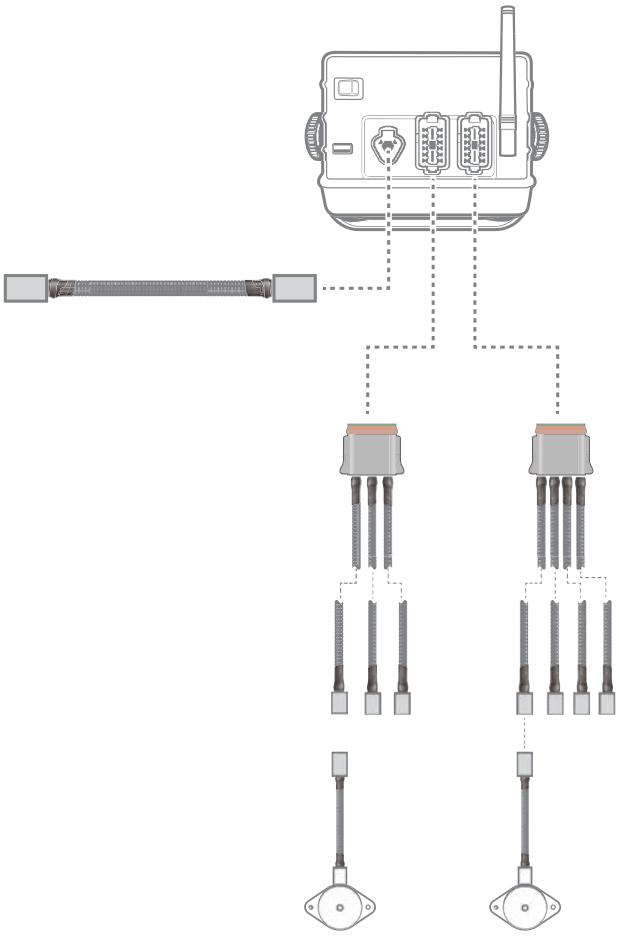
CANNON

ADS 418

ANGLE_DETECTION_SYSTEM

Installation Guide



ADS 410
ANGLE_DETECTION_SYSTEM

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ADS 410
ANGLE_DETECTION_SYSTEM

Installation Guide
INTRODUCTION

Since equipment models differ the ADS 410 Angle Detection System requires custom installation; therefore these instructions are a guide only. If unsure of any part of installation process, consult with supervisor or engineering to resolve any problems.

ADS 410 Angle Detection System installation will be in three parts;

1. Monitor and Boom Rotation Sensor installation.

2. Feeder Rotation Sensors and Transmitter/Power Pack installation.

3. Wiring Harness (custom manufacture)

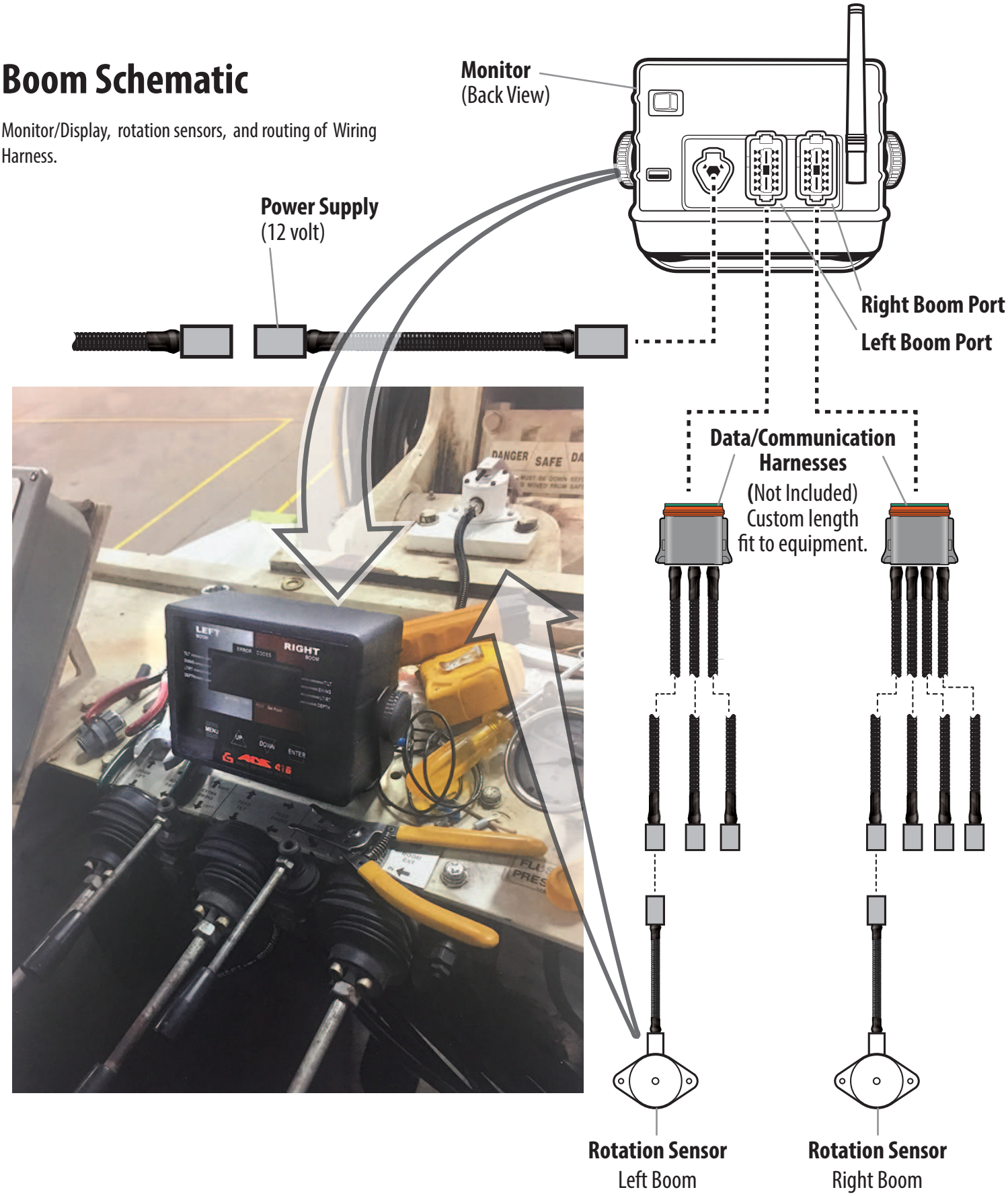
Read the following guide lines and familiarze yourself with the components for proper installation.

Tools Required:
Drill
Measuring Tape
Marker or Scribe
Self Tape Screws or Mounting Bolts

WARNING:
The installer of this radio equipment must ensure that the antenna is located or pointed such that it does not emit RF field in excess of Health Canada limits for the general population; consult Safety Code 6, obtainable from Heath Canada's website www.hc-sc.gc.ca/rpb."

Boom Schematic

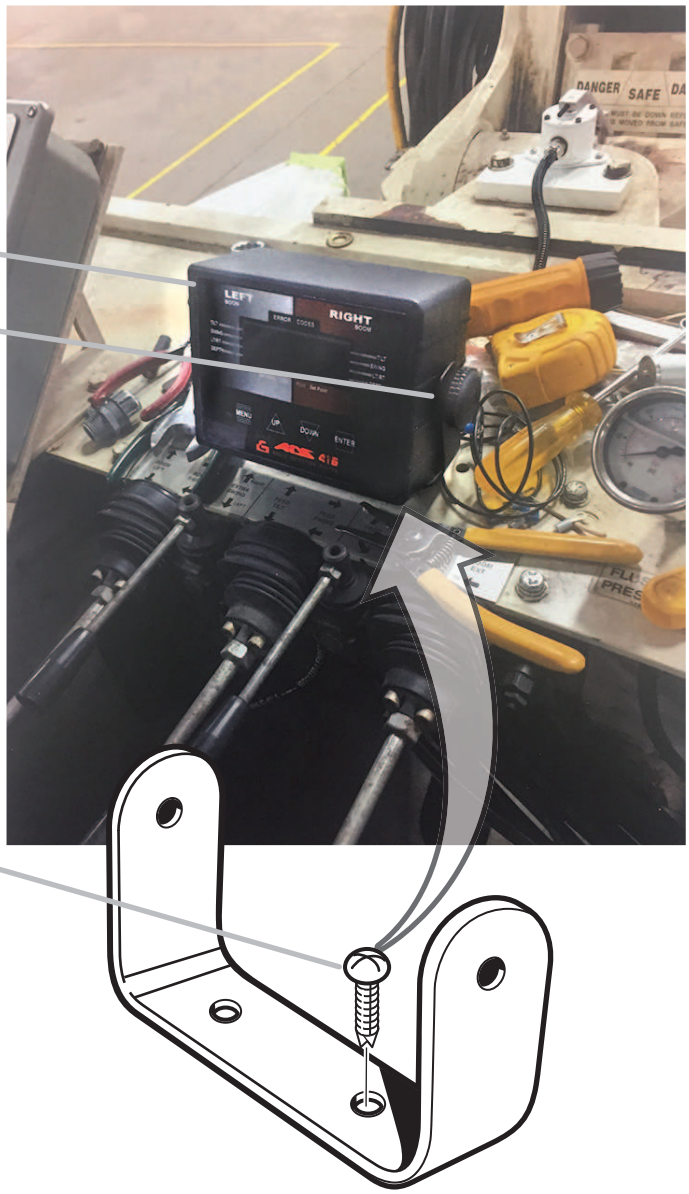
Monitor/Display, rotation sensors, and routing of Wiring Harness.



Monitor Installation

Display/Monitor Unit

1. Display Monitor - In the drill's cab - Locate an easy accessible position with-in operator's arm reach to mount the Display Unit.
2. Remove the Units mounting bracket by loosing the monitor's adjustment nobs.
3. Use the mounting bracket holes as a template to mark position.
4. Drill pilot holes for self taping screws or bolts for mounting.
5. Use self-taping screws or bolts to secure the monitor's mounting bracket into elected position.

