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# Patriot® 3240
# Patriot® 3340
# Tier 4B (final)

Sprayer

*PIN YGT044001 and above*

# SERVICE MANUAL

**Part number 48068911**
1st edition English
October 2016

CASE IH AGRICULTURE

# INTRODUCTION

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# Engine - Torque

| | |
|---|---|
| Patriot® 3240 | NA |
| Patriot® 3340 | NA |

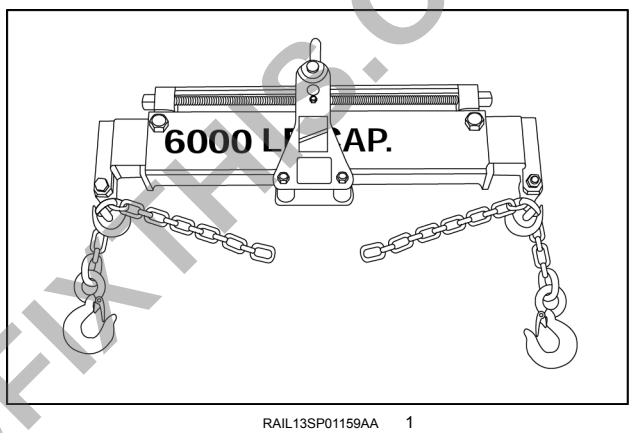
| Description | Torque values |
|---|---|
| Motor mount bolts | **310 - 380 N·m (229 - 280 lb ft)** |
| Engine air tube clamps | **16 - 18 N·m (12 - 13 lb ft)** |
| Fan bolts | **9 - 11 N·m (80 - 97 lb in)** |

# Engine - Special tools

| | |
|---|---|
| Patriot® 3240 | NA |
| Patriot® 3340 | NA |

### OEM4130

Load rotor




RAIL13SP01159AA 1

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# Gearbox - Remove - Pump drive

| | |
|---|---|
| Patriot® 3240 | NA |
| Patriot® 3340 | NA |

**Prior operation:**
**Oil reservoir - Remove (35.300)**

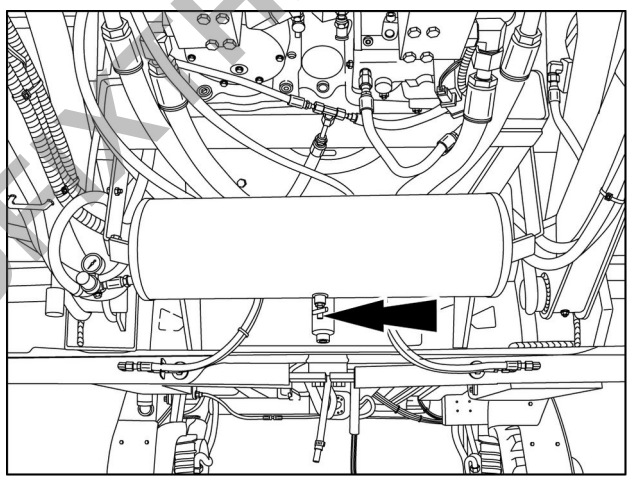
***NOTE:*** *If replacing hardware must use the hardware noted in this Machine's Parts Manual.*

**⚠ WARNING**

**Avoid injury!**
**The component is heavy. Removal/installation requires two persons or a lifting device.**
**Failure to comply could result in death or serious injury.**

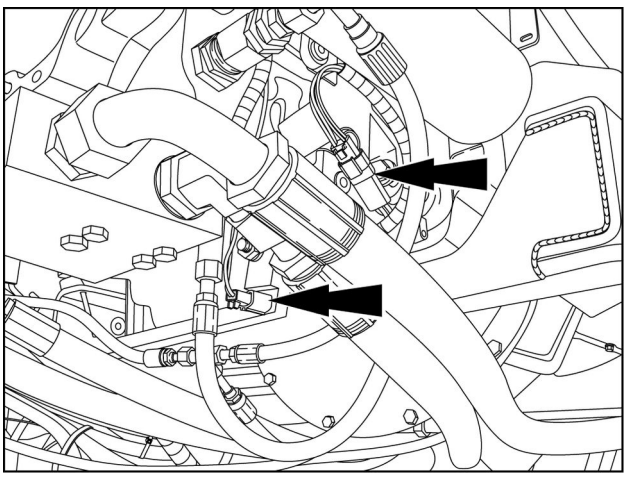
**W1141A**

1. Release all air pressure from tank. Remove air tank.



RAIL13SP04780AA 1

2. Disconnect the harness leads.



RAIL13SP04950AA 2

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# Powered front axle - Torque - Axle extension

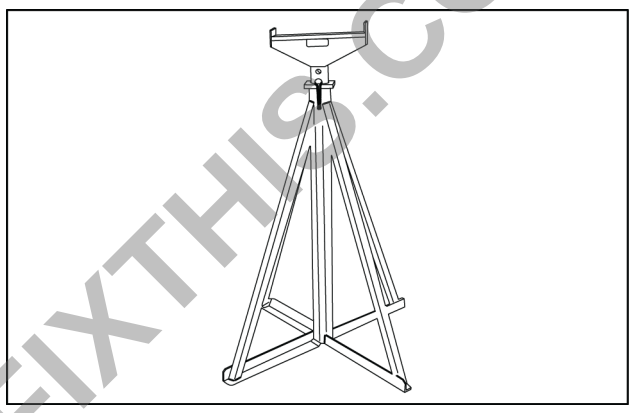
| | |
|---|---|
| Patriot® 3240 | NA |
| Patriot® 3340 | NA |

| Description | Torque values |
|---|---|
| Fender bracket mount bolts | **75 N·m** (**55 lb ft**) |
| Steering cylinder bolt | **393 - 419 N·m** (**290 - 309 lb ft**) |

# Powered front axle - Special tools - Axle extension

| | |
|---|---|
| Patriot® 3240 | NA |
| Patriot® 3340 | NA |

OTC380002856 **15 ton** jackstand



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# Powered rear axle - Torque - Axle extension

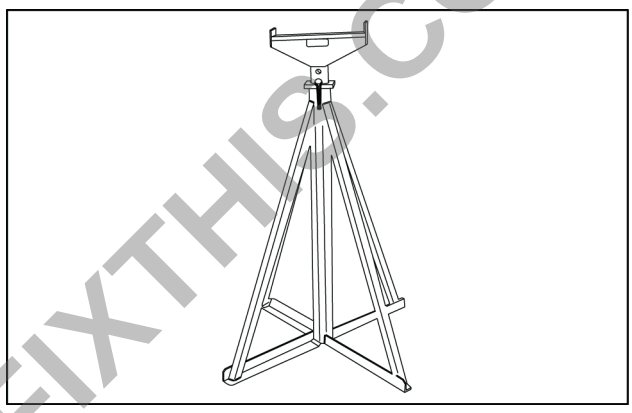
| | |
|---|---|
| Patriot® 3240 | NA |
| Patriot® 3340 | NA |

| Description | Torque values |
|---|---|
| Fender bracket mount bolts | **75 N·m** (**55 lb ft**) |
| Steering cylinder bolt | **393 - 419 N·m** (**290 - 309 lb ft**) |

