

# TUBE•LINE™

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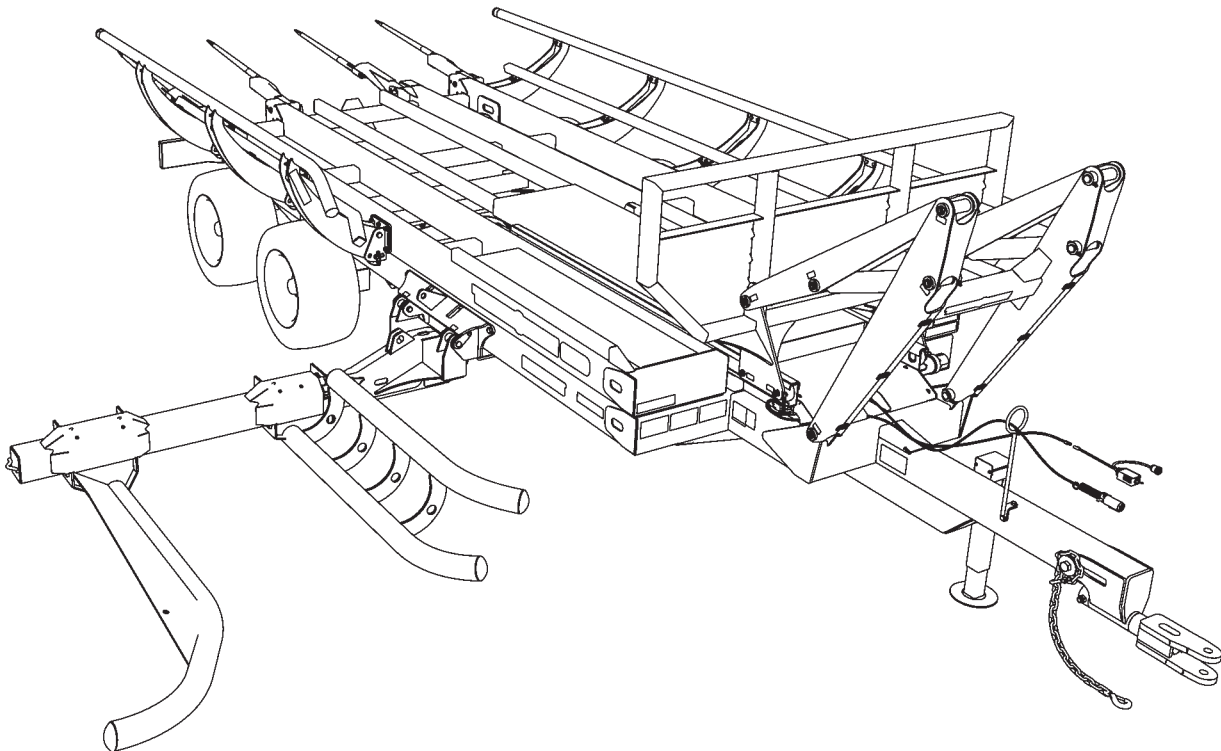
# Operator's Manual

Keep this manual with the machine at all times.

## TECHNOBALE

### Techno-Bale Bale Carrier

# 980



# Operator's Manual

Thank you for choosing the Tubeline Techno-Bale TB980. Our hope is that it will give you many years of productive service. This machine is designed to pick up bales in field and transport them efficiently to storage locations.

Please read and understand this manual and the machine before operation.

## Warranty and Limitation of Liability

All equipment is sold subject to mutual agreement that it is warranted by the company to be free from defects of materials and workmanship. But the company shall not be liable for special, indirect or consequential, damages of any kind under this contract or otherwise. The company's liability shall be limited exclusively to replacing or repairing without charge, at its factory or elsewhere, at its discretion.

Any material, or workmanship defects which become apparent within one year from the date on which the equipment was purchased, and the company shall have no liability for damages of any kind. The buyer by the acceptance of the equipment will assume all liability for any damages, which may result from the use or misuse by his employees or others.

Warranty coverage is null and void unless Warranty Registration form has been completely filled in and is on file at Tubeline Manufacturing Ltd.

## Manuals

Manuals are printed and shipped with machines as they leave the manufacturer. Your machine may include parts or features not yet included in the initially shipped manual. The latest manual version can be found at [www.tubeline.ca/support](http://www.tubeline.ca/support). Tubeline reserves the right to update and change manuals as seen fit. Dealers are informed of any pressing changes/ modifications. They can help you with any questions regarding replacement parts.

## Serial Number

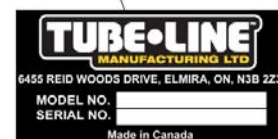
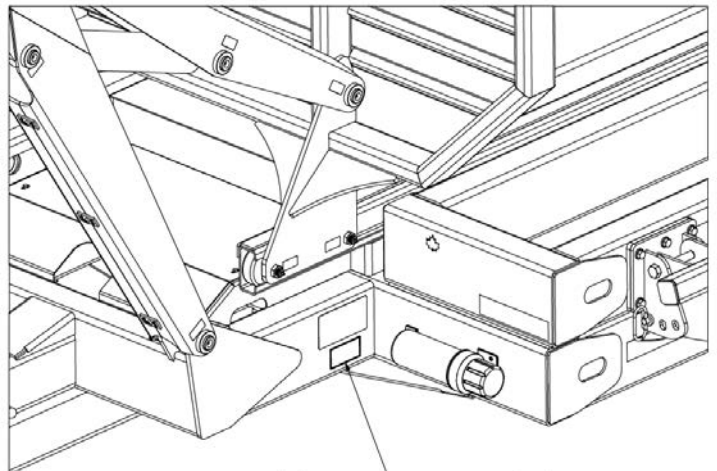
The implement serial number is located on the front of the frame. This number helps us to track changes and improvements and must be mentioned when ordering parts or requesting service. For your convenience, a space has been provided inside the front cover of this manual to record the serial number, model number, purchase date, and dealer name.

Model No: \_\_\_\_\_ TB980

Serial No: \_\_\_\_\_

Date Purchased: \_\_\_\_\_

Dealer Name: \_\_\_\_\_



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## Principals of Operation

The Techno-Bale 980 is designed to be hitched behind a tractor.

The Techno-Bale consists of a steel tubed trailer and deck. The rear of the deck is hinged to the rear of the frame. Bales are side loaded by manually activating the bale arm, and pushed down the deck by manually activating the ram pusher. A full deck of bales can be unloaded by manually activating hydraulics to tip the deck.

**NOTE:** A limit switch is installed to keep the deck from being raised while the ram is engaged.

Rear tines can be locked in vertical or horizontal positions for varying operations.

We recommend that you carefully read this entire manual before operating the Techno-Bale.

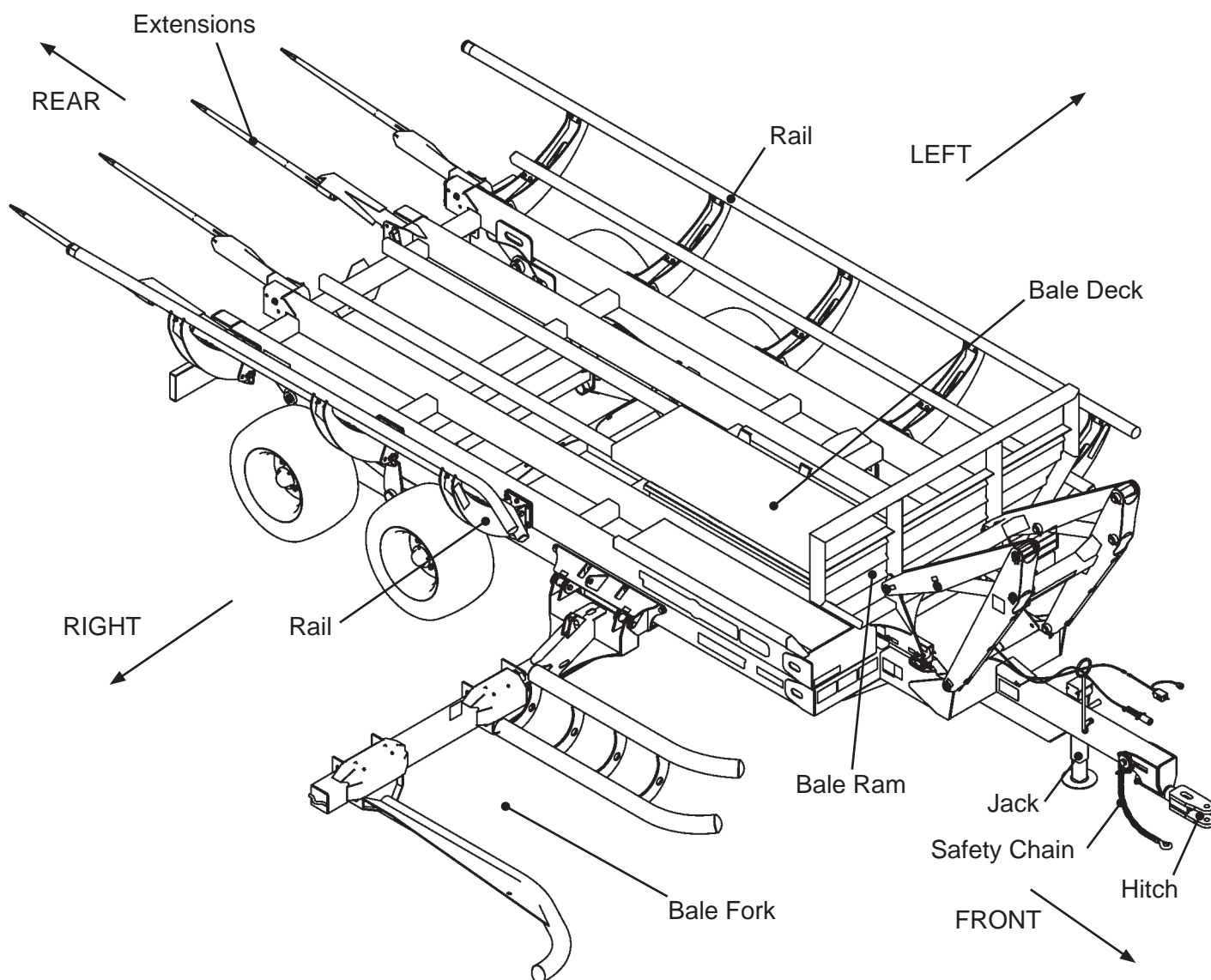
Please do not assume you know how to operate and maintain your machine before reading this manual carefully.

Keep this manual available for reference.

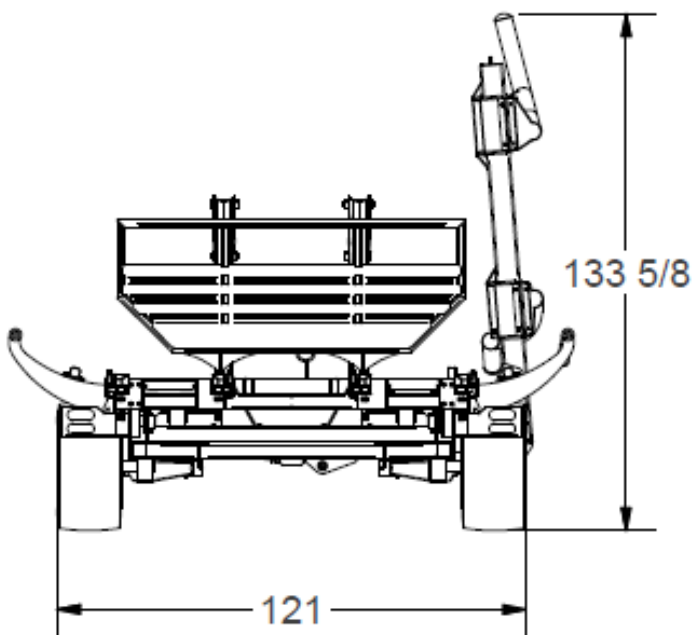
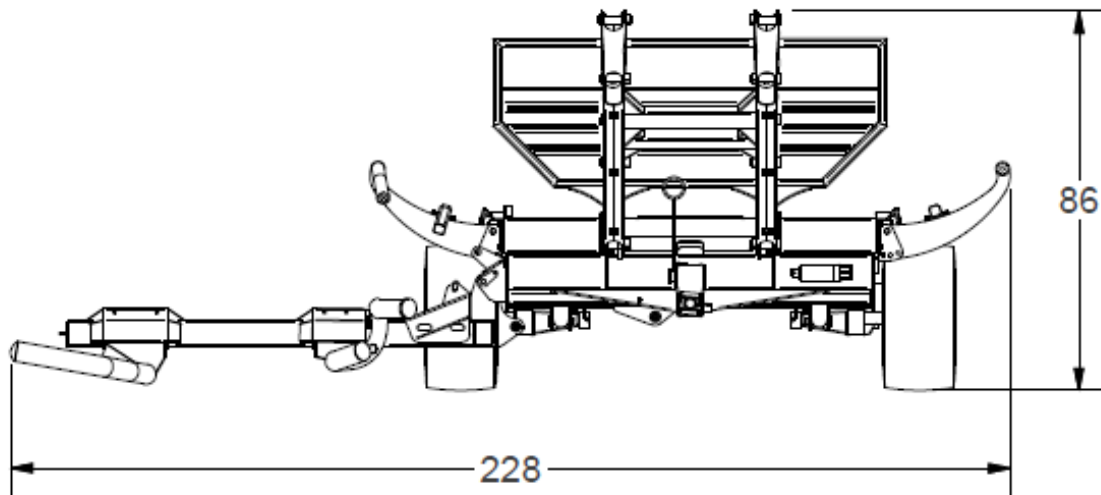
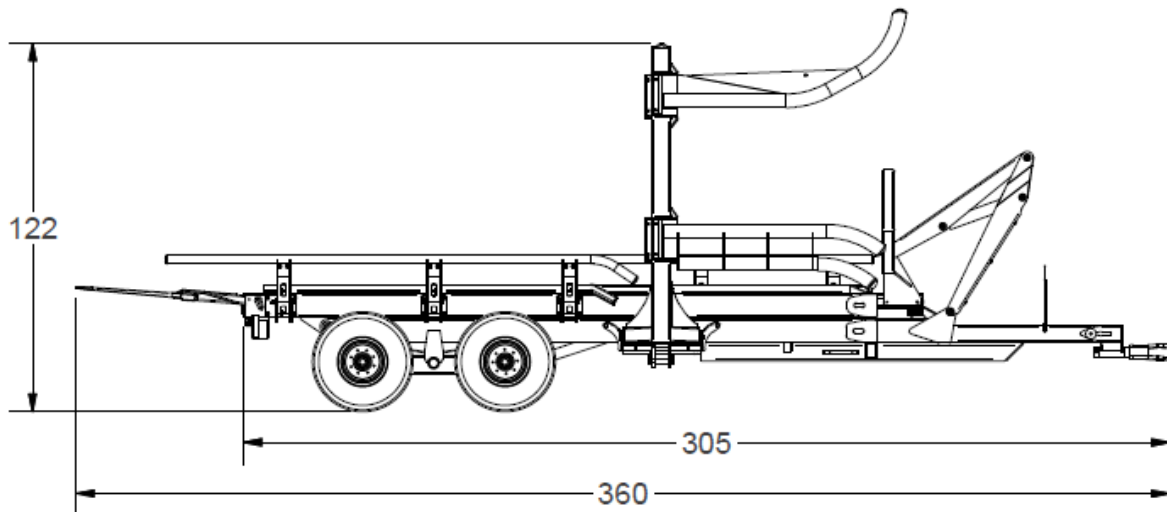
Call your authorized dealer if you need any assistance or more information.

## Terminology

Directions, common parts and areas.



## Specifications



### Hydraulic Requirements

The Techno-Bale TB980 requires 16 GPM hydraulic flow for optimal performance.

### Tractor Requirements

The Techno-Bale TB980 requires a minimum of 16,000lb ballast weight to tow a full load.

## Tire Load Index Charts

Replacement tires must match or exceed the specifications in that size tire's chart.

### 32X15.5-16.5 I-1

Tire Size	P.R & LI	Type	Rim	OD	SW	Static Load Radius	Rolling Circumf	Recom. Load	Pressure	Speed
32X15.5-16.5	14	TL	12"	32.9"/ 836 mm	16"/ 406mm	13.6"/ 345mm	89.7"/ 2278mm	5842lb/ 2650kg	90psi/ 6.2bar	31mph/ 50kmph

### 15/55-17 I-1

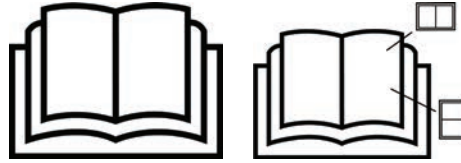
Tire Size	Rim	Unloaded		Static Load Radius	Rolling Circumf	Ply Rating	Load Index	Pressure	Load Capacity (lbs)							
		OD	SW						Drive Wheel				Free Rolling			
									6 mph	16 mph	25 mph	31 mph	6 mph	16 mph	25 mph	31 mph
15/55-17	13"	33.5"	15.4"	14.7"	97"	18	DR 150A8	81psi	6950	5910	4960	4480	9790	8310	6990	6280
							DR 146B	84psi	7080	6020	5050	4540	10010	8510	7140	6440
							FR 138A8									
							FR 134B	87psi	7230	6130	5160	4650	10190	8660	7280	6550

# Section 1: Safety

## Safety Symbol



This safety alert symbol is found throughout this manual to call your attention to instructions involving yourself and others working around the machine. Failure to follow these instructions can result in injury or death. This symbol means: **Attention! Become Alert! Your Safety is involved!**



## Safety Signal Words

**CAUTION:** Indicates a potentially hazardous situation that may result in injury.

**WARNING:** Indicates a potentially hazardous situation that could result in serious injury or death.

**DANGER:** Indicates a hazardous situation that needs to be avoided. It is you the operator that needs to be aware of these dangers.

