EQ SYSTEMS®

(800) 846-9659

CONVERSION TO SMART-LEVEL FOR CONQUEST/ENDURA UNITS (SUPER C)

YEARS 2001-2010 MANUFACTURED BY GULF STREAM

EQ Systems Part # 70579 and 70580

These kits are designed to replace older control systems that components are no longer available for. It involves the replacement of the current control panel # 1702 or # 2086 with the new Smart-Level control panel # 2730SBT. None of the current wiring connections/harness from the control panel to the pump assembly will be used. On older systems using leg switches, the leg switch harness/wiring and the leg switches will not be used. The leg switches should be removed to prevent “confusion”. The unused wire/harnesses may be removed or abandoned. Current chassis interface connections (ignition, park brake/ground inputs) will be used.

These kits will not solve issues with the pump assembly or the jack legs. It should be confirmed that the pump assembly is sound and that the jack legs do not have issues that will affect the operation of the system. These kits will not solve power supply issues.

There are Two Different Kits Depending on if the Unit has One or Two Hydraulic Slides

System requirements

1. Original system must be an Equalizer System that has one of the following control panel numbers: 1702, or 2086.
2. Operational pump assembly
3. Working jack legs
4. Correct hose and fitting connections between the pump and the jack legs. If there are any hose or fitting issues they must be corrected. The hose assemblies for the jacks need to be ¼ I.D. If the unit has 1/8-inch hose, they may need to be replaced with ¼ inch I.D. assemblies for this upgrade to properly function. See section on hose assemblies.

5. System must have independent control of jack legs. Conquest/Endura units had the front jacks “teed” hydraulically and electrically at the manifold. These front jacks must be isolated from each other by adding a valve to provide independent control of the jacks. Some of these units will have an “unused” cavity or port in the manifold for the addition of the valve and coil other units will also need to have the manifold changed.

System Modifications

Manifold/Valve Modification/Addition:
Conquest/Endura (Super C) units with manual control panels (# 1702 or 2086) were manufactured with the front jacks “Teed” together (not isolated). For the conversion to work the front jacks must be isolated. Some units have an unused (plugged) cavity that can have a valve added to. Other units will need to have the manifold changed. Generally, the following guide below can be followed to determine this. However, to be sure the manifold must be checked for this unused cavity.
Units with no hydraulic slides will have an extra cavity to add the required valve.
Units with 2 hydraulic slides will have an extra cavity to add the required valve.
Units with 1 hydraulic slide will need to have the manifold replaced.

Units with Unused Cavity: (Kit # 70579).
This unused cavity (stamped V4 or V6) in the manifold) with a hex plug (1 inch hex) in it that will be removed, and a valve and coil (part of the kit) will be added. Then on the upper surface of the manifold remove 2 Allen hex plugs and install adaptor fittings to attach hose fittings to. Next shift all hose connections on the manifold 1 place to the right (looking at it from the valve side). Next locate the white and brown wires that are “Y” together connected to the coil at the end of the manifold, remove the “Y” and connect the brown wire to the end coil (V1) next move (shift) all the other wires (colored) 1 coil to the right. This will set up the manifold so that the valves to the left (V1 through V4) are for the jacks and the remaining valve(s) to the right are for the slides.

Install the New Pressure Switch Into the Manifold
On units with a pressure switch, simply remove the original one and install the new one in the same port.

On systems that did not have a pressure switch. They will have jack leg switches that will not be used with the new system. Remove these leg switches. The harnesses that feed each leg switch will not be used- they can be removed or tied up out the way.

Locate a port on the retract side of the manifold that is not currently used. Generally, this port will be stamped with a “B” followed by a number. Remove the plug and install the pressure switch.
Also, a Port marked PS or G1 may be used.
A 90-degree fitting has been included and may be used to install the pressure switch. If none of these are available for use, then the use of a TEE fitting will be used (included in the kit) to connect two of the retract side hoses (B side of the manifold) together. This will free up one of the retract side ports to install the pressure switch.
One of the terminals on the pressure switch will be connected to the pump ground stud using the supplied ground harness the other terminal will be connected to the
Yellow/Black trace wire in the new pump harness.