# Powered rear axle - Special tools - Axle extension

| | |
|---|---|
| Patriot® 3240 | NA |
| Patriot® 3340 | NA |

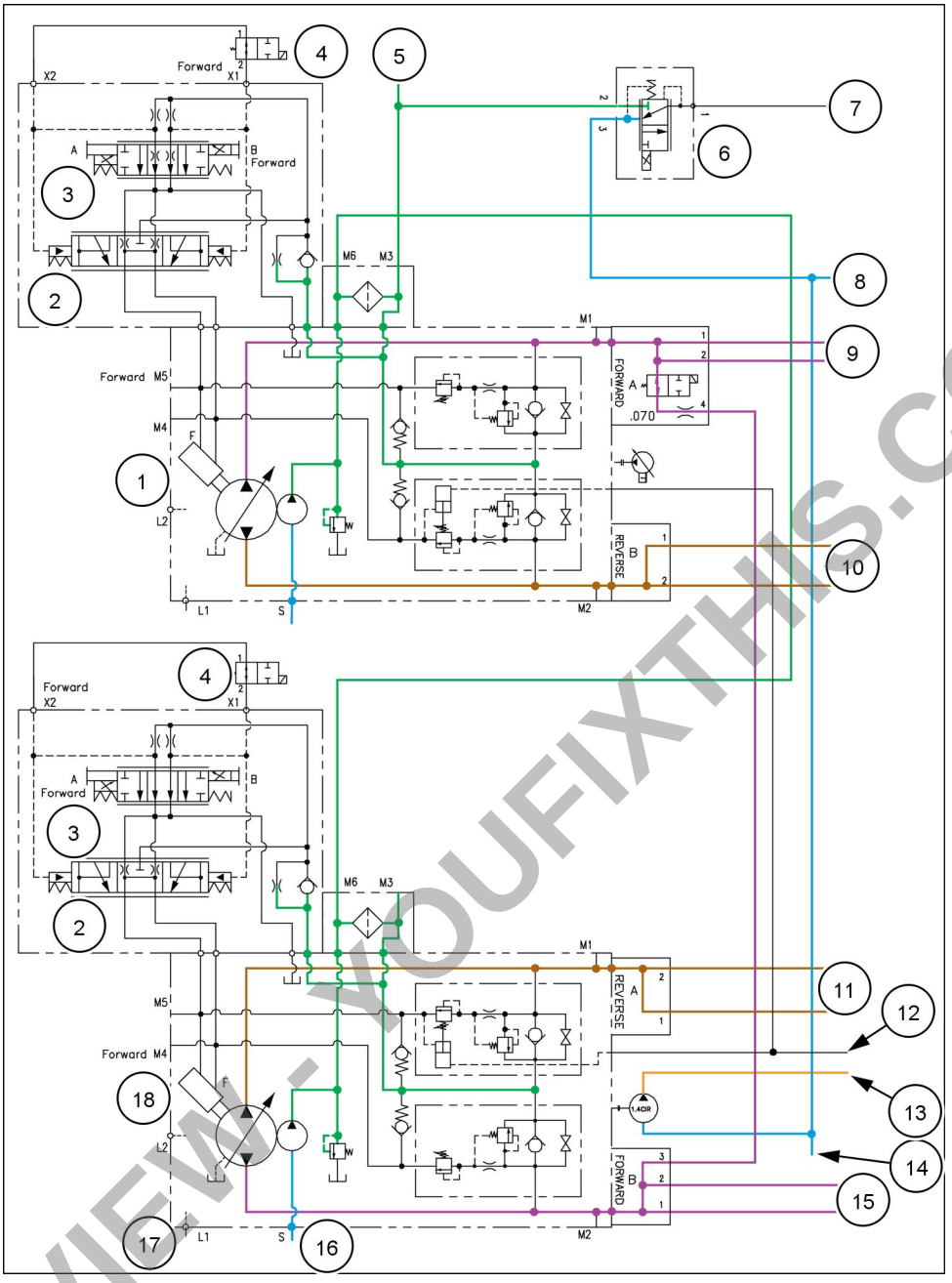
OTC380002856 **15 ton** jackstand



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RAIL13SPO5032HA 2

For the above schematic for the Patriot 3340, the milli-amp signal from the power train control module (PCM) is sent to a electronic proportional valve (EP) on each pump.

| Item | Description | Item | Description |
|---|---|---|---|
| 1 | Hydrostatic pump – Right front (RF), Left rear (LR) | 10 | To wheel motor RF and LR – reverse travel |
| 2 | Stroking piston – pump | 11 | To wheel motor RR and LF – reverse travel |
| 3 | Electronic proportional valve (EP) | 12 | To valve reverse pressure limiter |
| 4 | Shunt valve | 13 | Gear pump supply to PWM valve |
| 5 | Charge pressure to park brake valve | 14 | Gear pump suction from hydraulic tank |
| 6 | Motor control valve (MCV) | 15 | To wheel motor RR and LF – forward travel |
| 7 | Motor control valve (MCV) supply to wheel motors | 16 | Charge pump suction from hydraulic tank |
| 8 | To park brake valve | 17 | L1 return to hydraulic tank |
| 9 | To wheel motor RF and LR – forward travel | 18 | Hydrostatic pump – Right rear (RR), Left front (LF) |


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# SERVICE MANUAL

## Power Take-Off (PTO)

**Patriot® 3240 TIER 4B (FINAL) sprayer [YGT044001 - ]**
**Patriot® 3340 TIER 4B (FINAL) sprayer [YGT044001 - ]**

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# Parking brake or parking lock - Torque - Park brake release for towing

| | |
|---|---|
| Patriot® 3240 | NA |
| Patriot® 3340 | NA |

| Description | Torque values |
|---|---|
| Bypass actuator | **41 N·m** (**30 lb ft**) |

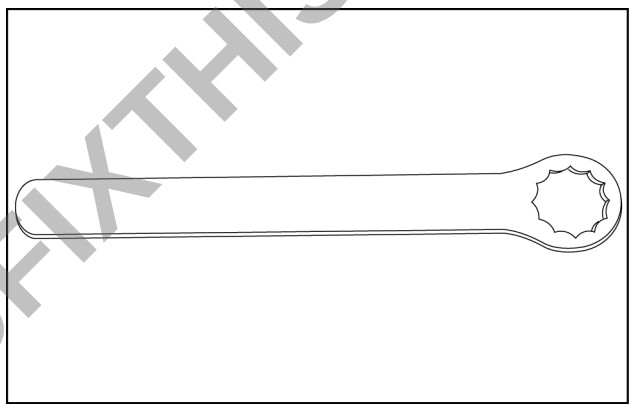
# Parking brake or parking lock - Special tools - Park brake release for towing

| | |
|---|---|
| Patriot® 3240 | NA |
| Patriot® 3340 | NA |

***NOTE:*** *Tool numbers BN310312 (Patriot 3340 only), BN310313 (Patriot 3340 only), and BN324972 are sold through CNH parts system.*

## Bypass wrench - BN310312 (Patriot 3340 only)

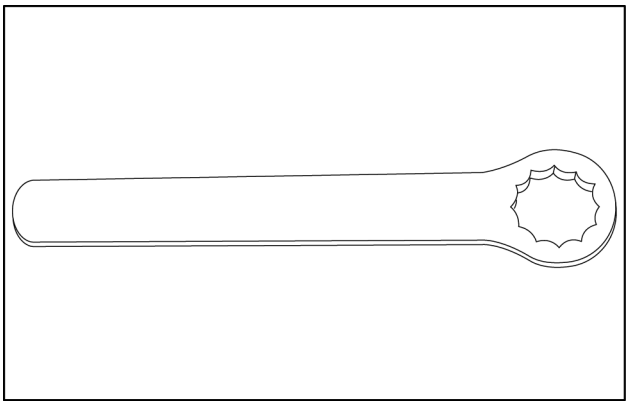
***NOTE:*** *Tool number BN310312 is sold through CNH parts system.*



RAIL13SP01146AA 1

## Bypass wrench - BN310313 (Patriot 3340 only)

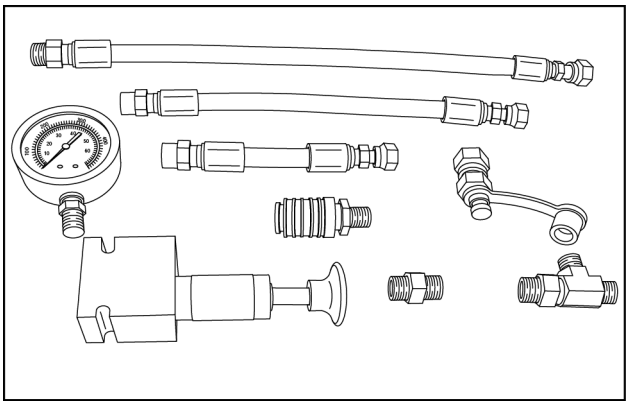
***NOTE:*** *Tool number BN310313 is sold through CNH parts system.*



