Slideout Systems

Newmar's Rack & Pinion System

If you had the opportunity to see the installation of our slideout mechanism at the start of production, you were able to see how the tubes are fitted to the frame, the physical size of the tubes, the driven cogwheels, the motor gearbox, the shafts and flange bearings. You would then see that the Newmar unit is simply 'bodacious'. If you were to examine and compare our components to the competition's slideout components, we believe you would come away saying 'No contest, Newmar has the best components and design'. In fact, Newmar's slideout mechanism is so strong that it can be demonstrated with someone sitting on the sofa while the slideout is being moved into position.

The electric motor is compact and centrally located to eliminate the need to install a motor on either end. When Newmar was selecting motors for the slideout, the motor Newmar needed was not on the market. Newmar finally found a manufacturer who had a prototype of a motor that was exactly what Newmar needed. The motor that Newmar uses today evolved from that design.

This motor is a 12V electric that generates 1/15 hp and uses 11 amps to move the slideout into position. It is geared very low to allow for low amperage needs. For every turn of the drive cogwheel, the slideout travels 12/56", therefore depending on the floor width of the slideout it may only complete a little over 2 turns to fully extend or retract. Due to this design, the operation is 'whisper quiet'.

A critical element to Newmar's design is the use of the 'transtorque bushing'. This is a keyless bushing which provides us with infinite adjustment ability between the ends of the room and provides a quick release should the motor require service in the field. The bushing transmits high motor torque to the shaft without slipping. It does not require that the shaft have keys, setscrews, or keyways machined in the shaft. Without keys or keyways, there is not an alignment problem during production.

Newmar engineers have provided a superior strength platform by supporting the slideouts socket tubes by attaching to both of the mainframe rails. Newmar's slideouts do not need a secondary support and can be operated even while setting on an incline. In comparison, some to the competition hangs their slide rails like an outrigger to the side of the one main rail.

The heaviest slideouts are the rooms that house the kitchen units. For those, we use an aluminum-framed floor. All slideout rooms have aluminum framed sidewalls and roofs standard.

Newmar's patented flat floor design does not cut corners. Newmar uses box tubing for their slide mechanisms. This provides excellent load strength while providing superior torsion resistance. Many manufactures use an open channel that lacks the torsion resistance of tubes and creates open area for debris and rodents to find a home. Newmar went to great pains to provide that our slideouts are sealed as well as rodent proof.

With a Newmar flat floor slideout, full glasses of water can safely ride through the entire cycle without spilling. This is unique to Newmar and is possible due to our patented design.

The Newmar designed 'Jet' seal encircling the perimeter of the slideout room wipes the slideout roof as the room retracts. The slideout roof has a slight slope to it. This allows water to be channeled off during a rain shower. Many of the competitor's units have a flat roof only.

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The operator of Newmar's slideout room can push the button and walk away. An amp-peak sensor reads the load on the motor and it automatically shuts down when it senses that the unit has reached the adjustable stop. This design is easier to diagnose and it is fully adjustable.

In case of power loss, there is a nut on the side of the motor that allows for the attachment of a ½" drive ratchet with a 5/8" socket.

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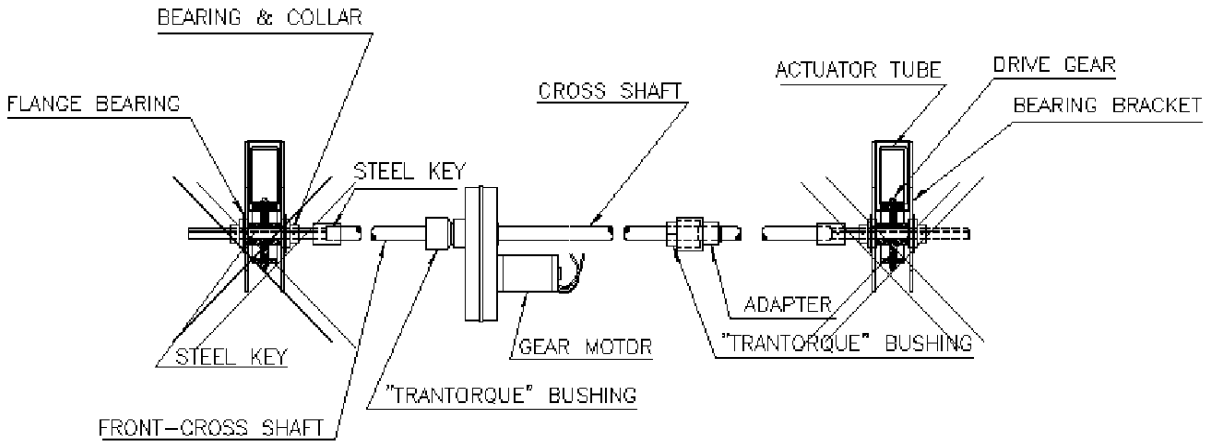
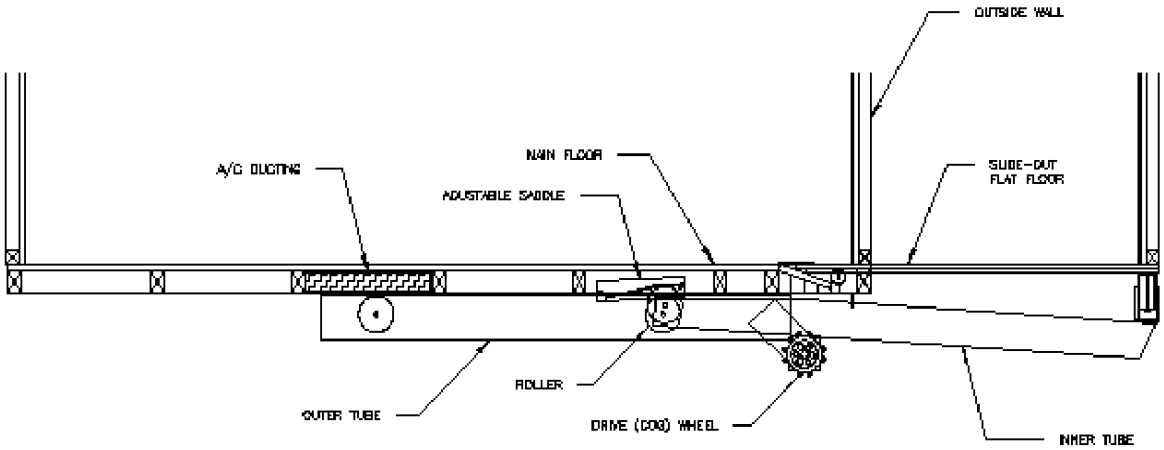
Slideout Systems