Units Without An Unused Cavity: (Kit # 70580)
Generally, these will be units with 1 hydraulic slide. These units that do not have an unused cavity for the addition of a valve will need to have the manifold replaced for the Auto Level conversion to work. The “Kit” (#70580) for these units will come with an adaptor block and a manifold that the installer will use many of the original valves in from the original manifold plus one new valve and coil in the kit. Also, in the kit there will be new fittings and plugs that may or may not be needed depending on the needs of the specific unit. The “reuse” of original manifold valves and coils is to help contain cost to the customer.

First mark/label all hose assemblies and wiring for the original location. Photos will be helpful. Clean the area to avoid debris from entering the system.

Operate the jack and slides in extend for just a couple of seconds to relieve most of the fluid pressure. Next there are two valves with knobs pull out and turn the knobs. After a few seconds most of the fluid pressure will go to tank. Return the knobs back to their original position by rotating them until they spring back in

Then disconnect all hose assemblies from the manifold. Disconnect all wiring to the manifold valve coils.

Remove the original manifold. The manifold is attached to the pump assembly lower by two bolts passing down through the manifold and into the port plate of the lower assembly. These will have 7/16 heads. Unscrew both fully then remove the manifold. Parts from it (valves, coils, etc.) will be used later.

The new manifold consists of two sections that need to be assembled onto the pump assembly. The adaptor block is held to the pump port plate by two bolts that go down through the center of the adaptor block threading into the port plate.

Clean/wipe off the pump port plate.

The adaptor block needs to have the hand pump and the DV 1 valve installed into it prior to it being attached to the pump port plate. Position the hand pump handle socket away from the DV 1 valve.

Install two O-rings # H90-012 into the counterbored holes on the underside of the adaptor block use grease to hold in place.
Using two ¼-20 x 1.75 GR 8 HHCS with lock and flat washers through the counterbored holes in the top secure the adaptor block to the pump port plate threaded holes. Do not allow O-rings to be displaced from the counterbores. Tighten bolts to 10-15 LB-FT.

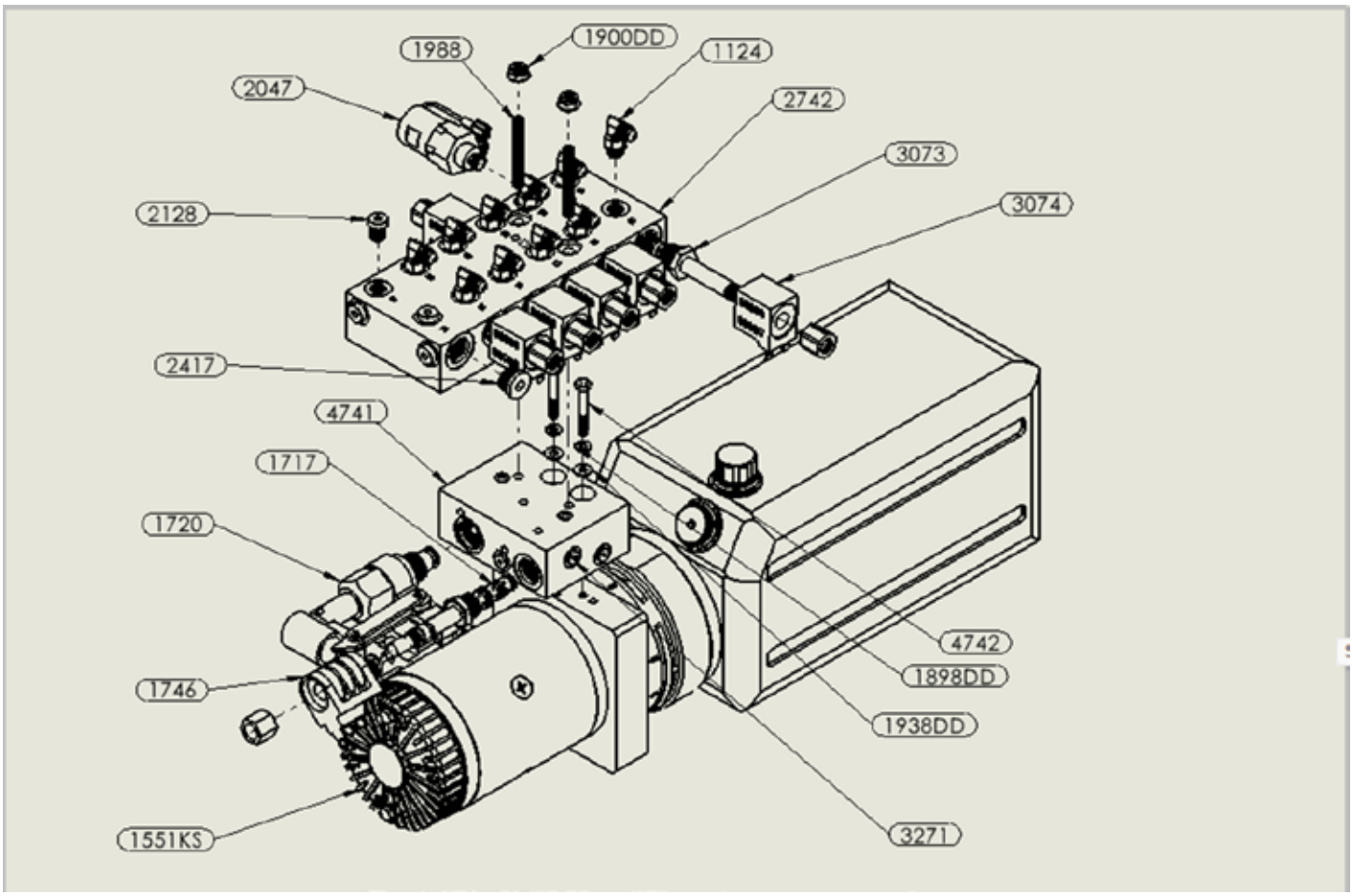
Transfer parts from the original manifold plus the new valve and coil into the new manifold. The valve from the DV 2 cavity of the original manifold goes into the single cavity on the side of the new manifold. The pressure switch is installed into the port on the same side of the manifold. The end cavity and ports (function# 6) will not be used they will be plugged with supplied parts.