RAIL13SP01147AA 2

## Kit, hand pump - BN324972

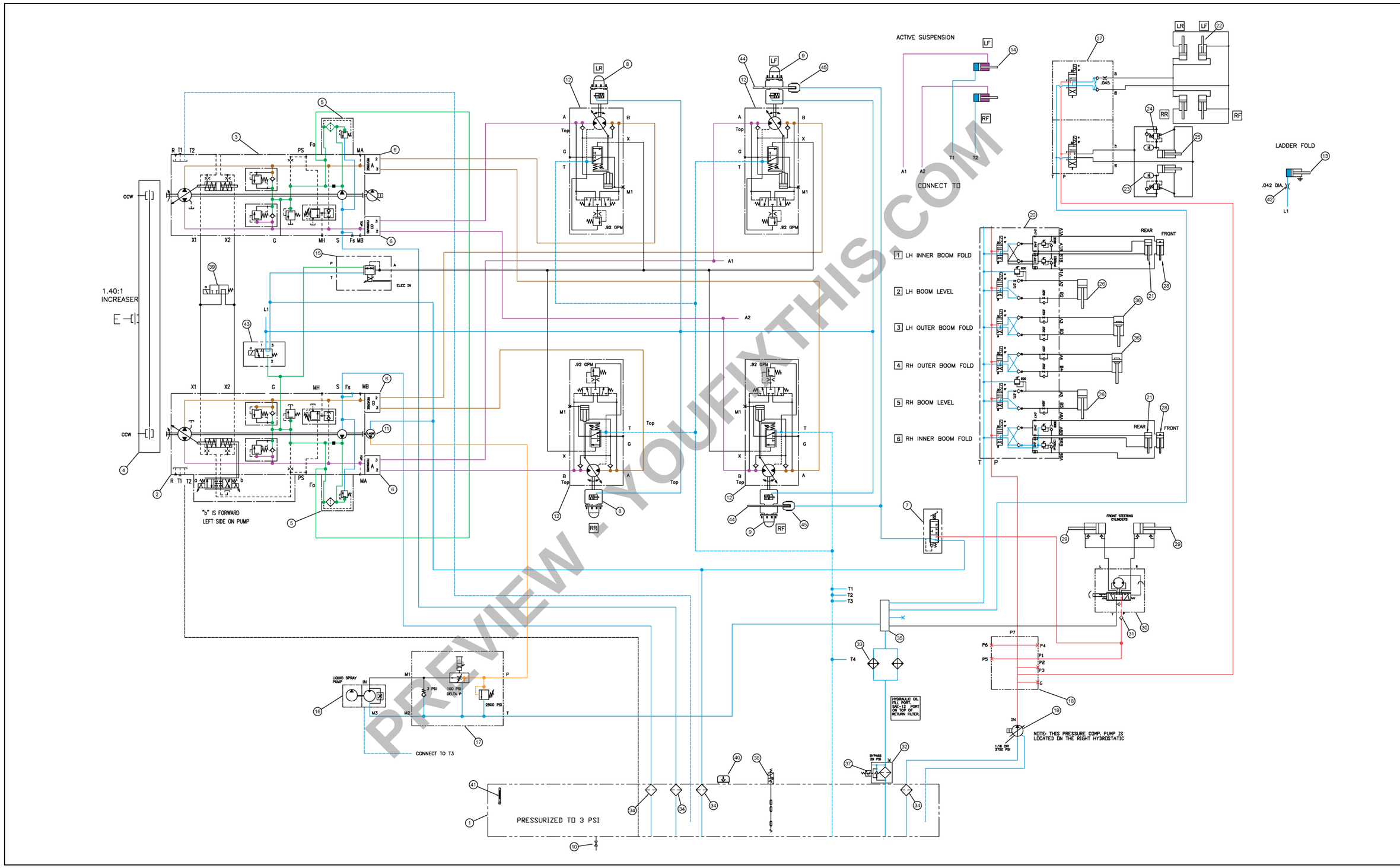
***NOTE:*** *Tool number BN324972 is sold through CNH parts system.*



RAIL13SP01148AA 3



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RAIL13SP04759JA 1

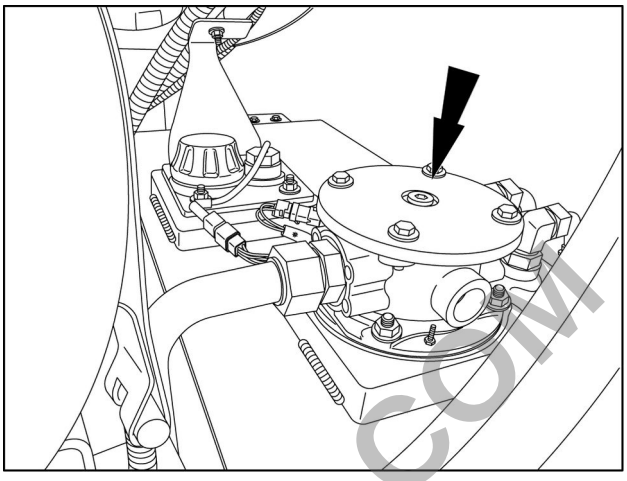


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3. Install a new in-tank return filter on the auxiliary hydraulic circuit.

***NOTE:*** *This step is only required if installing a front suspension cylinder.*

4. Start the engine and run in neutral at a minimum of **1500 RPM**.
5. While driving the machine depress the traction assist pedal to cycle the cylinder five times to move any air and debris to the tank.
6. Allow the engine to run at **1500 RPM** with the vehicle in neutral for a minimum of **20 min** to filter and warm the hydraulic oil prior to any operation.
7. Run the machine for at least one hour under light load to complete the hydraulic oil filtration.
8. Shut down the machine and check for leaks.