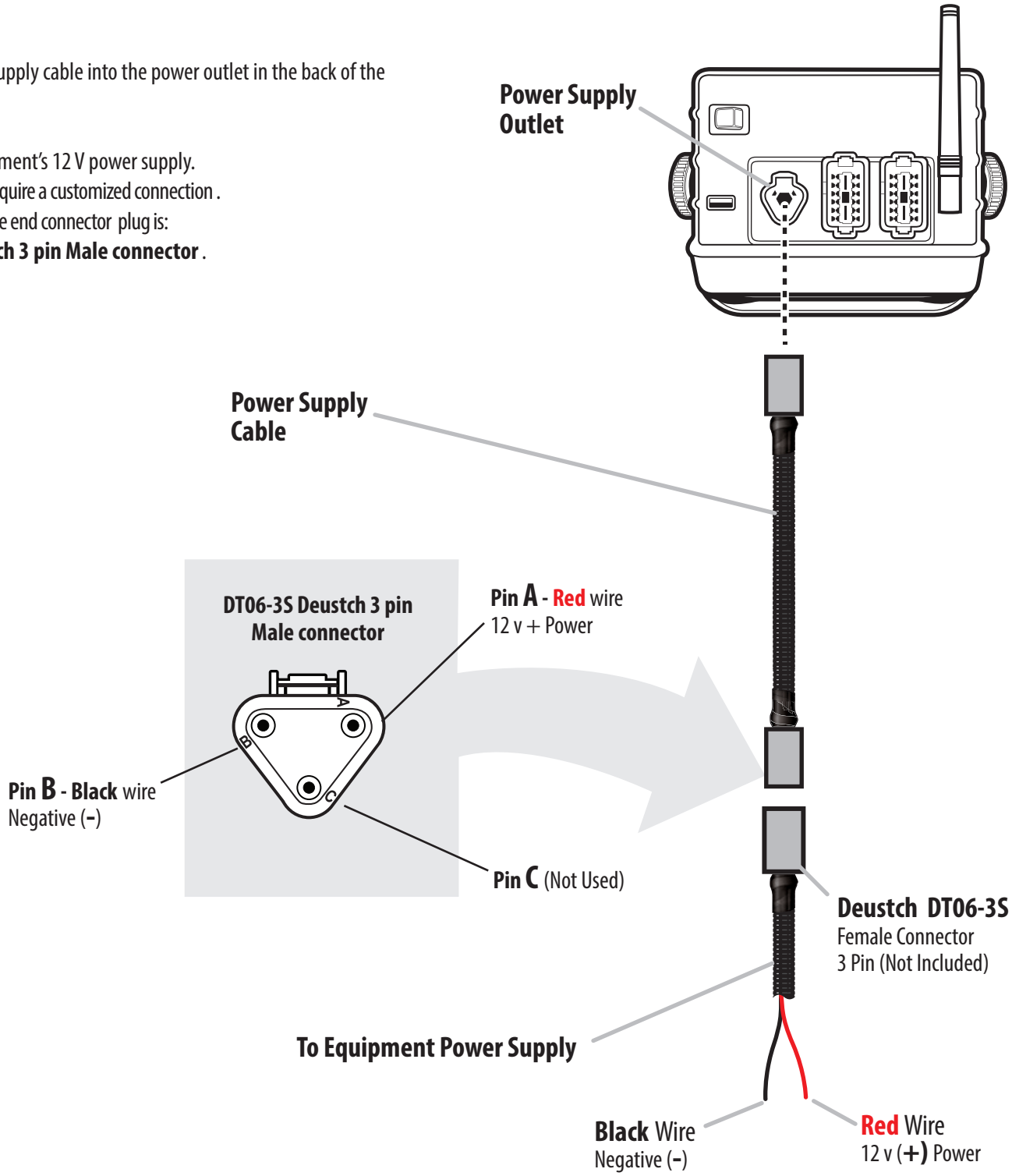


Monitor and Boom Rotation Sensor Installation (continued)

Power Supply Cable - Connection

1. Plug the power supply cable into the power outlet in the back of the Display Unit.

2. Connect to equipment's 12 V power supply. Installation may require a customized connection . Power Supply Cable end connector plug is: **DT06-3S Deutsch 3 pin Male connector** .



Monitor and Boom Rotation Sensor Installation (continued)

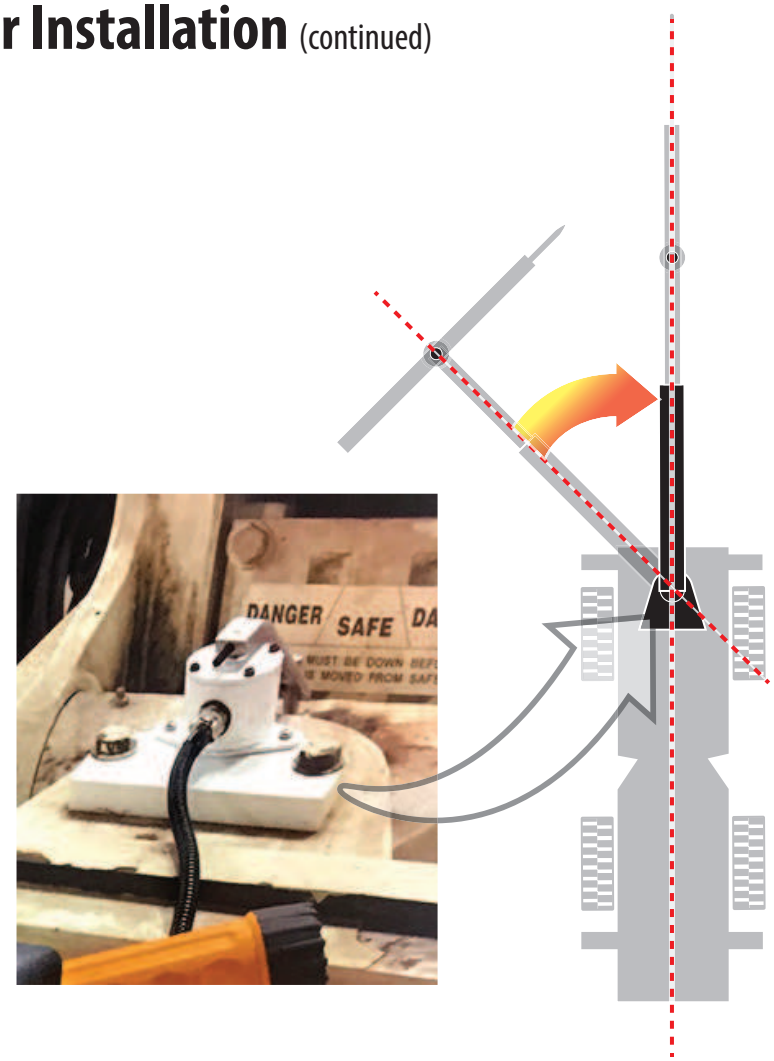
Rotation Sensor - Boom (left and Right)

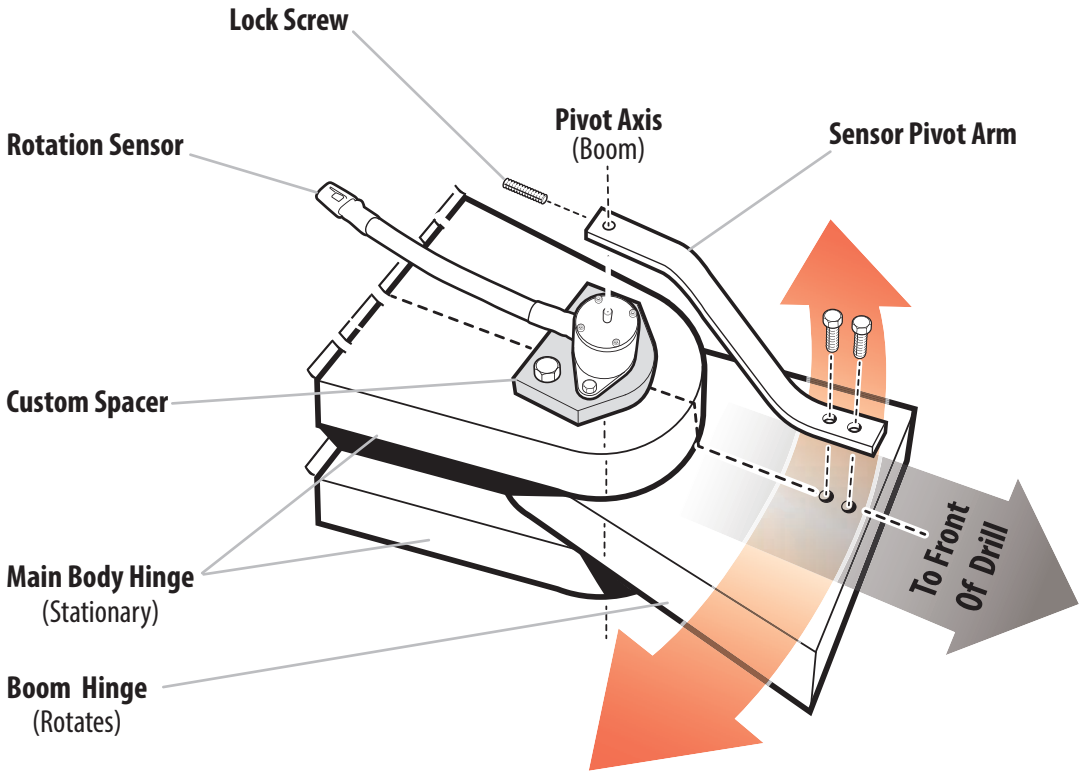
Rotation Sensors are mounted on the boom, and connected to the Display/Monitor with a custom manufactured length Data/Communication Cable.

1. Center the left and right rotation sensors on the pivot points of the left and right booms.

   Note: The Rotation Sensor is mounted on the stationary part of the pivot point and the Pivot Arm is attached to the boom which moves.

2. A custom spacer may have to be manufactured.



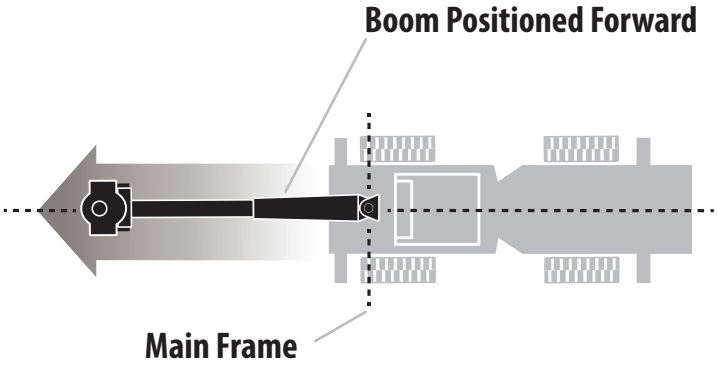


Monitor and Boom Rotation Sensor Installation (continued)

ROTATION SENSOR (Boom) - SENSOR PIVOT ARM

The Sensor Pivot Arm attaches to the spindle of the rotation sensor and the other end attaches to the center of the boom hinge.

Sensor Pivot Arm is custom manufactured.



1. Position Drill Boom/s straight forward, 90° to main frame of drill.

2. A custom spacer may have to be manufactured to bring the rotation sensor to a correct level. Secure spacer in place.

3. Mount rotation sensor on spacer, centered over the pivot point.

4. **Sensor Pivot Arm** (custom manufacture)

   A. Measure a length of steel rod or bar that will run from the Rotation Sensor spindle to the center line of the Boom Hinge.