Install two o rings # H70-011 into the counterbores of the upper surface of the adaptor block that was prior installed on to the pump. Use grease to hold in place.

Install two studs # 1988 into the threaded holes near to the O ring/counterbores of the prior installed adaptor block tighten till snug.

Place the manifold down over the studs onto the top of the adaptor manifold.

Install two nuts # 1900DD onto the studs, tighten to 12 to 18 LB-FT.



Hose Assemblies

Most systems supplied from 2003 through 2008 may have used 1/8 inch I.D. hydraulic hose assemblies for the jacks and slides. On these units the Hose assemblies for the jacks may need to be replaced with ¼ inch I.D. hose assembly. Along with changing the hose assemblies the upper jack fittings must be changed to the restrictor type. Recommend ordering 4 of # 1403, 4 of # 1190 and 4 of # 1124.

The hose and fitting change is required to maintain a known restriction value in the hydraulic system so that Auto-Level and All Retract will function correctly. It is possible that the original hose assemblies may work if their lengths are all approximately the same and their length does not exceed 14 feet.

Hose assemblies are not included in the conversion kit. They must be ordered separately. Generally, on units with only one hydraulic slide out the pump was mounted near the mid area of the coach and 8, 14 ft. hoses (EQ # 2469) will work fine on these. Due to the varied lengths used on other

coaches the lengths required will need to be provided by the installer to EQ Systems so proper lengths may be ordered.

Important Items When Replacing Hose Assemblies
Clean the area of the hose connections at the jacks and the pump manifold assembly to prevent debris from entering the system prior to disconnecting/removing hose assemblies. High fluid pressure is present in the system. Jacks should be “positioned” so that they are not extended supporting the coach or retracted fully, and slides should not be fully in or out prior to disconnecting hose fittings. This will “relive” most of the fluid pressure.