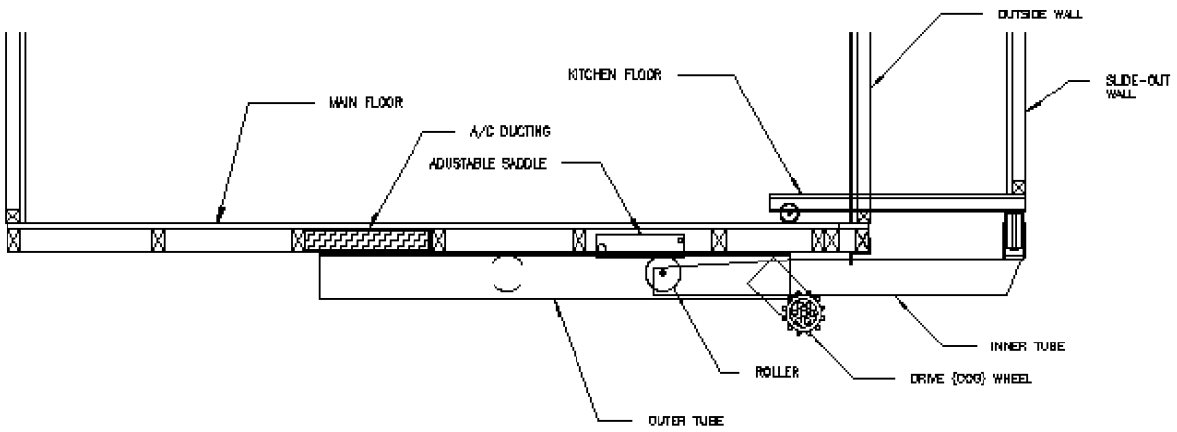
SLIDE-OUT MECHANISM



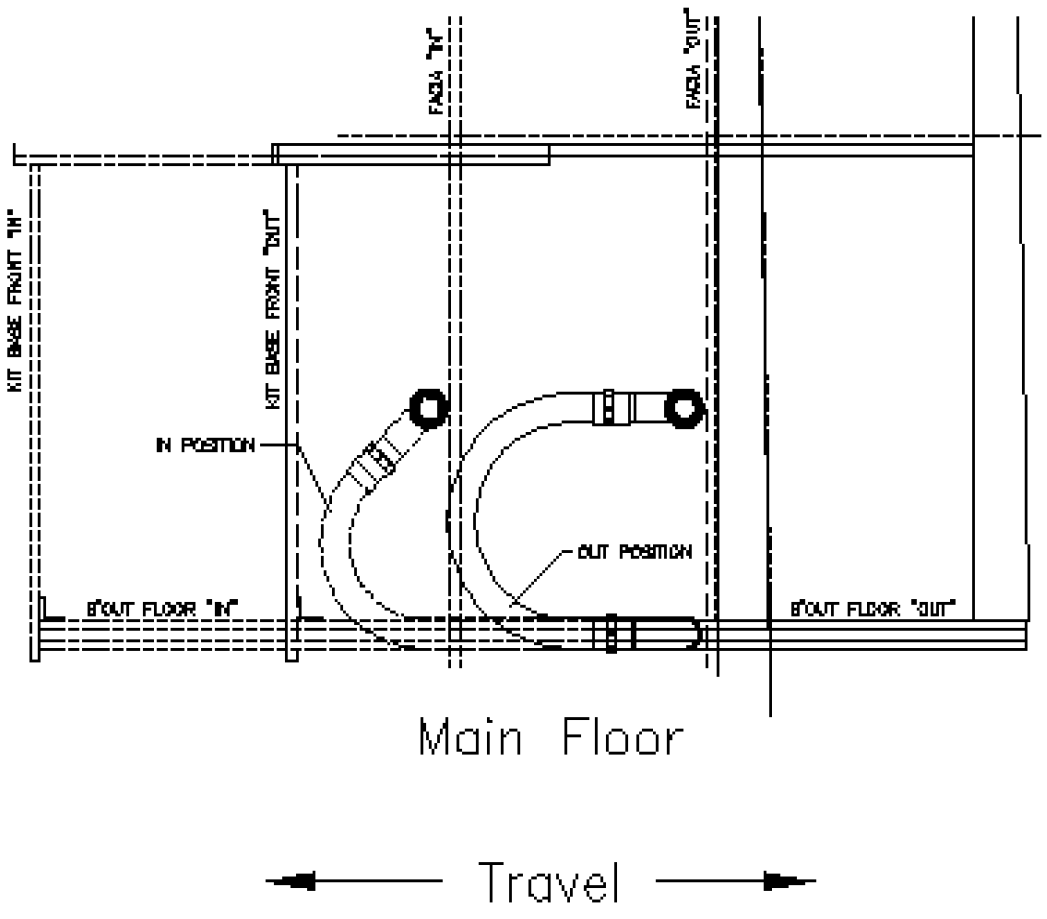
FLAT-FLOOR SLIDE-OUT



KITCHEN SLIDE-OUT



Kitchen Plumbing – Slide-Out



Slideout Systems

Slideout systems in use today:

There are four types of slide-out systems on the market today:

1. Hydro-mechanical, more popularly know as 'hydraulic'.

   All hydraulic systems used have a 12V electrical motor driven hydraulic pump that supply the hydraulic cylinders.
   A hydraulic system allows the slideout to run in or out quicker than electric but the operator has to hold the switch in order for it to operate. On Newmar's 12V electric system, the operator simply throws a switch and the operation then becomes automatic.
   Newmar chose the electric slideout drive system instead of hydraulic because of its reliability and simplicity. A hydraulic system is inherently more complex. In time, seals wear and piston rod surfaces become scratched or damaged. This can cause the cylinders to leak under the high pressures that they operate. They are housed inside the frame, floor and underbelly materials, which make them difficult to service when a repair is needed.

2. Cable driven.

   A cable system consists primarily of an electric motor, pulleys and cable. A cable-driven system is light in weight and compare in size, but it also requires frequent and difficult maintenance. There is always the need for adjustment, as the cable stretches more on one side or the other, depending on how the users have loaded the slideout for that day. Therefore, timing the slideout so both ends close in unison and so they properly seal becomes a constant concern.

   Often these systems lack the power required for the larger rooms.

3. Double or single ball screw mechanism (depending on the size of the slideout).

   The ball screw design uses a single motor and ball screw on small slideouts, but double motors and two ball screw on large slideouts. Since 12V motors will have varying RPM's under different loading, the double motor slideouts will have an inherent synchronizing problem. Another concern would be that the ball screws are subject to collecting dirt and may corrode.

4. Rack and pinion.

   Newmar uses the rack and pinion system on our product line. The industry has followed our lead in design to the point where approximately 85" of the RV manufacturers now use a form of the rack and pinion system in their designs. The rack and pinion system provides for a flush floor design, is quiet and requires little maintenance.

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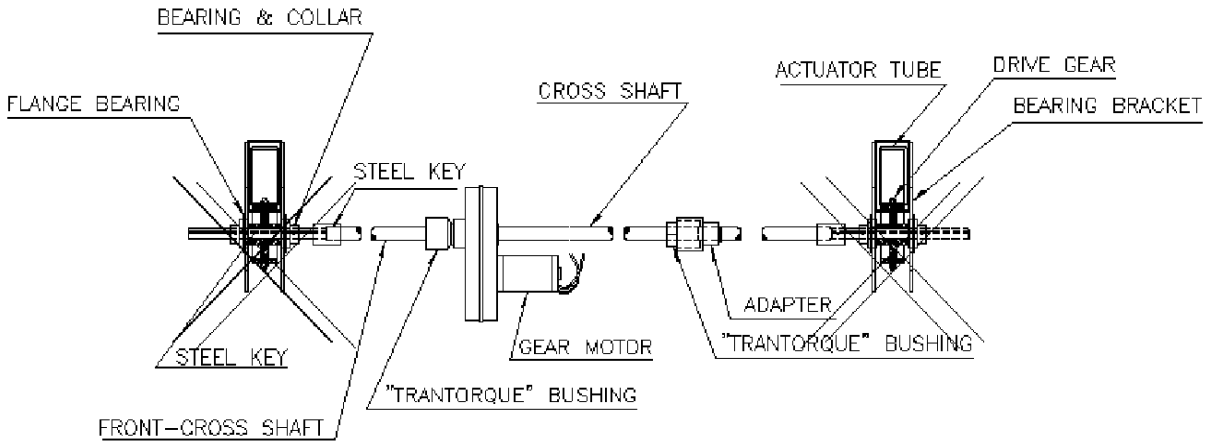
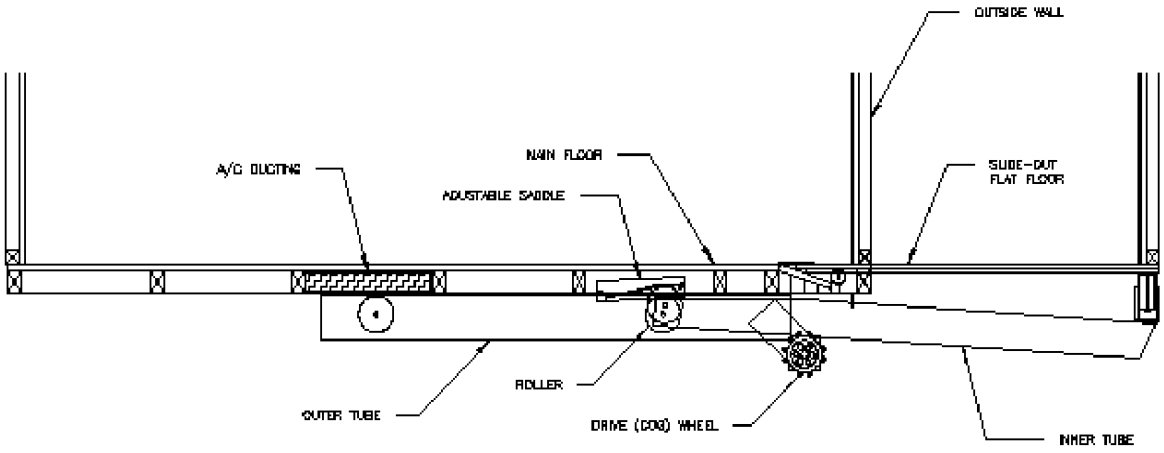
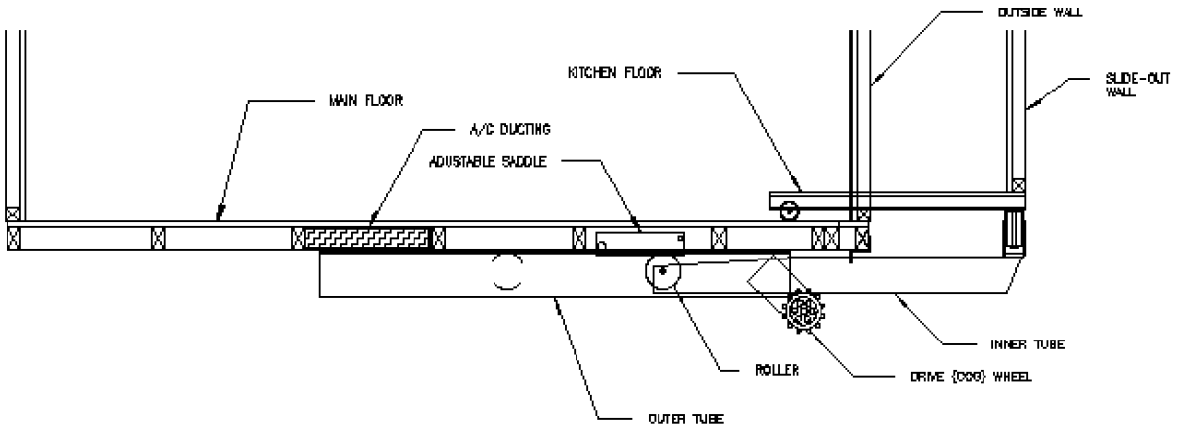