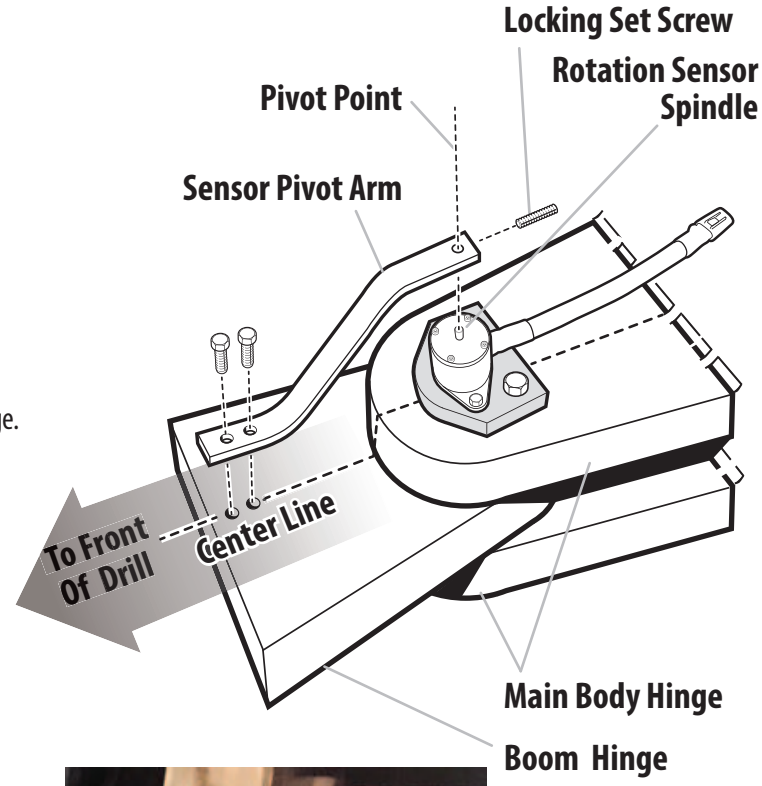
   Ensure pivot arm can rotate free of any hoses, wiring harnesses or other mechanical parts.

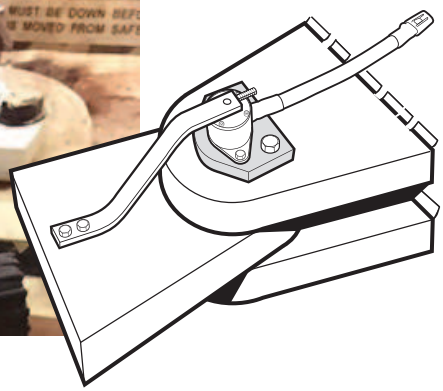
   B. Pivot Arm will require custom bends for correct fit.

   C. Drill a hole at the end of the sensor pivot arm that will fit over the Rotation Sensor Spindle.

   D. Manufacture a set screw on the pivot arm that will lock the pivot arm to the rotation sensor spindle.

   E. Secure the other end of the pivot arm to the Boom Hinge with bolts or self taping screws.
   Ensure that there is no movement at this point.

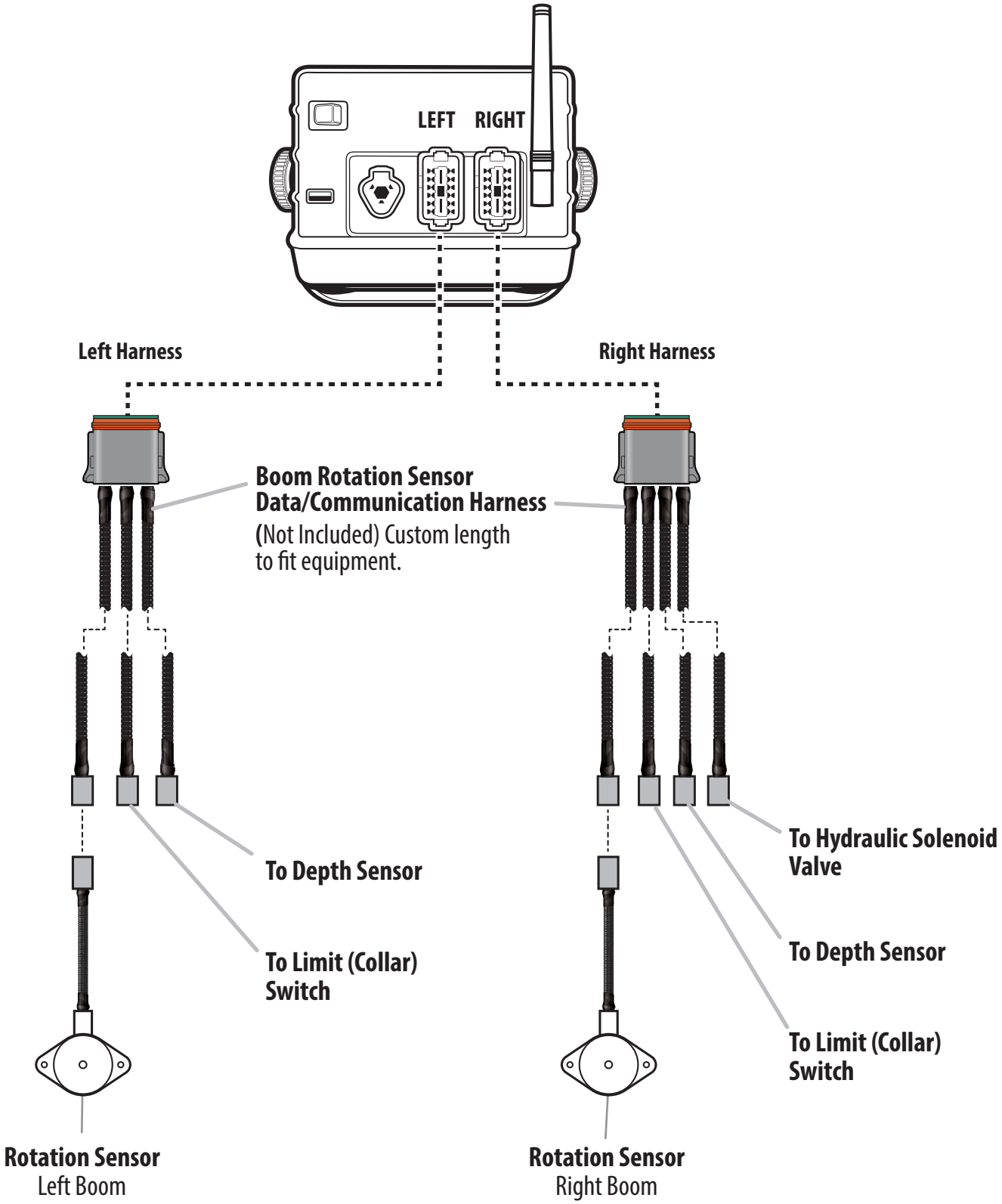




ROTATION SENSOR - BOOM - MAIN HARNESS

Because equipment vary, the Rotation Sensor and Display/Monitor are connected with a custom made Data/Communication Harness.

Left and Right Data/Communication Wiring Harness differ slightlY.



DATA/COMMUNICATION WIRING - Rotation Sensor - Right Boom

Left and Right Data/Communication Wiring Harness differ slightly

1. Measure the distance the Data/Communication Cable will be routed from the Rotation Sensor mounted on the boom; to the mounted Display/Monitor (in the cab).

2. Cut three (3), 18 gage wires (Red, Black, and White) to the length of route measured from the Display Unit to the Right Boom Rotation Sensor.

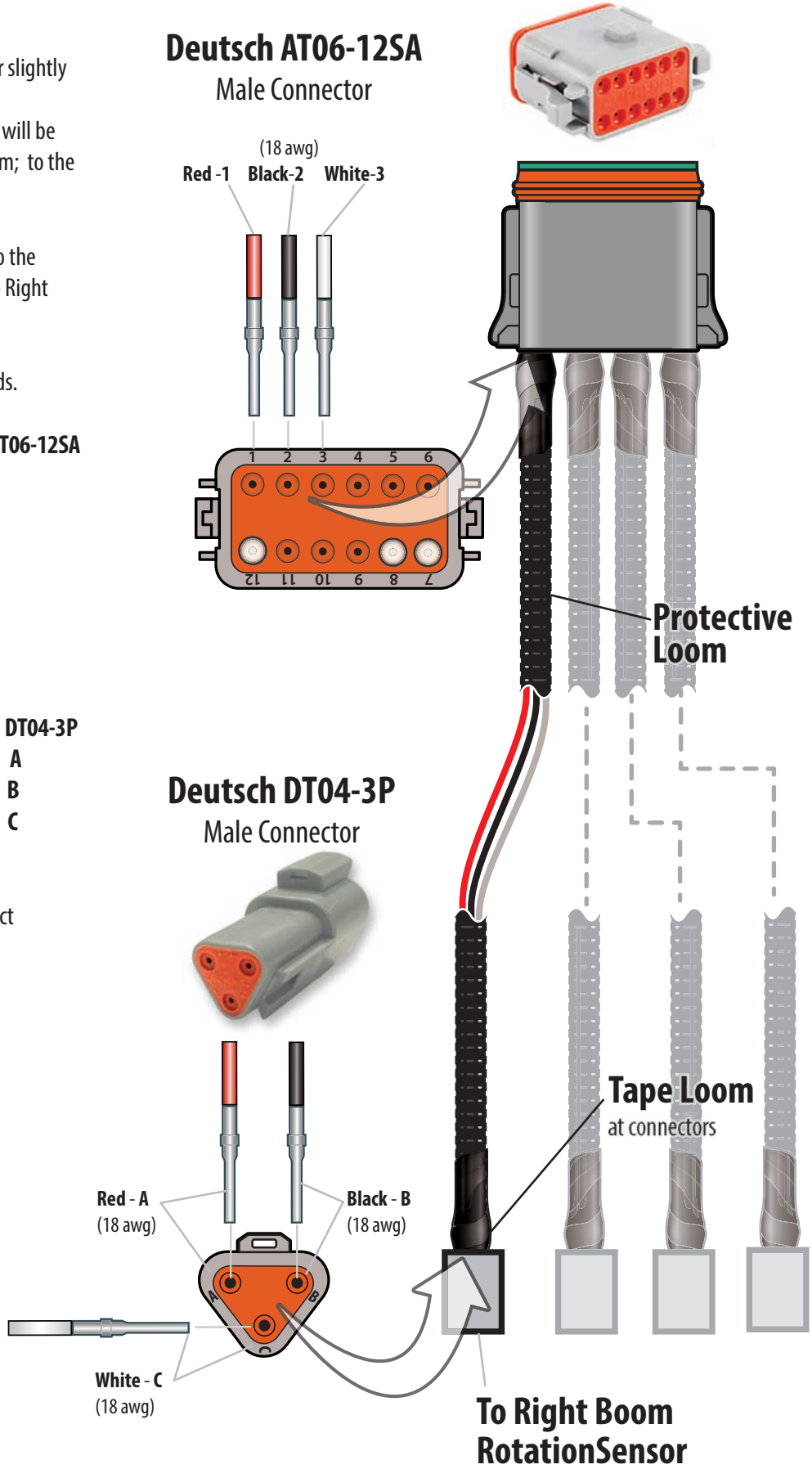
   A. Strip wire ends and crimp male pins to the wire ends.

