

## PRODUCT WARNINGS

### PLEASE READ BEFORE OPERATING OR INSTALLING ANY BASE SYSTEM

The ASK-D receiver unit is not rated for use in explosive environments and must not be installed in close proximity to tank fittings or hose connections!

Air solenoids used to control the tank internal valves should be connected to the same air supply for the DOT required MANUAL Emergency Stop switch(s). Following activation of the radio remote Emergency Stop feature the operator MUST first close the manual internal valve switch prior to re-setting the BASE system. Failure to do this may result in the internal valve(s) automatically and unintentionally reopening with system reset.

Systems wired 'hot' to power when the vehicle is in motion have ALL remote functions still operable. A driver (or passenger) may accidentally activate the remote control unintentionally causing the Emergency Stop feature to activate and the trucks engine to stop instantly. Systems must be properly interlocked (see above) to prevent unintended use.

Never attempt to perform PTO repairs from under chassis while engine is running or while wearing radio remote control device

All open valves must be closed prior to system reset to prevent the valve from automatically and unintentionally reopening with Emergency Stop reset

DO NOT CHASSIS GROUND EITHER OF THE HOSE REEL MOTOR ELECTRICAL LEADS WHEN USING A REMOTE CONTROL POLARITY REVERSER CIRCUIT. BOTH LEADS MUST BE CONNECTED DIRECTLY TO THE CONTROLLER AS SHOWN IN THE DRAWINGS

NEVER GO UNDER A TRUCK WITH THE ENGINE RUNNING AND NEVER USE THE REMOTE CONTROL DEVICE TO ACTIVATE THE PTO WHEN WORKING ON OR SERVICING THE PTO FROM UNDER THE TRUCK. THE REMOTE CONTROL DEVICE IS INTENDED TO BE USED ONLY WHEN THE OPERATOR IS NOT AT RISK OF BEING INJURED BY THE MACHINE.

Unauthorized modifications to any BASE system, or any unintended uses of BASE systems may void the manufacturer's warranty for the product. This may include, but is not limited to drilling holes in BASE product enclosures, adding auxiliary or bypass switches, changes to installation procedures, modifications to antennae configurations, modifications to charging configurations, or changes to the electronic or mechanical workings of the system.

## Model ASK-D One to Four Function Radio Remote Control System

### SYSTEM OVERVIEW

BASE Engineering's ASK-D systems have been designed to provide wireless remote control and emergency shutdown for bulk fuel delivery vehicles including LPG and Refined Fuels. This installation guide references features specific to Fuel Truck applications. For other applications, please contact the factory.

### SYSTEM INCLUDES

- Transmitter with leather carry case
- Chassis mounted Receiver module
- Pre-measured wiring harness
- Antenna and Coax cable

Optional equipment may include:

- Ignition Kill relay
- Frame mounted Air Solenoid(s)
- Query relay (LPG trucks above 3500 USG)
- Hose Reel control circuit

Additional hardware to be supplied by truck-builder:

- Mounting hardware (nuts and bolts)
- Chassis specific ECM pin connectors
- Plastic tubing for pneumatic connections
- Parking brake air pressure switch to power system

## HARDWARE INSTALLATION

### Body Mounted Receiver Unit

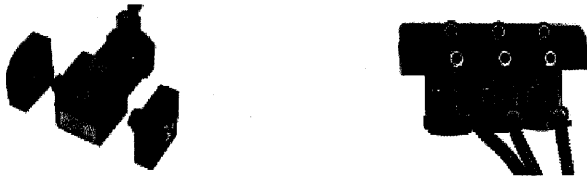
The ASK-D **BASE** receiver unit may be mounted in-cab or externally on the back of the cab or frame rail. It is recommended that you use 1/4 x # 20 large flanged inserts and 1 1/4 x # 20 bolts with both lock and flat washers to securely fasten the receiver to cab sheet metal. The wiring harness and antenna coax connectors should always be pointing down.