FLAT-FLOOR SLIDE-OUT



KITCHEN SLIDE-OUT



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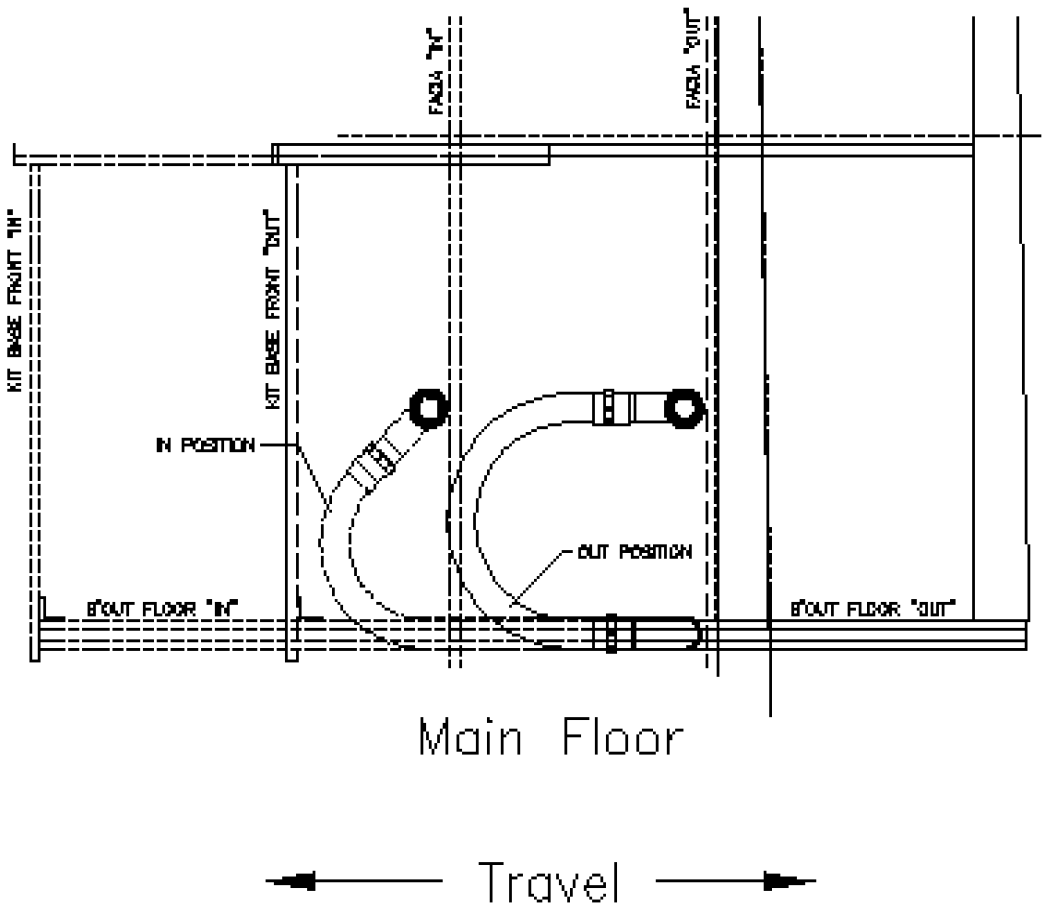


Slide Out

Trouble Shooting

A. Slide out runs a short distance then shuts off premature.

1. Check rollers that are mounted to the bottom of slide out floor for any obstruction.
2. We recommend that the coach be plugged into shore power before operation of slide out. A battery that isn't fully charged may not run a slide out by itself. Slide out motors need a full 12v to operate properly.
3. If problem occurs when bringing slide out in, make sure it is not catching on the awning cover.
4. Diagnosing a control box problem. If a slide out runs but shuts off prematurely one can increase the tension adjuster. The tension adjuster is a white screw in a brown case on the bottom of the slide out controller box. Clockwise increases and counter-clockwise decreases. Using a very small screwdriver will prevent damage to the control box. Make adjustments only in very small increments until slide out runs as it should. Too much tension will buckle the trim on slide out. If the adjustment screw is 'maxed' out and slide out continues to have problem, the control box needs to be changed. On March 21, 1995 all units, both motorized and towable, with the drop floor or standard slide outs, were produced using the same style of control box. New style control boxes for the rack and pinion slide outs are inter-changeable with some slight modifications. See page 15-7.

B. Slide out doesn't run at all.

1. When slide out button is activated does red light on button light up? If not, check the fuse to see if it has been blown. Make certain coach has 110 power. A slide out needs the full 12v to operate properly.
2. 1997 and 1998 K-2, London Aire and Kountry Aire Diesel Pusher Units Only have a safety devise that requires the driver's seat to be in the forward position before the slide out will operate.
3. Check to see if you have 12v power to the control box. The green wire should have 12v and the green/yellow wire must have 12v for the slide out to operate. If there is power going to the control box, then check for power at the slide out motor when the switch is activated. If there is no power to the motor from the control box, change the control box. If there is power to the motor, but the motor will not activate, check the slide out motor, and if the motor activates, but the slide out doesn't move, make sure that the transtorque bushing isn't slipping, see step 4.
4. With 12v established to the control box, unhook the motor wire plug from the controller. There are two wires in this plug. Then see if the red light on the slide out button lights up when activated. If the light doesn't work, either the slide out control box or switch is defective. More than likely, it will be the control box that is defective. Defective slide out buttons are rare. Refer to page 15-5 for instructions on slide out button installation.
5. If the slide out causes blown fuses when activated, a continuity inspection of the slide out motor wires is necessary. Disconnect the motor wire plug from the control box. Disconnect both wires by the slide out motor. Temporarily connect the wires from the coach together. If you have a two motor slide out system, do this on both motors. Check the continuity by using the slide out control plug, connecting the Motor Wire 1 to the Motor

Wire 2 and also from the frame to Motor Wire 1. There should be no continuity from the frame to the Motor Wire 1.

6. If the slide out button is activated and the motor runs but the room doesn't move, or only moves at times, the transtorque bushing might be loose. Torque the bushing to 115#. If the problem persists take the motor loose and score the motor shaft with 80 grit sand paper and reinstall. Never oil transtorque bushing or motor shaft.
7. If the motor activates but doesn't drive the shaft and transtorque bushing isn't slipping, the motor needs to be replaced. See page 15-3 for motor replacement. On two motor slide out systems, there are replacement gears available to rebuild these motors if they strip their gears. There are no replacement gears for center-mounted motors.

C. Slide Out Adjustment.

1. When a slide out needs to be equalized to match the sidewall of the coach, a number of steps need to be taken. First, if you have a fifth wheel, check to see if it is a center motor slide out drive system or a two motor slide out system. Some 1998 fifth wheel units still use the older style, two motor system. See Step A for the center motor systems and Step B for the two motor systems.
   a. - Center Motor Slide Out

      Run the slide out within two feet of the in position. Loosen the transtorque bushing by the motor and the transtorque bushing in the shaft assembly. When loosening each bushing, break it loose in two stages. The transtorque bushing has right hand threads. Break it loose once and continue to turn until it tightens. Then break it loose a second time. Measure the sidewall of the coach to the slide out. When both sides measure the same re-torque both bushings 145#.

   b. - Two Motor Slide Out

      Run the slide out within two feet of the in position. Loosen the transtorque bushing in the center of the shaft assembly and the transtorque bushing by the motor on the side you are adjusting. When loosening each bushing, break it loose in two stages. The transtorque bushing has right hand threads. Break it loose once and continue to turn until it tightens. Then break it loose a second time. Be sure to re-torque both bushings to 125#.
2. Adjusting the slide out from side to side. Loosen the nut directly behind the slide out tube (there is one on each tube) and any brackets that hold the slide out skirt on, if any. Slide out will then slide from side to side, tighten nuts when in the proper place.
3. There are adjustment bolts provided on each slide out assembly. These can be used to raise or lower the entire slide out or one end only. These bolts are on both side of each actuating tube. Please note that you will need to loosen the center nut before moving the slide out up. However, certain cautions need be taken when doing this adjustment. When adjusting the slide out up, do not raise it so high that the trim on the slide out hits the trim on the coach. When adjusting the slide out down, do not lower it so low that the slide out motor can not take the slide out in as far as it is required for a proper seal. This adjustment changes how the slide out fits in the opening of the coach and also how it seals. This adjustment affects the seal of the standard slide out 'in' or 'out'. The effect of this adjustment on the drop floor slide out is on the seal when the slide out is in the 'in' position. There is a tube saddle adjustment for the slide outs to adjust how well they seal in the 'out' position.

4. The tube saddle does only one thing, it adjusts the seal inside the top of the slide out in the out position only. Do this adjustment with the slide out room fully extended. Please note that all adjustments on slide outs have to be carefully considered. Be aware that some adjustments may affect the fit of the slide out room requiring more adjustments to be made.
5. If the slide out runs in too tight, either extended or retracted, there are stop rods along the inside of each actuating arm. Each rod is threaded. When shortening the distance of the stop rod between the coach and the end of the actuating arm will stop the slide out farther from the trim in the extended position. To cause the slide out to stop sooner in the retracted position, adjust the two nuts that are locked together out towards the end of the actuating arm. Loosen these and move them in towards the coach and re-lock them. Adjusting in the reverse order will have the opposite effect.

D. Manual Operation of the Slide Out.

   a. Center Motor Slide Out - Loosen the transtorque bushing by the motor. Five or six people can then retract the slide out by pushing.
   b. Two Motor Slide Out - Loosen the transtorque bushing by both motors. Five or six people can then retract the slide out by pushing.
   c. Please note, it is not possible to wrench the drop floor slide out up the incline, however five or six people pushing can get it up the incline. After it is up the incline one person can wrench it in.