   B. Place one end of the crimped wires into a **Deutsch AT06-12SA** **Male** connector: **Red** wire ..... Terminal **1**
   Black wire ..... Terminal **2**
   White wire ..... Terminal **3**

   C. Enclose wires in protective loom.

3. Insert the other end of the three wires into a **Deutsch DT04-3P** (3 pin) Male connector: **Red** wire ..... Terminal **A**
   Black wire ..... Terminal **B**
   White wire ..... Terminal **C**

4. Tape or shrink wrap Loom and wires where they connect to Deutsch connectors.



LIMIT SWITCH WIRING - Rotation Sensor - Right Boom

Left and Right Data/Communication Wiring Harness differ slightly

1. Measure the distance the Limit Switch Harness is to be routed to the Display/Monitor mounted in the cab.

2. Cut two (2), 18 gage wires (Red and Black) to the length of route measured from the Display Unit to the Limit Switch.

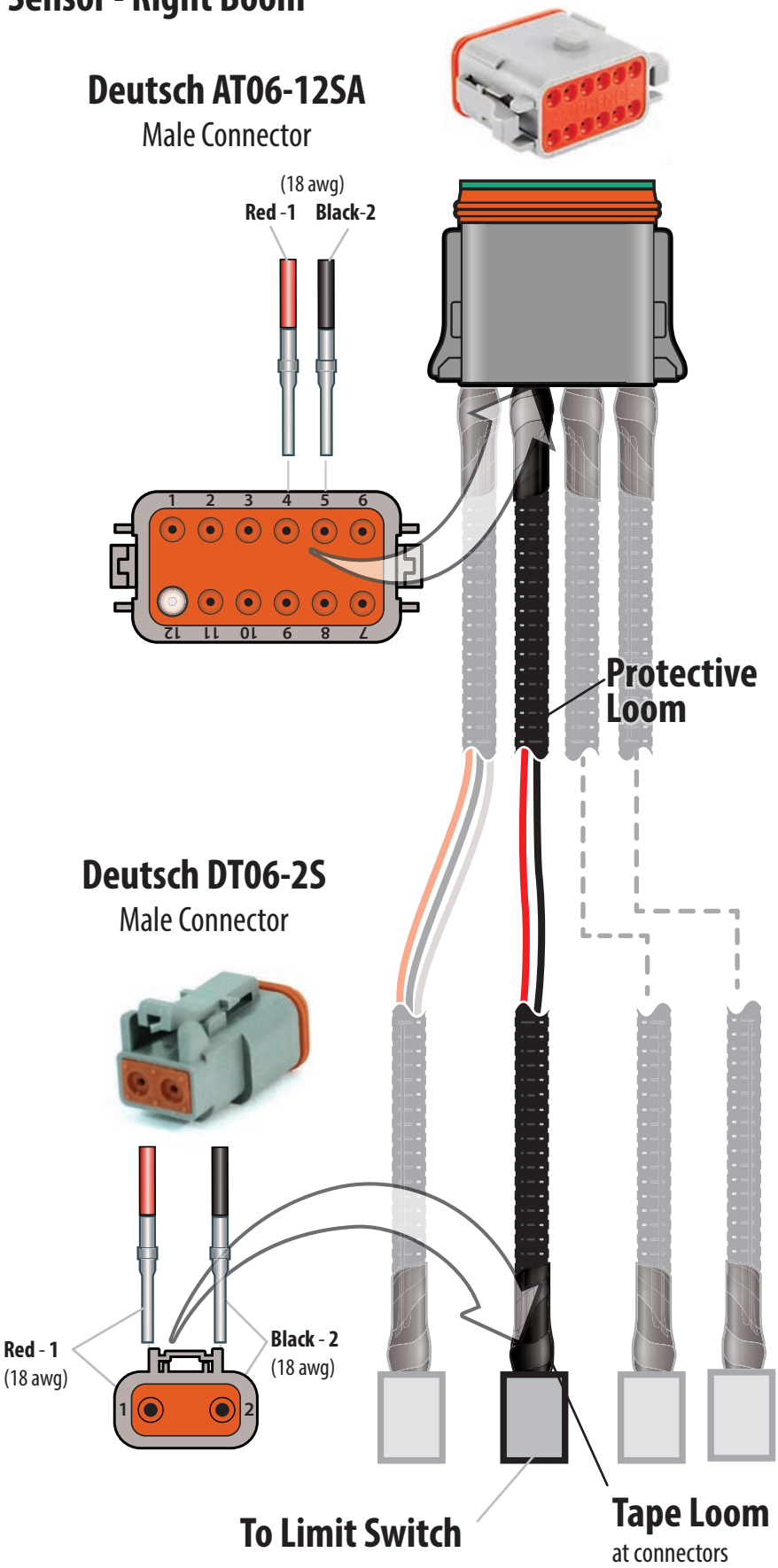
   A. Strip wire ends and crimp male pins to the wire ends.

   B. Place one end of the crimped wires into a **Deutsch AT06-12SA** **Male** connector: **Red** wire ..... Terminal **4**
   Black wire ..... Terminal **5**

   C. Enclose wires in protective loom.

3. Insert the other end of the two wires into a **Deutsch DT06-2S** (2 pin) Male connector: **Red** wire ..... Terminal **1**
   Black wire ..... Terminal **2**

4. Tape or shrink wrap Loom and wires where they connect to Deutsch connectors.



DEPTH SENSOR WIRING - Rotation Sensor - Right Boom

Left and Right Data/Communication Wiring Harness differ slightly

1. Measure the distance the Depth Sensor Harness is to be routed to the Display/Monitor mounted in the cab.

2. Cut four (4), 18 gage wires: **Green**, **White**, **Red**, and **Black** to the length of route measured from the Display Unit to the Limit Switch.

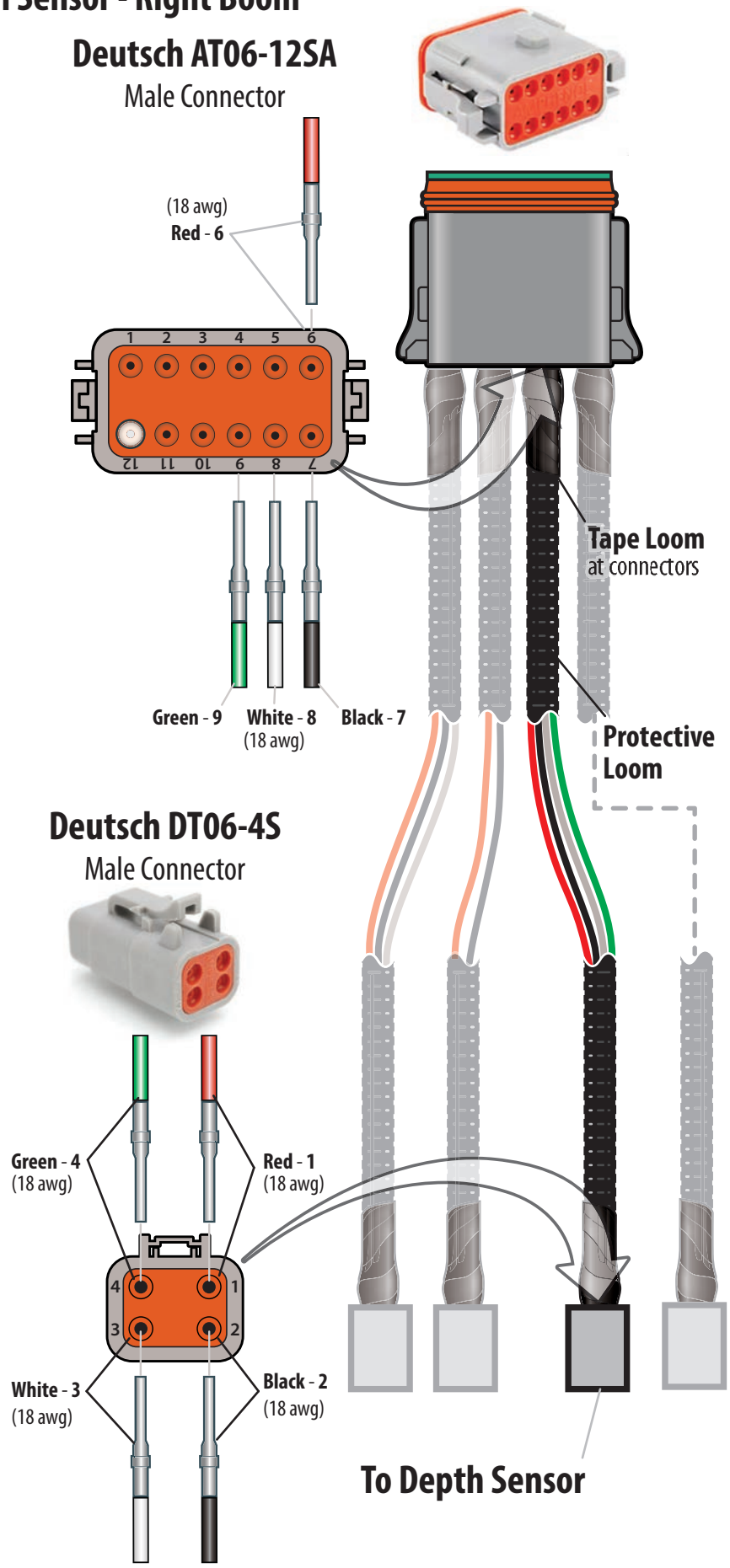
   A. Strip wire ends and crimp male pins to the wire ends.

   B. Place one end of the crimped wires into a **Deutsch AT06-12SA** **Male** connector:
   - **Red** wire ..... Terminal - **6**
   - **Black** wire ..... Terminal - **7**
   - **White** wire ..... Terminal - **8**
   - **Green** wire ..... Terminal - **9**

   C. Enclose wires in protective loom.

3. Insert the other end of the **four** (**4**) wires into a **Deutsch DT06-4S** (4 pin) Male connector:
   - **Red** wire ..... Terminal - **6**
   - **Black** wire ..... Terminal - **7**
   - **White** wire ..... Terminal - **8**
   - **Green** wire ..... Terminal - **9**

4. Tape or shrink wrap Loom and wires where they connect to Deutsch connectors.



HYDRO VALVE WIRING - Rotation Sensor - Right Boom

Left and Right Data/Communication Wiring Harness differ slightly

1. Measure the distance the Depth Sensor Harness is to be routed to the Display/Monitor mounted in the cab.

2. Cut two (2), 18 gage wires: **Red**, and **Black** to the length of route measured from the Display Unit to the Limit Switch.

