



TM

HYDRAULIC LANDING GEAR OWNER'S MANUAL

LIPPERT
COMPONENTS™

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WARNING

Failure to act in accordance with the following may result in death or serious injury.

The use of the Lippert Hydraulic Landing Gear to support the coach for any reason other than which it is intended is prohibited by Lippert's limited warranty. The Lippert Hydraulic Landing Gear system is designed as a system to drop the unit off of a truck, level the unit from front to back and stabilize the front of the unit only and should not be used to provide service for any reason under the coach such as changing tires or servicing the landing gear.

Lippert Components, Inc. recommends that a trained professional be employed to change the tire of the coach. Any attempts to change tires or perform other service while coach is supported by the hydraulic landing gear could result in death, serious personal injury and/or damage to the coach.

- Be sure to park the coach on solid, level ground.
- Clear all jack landing locations of debris and obstructions. Location should also be free of depressions.
- When parking the coach on extremely soft surfaces, utilize load distribution pads under each jack.
- People and pets should be clear of coach while operating Lippert hydraulic landing gear system.
- Be sure to keep hands and other body parts clear of fluid leaks. Oil leaks in the Lippert hydraulic landing gear may be under high pressure and can cause serious skin penetrating issues.
- Never lift the coach completely off the ground. Lifting the coach so the wheels are not touching ground will create an unstable and unsafe condition.

Prior to Operation

The Lippert Hydraulic Landing Gear shall only be operated under the following conditions:

1. The unit is parked on a reasonably level surface.
2. The towing vehicle is disengaged from the unit.
3. Be sure all persons, pets and property are clear of the coach while Lippert Hydraulic Landing Gear is in operation.

System Description

Please read and study the operating manual before you operate the Lippert Hydraulic Landing Gear.

- The Lippert Hydraulic Landing Gear is an electric/hydraulic system. A 12V DC electric motor drives a hydraulic pump that moves fluid through a system of hoses, fittings and jacks to level and stabilize the coach.
- There are no serviceable parts within the electric motor. If the motor fails, it must be replaced.
- Disassembly of the motor voids the warranty.
- Mechanical portions of the Lippert Hydraulic Landing Gear are replaceable. Contact Lippert Components, Inc. to obtain replacement parts.

Component Description

The Lippert Hydraulic Landing Gear consists of the following major components:

- Lippert Hydraulic Landing Gear are rated at a lifting capacity appropriate for your coach.
- Lippert Hydraulic Landing Gear is powered from a central 12V DC motor/pump assembly, which also includes the hydraulic oil reservoir tank, control valve manifold, and solenoid valves.
- The Lippert Hydraulic Landing Gear is controlled electronically from the switch near the pump.

Preventative Maintenance Procedures

The Lippert Hydraulic Landing Gear has been designed to require very little maintenance. To ensure the long life of your slide-out system, read and follow these few simple procedures.

1. Check the fluid level every month.
 - A. Check fluid only when jacks are fully retracted.
 - B. Always fill the reservoir with the jacks in the fully retracted position. Filling reservoir when jacks are extended will cause reservoir to overflow into its compartment when jacks are retracted.
 - C. When checking fluid level, fluid should be within ¼" of fill spout lip.
2. Inspect and clean all Pump Unit electrical connections every 12 months.
3. Remove dirt and road debris from Landing Gear as needed.

WARNING

The coach should be supported at both front and rear axles with jack stands before working underneath. Failure to do so may result in death or serious injury.

The Lippert Hydraulic Landing Gear has been static tested to over 6,000 continuous cycles without any noticeable wear to rotating or sliding parts. It is recommended that when operating in harsh environments and conditions (road salt, ice build-up, etc.) the moving parts be kept clean. They can be washed with mild soap and water. No grease or lubrication is necessary and in some situations may be detrimental to the environment and long-term dependability of the system.

Mechanical Components

Although the system is designed to be almost maintenance-free, actuate the landing gear once or twice a week to keep the seals and internal moving parts lubricated.

Check for any visible signs of "leaking" before and after movement of the system and the coach.

When the landing gear is down, visually inspect the inner and outer assemblies. Refer to components list for location of inner assemblies. Check for excess build-up of dirt or other foreign material; remove any debris that may be present.

If the system squeaks or makes any noises it is permissible to apply a coat of lightweight oil or silicone lubricant spray to the hydraulic rod but remove any excess oil so dirt and debris do not build-up. DO NOT use grease.

Electrical Components

For optimum performance, the landing gear system requires full battery current and voltage. The battery must be maintained at full capacity. Other than good battery maintenance, check the terminals and other connections at the battery, the control switch and the pump motor for corrosion and loose or damaged terminals. Check motor leads under the coach chassis. Since these connections may be subject to damage from road debris, be sure they are in good condition.

NOTE: The Lippert Hydraulic Landing Gear is designed to operate as a negative ground system. A negative ground system utilizes the chassis frame as the ground source. An independent ground wire back to the battery is not needed. It is important the electrical components have good wire to chassis contact. Over 90% of unit electrical problems can be attributed to bad ground connections.