E. Slide Out Motor Replacement.

1. Center Motor Slide Out Replacement - On center motor slide out assemblies, the one-inch drive shaft goes through the slide out motor. Disassembly of the shaft will be necessary to remove the motor. The slide out motor can be taken off of the shaft in one direction only
   a. Before starting the disassembly of the shaft, a jack must be placed under the slide out to take all of the weight off of the drive wheel.
   b. Remove all shafts and the drive wheel between the motor and the actuating arm.
   c. Loosen the transtorque bushing and the four mounting screws that hold the slide out motor. Disconnect the 12v power supply. The motor will now slide off of the shaft.
   d. When installing the motor, torque the bushing to 145#. Re-install the remaining drive assembly in the reverse order from which it was removed.

2. Two Motor Slide Out Replacement -
   a. Loosen the transtorque bushing.
   b. Disconnect the 12v power supply.
   c. Remove the four mounting screws.
   d. When installing the new motor, it is very important to reposition all of the rubber washers as they were before.
   e. Torque the bushing to 125#.

3. In our 2000 London Aire series, a Bison motor was used.

Slide Out

General Slide Out Information

1. Transtorque bushing is torqued at 125 #s on 3/4" shaft and 145#s on 1" shaft.

2. The two motor slide out system uses a different motor than the center motor slide out system. On the motor there is a tag that states the rpm's. The two motor slide out requires a motor with 1.8 rpm's.

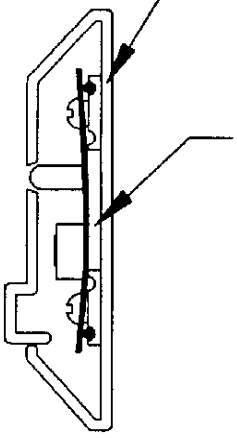
3. Slide outs have a 20 amp fuse for the motor operation. It is located in the house fuse panel.

4. Carpeting can be changed in a coach without removing the slide out if you follow this procedure.
    a. Run slide out to the fully extended position
    b. On the outside, run a wooden 2x6 the length of the slide out, under the floor of the slide out and jack the slide out up with two (or three, if possible) bottle jacks or floor jacks until the top of the slide out touches the slide out bulb seal, stopping before damage occurs to the roof or the seal. This will give you room to remove and replace the carpet under the slide out.
    c. Cautiously lift the roller incline ramps. Make sure the replacement carpet is under these ramps. Using a hamper and a block of wood, lower the incline to the carpet, make sure of offset for the slide out rollers to cross over.

5. Water leaks on a non-drop floor slide out.
        a. Rain water sometimes runs down the side wall of the slide out into the trim track
            i. Completely extend the slide out.
            ii. Remove screw cover on the bottom trim up to the unit sidewall. Apply sealant under screw cover on trim track. Reinstall screw cover.

Slide Out

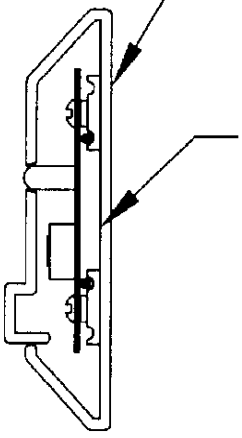
Incorrect



Wires should not be in the outer holes.

The switch won't function properly with the switch plate bent inward.

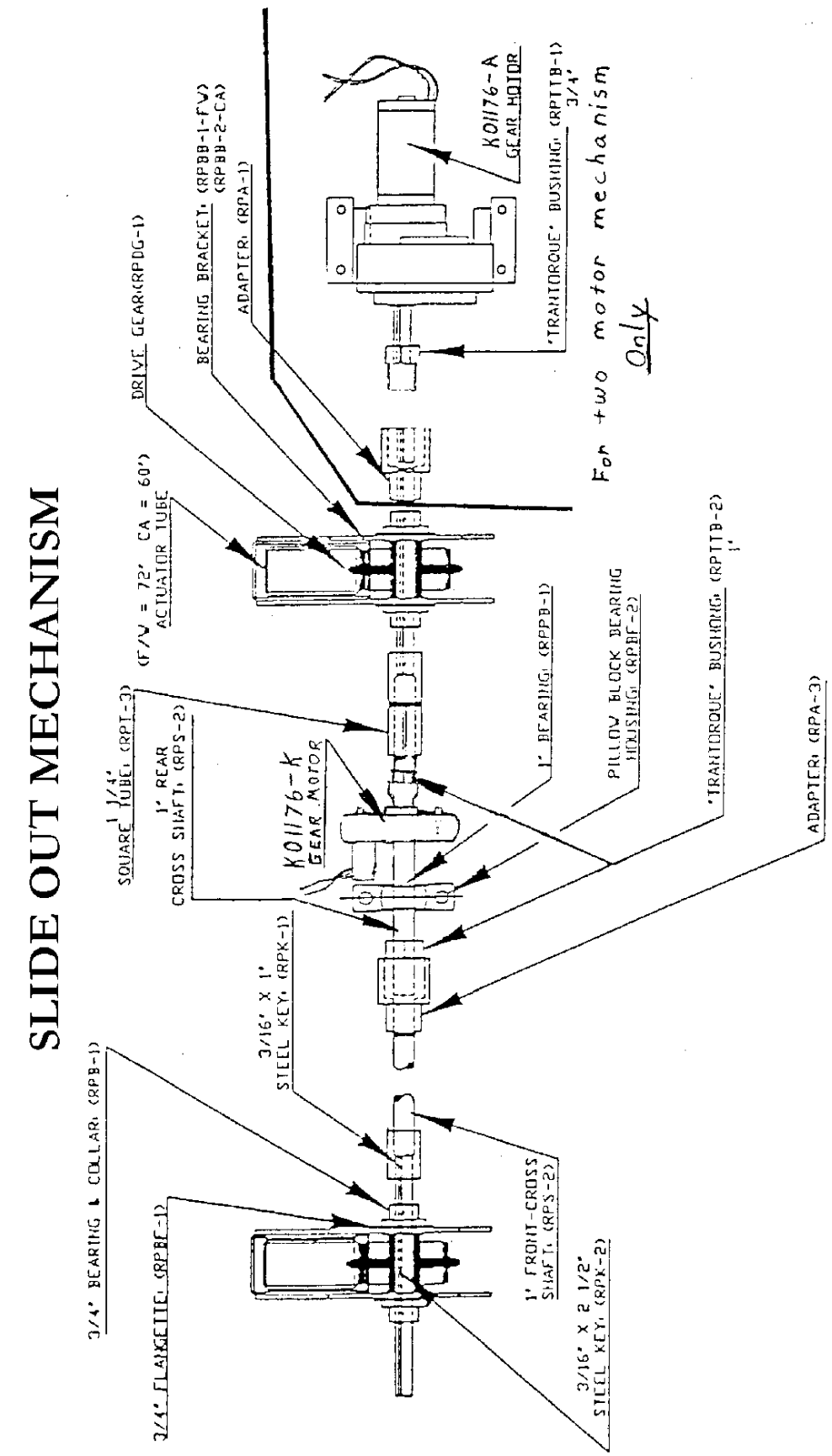
Correct



Wires must be in the inner holes.

The switch plate will flex outward slightly. This is normal.

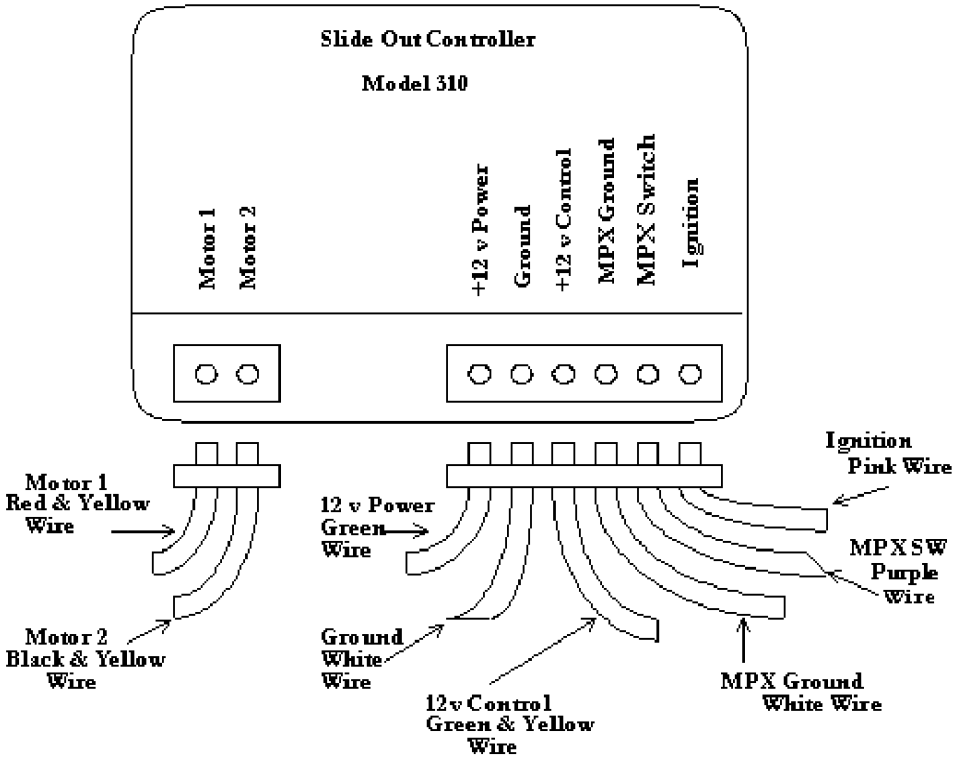
Slide Out


SLIDE OUT MECHANISM
3/4" BEARING & COLLAR (RPB-1)
3/4" FLANGETTE (RPBF-1)
3/16" X 2 1/2" STEEL KEY (RPK-2)
1" FRONT-CROSS SHAFT (RPS-2)
3/16" X 1" STEEL KEY (RPK-1)
1" REAR CROSS SHAFT (RPS-2)
1 1/4" SQUARE TUBE (RPT-3)
(F/V = 72" CA = 60") ACTUATOR TUBE
DRIVE GEAR(RPDG-1)
BEARING BRACKET (RPBB-1-FV) (RPBB-2-CA)
ADAPTER (RPA-1)
K01176-K GEAR MOTOR
1" BEARING (RPPB-1)
PILLOW BLOCK BEARING HOUSING (RPPBF-2)
TRANTORQUE BUSHING (RPTTB-2) 1"
ADAPTER (RPA-3)
K01176-A GEAR MOTOR
TRANTORQUE BUSHING (RPTTB-1) 3/4"
For two motor mechanism Only

Slide Out

Slide Out Control Module Replacement Procedure

CURRENT SLIDE OUT CONTROL BOX



The following steps are for replacing the old style control module labeled "Slide Out Room Controller-Low Current" with the Model 310, Part #25481 controller.