RAIL14SP00274AA 3

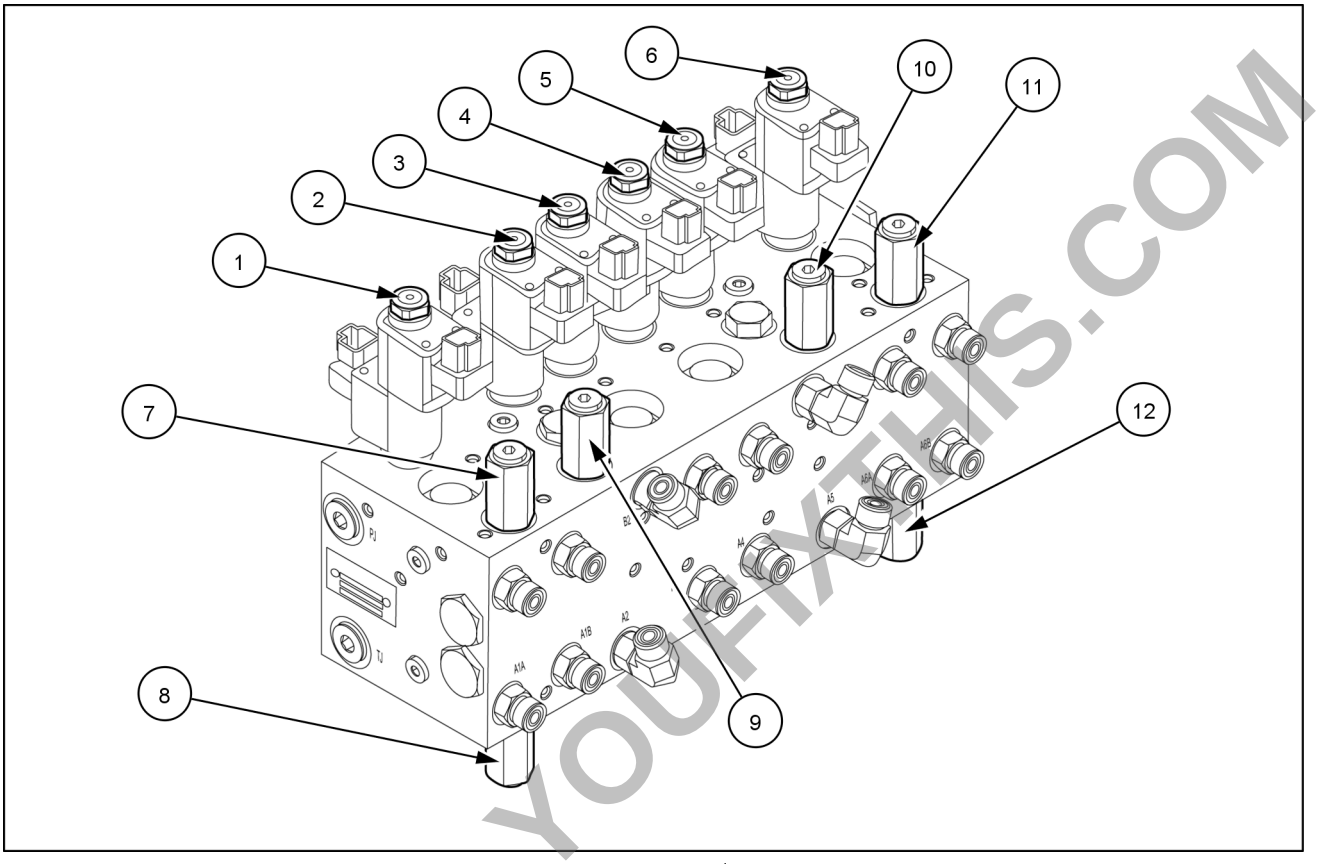
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# Control valves - External view - Six or eight section valve bank

| | |
|---|---|
| Patriot® 3240 | NA |
| Patriot® 3340 | NA |

## Six function valve bank solenoid identification




RAIL13SP01416FA 1

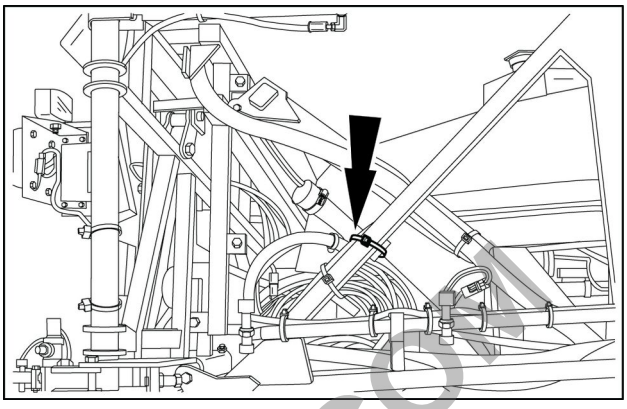
1. Left inner boom fold
2. Left boom level
3. Left outer boom fold
4. Right outer boom fold
5. Right boom level
6. Right inner boom fold
7. Left inner boom fold **1500 psi** rod end relief valve
8. Left inner boom fold **3000 psi** blind end relief valve
9. Left boom level **200 psi** blind end relief valve
10. Right boom level **200 psi** blind end relief valve
11. Right inner boom fold **1500 psi** rod end relief valve
12. Right inner boom fold **3000 psi** blind end relief valve

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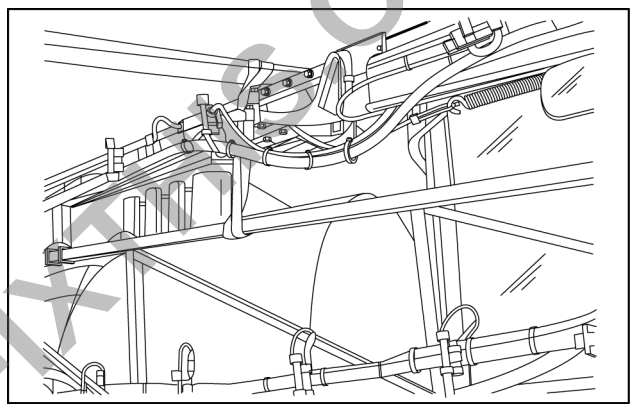
7. Pull all disconnected wiring and hoses back to the inner boom. Secure wiring and hoses to the inner boom frame.

***NOTE:*** *Take note of wiring and hose routing before removal for proper installation.*



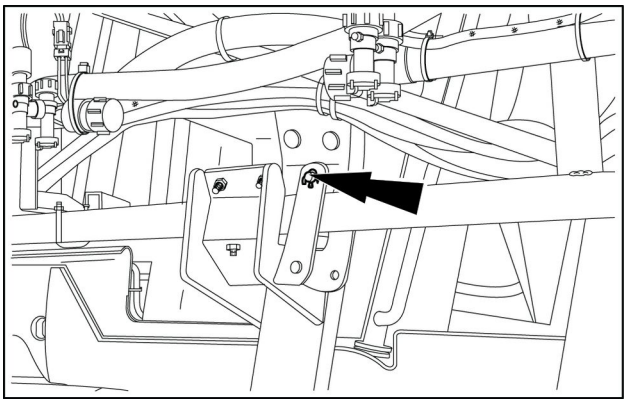
RAIL13SP01958AA 6

8. Attach proper lifting device to the inner boom assembly.



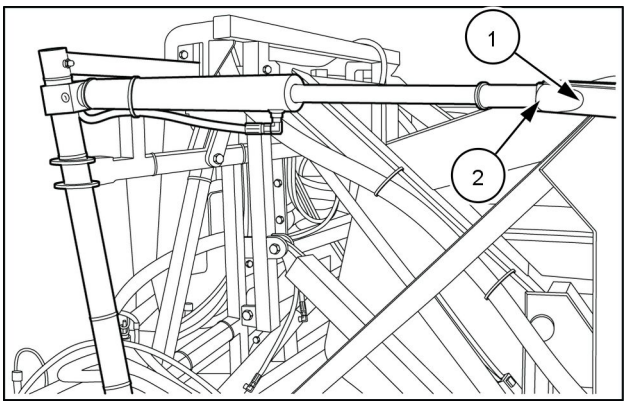
RAIL13SP01959AA 7

9. Remove boom lock pin from the cradle.



RAIL13SP01960AA 8

10. Remove the nut and bolt **(1)** from the cylinder pin. While supporting the cylinder, remove the rod end cylinder mounting pin **(2)**.




