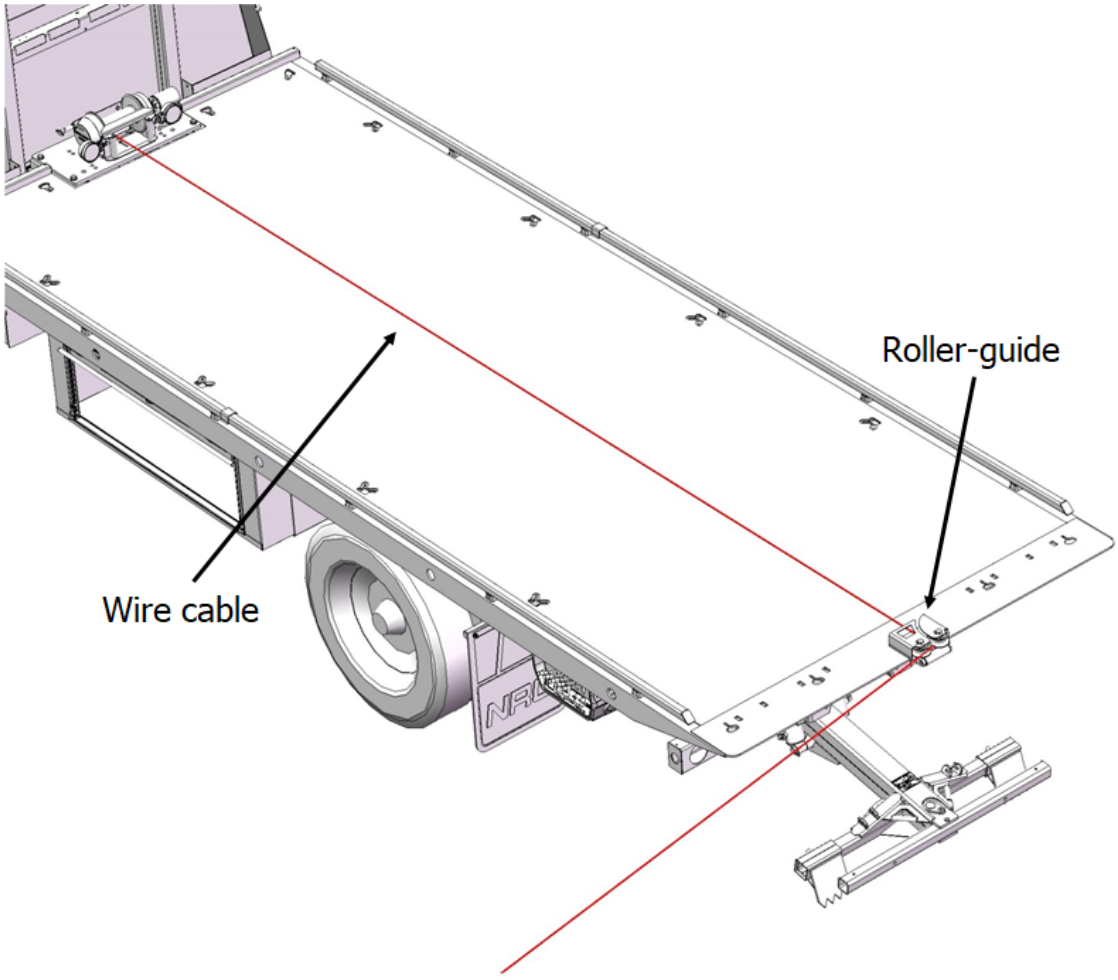


FIGURE 30 – SIDE RECOVERY

6. Attach the winch to the vehicle to be hauled and follow the procedure for loading a vehicle (see 3.4.2 Loading the vehicle).
7. Once the vehicle is in a position to be pulled straight, remove the roller-guide or pulley. Position your carrier so that you can pull the vehicle straight and continue using the winch to pull the vehicle onto the carrier (see 3.4 Loading and unloading a vehicle

3.4 Loading and unloading a vehicle

The procedure below is general and may not apply to all situations you encounter with your NRC carrier. Consequently, NRC does not accept any responsibility for the consequences of using these procedures.

⚠ DANGER

Before loading or unloading the carrier, you must:

- **Familiarize yourself with all your NRC carrier's controls and accessories.**
- **Understand the basic principles of hauling a vehicle.**
- **Create a safe environment for yourself and for others by working, as much as possible, in a secure place and by clearly indicating your presence.**
- **Keep anyone who is not adequately trained away from your work area and out of danger.**

3.4.1 Positioning the carrier

1. When you need to haul a vehicle, first ensure that the site is safe and free of obstacles.
2. Position your truck in front of the vehicle to be hauled and put it in reverse. Back up, leaving a distance of 10 to 15 feet between the two vehicles, as illustrated in Figure 31.

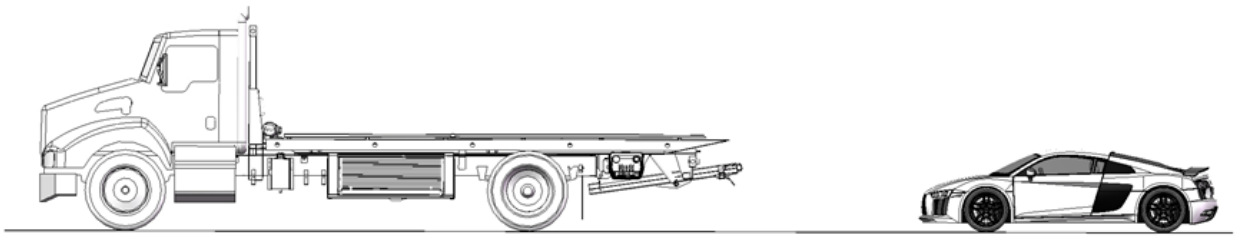


FIGURE 31 – PREPARATION DISTANCE: 10 TO 15 FEET

3.4.2 Loading the vehicle

⚠ DANGER

Consult the vehicle's manual to locate where the chains need to be used on the hauled vehicle.

Always respect your local, regional and national blocking/bracing, hauling, and tie-down standards and regulations.

Always use chains, straps or other bracing devices approved by regulatory organizations.

1. Before getting out of your truck, engage the PTO and adjust the engine speed according to your vehicle's and your NRC carrier's required operating pressure.

   NOTE: The engine usually operates at around 1,100 to 1,200 rpm. The operating pressure must be lower than 2,500 psi for 10TB and 20TB carriers and lower than 2,800 psi for 30TB and 40TB carriers.

2. Lower the end of the carrier deck to the ground (see 3.2 Common operating procedures).

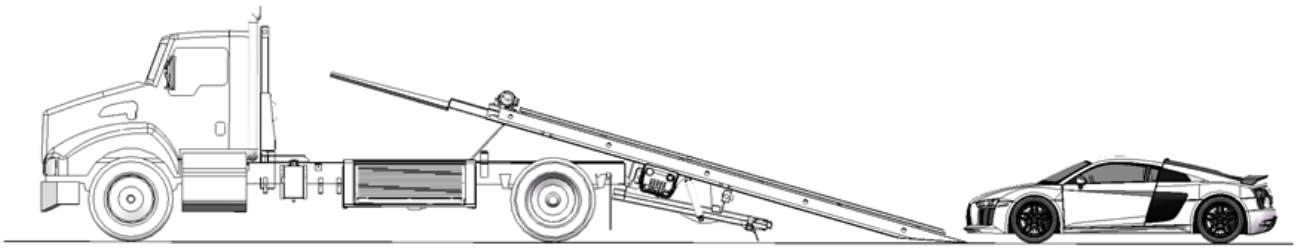


FIGURE 32 – POSITIONING THE CARRIER DECK

3. Disengage the winch and pull the cable to the front of the vehicle to be hauled.

4. Secure a chain (or an adequate belt) to the anchors recommended by the manufacturer of the vehicle to be hauled.

> IMPORTANT: Never attach the cable hook directly to the hauled vehicle.

5. Engage the winch and wind the cable in, but ensure that the cable is not under tension.
6. Place the vehicle in neutral and load it onto the carrier (see 3.3 Using the winches).
7. When the vehicle is positioned on the carrier, install two blocking devices on the front (one on each side). Do not stand behind the hauled vehicle until it has been securely blocked and braced.

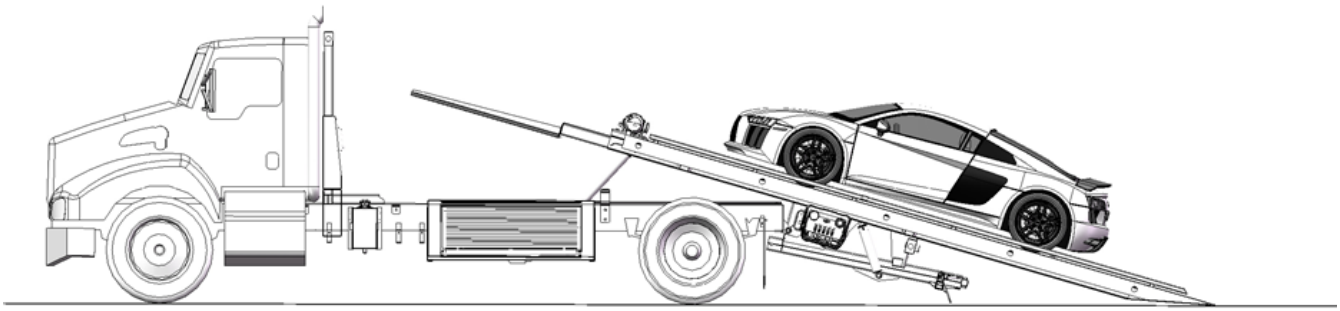


FIGURE 33 – HAULING THE VEHICLE

8. Put the hauled vehicle in park and apply the parking brake.

9. Using the carrier tilt lever, slightly decrease the angle of the carrier. Keep the carrier slightly tilted to prevent the vehicle from moving forward. If necessary, use the wheel lift as a stabilizer. See 3.2.3 Returning the carrier to transport position for more information on how to return the carrier to transport position.

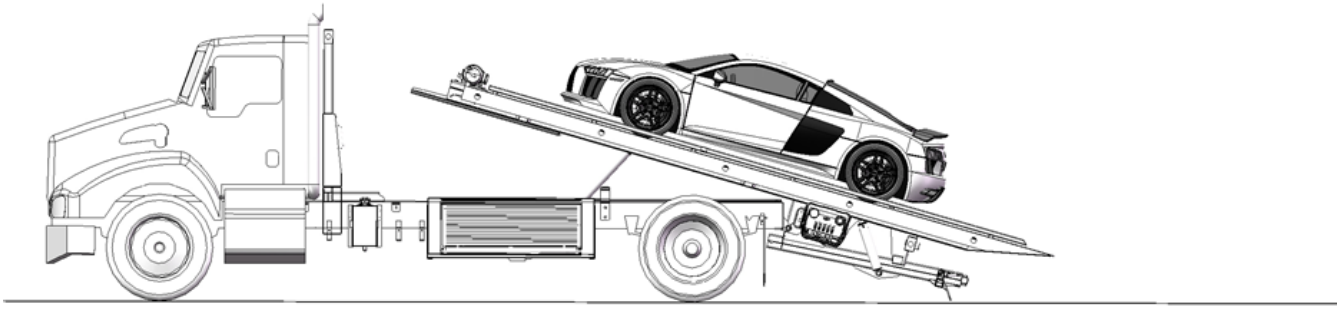
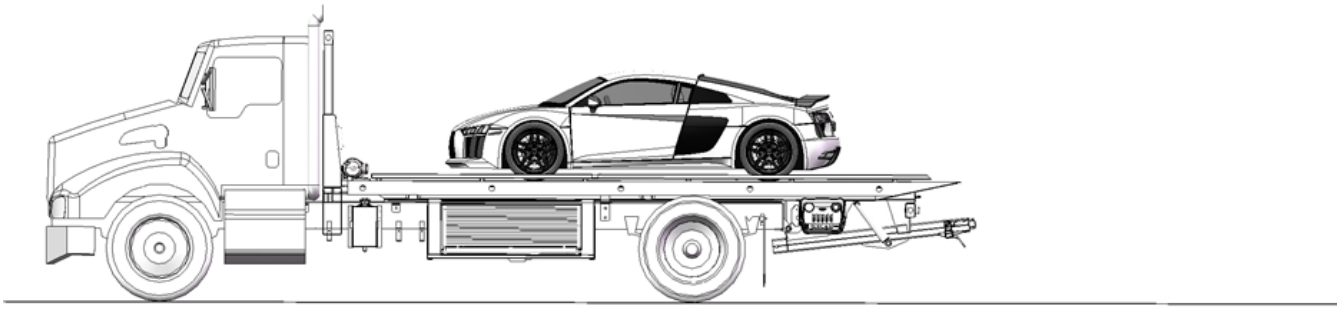


FIGURE 34 – DECREASING THE ANGLE OF THE CARRIER

10. Install the recommended blocking devices on the hauled vehicle.
11. Using the carrier tilt lever, return the carrier to a level position.

12. Using the carrier slide lever, slide the carrier deck forward to a locked-in position (at the very front of the carrier).



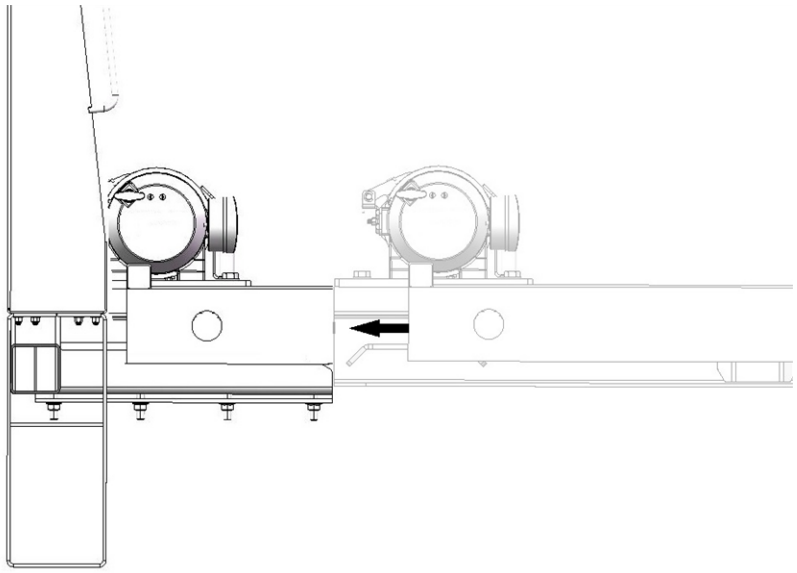


FIGURE 35 – LOCKED-IN TRANSPORT POSITION

13. Brace the vehicle on your carrier. See 3.5 Bracing the load.

14. Perform a final inspection. Ensure that the blocking devices are secured and that none of the vehicle's (or your carrier's) components will move during transportation.

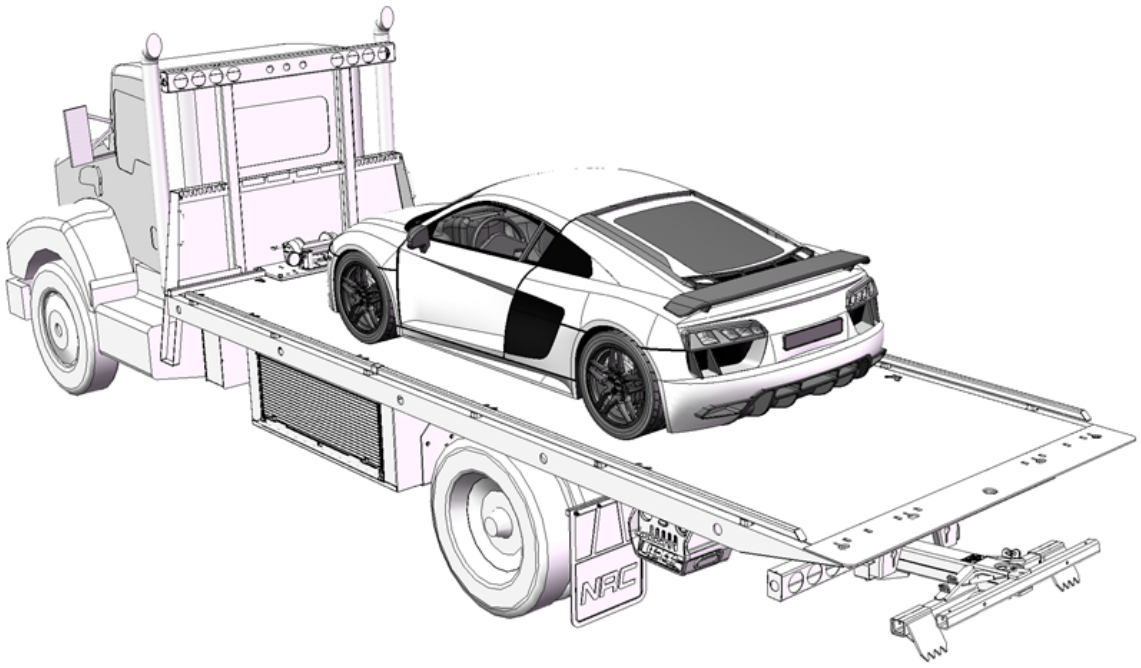


FIGURE 36 – VERIFY ALL BLOCKING DEVICES BEFORE HEADING OUT

15. Before leaving, disengage the PTO.

3.4.3 Unloading the vehicle

1. Before getting out of your truck, engage the PTO and adjust the engine speed according to your vehicle's and your NRC's carrier requirements.

