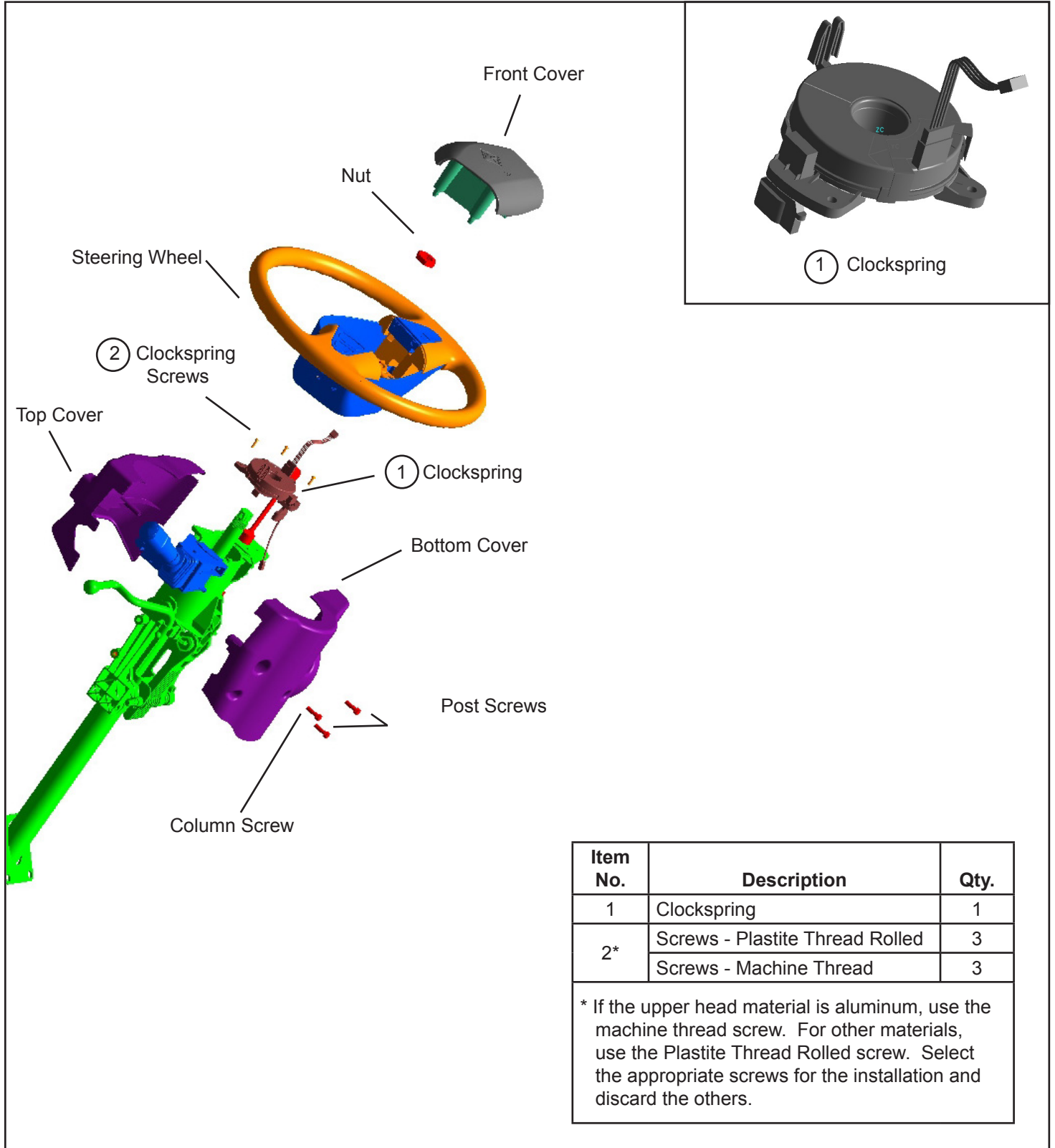


# Installation Instructions

## CLOCKSPRING KIT



Item No.	Description	Qty.
1	Clockspring	1
2*	Screws - Plastite Thread Rolled	3
	Screws - Machine Thread	3

\* If the upper head material is aluminum, use the machine thread screw. For other materials, use the Plastite Thread Rolled screw. Select the appropriate screws for the installation and discard the others.