RAIL13SP01578AA 9

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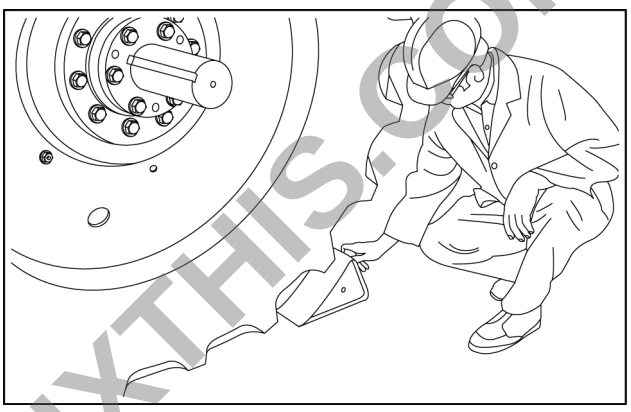

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# Steering column - Remove

| | |
|---|---|
| Patriot® 3240 | NA |
| Patriot® 3340 | NA |

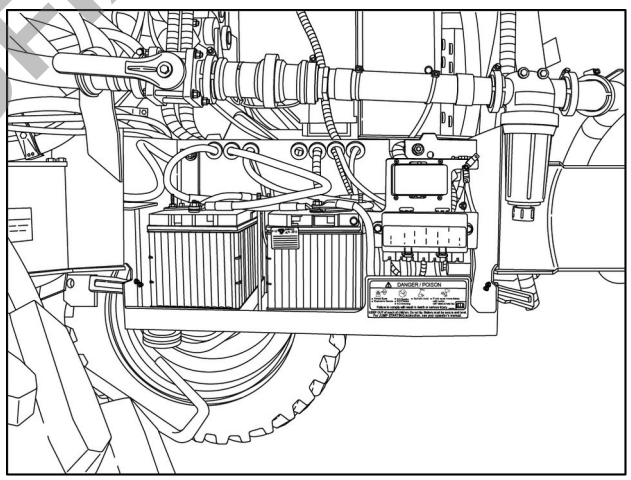
**Prior operation:**
Park the tractor on a hard, level surface.
**Prior operation:**
Put the transmission shift lever in PARK.
**Prior operation:**
Turn the engine off and remove the key.

1. Place blocks in front of and behind the rear wheels.



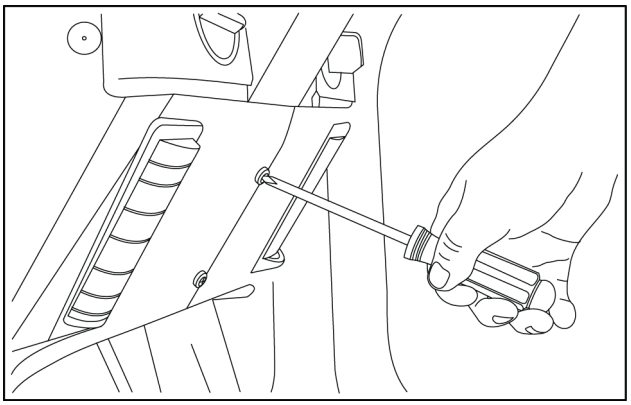
RAIL13SP01365AA 1

2. Disconnect battery cables from negative posts.



RAIL13SP04671AA 2

3. Remove the two retaining screws that attach the left and right lower console panels.



RAIL13SP01366AA 3

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# Front wheels - Torque

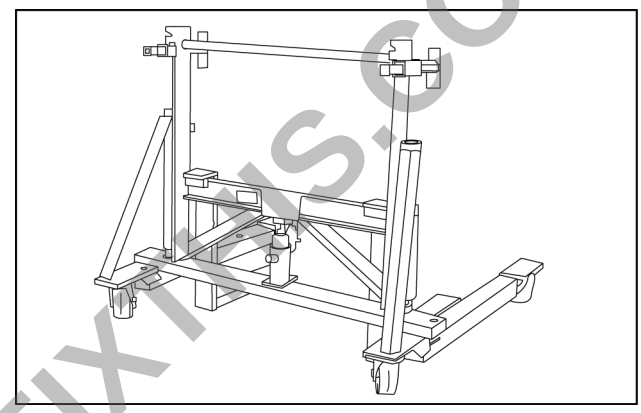
| | |
|---|---|
| Patriot® 3240 | NA |
| Patriot® 3340 | NA |

| Description | Torque values |
|---|---|
| Wheel lug nuts | **608 - 675 N·m** (**448 - 498 lb ft**) |

# Front wheels - Special tools

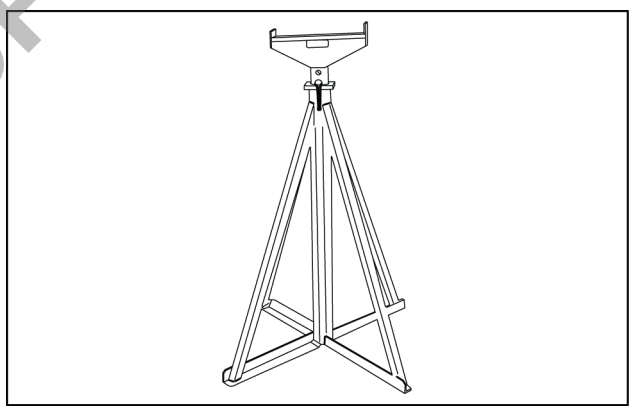
| | |
|---|---|
| Patriot® 3240 | NA |
| Patriot® 3340 | NA |

Wheel/axle lift **CAS10078**



RAIL13SP01850AA 1

**15 ton** jackstand



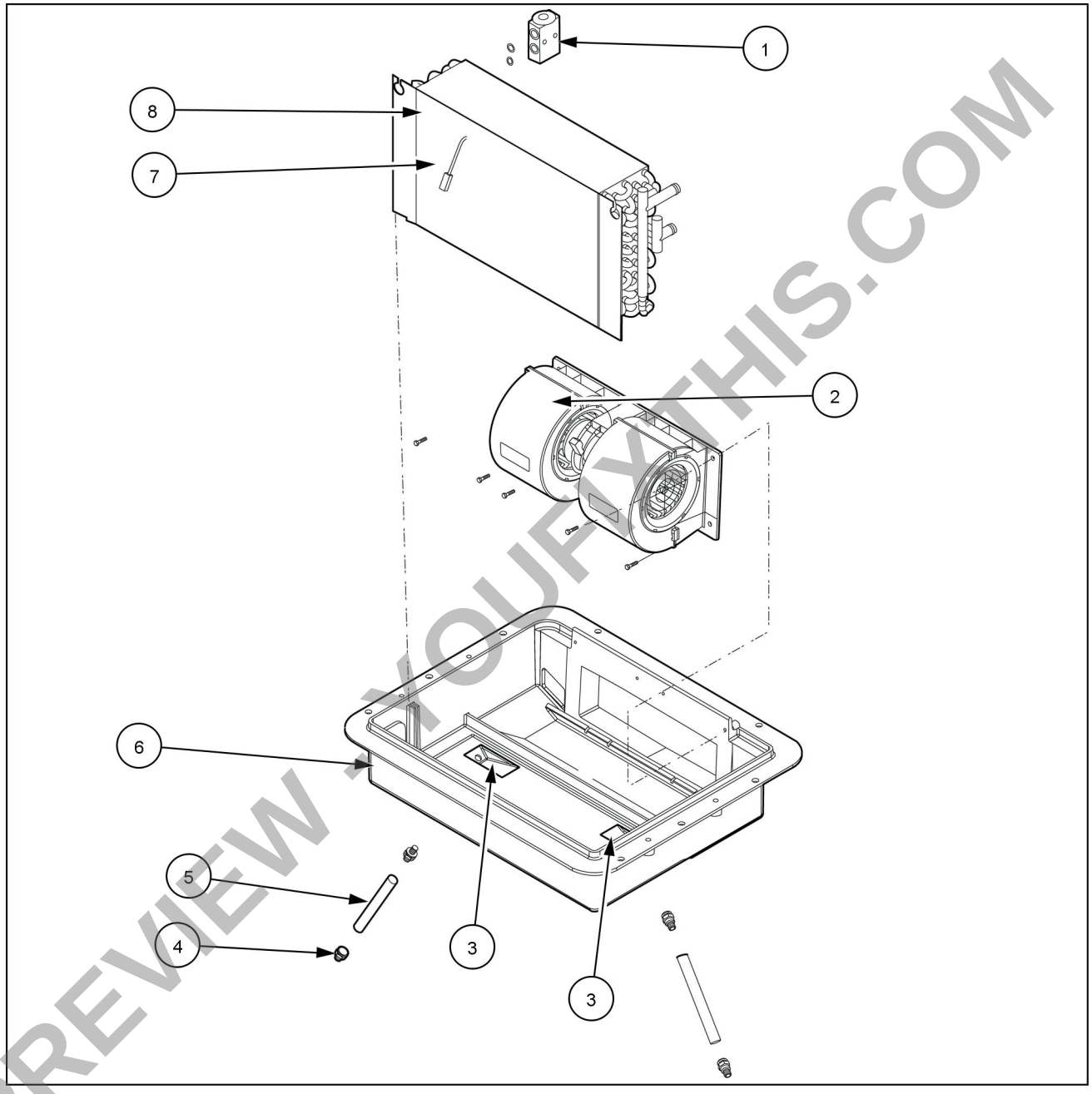
RAIL13SP01853AA 2

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# Evaporator/Heater coil - Component identification - Blower and evaporator

| | |
|---|---|
| Patriot® 3240 | NA |
| Patriot® 3340 | NA |




RAIL13SP01759GA 1

1. Thermal expansion valve
2. Blower motor
3. Box drainage
4. Check valve
5. Condensate drain tube
6. Evaporator box assembly
7. Evaporator temp sensor
8. Evaporator core