> NOTE: The engine usually operates at around 1,100 to 1,200 rpm. The operating pressure must be lower than 2,500 psi for 10TB and 20TB carriers and lower than 2,800 psi for 30TB and 40TB carriers.

2. Using the carrier slide lever, slide the carrier deck all the way backward and tilt it slightly.
3. Remove the rear blocking devices.

4. Lower the end of the carrier to the ground (see 3.2 Common operating procedures for the carrier procedures). If necessary, use the wheel lift as a stabilizer.
5. Place the hauled vehicle in neutral and disengage the parking brake.
6. Make sure that nobody is behind the hauled vehicle and remove the blocking devices.
7. Unwind the winch cable to lower the vehicle to the ground.
8. Once the vehicle is completely off the carrier, put it in park and engage the parking brake.
9. Unfasten the cable, chain or belt.
10. Raise the carrier, gather all accessories and secure the cable to prevent movement during transportation.
11. Before leaving, disengage the PTO.

3.5 Bracing the load

⚠ DANGER

Consult the vehicle's manual to locate where the chains need to be used on the hauled vehicle.

Always respect your local, regional and national blocking/bracing, hauling, and tie-down standards and regulations.

Always use chains, straps or other bracing devices approved by regulatory organizations.

Your NRC carrier has several chain anchors located around the perimeter and along the middle of the carrier (the number of anchors and locations varies depending on the carrier model). An NRC carrier anchor has a capacity of 2,270 kg (5,000 lb.).

When choosing bracing devices, make sure that they are compatible with your NRC carrier's anchors. Your authorized NRC distributor supplies all of the necessary products for your carrier and can provide information about these items.

Regularly inspect your carrier's anchors for deformations and perforations. Never use a damaged anchor; have it repaired as soon as possible by an authorized NRC distributor.

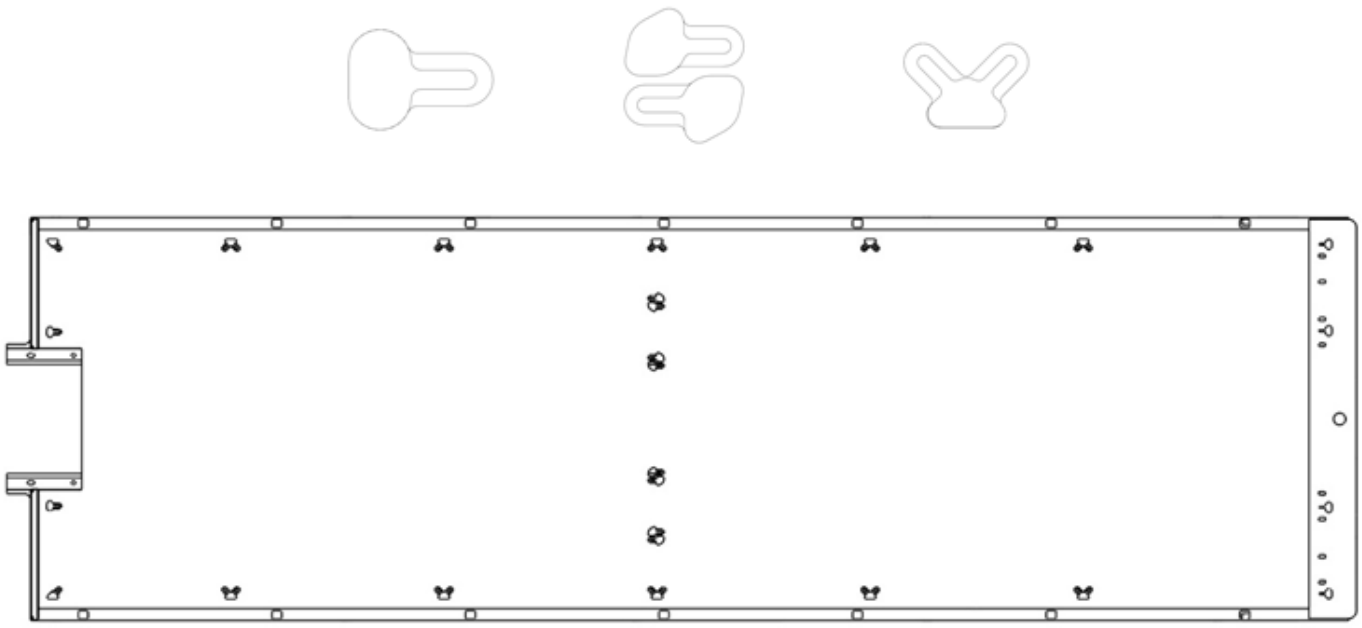


FIGURE 37 – EXAMPLE OF ANCHOR LOCATIONS

Insert a chain link into the anchor to fasten the chain, as shown in Figure 38. Never use hooks to secure a chain to an anchor, as shown in Figure 39. If anchoring is not performed appropriately, you can cause damage and put your safety and that of others at risk.

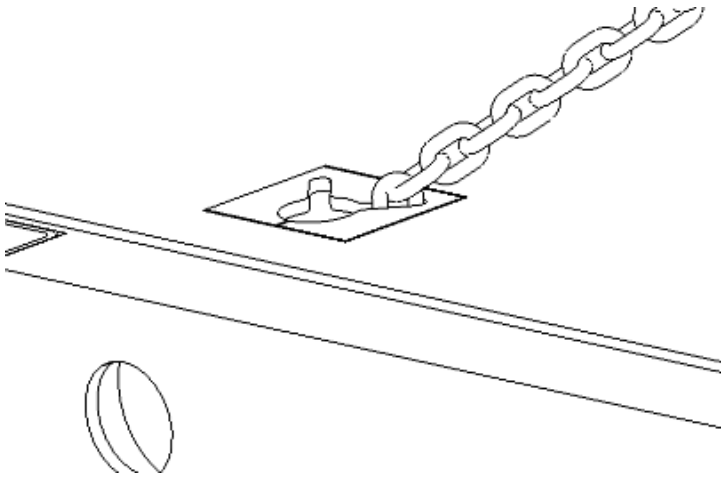


FIGURE 38 – RIGHT WAY TO USE ANCHORS

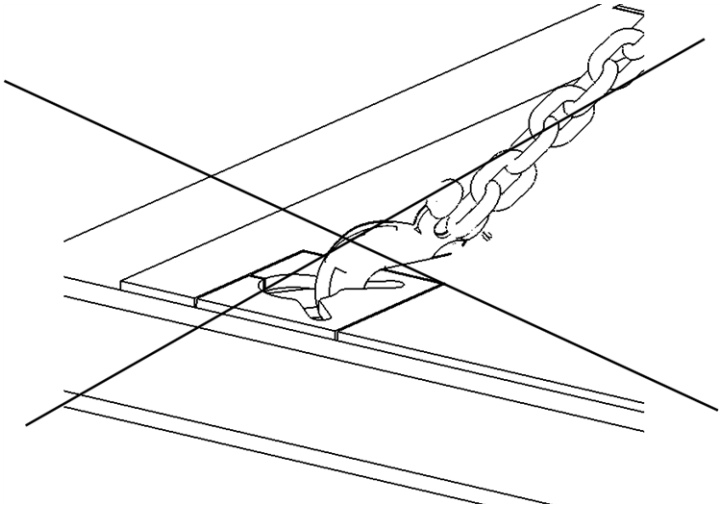


FIGURE 39 – WRONG WAY TO USE ANCHORS

3.6 Using the wheel lift

3.6.1 Standard procedures

The wheel lift extension and wheel lift elevation levers or joystick (see 1.1.5 Control box and 1.1.6 Dual joystick control box (option) for their positions) operate the wheel lift. To move the wheel lift up or down and extend or retract the telescopic section, move the levers (or joystick) as per the instructions printed on the control panel label.

⚠ DANGER

Never exceed the wheel lift's indicated capacity for your specific NRC carrier and truck. Disregarding this warning may cause loss of control of the vehicle or even an accident.

Never use the wheel lift to jack up your truck or any other vehicle with the intention of working underneath. The wheel lift is not designed to be used as a jack and may lead to equipment damage and injury.

When backing up, keep in mind that the wheel lift exceeds the length of your truck.

3.6.2 Wheel lift accessories

There are several wheel lift accessories that can be used with your carrier. Before using the wheel lift for towing a vehicle, install the appropriate accessories for the situation. The accessories and their functions are described in 9 Accessories.

3.6.3 Stabilization using the wheel lift and spades

When loading or unloading vehicles, you can use the wheel lift as a stabilizer. This will prevent your truck from lifting up due to the load on the rear axle.

To help secure your truck when hauling with a winch, use the spades and lower the wheel lift until the wheels begin to lift off the ground, bringing the entire weight to bear on the spades.

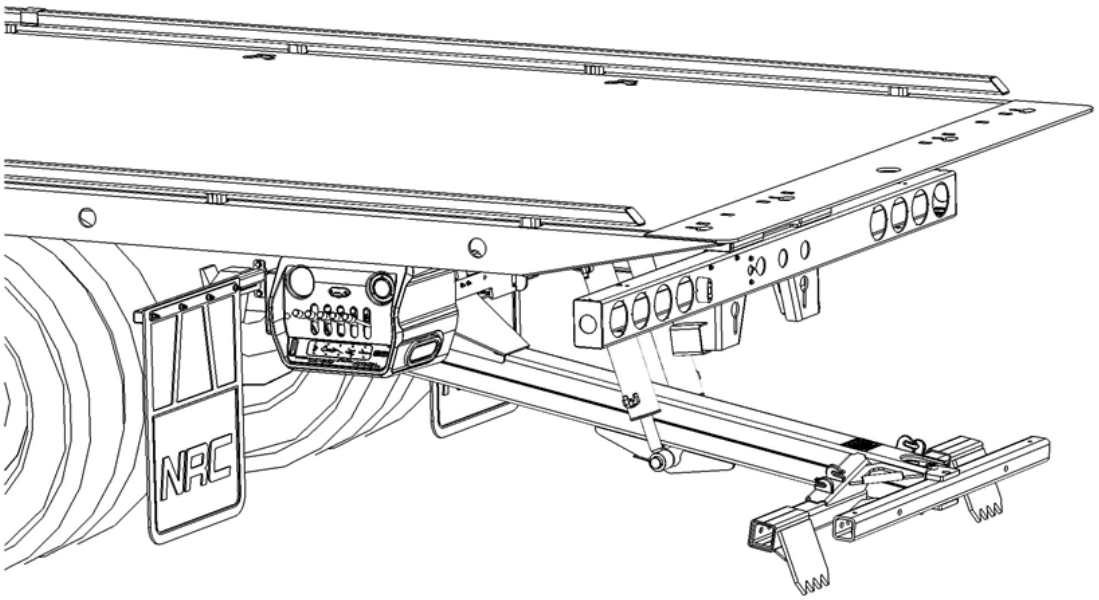


FIGURE 40 – USING THE SPADES

3.6.4 Using the wheel lift for towing a vehicle

⚠ DANGER

Before loading or unloading the carrier, you must:

- **Familiarize yourself with all your NRC carrier's controls and accessories.**
- **Understand the basic principles of hauling a vehicle.**
- **Create a safe environment for yourself and for others by working, as much as possible, in a secure place and by clearly indicating your presence.**
- **Keep anyone who is not adequately trained away from your work area and out of danger.**

A load must be on the carrier before you use the wheel lift for towing another vehicle, as shown in Figure 41.

1. Install the appropriate towing accessories and adjust them to the width of the towed vehicle. The accessories and their functions are described in 9 Accessories.
2. Align the truck with the vehicle to be towed. Position the truck three to four feet from the vehicle to be towed, as indicated in Figure 41.

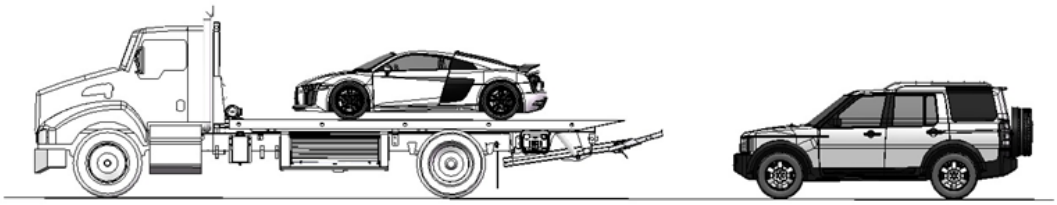


FIGURE 41 – POSITION THE TRUCK

3. Lower the wheel lift to the ground and extend it so it rests against the front wheels of the vehicle to be towed.

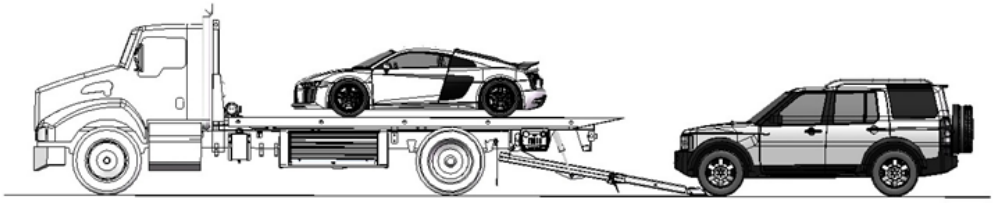


FIGURE 42 – LOWER AND EXTEND THE WHEEL LIFT

4. Insert the wheel lift L-arms into the tow bar by placing them against the rear of the tires and on the outside of the wheels, as shown in Figure 43. Insert the retaining pins. The L-arms may have to be adjusted to line up properly with the holes for the pins.

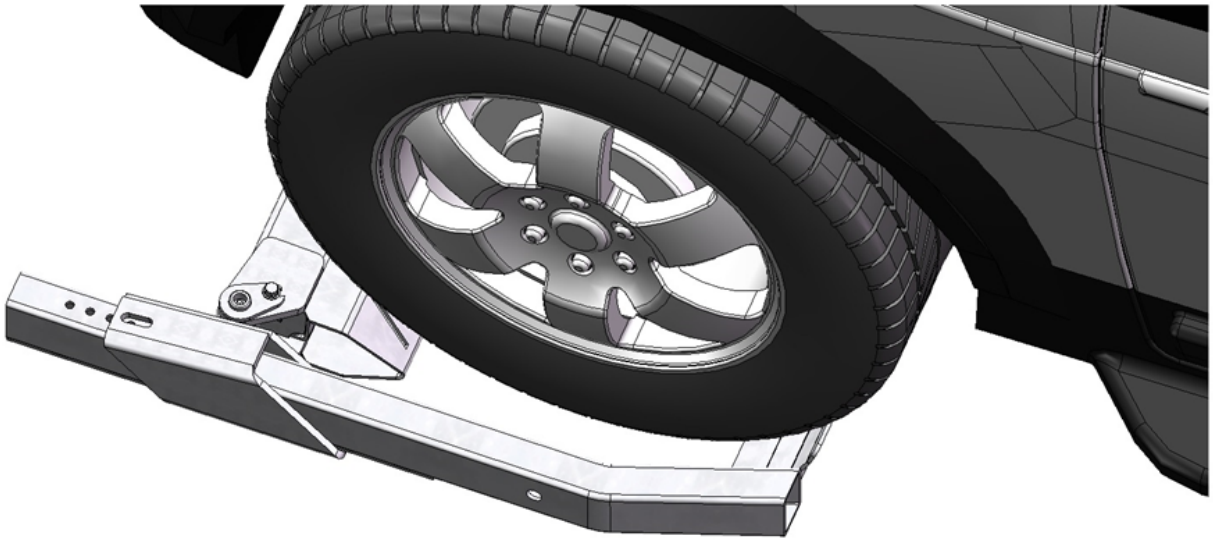


FIGURE 43 – INSERT THE L-ARMS AND RETAINING PINS

5. Use the straps and ratchets (parts 0392009 and 0392010) to properly attach the wheel of the towed vehicle to the tow bar and L-arms.
6. Slowly raise the towed vehicle with the wheel lift, ensuring that the vehicle remains securely in place and that the wheel lift and L-arms do not come into contact with any part of the vehicle, as shown in Figure 44.

