AKRON®
BRASS COMPANY

STYLE 6041 CAN TOGGLE SWITCH BOX
INSTALLATION, OPERATION & MAINTENANCE MANUAL

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SAFETY SUMMARY

SIGNAL WORD DEFINITION

Per the ANSI Z535.4 standard, the following signal words and definitions are used to indicate hazardous situations:

⚠ DANGER DANGER indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.

⚠ WARNING WARNING indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.

⚠ CAUTION CAUTION indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It is also used to alert against unsafe practices.

GENERAL SAFETY PRECAUTIONS

The following are general safety precautions that are not related to any specific procedures and therefore do not appear elsewhere in this publication. These are recommended precautions that personnel must understand and apply during many phases of operation and maintenance.

⚠ WARNING For fire fighting use only by trained fire fighters.

⚠ WARNING Do not use the Toggle Switch Box when the override cranks are being used or are in position for use.

⚠ CAUTION Although the enclosure for the Toggle Switch Box is water-resistant, it is important to keep water out of the enclosure. Prolonged exposure to water will cause damage. When the cover of the enclosure is removed, make sure the seal under the cover is intact and free of dirt and debris.

⚠ CAUTION This product must be wired in adherence with the SAE J1939/11 specification. Failure to do so may result in sporadic operation or non-operation.

⚠ CAUTION While this device is designed to reside on a standard J1939 CAN network, it is recommended that Akron Brass CAN products operate on their own CAN network isolated from the other CAN networks on the vehicle.

PRODUCT SPECIFICATIONS

6041 CAN TOGGLE SWITCH BOX

- Power - 8 to 33 volts DC, <.25 amperes
- Operating Temperature - -40°C. to +85°C.
- Storage Temperature - -50°C. to +85°C.
- Communications – J1939/11 CAN Network

INSTALLATION INSTRUCTIONS

TOOLS & MATERIALS REQUIRED

- Medium Phillips screwdriver • Small flat screwdriver
- Metric Allen Wrench Set
- Deutsch Crimping Tool
- Deutsch DTM06-4S-CE13 or equivalent and associated crimp terminals
- Optional Akron Brass 721579 pre-wired connector/harness

MECHANICAL INSTALLATION

The 6041 CAN Toggle Switch Box comes with a mounting kit that allows either surface or flush mounting.

For a surface mount application, carefully remove the lid of the Toggle Switch Box by loosening the four screws on each corner of the lid. Drop one each of the M2.5 X 10 mm cap screws head first into the four holes in the main enclosure body directly under the four small holes in the lid. Replace and reattach the lid. Using the appropriate Allen wrench, attach the flush mount bezel to the Switch Box. See Figure 1 and Figure 4 for recommended panel cutout.

For a flush mount application, three methods may be utilized. When access to the back of the mounting surface is available, use four M5 screws from behind to directly mount the Switch Box to the surface. See Figure 2 Figure 5 for recommended hole layout.

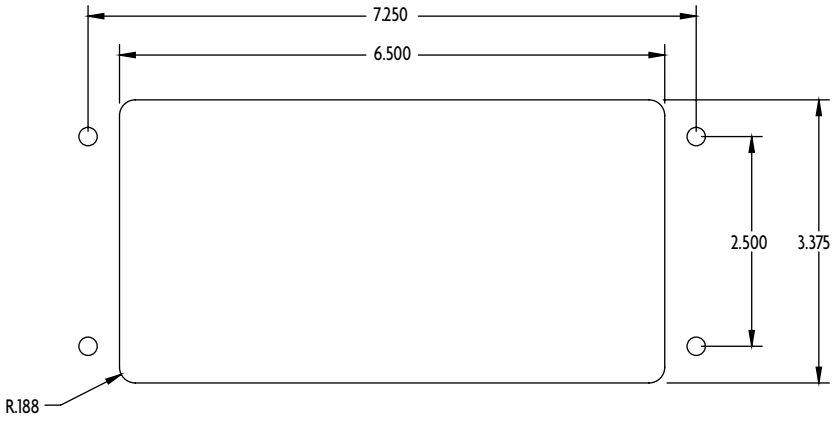
A second flush mount method utilizes the included adapter plate. Use the included M5 flat head screws to attach the adapter plate to the bottom of the Toggle Switch Box. Next, utilizing four screws of the customer's choosing, attach the Toggle Switch Box to the mounting surface. See Figure 3 and Figure 6 for recommended hole layout.