Figure 1 Clockspring Kit



## GENERAL SAFETY GUIDELINES

**WARNING! PLEASE READ AND FOLLOW THESE INSTRUCTIONS  
TO AVOID PERSONAL INJURY OR DEATH:**



When working on or around a vehicle, the following guidelines should be observed **AT ALL TIMES**:

- ▲ Park the vehicle on a level surface, apply the parking brakes and always block the wheels. Always wear personal protection equipment.
- ▲ Stop the engine and remove the ignition key when working under or around the vehicle. When working in the engine compartment, the engine should be shut off and the ignition key should be removed. Where circumstances require that the engine be in operation, **EXTREME CAUTION** should be used to prevent personal injury resulting from contact with moving, rotating, leaking, heated or electrically-charged components.
- ▲ Do not attempt to install, remove, disassemble or assemble a component until you have read, and thoroughly understand, the recommended procedures. Use only the proper tools and observe all precautions pertaining to use of those tools.
- ▲ If the work is being performed on the vehicle's air brake system, or any auxiliary pressurized air systems, make certain to drain the air pressure from all reservoirs before beginning ANY work on the vehicle. If the vehicle is equipped with a Bendix® AD-IS® air dryer system, a Bendix® DRM™ dryer reservoir module, or a Bendix® AD-9si® air dryer, be sure to drain the purge reservoir.
- ▲ Following the vehicle manufacturer's recommended procedures, deactivate the electrical system in a manner that safely removes all electrical power from the vehicle.
- ▲ Never exceed manufacturer's recommended pressures.
- ▲ You should consult the vehicle manufacturer's operating and service manuals, and any related literature, in conjunction with the Guidelines above.
- ▲ Never connect or disconnect a hose or line containing pressure; it may whip and/or cause hazardous airborne dust and dirt particles. Wear eye protection. Slowly open connections with care, and verify that no pressure is present. Never remove a component or plug unless you are certain all system pressure has been depleted.
- ▲ Use only genuine Bendix® brand replacement parts, components and kits. Replacement hardware, tubing, hose, fittings, wiring, etc. must be of equivalent size, type and strength as original equipment and be designed specifically for such applications and systems.
- ▲ Components with stripped threads or damaged parts should be replaced rather than repaired. Do not attempt repairs requiring machining or welding unless specifically stated and approved by the vehicle and component manufacturer.
- ▲ Prior to returning the vehicle to service, make certain all components and systems are restored to their proper operating condition.
- ▲ For vehicles with Automatic Traction Control (ATC), the ATC function must be disabled (ATC indicator lamp should be ON) prior to performing any vehicle maintenance where one or more wheels on a drive axle are lifted off the ground and moving.
- ▲ The power **MUST** be temporarily disconnected from the radar sensor whenever any tests **USING A DYNAMOMETER** are conducted on a vehicle equipped with a Bendix® Wingman® system.

## DESCRIPTION

This kit contains all of the necessary components to replace the clockspring on International vehicles.

## DISASSEMBLY

1. Be sure to park the vehicle with the wheels straight ahead.
2. Disconnect the power source before working on electrical components.
3. Remove the front cover of the steering wheel by inserting a Phillips head screwdriver into each of the four apertures (two per side) as shown in Figure 3. When the latching mechanism is released, pull the front cover forward.
4. Disconnect the electrical connector of the clockspring wiring harness near the steering wheel. Do not attempt to disconnect the harness near the clockspring.
5. Mark the orientation of the shaft spindle and plate to aid alignment at reassembly.
6. Remove the steering wheel nut. Refer to Figure 4.
7. Using a wheel puller to loosen, remove the steering wheel from the shaft spindle. Refer to Figure 5.
8. As shown in Figure 6, remove the steering column covers by removing the two post screws and one column screw with a Torx® driver. Separate the bottom and top cover halves. A wiring harness is attached to the bottom cover half and will prevent the cover from being removed from the steering column area. Complete removal of this cover is not necessary or recommended to facilitate the installation of this kit.
9. Disconnect the electrical connector on the bottom side of the clockspring by prying the locking tab gently with a flat blade screwdriver. The locking tab is located on the steering column side of the housing.
10. Using the applicable (either Phillips or Torx®) screw driver, remove the three screws (2) that secure the clockspring (1) to the steering column assembly.

## Installing the Replacement Clockspring

Clocksprings can be one of two types, either “canceling” or “non-canceling”. A “canceling” clockspring cancels, or turns off, the turn signal when the steering wheel is turned, whereas a “non-canceling” clockspring requires the driver to manually cancel the turn signal upon completion of the turn. The clockspring included in this kit is a “canceling” assembly but can be converted to a non-canceling assembly. To convert to a non-canceling assembly remove the canceling hub by gently pulling and rocking the hub to disengage the three locking tabs. Refer to Figure 9.