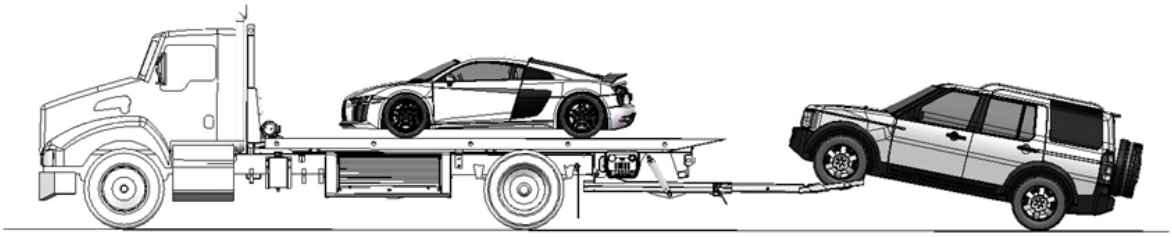


FIGURE 44 – RAISE THE TOWED VEHICLE

7. Raise the vehicle high enough so that it does not touch the ground during transport. Verify that the tail end of the towed vehicle does not drag on the ground.
8. Use the wheel lift extension to adjust the distance between the truck and the towed vehicle. Check that there is enough room between the towed vehicle and the truck for turning, as indicated in the figure below.

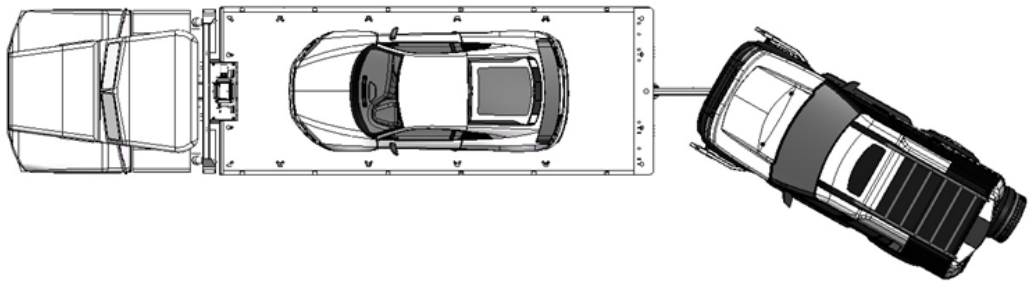


FIGURE 45 – LEAVE ROOM FOR TURNING

9. To secure the towed vehicle, use the retractable safety chains at the back of the carrier and attach them to the anchors on the towed vehicle as recommended by the manufacturer. Remember to cross the chains to facilitate turning.
10. Place one chain under the wheel lift and secure it to the provided anchor.
11. Reverse the procedure when unloading the vehicle from the wheel lift.

4 MAINTENANCE

Regular maintenance can prevent problems and damage to equipment. This chapter contains safety guidelines, maintenance procedures and the recommended maintenance schedule for your carrier.

NOTE: See the winch manufacturer manual for more details about winch maintenance.

4.1 Safety guidelines

⚠ CAUTION

When performing maintenance on the carrier or winches, always:

- Ensure that you fully understand all the safety rules described in Chapter **2 Safety**.
- Wear protective clothing (goggles, gloves, footwear, etc.).
- Watch out for moving parts.
- Watch out for hot components.
- When working under the vehicle, apply the parking brake and use wheel chocks.
- When lifting the vehicle, use approved and certified equipment that is in good condition.

For winch safety guidelines, see the winch manufacturer manual.

⚠ DANGER

When performing any maintenance or repair procedure under the deck of your carrier, you must install a lock on each elevation cylinders. Make sure you use the pair of locks that suits your model. Refer to document Lock for elevation cylinders (89231xx-en).

4.2 General maintenance

NOTE: Remember that regular maintenance will keep the carrier in good condition, extend its lifespan and reduce the risk of damage and breakage.

4.2.1 General carrier maintenance

Description	After		Every				
	1st use	6 mths	1 day	2 wks	3 mths	6 mths	1 yr
Adjust the hydraulic pressure. See 4.4.1 Adjusting the hydraulic pressure.					x		
Check the cable tension for all winches. See 4.2.3 Winch cable tension.					x		
Replace all the oil filters (pressure and return filters). Clean the inlet filters and test the hydraulic fluid.		x					x
Inspect the equipment to ensure that it is in good condition for the next job.			x				
Visually inspect the cable(s) to ensure that they are in good condition, lubricated and properly wound. See 4.2.4 Steel cable maintenance.			x				
Check that no cylinders or hoses are leaking.			x				
Inspect all anchors, eyes and pulleys for cracks and structural damage.			x				

Description	After		Every				
	1st use	6 mths	1 day	2 wks	3 mths	6 mths	1 yr
Check the condition of the high-pressure oil filter and that all the high-pressure indicators are green. If the indicators are red, replace the filter.				x			
Have an NRC-authorized distributor check the hydraulic system.							x

4.2.2 Winch maintenance

See the winch manufacturer's manual.

4.2.3 Winch cable tension

For the 20,000 lb. winch model only, check the cable tension indicator. To maintain adequate tension on the cable, each indicator should read approximately 90 psi. Adjust the tension when necessary.

The other winch models do not have a cable tension indicator.

4.2.4 Steel cable maintenance

Steel cables must be regularly inspected to ensure safe operation. When a cable is worn, deformed or bent, you must replace it. See the ISO 4309:2017 standard for the criteria for inspecting, maintaining and disposing of steel cables.

The cable dimensions vary based on the winch model. For equipment sold in North America, see 1.2.3 Winches for the type of cable used for each winch model.

> IMPORTANT: NRC only supplies steel cables for equipment sold in North America (NRC does not supply steel cables where Standard 14492 is applicable). When NRC does not supply the winch cable, the distributor must select the appropriate cable for their winch model.

4.3 Lubrication

This section details the lubrication points and schedule for the various carrier parts. Make sure to use the oil recommended by the manufacturer of each component.

4.3.1 Oil

IMPORTANT: NRC carriers use oil for the hydraulic system for the winches. When changing the oil, take care not to spill and collect the oil in a leak-proof can or container. Bring the oil to your nearest collection point for recycling.

NOTE: Oil types for other equipment included with NRC equipment (e.g. winch) are provided for reference only. See the manufacturer's manual (e.g. winch manufacturer's manual) for the appropriate oil type and frequency for your application and model.

TABLE 15 – OIL TYPES AND LOCATIONS

Description	Instruction	Oil Type or Commercial Name	Frequency	Location
Hydraulic oil	Fill up to 3 inches from the top of the tank.	Hydrex MV 32 (T-22, T-32 or AW-32)	Weekly, as needed	Oil tank position depends on your carrier installation. See Figure 46 for an example.

Description	Instruction	Oil Type or Commercial Name	Frequency	Location
Oil for the winches	Remove the plug on the side of the winch reservoir and insert your finger. If you cannot touch the oil, the oil level is too low and must be topped up.	SAE 90EP. Oil type may vary. See the winch manufacturer's manual	6 months	Winch oil tank
Oil for the winch cables	Along the full length of the cables, as required by the cable manufacturer	Lubricant for steel cables	4 to 6 months	All winch cables

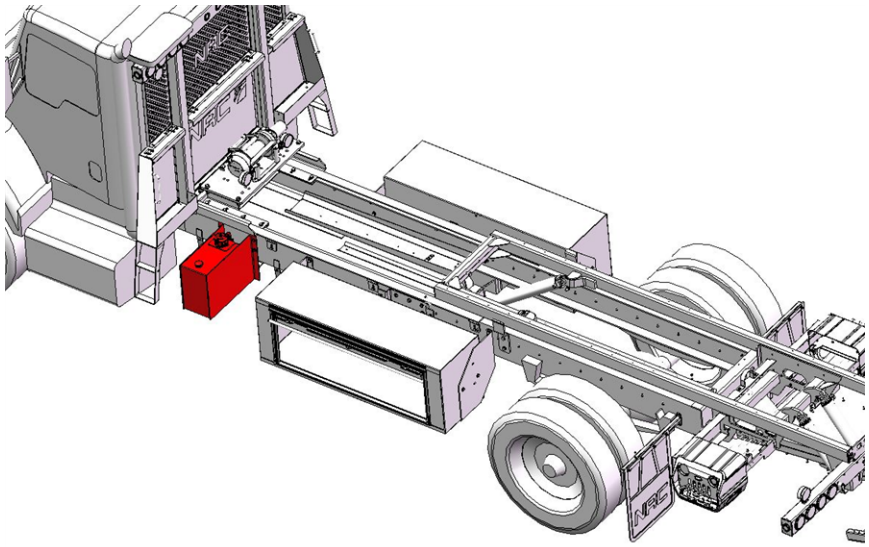


FIGURE 46 – EXAMPLE OF THE OIL TANK POSITION

4.3.2 Grease

See Table 15 and Table 16 for the lubricant type and frequency for each component. See Figure 47 to Figure 56 for the lubrication point locations for each component.

> NOTE: The number of grease fittings may vary depending on the models of the components on your carrier. The figures below may show the left side, right side, front or rear component. The same lubrication points are also present on the other side (left, right) if the same components are present.

TABLE 16 – LUBRICATION SCHEDULE

Description	Lubricant Type	Every		
		1 mth	6 mths	1 yr
Zerts	Grease	X		
Valves	Anti-freeze grease			X
Teflon slides	Grease		X	

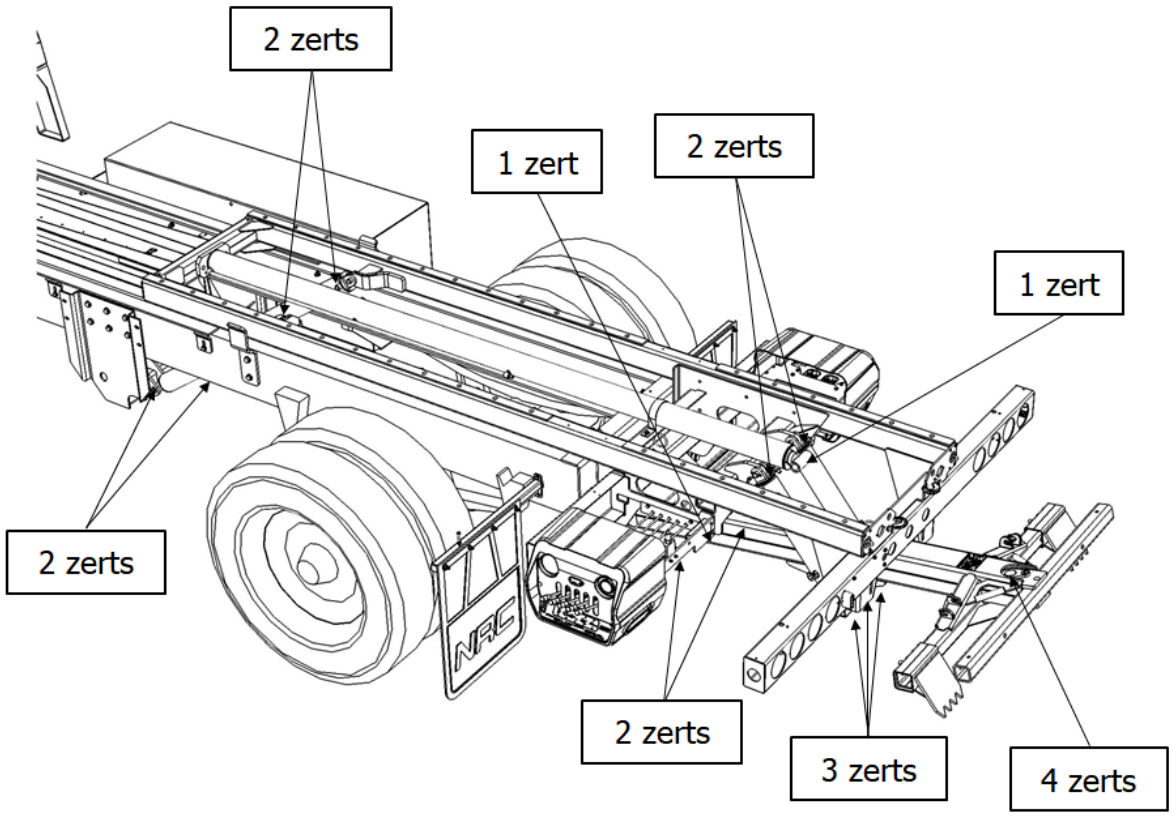


FIGURE 47 – OVERVIEW OF LUBRICATION POINTS (40TB ILLUSTRATED)

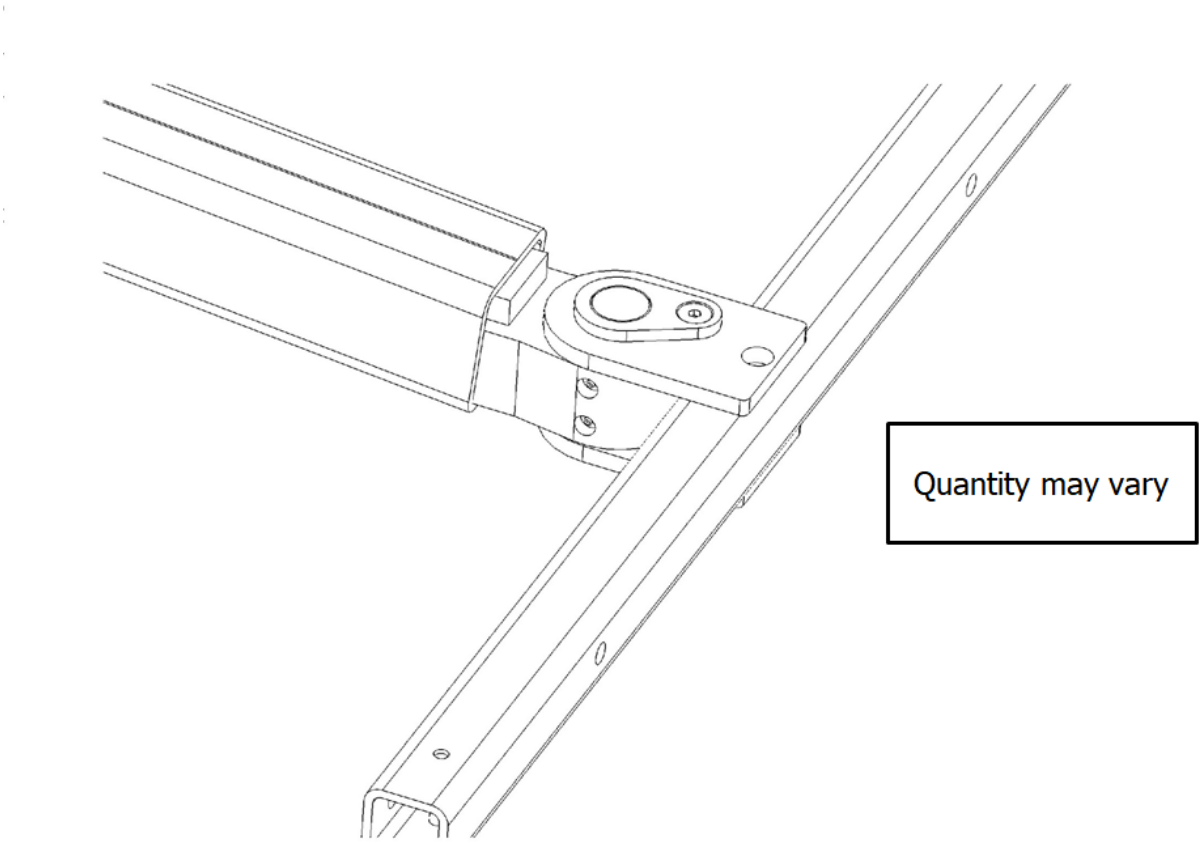


FIGURE 48 – TOW BAR HEAD LUBRICATION POINT (40TB ILLUSTRATED)

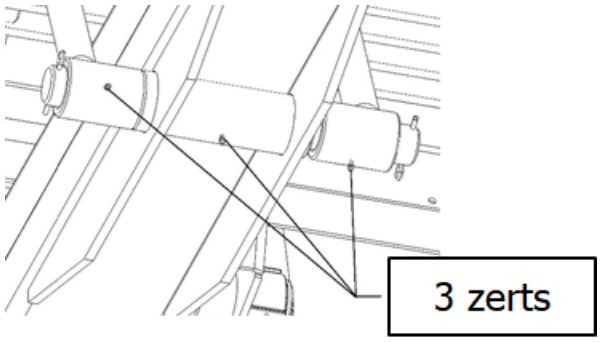


FIGURE 49 – WHEEL LIFT ELEVATION CYLINDER LUBRICATION POINT

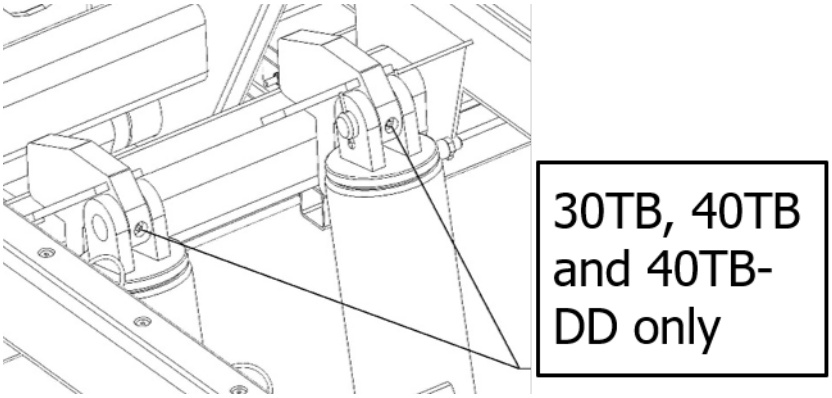


FIGURE 50 – WHEEL LIFT ELEVATION CYLINDER GEAR LUBRICATION POINTS (40TB ILLUSTRATED)