A third flush mount method is achieved by inserting four screws through the top of the lid all the way through the CAN Toggle Switch Box to threaded holes located underneath in the mounting surface.

⚠ CAUTION Although the enclosure for the Toggle Switch Box is water-resistant, it is important to keep water out of the enclosure. Prolonged exposure to water will cause damage. When the cover of the enclosure is removed, make sure the seal under the cover is intact and free of dirt and debris.

Figure 1

Four Switch Flush Mount Hole Layout



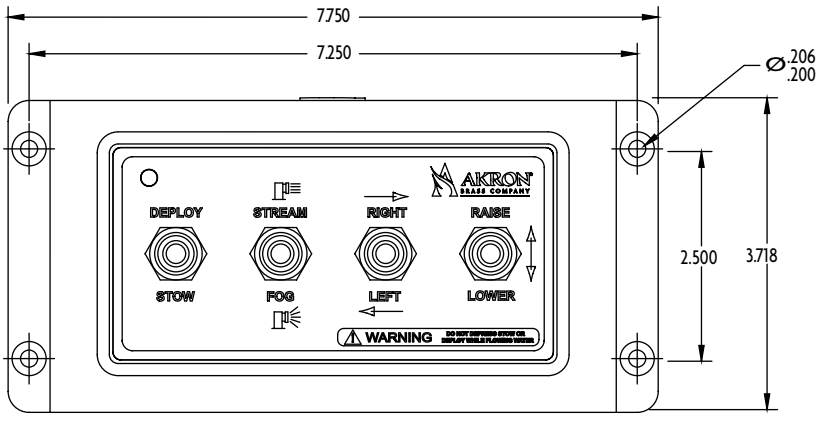


Figure 2

Four Switch Surface Mounting Hole Layout

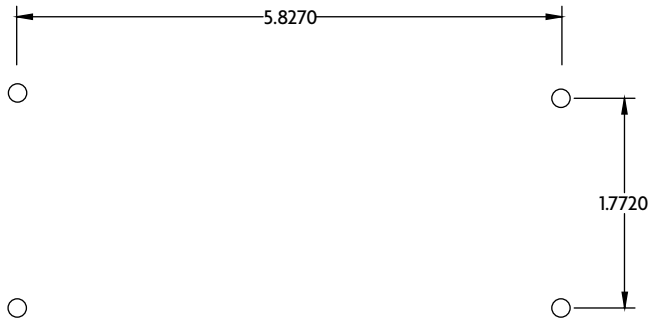


Figure 3

Four Switch Flange Adapter Plate Hole Layout

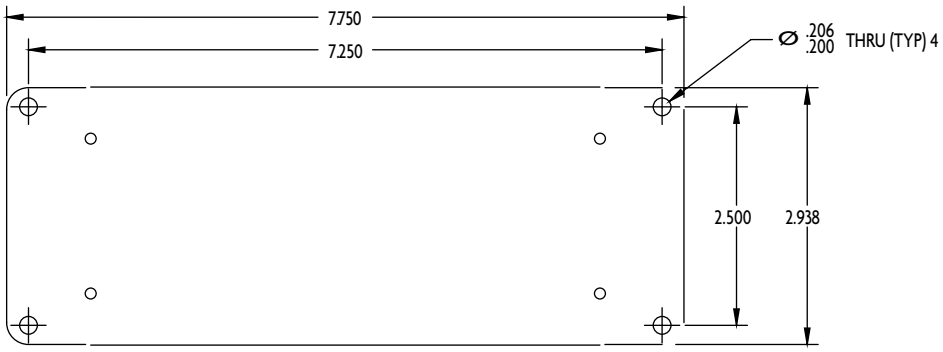
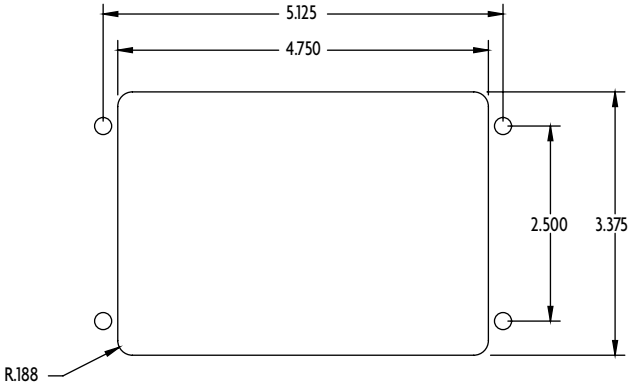