NOTE: For long-term storage: It is recommended that the room be closed (retracted) and if your unit is equipped with the IRC room control, it is recommended all of the control knobs be kept in the closed position.

Auxiliary Operation

The Lippert Hydraulic Landing Gear can be run with power devices like electric drills or cordless screwdrivers. In the event of electrical or system failure, this manual method of extending and retracting the jacks can be used. A standard hand-held cordless or power drill is all that is required.

1. Locate the blocking valve (Fig. 1) on the top cap of either of the landing gear jacks.
2. Using a $\frac{5}{32}$ " Allen wrench, manually open the valve by turning the manual override set screw in the end of the valve clockwise (Fig. 1).
3. Remove protective label from the motor (Fig. 2).
4. Using a standard $\frac{1}{4}$ " hex bit, insert into auxiliary drive device, i.e. cordless drill or power drill. Insert hex bit into coupler found under protective label (Fig. 2).
5. Run drill forward or clockwise to retract jacks and in reverse or counterclockwise to extend jacks.
6. Be sure to turn manual override set screw back to the counterclockwise position after extending or retracting landing gear (Fig. 3).

Fig. 1

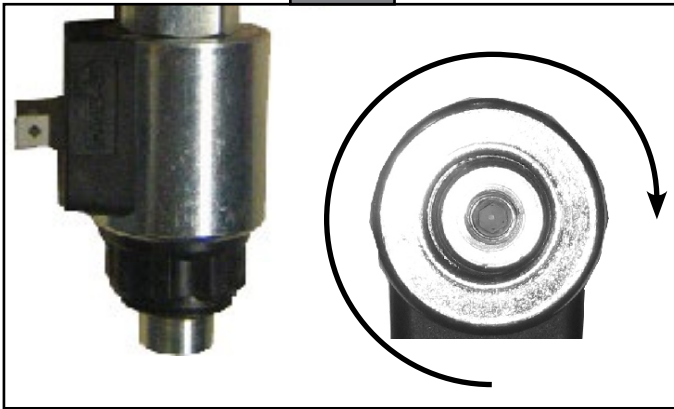


Fig. 2

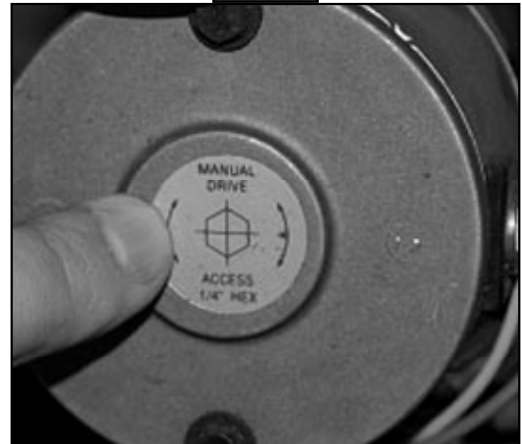
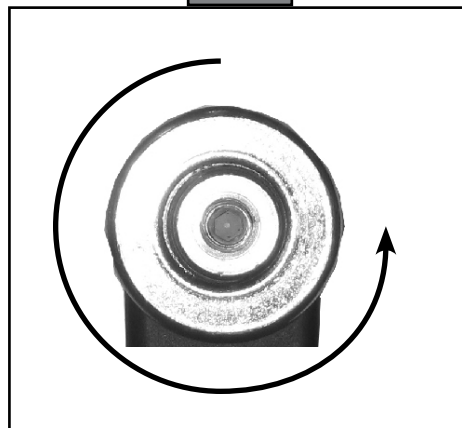


Fig. 3



Fluid Recommendation

The Lippert Electronic Leveling System is pre-filled, primed and ready to operate direct from the manufacturer. Type "A" Automatic Transmission Fluid (ATF) is utilized and will work. ATF with Dexron III® or Mercon 5® or a blend of both is recommended by Lippert Components, Inc.

In colder temperatures (less than 10° F) the jacks may extend and retract slowly due to the fluid's molecular nature. For cold weather operation, fluid specially formulated for low temperatures may be desirable. For a list of approved fluid specifications, see [TI-188](#).

Filling Directions

NOTE: Be sure landing gear are fully retracted prior to filling reservoir to prevent over-filling.

1. Remove Breather/Fill Cap.
2. Pour ATF into Breather/Fill opening.

NOTE: Do not allow any contamination into reservoir during fill process.

NOTE: Standard reservoir holds approximately 2 quarts (1.89 liters) of ATF.

3. Fill to within ½" of top.
4. Replace Breather/Fill cap when finished.

System is self-purging. By simply cycling the system 2-3 times, any air in the system will be forced back to the reservoir and out of the Breather/Fill cap.

Troubleshooting

Power Unit

Before attempting to troubleshoot the Power Unit, make sure an adequate power source is available. The unit batteries should be fully charged or the unit should be plugged into to A/C service with batteries installed. Do not attempt to troubleshoot the Power Unit without assuring a full 12V DC charge.

The following tests require only a DC voltmeter (or DC test light) and a jumper lead.