Hoses should be labeled/tagged to assure that the connections from the jacks to the manifold are made correctly as the correct placement is critical to proper operation. See the chart for proper hose connections.
When routing hose assemblies keep them away from areas that produce heat and items that may chaff or cut the hose. The use of loom clamps and wire ties plus protective coverings may be used.
If hose assemblies are changed it will be necessary to purge the air from the hose assemblies for proper operation. This purging is done by fully extending and retracting the jacks at least 3 times to expel air out through the reservoir. Allowing time between for aerated fluid in the reservoir to clear. When doing this do not allow the reservoir to go empty and if the fluid in the reservoir is aerated (foamy) allow it to dissipate prior to running. Use ATF Dexron or Multipurpose (Automatic Transmission fluid) to keep proper fluid level.

Manifold Stamp Color Code Jack Leg Connection

T 1 Brown Solid Left Front Top

T 2 White Solid Right Front Top

T 3 Orange Solid Left Rear Top

T 4 Yellow Solid Right Rear Top

B 1 Brown Stripe Left Front Bottom

B 2 White Stripe Right Front Bottom

B 3 Orange Stripe Left Rear Bottom

B 4 Yellow Stripe Right Rear Bottom

Control Conversion Instructions

Prior to starting the control conversion, disconnect the battery cables supplying power to the pump assembly.
Verify that the power has been disconnected by checking for the absence of voltage at the motor solenoid battery connection terminal.

Remove the original control panel from the dash or the mounting. Unplug all the connectors going to the original control panel. Be sure to remove the original mounting bezel/box as it is not used with the new Smart-Level control panel. Locate the Red or Pink and the Black or Black/Yellow wire exiting the original main control panel harness (about 18 inches down from the original J1 (12 pin) connector). These are the Chassis ignition (Red or Pink) and the Park Brake /Ground (Black or Black/Yellow Trace). Cut these loose from their connection points. Keep these connection points chassis side handy as they will be connected later to the new Smart-Level harness. The portion of the original harness with the 12-pin single row connector and the power feed will not be used with the new system. Either remove or tape-up and abandon this harness.

The new harness needs to be run from the control panel mounting area to the pump assembly. The harness should be routed away from high heat sources such as exhaust components and kept away from moving items such as suspension parts or the drive shaft. The harness should be “tied in place” with the use of loom champs or tie wraps. The end of the harness with the two row 12 pin and the 3-pin connectors and loose wires go to the new Smart-Level control panel mounting area.

Wiring at the Pump/Manifold Assembly

A new grounding harness is provided to ground all coils and the pressure switch.
Connect all grounding wires one to each valve coil and one to the pressure switch. The 5/16 eyelet goes to the pump ground stud. Note: the pump ground stud is located in the center section that separates the motor from the reservoir, it is not the stud on the motor.

Install the New Pump Harness at the Pump and Manifold

Replace the wiring harness on the pump/manifold assembly. All wiring connections will be the same as the original with the addition of a yellow/black wire that will connect to the new pressure switch.

Valve Coil Color Code Wire Connections

V1 Brown Left Front Jack
V2 White Right Front Jack
V3 Orange Left Rear Jack
V4 Yellow Right Rear Jack
V5 Green/stripe Slide #1 (if present)
V6 Purple/stripe Slide #2 (if present)
Motor solenoid Solid Blue
Valve DV 1 Solid Green
Valve DV 2 Solid Blue

Install the New Power and Ground Feed at the Pump

There may or may not be one originally. This is the power and ground feed for the new Smart-Level control panel. This is a supplied two wire harness. The black wire connects to the pump ground stud. The yellow or red fused wire connects to the battery terminal connection on the motor solenoid. The connector is mated to the two-pin connector (Red and Black) on the new wire harness connecting the Smart-Level control panel to the pump assembly. Note; the pump ground stud is located in the center section that separates the motor from the reservoir. The stud on the motor is not a ground.

Connect the 9-pin Connectors at the Pump Assembly

The wire colors through the connector halves should match. Verify that the connector locks are in place.

Connect the 2- pin Connectors

The black should mate with black and the fused wire yellow or red should mate with red.

Reconnect the battery power to the pump assembly. Verify that the batteries are fully charged and that there is power to the pump assembly. Use a digital meter to verify that there is at least 12.6 VDC measured at the motor solenoid/ battery terminal connection to the pump ground stud.