**NOTE:** Informative only, not hazard or safety related.

## General Safety

Safety of the operator is one of our main concerns, however we do hear of some accidents that could have been avoided if some precautions had been taken. To avoid personal injury study the following precautions and insist those working with you or for you, follow them.

In most cases the pictures will have the shielding in place, in some they may be removed, only to show a view behind the shield. Keep all the shields, safety doors in place. If they become faulty and fail to work replace them. They are for your safety, do not operate the equipment with them removed.

Replace any decals that may be missing or that are not readable. Location of the decals is indicated in this manual.

Do not operate this machine while under the influence of drugs or alcohol.

Review the safety instructions with all users annually.

This equipment should not be operated by children, or with those unfamiliar with the operation of the machine. Do not allow persons to operate this machine until they have read this manual and/or were instructed by a qualified person.

Do not paint over, remove or deface any safety signs or warning decals on your equipment. Observe all safety signs and practice the instructions on them.

## Lighting & Marking

This machine is equipped with lights and reflectors as required by the most stringent government and ASAE specifications. They work with the tractor 7-pin connector.



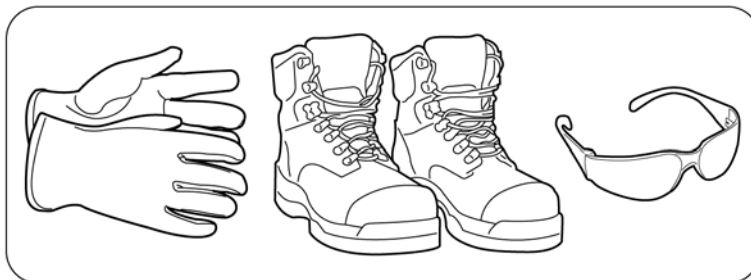
## Personal Protective Equipment



**WARNING:** Wear work boots, gloves, and safety glasses when maintaining or repairing machine.

**WARNING:** Wear work boots and ear protection when operating machine.

**DANGER:** Do not wear loose clothing when operating or maintaining the Technobale 980.



### A Word To The Operator

It is **YOUR** responsibility to read and understand the safety section in this book before operating the Techno-Bale 980. You must ensure that you and anyone else who is going to use, maintain or work around the Techno-Bale be familiar with the use, maintenance procedures and related safety information contained in this manual. Remember that **YOU** are the key to safety. Good safety practices not only protect you, but also the people around you. Most accidents can be prevented. Do not risk injury or death by ignoring good safety practices.

1. Study the features in this book and make them a working part of your safety program. Keep in mind that this safety section is written only for the Techno-Bale.
2. Techno-Bale owners must give operating instructions to operators or employees before allowing them to operate the machine, and at least annually thereafter per OSHA (Occupational Safety and Health Administration) regulation 1928.57
3. The most important safety device on this equipment is a **SAFE** operator. It is the operator's responsibility to read and understand **ALL** Safety and Operating instructions in the manual and to follow these.
4. A person who has not read and understood all directive and safety instructions in not qualified to use the Techno-Bale. An untrained operator exposes himself and bystanders to possible serious injury or death.
5. Practice all other usual and customary safe working precautions and above all;

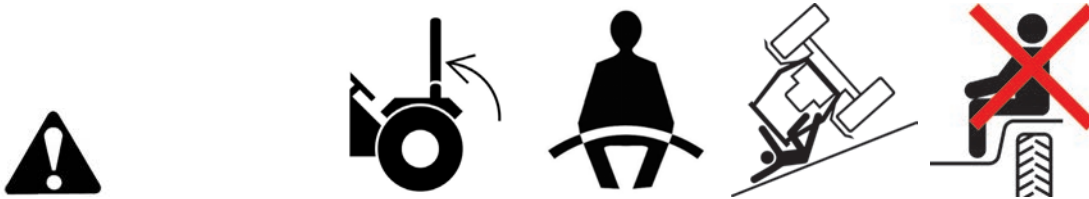
### REMEMBER !

#### **SAFETY IS YOUR RESPONSIBILITY. YOU CAN PREVENT SERIOUS INJURY OR DEATH.**

6. This safety section is intended to point out some of the basic safety situations that can be encountered during the normal operation and maintenance of the Techno-Bale, and to suggest possible ways of dealing with these situations. This section is **NOT** a replacement for other safety practices featured in other sections of this book.

## General Safety

1. Read and understand the Operator's Manual and all safety signs before operating, maintaining, adjusting or cleaning the Techno-Bale.
2. All equipment has a limit. Make sure you understand the speed, brakes (additional option), stability and load characteristics of the Techno-Bale and your tractor before you start.
3. Make sure the tractor is in proper operating condition as stated in the tractor Operator's Manual. The tractor must have enough weight and braking capacity, especially when operating on uneven terrain.



**WARNING !** Only use a tractor with a ROPS cab and seat belt.

4. Have a first-aid kit available for use should the need arise and know how to use it.
5. Have a fire extinguisher available for use should the need arise and know how to use it.
6. **NEVER** allow riders. Keep others away from your work area.
7. Wear appropriate protective gear. This list includes but is not limited to:
  - Protective shoes with slip-resistant soles
  - Protective glasses
  - Hearing protection
  - Respirator or filter mask
8. Install and secure all guards before starting.
9. Turn machine off, stop and disable engine, remove ignition key and place in your pocket and wait for all moving parts to stop before servicing, adjusting, repairing, or unplugging.
10. Clear area of people, especially small children, before using the unit.
11. Review safety related items annually with all personnel who will operate or maintain the Techno-Bale.
12. Where possible, avoid operating the Techno-Bale near roads, ditches, embankments or holes. Reduce speed when operating on rough, slippery, or muddy surfaces and when turning or crossing slopes, Stay off slopes too steep for proper operation.
13. Beware of the machine size and have enough space to allow for operation. Never operate the Techno-Bale at high speeds in crowded places.
14. Do NOT use attachments unless the attachments are approved optional equipment.
15. Securely fasten your seat belt before operating the machine. Always remain seated when operating the machine.

## Equipment Safety Guidelines

1. manual may show an assembly with a safety shield removed. However, equipment should never be used in this condition. Keep all shields in place. If shield removal becomes necessary for repairs, replace the shield prior to use.
2. Replace any safety sign or instruction sign that is not readable or missing. Location of such safety signs are indicated in this manual.
3. Never intake alcoholic beverages or drugs which can hinder alertness or coordination while using this equipment.  
Consult your doctor about using this machine while taking prescription medications.
4. Under no circumstances should young children be allowed to work on this equipment. Do not allow persons to use or assemble this unit until they have read this manual and have developed a thorough understanding of the safety precautions and of how the machine works. Review the safety instructions with all users annually.
5. This equipment is dangerous to children and persons unfamiliar with its operation. The operator should be a responsible, properly trained and physically able person, familiar with machinery and trained in this equipment's operations. If an elderly person is assisting with work, their physical limitations need to be recognized and accommodated.
6. Never exceed the limits of a piece of machinery. If its ability to do a job, or to do it safely, is in question - **DON'T TRY IT.**
7. In addition to the design and configuration of this implement, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transportation, maintenance, and storage of the machine.

## Safety Training

1. Safety is the primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by a single careless act of an operator or bystander.
2. In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transportation, maintenance and storage of this equipment.
3. It has been said, "The best safety feature is an informed, careful operator." We ask that you to be that kind of operator. It is the operator's responsibility to read and understand ALL safety instructions in the manual and follow them. Accidents can be avoided.
4. Working with unfamiliar equipment can lead to careless injuries. Read this manual before assembly or use, to acquaint yourself with the machine. If this machine is used by any person other than yourself, or is loaned or rented, it is the machine owner's responsibility to make certain that the operator, prior to using:
  - Reads and understands the operator's manual
  - Is instructed in safe and proper use.
5. Know your controls and how to stop the engine and machine quickly in an emergency.
6. Train all new personnel and review instructions frequently with existing workers. Be certain only a properly trained and physically able person will use the machinery. A person who has not read and understood all the safety instructions is not qualified to use the machine. An untrained operator exposes himself and bystanders to possible serious injury or death. If the elderly are assisting with the work, their physical limitations need to be recognized and accommodated.

## Safety Signs

1. Keep safety signs clean and legible at all times.
2. Replace safety signs that are missing or have become illegible.
3. Replaced parts that displayed a safety sign should also display the current sign.
4. Safety signs displayed in Safety Sign Locations each have a significant purpose and need to be cleaned or replaced when necessary.
5. Safety signs are available from your authorized distributor or dealer parts department or from the manufacturer.

## How to Install Safety Signs

1. Install in clean and dry area.
2. Apply in temperature above 10°C (50°F).
3. Determine exact position of new safety sign before removing backing.
4. Align the sign over the specific area, carefully press the sign on, slowly peeling away the backing paper while smoothing the sign in place.
5. Small air pockets can be pierced with a pin and smoothed out using a piece of sign backing paper.

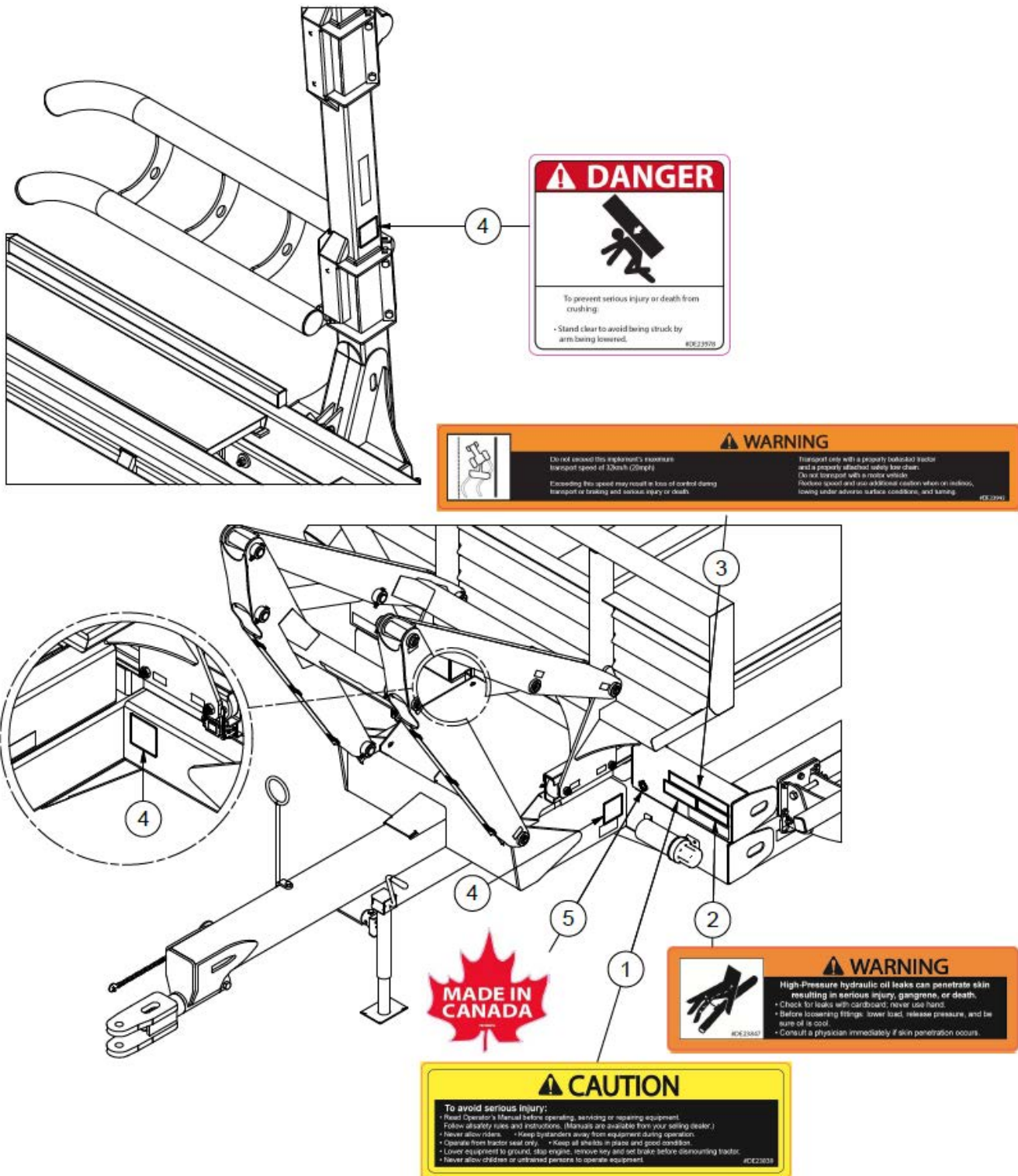
# Safety Sign Locations

The types of safety signs and locations on the equipment are shown in the illustrations that follow. Good safety requires that you familiarize yourself with the various safety signs, the types of warning, and the area, or proper function related to that area, that requires your safety awareness.

**NOTE:** Examples only, actual decals may differ in text and graphic representation.

## REMEMBER

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



## Safety Decals

ITEM	QTY	PARTNUMBER	DESCRIPTION
1	1	DE23839	Read Owners Manual Decal Caution
2	1	DE23847	High Pressure Fluid Warning Decal
3	1	DE23942	Warning - Max. Transport Speed Decal
4	3	DE23978	Danger Decal (Stand Clear to Prevent Crushing)
5	1	DECANADA	Decal Made In Canada