1. Connect the white ground wire to the MPX white ground wire.

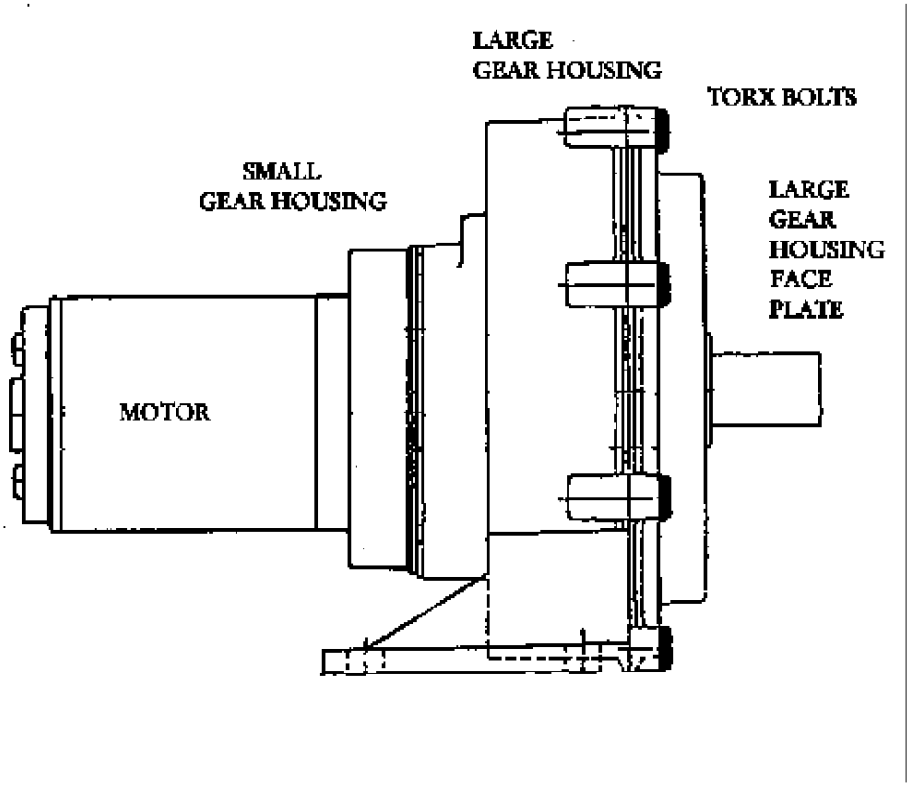
2. Connect the green 12v power to the green and yellow 12v control.

3. If installing the control module on a towable unit, the pink ignition wire will not be used.

Note: The older 'Barker' controller can not be replaced with the rack and pinion controller. You will need a 'Barker' controller.

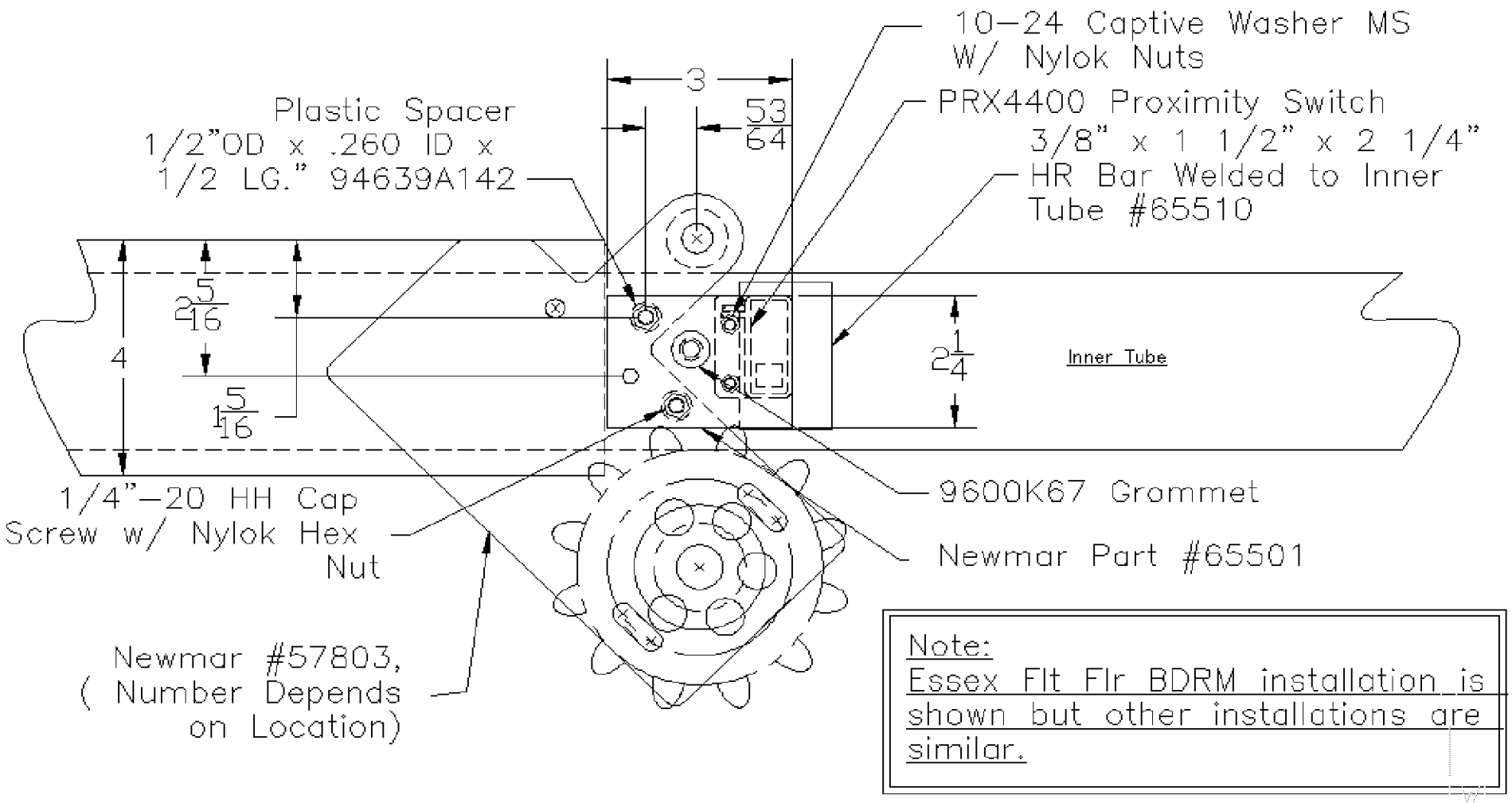
Slide Out

Slide Out Motor Gear Replacement



1. Remove the eight torx bolts from the large gear housing faceplate. Remove the faceplate. When removing the faceplate, make note of the location of all of the spacer washers on the gear shafts to be reused when assembling.
2. Clean all of the grease and metal shavings off the gears and gear housing.
3. Remove the six torx bolts fastening the large gear housing to the small gear housing. Remove the large gear housing, again, noting the location of all spacer washers on the gear shafts.
4. Remove all gears, cleaning grease off the gears and the housing.
5. Replace the original gears with the replacement gear provided with the gear replacement kit. Apply bearing grease liberally to all gears.
6. Before attaching the small gear housing to the large gear housing, check that all spacer washers are in the proper place. Use the replacement gasket between the gear housings. Use Loc-Tite when installing the torx bolts.
7. Install all of the spacer washers as before with the new gear from the replacement gear kit in the large gear housing. Apply grease liberally to the gears. Install the large gear housing faceplate with the new gasket included in the kit. Again, use Loc-Tite on all torx bolts.
8. The A (1.8) motor requires the A, Part # 01252, replacement gear. The B (2.0) motor requires the B, Part # 01251, replacement gear.
9. All C motors are replaced with a B motor.

Note: An A and B motor cannot be used on the same slide out.



Note:
Essex Flt Flr BDRM installation is shown but other installations are similar.

R100 Options's SD Room Switch and Bracket


SMOKE-OUT LOCK ALARM TEST TOOL
OPERATING INSTRUCTIONS

1, Connecting the test tool.