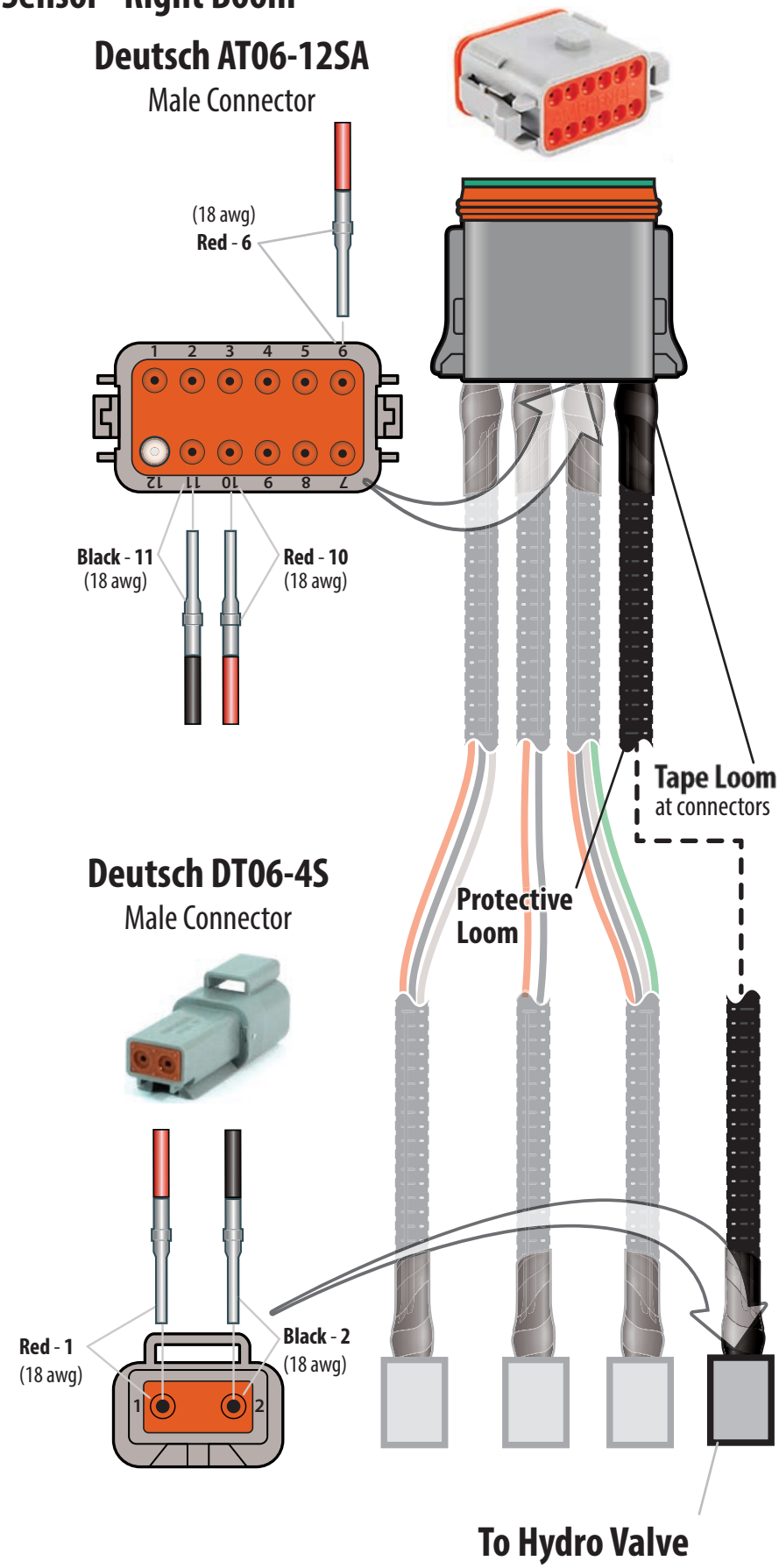
   A. Strip wire ends and crimp male pins to the wire ends.

   B. Place one end of the crimped wires into a **Deutsch AT06-12SA** **Male** connector: **Red** wire ..... Terminal - **10**
   Black wire ..... Terminal - **11**

   C. Enclose wires in protective loom.

3. Insert the other end of the **four** (**4**) wires into a **Deutsch DT06-4S** (4 pin) Male connector: **Red** wire ..... Terminal - **10**
   Black wire ..... Terminal - **11**

4. Tape or shrink wrap Loom and wires where they connect to Deutsch connectors.



DATA/COMMUNICATION WIRING - Rotation Sensor - Left Boom

Left and Right Data/Communication Wiring Harness differ slightly

1. Measure the distance the Data/Communication Cable will be routed from the Boom Rotation Sensor mounted on the boom; to the mounted Display/Monitor (In cab).

2. Cut three (3), 18 gage wires (Red, Black, and White) to the length of route measured from the Display Unit to the Right Boom Rotation Sensor.

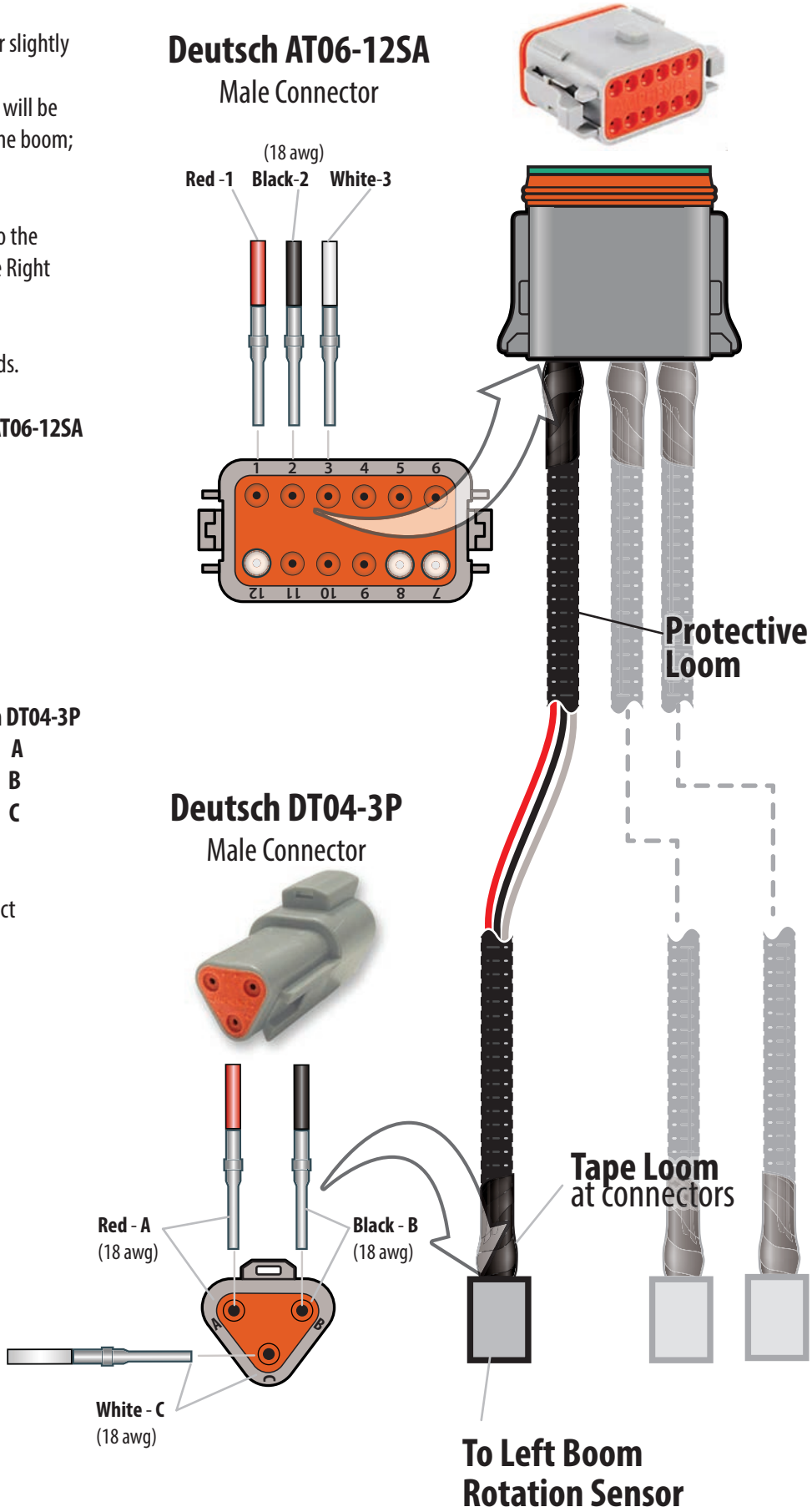
   A. Strip wire ends and crimp male pins to the wire ends.

   B. Place one end of the crimped wires into a **Deutsch AT06-12SA** **Male** connector: **Red** wire ..... Terminal **1**
   Black wire ..... Terminal **2**
   White wire ..... Terminal **3**

   C. Enclose wires in protective loom.

3. Insert the other end of the three wires into a **Deutsch DT04-3P** (3 pin) Male connector: **Red** wire ..... Terminal **A**
   Black wire ..... Terminal **B**
   White wire ..... Terminal **C**

4. Tape or shrink wrap Loom and wires where they connect to Deutsch connectors.



LIMIT SWITCH Wiring - Left Boom

Left Wiring Harness are the differs from the right.
One of each has to be custom built.