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### Air Solenoid Installation

The air solenoid provided for emergency closure of the truck's main internal valve should be mounted externally on the back of the cab directly between the inside of the frame rails and 1.5" up from the bottom of the cab. (See BASE drawing # 90610 for details)

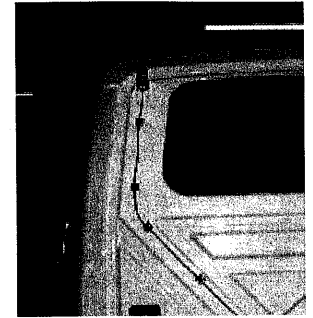


**Note:** Air inlet is on the left side and air outlet is on the front. Modular solenoids may be coupled together using a common air supply. Air solenoids typically 'open' with signal from radio transmitter allowing air to pass through to actuator device. **Emergency Stop** air solenoids typically 'close' with signal from radio transmitter causing air to dump and valves to close.

**WARNING:** Air solenoids used to control the tank internal valves should be connected to the same air supply for the DOT required MANUAL Emergency Stop switch(s). Following activation of the radio remote Emergency Stop feature the operator **MUST** first close the manual internal valve switch prior to re-setting the BASE system. Failure to do this may result in the internal valve(s) automatically and unintentionally reopening with system reset.

### Antenna and Coax Cable Installation

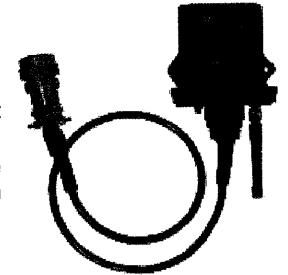
The antenna mounting bracket should be fastened to the back of the cab near the roof. It is recommended that you use nut inserts with 1/4 inch bolts to securely fasten the bracket. The coax cable should be loomed and fastened to the cab using 3M tie down's every 12"'. Once the cable has been installed attach the larger connector to the antenna and the smaller connector to the bottom of the receiver (see photo).



## WIRE HARNESS CONNECTIONS

### Wiring Harness Installation

The wiring harness is supplied pre-cut to OEM requirements to allow for quick connection to truck electronic systems. Plug the harness connector into the bottom of the receiver unit and run each wire or wire bundle to the required destination. It is strongly recommended that extra care is provided when fastening the cable. (See attached drawing for connection details specific to your chassis and order request)



### 12/24VDC Connections

It is strongly recommended that the +12/24VDC power to 'arm' any BASE Emergency Stop system be taken from a source that is energized only during pumping operations. The addition of a 12/24VDC normally closed (low air) pressure switch in the PARK BRAKE air supply line (feeding the dash mounted park brake switch) is the preferred interlock method. Making the power connections through this switch ensures that the system will be de-energized when the vehicle is in motion and also that the internal valve(s) have automatically closed if accidentally left open (Emergency Stop systems only). Other options include using a relay in the PTO lamp circuit to turn on the BASE system. The relay ground is switched 'on' by the PTO lamp ground circuit routing 12/24VDC positive power to the receiver (refer to BASE drawing # 00242 for PTO relay connection detail).

-12/24VDC Ground connection to the receiver should be a reliable chassis or direct battery ground. Ensure that any chassis ground connection is scraped clean of paint or grease or use a ground connection supplied by the chassis manufacturer 'body builder' plug.

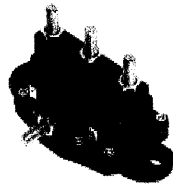
**WARNING:** Systems wired 'hot' to power when the vehicle is in motion have ALL remote functions still operable. A driver (or passenger) may accidentally activate the remote control unintentionally causing the Emergency Stop feature to activate and the trucks engine to stop instantly. Systems must be properly interlocked (see above) to prevent unintended use.

#### Ignition 'Kill' relay (if supplied)

The pre wired Ignition kill relay should be securely mounted on the firewall in the engine compartment. It is VERY IMPORTANT that all wire connections are soldered and then covered with heat shrink tubing for weather protection. Improper connections may result in poor engine performance or failure of the EMERGENCY STOP engine kill function (see BASE drawing # 90614 for detailed wire connections).