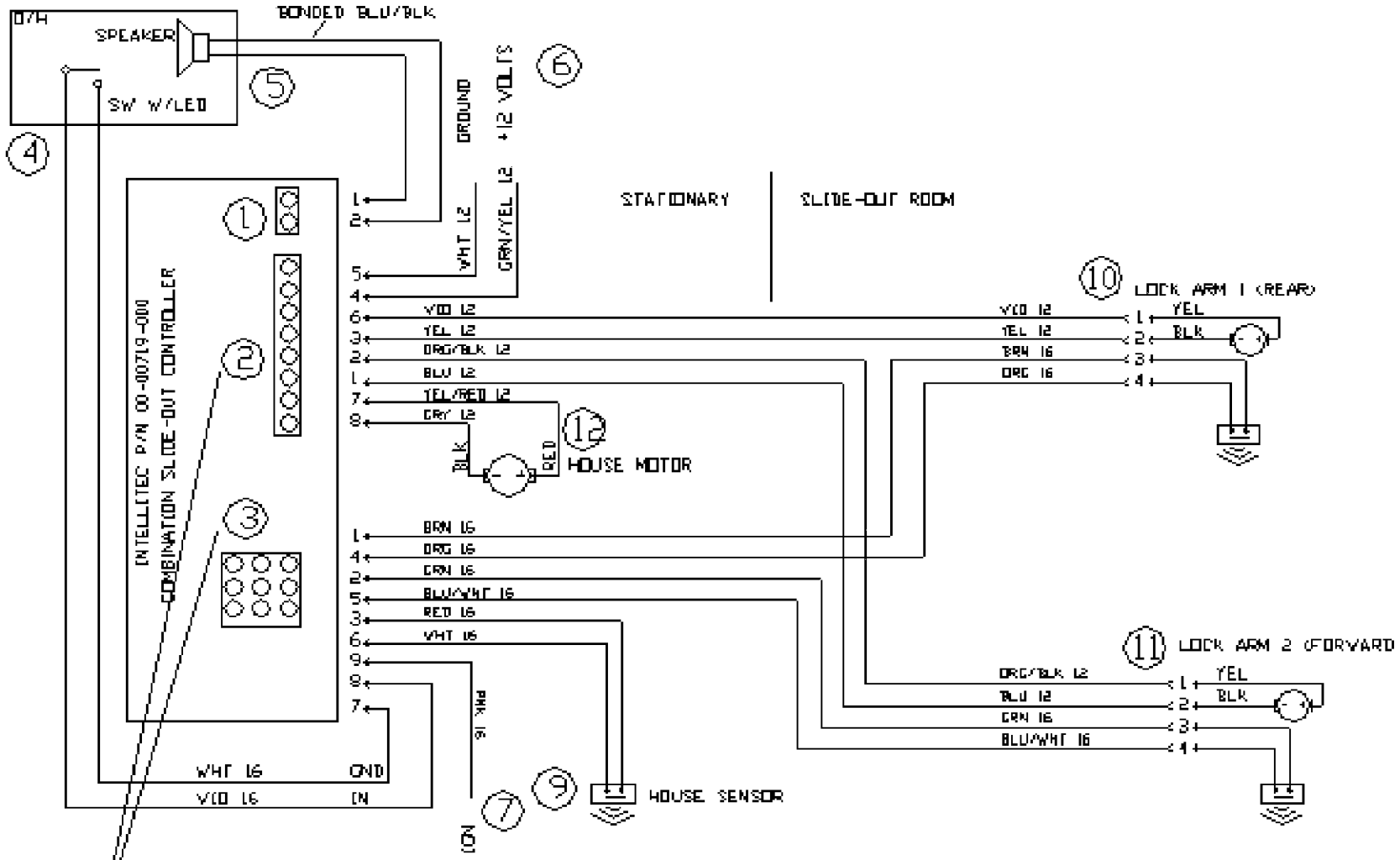
The test tool is configured with an operating panel that includes 3 switches for independent operation of 2 lock arm motors and 1 slide-out motor. Situated above each switch is an indicator lights to confirm proper operation of the proximity sensors. Included with the test tool is an Intellitec 310 slide-out controller. The 310 controller is used by the test tool to run the slide-out in/out motor. Use the 8 pin in-line and 9 pin matrix connectors to connect into the slide-out system. Remove the 8 pin in-line and 9 pin matrix connectors from the appropriate slide-out control box and plug the removed connectors to the connectors of the slide-out tool.

2, Using the test tool.

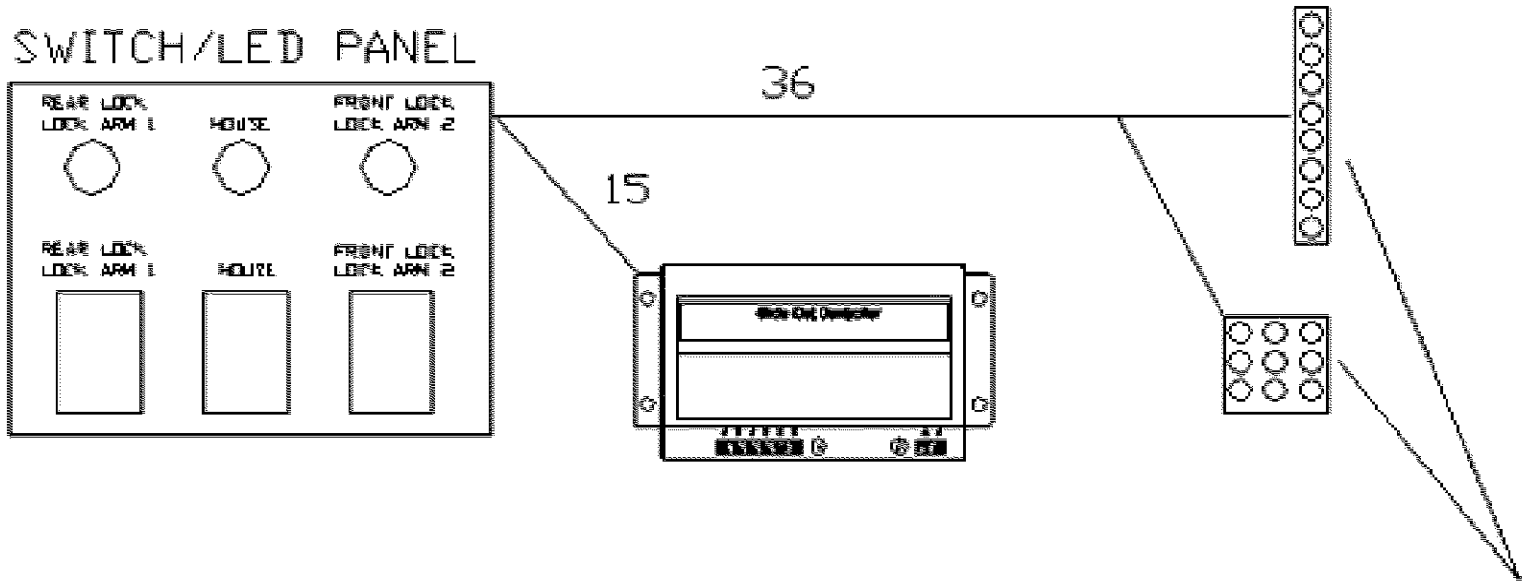
The test tool will aid you in determining the cause of the slide-out room failure. The two outer indicator lights illuminate when the lock arms are in the retracted position. The center indicator light illuminates when the slide-out room is in the fully-in position. Use these indicator lights to determine if the proximity sensors (PS) are working properly. Each lock arm has a PS to tell the slide-out control when it is retracted and the slide-out room has a PS to tell the slide-out control when the room is in the full-in position. When the lock arm is in the retracted position the PS will actuate and create a closed circuit to the slide-out control. If the PS is not aligned properly with mating components it will not close the circuit. This will be indicated on the test tool by a failure of the light to illuminate with the lock arm retracted. This will prevent the slide-out controller from driving the room out. If the PS is damaged it may show a closed circuit regardless of the position of the lock arm. This will be indicated on the test tool by observing if the lock arm indicator light remains on when the lock arm is moved into the extended position. Driving the room to its full-in position will cause the slide-out room PS to actuate and create a closed circuit to the slide-out control. The slide-out control will then deploy the lock arms to the extended position. This will be indicated on the test tool with illumination of the center indicator light when the room is in. If the indicator light does not illuminate with the slide-out room in the lock arms will not deploy. If the center indicator light stays illuminated with the slide-out room extended the lock arms will deploy when the room is extended. If the center indicator light stays on with the room extended the PS most likely needs replaced. However, it could also indicate a short in the wiring between the slide-out control box and the PS.

The lock arm switches are reversing switches used to extend and retract the lock arms. Use these switches to verify operation of each lock arm independently.