1. Attach voltmeter (or test light) leads to the negative and positive terminals on motor solenoid. Does the meter indicate 12V DC? If YES, see Step 2; if NO see Step 3.
2. If YES, at the motor, check the incoming leads to 12V DC (if necessary, disconnect leads at wire splices). Does meter indicate 12V DC? If YES, Power Unit needs to be replaced. The motor is not field serviceable. Do not attempt to repair. If NO, Inspect all wires and connections between the wall switch and the motor. Repair connections as necessary. Recheck as in Step 1.
3. If NO, Inspect all connections between battery and solenoid. Inspect 30A Auto-reset Circuit Breaker. Recheck as above in Step 1.

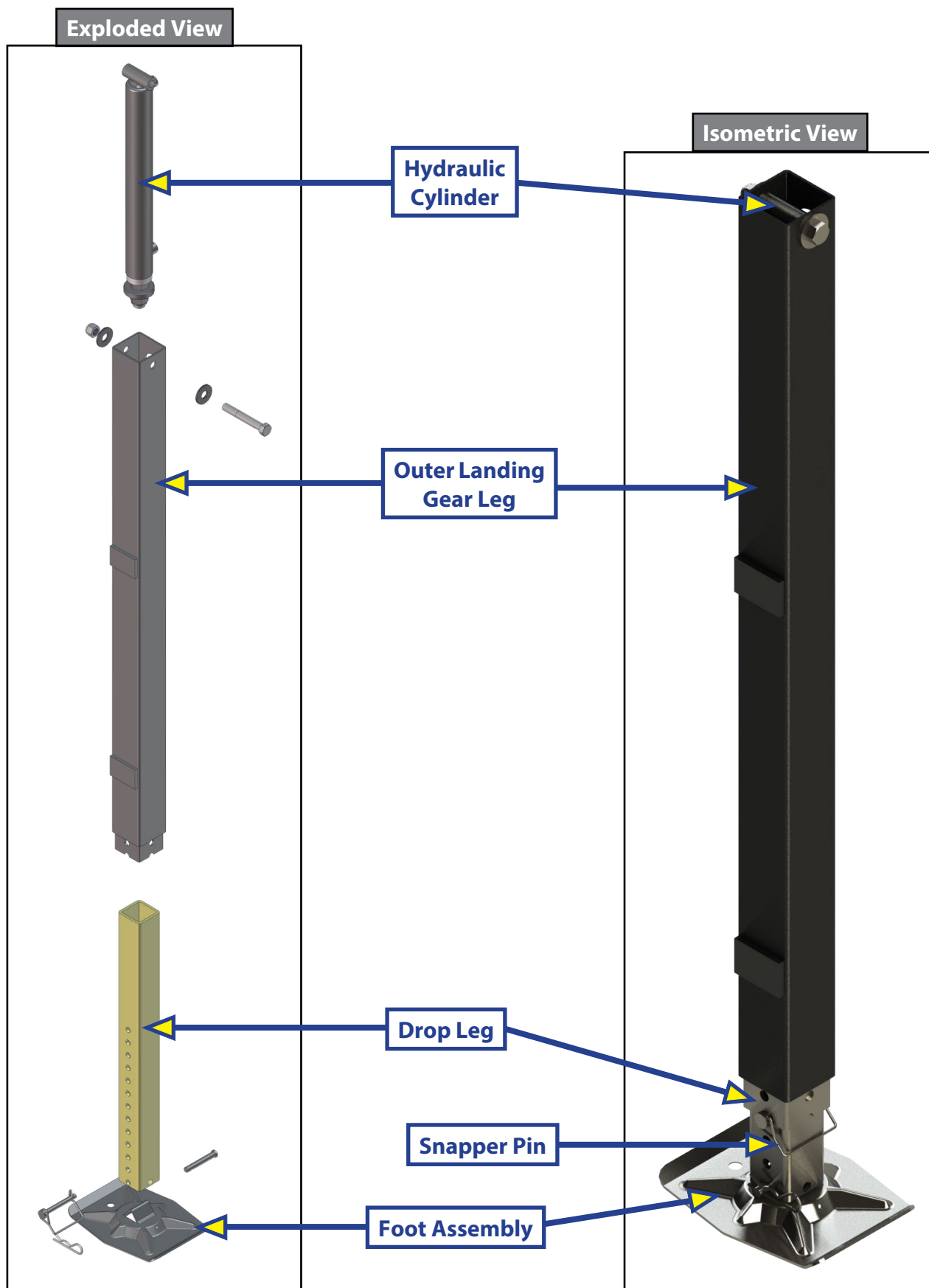
NOTE: Since there are no field serviceable parts in the motor of the Power Unit, electrical troubleshooting and service is limited to replacing only those components as previously outlined.

NOTE: Thorough inspection of wiring and connections is the only other electrical service that can be performed.