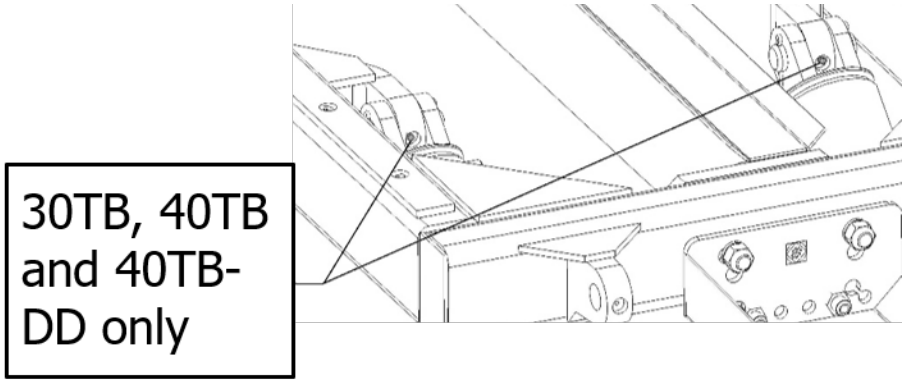


FIGURE 51 – WHEEL LIFT ELEVATION CYLINDER ANCHORS (40TB ILLUSTRATED)

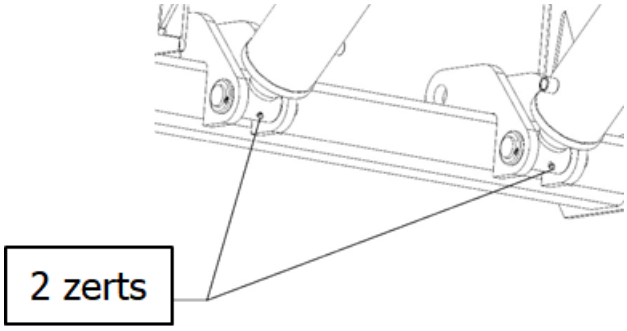


FIGURE 52 – ELEVATION CYLINDERS UNDERNEATH CHASSIS, LUBRICATION POINT

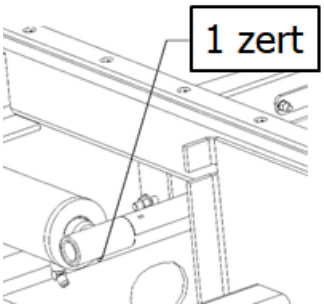


FIGURE 53 – IN-AND-OUT CYLINDER LUBRICATION POINT UNDERNEATH CHASSIS

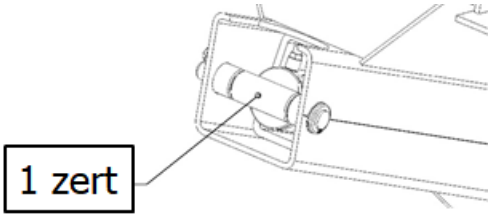


FIGURE 54 – WHEEL LIFT IN-AND-OUT CYLINDER LUBRICATION POINT

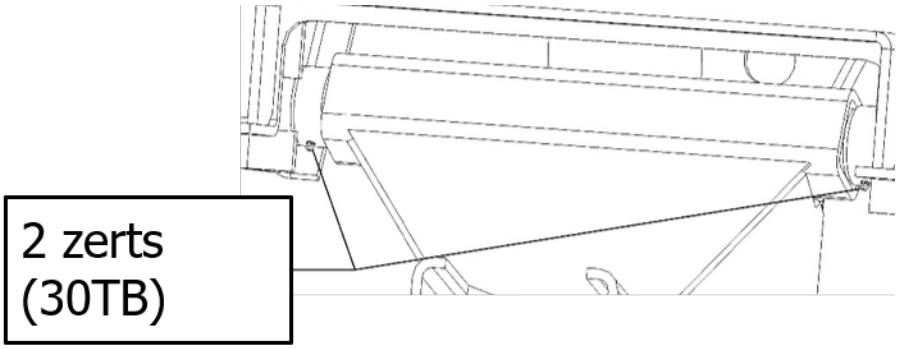


FIGURE 55 – TOW BAR ANCHOR LUBRICATION POINT (30TB ILLUSTRATED)

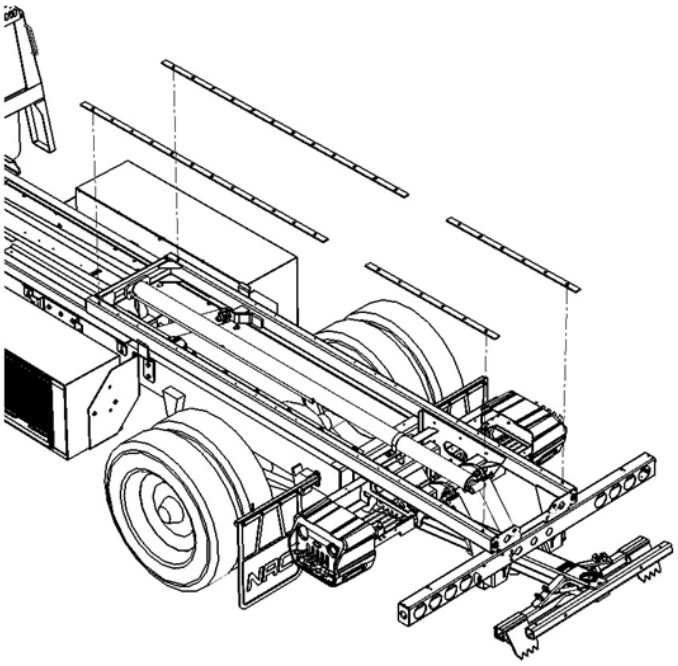


FIGURE 56 – SLIDING TEFLON TRACK

4.4 Maintenance procedures

This section contains all maintenance procedures.

4.4.1 Adjusting the hydraulic pressure

The carrier's hydraulic pressure is factory set. A pressure gauge is provided. To record an exact reading, adjust the engine speed to between 600 and 800 rpm for a large engine (more than 270 hp) and between 600 and 1,000 rpm for a small engine (less than 270 hp). For Aisin or Allison transmissions, contact the manufacturer to adjust the PTO versus the engine speed.

4.4.2 Wheel-lift bar lock valve

It is normal for the lock valve to make noise while operating, depending on the speed and weight of your load. No maintenance or adjustment is required.

5 TROUBLESHOOTING

This chapter provides a summary of the most common problems, as well as their main causes and solutions. The following sections provide detailed procedures for some of the solutions.

NOTE: Only distributors are authorized to perform repairs that involve replacing parts.

5.1 Troubleshooting common problems

The following table covers problems that you can solve on your own. If your problem is not listed or you cannot resolve it yourself, contact your distributor. See Authorized distributors and service providers.

TABLE 17 – TROUBLESHOOTING

Problem	Causes	Solutions
The levers on control box don't work	The PTO is disengaged	Engage the PTO (see 3.2.1 Engaging the power take-off (PTO)).
	The control panel has no power	Check the DC power (12 VDC in North America and 24 VDC elsewhere) on the main electrical panel (main relay) and check the control panel wiring.
	There is no hydraulic power	Check whether the passenger's side control panel is working. If not, troubleshoot the hydraulic system.
The winches cannot be engaged	A winch was disengaged before the carrier was started	Stop the carrier, disengage the PTO, engage all winches and start over.
	The air pressure is too low	Check for an air leak or a bent hose.

Problem	Causes	Solutions
The winches cannot be disengaged	A winch was disengaged before the carrier was started	Stop the carrier, disengage the PTO, engage all winches and start over.
	The solenoid has no power	Using a multimeter, see whether the solenoid wiring is carrying a current.
	The air pressure is too low	Check for an air leak or a bent hose.
	The winch solenoid is faulty	Replace the solenoid. Follow the air line to locate the solenoid, which is near the winch.
	The cylinder piston may be broken or bent (only for RPH 15,000 winches)	Replace the cylinder.
The carrier lacks power and runs too slowly	The pressure filter is clogged and the high-pressure gauge on the pressure filter is red	Replace the filter.
The winch cable stops too quickly or too slowly in free spool mode (disengaged)	The air pressure on the cable tensioner is too low or too high	Increase or decrease the air pressure on the cable tensioner.

Problem	Causes	Solutions
The carrier has no power	The ignition doesn't send a signal to the solenoid telling it to activate	Check the power and ensure that the solenoid is properly grounded. Replace any damaged wiring.
	The main solenoid is burned out	Replace the main solenoid in the main electrical panel.
The wheel lift has trouble retracting	The hydraulic pressure is too low	Check the hydraulic pressure.
	The spool on the valve bank is not completing its stroke	Check the neighbouring spool and ensure that the spool completes its stroke. If the spool does not complete its full stroke, something is preventing it from moving freely. Remove the obstruction.
	The wear pads are not in place or sufficiently lubricated	Ensure that all wear pads are in place and well lubricated.
	The wheel lift telescopic section is bent	Use a straight edge to see whether the wheel lift telescopic section is straight. If it is bent, have it repaired. You can also remove the steel spacers one by one and see whether that makes a difference.
	The IN\OUT cylinder is diverted	Completely retract the cylinder. Disconnect the bottom hose from the tailboard. Remove the male quick coupler from the hose and put the open end of the hose in a pail. Start the hydraulic system and pull the lever to retract it again, even if it is already retracted. If oil comes out of the hose in the pail, something is wrong with the cylinder. Have it repaired.

Problem	Causes	Solutions
The remote control won't control the carrier	The remote control battery is dead	Recharge the battery. The battery charger is on the outside of the electrical panel.
	The antenna on the remote control receiver is broken	Replace the antenna. It is located on the right side of the carrier, just above the oil reservoir.
The oil is leaking	The hydraulic line has an oil leak	Check all the hydraulic lines and repair any oil leaks.
	A connection is too tight or too loose, causing an oil leak	Check all the hydraulic connections for oil leaks due to over-tightening or under-tightening. Tighten or loosen the connection.

6 ACCIDENT OR BREAKDOWN PROCEDURE

This section explains what to do in case of an accident or equipment failure. Your goal is to safely stabilize the equipment and either perform the necessary repairs on site or bring it to a repair location.

Refer to this manual for all operation, maintenance and repair procedures. If in doubt, do not hesitate to contact your distributor. See the list of Authorized distributors and service providers.

6.1 Electrical failure

In the event of an electrical failure, you may not be able to operate the winch disengagement switch (optional) that is located on the control box. The other carrier functions should operate normally.

6.2 Hydraulic failure

In the event of a hydraulic failure, the hydraulic pressures required for normal operation are not reached in the circuits. The hydraulic pump or PTO may be the cause.

⚠ WARNING

The hydraulic failure must be repaired before performing other towing operations.

To troubleshoot a hydraulic failure:

1. Using a component that requires hydraulic pressure, check whether the hydraulic pressure shows as normal on the console.
2. Engage the PTO to operate the hydraulic pump and check the console to see whether the PTO engages normally. If the PTO does not engage, have it repaired.
3. If the PTO works normally, check whether the hydraulic pump is operating normally. If the hydraulic pump is not working normally, see Pump Failure below.

When the correct operating pressures are reached, stabilize the equipment safely.

6.3 Pump failure

In the event of a pump failure, the entire hydraulic system will not be functional. If all hydraulic components are in their stored position, i.e. the position for travel without a load, bring your equipment to a repair location. If some components are not in their stored position, and it is not possible to safely get to a repair point, the pump must be repaired or replaced on site.

6.4 Truck failure

In the event of a vehicle breakdown, you may not be able to operate the equipment. Have the equipment moved to a safe place to make the necessary repairs on the truck.

7 STORAGE

Proper storage is important to prevent premature wear and tear on your machine. Ideally, it should be stored in a dry, covered area.

When storing your carrier:

1. Immobilize the machine in a dry and stable location.
2. Position the parts so that the cylinders are fully retracted.
3. Lubricate any exposed cylinder rods.
4. Disconnect the electrical power supply to avoid depleting the batteries.

When taking your carrier out of storage:

1. Clean and lubricate all parts, including the slider.
2. Replace the return filter on the hydraulic reservoir.
3. Check the oil level and pressure.
4. Connect the electrical power supply.

8 DISASSEMBLY AND DISPOSAL

When the equipment reaches the end of its lifespan, dispose of its various parts in an environmentally friendly manner.

Before disassembling the machine, drain all fluids and remove the battery for recycling.

Comply with all effective regulations, including the RoHS Directive for electrical components, when disassembling the machine and disposing of the following parts:

- Electrical components;
- Rubber hydraulic hoses;
- Painted parts;
- Metal;
- Composite materials.

To protect both you and the environment, we recommend having a specialized company disassemble your machine.

9 ACCESSORIES

Many towing accessories are available to fit most of your towing requirements. This section presents the most common types of accessories. Contact your NRC distributors to learn about the full range of accessories available for your carrier model.

9.1 Standard accessories

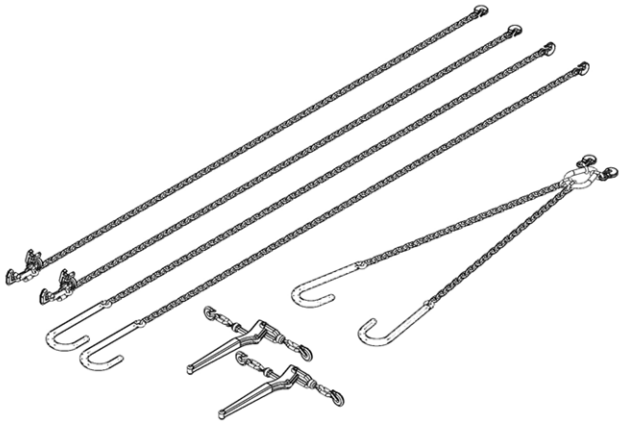


FIGURE 57 – STANDARD ACCESSORIES FOR 10TB AND 20TB CARRIERS

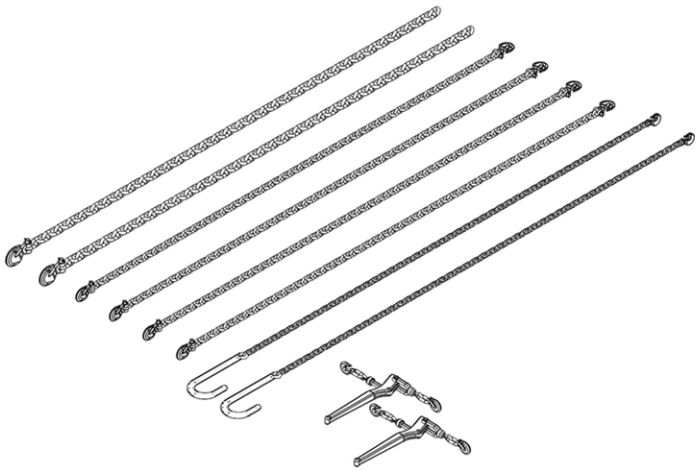


FIGURE 58 – STANDARD ACCESSORIES FOR 30TB AND 40TB CARRIERS

TABLE 18 – STANDARD ACCESSORIES INCLUDED WITH YOUR CARRIER MODEL

NOTE: In addition to the following standard accessories, a carrier equipped with a wheel-lift system also has a tow light kit.

Description	10TB - 20TB*	30TB - 40TB	40TB-DD
5/16" x 36" "V" chain with "J" hook	1	-	1
5/16" x 96" chain with "J" hook	2	2	4
5/16" x 96" chain + grab + RTJ hook + binder	2	-	2
5/16"-3/8" chain binder	2	3***	4
Safety chain (in sub-frame)	2	-****	-****
3/8" x 96" chain with "grab hook"	-	4	4
1/2" x 96" chain with "grab hook"	-	2	2
3/8" x 60" chain with "slip hook"	-	2	2
Wheel-lift tie-down kit**	1	-	-

*Quantities for the 20TB-DD are 2 times the numbers shown in the table for double-deck carriers 26.5" in length or less, and 3 times the numbers for double-deck carriers 27" in length or more.

**Only for carriers equipped with a wheel-lift system

***Only 2 chain binders for a wheel lift without the telescopic section with T-bar

****2 optional safety chains (in subframe)

9.2 Removable rails

Your carrier may be equipped with removable rails. You can adjust their height. You can install the rails directly against the deck (elevation 0) or install them 1” above it.