Figure 4

Three Switch Flush Mounting Hole Layout



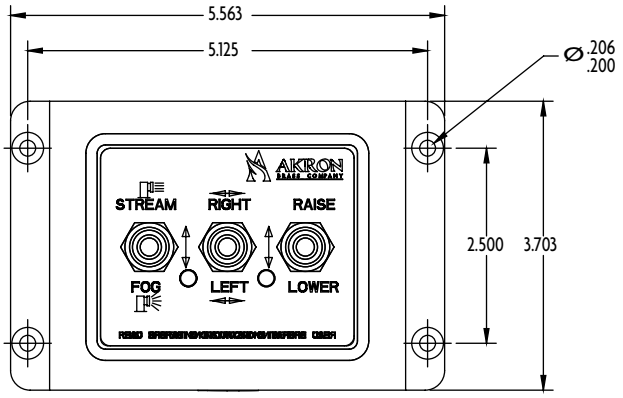


Figure 5

Three Switch Surface Mounting Hole Layout

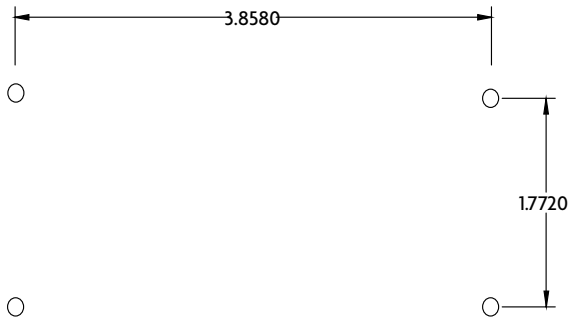
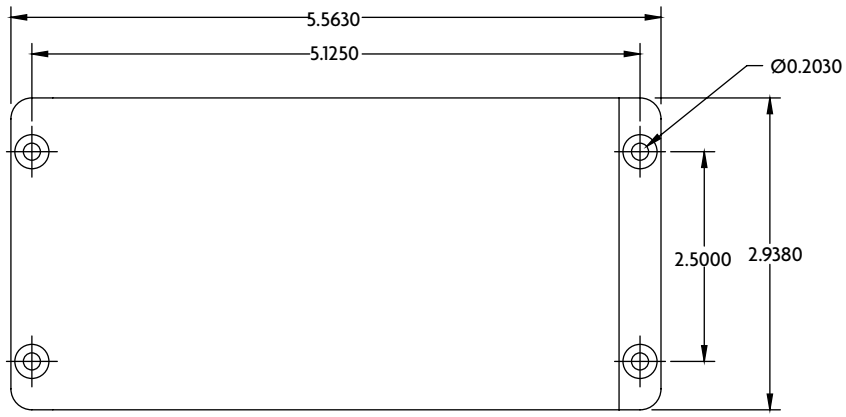


Figure 6

Three Switch Flange Adapter Plate Hole Layout



ELECTRICAL INSTALLATION

The following is intended to provide the basic instructions for installation of the 6041 CAN Toggle Switch Box. Refer to Figure 7, Figure 8, and Figure 9 for additional information. Wiring must be in compliance with SAE J1939 for proper operation.

Step 1 Connect Battery Positive to Pin #1 (use of Akron Brass Harness stub part number 721579 is recommended)
Step 2 Connect Battery Negative to Pin #2
Step 3 Connect CAN HI to Pin #3 (Akron Brass Harness stub part number 721579 already has this pin properly connected to a J1939 CAN network stub connector)
Step 4 Connect CAN LO to Pin #4 (Akron Brass Harness stub part number 721579 already has this pin properly connected to a J1939 CAN network stub connector)
Step 5 Add a terminating resistor if this device is at the end of the network.