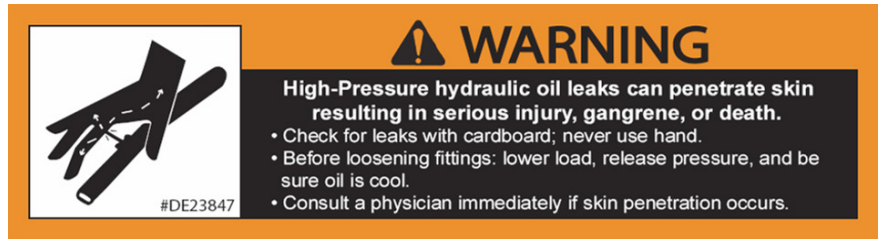
### Item - 1

Part No: DE23839



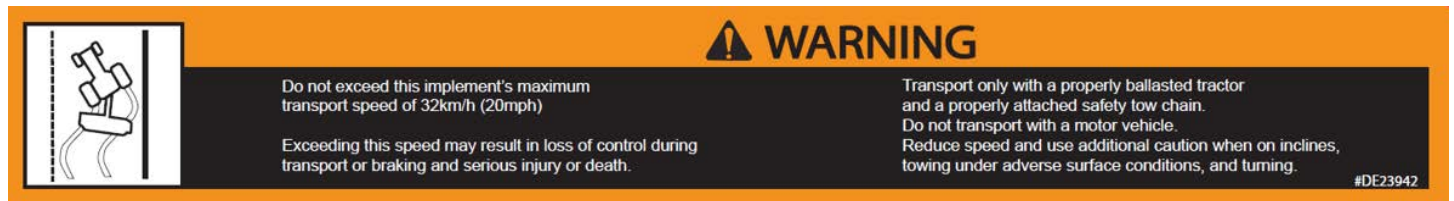
### Item - 2

Part No: DE23847



### Item - 3

Part No: DE23942



### Item - 4

Part No: DE23978

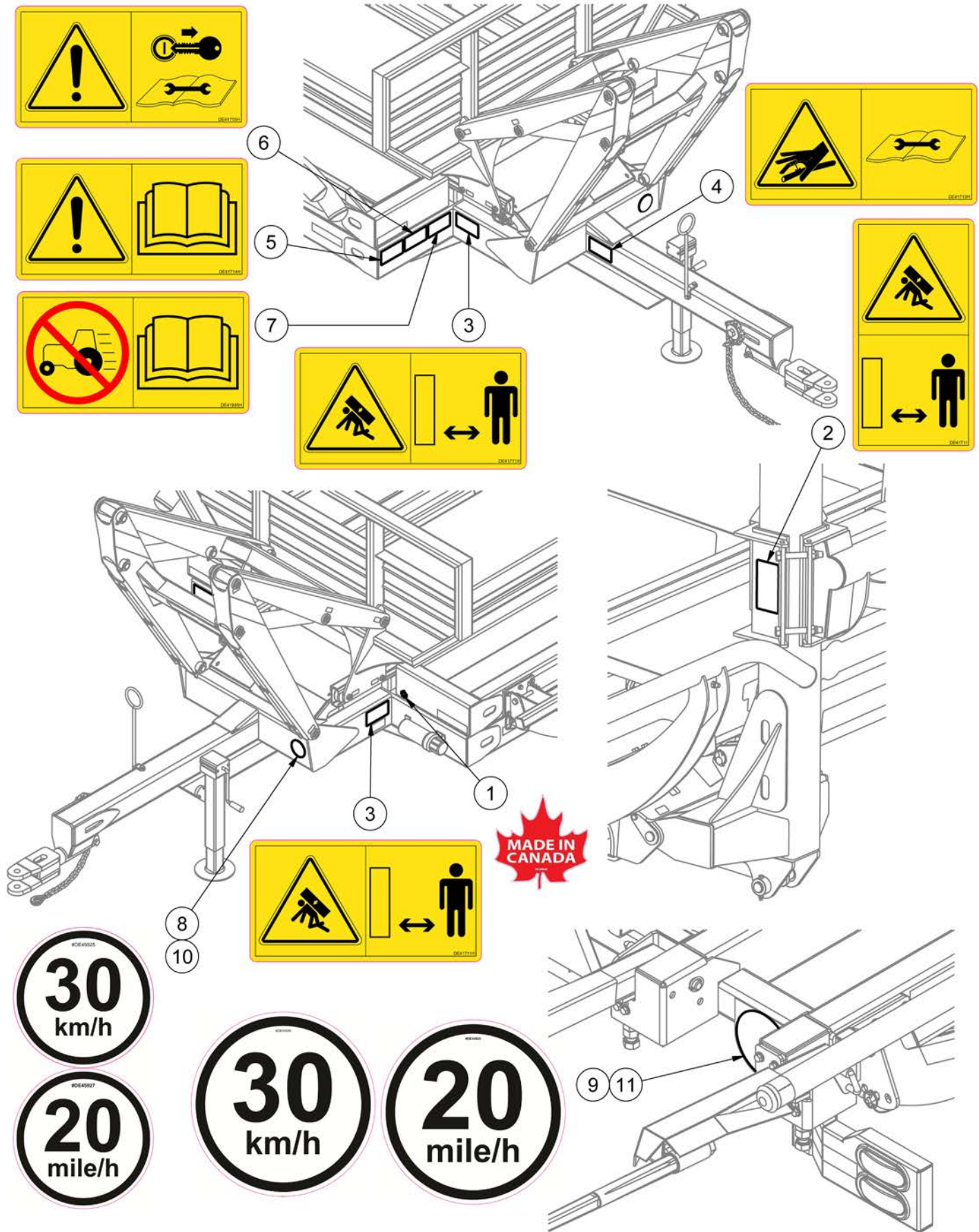


### Item 5:

Part No: DECANADA



# ISO Safety Decal Locations



## ISO Safety Decals

ITEM	QTY	PART NUMBER	DESCRIPTION	NOTE
1	1	DECANADA	Decal Made In Canada	
2	1	DE41711	ISO Decal - Angled Crush Hazard	
3	2	DE41711H	ISO Decal - Angled Crush Horizontal	
4	1	DE41713H	ISO Decal - High Pressure Fluid Horizontal	
5	1	DE41714H	ISO Decal - Read OM Horizontal	
6	1	DE41715H	ISO Decal - Remove Key Before Repair Horizontal	
7	1	DE41935H	ISO Decal - Transport Speed Limit	
8	1	DE45925	Decal - Small SIS 30kmh	Intl Models
9	1	DE45926	Decal - Large SIS 30kph	US Models
10	1	DE45927	Decal - Small SIS 20mph	Intl Models
11	1	DE45928	Decal - Large SIS 20mph	US Models



### Item 1: DECANADA

Manufacturer's country of origin.

### Item 2: DE41711

Crush hazard from bale loading arm. Stand clear while arm raised.



### Item 5: DE41714H

Read and understand manual before operating this machine.



### Item 6: DE41715H

Remove key from power unit before attempting repairs on this machine.



### Item 6: DE41935H

Do not exceed top speed of 32km/h (20mph) while transporting this machine.



### Item 3: DE41711H

Crush hazard from bale loading arm. Stand clear while arm raised.



### Item 8: DE45925 & Item 9: DE45926

Speed Indicator Sign for international machines.



### Item 10: DE45927 & Item 11: DE45928

Speed Indicator Sign for United States machines.



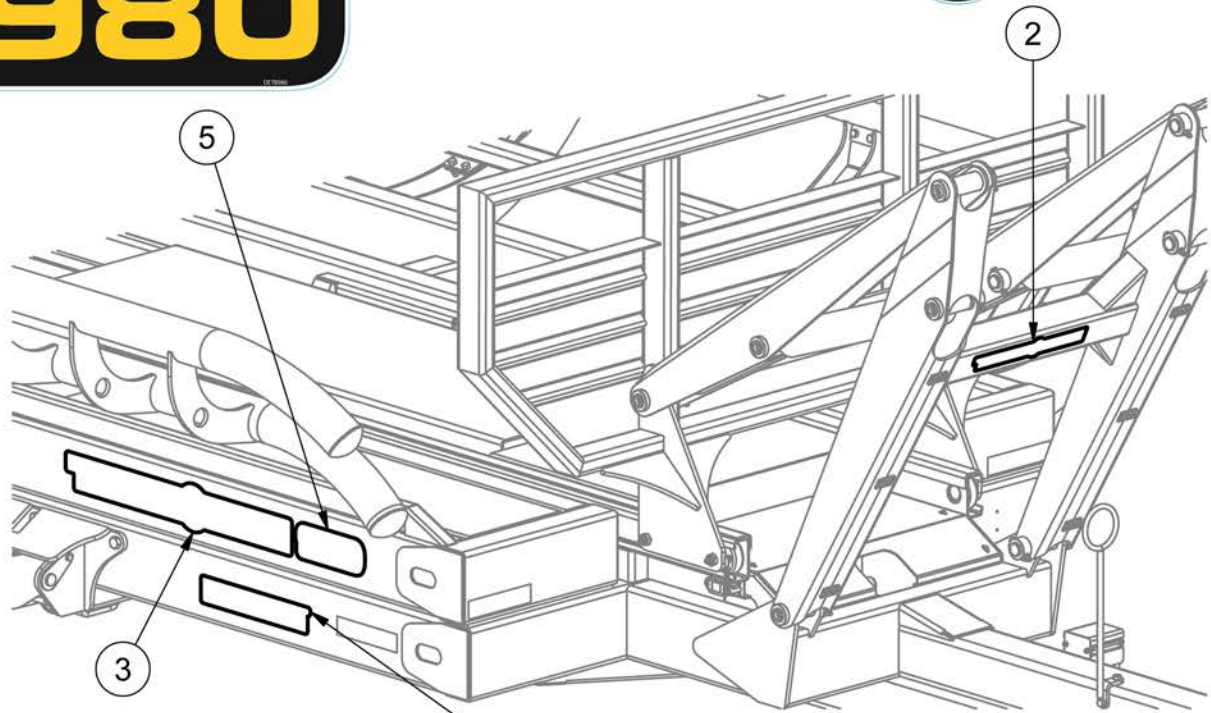
### Item 4: DE41713H

Do not use hand to check for hydraulic leaks, alternatively use a piece of cardboard.



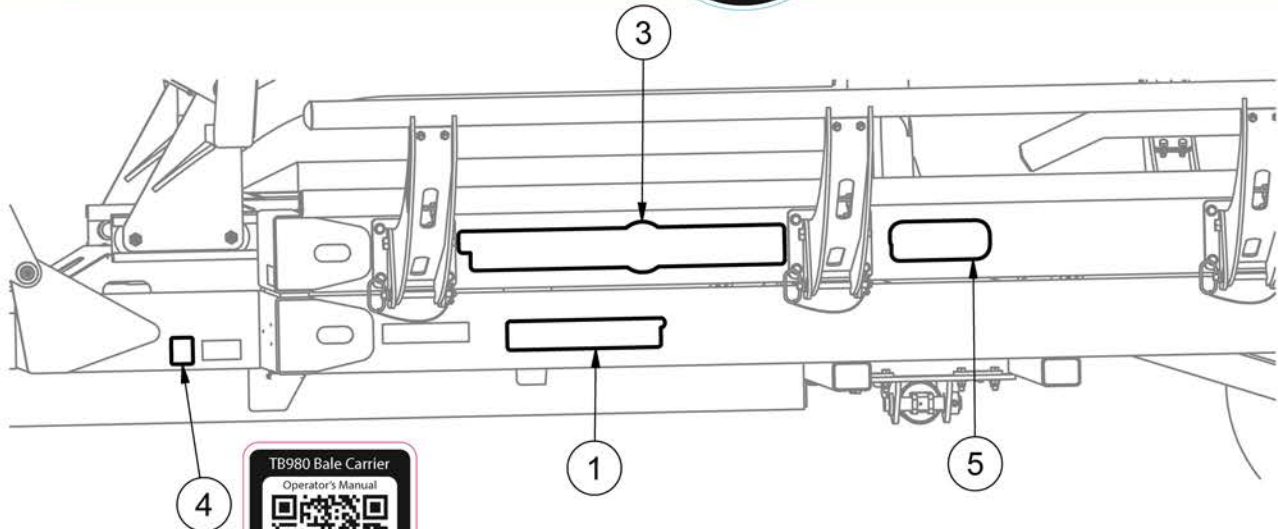
**980**

**TECHNOBALE**



**TUBE-LINE™**

**TECHNOBALE**



## DE27277 - Model Decal Kit

ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	DE28146	Tubeline Decal 4" x 16"
2	1	DE28704	Technobale - 2.25" x 19" Decal
3	2	DE28716	Technobale 5.5" x 34.0" Decal
4	1	DE50054	TB980 QR Decal
5	2	DETB980	Techno-Bale 980 Decal



### Item 1: DE28146

*Tubeline Manufacturing brand decal.*



### Item 2: DE28704 / Item 3: DE28716

*Technobale brand decal.*



### Item 4: DE50054

*TB980 QR Code decal.  
Scan with smartphone to  
access manuals online.*



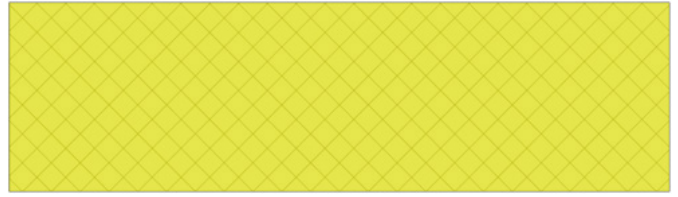
### Item 5: DETB980

*Model number decal.*

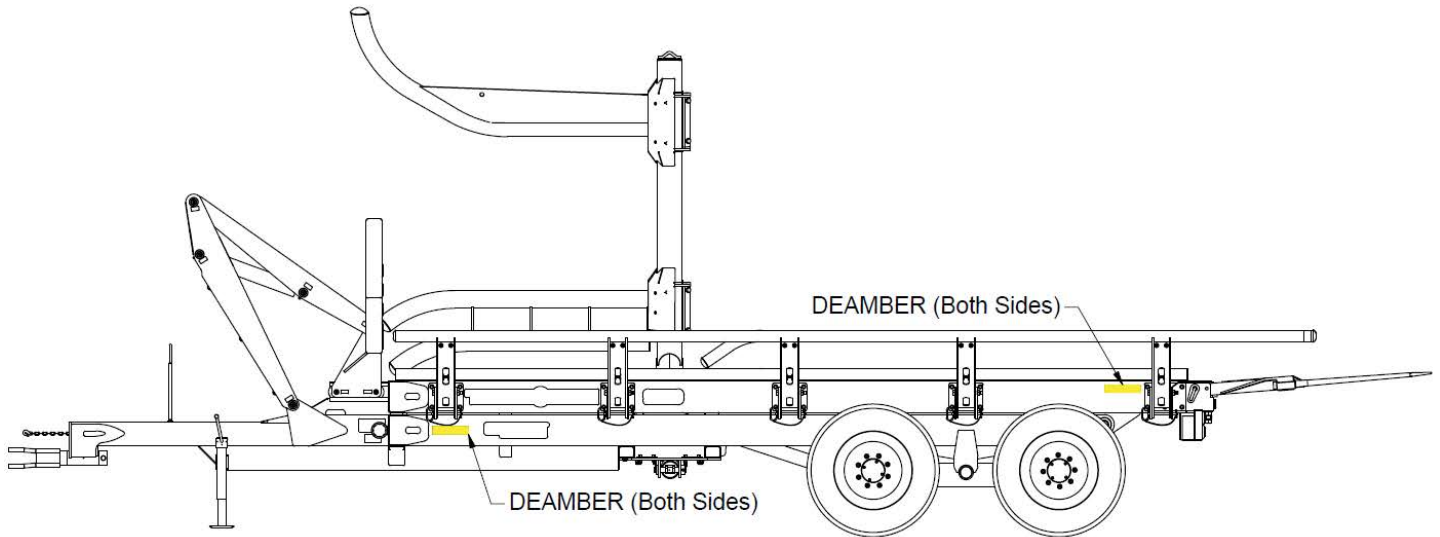
# Clearance Markers

Part No: DERED

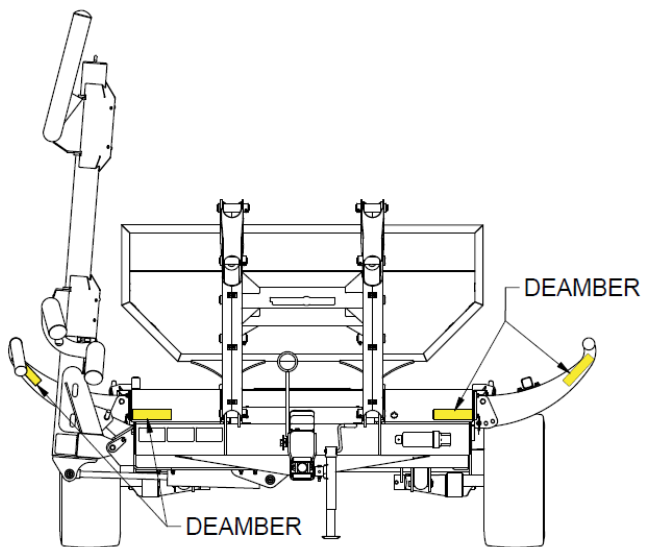
Part No: DEAMBER



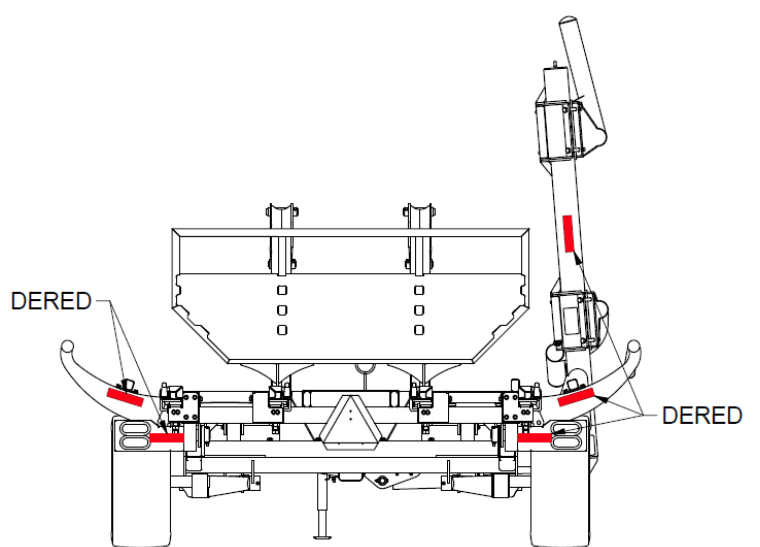
Side View



Front View



Rear View



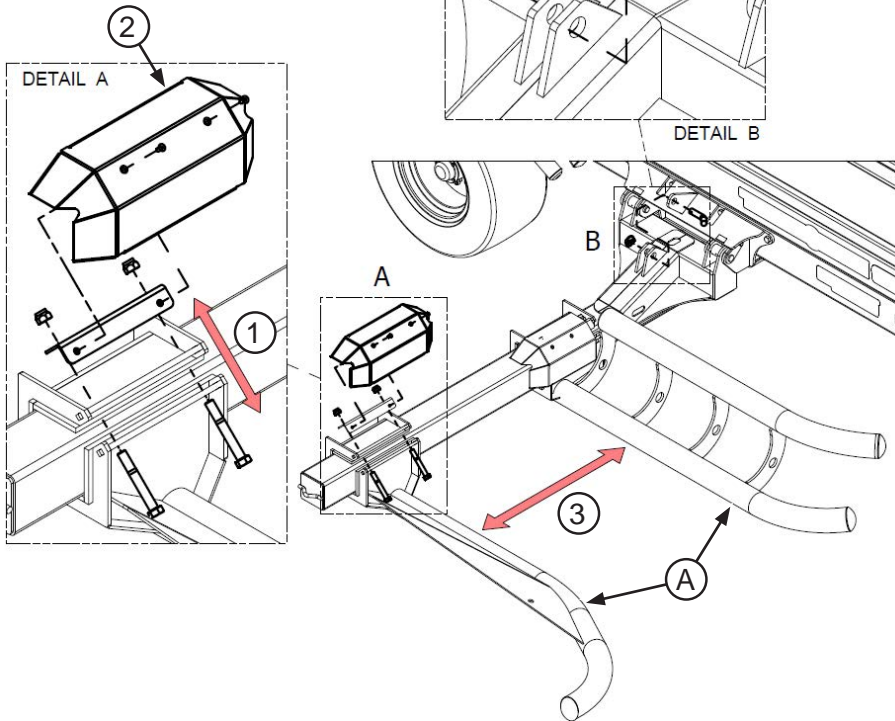
## Section 2: Adjustments

Various adjustments can be made to meet your specific needs, as follows:

### Loading Arm

Distance between bale fingers (**A**) of loading arm is adjustable according to diameter of bales. To adjust:

1. Loosen 1" bolts and nuts.
2. Remove covers at rear of fingers.
3. Move fingers to necessary width.
4. Refasten rear bale finger covers.
5. Retighten 1" bolts and nuts.