9.2.1 Rails 1” above the deck

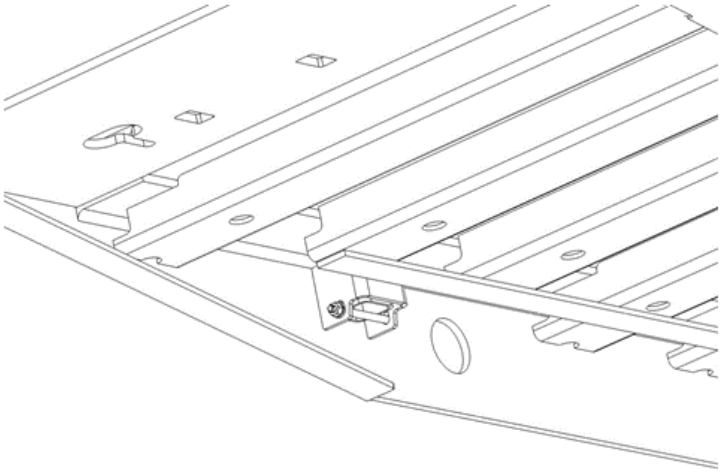


FIGURE 59 – BOLTS MAINTAINING THE RAILS 1” ABOVE THE DECK (VIEW FROM BELOW THE DECK)

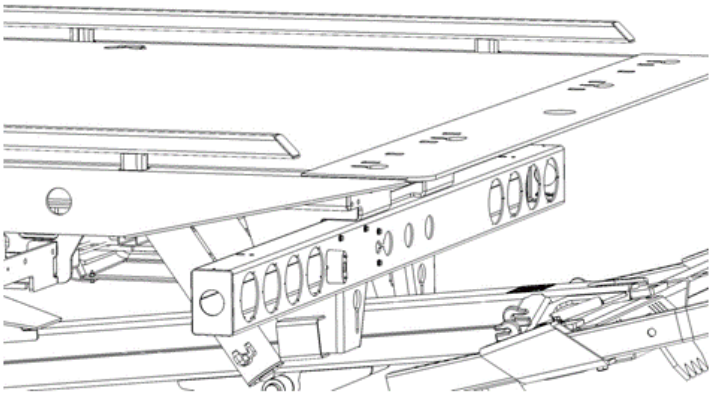


FIGURE 60 – RAILS INSTALLED 1” ABOVE THE DECK

9.2.2 Rails against the deck

To install the rails directly against the deck, remove the bolts that maintain them 1” above the deck and let the rails rest directly against the deck.

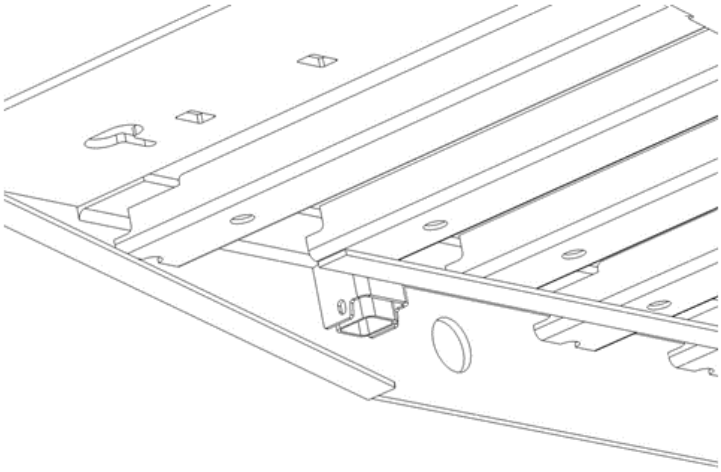


FIGURE 61 – BOLTS REMOVED TO POSITION THE RAILS DIRECTLY AGAINST THE DECK (ELEVATION 0)

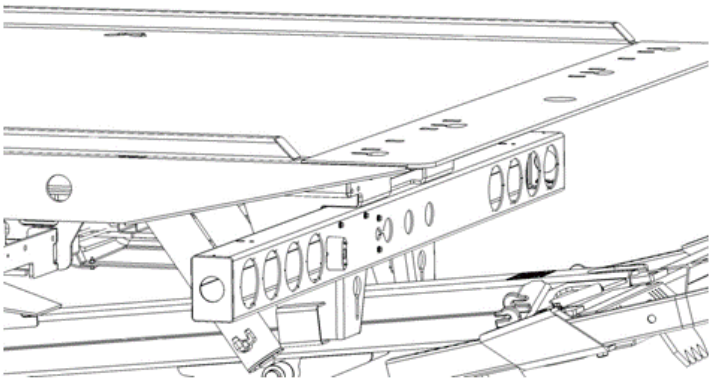


FIGURE 62 – RAILS INSTALLED DIRECTLY AGAINST THE DECK (ELEVATION 0)

9.3 Towing plates

Towing plates are used to tow a vehicle using 2 chains. This accessory is inserted on the T-head of the T-bar and secured in place with locking pins. The towing plates can be installed at different positions on the T-bar to fit different widths of towed vehicles.

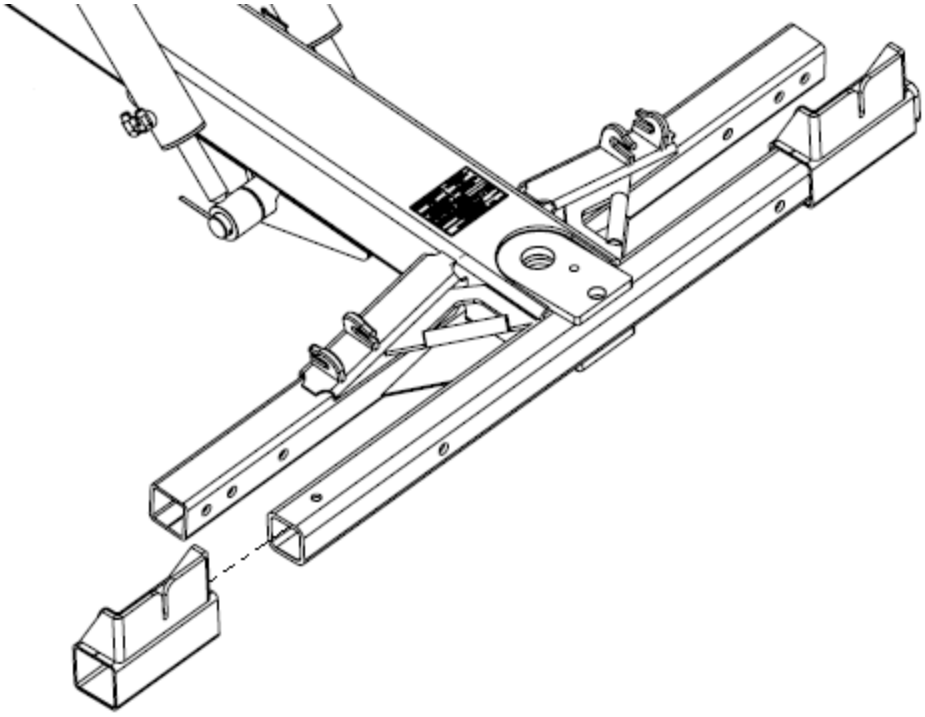


FIGURE 63 – TOWING PLATES

9.4 Light vehicle tire lift

A light vehicle tire lift is used to tow cars or light trucks. It has a capacity of 1,360 kg (3,000 lb.) for the 10TB and 20TB, and 1,818 kg (4,000 lb.) for the 30TB and 40TB. This accessory is inserted on the T-head of the T-bar and secured in place with locking pins. The L-arm can be installed at different positions on the tire lift to fit tires of various sizes.

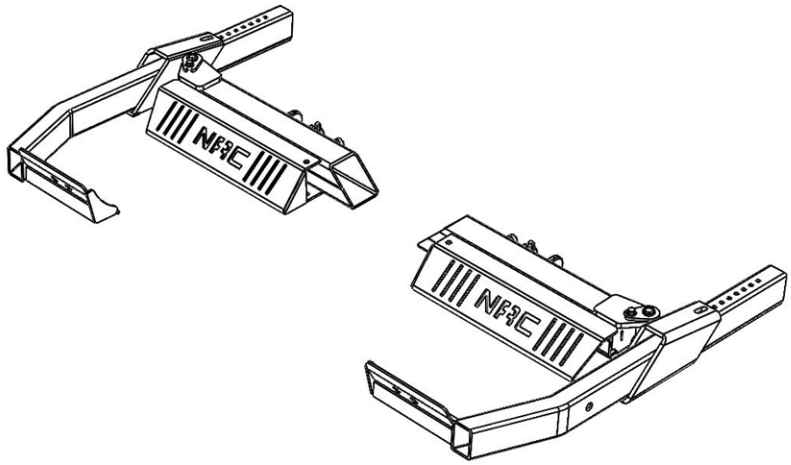


FIGURE 64 – LIGHT VEHICLE TIRE LIFT

9.5 Medium vehicle tire lift

A medium vehicle tire lift is used to tow buses or medium-weight vehicles. Consult the accessory nameplate for its indicated capacity. This accessory is inserted on the T-head of the T-bar and secured in place with locking pins. It can be installed at different positions on the T-head of the T-bar to fit vehicles of different widths. The positions of the angled plates can also be adjusted to fit tires of various sizes.

This accessory is available for 30TB carriers or bigger.

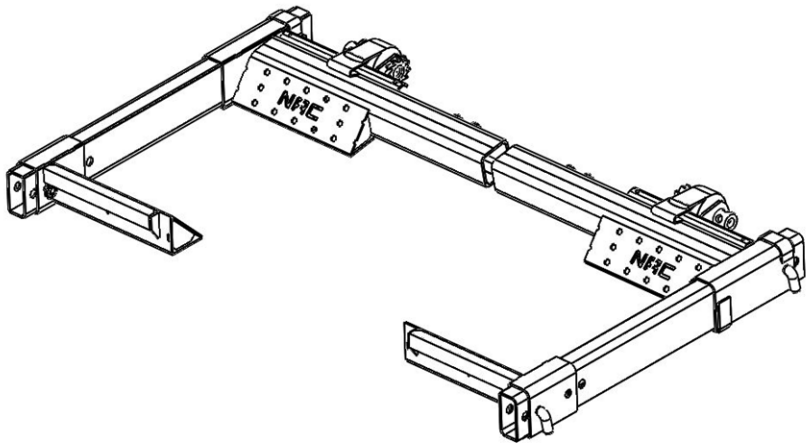


FIGURE 65 – MEDIUM VEHICLE TIRE LIFT

9.5.1 How to use a medium vehicle tire lift

The tire lift fits directly on the T-head of the T-bar and is secured in place with locking pins.

1. Position the tire lift at the appropriate position on the T-head of the T-bar. Make sure to position the tire lift according to the dimensions of the vehicle to be towed.
2. Secure the tire lift in place using the locking pins.
3. Position the angled plates to fit the tire dimensions of the vehicle to be towed.
4. Secure each angled plate in place using the locking pins.

Once the tire lift is installed, load the vehicle on the tire lift and secure the vehicle in place.

1. Position the tires of the vehicle on the angled plates.
2. Secure the vehicle in place using straps, which go around the tires and attach to the back of the tire lift.

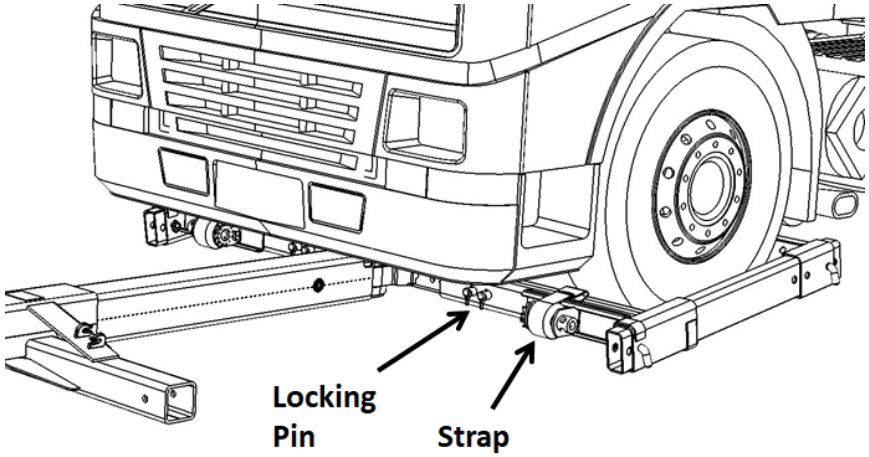


FIGURE 66 – INSTALLING THE TIRE LIFT ON THE T-HEAD

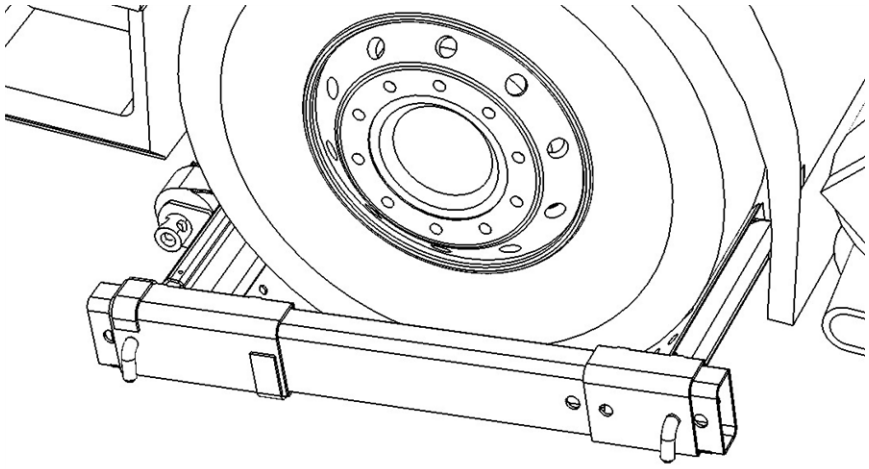


FIGURE 67 – BACK OF A TIRE LIFT

9.6 Heavy vehicle tire lift

A heavy vehicle tire lift is used to tow motor homes or heavy-weight vehicles. Consult the accessory nameplate for its indicated capacity. The tire lift is inserted on the T-head of the T-bar and secured in place with locking pins. It can be installed at different positions on the T-head to fit heavy vehicles of different widths. The positions of the angled plates can also be adjusted to fit tires of various sizes.

This accessory is available for 30TB carriers or bigger.

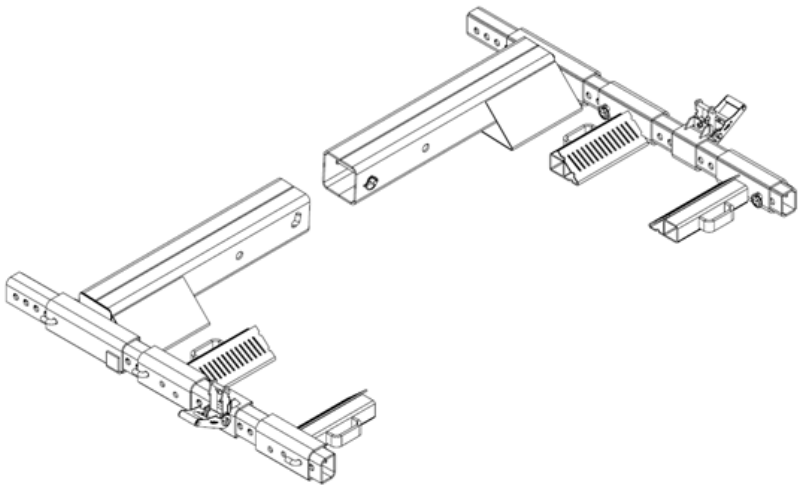


FIGURE 68 – HEAVY VEHICLE TIRE LIFT

9.6.1 How to use a heavy vehicle tire lift

The heavy vehicle tire lift fits directly on the T-head of the T-bar and is secured in place with locking pins.

1. Position the tire lift at the appropriate position on the T-head of the T-bar. Make sure to position the tire lift according to the dimensions of the vehicle to be towed.
2. Secure the tire lift in place using the locking pins.
3. Position the angled plates to fit the tire dimensions of the vehicle to be towed.
4. Secure each angled plate in place using the locking pins.

Once the tire lift is installed, load the vehicle on the tire lift and secure the vehicle in place.

1. Position the tires of the vehicle on the angled plates.
2. Secure the vehicle in place using straps, which go around the tires and attach to the back of the tire lift.