Interface Connections to Smart-Level Harness

The Pink wire is the ignition-on input. Connect this wire to the wire from the chassis that was connected to the Pink or Red from the original harness. This connection is mandatory- It is absolutely required. It triggers the jacks down alarm and is an extend disable when the engine is running/key on. Check this connection using a digital meter to be sure that it is “Hot” 12V DC positive when the key is in the engine run position.
The Black/Yellow trace wire is the Park Brake feed. Connect it to the Black or Black/Yellow wire from the original harness or take it to a solid chassis ground. If this is not done the engage park Brake light will be on and extend function may not operate. If a park brake feed connection is available, it may be used. See installation/operation manual for Smart-Level systems for more information on this.
The new harness may also have a purple and a gray wire these are not used on the conquest unit. Simply tape them back.

Smart-Level Control Panel

Connect the two plug in connectors to the Smart-Level control panel. First the 2 row 12 pin connector then the three pin power and ground connector. Verify that they and their wire are fully seated and that the connector locks are in place.

Smart-Level control panel mounting: The control panel contains level sensors. It is imperative that it be mounted firmly so that it “reacts” with the floor/frame of the coach. When pressing switches on the panel it and its mounting cannot “move” it must be solidly mounted. Use the 4 corner holes in the bezel and the panel for mounting. Do not use an “oversize” screw, doing so could destroy the control panel. After the control panel installation is complete there is a “control panel programing” that must be followed.

Finishing and Testing the Installation

The Smart-Level control panel should power up by pressing the power button. All LED lights should come on for a short time, and then all except for the power light and the jack status lights should go out. Press all the retract button and the pump
should come on to retract the jacks and clear (turn off the jacks down LED's).
Test the jack operation by pressing (one at a time) each of the down arrows. Jacks will be run in pairs. The jack down status LED for each individual leg should come on and the corresponding jacks should extend. Check all four down arrows, one at a time, for extend. Then using the up arrows, retract each pair of jacks check to see that the corresponding jacks retract and the jack down status LED's goes out shortly after the jacks are retracted.

Control panel programing must occur before attempting Auto Level.

If technical assistance is needed, please call EQ Systems (800) 846-9659
Please make sure you read and understand these instructions prior to calling

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EQ SMART-LEVEL CONTROL PANEL PROGRAMMING

May 2023

After the system is fully installed the control panel must be programed for operation. Failure to do this will result in a failed or improper Auto Level. There are two program settings that must be programed in the following order - 1) Orientation and 2) Null.

Step 1 - Orientation Setting

- This process cannot be completed until after the system has been connected to power and the control panel has been mounted and all electrical harness connections have been completed.
- This process teaches the control panel where the front of the vehicle is and how the control panel is mounted (vertical or horizonal). If this process is not performed correctly the processor will not know where the front of the vehicle is.
- It is possible that without doing this process it may work on a level floor/shop environment however when at locations where the system needs to operate specific legs for leveling it very likely will operate the improper legs.
- Once this process is properly completed the setting will be “retained” in the control panel and should not ever need to be performed again unless the control panel is replaced or moved to a different location.
- With the control panel off, press and hold the ALL RETRACT button, then while holding it press the POWER button, then release both buttons. The power light will start blinking and you will hear a rhythm beeping, and the 4 jacks down indicator lights will be on.
- Next the orientation is selected by pressing one of the manual control arrows. The exact specific one is determined by how the panel is mounted (see examples below). You will select an up arrow if the panel is mounted vertically and down arrow if it is mounted horizonal. The specific one is the one that most relates to the front of the coach.

Examples

- If the panel is mounted vertically inside the vehicle so that when you are looking at it, you are also looking at the inside of the front of the vehicle. You would push the UP ARROW for the front jacks.
- If the panel is mounted vertically inside the vehicle so that when you are looking at it, you are also looking at the inside of the rear of the vehicle then you would press the UP ARROW for the rear jacks.
- If the panel is mounted vertically on the vehicle so that when you are looking at it, you are also looking at the side of the vehicle then you would press the UP ARROW for the left or right jacks depending on which is the closest to the front of the vehicle.