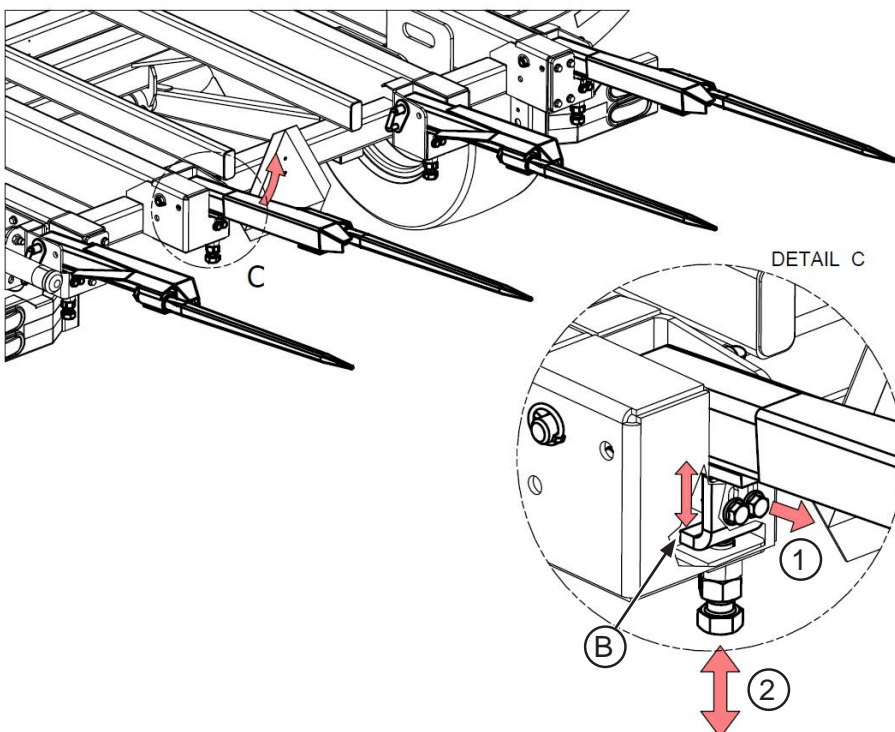
### Suggested Width Between Forks

4 x 4 = 40" / 4 x 5 = 43"  
4 x 6 = 46"- 48 " approx.

### Deck Extensions

The extensions are attached to the rear of the Techno-Bale. They permit the transportation of one or two extra bales and are used for **unloading in-line**. Raise or lower extensions by:

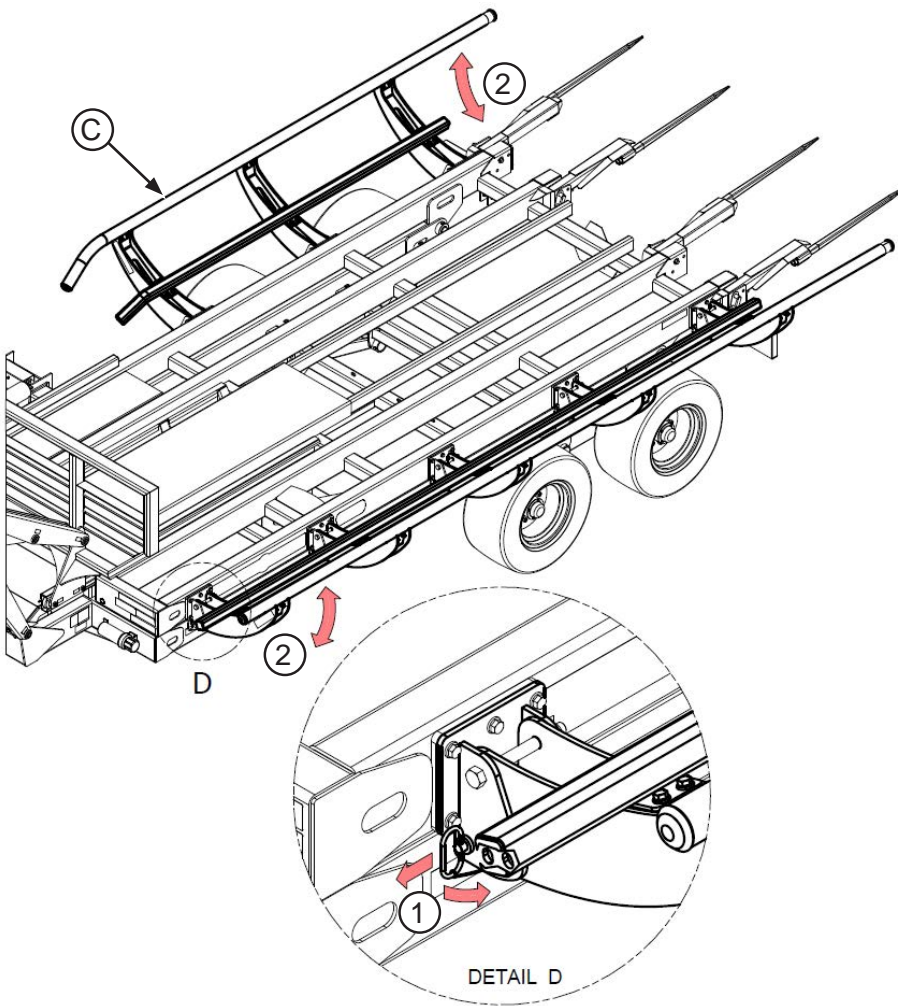
1. Loosen 2 rear bolts to allow adjustment plate to move.
2. Loosen or tighten bottom bolt and nut to raise or lower adjustment plate (**B**). This will raise or lower extension.
3. After extension is set to desired position, lock the adjustment plate in place by retightening 2 rear bolts.



## Guide Rails

The guide rails are adjustable according to the bale diameter.

1. Remove pins from current position
2. Lift or lower guide rails (C) to needed position.
3. Reset pins to lock guide rails in position.



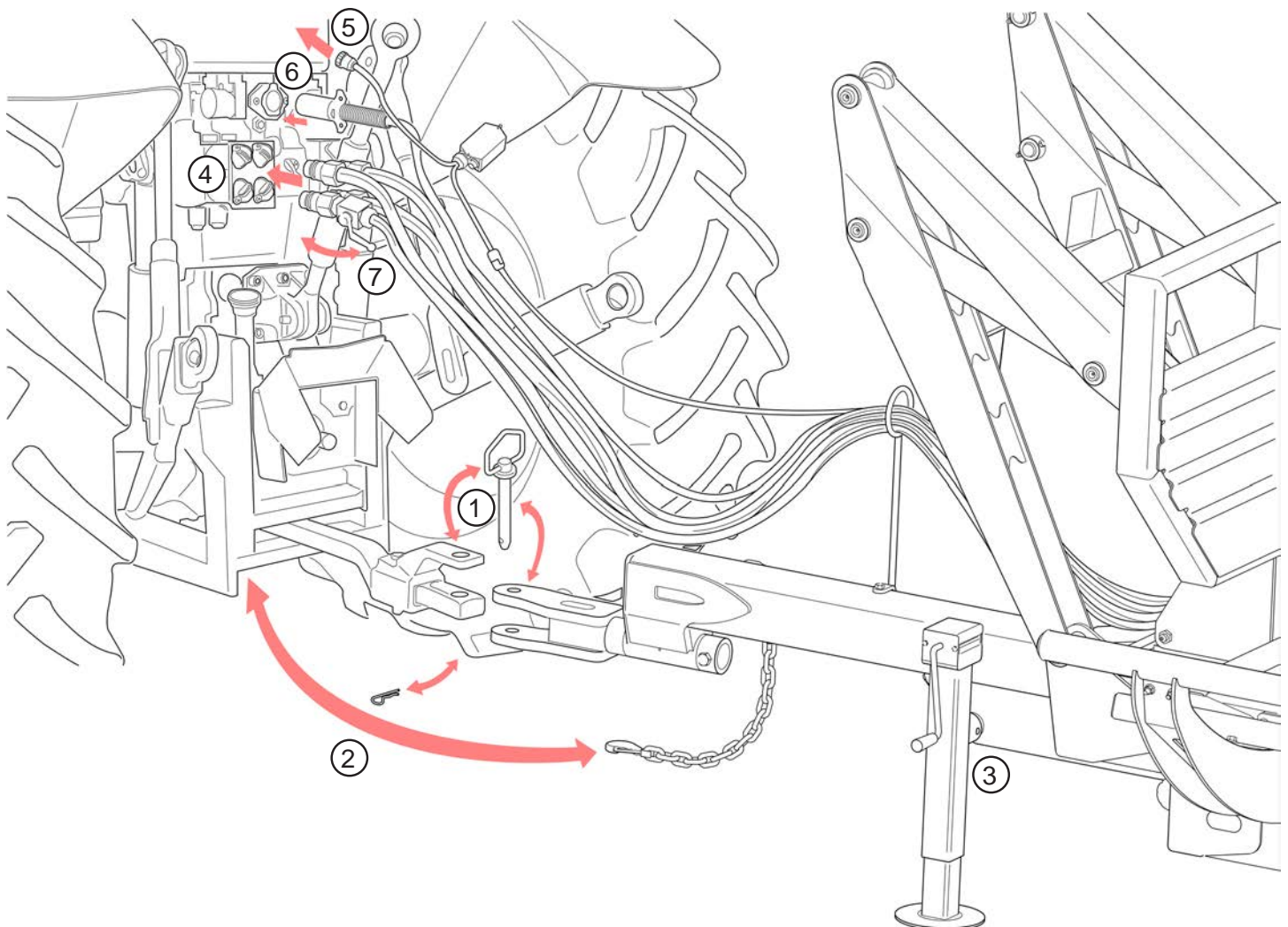
## Section 3: Operation



**THINK SAFETY! WORK SAFELY!**

### Operational Connection

1. Connect TB980 hitch to tractor drawbar.
2. Hook safety chain to the power unit.
3. Switch jack from vertical position to horizontal position at front of the bed (in the space provided).
4. Connect the 4 quick couplers to tractor hydraulic ports.
5. Connect selector valve electric harness into cab of power unit's 3 prong auxiliary 12 volt source.
6. Insert 7 pin electrical plug into power unit outlet.
7. Open loading arm shut-off valve.
8. Test the loading arm, lower and raise to ensure it is plumbed correctly.
9. Latch bale arm to frame in raised position for transportation with shutoff valve closed.

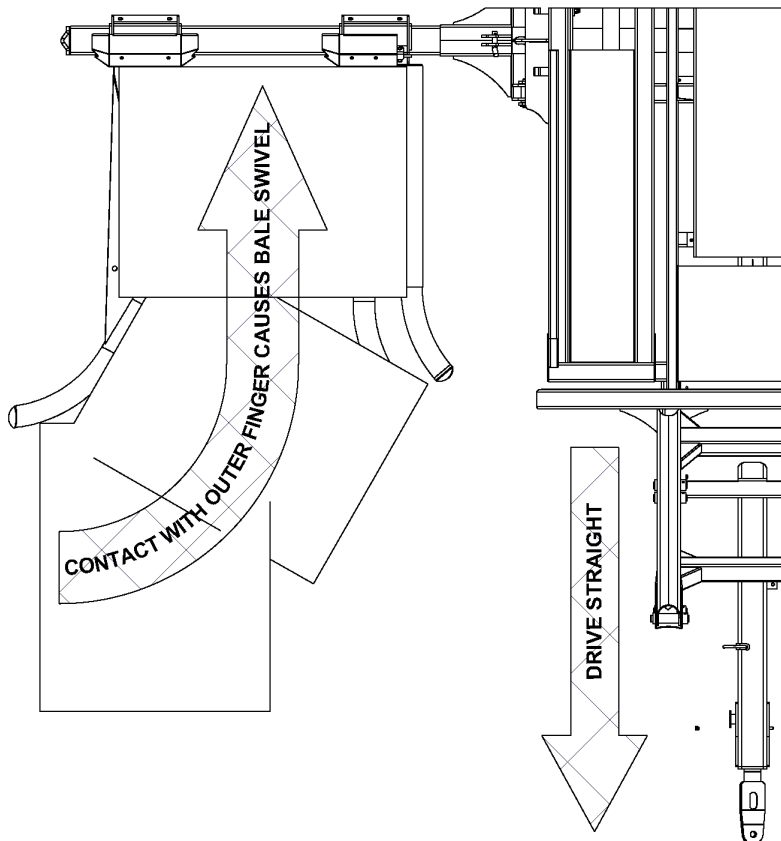
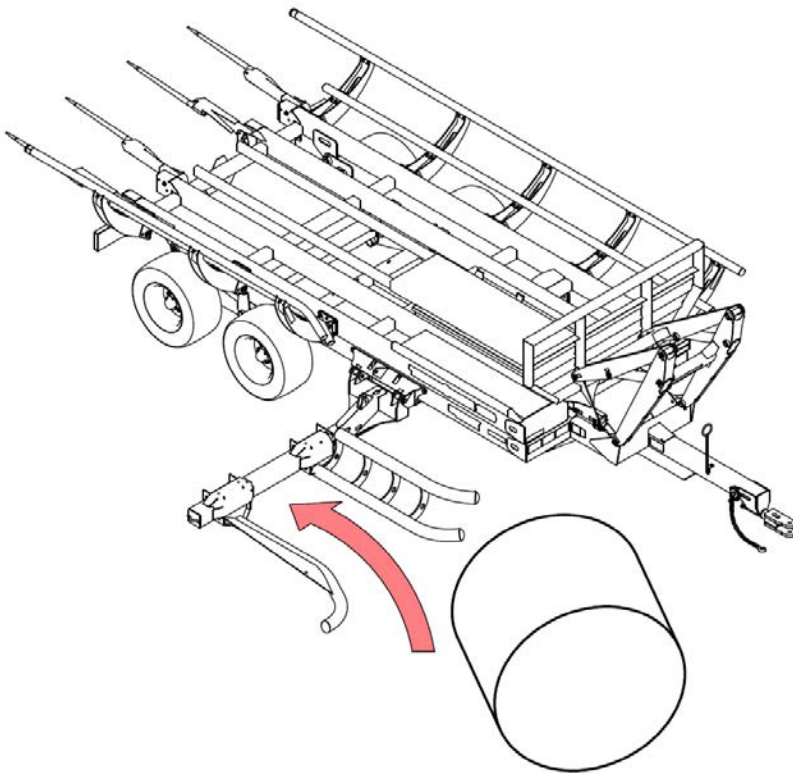


## Loading

Open the shut-off valve, [Item 7 on pg.3-1](#), allowing the loading arm to be raised and lowered with the tractor hydraulics, this will vary on which tractor ports you have connected loading arm cylinder hoses to.

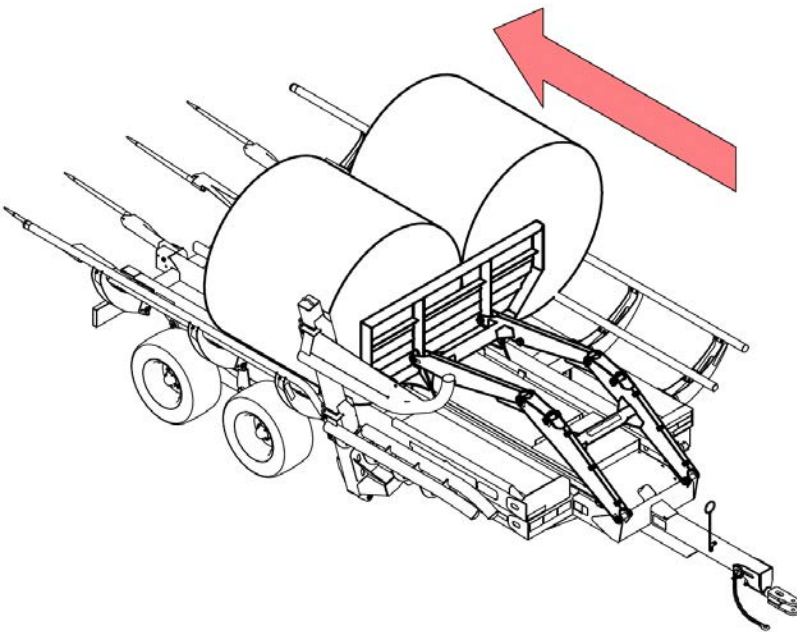
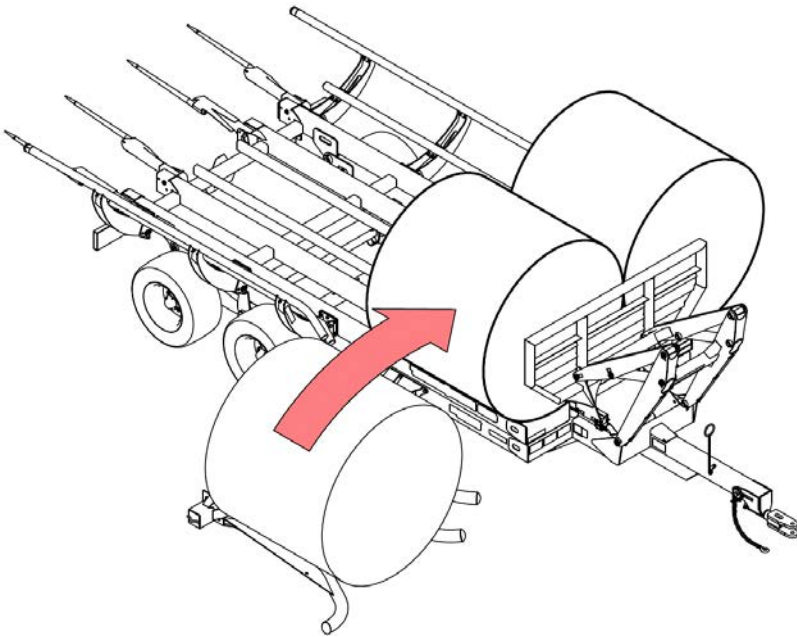
The Techno-Bale 980 picks up and moves 10 4' wide round bales. Loading may be done on the go. One bale may be transported on the loading arm, leaning up against the last bale loaded. It is possible to pick up a bale even if it is not parallel to the fork. You can rotate its position by using the interior of the outside fork. *See illustration below.*

**NOTE:** This operation must be executed while moving. After a few tries, you will be able to pick bales up from any position.