Problem	Probable Cause	Corrective Action
Jacks will not extend to ground, pump is running.	Little or no fluid in reservoir.	Fill reservoir with Dexron III ATF.
	Leg valve is inoperative.	Clean, repair or replace.
	Electronic signal is lost between switch and leg valves.	Trace wires for voltage drop or loss of signal. Repair or replace necessary wires or replace switch.
Any one or two jacks will not retract.	Hose damaged or not connected.	Replace with new hose or reconnect.
	Return valve is inoperative.	Replace inoperative return valve.
	Electronic signal is lost between switch and solenoid.	Attempt to retract jacks in manual mode, if successful replace control pad; if not, test voltage drop.
	Electronic signal is lost between switch and leg valve.	Repair bad wiring or replace defective board or valve.

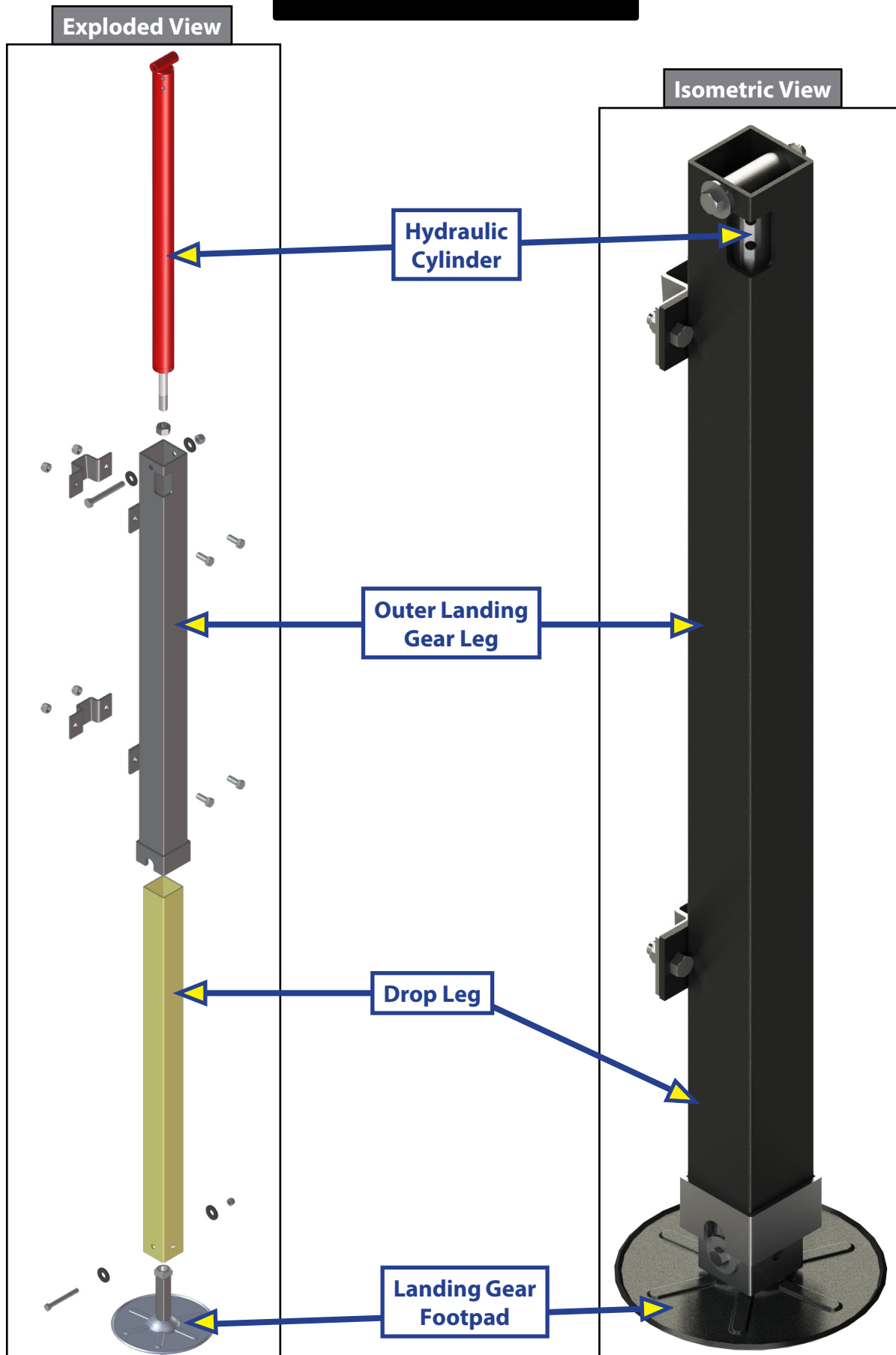
PINNED HYDRAULIC LANDING GEAR ASSEMBLY

LEVELING AND STABILIZATION



PINLESS HYDRAULIC LANDING GEAR ASSEMBLY

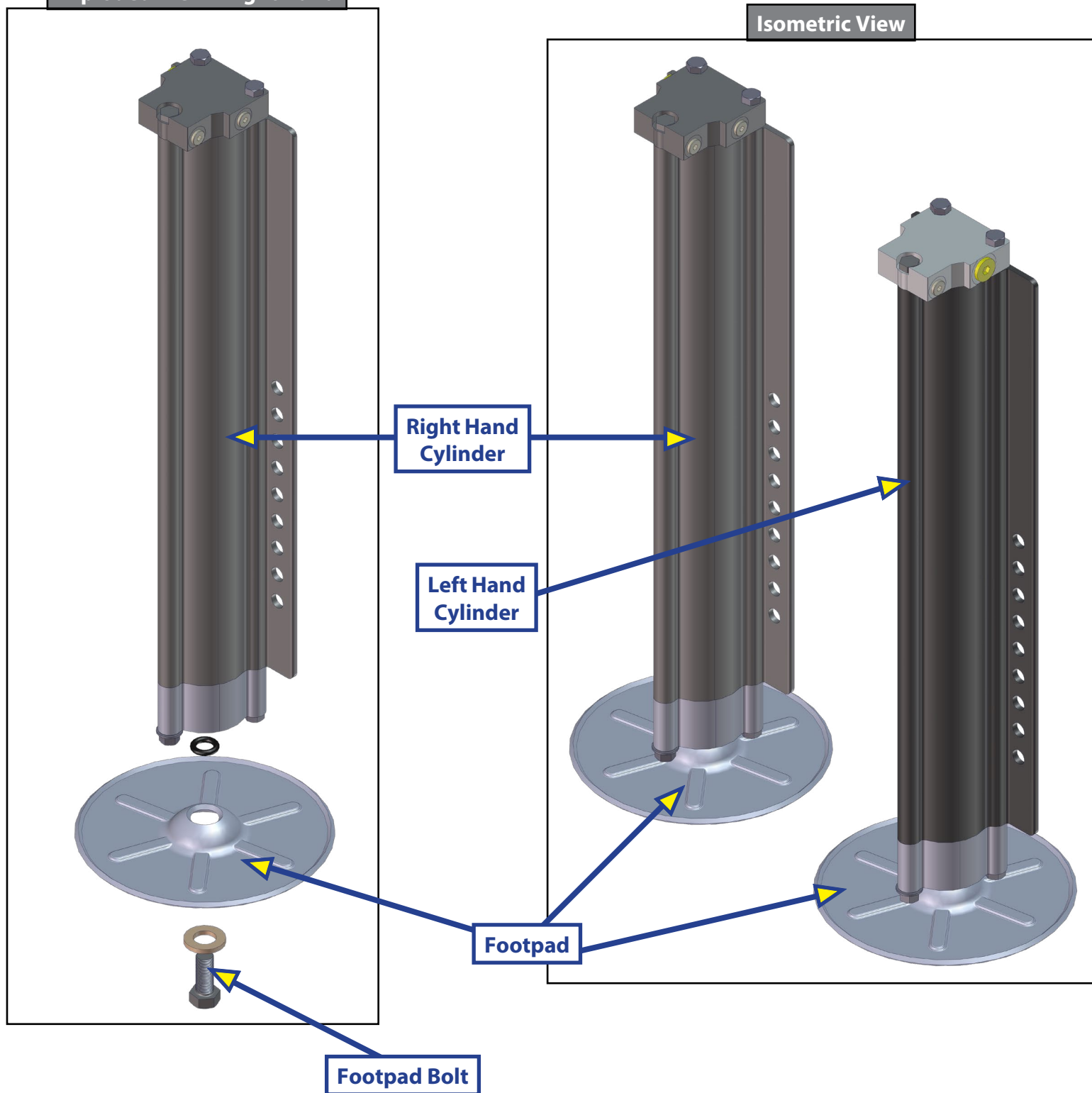
LEVELING AND STABILIZATION



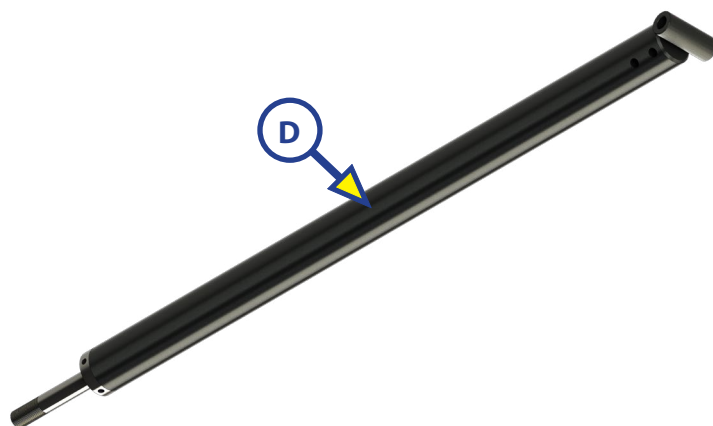
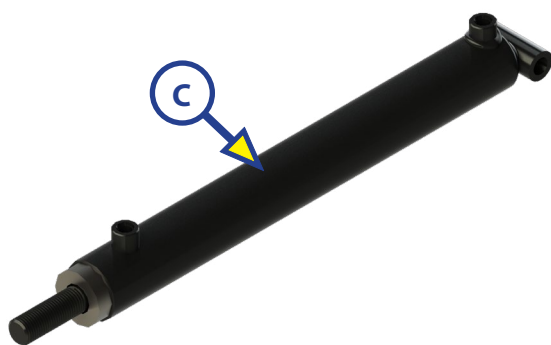
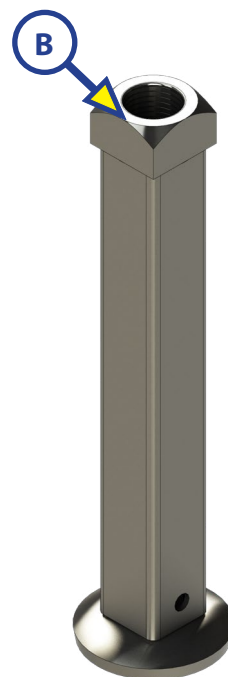
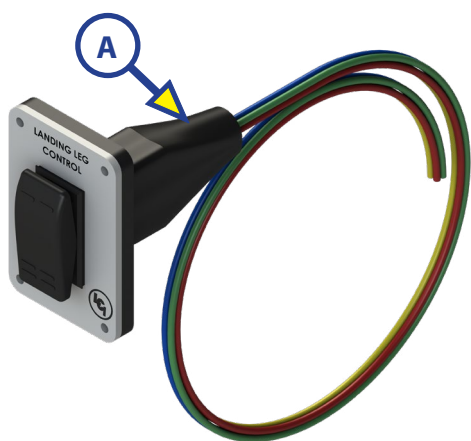
LEVELING AND STABILIZATION