⚠ CAUTION This product must be wired in adherence with the SAE J1939/11 specification. Failure to do so may result in sporadic operation or non-operation.

⚠ CAUTION While this device is designed to reside on a standard J1939 CAN network, it is recommended that Akron Brass CAN products operate on their own CAN network isolated from the other CAN networks on the vehicle.

Figure 7

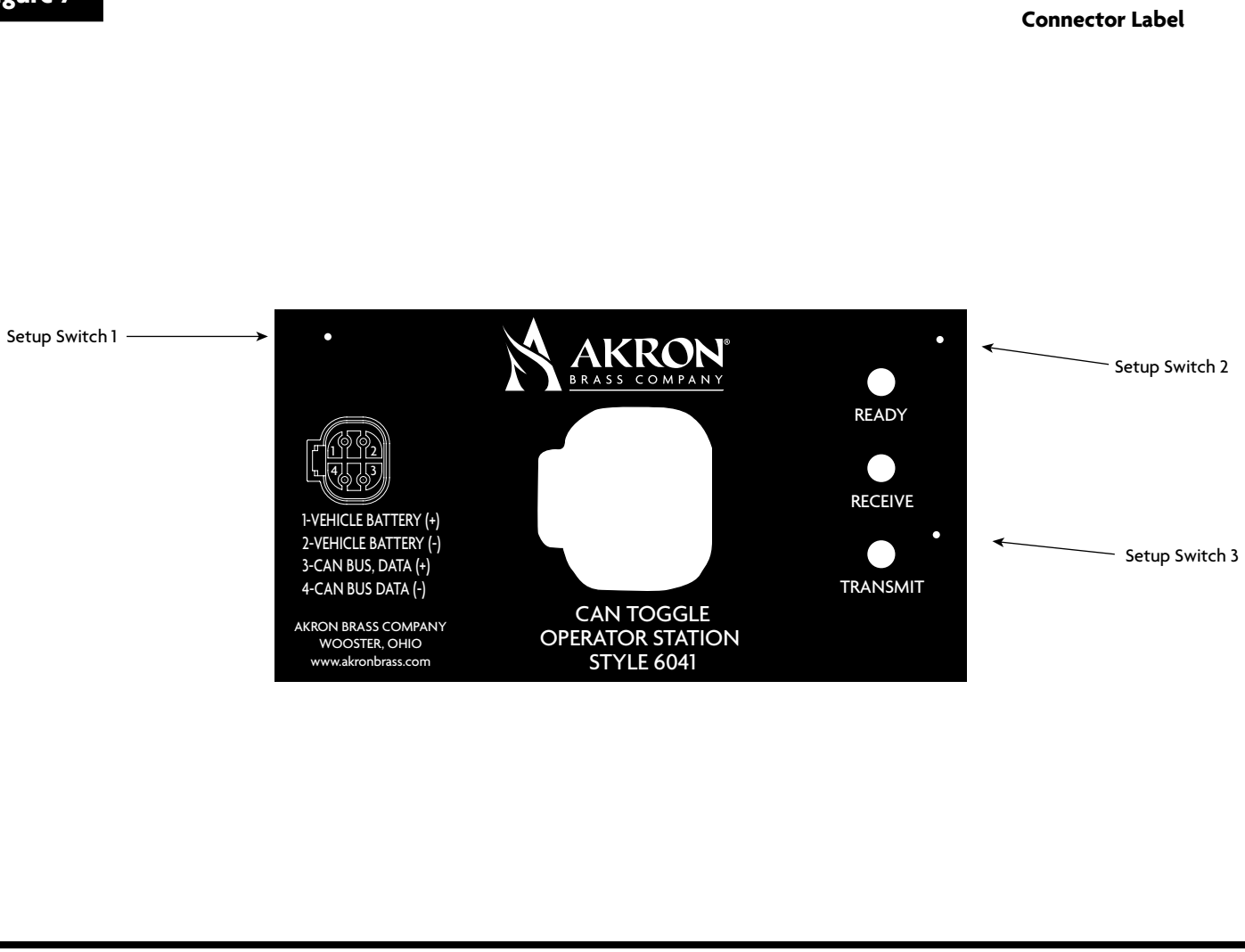
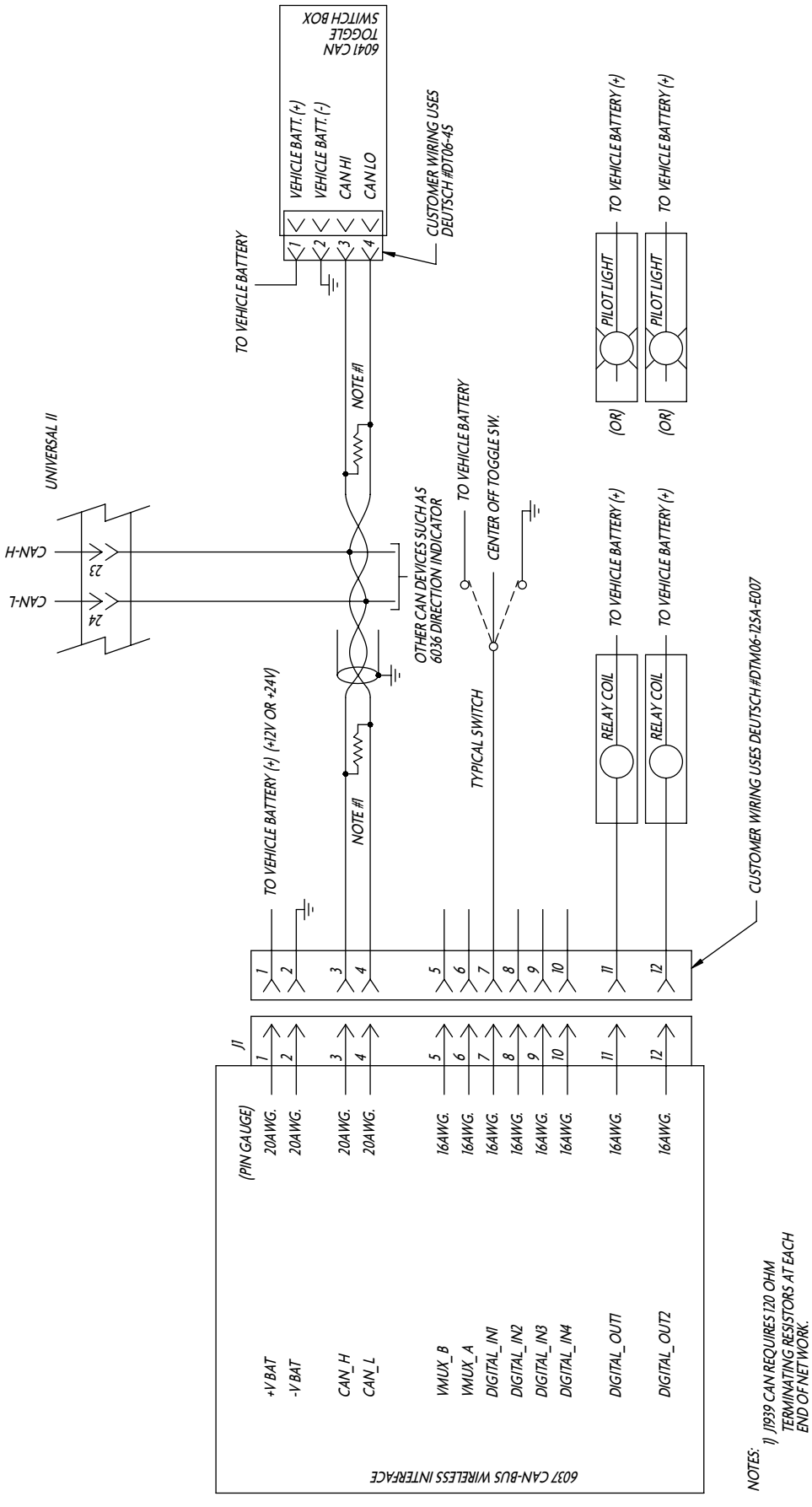