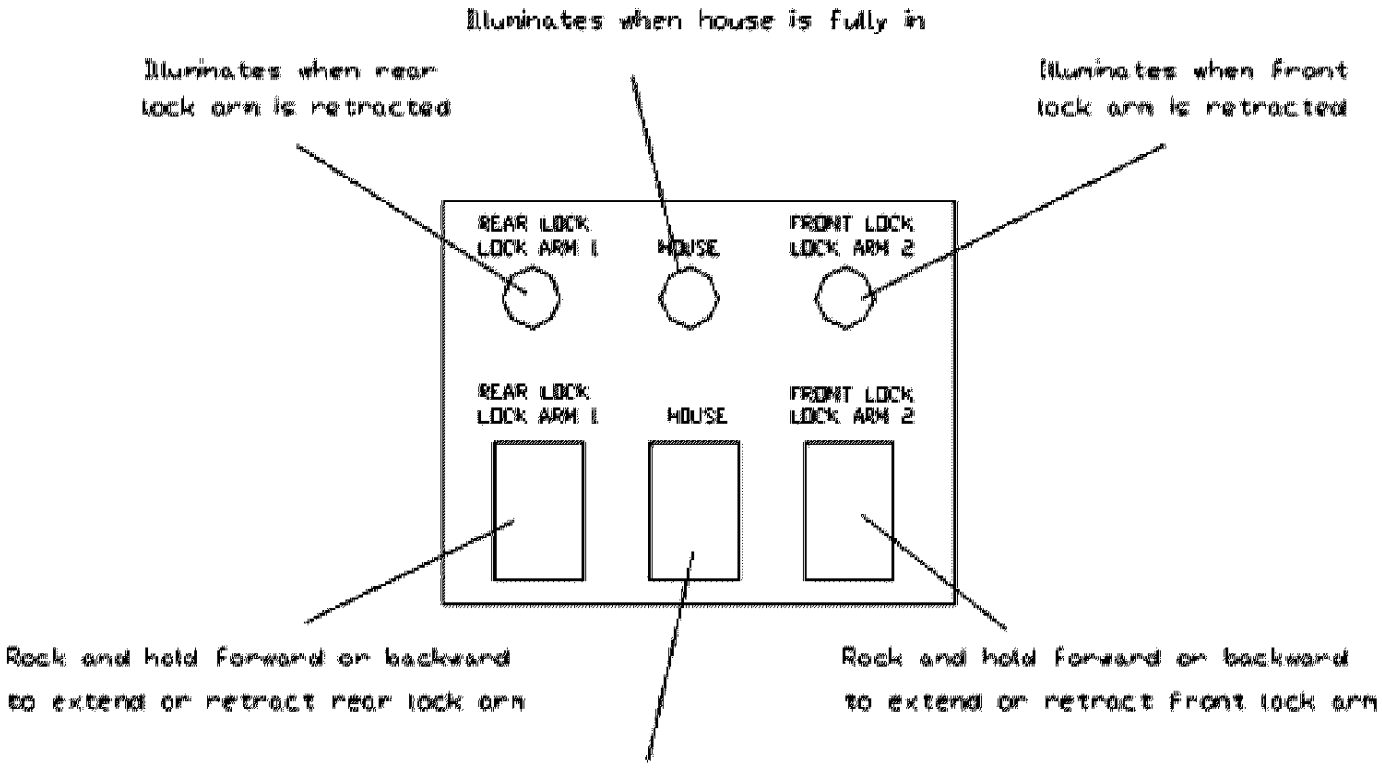
The center switch is a momentary on switch. Press and release the switch to move the slide-out room in or out. Pressing this switch signals the 310 slide-out controller attached to the test tool to operate the slide-room. The 310 controller will shut the slide-out motor off on high current. Press and release the switch during room movement to stop room travel and reverse direction.

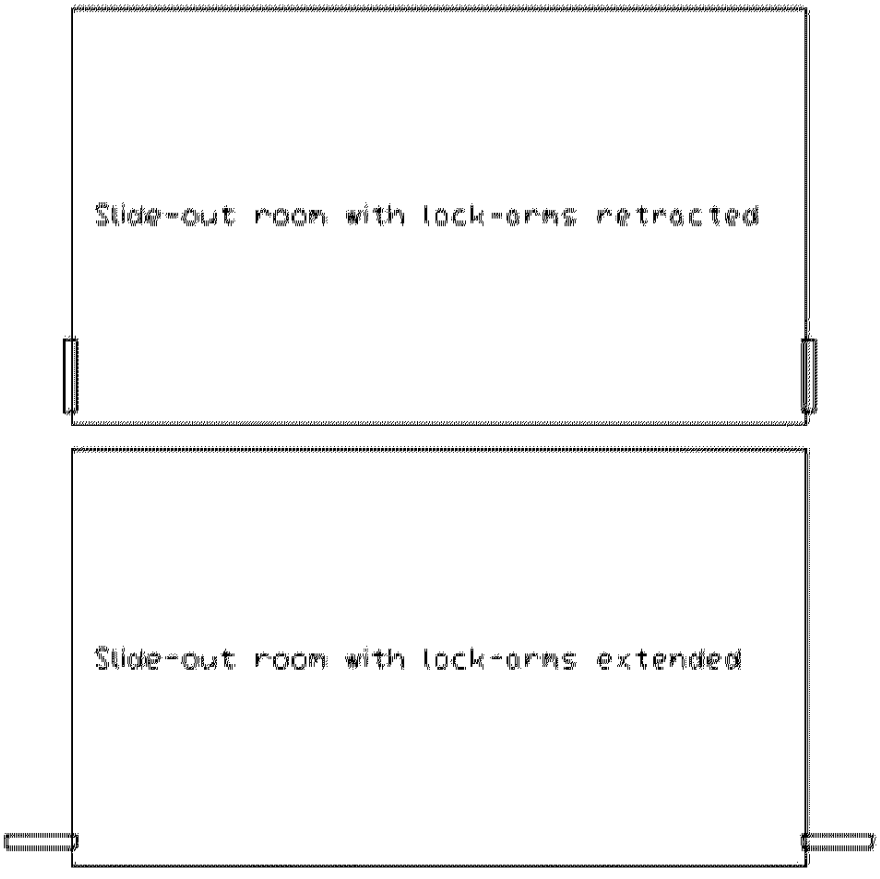


1. Remove connectors 2 & 3 from slide-out control box.



2, Plug the removed connectors into the connectors on the end of the 36" pigtail of the slide-out test tool.


Illuminates when house is fully in
Illuminates when rear lock arm is retracted
Illuminates when front lock arm is retracted
REAR LOCK LOCK ARM 1
HOUSE
FRONT LOCK LOCK ARM 2
REAR LOCK LOCK ARM 1
HOUSE
FRONT LOCK LOCK ARM 2
Rock and hold forward or backward to extend or retract rear lock arm
Rock and hold forward or backward to extend or retract Front lock arm
Push and release to automatically extend or retract house


Slide-out room with lock-arms retracted
Slide-out room with lock-arms extended

Slide Out Lock Arms

Helpful Information for Power Lock Equipped Rooms:

1. In order to operate the power lock arm system a minimum of **9 Volts** must be available.
2. There are 3 LED lights on the slide-out controller. When the 2 outside lights are on it indicates the paddles are properly shut and the center LED when lit indicates the room is in the travel position.
3. There is an ignition safety lock-out that prevents the room's operation when the ignition key is on.
4. When both the MPX (operation) switch's lights and the LED's on the controller flash it indicates that the potentiometer for the lock-arm motors is set too high.
    a. There are 3 potentiometers on the control. 1 for paddle control, 1 for room movement, and 1 voice volume control. (Small moves of the adjustment screw are all that should be taken. *(5 degrees per trial run is a significant adjustment)*
        1. The one that is visible with the cover in place is for the **room's slide-out motor** setting. **Counterclockwise** movement increases the amperage to the motor. The circuit board number for this is R-9.
        2. The **lock-arm motor's (paddle) potentiometer** is located under the cover so the cover requires removal if adjustment is needed. The adjustment for this potentiometer increases amperage to both paddle motors with a **clockwise** movement. On the circuit board next to the potentiometer is the number **R-13.**
        3. The **voice** module volume is adjusted with the **R-59** potentiometer. Its adjustment is **clockwise** for **adding volume** to the voice message.
5. The operator will need to hold the MPX (operation) switch momentarily (1½-2 Seconds) to start the action of the slide-out room. After the voice message ends there is a 5 second delay to move items, or occupants, in the way of the slide-out room.
6. It is designed not to operate when the following occurs on the controller's panel:
    a. If the center LED is not on when the room is in the in position the lock arms will not close and the room will not move.
    b. For the room to move out, all three (3) LEDs need to be on.
    c. For the room to move in, the outside LED lights need to be on.

Troubleshooting:

If the arms do not operate properly, check the pins at the connectors at the lock box. There may be a problem with the insulation not being stripped back far enough. You will need special tools to remove and crimp these pins.

Other troubleshooting tips are as follows;

1. The proximity switches are a magnetically actuated type.
2. If the center light is off when the room is in the in position check the gap between the actuating tube's plate and the room's sensing switch. The switch is designed for a gap of ¼" maximum.
3. If the room is out and the power lock-arm's doors open check to see if the center LED light is on at the controller. If the center light is on then check to see if the room's sensing switch is out of adjustment. It should have a 7/16" gap away from any ferrous (iron) object.

Slide Out Lock Arms

4. If the customer has this problem, the room switch can be activated. Allow the arm to move in and activate the switch a second time to stop. (The lock boxes are not waterproof with the arms out.)
5. The room's sensing proximity switch completes a circuit. It can be checked with a multi-meter set for "continuity reading". Without a ferrous object within the switch's operating range it will read open and when being within ¼" of a ferrous metal object it completes a circuit and is closed. When the room is in the switch completes a circuit by reading the metal plate attached to the tube and is closed. When the room is out, the distance from the tube to the switch exceeds 7/16" therefore the switch is open.
6. If an emergency, or inconvenient service condition exists for the customer, then the switch can be disconnected and by manipulation of the 2 wires create the needed open or closed condition.
7. There is 1 room sensing switch per slide-out and it can be found at the cog wheel.
8. There are 2 paddle sensing proximity switches, 1 per lock-housing, which are factory set. They rarely require service and should only be serviced by experienced service personnel.
9. To check the distance between the bolt and sensor, remove the pin at the paddle and actuator arm. Allow the actuator arm to run all the way in. Put putty on the bolt and check manually how far the bolt is from the sensor. Should be within 1/8", not designed for contact.
10. As a rule the paddle's motors require 4 amps to properly lock the room for travel. This setting is factory made for the customer.