Exploded View - Right Hand

Isometric View



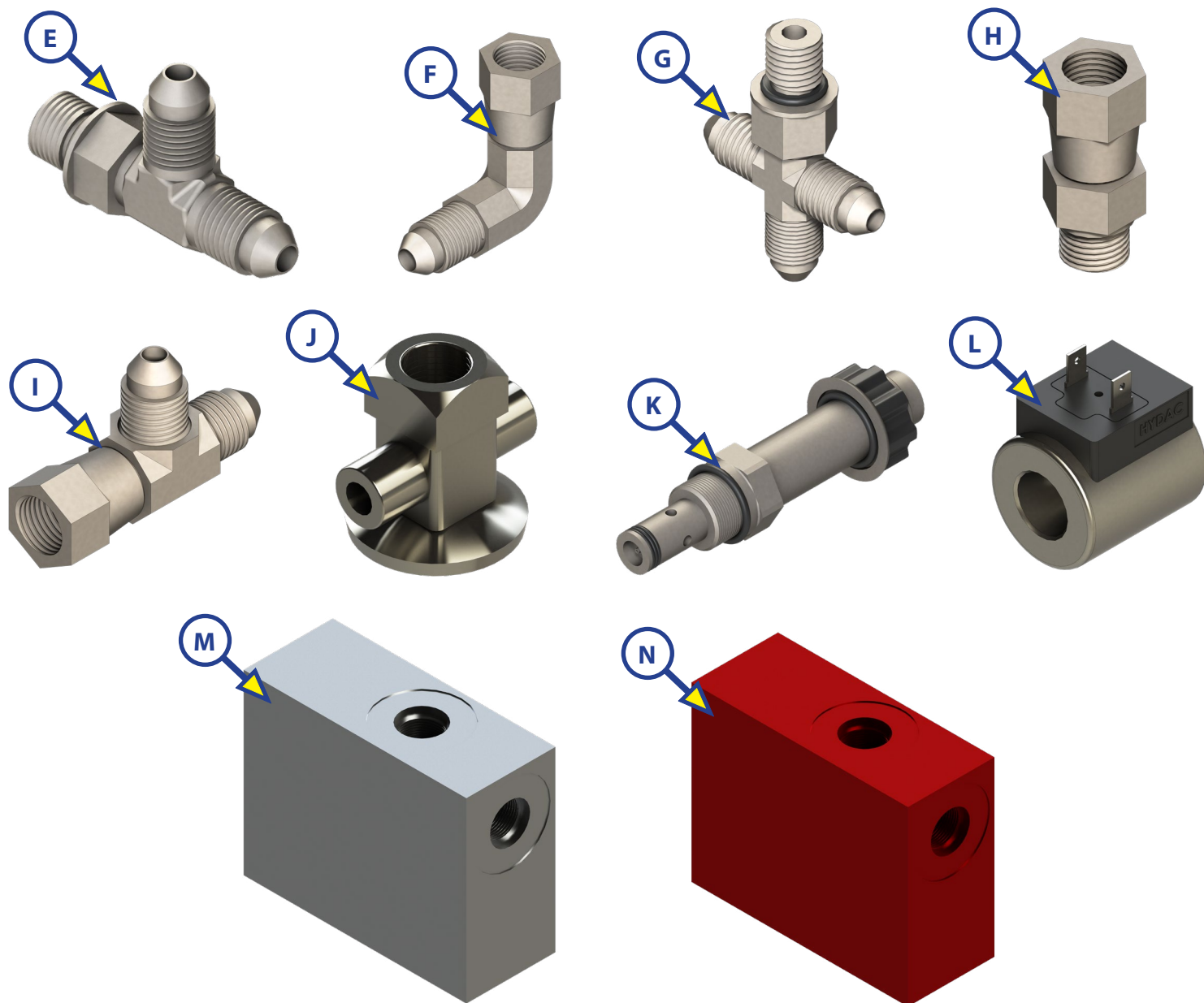
LEVELING AND STABILIZATION



Callout	Part #	Description
A	248026	Hydraulic Exterior Landing Gear Switch with Plate
B	115903	Stabilizer Jack Adapter
C	*137612	12" Stroke Bore Hydraulic Cylinder
D	118830	26" Stroke Bore Hydraulic Cylinder
NOTE: Parts shown with an asterisk (*) are for reference only. The part is not available for individual replacement.		