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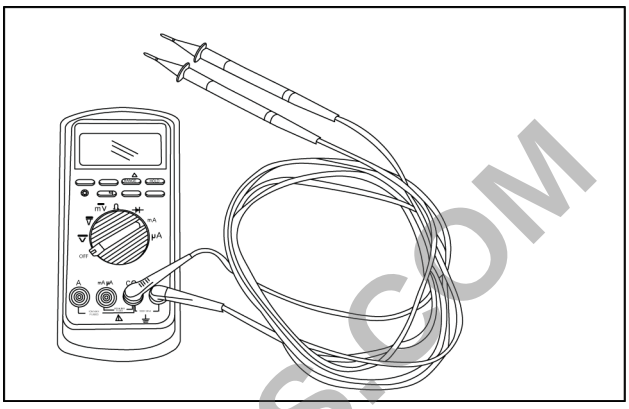

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# Electrical system - Special tools

| | |
|---|---|
| Patriot® 3240 | NA |
| Patriot® 3340 | NA |

## Multimeter

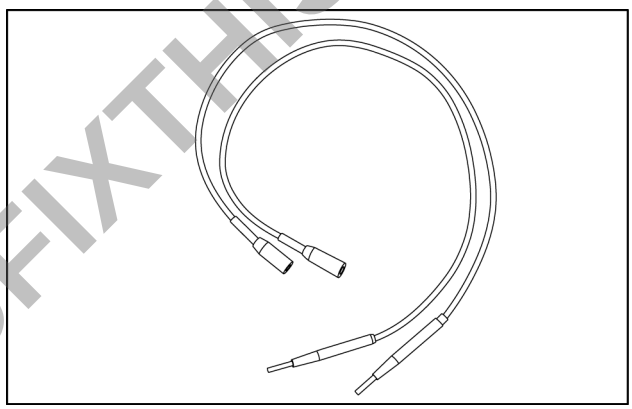
Fluke 88 digital multi-meter



RAIL13SP01281AB 1

## Back probe extension wire set

***NOTE:*** *Obtain direct from SPX – OTC 233788, or FNH00550*

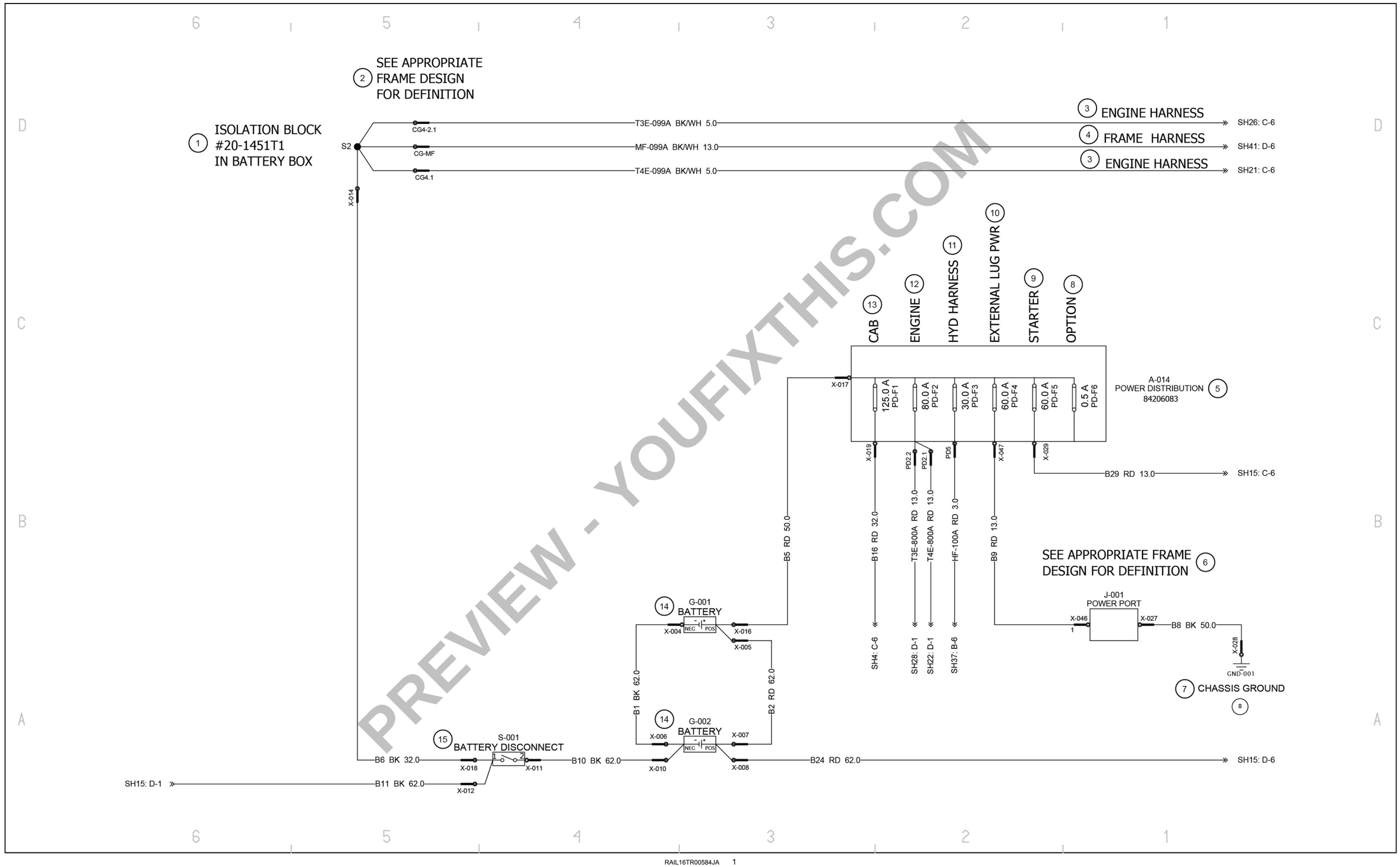


RAIL13SP01282AA 2

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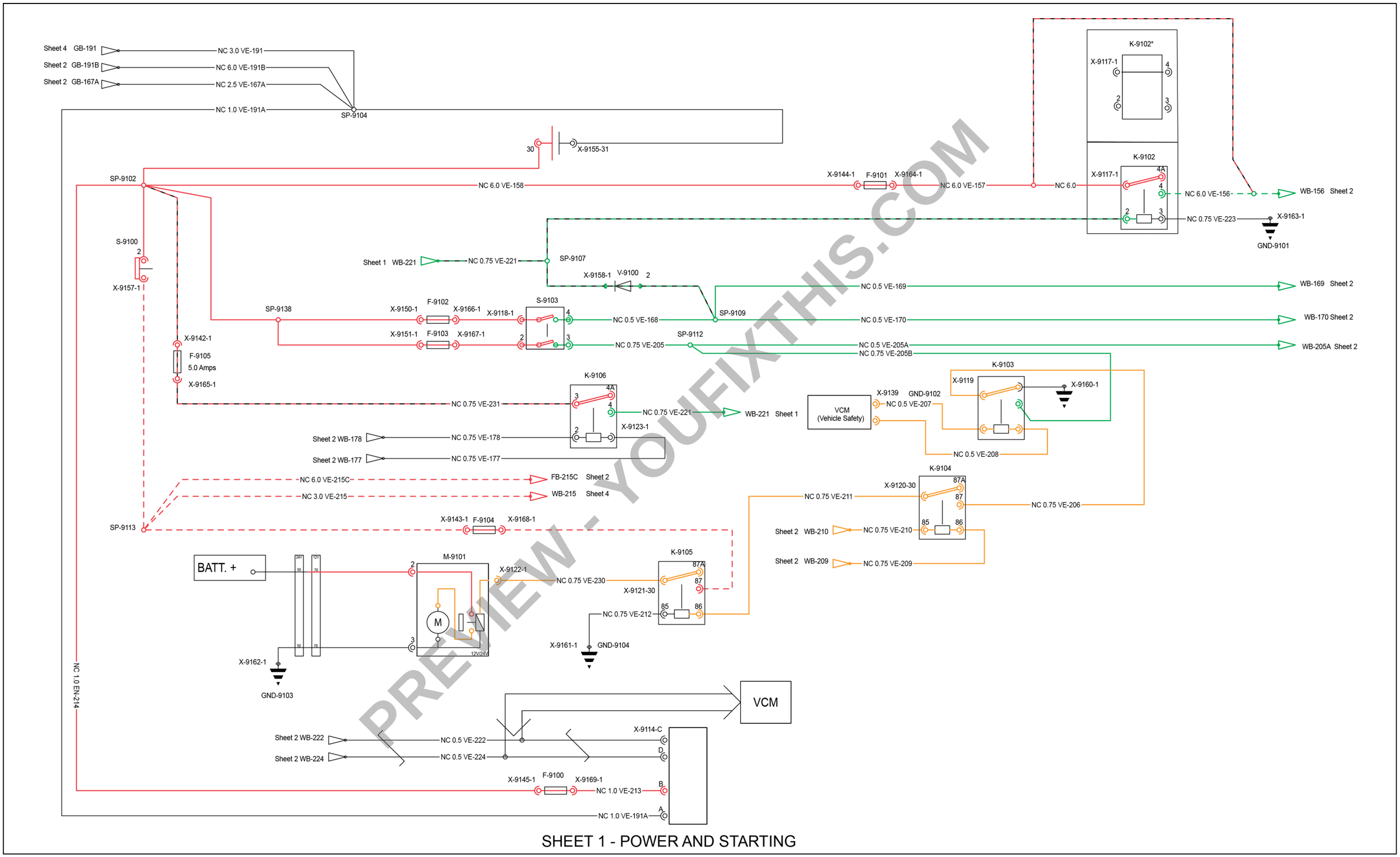
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SHEET 1 - POWER AND STARTING

NHVE14ENG0412JA 1

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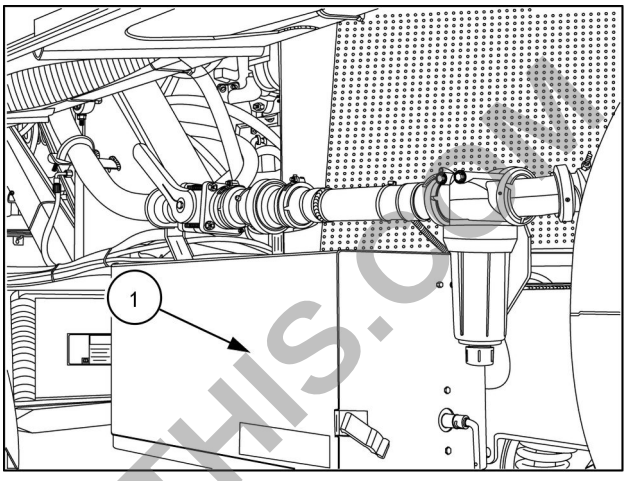
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# Battery - Remove

| | |
|---|---|
| Patriot® 3240 | NA |
| Patriot® 3340 | NA |

## Access to batteries

The battery compartment is located on the right-hand side of the machine. To access the batteries, open the rubber covered latches **(1)** located on both sides of the compartment cover. Remove the battery cover.