1. Measure the distance the Limit Switch Harness is to be routed to the Display/Monitor mounted in the cab.

2. Cut two (2), 18 gage wires (Red and Black) to the length of route measured from the Display Unit to the Limit Switch.

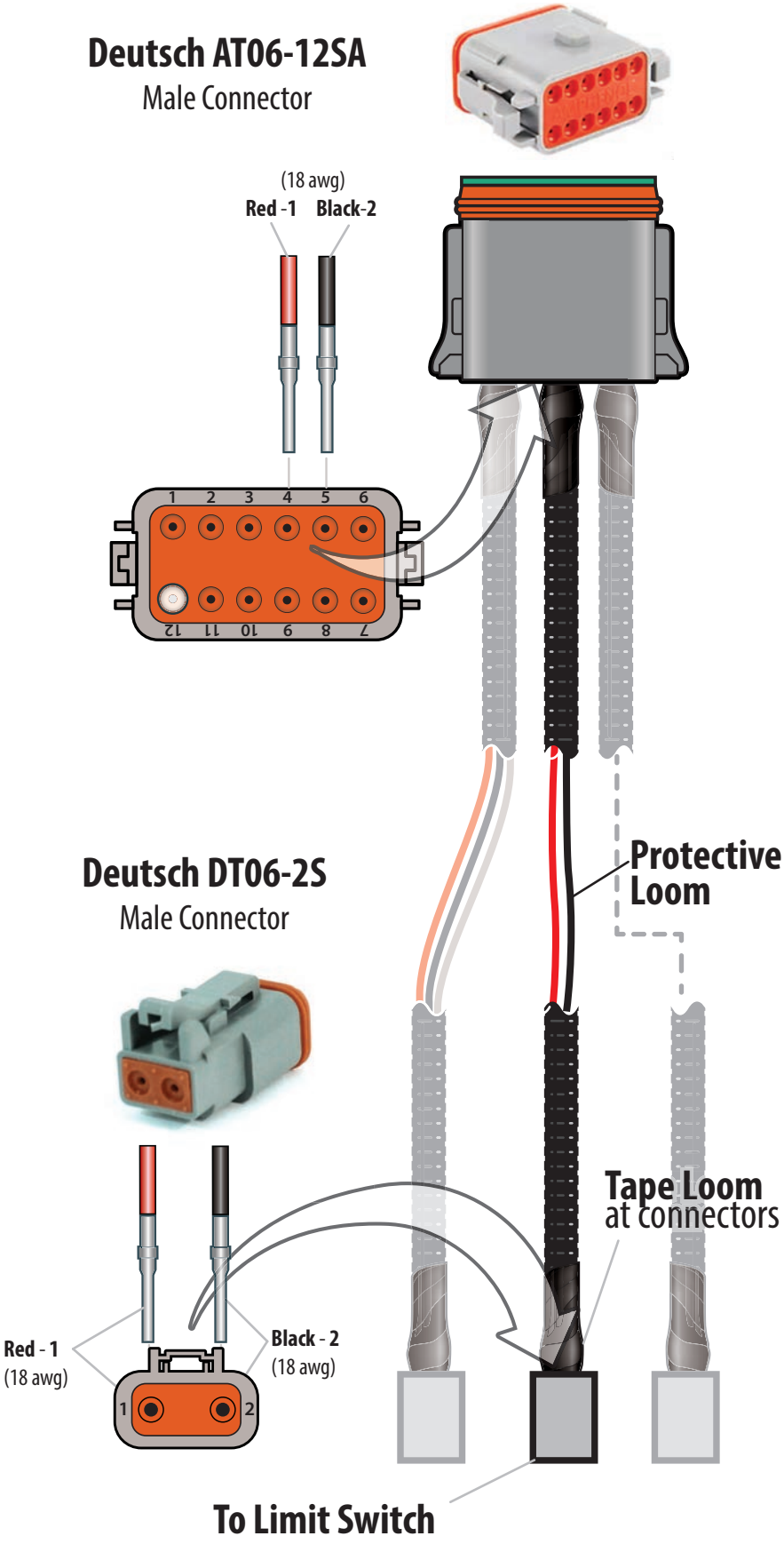
   A. Strip wire ends and crimp male pins to the wire ends.

   B. Place one end of the crimped wires into a **Deutsch AT06-12SA**
   Male connector: **Red** wire ..... Terminal **4**
   Black wire ..... Terminal **5**

   C. Enclose wires in protective loom.

3. Insert the other end of the two wires into a **Deutsch DT06-2S** (2 pin) Male connector: **Red** wire ..... Terminal **1**
   Black wire ..... Terminal **2**

4. Tape or shrink wrap Loom and wires where they connect to Deutsch connectors.



DEPTH SENSOR WIRING - Rotation Sensor - Left Boom

Left Wiring Harness are the differs from the right.
One of each has to be custom built.

1. Measure the distance the Depth Sensor Harness is to be routed to the Transmitter mounted on the boom.

2. Cut four (4), 18 gage wires: **Green**, **White**, **Red**, and **Black** to the length of route measured from the Display Unit to the Limit Switch.

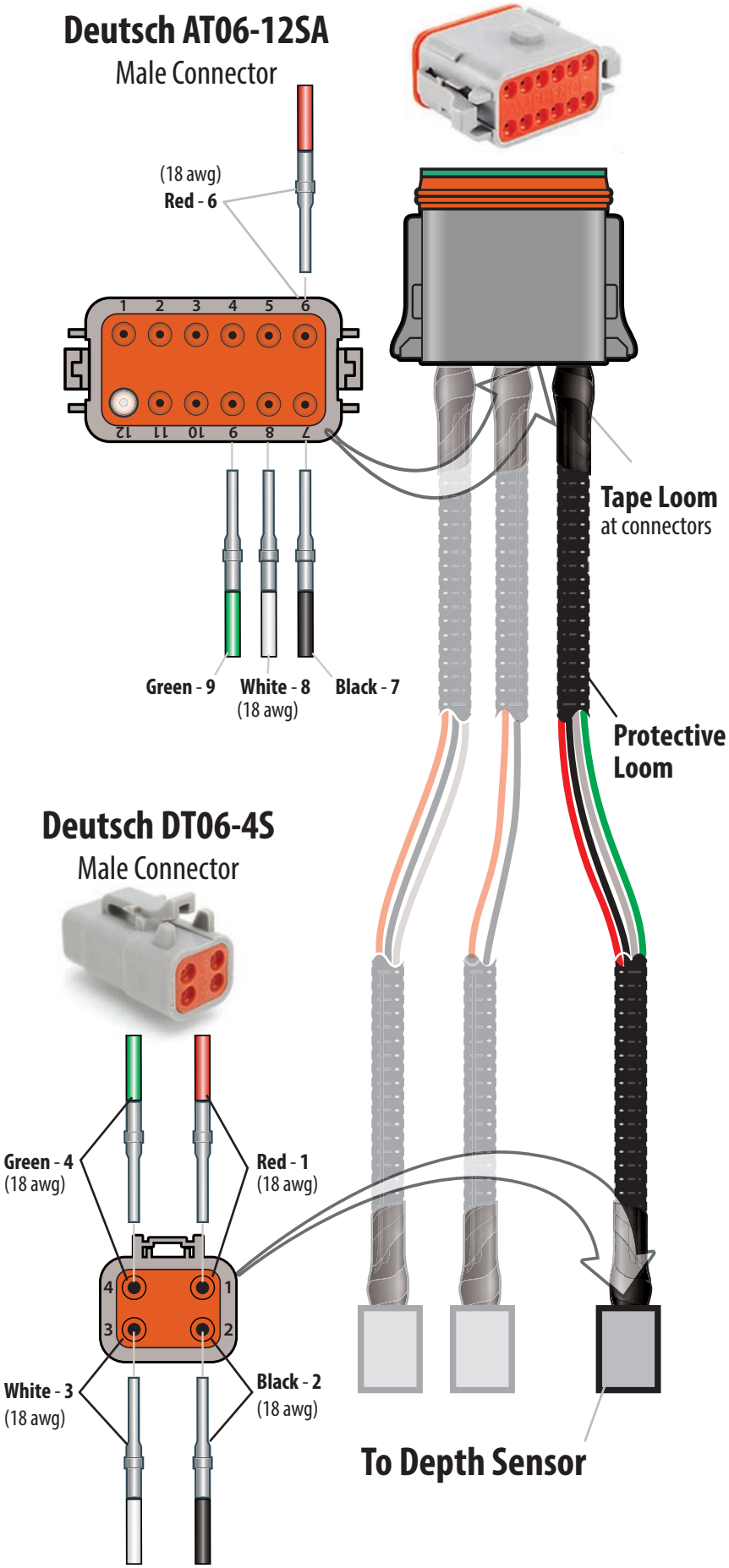
   A. Strip wire ends and crimp male pins to the wire ends.

   B. Place one end of the crimped wires into a **Deutsch AT06-12SA** **Male** connector:
   - **Red** wire ..... Terminal - **6**
   - **Black** wire ..... Terminal - **7**
   - **White** wire ..... Terminal - **8**
   - **Green** wire ..... Terminal - **9**

   C. Enclose wires in protective loom.

3. Insert the other end of the **four** (**4**) wires into a **Deutsch DT06-4S** (4 pin) Male connector:
   - **Red** wire ..... Terminal - **6**
   - **Black** wire ..... Terminal - **7**
   - **White** wire ..... Terminal - **8**
   - **Green** wire ..... Terminal - **9**

4. Tape or shrink wrap Loom and wires where they connect to Deutsch connectors.

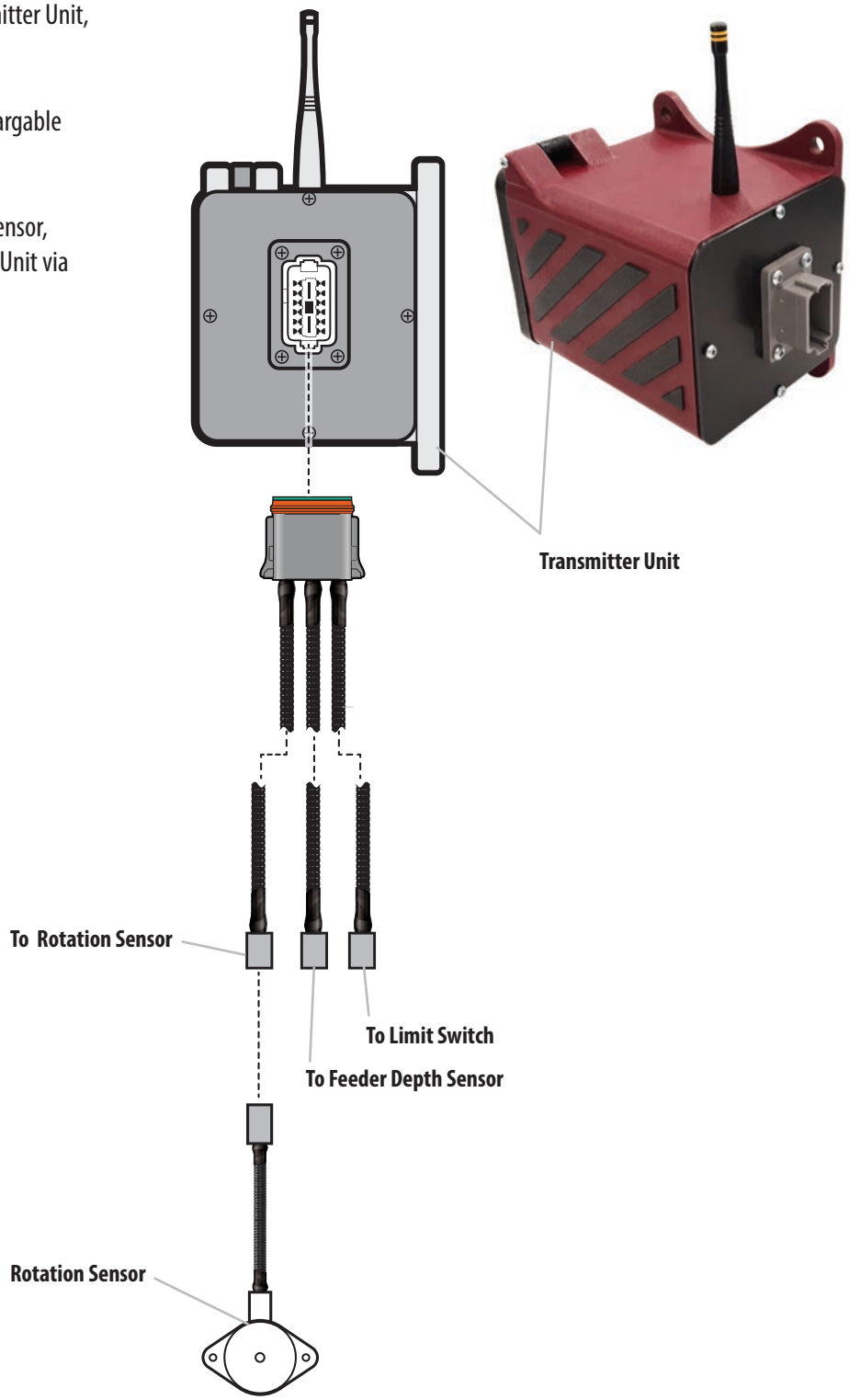


Feeder Transmitter_Schematic

The Feeder Transmitter assembly consists of the Transmitter Unit, Wiring Harness, and Rotation Sensor.