#### Hose Reel-Out option (if specified)

When the hose Reel Out operation is specified the remote control system includes a heavy-current bridge relay for reversing the polarity of the electric hose-reel motor (up to 125Amp DC). This 'reverser' circuit is available as a stand alone module to be frame mounted near the cab of the truck or as a pre-packaged control box including the required circuit-breaker(s). All BASE systems ordered with the Hose Reel control option include the 12VDC rewind button control wire. By using the BASE supplied 12VDC signal wire the system is interlocked preventing short circuit damage should the remote Reel Out button be pressed at the same time as the truck mounted Reel In switch. (Please reference the attached wire connection drawing specific to your order)



Hose Reel Control Module



Hose Reel Control Box with Breaker

Note: The ASK-D receiver unit is pre-wired for connection to the Hose Reel control circuit when this option is specified

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#### Hose Reel-In option (if specified)

The hose Reel- In feature requires a mechanism to automatically feed the hose back onto the hose reel drum without bunching up the hose and binding the drum rotation. Typically a single or double wrap hose reel design works well with no additional hardware. A conventional multi-wrap reel will require the addition of an automatic hose feeder or 'level rewind' device to lay the hose evenly across the drum as the operator may be several hundred feet away with the remote control transmitter.

Note: The ASK-D receiver unit is pre-wired for connection to the Hose Reel control circuit when this option is specified

#### Remote PTO (Power Take Off) operation (if supplied)

##### Electric 'Hot Shift'

A 12VDC receiver output wire is provided for connection directly to the closed or 'on' side of the PTO switch. When the BASE system PTO button is pressed this wire is energized. When the button is pressed again this wire is de-energized. If used to energize an electric/air solenoid supplied by the PTO manufacturer connect this wire directly to the 12VDC solenoid 'on' wire. A ground output is available on request.

##### Air 'Hot Shift'

These systems are supplied with an auxiliary electric/air solenoid provided by BASE. Following installation of the receiver and air solenoid (shown elsewhere) simply plug the pre-wired connector labeled 'PTO' to the corresponding air solenoid connector. Pressing the PTO button on the BASE transmitter will activate this air solenoid and allow air to engage the PTO.

##### Clutch Pedal Activated PTO

"T" into the air supply leading from the PTO dash switch to the transmission mounted PTO. Run a 1/4 inch air line from this "T" to the inlet side of the BASE supplied electric/air solenoid. Run a 1/4 inch air line from the outlet side of this solenoid to the Inlet side of a clutch mounted air piston. Pressing the transmitter PTO or CLUTCH button will cause the air piston to extend and disengage the clutch, transmission, PTO, and cargo pump. Pressing the button a second time will exhaust the air to the piston and allow the clutch to engage along with the PTO and cargo pump.

Note: Most operators activate the clutch piston with the remote control while in the cab or at the rear deck where they can then switch the PTO on with the manual control. When they reach the customers tank and wish to pump product the remote control is used to release the clutch pedal and engage the transmission/pump.

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#### Throttle Up/Down (if supplied)

A direct connection to engine ECM is provided when requested. See the attached drawing specific to this engine ECM connection if ordered. Momentary or Latched grounded ECM outputs also available.

For 'switched' Fast Idle applications a 12VDC receiver output is supplied for connection to the existing truck mounted fast idle switch. Connect the receiver output wire labeled 'Throttle' to the closed or 'ON' side of the fast idle switch.

#### Query Option (if specified)

The Query option utilizes a conventional truck back-up alarm as a warning signal to the operator of a pending 5-minute shut-down. If the operator fails to respond within 30 seconds of the audible warning the BASE system will automatically activate the Emergency Stop feature. The ASK-D receiver wire harness will have a blue wire labeled 'query alarm' for easy hook up. A back-up alarm drawing no more than 250 milliamps (1/4 Amp) must be used or an additional relay will be required for higher powered alarms. (Please see attached drawing, if applicable)

## SYSTEM TESTING

Once the system is installed and the truck is in the final stages of completion the **BASE** system should be powered up and tested in accordance with DOT documentation requirements.