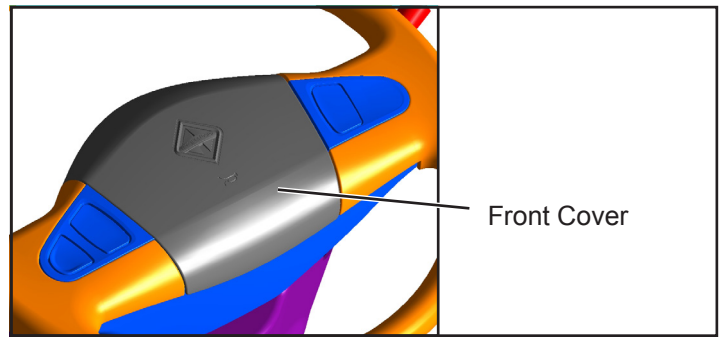


Figure 2 Front Cover

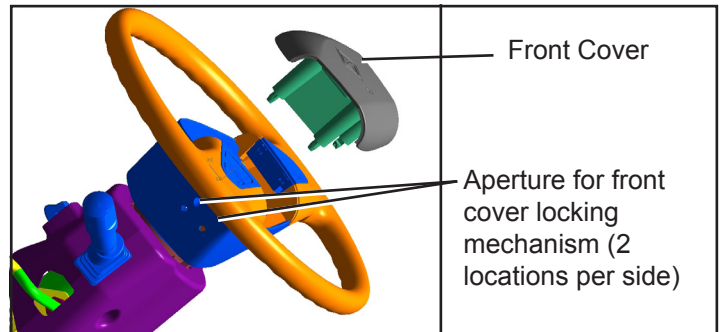


Figure 3 Releasing and Removing the Front Cover

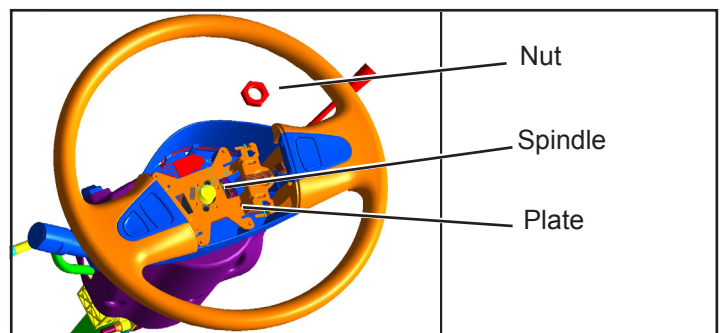


Figure 4 Removing the Steering Wheel Nut

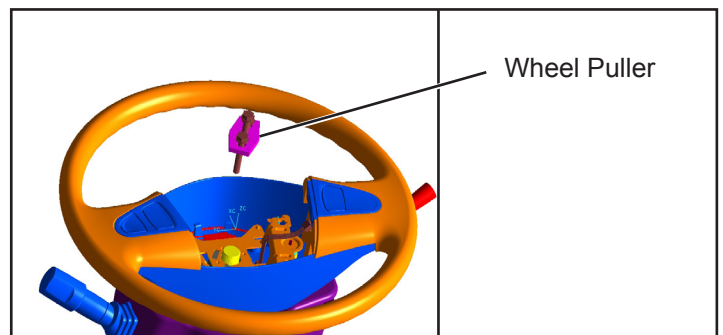


Figure 5 Wheel Puller

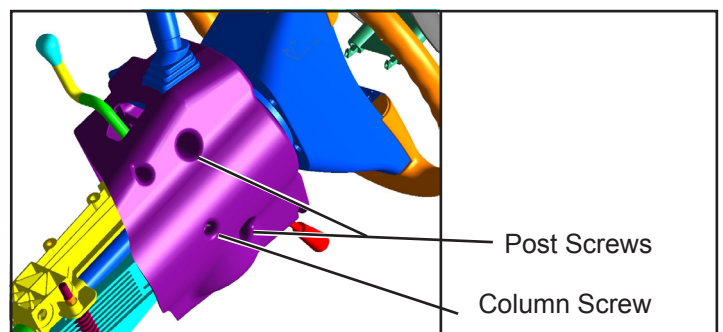


Figure 6 Removing the Column and Post Screws (bottom side)

1. Select the appropriate clockspring screw (2). If the upper head material is aluminum, use the machine screw (2), otherwise use the plastite screw (2).
2. Inspect the new clockspring verifying the label marked **“DO NOT USE IF LABEL IS BROKEN”** is intact. If the label is broken, the clockspring must be centered before it can be placed into service. Follow the instructions on the front surface of the clockspring for resetting the assembly. Refer to Figure 8.

3. Align the three holes on the clockspring (1) with the column mounting holes. The clockspring holes will align in one direction only. Using the three clockspring screws (2) identified in Step 1, secure the clockspring and torque the screws to 15–35 in-lbs.
4. Connect the clockspring electrical connector on the bottom of the housing to the wire harness. Refer to Figure 9. An audible “click” ensures the connector is secure.
5. Reinstall the column cover halves, starting with the bottom cover. Align the steering column screw hole of the bottom cover with the steering column hole. As shown in Figure 10, the locating tab inside the cover rests against the Bendix® TC-7™ trailer control valve mounting plate when properly positioned. Install the column screw. If the wire harness that attaches to the bottom cover becomes detached during installation, secure the wire harness and clip before installation.