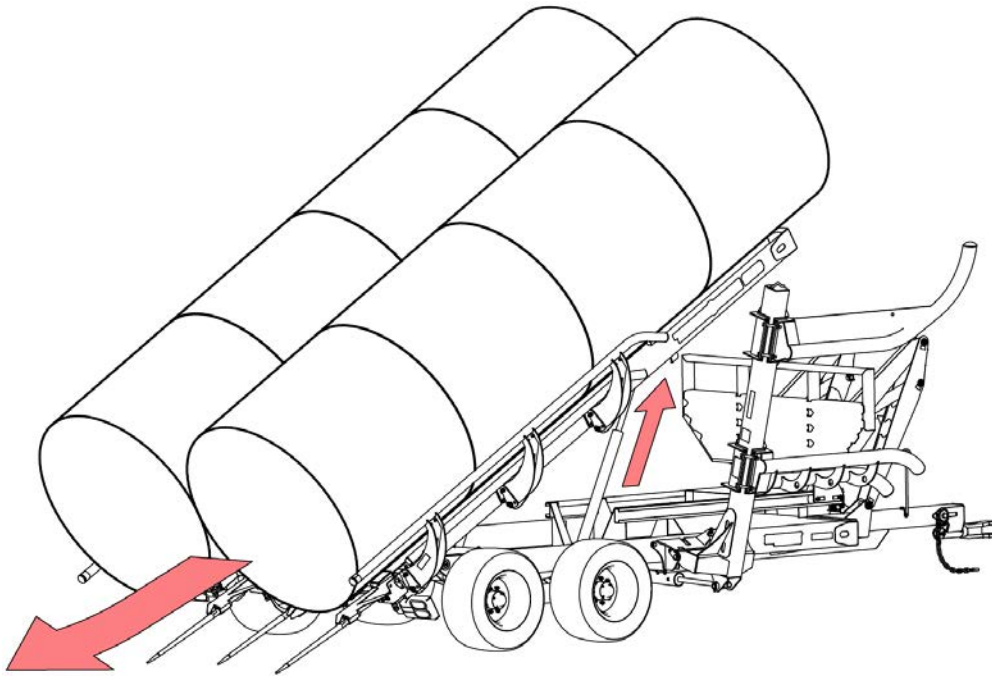


## Bale Ram

To operate bale ram simply use your tractor hydraulic controls, this is dependant on which tractor ports you have connected the Bale Ram hydraulic circuit hoses to. Refer to [pg.4-18](#) for Bale Ram hydraulic circuit layout.



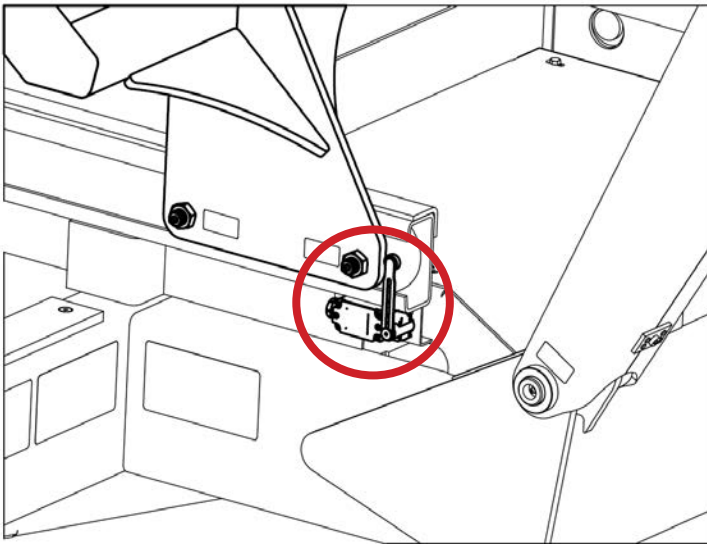




## Unloading

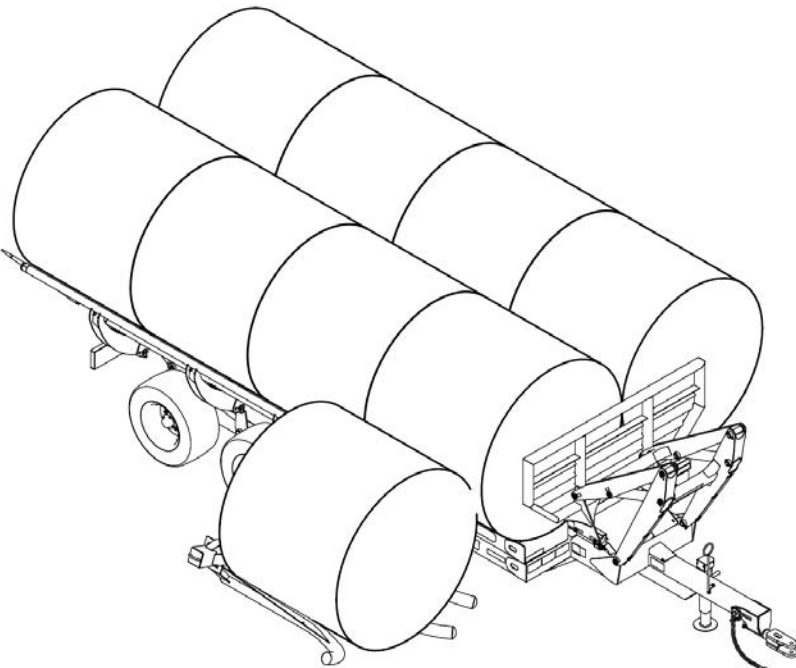
Activate the electric selector valve using the toggle switch (see [Wiring Harness, pg.4-16](#)) to change the function of the Bale Ram to raise the deck.

Fully retract the deck cylinders when lowering the bale deck.



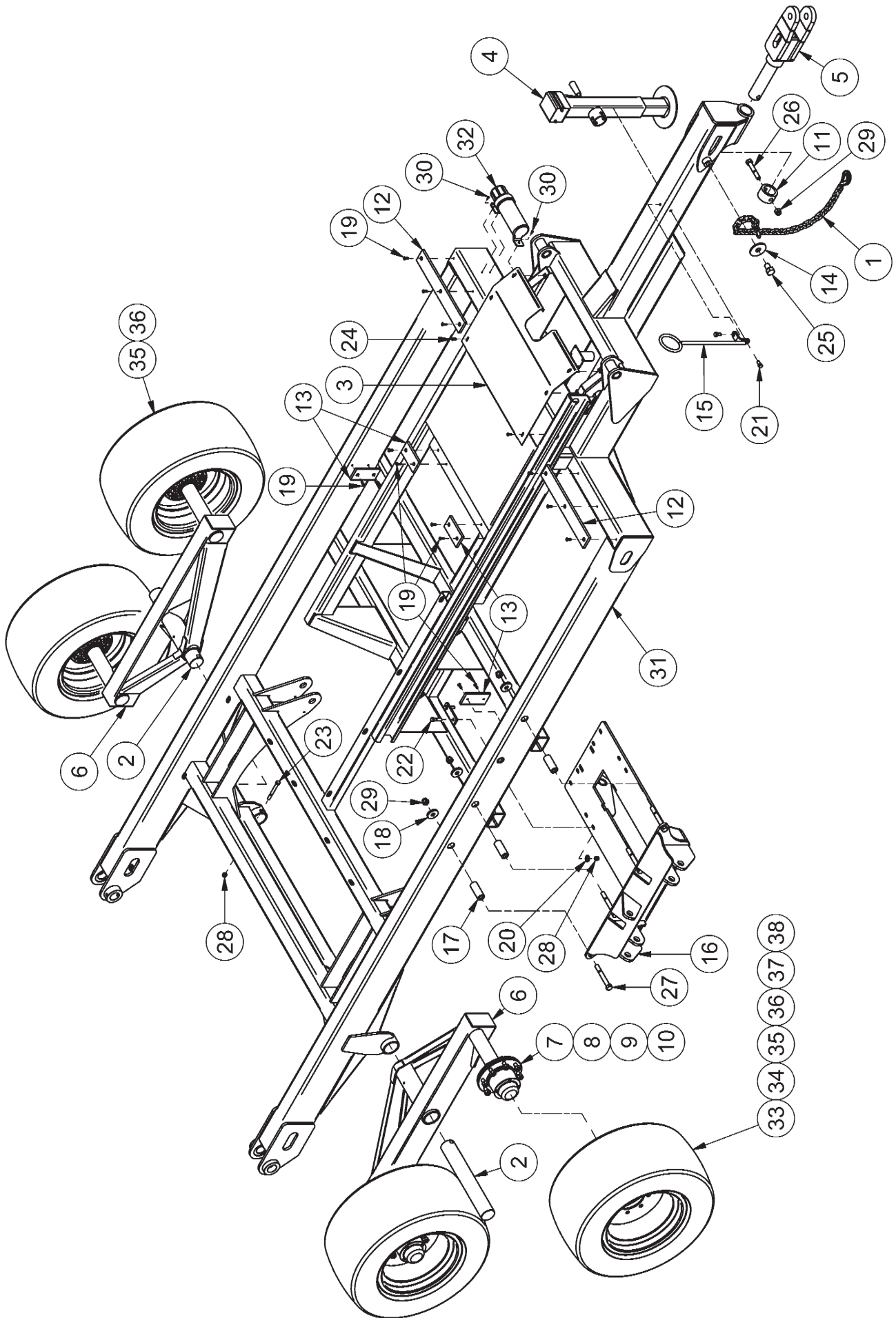
## Transporting Under Load

The Technobale 980 can carry an additional bale on the bale forks. Make sure to raise the bale arm is raised to press the bale against the last deck bale to secure it.



## Section 4: Parts Breakdowns & Lists

# Main Frame

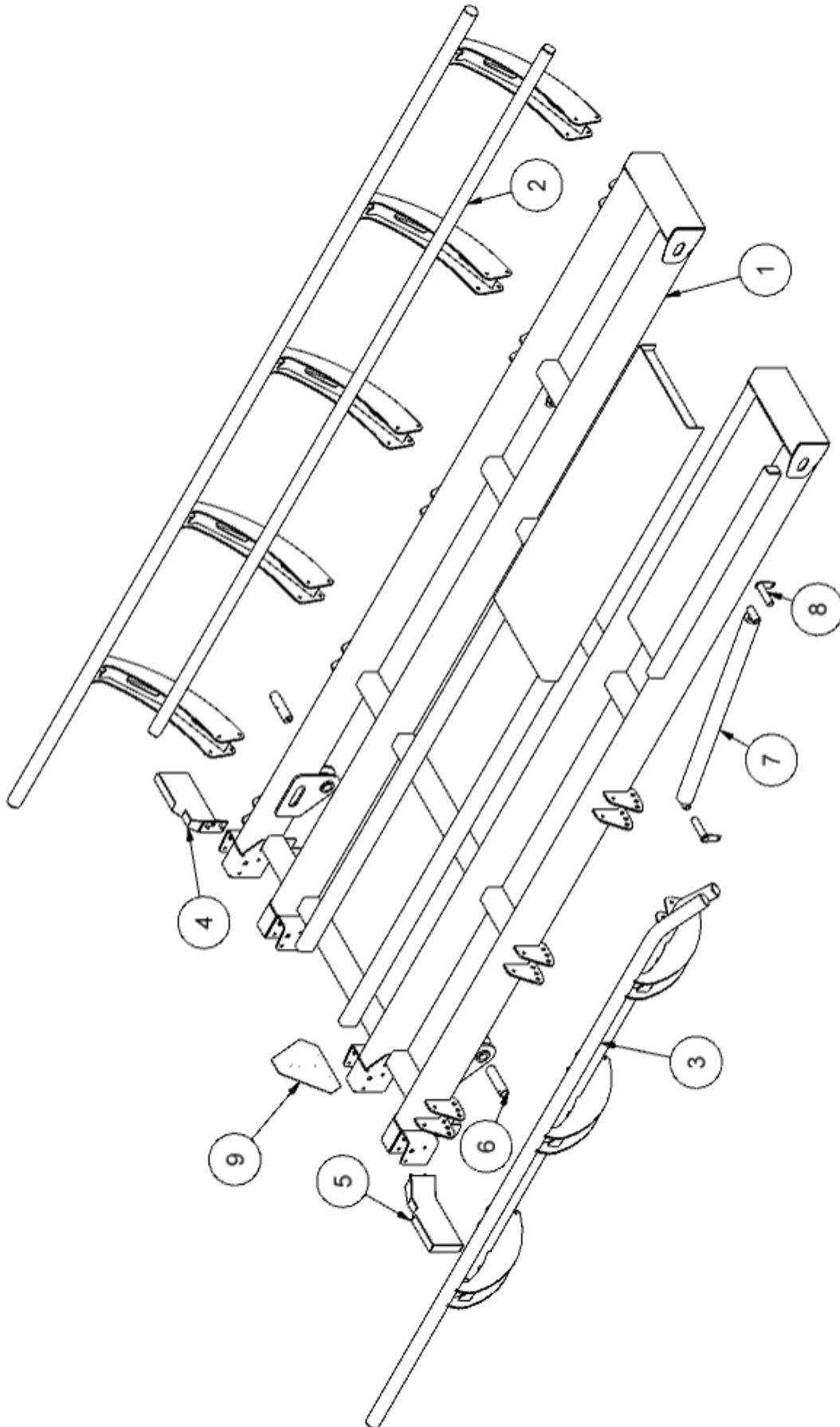


## Main Frame

ITEM	QTY	PART NUMBER	DESCRIPTION	NOTE
1	1	25262	Safety Chain 20000 # 60"	
2	2	25502	Walking Beam Pin	
3	1	25624	Front Cover	
4	1	25719	Heavy Duty Jack	
5	1	26041	Hitch Assembly	
6	2	26042	325 Walking Beam w/o Brake Flanges	
7	4	HUB 12000	Spreader Hub Model 450-600 HUB12000	SN 15TB201 - Current
8	4	HUB 12000-CCS	Complete Bearing and Seals for HUB12000	SN 15TB201 - Current
9	1	HUB 8000	Complete Assembly HUB8000	Up to SN 14TB202
10	1	HUB 8000-CCS	Complete Bearing and Seals for HUB8000	Up to SN 14TB202
11	1	26065	Tongue Swivel Retainer Washer	
12	2	26282	Deck Spacer Pad	
13	4	26283	Rear Axle Spacer Pad	
14	1	28037	Retaining Washer	
15	1	28042	Hydraulic Hose Mount	
16	1	28511	Bale Arm Mount	
17	4	28513	Tube Inside Bushing	
18	4	28514	Tube Outside Washer	
19	14	FHSCS5/16-18X1	Hex Bolt - 5/16"-18 x 1" Flat Socket Cap Screw	
20	12	FW 1/2	Flatwasher - 1/2" Zinc Plated USS	
21	2	HB1/2-13X1Z5	Hex Bolt 1/2-13x1 Gr 5 Zinc Plated Hex Cap Screw	
22	12	HB1/2-13X2Z5	Hex Bolt 1/2-13x2 Gr 5 Zinc Plated Hex Cap Screw	
23	2	HB1/2-13X4.5Z5	Hex Bolt 1/2-13x4 1/2 Gr 5 Zinc Plated Hex Cap Screw	
24	6	HB1/4-20X0.75Z5	Hex Bolt 1/4-20x3/4 Gr 5 Zinc Plated Hex Cap Screw	
25	1	HB1-8X1.5Z5	Hex Bolt 1-8x1 1/2 Gr 5 Zinc Plated Hex Cap Screw	
26	1	HB3/4-10X4.5Z5	Hex Bolt 3/4-10x4 1/2 Gr 5 Zinc Plated Hex Cap Screw	
27	4	HB3/4-10X6Z5	Hex Bolt 3/4-10x6 Gr 5 Zinc Plated Hex Cap Screw	
28	14	LN1/2-13NCZ5	LN 1/2-13 Zinc Plated Nylon Insert Lock Nut	
29	5	LN3/4-10NCZ5	LN 3/4-10 Zinc Plated Nylon Insert Lock Nut	
30	3	MS #10X24X0.5	Machine Screw - (Inch)	
31	1	TB109-110-340	TB980 Base	
32	1	TL5X2-201-111	Operator's Manual Holder	
33	4	WHE 15X55X17	Complete Wheel & Tire	Items 34,35
34	1	WHE 17138	Rim - 17 X 15 X 8 Bolt -16mm Offset	SN 15TB201 - Current
35	1	WHE 15X55X17T	15/55-17 18 Ply (Tire Only)	See Tire Load Chart
36	1	WHE 25418	32/15.5X16.5 14 Ply 12X16.5X8 Bolt Rim 3.12 Neg Offset	Items 37,38
37	1	WHE 1216.5	Rim 8 Bolt- 3.5 Negative Offset (32x15x16.5)	Up to SN 14TB202
38	1	WHE 32X15.5X16.5	32 x 15.5 x 16.5 14 ply (Tire only)	See Tire Load Chart