The following are the minimum functional tests required for each **BASE** system installation:

1. Apply parking brake, start the truck and allow air pressure to build up
2. Make sure the trucks internal valve is open using the manual control
3. Check for proper operation of PTO and THROTTLE radio remote functions
4. From a distance of 300ft, press the transmitter **EMERGENCY STOP** button and you should hear the internal valve close as the trucks engine stops
5. Turning the truck ignition all the way off before restart will re-arm the system and re-enable the tank internal valve

**Note:** The transmitter cannot be used to re-open the tank internal valve. This has been designed into the system software to prevent accidental re-opening in a panic situation. Pressing the transmitter repeatedly will send the same "stop" message.

## SYSTEM TROUBLESHOOTING

Little system maintenance is required. Care should be taken to provide clean air to the system through regular air tank draining and compressor maintenance. Heavy-duty truck and mil-spec components have been used throughout the **BASE** system to provide maximum operating life. In the unlikely event of a component failure perform the following steps with the system energized:

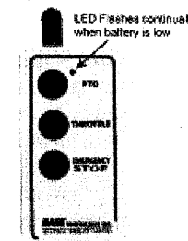
1. Check transmitter battery condition. The transmitter LED should flash only for a brief instant during the pushing of the stop button. (see Transmitter Battery Test below)
2. Ensure that the receiver "POWER" LED flashes briefly when power is switched to the system. This LED is located on left front face of the receiver.
3. If this indicator lamp fails to blink when the system is energized the unit has lost its power or ground.
4. With the system energized use a test lamp or multi-meter to check the red receiver wires for 12V power and the black receiver wires for ground.
5. If no 12V power is present check the connection to the Diamond Logic RPM module
6. The air solenoid valve should make an audible "click" when 12V is applied and removed from the positive connection.
7. An ohmmeter placed across pin numbers 30 and 87A on the ignition relay should indicate resistance until the transmitter **EMERGENCY STOP** button is pressed. If the relay is working properly the relay contact will "break" the ignition circuit when the transmitter is used.

Beyond these basic wiring checks it may be much more productive to simply unplug the system and replace the unit. Disconnect the quick connect plug at the base of the receiver then disconnect the antenna located at the bottom of the unit. Contact your nearest distributor or the factory at **1-800-924-1010** for immediate shipment of a replacement unit. Return the inoperative unit to the distributor or factory for evaluation and repair.

## TRANSMITTER BATTERY TEST & REPLACEMENT

Transmitter battery life will vary depending on usage. Battery replacement is required when the transmitter low battery indicator LED continually flashes while pressing and holding the transmitter button down. The transmitter microprocessor watches the battery voltage and trips the LED located at the top of the transmitter when the voltage falls below a preset value. This is set to happen well in advance of battery failure but replacement should be a priority.

Note: A low battery test along with a complete system operational test is recommended as part of a daily vehicle pre-check procedure.



## SYSTEM PROGRAMMING

All **BASE** systems are supplied pre-programmed and ready to go. The PTO and Throttle buttons are latched and the Emergency Stop button is Safety Latched. When added, the Query button is programmed with a query timer. In the event you have to replace the handheld transmitter or the receiver, please refer to the 'Component Replacement' section for step by step instructions. Please see below for a brief description of the programming modes.

### Latched Mode (PTO and Throttle)

A channel programmed for latched mode will operate in an on / off state. Pressing the button once will activate the channel until the same button is pressed a second time deactivating the channel.

### WARNING

**Never attempt to perform PTO repairs from under chassis while engine is running or while wearing radio remote control device.**

### Momentary (Hose Reel Operation)

A channel programmed for momentary operation will be active only while the transmitter button is pressed. Pressing the button will send a 12VDC signal from the corresponding receiver wire as long as the button is held. Releasing the button will turn off the 12VDC signal.

### Safety Latched Mode (Emergency Stop)

A channel programmed for safety latched mode will stay latched after a button is pressed to activate it. The only way the mode can be reset to its normal state is by cycling the key to off position for 5 seconds and then back to the on position.

**WARNING:** All open valves must be closed prior to system reset to prevent the valve from automatically and unintentionally reopening with Emergency Stop reset

### Query Mode

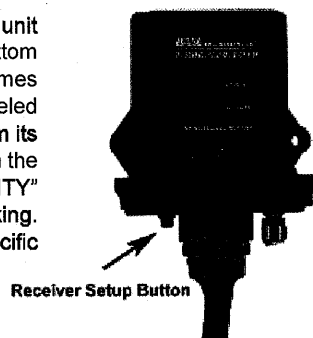
A channel programmed for query is used to trigger the emergency stop function if the driver is not paying attention. Once activated, the query button has to be pressed once every 5 minutes or the system will go in to safety latched mode. If the driver fails to press the button a warning will sound (usually through a back up alarm) at the 4 minute and 30 second mark giving the driver 30 seconds to respond before the shutdown sequence is automatically activated.