Align the top cover with the bottom cover and install the two post screws. Tighten the center column screw to 20-40 in-lbs and the post screws to 10–25 in-lbs.

6. Align the steering wheel on the steering column shaft. Also align the clockspring clip with the slot in the steering wheel and feed the clockspring wire harness into the steering wheel opening. Exercise extreme caution to prevent misalignment and possible damage to the shaft and steering wheel.
7. Replace the nut and torque to 660–720 in-lbs.
8. Connect the clockspring wire harness to the steering wheel (horn) connector.
9. Install the front cover.
10. Reconnect the power source.

### Testing the Vehicle

1. Activate the horn to verify the electrical connection to the horn is complete.
2. Turn on the turn signal then turn the steering wheel to verify that the system operates correctly as either a “non-canceling” or “canceling” switch.
3. If the horn and / or turn signals are not functioning properly, verify that the power source is connected and that all electrical connections are properly seated.

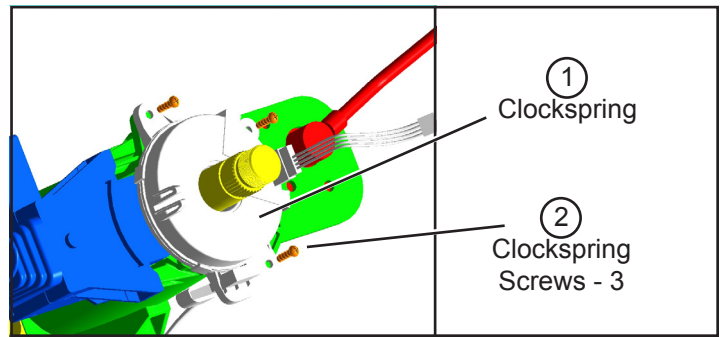


Figure 7 Clockspring Removal

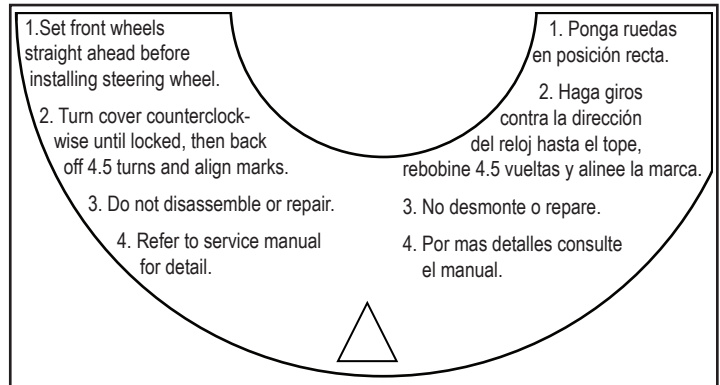


Figure 8 Clockspring Label

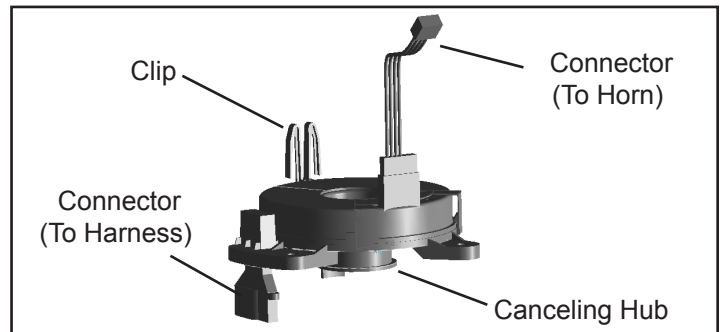


Figure 9 Clockspring (bottom view)

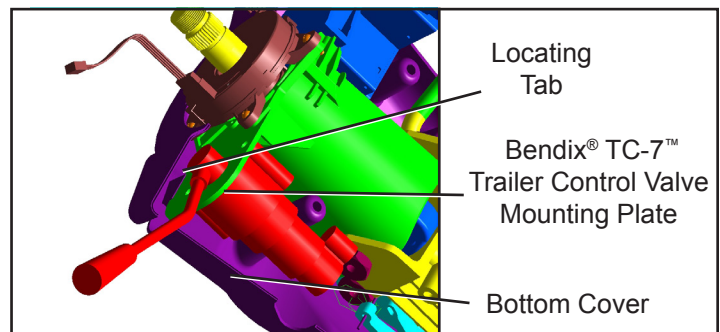


Figure 10 Bottom Cover Installation

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