## Deck Assembly (Original)

Used up to serial no. 10TB3005

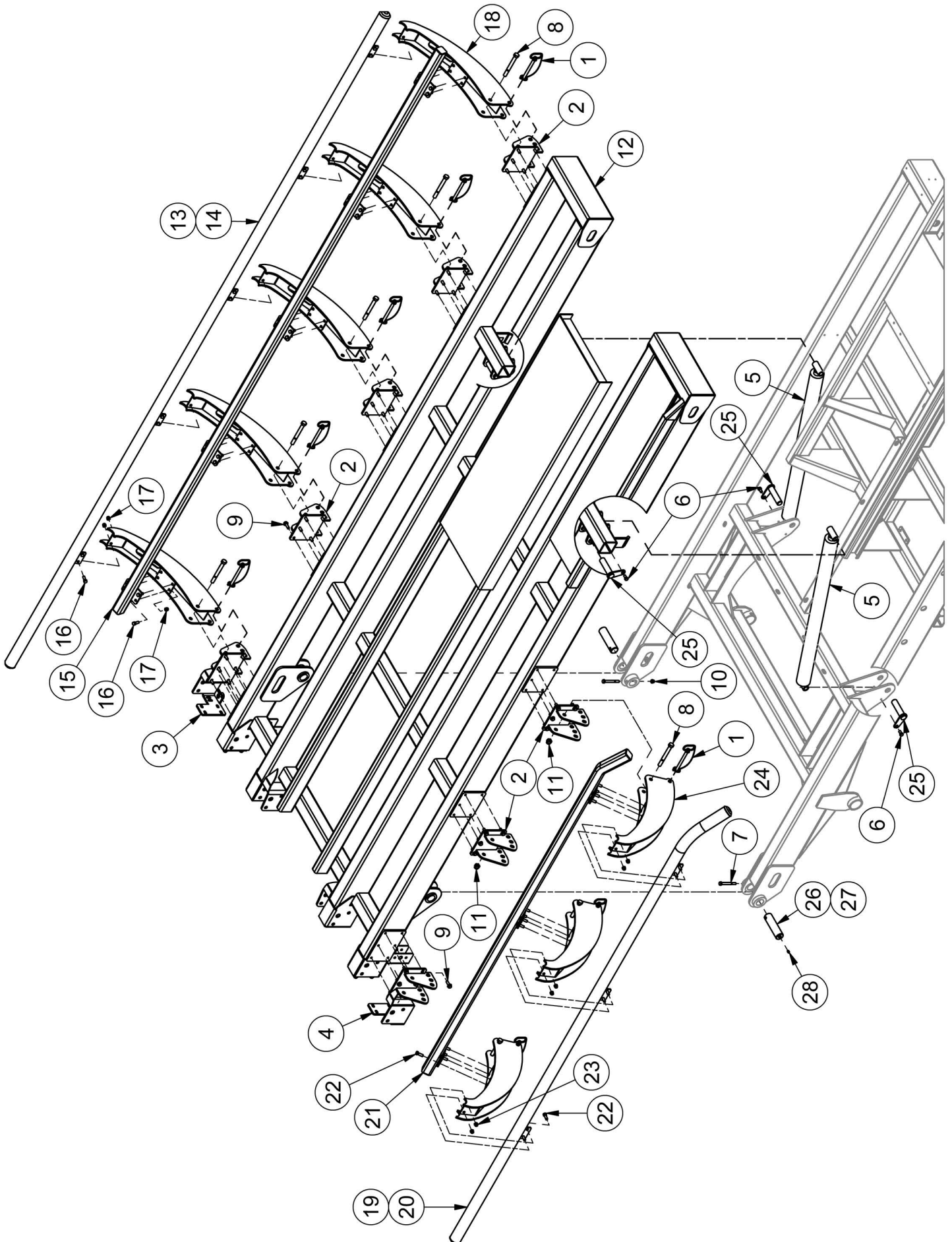


## Deck Assembly (Original)

Used up to serial no. **10TB3005**

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	TB109-110-342	Bale Deck
2	1	TB109-110-343	Left Bale Guard
3	1	TB109-110-345	Right Bale Guard
4	1	25417	Right Light Bracket
5	1	25412	Left Light Bracket
6	2	TB109-110-350	Deck Pivot Pin
7	2	25419	Deck Cylinder (3.0" x 56")
8	4	TB109-110-349	Deck Cylinder Pin
9	1	DESMV	Slow Moving Vehicle Sign
10	8	HB1/2-13X1.1/2CZ5	1/2"-13 x 1-1/2" Grade 5 Zinc Finish Hex Cap Screw
11	14	LN1/2-13NCZ2	1/2"-13 Grade 2 Zinc Finish NE Steel Nylon Insert Lock Nut
12	8	25522	Clevis Pin/Chain/Snap-Ring
13	4	FW 3/8	Flatwasher - Plated - 3/8" Zinc Plated USS
14	4	HB 3/8-16X1.1/4 Z5	Hex Bolt - 3/8"-16 X 1.1/4" Grade 5 Zinc Plated Hex Cap Screw NC
15	2	HB1/2-13X4.1/2CZ5	1/2"-13 x 4-1/2" Grade 5 Zinc Finish Hex Cap Screw
16	8	HB3/4-10X8.0CZ5	3/4"-10 x 8" Grade 5 Zinc Finish Hex Cap Screw
17	8	LN3/4-10NCZ2	3/4"-10 Grade 2 Zinc Finish NE Steel Nylon Insert Lock Nut
18	6	LN3/8-16NCZ2	3/8"-16 Grade 2 Zinc Finish NE Steel Nylon Insert Lock Nut
19	4	HB1.0-8X3.0CZ5	1"-8 x 3" Grade 5 Zinc Finish Hex Cap Screw
20	8	FW 1/2	Flatwasher - 1/2" Zinc Plated USS

# Deck Assembly - SN 11TB3001 to Current

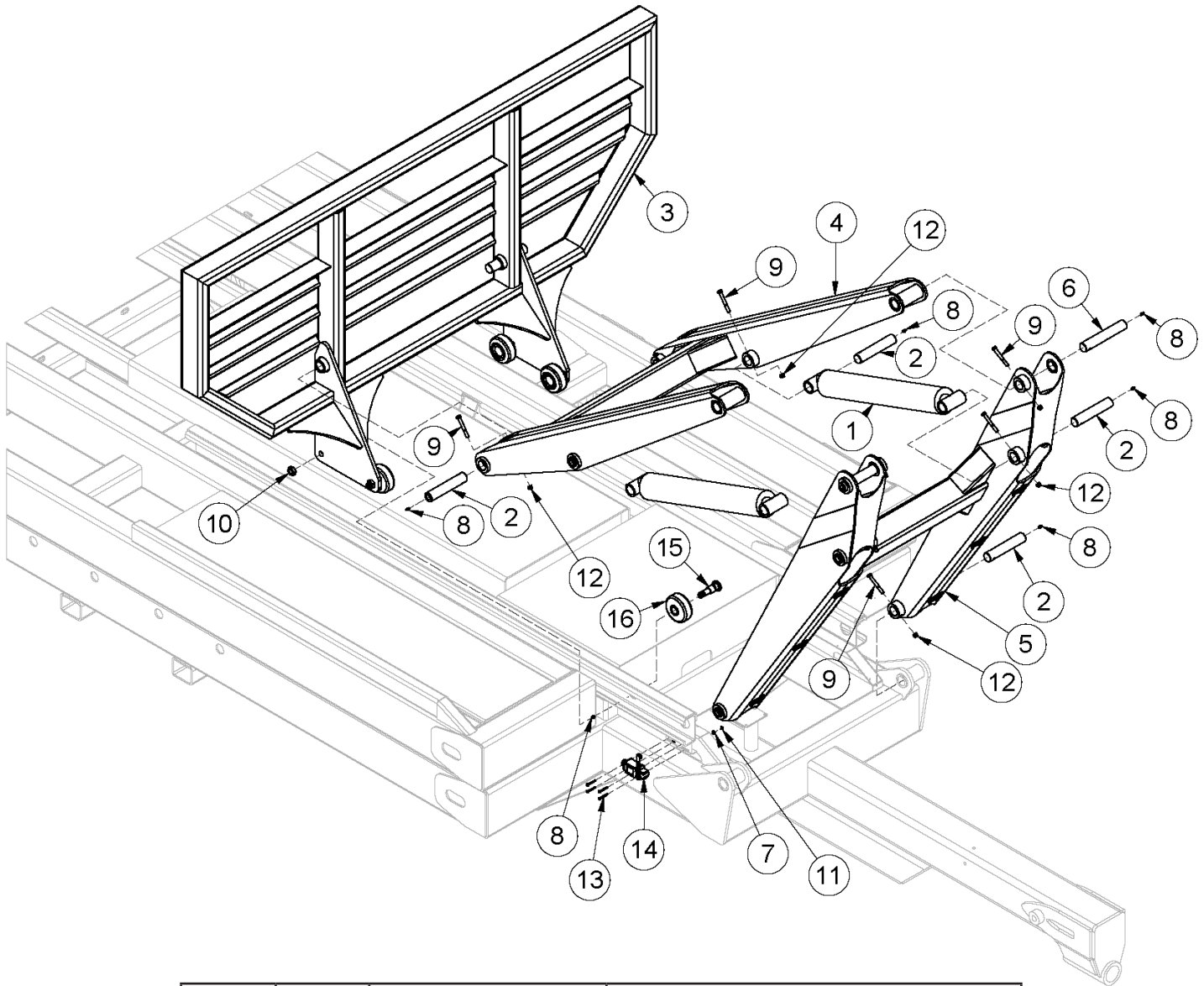


## Deck Assembly - 11TB3001 to Current

ITEM	QTY	PART NUMBER	DESCRIPTION	NOTE
1	8	25522	Hitch Pin 5/8 X 6.5	
2	6	28504	Rail Mount	
3	1	28528	Rear Rail Mount	
4	1	28528M	Rear Rail Mount	
5	2	CYL25419	Deck Cylinder - 1.5" Rod - 3" Bore x 48" Stroke	
6	4	HB1/2-13X1Z5	Hex Bolt 1/2-13x1 Grade 5 Zinc Plated Hex Cap Screw	
7	2	HB1/2-13X4.5Z5	Hex Bolt 1/2-13x4 1/2 Grade 5 Zinc Plated Hex Cap Screw	
8	8	HB3/4-10X7Z5	Hex Bolt 3/4-10x7 Grade 5 Zinc Plated Hex Cap Screw	
9	50	HBC1/2X1.5	Hex Bolt Cerrated 1/2-13 x 1 1/2 Zinc Flange Bolt	
10	2	LN1/2-13NCZ5	LN 1/2-13 Zinc Plated Nylon Insert Lock Nut	
11	8	LN3/4-10NCZ5	LN 3/4-10 Zinc Plated Nylon Insert Lock Nut	
12	1	TB109-110-342	Bale Deck	
13	1	TB109-110-343	Left Bale Guard	Items 14-18
14	1	28520	Long Top Rail	
15	1	28521	Long Bottom Rail	
16	30	HB1/2-13X1.5Z5	Hex Bolt 1/2-13x1 1/2 Grade 5 Zinc Plated Hex Cap Screw	
17	30	LN1/2-13NCZ5	LN 1/2-13 Zinc Plated Nylon Insert Lock Nut	
18	5	TB109-110-344	Bale Guard Gusset	
19	1	TB109-110-345	Right Bale Guard	Items 20-24
20	1	28517	Short Top Rail	
21	1	28519	Short Bottom Rail	
22	18	HB1/2-13X1.5Z5	Hex Bolt 1/2-13x1 1/2 Grade 5 Zinc Plated Hex Cap Screw	
23	18	LN1/2-13NCZ5	LN 1/2-13 Zinc Plated Nylon Insert Lock Nut	
24	3	TB109-110-344	Bale Guard Gusset	
25	4	TB109-110-349	Deck Lift Cyl Pin	
26	2	TB109-110-350	Deck Pivot Pin	Items 27,28
27	1	25499	Pin	
28	1	GRNPT 1/8	Grease Fitting 1/8 Straight	