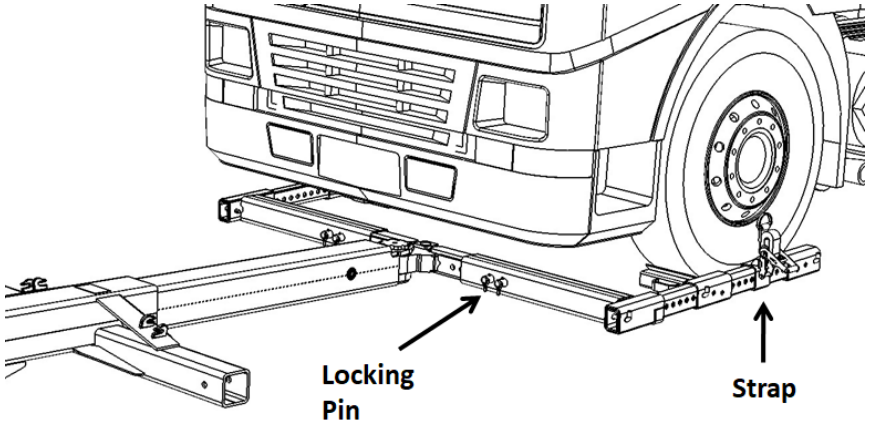


FIGURE 69 – INSTALLING THE HEAVY VEHICLE TIRE LIFT

9.7 Fifth-wheel adapter

A fifth-wheel adapter is designed to move empty fifth-wheel/kingpin trailers. This accessory is used in combination with fork holders, which must have been previously installed on the T-head of the T-bar (see 9.13).

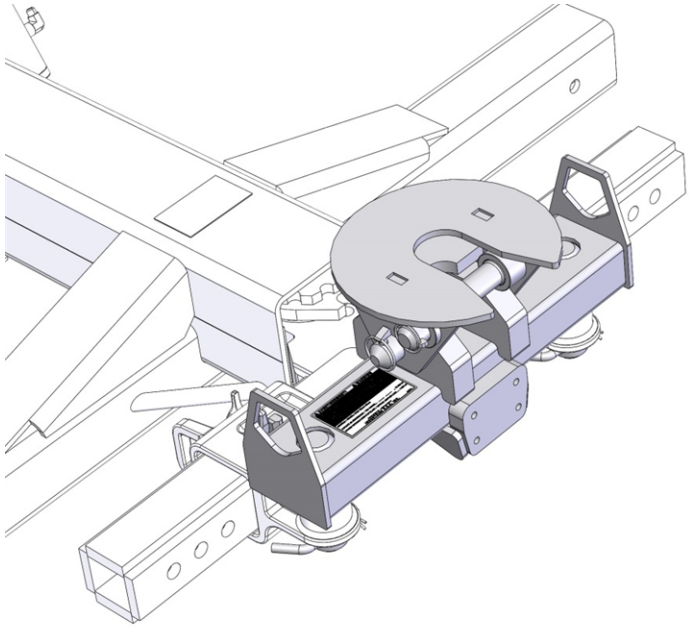


FIGURE 70 – FIFTH WHEEL

9.8 Gooseneck

A gooseneck is used to tow a gooseneck trailer. This accessory is inserted on the T-head of the T-bar and secured in place with locking pins.

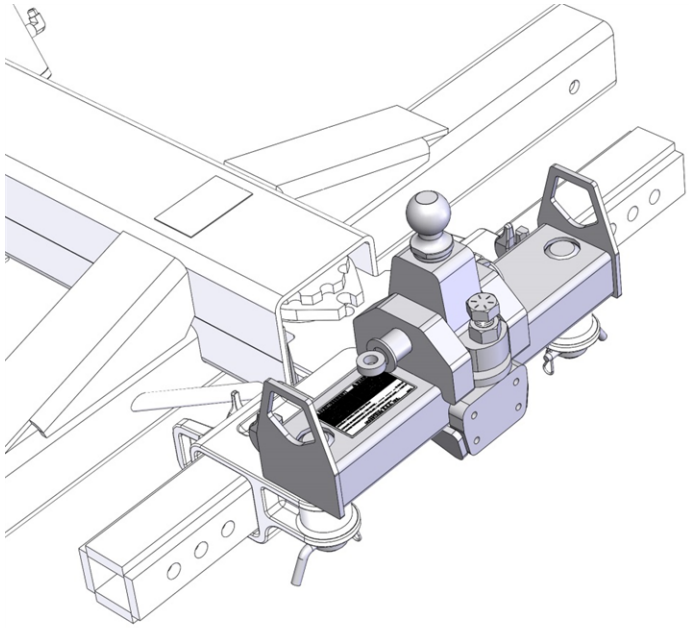


FIGURE 71 – GOOSENECK

9.9 Pintle hook

A pintle hook is used to tow a trailer or other vehicle equipped with a pintle hook. This accessory is inserted on the T-head of the T-bar and secured in place with locking pins.

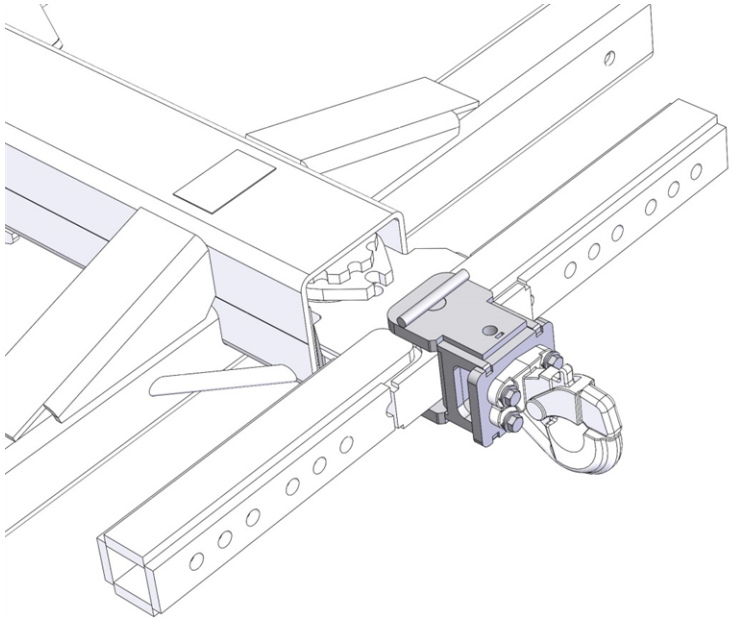


FIGURE 72 – PINTLE HOOK

9.10 Trailer hitch

A trailer hitch is used to tow a trailer. This accessory is inserted on the T-head of the T-bar and secured in place with locking pins.

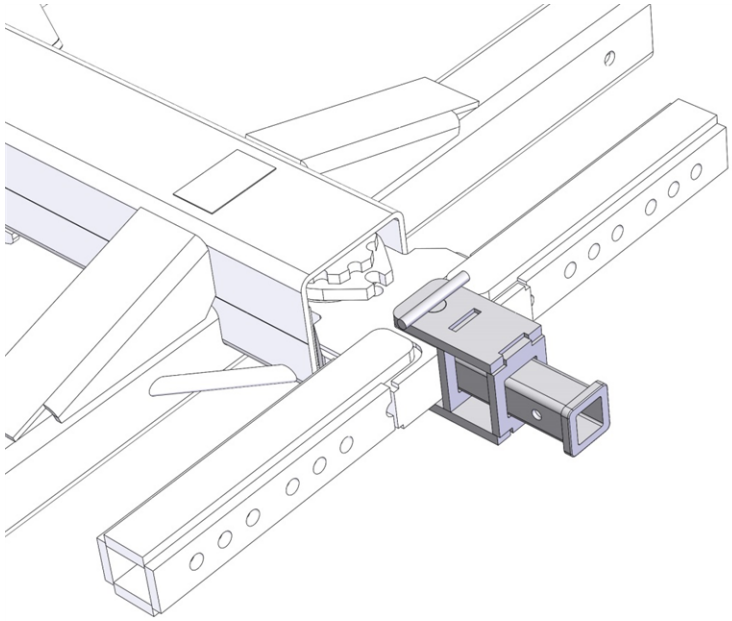


FIGURE 73 – TRAILER HITCH

9.11 Roller-guide

A roller-guide is used for side recovery. See 3.3.6 for more information on how to use a roller-guide.

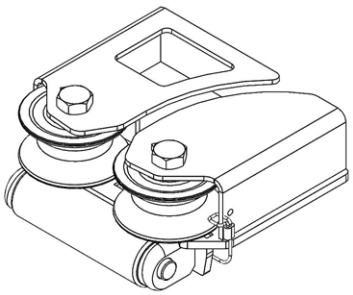


FIGURE 74 – ROLLER-GUIDE

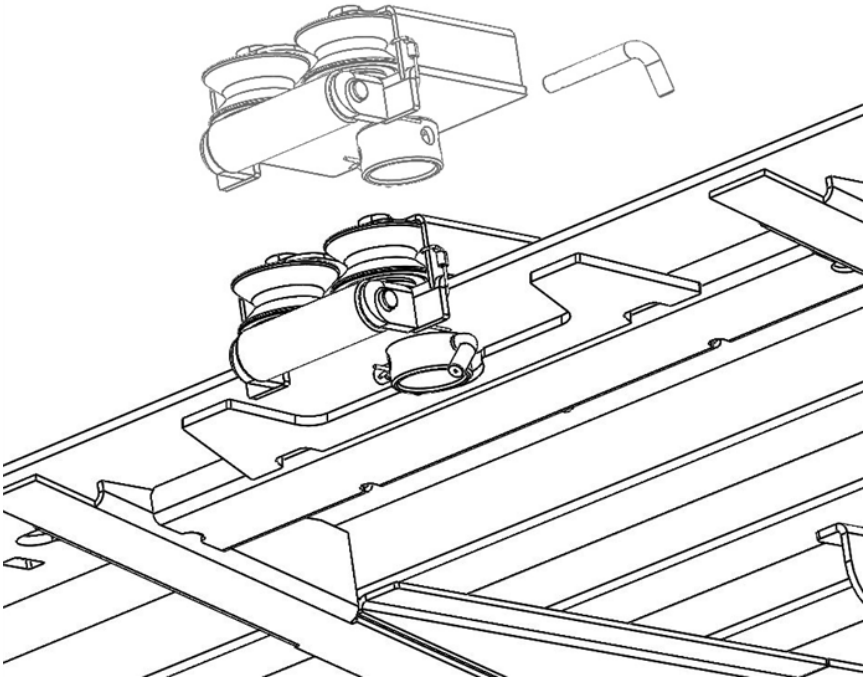


FIGURE 75 – INSTALLING A ROLLER-GUIDE

9.12 Pulley

A pulley is used for side recovery. A pulley is installed the same way as a roller-guide. See 3.3.6 for more information on how to use a pulley.

A removable pulley can rotate on two axes, allowing you to recover vehicles or loads that are not directly behind the platform but at an angle.

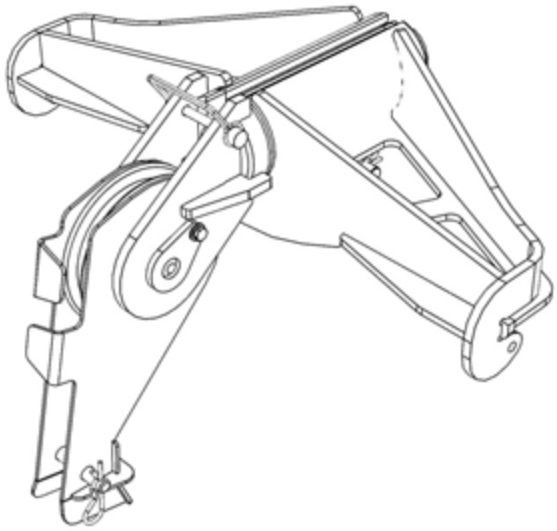


FIGURE 76 – PULLEY

9.12.1 How to use a pulley

When recovering a load that is not directly behind the platform, ensure that the pulley does not turn in a way that improperly transfers the load to the pulley (see figure below). Pulling on a load with an improperly positioned pulley will bend the pulley permanently.

When working with the removable pulley, ensure that it is in the correct position (see figure below). While stretching the cable with the winch, pull the cable between the pulley and the load to ensure that the pulley is positioned properly and that the cable wraps around the pulley until the cable is stretched. In this position, the load transfers properly to the pulley, ensuring its optimal operation.

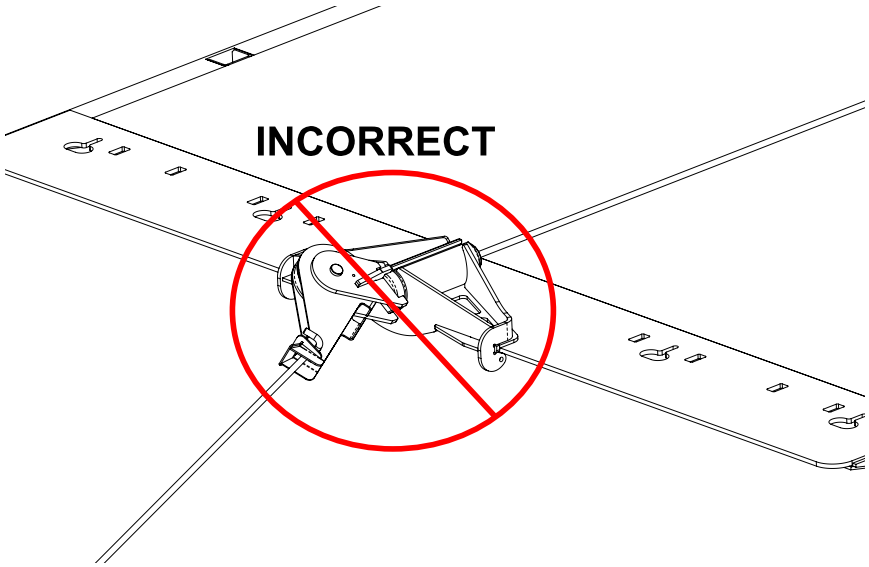


FIGURE 77 – INCORRECT USE OF A PULLEY

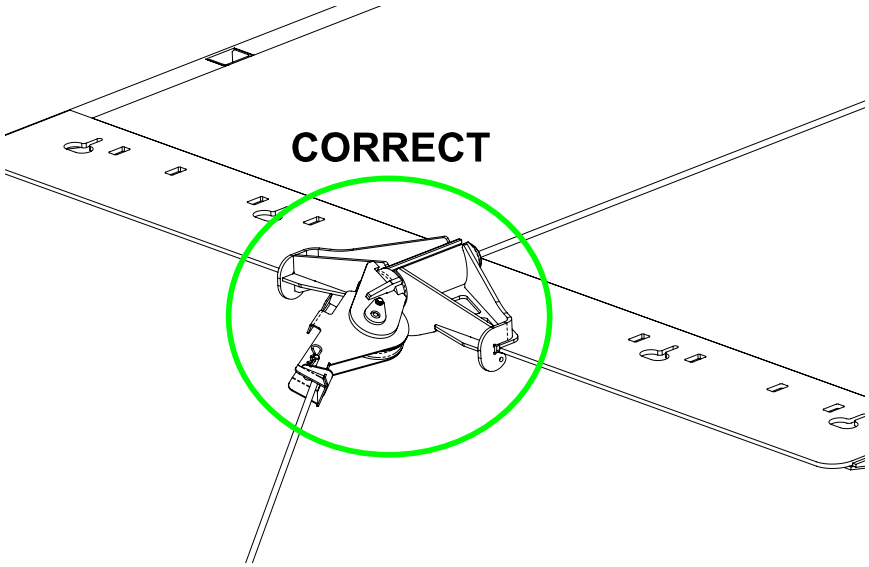


FIGURE 78 – CORRECT USE OF A PULLEY

9.13 Fork holders (swivel receivers) and forks

Fork holders are used to hold forks. They are installed on the T-head of the T-bar and can be used to hold the vehicle towed by the chassis, axles or structural members. There are various models of fork holders for the 10TB and 20TB carriel models and other fork holders for the 30TB and 40TB carrier models.

Forks are components used with fork holders. They can be used to hold the vehicle towed by the chassis, axles or structural members.

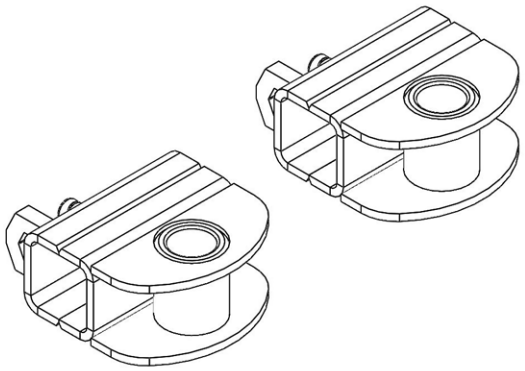


FIGURE 79 – EXAMPLE OF FORK HOLDERS (MODEL FOR 10TB AND 20TB SHOWN)

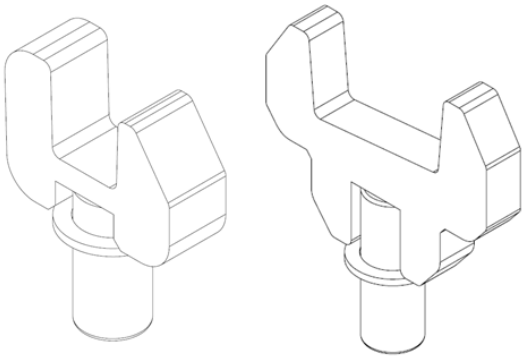


FIGURE 80 – EXAMPLE OF FORKS

9.13.1 How to install fork holders

Install the fork holders on the T-head of the T-bar. There are several positions in which you can install the fork holders on the T-bar.

