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TABLE OF CONTENTS

Before You Get Started.....115

Installation Procedure For End Fittings.....116

Installation Procedure For Universal Joint Kits.....116
- Spring Tab Style
  - Quick Disconnect™ Yoke 116
  - Companion Flange/Flange Yoke (S.A.E., DIN, and T-Type) 119
- Snap Ring Style
  - Quick Disconnect™ Yoke 122
  - Companion Flange/Flange Yoke (S.A.E., DIN, and T-Type).....125

Installation Procedure For Center Bearings.....128
- Quick Disconnect™ Yoke Style 128
- Companion Flange/Flange Yoke Style (S.A.E., DIN and T-Type) 130
- Outboard Slip Style 132

Installation Procedure For Slip Member Boot.....133

Installation Procedure For Driveshaft Assemblies.....136
- Quick Disconnect™ Yoke Style 136
  - One-Piece.....136
  - Two-Piece 138
  - Multiple-Piece 142
- Companion Flange/Flange Yoke Style (S.A.E., DIN and T-Type) 146
  - One-Piece.....146
  - Two-Piece 149
  - Multiple-Piece 152

SPICER LIFE SERIES™ DRIVESHAFT INSTALLATION

Before You Get Started

Note – Spicer Life Series driveshafts are found on vehicles throughout the world. Therefore, this manual includes world-wide terminology. These terms have been highlighted in teal.

Caution – Under no circumstances should individuals attempt to perform driveline service and/or maintenance procedures for which they have not been trained or do not have the proper tools and equipment. ▲ See warning, below.

▲ ***WARNING***

Failure to take commonsense, precautionary measures when working on a vehicle or other machinery could result in property damage, serious personal injury or death. In order to avoid property damage, serious personal injury or death, you must:

1. **ALWAYS** wear safety glasses when performing maintenance or service. Failure to wear safety glasses can result in personal injury and/or partial or complete vision loss.

2. **NEVER** go under a vehicle while the engine is running. Be sure the vehicle's engine is off, and keys are removed from ignition.

3. **NEVER** go under or work on a vehicle that is not on a level or flat surface.

4. **NEVER** work on a driveshaft without blocking the vehicle's wheels and releasing all parking brakes. ▲ See warning, below.

▲ ***WARNING***

Failure to release all parking brakes and placing transmission in neutral can result in torque being applied to the driveshaft. Disconnecting a driveshaft with applied torque can result in property damage, serious personal injury or death.

5. **NEVER** lift a vehicle without the appropriate weight-rated, vehicle-support equipment.

6. **NEVER REMOVE** a driveshaft from the vehicle without keeping the vehicle's transmission in neutral. ▲ See warning, step 4.

7. **CAUTION** – Spicer Life Series driveshaft assemblies can weigh in excess of 100 pounds (46 kilograms). Be sure to use proper lifting techniques when handling Spicer Life Series driveshafts. More than one person may be needed when handling driveshaft assemblies.

8. **ALWAYS** use support straps to prevent the driveshaft from falling out of vehicle during the removal and installation process.

9. **NEVER** heat components or use sledgehammers or floor jacks to remove the driveshaft from vehicle.

Note – For driveshaft applications that have pillow blocks, dampers, parking brakes or retarders, refer to these component manufacturers' or the original equipment vehicle manufacturers' service manuals for proper procedures.

SERVICING A SPICER LIFE SERIES DRIVESHAFT

The following components are serviceable:

- Universal Joint Kits
- Boot Kits
- Quick Disconnect™ End Yokes
- S.A.E., DIN and T-Type Flange Yokes
- S.A.E., DIN and T-Type Companion Flanges
- Bearing Retainers and Bolts or Stamped Straps and Bolts
- Spring Tabs and Bolts
- Center Bearing Assemblies
- Grease Zerk (Nipple) Fittings

Note – Spicer Life Series 140, 170 and 250 driveshaft assemblies and components are metric. To eliminate any confusion between S.A.E. and metric threaded fasteners, the metric fasteners have been color coded gold. Spicer Life metric fasteners include spring tab bolts, bearing retainer bolts and midship nuts.