Figure 8

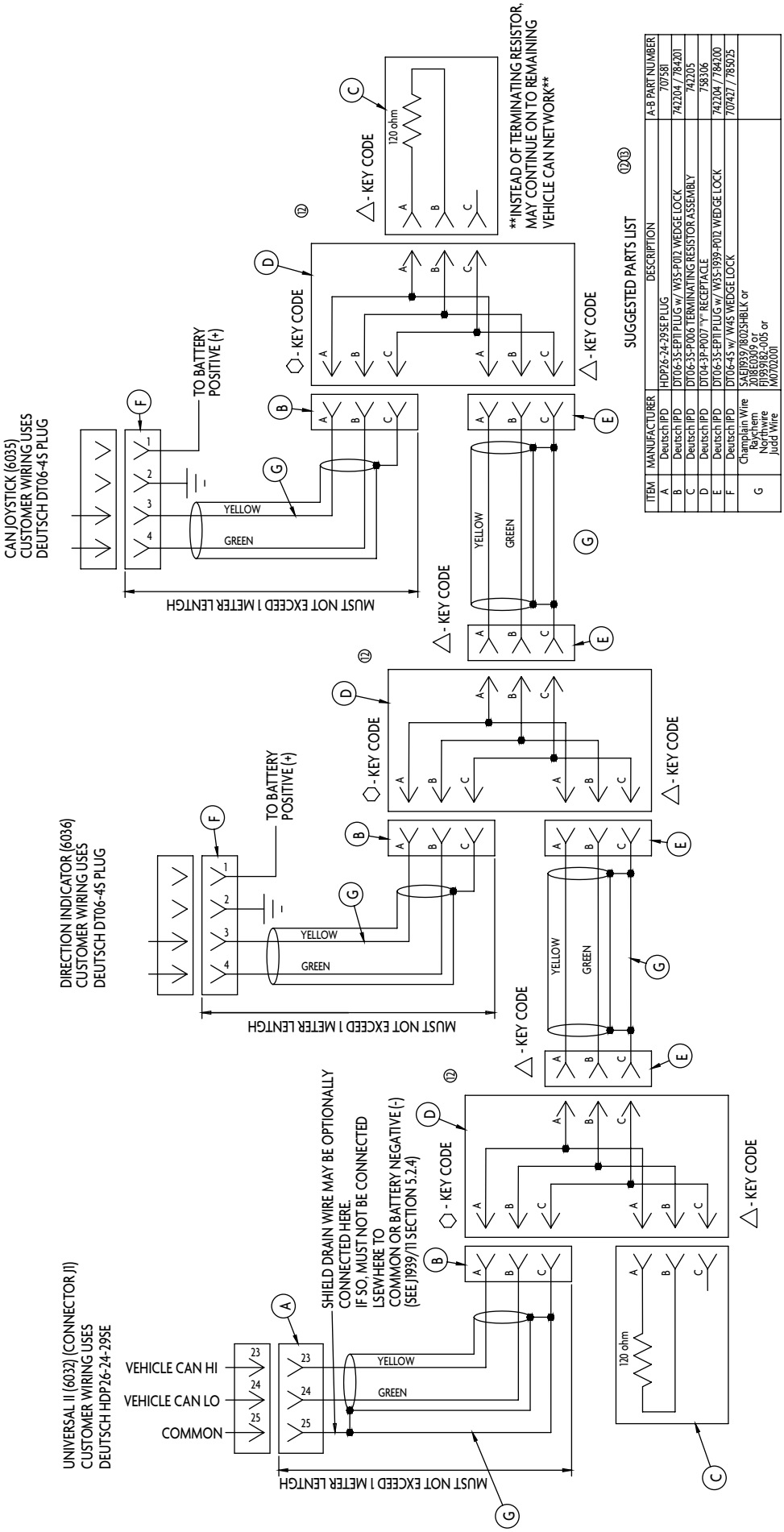
Typical Electrical Connections



NOTES:
1) J1939 CAN REQUIRES 120 OHM TERMINATING RESISTORS AT EACH END OF NETWORK.