1. Position the fork holders on the T-head of the T-bar.
2. Secure them in place using the locking pin.
3. Insert the appropriate forks in the fork holders.

Once in place, position the axle (or chassis or other structural members) of the towed vehicle on the forks, then secure the vehicle in place.

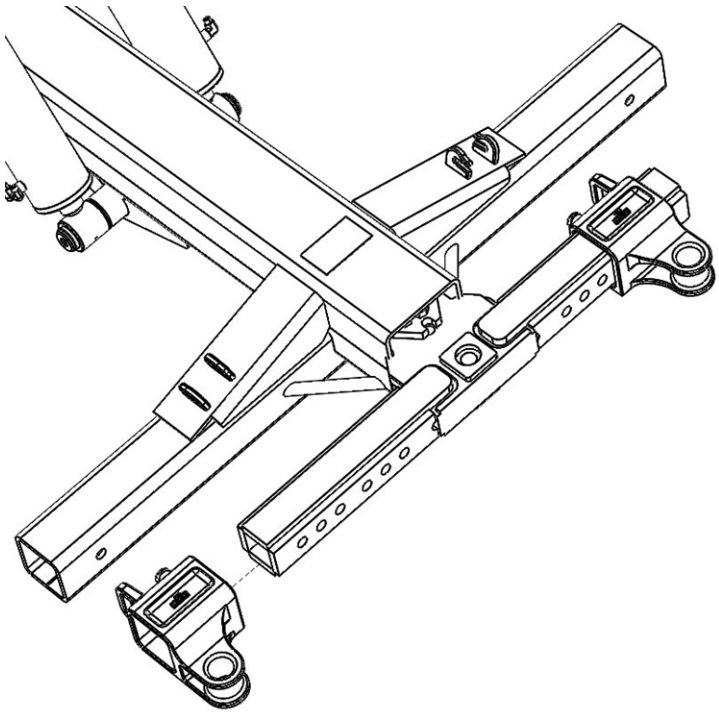


FIGURE 81 – INSTALLING FORK HOLDERS (MODEL FOR 30TB AND 40TB SHOWN)

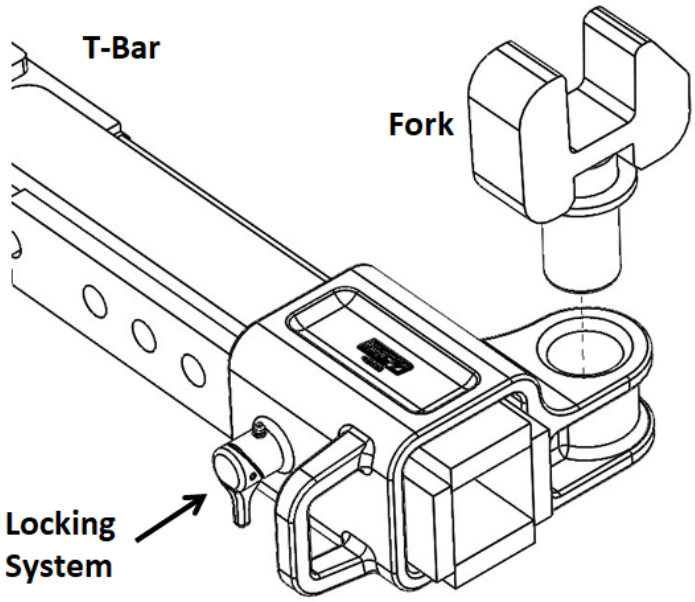


FIGURE 82 – INSTALLING A FORK

9.14 Holders with integrated forks

Holders with integrated forks are accessories that also fit into the T-head of the T-bar. They combine both the fork holder and the fork in one accessory. They serve as a direct link between the towed vehicle and the T-bar. They can be used in place of the fork holders and forks.

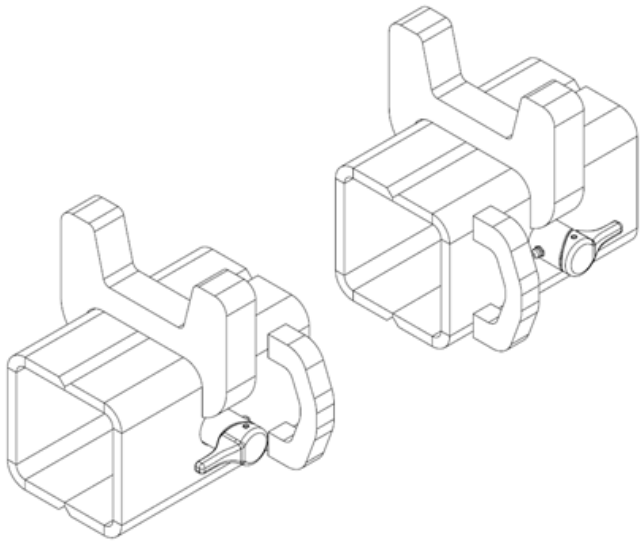


FIGURE 83 – EXAMPLE OF HOLDERS WITH INTEGRATED FORKS

9.14.1 How to use holders with integrated forks

Install the holders with integrated forks on the T-head of the T-bar. There are several possible positions in which you can install the holders with integrated forks.

1. Position the holders with integrated forks on the T-head of the T-bar.
2. Secure them in place using the integrated locking system.

Once in place, position the axle (or chassis or other structural members) of the towed vehicle on the forks, then secure the vehicle in place.

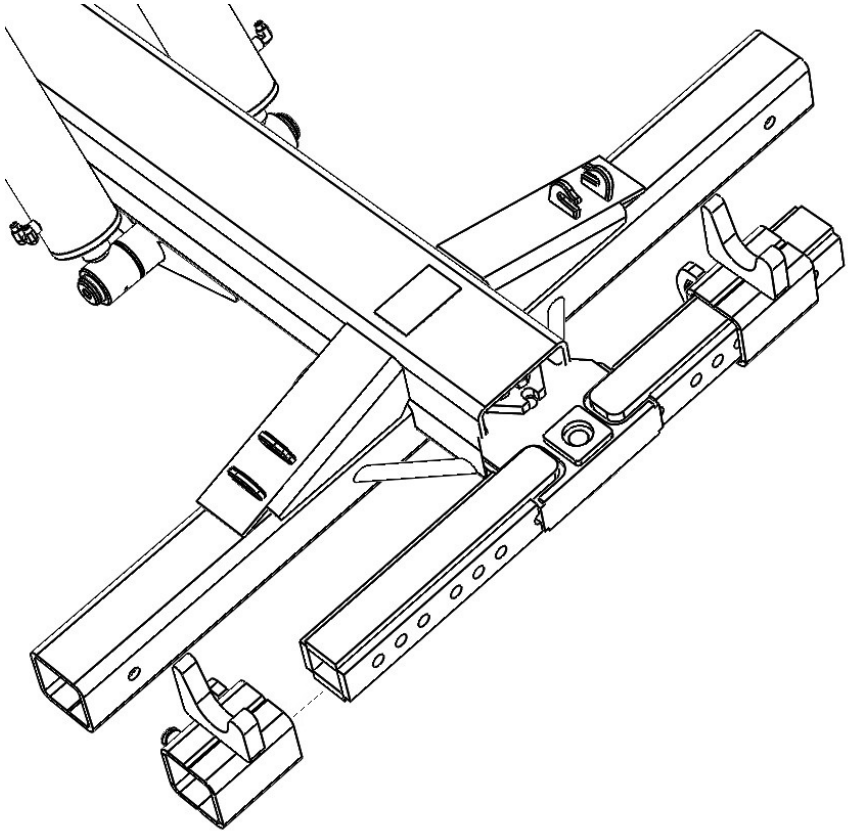


FIGURE 84 – INSTALLING THE INTEGRATED FORKS

9.15 Tow bar brackets

Tow bar brackets are accessories that also fit into the T-head of the T-bar. They are used to attach the towed vehicle with tow chains to the T-bar. They secure the towed vehicle during towing.

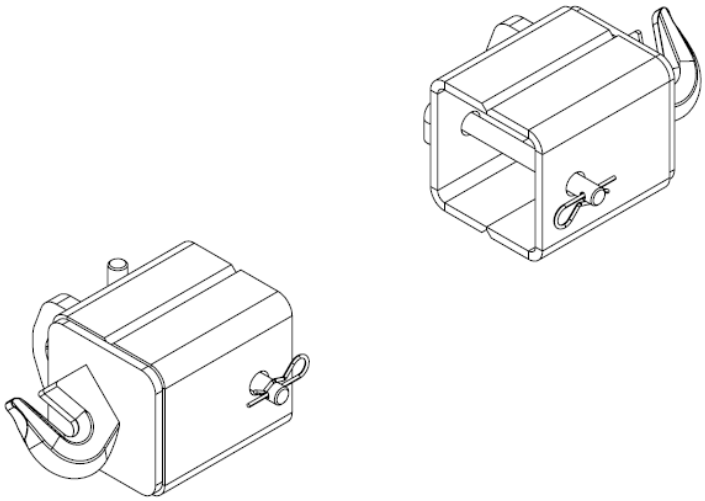


FIGURE 85 – EXAMPLE OF TOW BAR BRACKETS

9.15.1 How to use tow bar brackets

Install the tow bar brackets on the T-head of the T-bar. There are several positions in which you can install the tow bar brackets on the T-bar.

1. Position the tow bar brackets on the T-head of the T-bar.
2. Secure them in place using the locking pin.

Once they are in place, position the axle (or chassis or other structural members) of the towed vehicle on the T-bar, then secure the vehicle in place. To do so, attach the axle of the vehicle to the hooks of the tow bar brackets using tow chains.

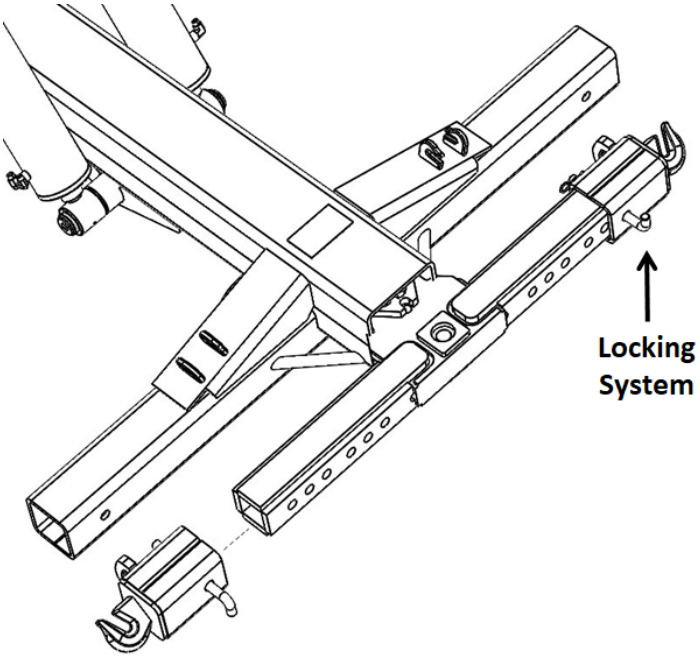


FIGURE 86 – INSTALLING THE TOW BAR BRACKETS

9.16 Rubber pads

The rubber pads are accessories that attach to the stabilizer tube of the T-bar (NOT to the T-head). They help stabilize the T-bar on the ground and are used when you want to protect the ground from damage.

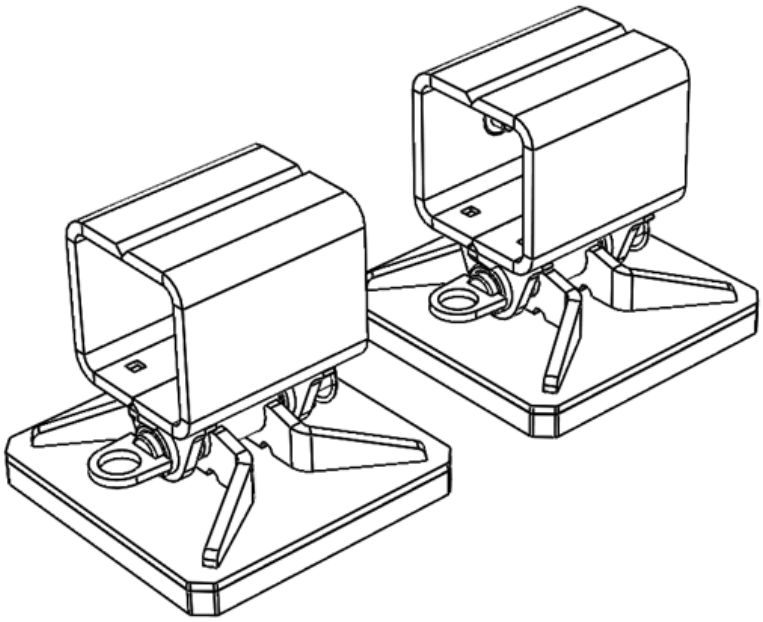


FIGURE 87 – RUBBER PADS

9.17 Stabilizer grips

Stabilizer grips are accessories that attach to the stabilizer tube of the T-bar (NOT to the T-head). They provide more grip on the ground when the rubber pads are not enough. They are mainly used when drawing a load to increase the grip on the ground and prevent the tow truck from sliding.

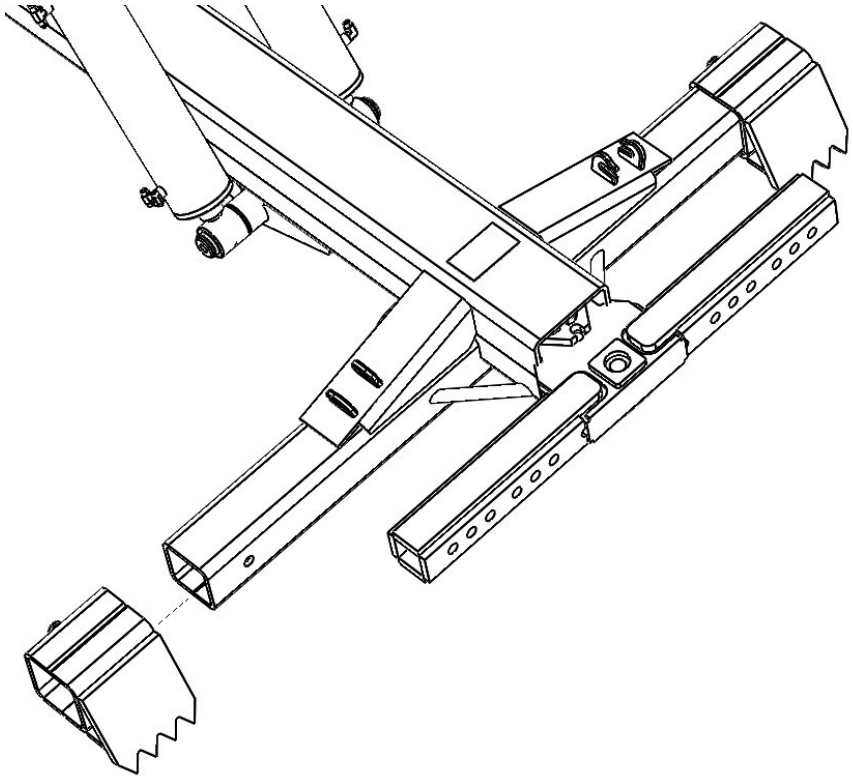


FIGURE 88 – INSTALLING THE STABILIZER GRIPS

9.18 Versatile stabilizer grips

Versatile stabilizer grips are accessories that attach directly to the stabilizer tube of the T-bar (NOT to the T-head). They are usually used together with a roller-guide or pulley for side recovery. They are mainly used when drawing a load from the side to increase the grip on the ground and prevent the tow truck from sliding.

Depending on where the load is pulled from, the versatile stabilizer grips can be installed in various positions.