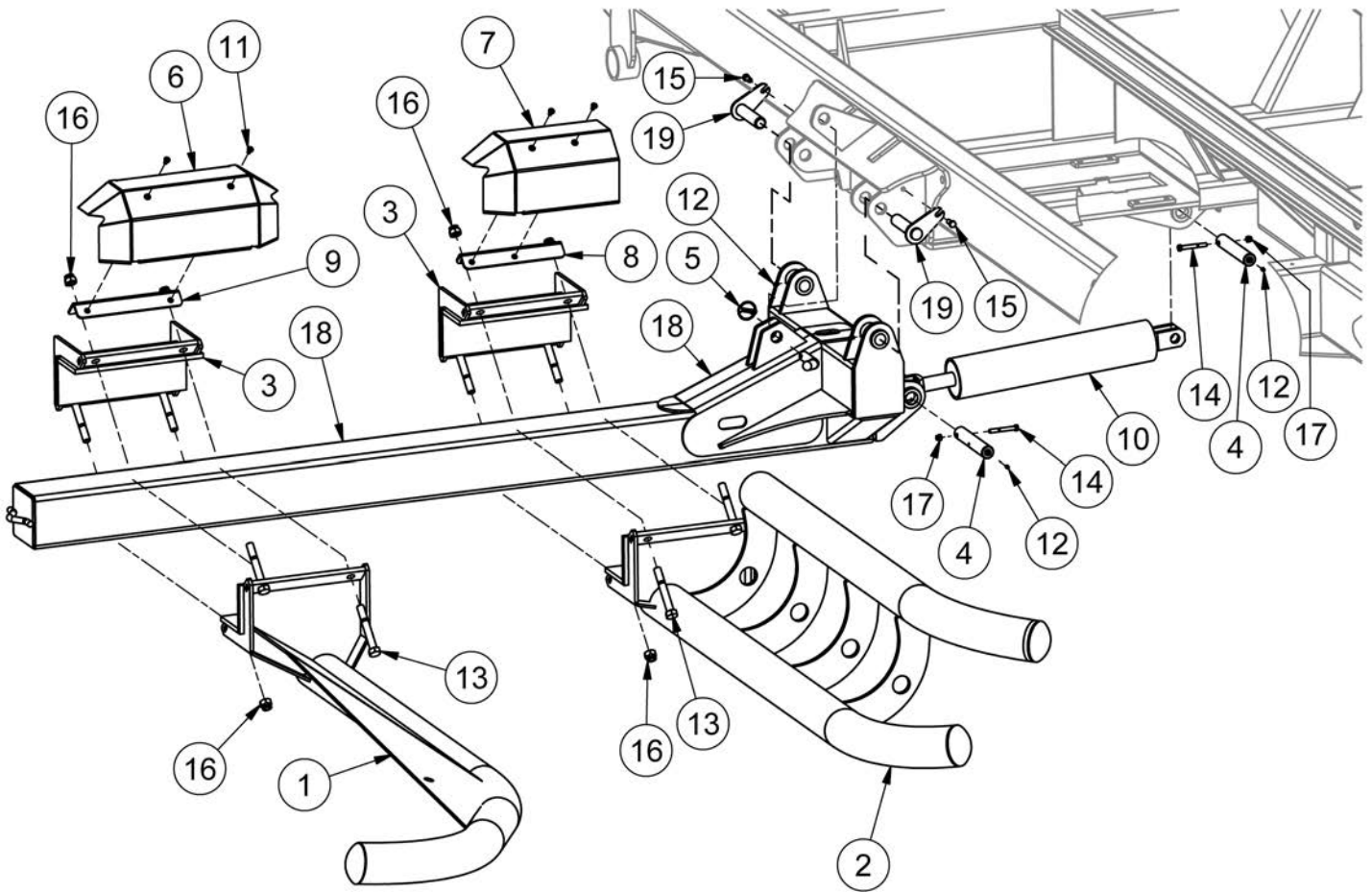


## Ram Assembly



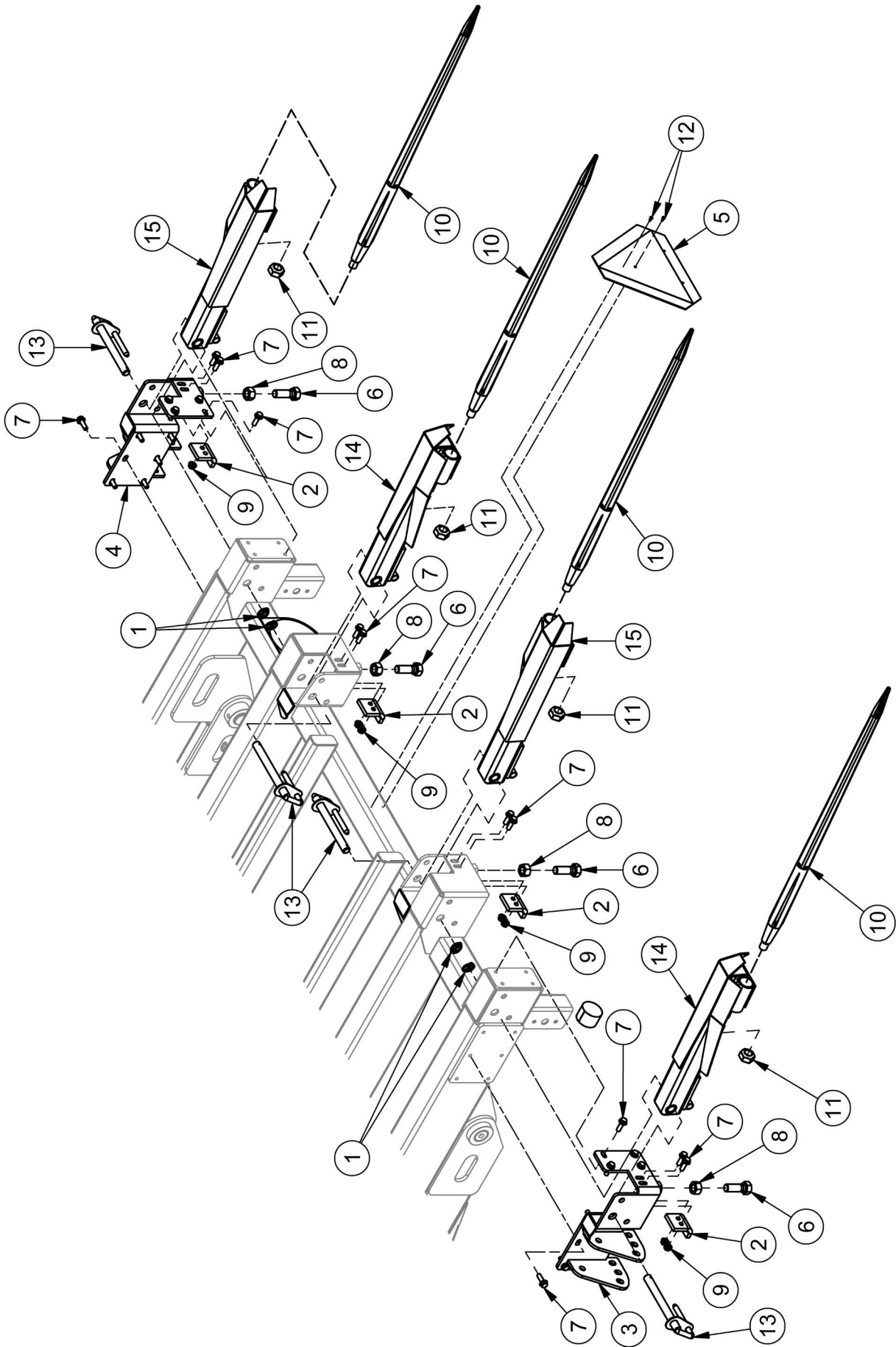
ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	25593	Ram Cylinder
2	8	25621	Ram Pin 1.375" x 7"
3	1	25627	Bale Pusher
4	1	25629	Bale Pusher Frame
5	1	26040	Front Scissor Arm
6	4	26069	Scissor Arm Top Pin 1.375" x 8"
7	4	FW #10	Flat Washer
8	20	GR.25X28	Grease Nipple
9	11	HB .375 x 3	Hex Bolt
10	4	HN .75	Hex Nut
11	4	HN 10 - 24	Hex Nut
12	12	LN 375	Lock Nut
13	4	MS 10 - 24 x 1.5	Machine Screw
14	1	TB960-100-150	Ram Limit Switch
15	4	TL5X2-301-156	Ram Wheel Axle
16	4	TLWHEEL0205	Ram Rail Wheel

## Bale Arm Assembly



ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	25750	Outside Bale Finger
2	1	25751	Inside Bale Finger
3	2	25752	Bolt-On Bracket
4	2	26069	Scissor Arm
5	1	28940	Lynch Pin - 3/8 X 1-3/4"
6	1	29818	Bale Finger Bolt Shield
7	1	29831	Bale Finger Bolt Shield
8	1	29951	Bale Arm Mesh Guard Mount
9	1	29952	Outer Bale Mesh Guard Mount
10	1	CYL25594	Hydraulic Lift Cylinder
11	4	FHSCS5/16-18X0.75	Hex Bolt - 5/16"-18 x 3/4" Flat Socket Cap Screw
12	4	GR 1/4 X 28	Grease Fitting 1/4-28 Straight Standard Zerk
13	8	HB3/4-10X5.5Z5	Hex Bolt 3/4-10x5 1/2 Grade 5 Zinc Plated Hex Cap Screw
14	2	HB3/8-16X3Z5	Hex Bolt 3/8-16x3 Grade 5 Zinc Plated Hex Cap Screw
15	2	HB7/16-14X1Z5	Hex Bolt 7/16-14x1 Grade 5 Zinc Plated Hex Cap Screw
16	8	LN3/4-10NCZ5	LN 3/4-10 Zinc Plated Nylon Insert Lock Nut
17	2	LN3/8-16NCZ5	LN 3/8-16 Zinc Plated Nylon Insert Lock Nut
18	1	TB109-110-346	Bale Arm
19	2	TB109-110-352	Bale Arm Pin

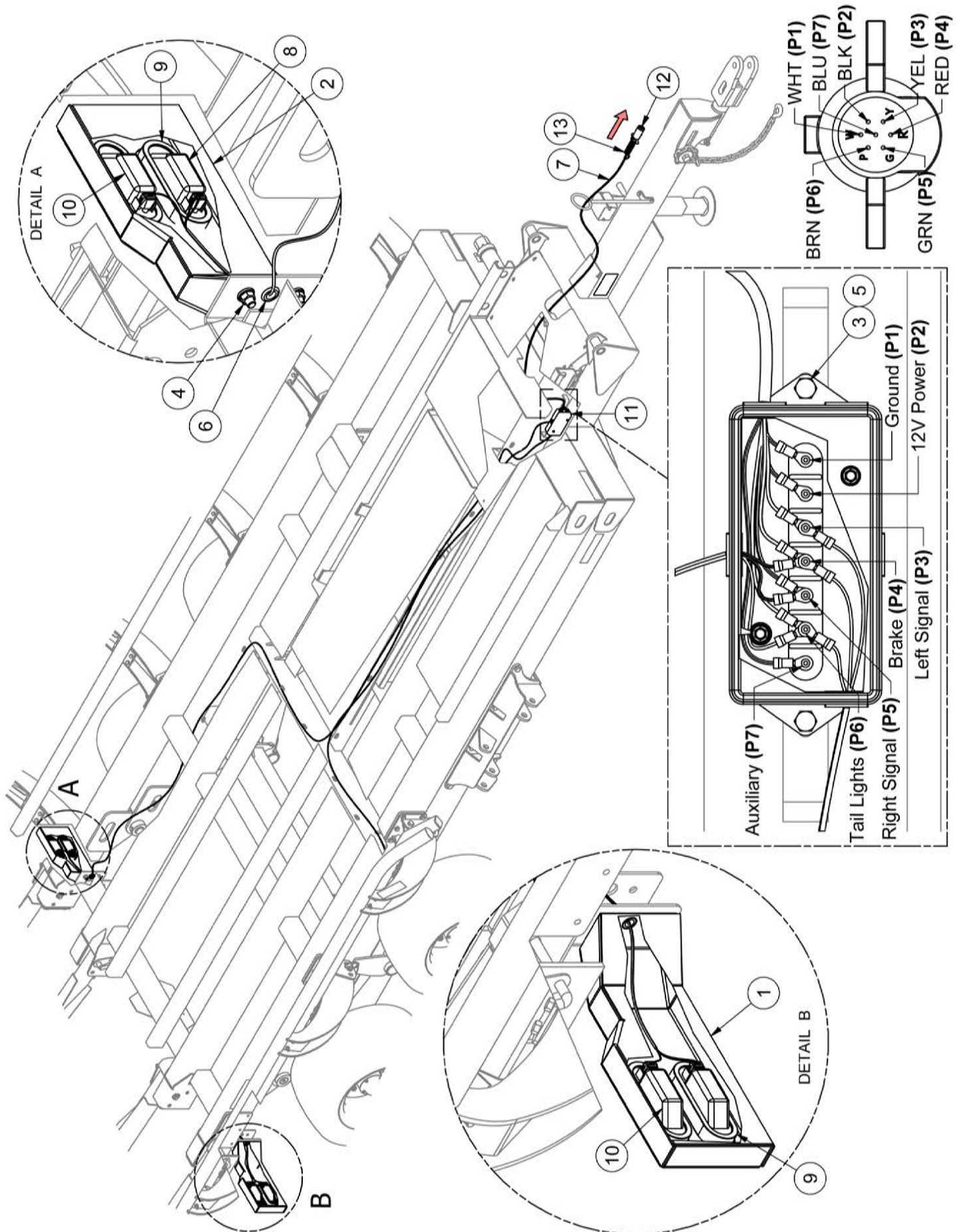
# Bale Extensions Assembly



## Bale Extensions Assembly

ITEM	QTY	PART NUMBER	DESCRIPTION
1	4	25680	Lynch Pin
2	4	26993	Formed Adjuster Plate
3	1	28528	Rear Rail Mount
4	1	28528M	Rear Rail Mount
5	1	DESMV	Slow Moving Vehicle Sign
6	4	HB1-8X3Z5	Hex Bolt 1-8x3 Grade 5 Zinc Plated Hex Cap Screw
7	28	HBC1/2X1.5	Hex Bolt Cerrated 1/2-13 x 1 1/2 Zinc Flange Bolt
8	4	HN1-8CZ5	Hex Nut 1"-8 Grade 5 Zinc Plated Finished
9	8	HNC1/2	Serrated Hex Nut
10	4	LA-SDE49	Bale Spear - 49" Conus II
11	4	LA-SDENU	Conus 2 Nut
12	2	MS #10X24X0.5	Machine Screw - (Inch)
13	4	TB109-110-351	Bale Extension Pin
14	2	TB900-100-140	Right Bale Spear Extension
15	2	TB900-100-141	Left Bale Spear Extension

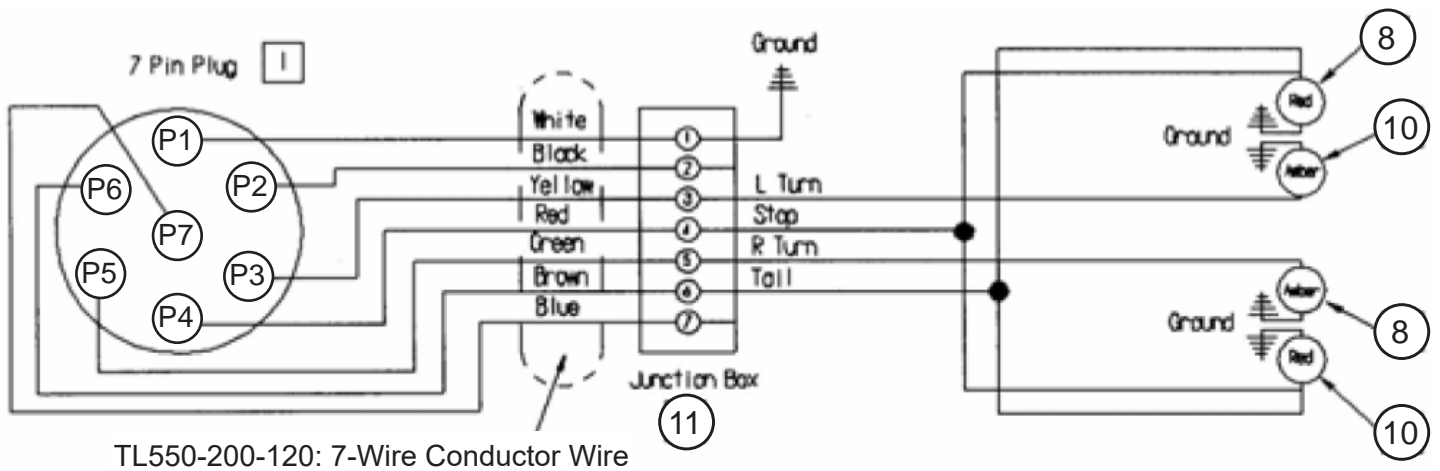
# Running Lights



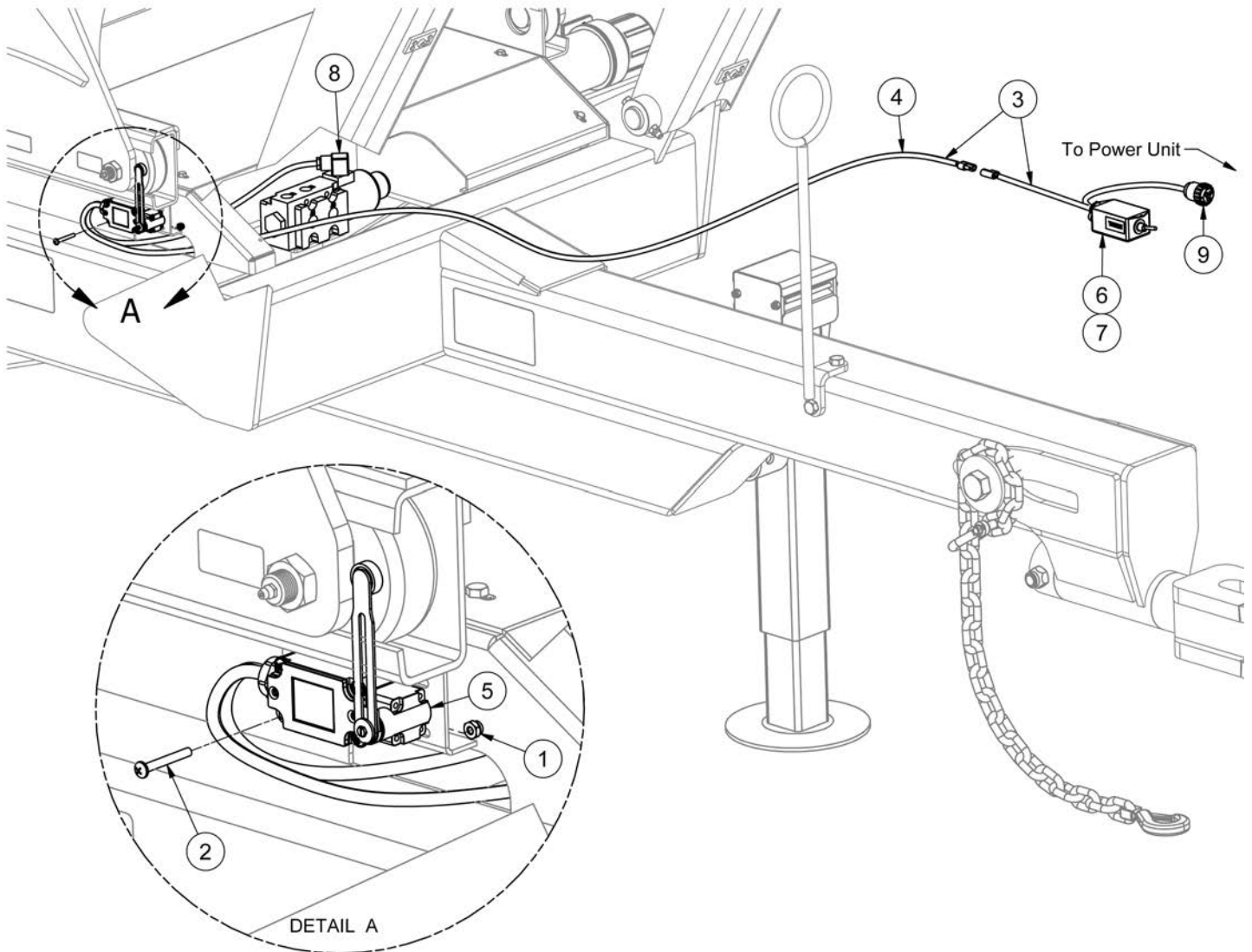
## Running Lights

ITEM	QTY	PART NUMBER	DESCRIPTION	NOTE
1	1	25412	Right Light Bracket	
2	1	25417	Left Light Bracket	
3	2	HB1/4-20X1Z5	Hex Bolt 1/4-20x1 Gr 5 Zinc Plated Hex Cap Screw	
4	4	HNC1/2	Serrated Hex Nut	
5	2	LN1/4-20NCZ5	LN 1/4-20 Zinc Plated Nylon Insert Lock Nut	
6	2	TL5X2-100-143	5/8" Grommet	
7	1	TB109-110-327	TB980 Running Light Wiring Harness	Items 8-13
8	2	TL5X2-500-137	Red Brake Light	
9	4	TL5X2-500-136	Light Grommet	
10	2	TL5X2-500-138	Amber Light	
11	1	TL550-200-118	Junction Box	
12	1	TL550-200-117	7 Pin Plug	
13	1	TL550-200-119	Strain Relief for 7-Pin Plug	