The Transmitter Unit has it's own power supply; a rechargable lithium battery power pack.

The Transmitter relays data from the Feeder Rotation Sensor, Depth Sensor, and Limit Switch to the Monitor/Display Unit via Radio Frequency.



Feeder Transmitter Unit_Mounting

The Feeder Transmitter Unit is mounted on the Feeder Arm.

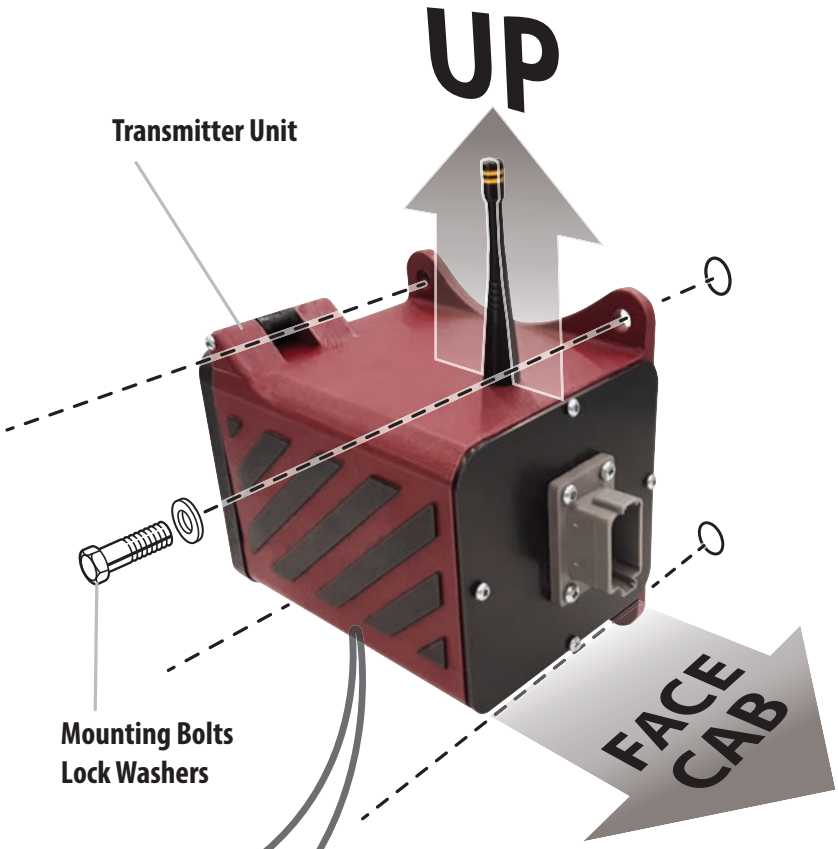
1. Choose a location to mount the Transmitter Unit that is clear of moving parts and hoses; Antenna in a Clear line of sight.

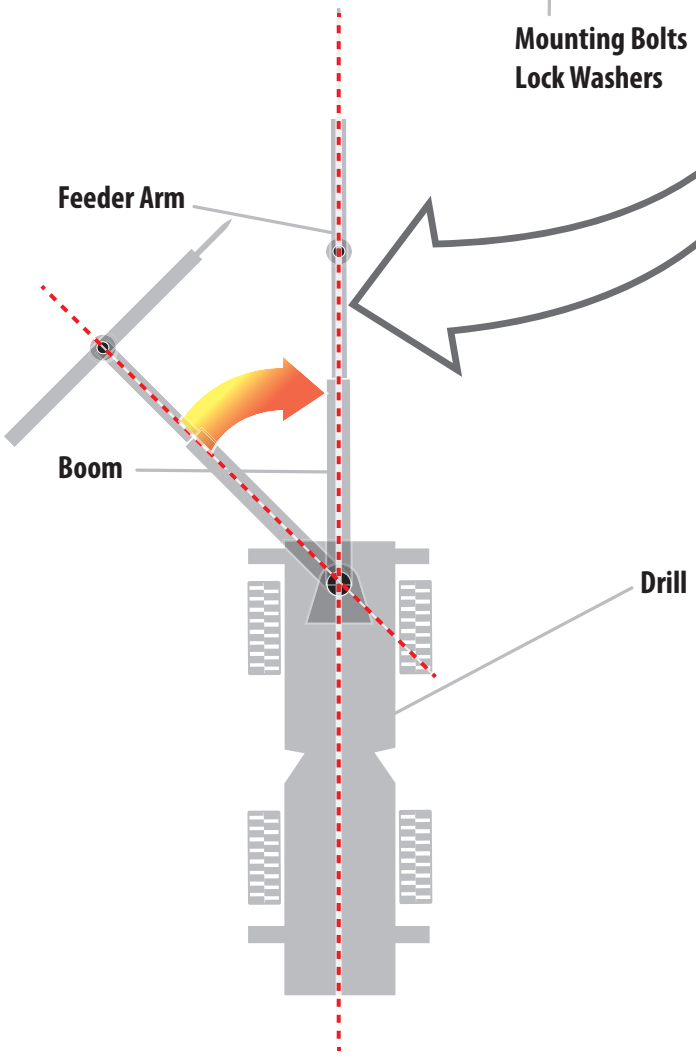
   The Transmitter Unit is positioned on the side of the feeder arm with the antenna **UP**; and **Facing** towards the Monitor/Display mounted in the **Cab**.

2. Hold or clamp the Transmitter Unit in position to use it as a template for marking mounting holes on the feeder arm.

3. Drill the four mounting holes. Ensure that holes are tight fit for bolts to avoid vibration and movement during drill operation.

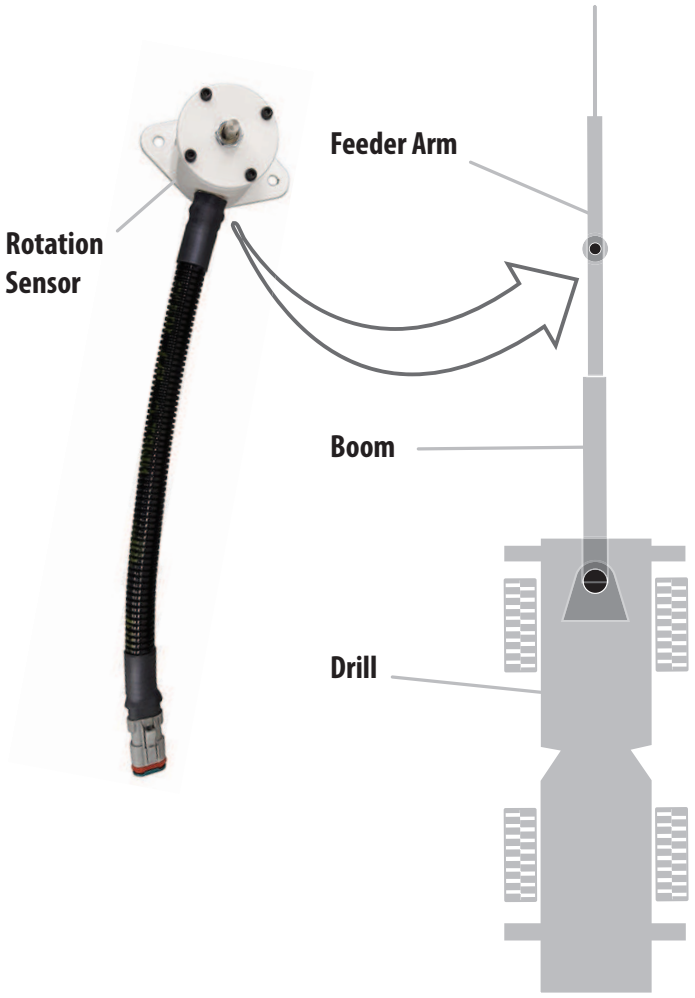
4. Secure Transmitter Unit in position with mounting bolts, nuts and lockwashers.





Feeder Rotation Sensor_Mounting

The Feeder Rotation Sensor is mounted similar to the Boom Rotation sensor.



The Sensor Pivot Arm attaches to the spindle of the rotation sensor and the other end attaches to the center of the feeder hinge.

Mounting Feeder Rotation Sensor is similar to the Boom rotation sensor except the Feeder Rotation Sensor mounts on the Feeder Arm and the Pivot Arm mounts on the Boom.

Sensor Pivot Arm is custom manufactured.

1. Position the feeder arm straight forward, 90° to main frame of drill.
2. A custom spacer may have to be manufactured to bring the rotation sensor to a correct level. Secure spacer in place.
3. Mount rotation sensor on custom spacer; centered over the pivot point.
4. **Sensor Pivot Arm** (custom manufacture)

   A. Measure a length of steel rod or bar that will run from the Rotation Sensor spindle to the center line of the Boom Arm.

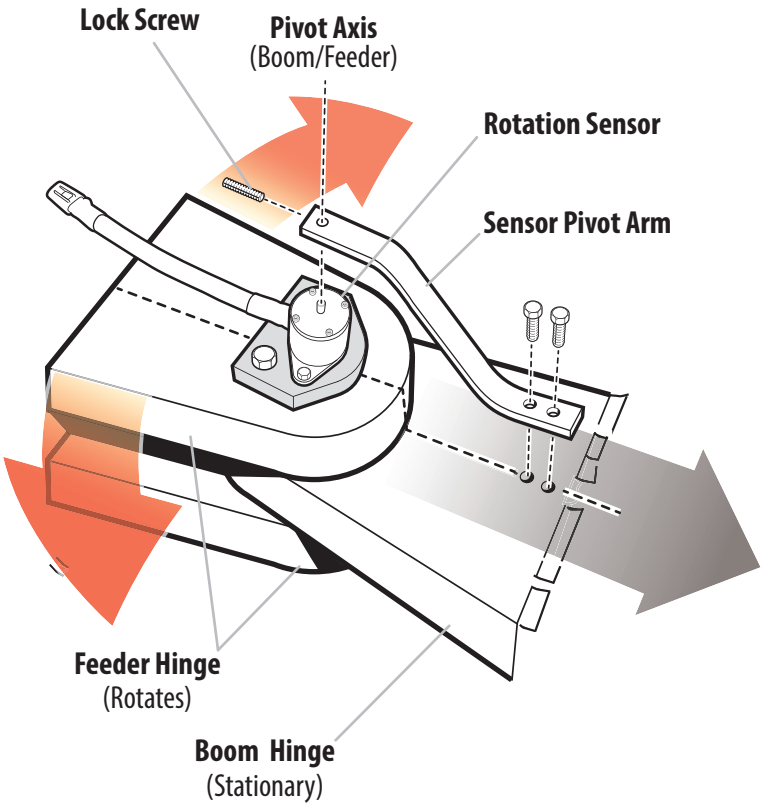
   Ensure pivot arm can rotate free of any hoses, wiring harnesses or other mechanical parts.