HYDRAULIC LANDING GEAR COMPONENTS LIST

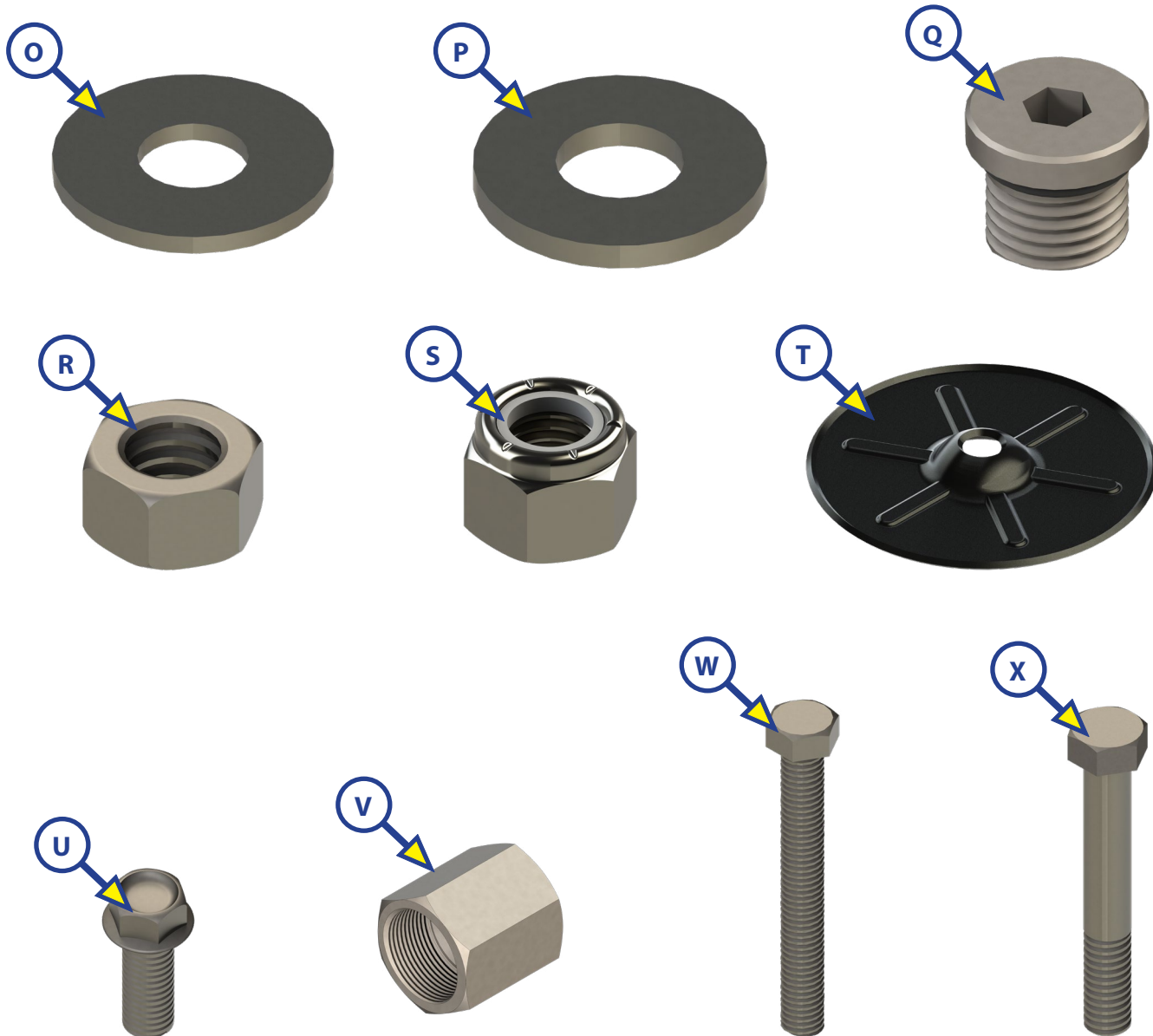
LEVELING AND STABILIZATION



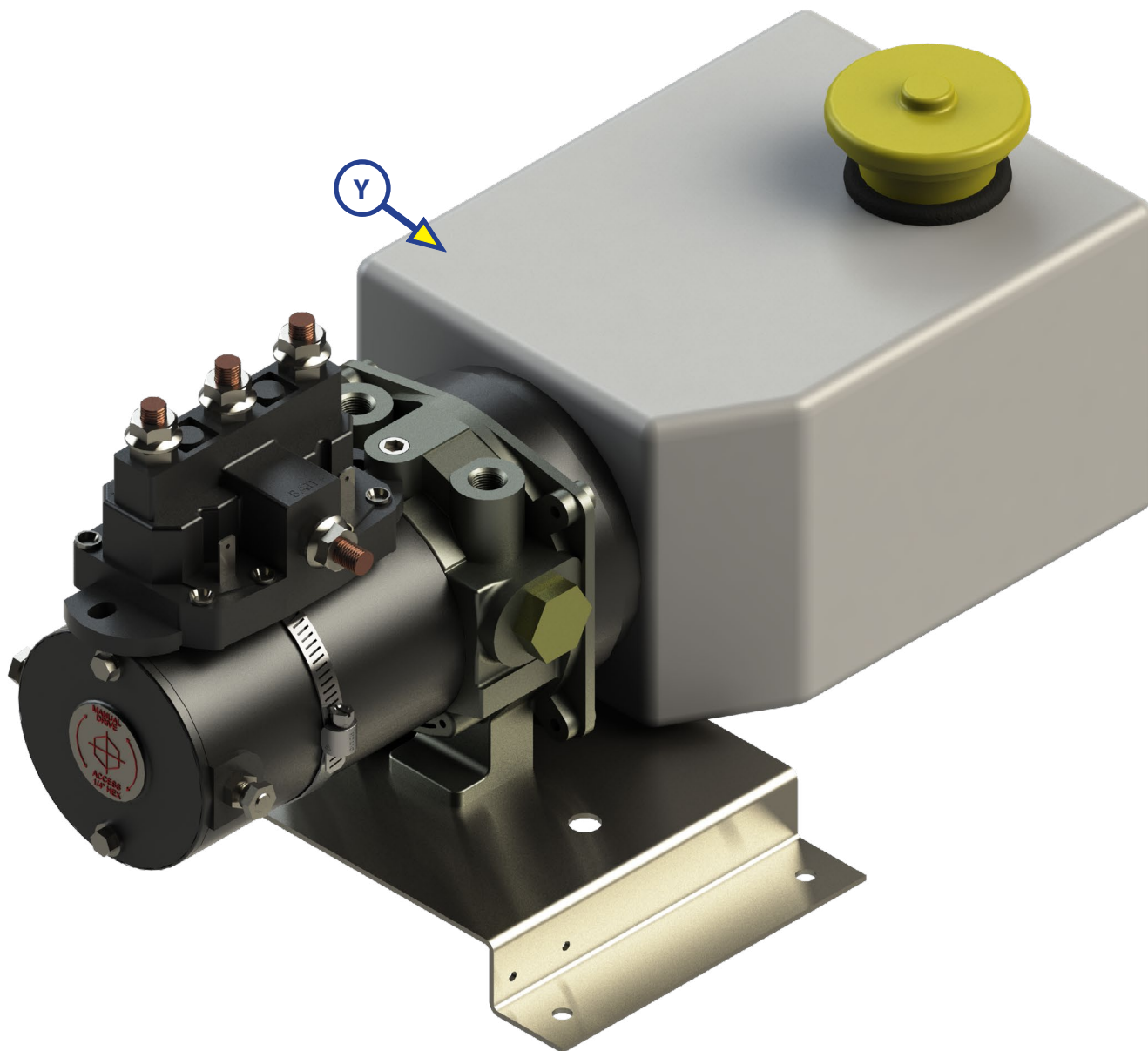
Callout	Part #	Description
E	113130	T-Fitting without Ring
F	113134	Swivel Elbow Fitting
G	136225	Cross Fitting
H	113133	Swivel Straight Fitting
I	113135	Swivel Tee Fitting
J	162893	Hydraulic Leg Gear Foot Adapter
K	177094	Cartridge Valve with Set Screw Turn and Lock Manual Override
L	176954	Hydac Spade Coil
M	138420	Valve Body Non-Restricted
N	138421	Red Block Restricted Valve Body

HYDRAULIC LANDING GEAR COMPONENTS LIST

LEVELING AND STABILIZATION



Callout	Part #	Description
O	118130	Washer; 5/8 x 1.78 x .160 Flat Zinc
P	119075	Washer; 3/8 USS Flat Washer
Q	140998	Ring Hollow Hex Plug
R	118606	Nut; 3/4 - 10 HEX GR5 Zinc
S	118044	Nut; 3/8 - 16 Nylon Insert Lock Nut Zinc
T	113309	Foot Plate
U	117919	Bolt; 3/8 - 16 x 1 Serrated Flange GR5 Zinc
V	216288	#4 JIC Cap
W	118128	Bolt; 3/8 - 16 x 3 GR5 Zinc
X	118609	Bolt; 1/2 - 13 x 3 1/2 HHCS GR5 ZN PTHD ST



Callout	Part #	Description
Y	141111	Hydraulic Power Unit
NOTE: This is the most common power unit for hydraulic landing gear; however please call our parts department to correctly identify the power unit required.		

Notes

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LIPPERT COMPONENTS™

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