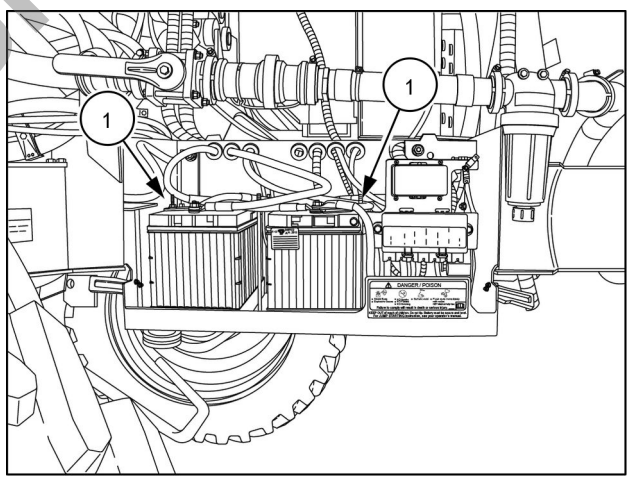



RAIL13SP04100AA 1

***NOTE:*** *If replacing component parts, always use the parts noted in this Machine's Parts Manual.*

## Battery removal

1. Disconnect all ground cables from each battery negative (-) terminal.
2. Disconnect the positive cables from each battery positive (+) terminal.
3. Remove the battery hold down bracket **(1)** to remove the batteries.




RAIL13SP04671AA 2

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# Electrical systems - 55

## FAULT CODES - DTC

**Patriot® 3240 TIER 4B (FINAL) sprayer [YGT044001 - ]**
**Patriot® 3340 TIER 4B (FINAL) sprayer [YGT044001 - ]**

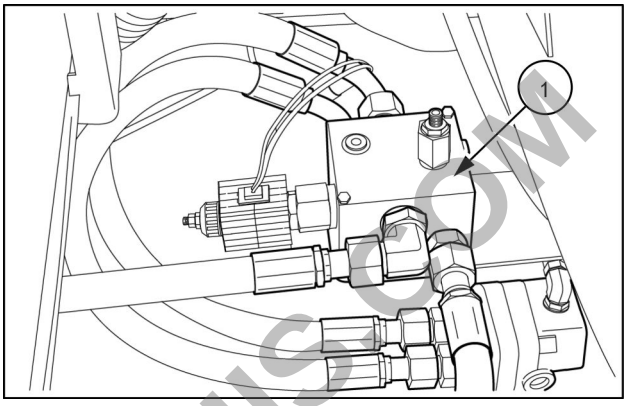
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# Liquid fertilizer system - Overview - PWM product pump control valve

| | |
|---|---|
| Patriot® 3240 | NA |
| Patriot® 3340 | NA |

The oil flow from the gear pump is ported to the “P” port of the PWM product pump control valve **(1)**. The PWM product control valve is a PWM (Pulse Width Modulated) controlled valve. It is located at the lower front part of the product tank.