EQ SMART-LEVEL CONTROL PANEL PROGRAMMING

Step 2 - Setting the Null

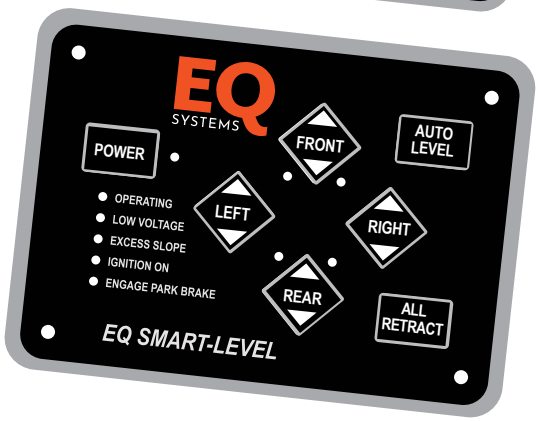
Null is the term used to indicate the levelness of the coach. A Null setting should have been performed by the installer. If the coach is not level following an attempt to Auto Level, you will need to level the coach and reset the null.

Use a bubble level on a flat surface in the center of the coach as a reference. You do not need to have the jacks deployed to set the null.

- To set the null, first press the POWER button on the keypad to activate the unit. The LED light next to the Power button should be lit RED when the power is on.
- Level the coach by deploying jacks manually, or by simply parking the coach on a level site. Once the coach is level, turn the POWER off at the panel.
- While holding down the AUTO LEVEL button, press and release the POWER button. This should cause the keypad to make a series of beeps.
- After the Keypad has beeped 5 to 6 times, release the AUTO LEVEL button and you will get a confirmation beep. (The Keypad will continue to beep if the Auto Level button is held) The new null has been set and the panel will store/remember this setting.
- Press and release the ALL RETRACT button to retract the jacks to the stowed position.

Note: if you are not clear on this process please check our website for videos and/or call EQ Systems for assistance.

QUICK START OPERATION



EQ SMART-LEVEL

Park coach, set the brake, and turn off the ignition.*

Press the **POWER** button on the **EQ SMART-LEVEL KEYPAD/EQ SMART-LEVEL APP** to turn the system on.

If the four lights are lit in the center of the keypad, press **ALL RETRACT**.

After the four lights go out press **AUTO LEVEL**. During the leveling process the keypad will beep.

Allow **EQ SMART-LEVEL** system to run in the auto mode until all jacks are finished adjusting.

At this time you will hear two beeps indicating you are level and the process is complete.

Press the **POWER** button on the **EQ SMART-LEVEL KEYPAD/EQ SMART-LEVEL APP** to turn the system off.

*Note: The leveling system on your coach may require the ignition on and the engine running. Refer to the operation manual per manufacturer.

RETRACTING LEVELING SYSTEM

When you are ready to move your coach, press the **POWER** button and then press the **ALL RETRACT** button.*

When all jacks are fully retracted, the four lights will go out and the beeping will stop. Once you're finished, press power to turn off.

Visually inspect to be sure that all jacks are fully retracted prior to travel.

*Note: If your coach is equipped with air ride suspension you will need to start your coach engine and build air pressure before retracting to ensure that the suspension will air up.

BLUETOOTH OPERATION

- If the face of your keypad indicates that your controller is compatible with a bluetooth device, download the EQ Smart-Level app in the Android or Apple app store.
- If your keypad does not indicate compatibility, your Bluetooth connectivity may be done through your multiplex system.
- When downloading the app, make sure your Bluetooth setting is turned on or the app will not connect to your coach.
- Once the app is downloaded please follow the instructions above to level your coach.

PREVENTATIVE MAINTENANCE

- Make sure that all battery and electrical connections are tight and free of corrosion.
- Verify that the batteries are good and properly charged.
- Depending on how often the jack shafts are exposed to the outdoor elements, it is good to keep them coated with a silicone based lubricant.
- Do not use grease or any other lubricant that stays wet.
- In the event that it is necessary to add fluid to the reservoir, use a good quality automatic transmission fluid (Dexron).

FOR RECALIBRATION/SETTING THE NULL

please view the video in the Support section of our website.

FOR MANUAL OVERRIDE OF THE RETRACT FUNCTION

please view the video in the Support section of our website.

(800) 846-9659

For a complete operation and troubleshooting manual or to activate your warranty please visit **EQSYSTEMS.US**