Figure 9

Typical J1939 Wiring



SUGGESTED PARTS LIST ⑫⑬

ITEM	MANUFACTURER	DESCRIPTION	A-B PART NUMBER
A	Deutsch IPD	HDP26-24-29SE PLUG	707581
B	Deutsch IPD	DT06-3S-EP11 PLUG w/ W3S-P012 WEDGE LOCK	742204 / 784201
C	Deutsch IPD	DT06-3S-P006 TERMINATING RESISTOR ASSEMBLY	742205
D	Deutsch IPD	DT04-3P-P007 "Y" RECEPTACLE	798306
E	Deutsch IPD	DT06-3S-EP11 PLUG w/ W3S-1939-P012 WEDGE LOCK	742204 / 784200
F	Deutsch IPD	DT06-4S w/ W4S WEDGE LOCK	707427 / 785025
G	Champlain Wire Raychem Northwire Judd Wire	SAEJ1939/28D2SHBLK or 2018E0309 or FJ1939182-005 or M0702001	

OPERATING INSTRUCTIONS

NORMAL OPERATION

The 6041 CAN Toggle Switch Box is Plug and Play, and comes ready to use. Once installed, the CAN Toggle Switch Box can be used in conjunction with a Universal II control box to operate the monitor/turret.

NOTE: The 6041 CAN Toggle Switch Box is designed to be as benign as possible on a typical J1939 network. It performs standard address claiming. It issues standard J1939 Joystick messages. The CAN Toggle Switch Box's default mode is Joystick 1 which is the highest network priority. It is possible to change this priority in the field by using the setup mode (See Changing the Priority Level). It is possible to have multiple Universal II's and Switch Boxes on the same network. Contact Akron Brass customer support for custom software if this is a requirement.

⚠ WARNING For fire fighting use only by trained fire fighters.

⚠ WARNING Do not use the Toggle Switch Box when the override cranks are being used or are in position for use.

The 6041 family of CAN Toggle Switch Boxes have various groups of functions. The paragraphs below detail some of those functions. Refer to the 6032 Universal II manual or the control drawing for the 6041XXXX variant for additional switch functions.

Pushing the Raise/Lower toggle switch forward will raise the monitor/turret nozzle. Pulling the Raise/Lower toggle switch backward will lower the monitor/turret nozzle. Moving the Left/Right toggle switch to the right will rotate the monitor/turret to the right. Moving the Left/Right toggle switch to the left will rotate the monitor/turret to the left.

The Fog/Stream toggle switch is used to control the pattern sleeve of the nozzle. Pushing the Fog/Stream toggle switch forward will move the pattern sleeve towards the straight stream position. Pulling the Fog/Stream toggle switch backward will move the pattern sleeve towards the fog position. In both cases, the pattern sleeve will stop when the toggle switch returns to center position, or the pattern sleeve reaches the full extent of its travel. This permits a continuously adjustable discharge pattern.

The Stow/Deploy switch is used to move the monitor/turret in and out of it's stow position for transit. (Refer to the Universal II manual for teaching the Stow/Deploy positions) Pushing and holding the Stow/Deploy toggle switch forward for at least two seconds will initiate a deploy sequence placing the monitor/turret in position for normal operation. Pulling and holding the Stow/Deploy toggle switch backward for at least two seconds will initiate a stow sequence placing the monitor/turret in position for transit.

The Oscillation (Start/Set)/(Pause/Resume) switch is used to teach and control a horizontal oscillation pattern. Pushing the Oscillation toggle switch forward, the monitor/turret rotation will be driven toward the right until either: the switch is released, a soft-limit is encountered, or a hard-limit is encountered. That point will be assigned the rightmost travel point in the auto-oscillate profile. The monitor/turret will again automatically reverse direction and move to the left until the "Set/Start" switch is pushed and released, a soft-limit is encountered, or a hard-limit is encountered. That point will be assigned the leftmost travel point in the auto-oscillate profile. The monitor/turret will then automatically oscillate back and forth between those two points until either: the Oscillation switch is pulled backward to the "Pause/Resume" position, a Left or Right command is received from a switch or joystick input, or some other disabling function is encountered. Pulling the Oscillation switch backward to the "Pause/Resume" position will only pause oscillation, and pulling the Oscillation switch backward to the "Pause/Resume" position switch a second time will cause oscillation to be resumed using the taught positions. Use of a Left or Right command will cancel oscillation and the profile will be cleared. The monitor can be moved up and down during oscillation without cancelling the oscillation function.