Do not:

1. **Do not** hit the proximity switches with a hammer. They do not like shock therapy.
2. **Do not** send an electrical charge though the switch as this will ruin the switch.

Slide Out Lock Arms

Slide Out Lock Arm Test Tool

1. Connecting the test tool.

The test tool is configured with an operating panel that includes three (3) switches for the independent operation of the two (2) lock arm motors and the one (1) slide out motor. Situated above each switch is an indicator light to confirm proper operation of the proximity sensors (PS). Included with the test tool is an Intellitec 310 slide out controller. The 310 controller is used by the test tool to run the slide out motor. Use the eight (8) pin in-line and nine (9) pin matrix connectors from the appropriate slide out control box, plugging the removed connectors into the connectors of the slide out tool. Remove the eight (8) pin in-line and nine (9) pin matrix connectors (figure 1, on next page) from the appropriate slide out control box and plug the removed connectors to the connectors of the slide out tool.

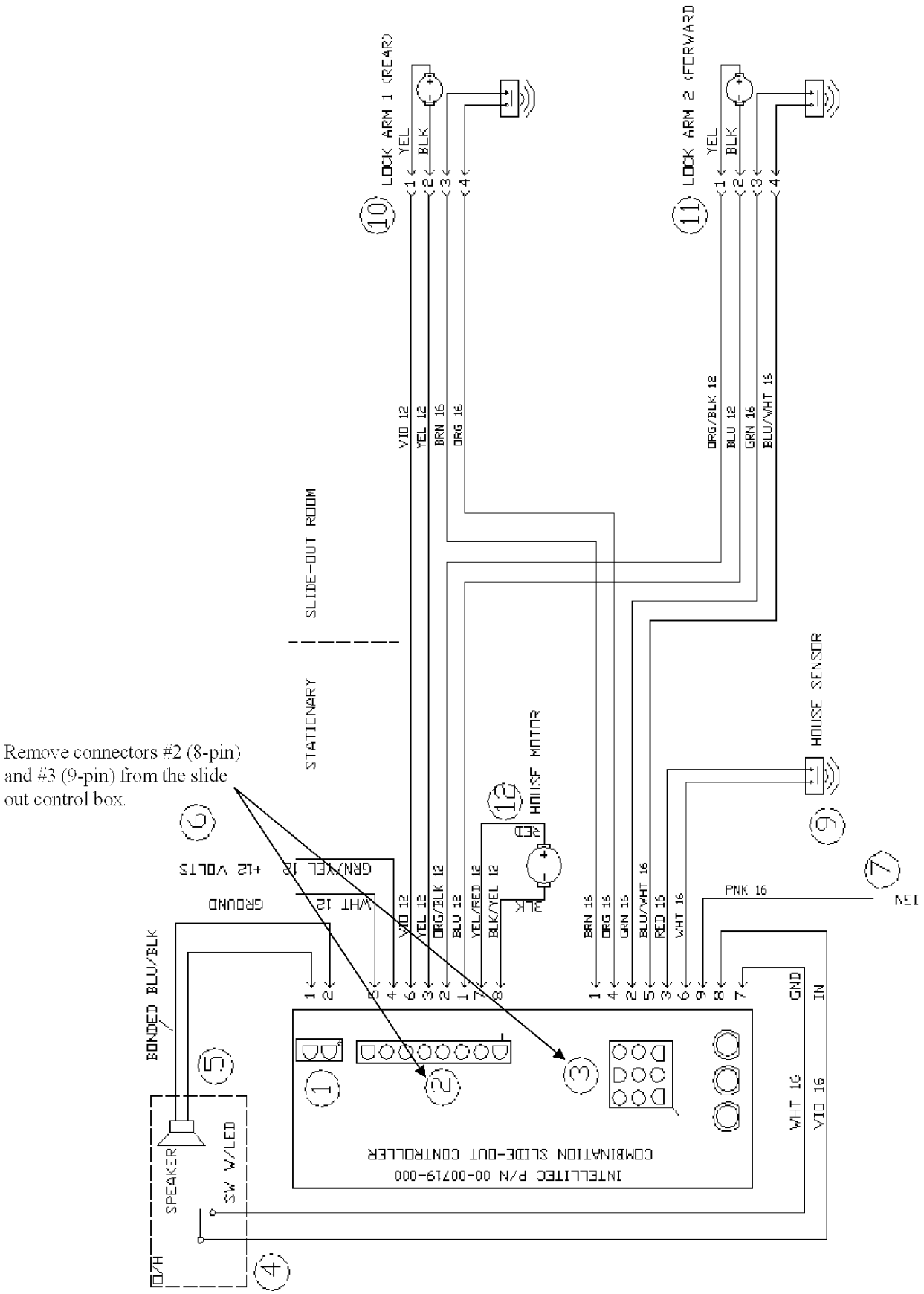
2. Using the test tool.

The test tool will aid you in determining the cause of the slide out room failure. The two outer indicator lights illuminate when the lock arms are in the retracted position. The center indicator light illuminates when the slide out room is in the fully 'IN' position. Use these indicator lights to determine if the PS are working properly. Each lock arm has a PS to tell the slide out control when it is retracted. The slide out room has a PS to tell the slide out control when the room is in the full 'IN' position. When the lock arm is in the retracted position, the PS will actuate and create a closed circuit to the slide out control. If the PS is not aligned properly with the mating components, it will not close the circuit. This will be indicated on the test tool by a failure of the light to illuminate with the lock arm retracted. This will prevent the slide out controller from driving the room out. If the PS is damaged, it may show a closed circuit regardless of the position of the lock arm. This will be indicated on the test tool by observing if the lock arm indicator light remains on when the lock arm is moved into the extended position. Driving the room to the full 'IN' position will cause the slide out room PS to actuate and create a closed circuit to the slide out control. The slide out control will then deploy the lock arms to the extended position. This will be indicated on the test tool with an illumination of the center indicator light, when the room is "IN". If the indicator light does not illuminate with the slide out room 'IN', the lock arms will not deploy. If the center indicator light stays illuminated with the slide out room extended, the lock arms will deploy when the room is extended. If the center indicator light stays on with the room extended, the PS most likely needs replaced. However, it could also indicate a short in the wiring between the slide out control box and the PS.

The lock arm switches are reversing switches used to extend and retract the lock arms. Use these switches to verify the operation of each lock arm independently.

The center switch is a momentary 'ON' switch. Press and release the switch to move the slide out room 'IN' or 'OUT'. Pressing this switch signals the 310 slide out controller attached to the test tool to operate the slide out room. The 310 controller will shut the slide out motor off on high current. Press and release the switch during room movement to stop and reverse direction of travel of the room.

Slide Out Lock Arms

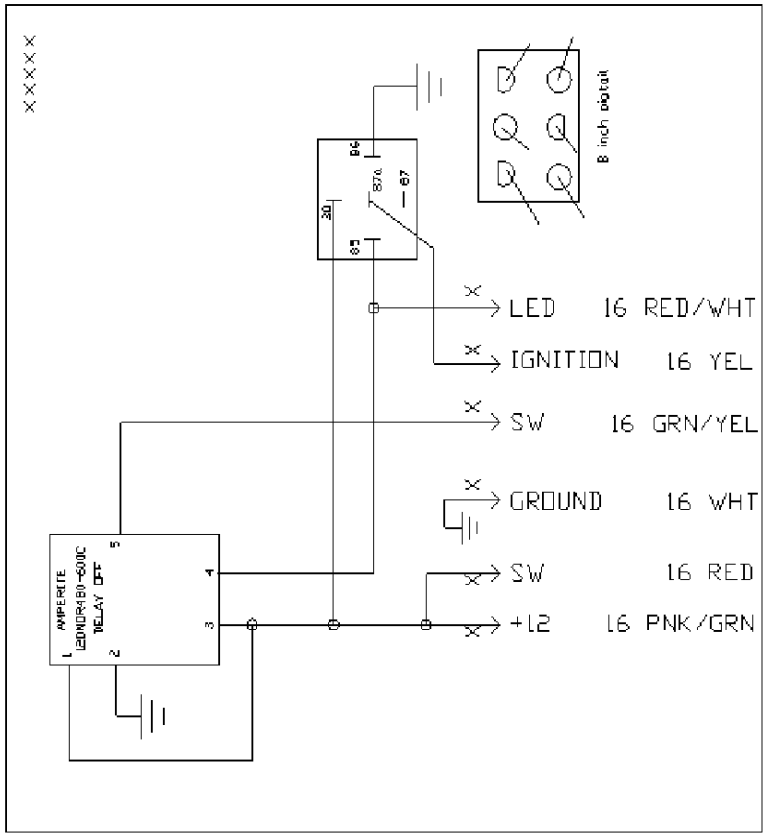


Slide Out Lock Arms

The timer will shut down in 10 minutes and activate the ignition lockout. Plans are to implement the new version on 2006 units.

NEW VERSION

Slide-out power timer module



TOWABLES ONLY

The timer shuts off power to the control module. The MPX switch has to be turned on twice to have the slide out move in.

CURRENT VERSION

Slide-out power timer module