TRAILER PLUG PINS	TRAILER PLUG (7 WIRE)	PIN LABEL	J-BOX TO TRAILER LIGHTS (3 WIRE X2)	TRAILER LIGHT PLUGS (3 WIRE X4)
P1	White	Ground		Amber lights BLK wires removed
P2	Black	12V Power		All lights WH wires ground to frame
P3	Yellow	LH Signal	Green to ->	LH Amber Light RED
P4	Red	Electric Brake	WH to ->	LH & RH Red Light RED
P5	Green	RH Signal	Green to ->	RH Amber Light RED
P6	Brown	Tail Lights	Black to ->	LH & RH Red Light BLK
P7	Blue	Auxiliary		

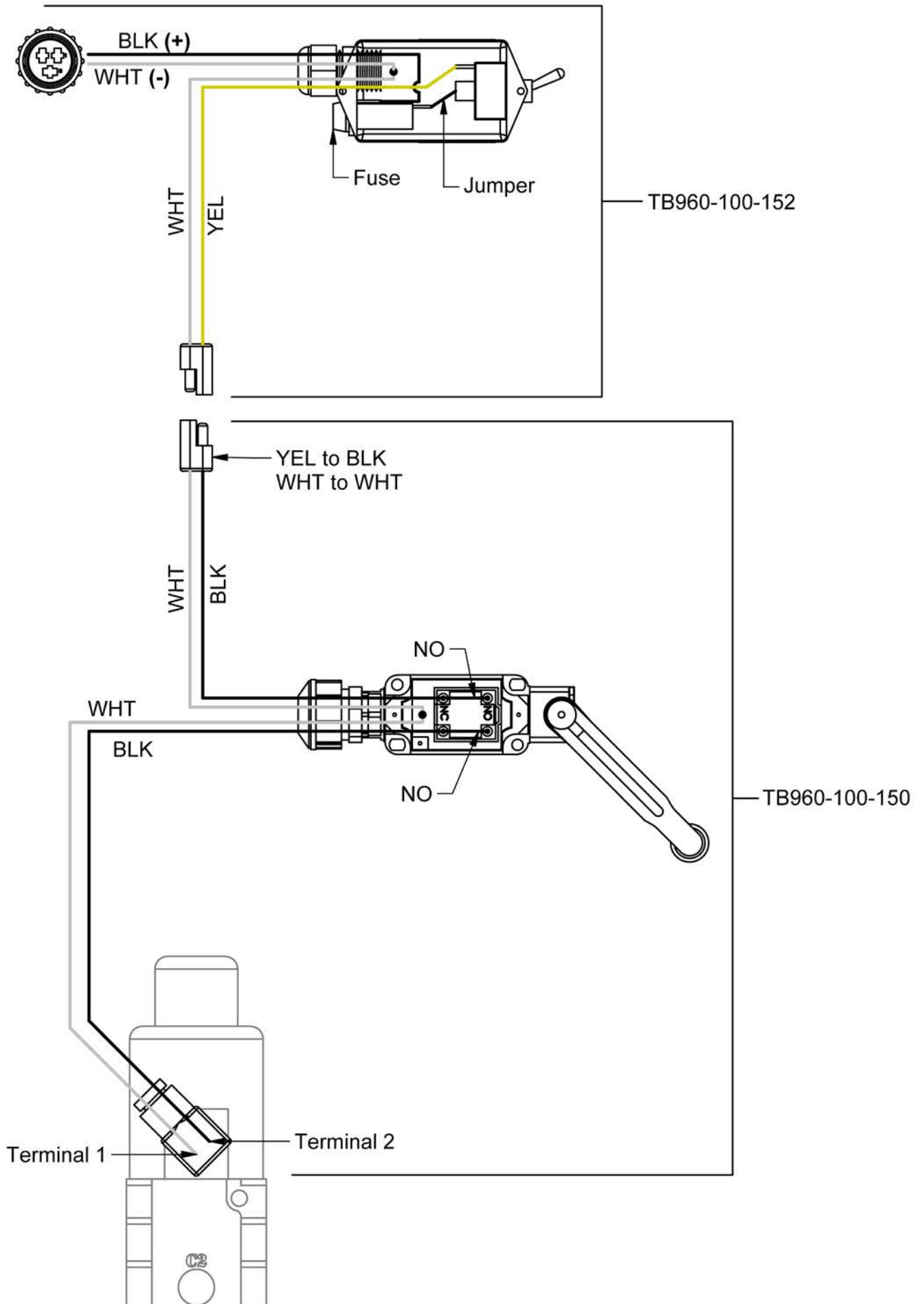


## TB960-100-151 - Solenoid Wiring Harness



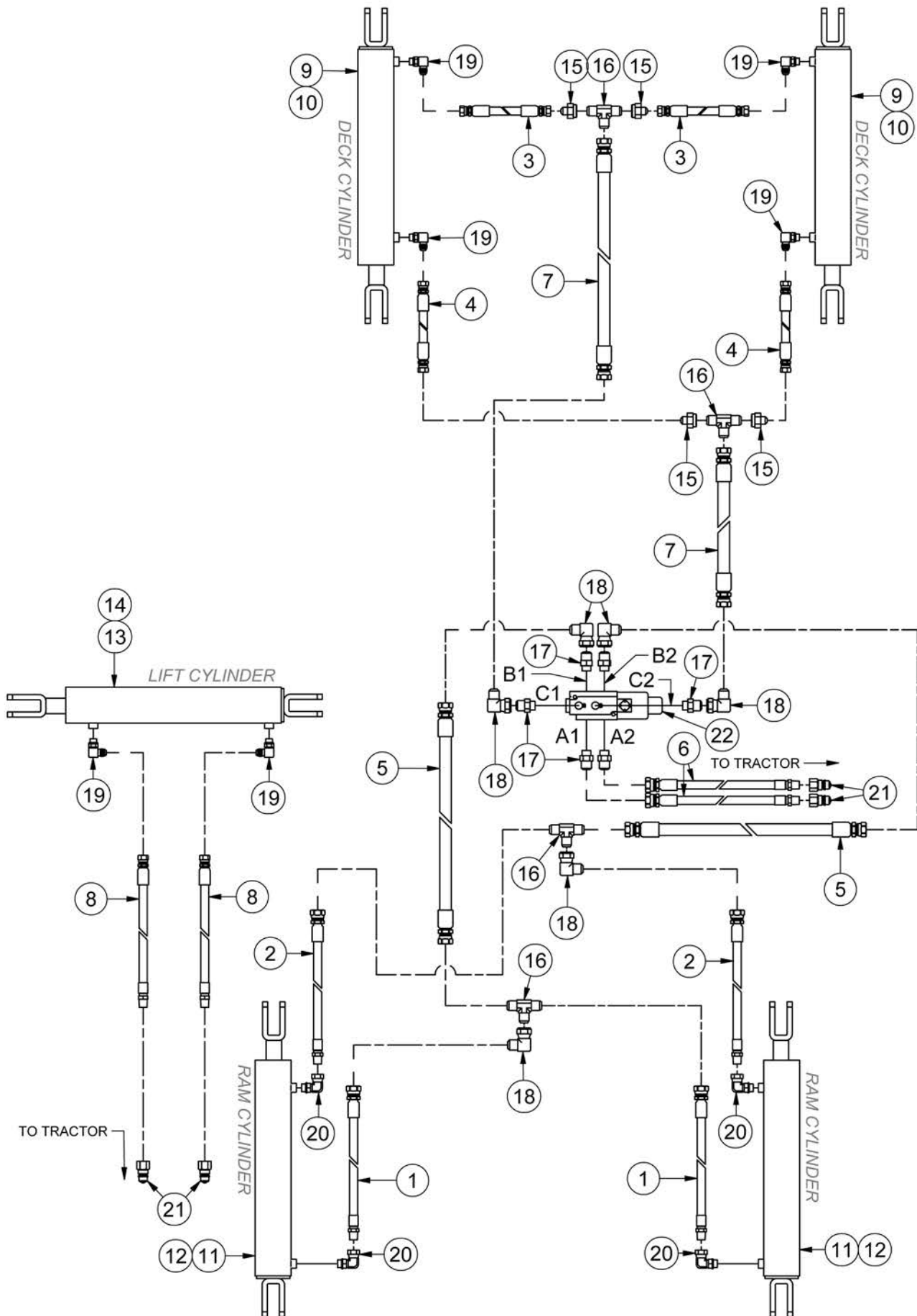
ITEM	QTY	PART NUMBER	DESCRIPTION	NOTE
1	4	LN#10-24NCZ5	LN 10-24 Zinc Plated Nylon Insert Lock Nut	
2	4	MS #10X24X1.5	Machine Screw - (Inch)	
3	1	TB960-100-151	Technobale Wiring Harness	Items 4,6
4	1	TB960-100-150	Technobale Solenoid Harness	Items 5,8
5	1	TL550-100-060	Limit Switch	
6	1	TB960-100-152	Technobale Switch Box to Tractor Harness	Items 7,9
7	1	TL550-100-079	Fuse-15AMP	
8	1	VAL C02	Electric Connector	
9	1	TB109-110-307	Power Plug	

# TB960-100-151 - Solenoid Wiring
















# Hydraulic Layout



## Hydraulic Layout

ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	26271	.5" Hydraulic Hose-88" (8MP,12FJX)
2	2	26272	.5" Hydraulic Hose-110" (8MP,12FJX)
3	2	26273	.5" Hydraulic Hose-44" (8FJX,8FJX)
4	2	26274	.5" Hydraulic Hose-88" (8FJX,8FJX)
5	2	26275	.75" Hydraulic Hose-20" (12FJX,12FJX)
6	2	26276	.75" Hydraulic Hose-120" (8MP,12FJX)
7	2	26277	.75" Hydraulic Hose-132" (12FJX,12FJX)
8	2	26278	.5" Hydraulic Hose-228" (8MP,8FJX)
9	2	CYL25419	Deck Cylinder - 1.5" Rod - 3" Bore x 48" Stroke
10	2	FSK-607	Seal Kit for CYL25419
11	2	CYL25593	Ram Cylinder - 1.5" Rod - 3" Bore x 20" Stroke
12	2	FSK-606	Seal Kit for CYL25593
13	1	CYL25594	Lift Cylinder 2" Rod - 4" Bore x 20" Stroke
14	2	FSK-605	Seal Kit for CYL25594
15	4	HF 2406-12-8	Hydraulic Adaptor Fitting
16	4	HF 2603-12-12-12	Hydraulic Tee Fitting
17	6	HF 6400-12-10	Hydraulic Adaptor Fitting
18	6	HF 6500-12-12	Hydraulic Elbow Fitting
19	6	HF 6801-8-8	Hydraulic Elbow Fitting
20	4	HF 6901-8-8	Hydraulic Elbow Fitting
21	4	HF 8010-4	Male Quick Coupler
22	1	TB109-110-313	Diverter Valve

# Torque Values - Imperial

SAE Grade and Head Markings	NO MARK 	1 or 2 <sup>b</sup>	 5  5.1  5.2	 8  8.2
SAE Grade and Nut Markings	NO MARK 	2	 5 	8  8 

Size	Grade 1				Grade 2 <sup>b</sup>				Grade 5, 5.1, or 5.2				Grade 8 or 8.2			
	Lubricated <sup>a</sup>		Dry <sup>a</sup>		Lubricated <sup>a</sup>		Dry <sup>a</sup>		Lubricated <sup>a</sup>		Dry <sup>a</sup>		Lubricated <sup>a</sup>		Dry <sup>a</sup>	
	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft
1/4	3.7	2.8	4.7	3.5	6	4.5	7.5	5.5	9.5	7	12	9	13.5	10	17	12.5
5/16	7.7	5.5	10	7	12	9	15	11	20	15	25	18	28	21	35	26
3/8	14	10	17	13	22	16	27	20	35	26	44	33	50	36	63	46
7/16	22	16	28	20	35	26	44	32	55	41	70	52	80	58	100	75
1/2	33	25	42	31	53	39	67	50	85	63	110	80	120	90	150	115
9/16	48	36	60	45	75	56	95	70	125	90	155	115	175	130	225	160
5/8	67	50	85	62	105	78	135	100	170	125	215	160	240	175	300	225
3/4	120	87	150	110	190	140	240	175	300	225	375	280	425	310	550	400
7/8	190	140	240	175	190	140	240	175	490	360	625	450	700	500	875	650
1	290	210	360	270	290	210	360	270	725	540	925	675	1050	750	1300	975
1-1/8	400	300	510	375	400	300	510	375	900	675	1150	850	1450	1075	1850	1350
1-1/4	570	425	725	530	570	425	725	530	1300	950	1650	1200	2050	1500	2600	1950
1-3/8	750	550	950	700	750	550	950	700	1700	1250	2150	1550	2700	2000	3400	2550
1-1/2	1000	725	1250	925	990	725	1250	930	2250	1650	2850	2100	3600	2650	4550	3350

DO NOT use these values if a different torque value or tightening procedure is given for a specific application. Torque values listed are for general use only. Check tightness of fasteners periodically.

Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical grade.

Fasteners should be replaced with the same or higher grade. If higher grade fasteners are used, these should only be tightened to the strength of the original.

Make sure fasteners threads are clean and that you properly start thread engagement. This will prevent





















them from failing when tightening.

Tighten plastic insert or crimped steel-type lock nuts to approximately 50 percent of the dry torque shown in the chart, applied to the nut, not to the bolt head. Tighten toothed or serrated-type lock nuts to the full torque value.

<sup>a</sup> "Lubricated" means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings. "Dry" means plain or zinc plated without any lubrication.

<sup>b</sup> Grade 2 applies for hex cap screws (not hex bolts) up to 152 mm (6-in.) long. Grade 1 applies for hex cap screws over 152 mm (6-in.) long, and for all other types of bolts and screws of any length.

# Torque Values - Metric

Property Class and Head Markings	4.8		8.8		9.8		10.9		12.9	
										
Property Class and Nut Markings	5		10		10		10		12	
										

Size	Class 4.8				Class 8.8 or 9.8				Class 10.9				Class 12.9			
	Lubricated <sup>a</sup>		Dry <sup>a</sup>		Lubricated <sup>a</sup>		Dry <sup>a</sup>		Lubricated <sup>a</sup>		Dry <sup>a</sup>		Lubricated <sup>a</sup>		Dry <sup>a</sup>	
	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft
M6	4.8	3.5	6	4.5	9	6.5	11	8.5	13	9.5	17	12	15	11.5	19	14.5
M8	12	8.5	15	11	22	16	28	20	32	24	40	30	37	28	47	35
M10	23	17	29	21	43	32	55	40	63	47	80	60	75	55	95	70
M12	40	29	50	37	75	55	95	70	110	80	140	105	130	95	165	120
M14	63	47	80	60	120	88	150	110	175	130	225	165	205	150	260	190
M16	100	73	125	92	190	140	240	175	275	200	350	255	320	240	400	300
M18	135	100	175	125	260	195	330	250	375	275	475	350	440	325	560	410
M20	190	140	240	180	375	275	475	350	530	400	675	500	625	460	800	580
M22	260	190	330	250	510	375	650	475	725	540	925	675	850	625	1075	800
M24	330	250	425	310	650	475	825	600	925	675	1150	850	1075	800	1350	1000
M27	490	360	625	450	950	700	1200	875	1350	1000	1700	1250	1600	1150	2000	1500
M30	675	490	850	625	1300	950	1650	1200	1850	1350	2300	1700	2150	1600	2700	2000
M33	900	675	1150	850	1750	1300	2200	1650	2500	1850	3150	2350	2900	2150	3700	2750
M36	1150	850	1450	1075	2250	1650	2850	2100	3200	2350	4050	3000	3750	2750	4750	3500

DO NOT use these values if a different torque value or tightening procedure is given for a specific application. Torque values listed are for general use only. Check tightness of fasteners periodically.

Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical property class.

Fasteners should be replaced with the same or higher property class. If higher property class fasteners are used, these should only be tightened to the strength of the original.

Make sure fasteners threads are clean and that you

properly start thread engagement. This will prevent them from failing when tightening.

Tighten plastic insert or crimped steel-type lock nuts to approximately 50 percent of the dry torque shown in the chart, applied to the nut, not to the bolt head. Tighten toothed or serrated-type lock nuts to the full torque value.

a "Lubricated" means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings. "Dry" means plain or zinc plated without any lubrication.

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**Proposition 65 Warning**

Battery posts, terminals, and similar parts may contain lead which are known to the State of California to cause cancer and reproductive harm. Wear gloves and wash hands after handling.

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