   B. Pivot Arm will require custom bends for correct fit.

   C. Drill a hole at the end of the sensor pivot arm that will fit over the Rotation Sensor Spindle.

   D. Manufacture a set screw on the pivot arm that will lock the pivot arm to the rotation sensor spindle.

   E. Secure the other end of the pivot arm to the Boom Hinge with bolts or self taping screws.
   Ensure that there is no movement at this point.



Feeder Transmitter DATA/COMMUNICATION Wiring - Left and Right

Left and Right Feeder Wiring Harness are the same.
One of each has to be custom built.

1. Measure the distance the Data/Communication Cable will be routed from the Feeder Rotation Sensor mounted on the boom; to the mounted Transmitter (On boom).

2. Cut three (3), 18 gage wires (Red, Black, and White) to the length of route measured from the Display Unit to the Right Boom Rotation Sensor.

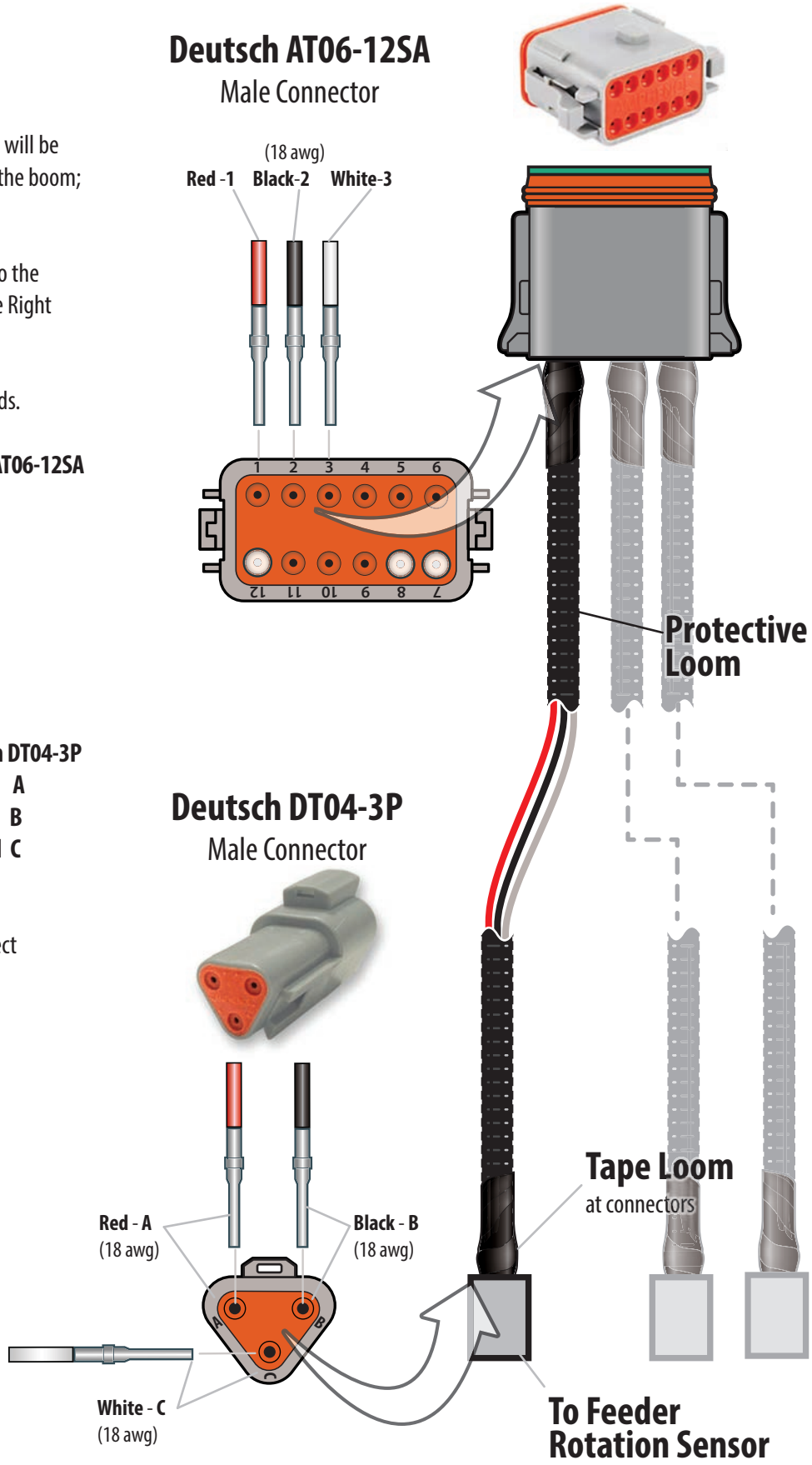
   A. Strip wire ends and crimp male pins to the wire ends.

   B. Place one end of the crimped wires into a **Deutsch AT06-12SA**
   Male connector: **Red** wire ..... Terminal **1**
   Black wire ..... Terminal **2**
   White wire ..... Terminal **3**

   C. Enclose wires in protective loom.

3. Insert the other end of the three wires into a **Deutsch DT04-3P** (3 pin) Male connector: **Red** wire ..... Terminal **A**
   Black wire ..... Terminal **B**
   White wire ..... Terminal **C**

4. Tape or shrink wrap Loom and wires where they connect to Deutsch connectors.



LIMIT SWITCH WIRING - Left and Right

Left and Right Feeder Wiring Harness are the same.
One of each has to be custom built.

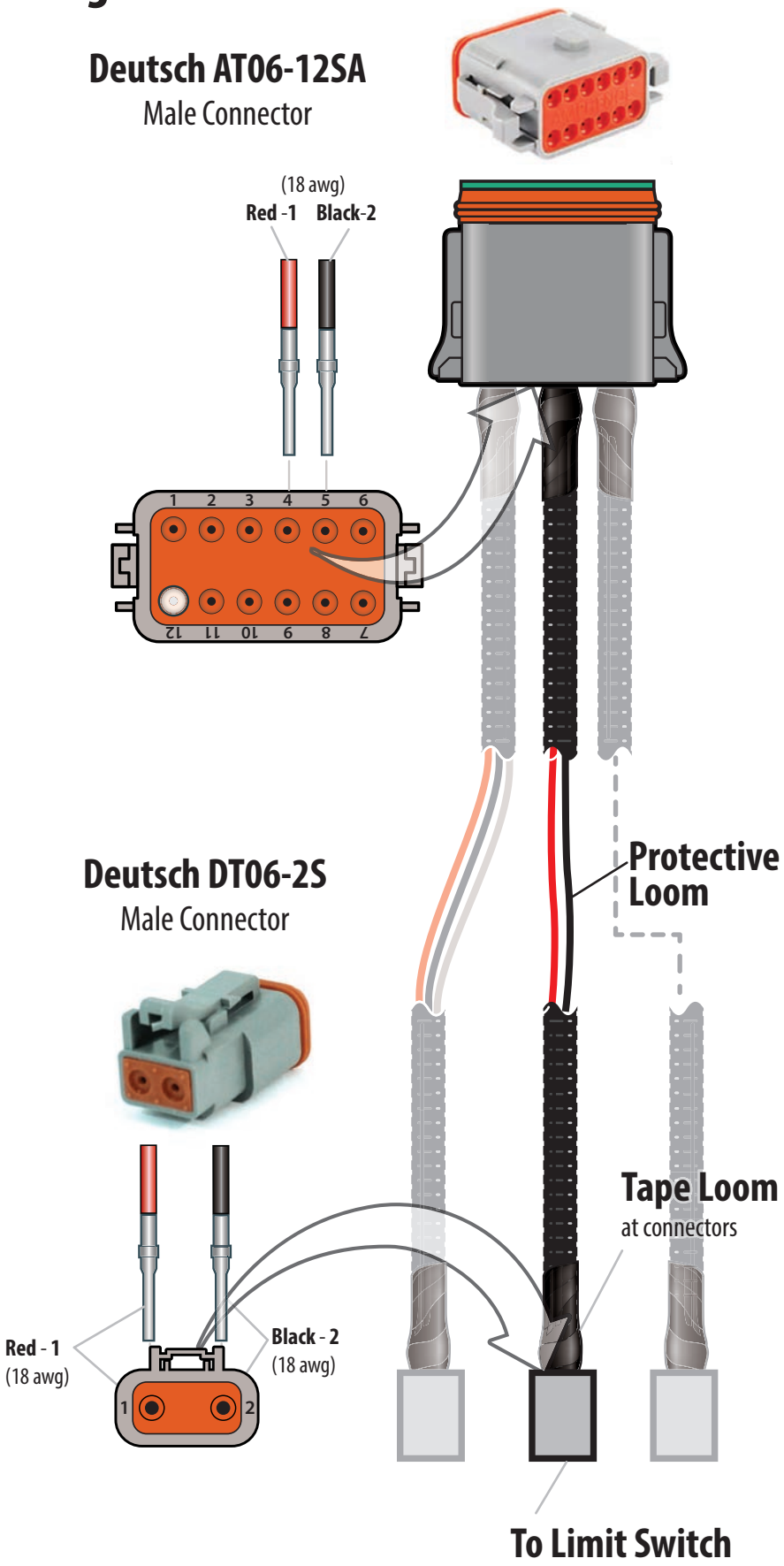
1. Measure the distance the Limit Switch Harness is to be routed to the Display/Monitor mounted in the cab.

2. Cut two (2), 18 gage wires (Red and Black) to the length of route measured from the Display Unit to the Limit Switch.

   A. Strip wire ends and crimp male pins to the wire ends.

   B. Place one end of the crimped wires into a **Deutsch AT06-12SA**
   Male connector: **Red** wire ..... Terminal **4**
   Black wire ..... Terminal **5**

   C. Enclose wires in protective loom.

3. Insert the other end of the two wires into a **Deutsch DT06-2S** (2 pin) Male connector: **Red** wire ..... Terminal **1**
   Black wire ..... Terminal **2**

4. Tape or shrink wrap Loom and wires where they connect to Deutsch connectors.