The Discharge On/Off/Remote switch is used to control the discharge valve that is connected to the Universal II. Pushing the Discharge switch to the "On" position will cause the discharge valve to be turned on regardless of any external device (joystick) until the switch is returned to the "Remote" or "Off" position. The switch is maintained in that position and will not return to center on its own. When the Discharge switch is pulled backward to the "Off" position, the Discharge valve will be turned off regardless of any external device (joystick) until the switch is returned to the "Remote" or "On" position (center). When the switch is in the center or "Remote" position, control of the discharge valve is turned over to the state of other network devices (i.e. Joystick trigger).

The Flow High/Low switch is used to control flow on a dual gallonage monitor/turret. Pushing the switch forward to the "High" position will place the monitor/turret in high flow mode. Pulling the Flow switch backward to the "Low" position will place the monitor/turret in the low flow mode.

SETUP AND CALIBRATION

Changes to the behavior of the Toggle Switch Box can be achieved by entering the setup mode. This can be done in the field with a small magnet. Three small dots located on the connector label (see Figure 7) identify the location of Hall Effect switches inside the switch box.

Changing the Priority Level

The SAE J1939/71 specification has made provisions for up to six joysticks residing on the same CAN bus (Joystick1 through Joystick6). Akron Brass has chosen to interpret this assignment as the priority level. Joystick1 has the highest priority, and Joystick6 has the lowest priority. A device at Joystick3 issuing "go right" messages would override a device at Joystick5 issuing "go left" messages. Akron Brass has set the default for the 6041 CAN Switch Box at Joystick1, the 6035 CAN Joystick at Joystick3, and the 6037 CAN Wireless Interface at Joystick5. Customers may require a different priority scheme. The following steps allow field changing of priority level.

Place a magnet over the Switch 1 dot for approximately one second (see Figure 7). All three LEDs will begin flashing the current priority level (the default will be three flashes). Momentarily placing a magnet over Switch 1 again will increase the Joystick number (decrease the priority) by one. Continue with momentarily placing a magnet over Switch 1 until the desired priority level has been reached. When Joystick6 has been reached, another Switch 1 activation will wrap around to Joystick1. When the desired priority level has been reached, momentarily place a magnet over Switch 2 to save the setting and the switch box will reset and return to normal operation.

NOTE: There cannot be two devices with the same priority level. If two devices are assigned the same priority level, only one will remain active on the network. The remaining device will become inactive and claim CAN node address 254 as defined and specified by SAE J1939.

MAINTENANCE INSTRUCTIONS

The 6041 CAN Toggle Switch Box has no user serviceable parts inside. If the device fails to operate properly, please contact an Akron Brass customer service representative for a replacement. Periodically examine the condition of the switch boots for cracking or splitting.

TROUBLESHOOTING

DIAGNOSTIC LEDs

The CAN Toggle Switch Box has three LEDs located near the connector labeled Ready, Receive, and Transmit. Their colors are Green, Yellow, and Red respectively. Under normal operation, the Green Ready LED indicates the unit is powered and that the unit's microprocessor is running. The Yellow LED will blink on and off when there are CAN messages sent by other devices on the network that pertain to the Toggle Switch Box. The Red LED will light when the joystick is sending CAN messages that contain non-centered switch positions. When the switch box returns to a quiescent state, the Red LED will turn off.

Make sure that no two CAN operator devices (Joystick, Wireless, or Switch Box) have identical priority settings, otherwise one of them will become inactive.

AKROVIEW SOFTWARE

As with all of the Akron Brass CAN product family, the 6041 CAN Toggle Switch Box supports the Akroview Software. The software provides additional diagnostics as well as software updating and other capabilities. Contact Akron Brass for additional information on how you can obtain a copy of Akroview software.

REVISION HISTORY

Revision 0 – 8/10/11 Initial release.

NOTES:

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