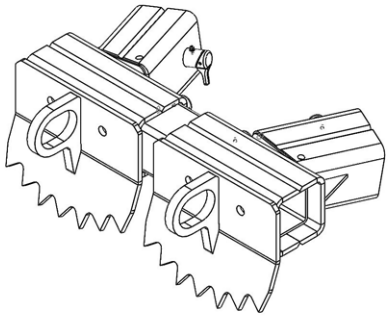


FIGURE 89 – EXAMPLE OF VERSATILE STABILIZER GRIPS

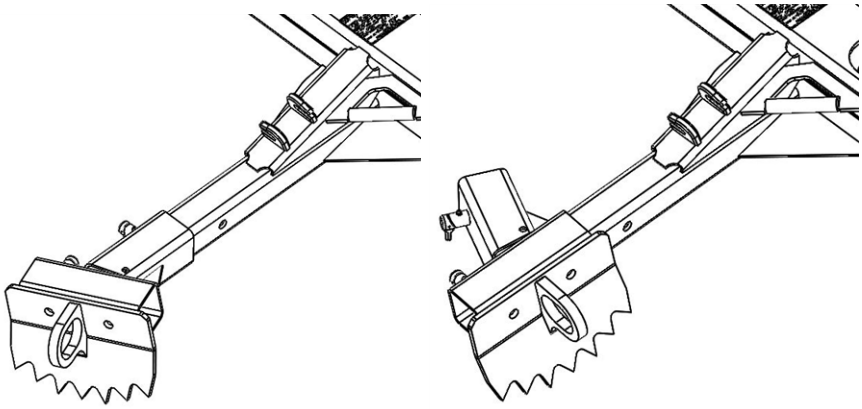


FIGURE 90 – INSTALLING THE VERSATILE STABILIZER GRIPS

9.19 Tow ramps

Tow ramps are used on the carrier in two places and situations:

1. At the front of the deck, to raise a towed vehicle to clear space for the winch.
2. At the back of the deck, to "lengthen" the deck.

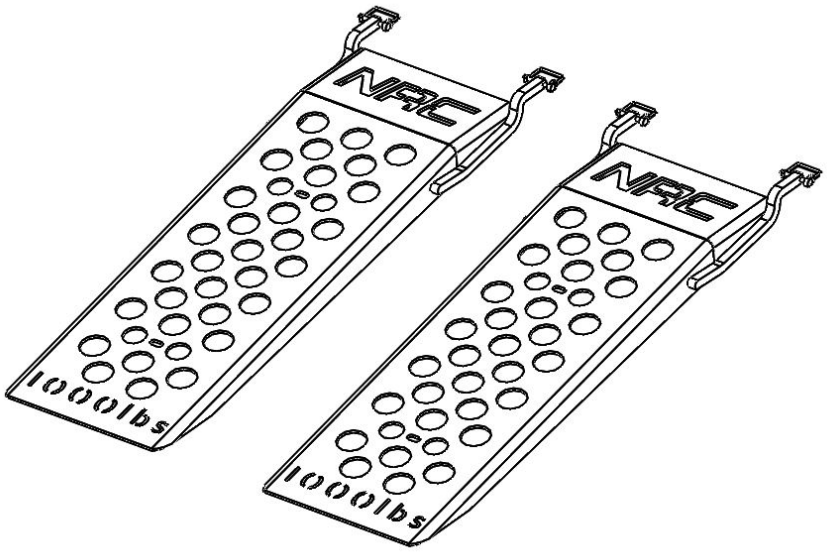


FIGURE 91 – EXAMPLE OF TOW RAMPS

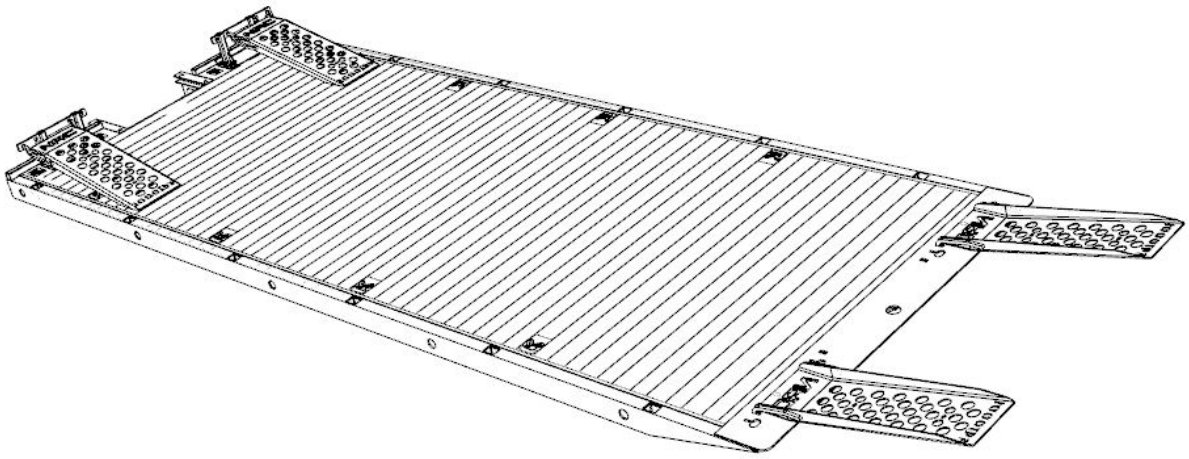


FIGURE 92 – INSTALLING THE TOW RAMPS

9.20 Safe loader

The safe loader is used to safely load the vehicle that you are towing onto the wheel lift. By using the safe loader's rearview camera, and the safe loader's screen and remote control in the carrier's cab, you can operate the wheel lift without leaving the cab. See 3.6 Using the wheel lift.

You can also use the hydraulic controls on the driver's side of the carrier to operate the safe loader.

The safe loader comes with two spacers for the L-arms to tow vehicles with small wheels or a flat tire.

⚠ DANGER

Never exceed the wheel lift's indicated capacity for your specific NRC carrier and truck. Disregarding this warning may cause loss of control of the vehicle or even an accident.

Never use the wheel lift to jack up your truck or any other vehicle with the intention of working underneath. The wheel lift is not designed to be used as a jack and may lead to equipment damage and injury.

When backing up, keep in mind that the wheel lift exceeds the length of your truck.

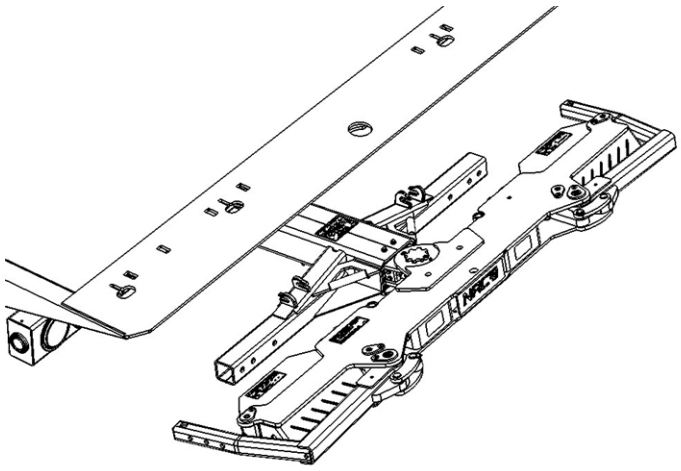


FIGURE 93 – SAFE LOADER WITH CLOSED L-ARMS

FIGURE 94 – SAFE LOADER CAMERA PLACEMENT ON THE WHEEL LIFT

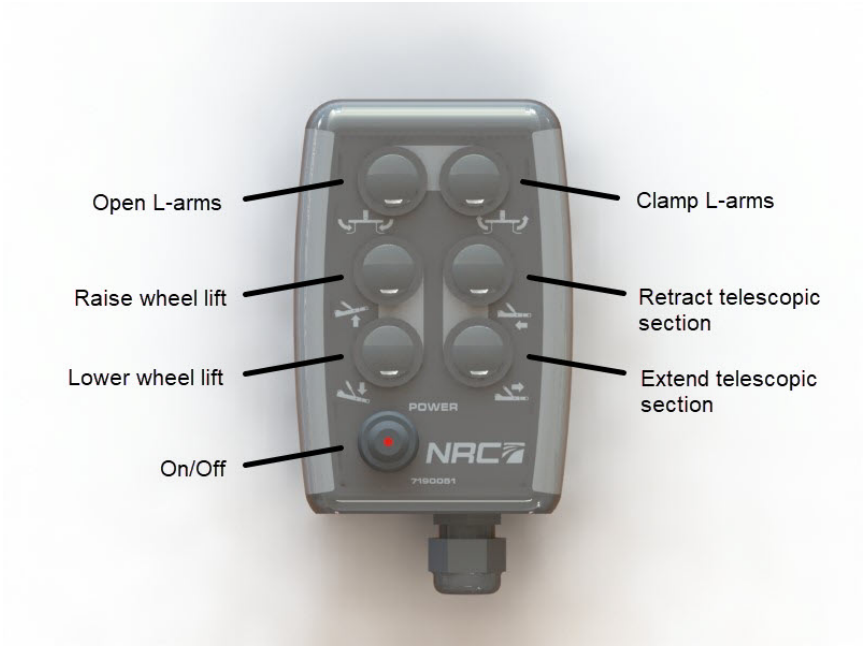


FIGURE 95 – SAFE LOADER REMOTE CONTROL

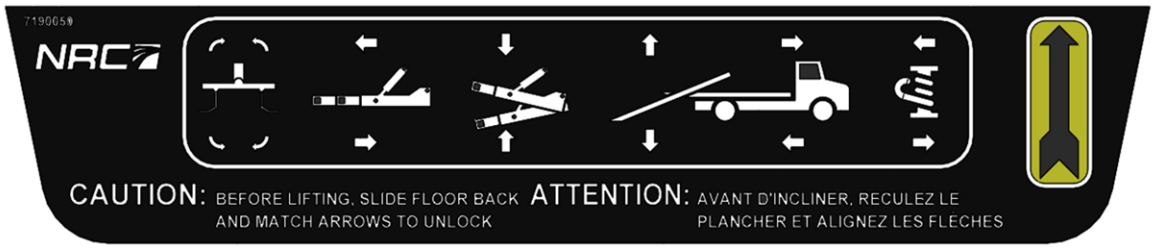


FIGURE 96 – SAFE LOADER HYDRAULIC CONTROLS

9.20.1 How to use the safe loader

1. Open the L-arms of the safe loader.

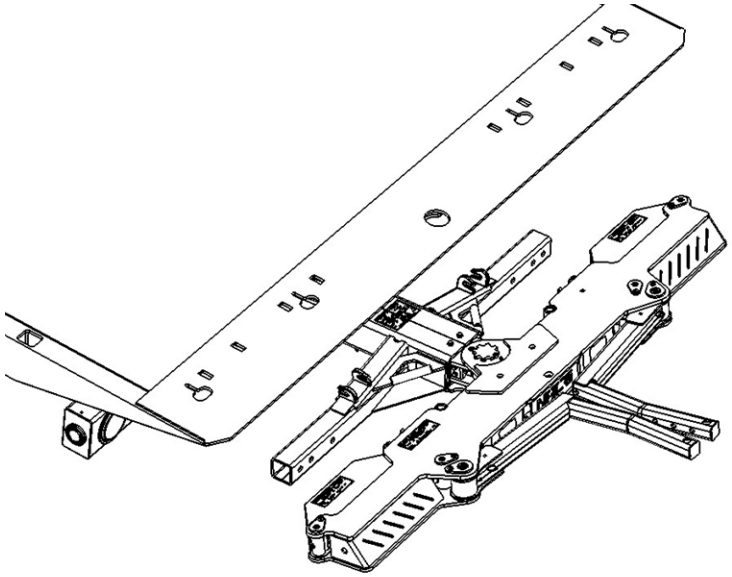


FIGURE 97 – SAFE LOADER WITH OPEN L-ARMS

2. If the vehicle has small wheels or a flat tire, you can use one of the included spacers to keep the L-arms parallel to the tow bar. Put a spacer on the L-arm if needed.

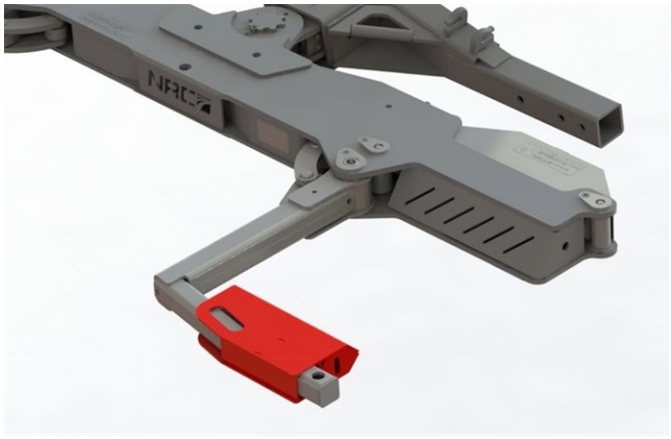


FIGURE 98 – PUTTING A SPACER ON THE L-ARM

3. Lower and extend the telescopic section and T-bar toward the vehicle that you are towing.

FIGURE 99 – EXTENDING THE TELESCOPIC SECTION

4. Back up until the T-bar is resting against the front wheels of the vehicle. Ensure that the T-bar is centered between the front wheels.

FIGURE 100 – CENTERING THE T-BAR BETWEEN THE FRONT WHEELS

FIGURE 101 – T-BAR RESTING AGAINST THE FRONT WHEELS (SIDE VIEW)

FIGURE 102 – T-BAR MAKING CONTACT WITH THE FRONT WHEELS (CLOSE-UP)

5. Clamp the L-arms around the wheels.

FIGURE 103 – CLAMPING THE L-ARMS AROUND THE WHEELS

6. Raise the vehicle high enough so that it does not touch the ground during transport. Verify that the tail end of the towed vehicle does not drag on the ground.

FIGURE 104 – RAISING THE VEHICLE

7. Move to a safe location if necessary before completing this step and the following step. Secure the wheels with straps and ratchets.

FIGURE 105 – SECURING THE VEHICLE WITH STRAPS AND RATCHETS

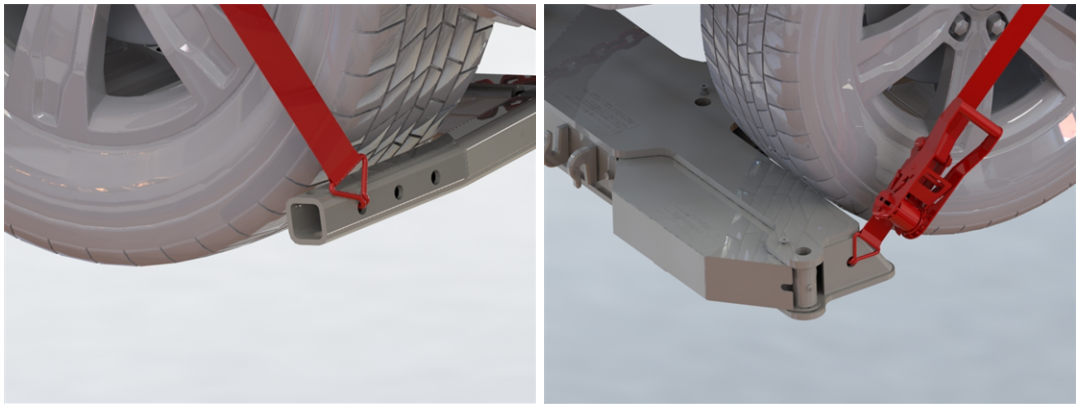


FIGURE 106 – ATTACHING THE RATCHET

8. Secure the vehicle with the retractable safety chains on the back of the carrier.

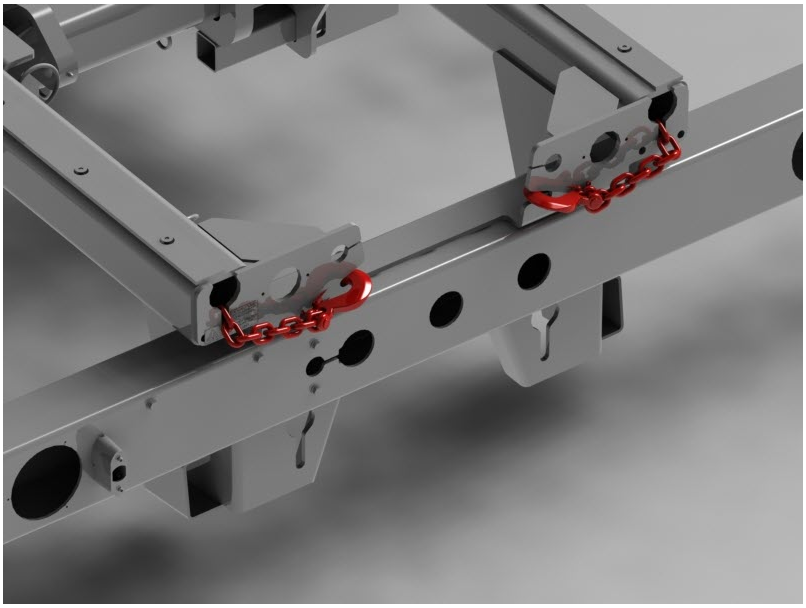


FIGURE 107 – RETRACTABLE SAFETY CHAINS

FIGURE 108 – SECURING THE VEHICLE TO THE CARRIER WITH THE SAFETY CHAINS

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Your logbook, which must be kept with your equipment, should contain the following information.

Logbook						
Date	Routine	Maintenance/Frequency (Flushing, Greasing, Tightening…)	Other Tasks (Inspections, Disassembly, Repairs…)	Name and Title	Number of Hours of Operation	Observations (Part Numbers…)

OPERATOR RECORD

Operator Name	Date

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