## TRANSMITTER & RECEIVER REPLACEMENT

To replace either the hand held transmitter or receiver unit please follow these instructions;

### Transmitter Replacement

To replace a transmitter on an existing receiver unit simply press the set-up button located at the bottom of the receiver mounted on the back of the cab 5 times very quickly (see photo). An indicator light labeled "ACTIVITY" will blink back at you 5 times to confirm its ready for a new handheld. Next press any button on the new handheld to complete the process. The "ACTIVITY" led on the receiver will blink again to confirm its working. The new transmitter is now dedicated to that specific receiver.



### Receiver Replacement

When replacing a receiver you still must dedicate the unit to the handheld. Please follow the transmitter replacement instructions listed above. In the event that the individual channels require reprogramming please follow these simple steps;

#### Steps to program each channel:

1. Turn power off to the receiver unit.
2. Remove the cover of the receiver unit and locate the set-up push button on the internal circuit board as well as the indicator LED beside it. This button is used to program all internal settings in the receiver.
3. Turn power on to the receiver unit – watch that the indicator led blinks once – this indicates that the receiver is functioning properly. Once you have started the programming operation if you lose track of your place in the sequence, turn the power off and then on again to start the operation over.
4. Press the set-up button 10 times in a row – quite quickly – about 2-3 times a second. Once the button has been pressed 10. Verify the LED indicator blinks 10 times. The receiver is now in "learning mode".
5. Once the led has blinked 10 times, the receiver unit is waiting for the "channel number". Press the button the number of times corresponding to the channel you wish to set. For example, one press for channel 1, two presses for channel 2.
6. The led will blink the number of times to verify that you have selected the correct channel. If you have not selected the proper channel or lose track of how many times you have pressed the button, turn the power off and then on again and start from the first step above.

7. Now that the channel has been selected, the "operating mode" for this channel must be set. Press the button the number of times below for the mode of operation desired for the channel – see elsewhere in the manual for a description of these modes of operation:

- o 1 Press -Channel will be **momentary** operation
- o 2 Presses -Channel will be **latched** operation
- o 3 Presses -Channel will be **safety-latched** operation
- o 4 Presses -Channel will be **query** operation
- o 6 Presses -Channel will be **enable** operation

8. The led will blink the number of times you have pressed the button and then will go out. The programming of the channel operation mode is now complete.

**Note:** Programmed settings are not lost when the power is turned off to the unit and will be active the next time the receiver is powered up again.

## WARRANTY & RETURN PROCEDURES

### Limited Warranty Policy

This **BASE** Engineering Inc. radio remote control system is supplied with a limited warranty to be free from defects in material and workmanship for a period of **4 years from the date of manufacture**. This warranty covers repair or replacement of the failed component only. Labor to repair or replace is not covered under this warranty.

Replacement parts will be shipped same-day when possible provided the call is placed prior to 1:00 pm (EST) Eastern Standard Time. Calls received later than 1:00 pm EST will be shipped overnight on the next business day. All defective components must be returned to the factory clearly marked with a RGA (Returned Goods Authorization) number for identification purposes.

### Warranty Claims

**BASE** Engineering Inc. will make a good faith effort for prompt correction or other adjustment with respect to any product which proves to be defective after consulting with us within the warranty period. Before any warranty repairs are attempted or before returning any product to the factory **BASE** Engineering must be contacted. **BASE** Engineering staff will require the model number and the serial number of the system.

**Troubleshooting calls and prior authorization for warranty can be made toll free to 800.924.1010.**

**BASE** Engineering shall not be liable for material, labor or contingent liabilities arising out of the improper use or function of any products. Warranty shall become void if the product is improperly installed, modified, damaged, abused or used for applications other than intended use.