RAIL13SP01400AA 1

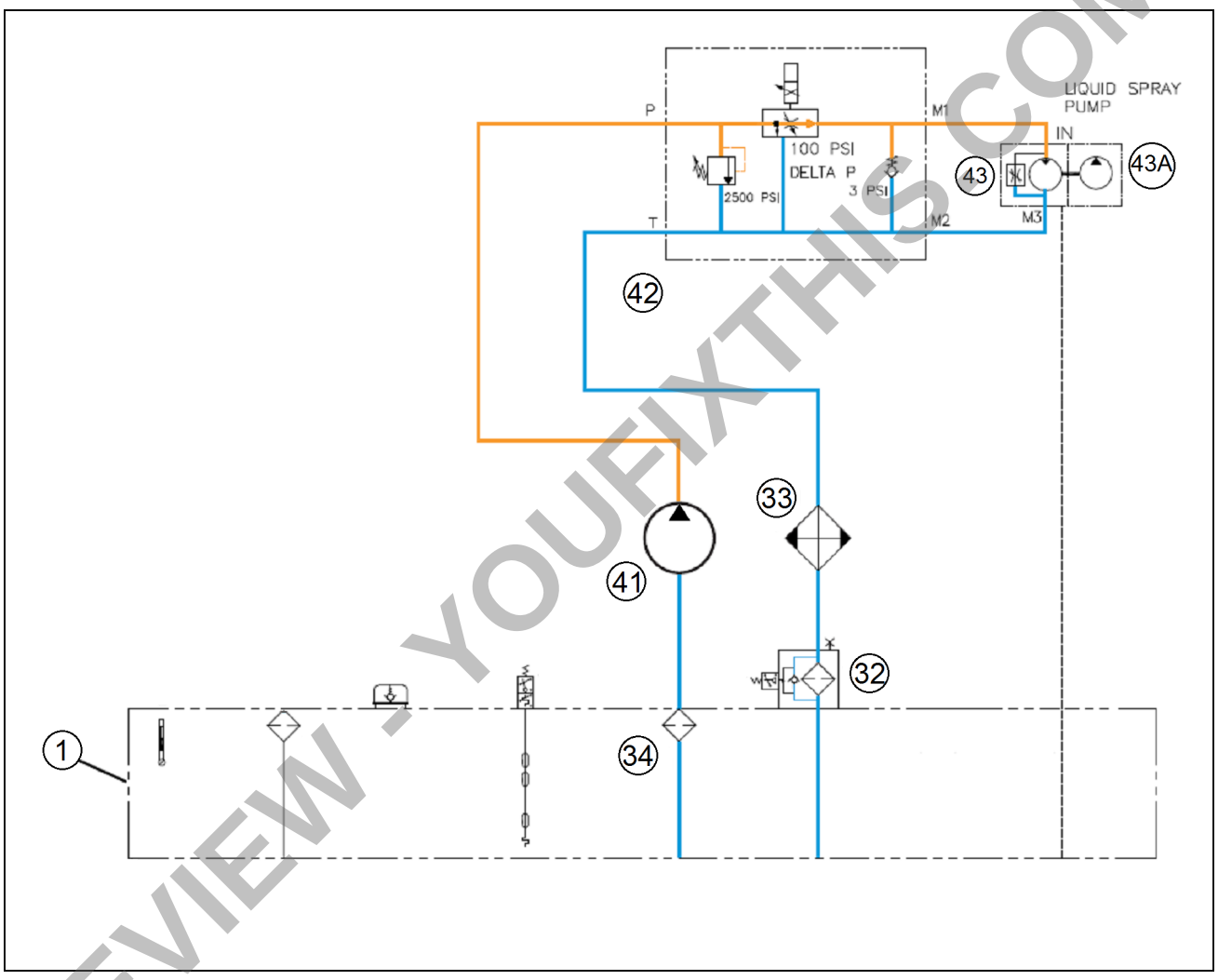
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## Spray system details

Product is delivered to the spray boom by the product liquid pump **(43A)**. The product liquid pump is of centrifugal design and is driven by a variable speed hydraulic motor **(43)**. The oil supply for the drive motor comes from the product delivery gear pump **(41)** mounted on the left rear of the engine. An electrically controlled Pulse Width Modulated (PWM) valve **(42)** in the PWM valve block allows for adjustment of the product pump speed automatically by the application rate controller or manually by the operator from the cab. The PWM valve keeps the product pump **(43A)** speed constant to maintain the required spray pressure, independent of engine speed. PWM valve **(42)** passes through the oil cooler **(33)** and the filter **(32)** to the hydraulic reservoir **(1)**. Oil flowing to the gear pump **(41)** passes through a suction strainer **(34)**.




RAIL13SP04022GA 5

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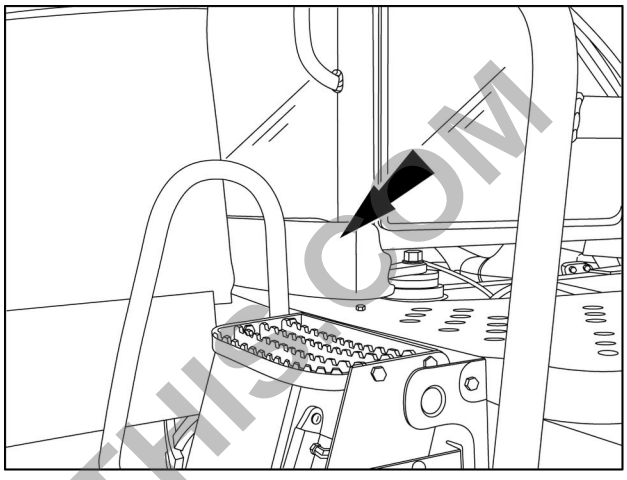
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# Front shield - Remove - Front hood

| | |
|---|---|
| Patriot® 3240 | NA |
| Patriot® 3340 | NA |

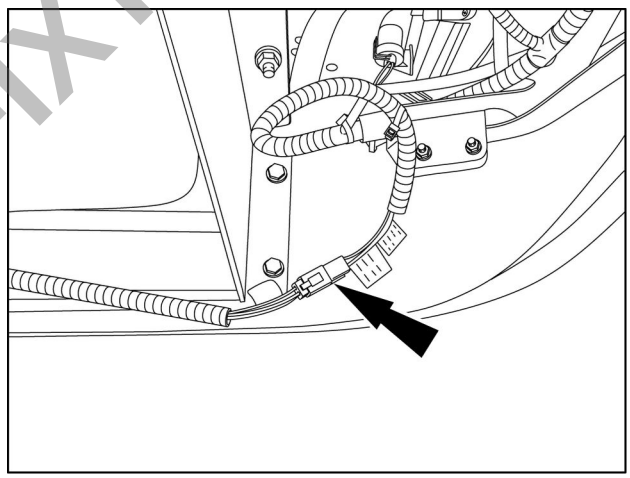
Park the machine on a flat level surface with an overhead crane available.

1. Remove the front lower trim pieces from the cab. The left hand side is shown. Remove both sides.



RAIL13SP04610AA 1

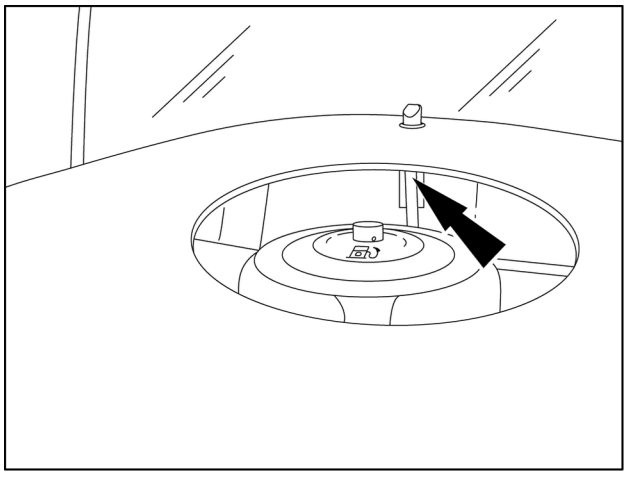
2. Disconnect the headlight harness connector as shown.



RAIL13SP04611AA 2

3. Disconnect the windshield washer hose at the spray nozzle.

***NOTE:*** *Plug the disconnected windshield washer hose.*



RAIL13SP04612AA 3

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