INSTALLATION PROCEDURE FOR END FITTINGS

SPICER LIFE SERIES 55, 70, 90, 100, 140, 170 & 250

Refer to the transmission, axle or transfer case original equipment manufacturers' service and maintenance manuals for proper procedures.

For center bearing fittings, refer to pages in this section for proper installation procedures for center bearings.

INSTALLATION PROCEDURE FOR UNIVERSAL JOINT KITS

SPICER LIFE SERIES 55, 70, 90, 100, 140, 170 & 250

Required Tools

- Ratchet or Air Gun
- Six-Point, 8mm Socket (Spicer Life 140, 170 & 250)
- Chisel (Spicer Life 55, 70, 90 & 100)
- Torque Wrench
- Hammer
- Pliers – For Snap Rings (Spicer Life 55, 70, 90 & 100)

One of the following is recommended:

- Three ton minimum, Arbor Press, along with
  (for Spicer Life Series 55, 70, 90, 100, 140, 170 & 250)
  Bearing Cup Spacer
  Push Rod
  Metal Plate 0.25 inches (6.4 mm) thick,

or

- J & J Tool Co., Inc. (see photo 104, right)
  Universal Joint Puller Kit 4LIFE – Basic or Complete
  (for Spicer Life Series 140, 170 & 250)
  1-800-221-4903
  Outside U. S. A. and Canada 1-215-256-9300,

or

- Tiger Tool TGLS-597 (See photo 105, right)
  or Mark 10A (not shown)
  (for Spicer Life Series 140, 170 & 250)
  1-800-661-4660
  Outside U. S.A. and Canada 1-604-855-1133

QUICK DISCONNECT™ SPRING TAB STYLE SPICER LIFE SERIES 140, 170 & 250

Caution – Be sure to carefully read all information on page 115 as well as grease recommendations and compatibility information in the lubrication section of this manual, before proceeding.

Note – Spicer Life replacement universal joint kit bearing assemblies contain only enough grease to provide needle roller bearing protection during storage. It is therefore necessary to completely lubricate each bearing assembly. It is also necessary to fully lubricate the universal joint kit after it is installed in the vehicle.

Photo 104

Photo 105

Photo 106

1. Remove needle retaining plugs from all bearing cup assemblies. Using a high-quality, N.L.G.I.*, E. P. Grade 2 lubricating grease, wipe each bearing cup assembly with grease. Fill all cavities between the needle rollers. Also apply a liberal coating of grease on the bottom of each bearing cup assembly and on the lip of the seal. (See photo 106, above.) ▲ See warning, below.

**National Lubricating Grease Institute*

▲ *WARNING*

Inadequate lubrication can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

Caution – Spicer **DOES NOT** recommend wiping the outside of bearing cup assemblies or yoke cross holes with grease, oil or silicone-based sprays. This could result in bearing cup assembly rotation in yokes. ▲ See warning, below.

▲ *WARNING*

Rotating bearing cup assemblies can result in yoke cross hole wear and distortion. Distorted yokes can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

2. Position the journal cross into the yoke cross holes with the grease zerk (nipple) fitting inward toward tubing. The

Photo 107

double-headed, grease zerk (nipple) fitting should be perpendicular to the yoke cross holes. (See photo 107, above.)

Failure to properly position the universal joint will result in the inability to grease the universal joint. ▲ See warning, step 1, regarding inadequate lubrication.

If using an arbor press, proceed to step 3. If using a universal joint installation tool, follow the tool manufacturer's instructions, then proceed to page 136 for installation procedures for Quick Disconnect™ driveshaft assemblies.

3. Move one end of the journal cross to cause a trunnion to project through the cross hole beyond the outer machined face of the yoke ear. Take one bearing cup assembly and position an installation height tool on the end of the bearing cup assembly. Place the bearing cup assembly over the protruding trunnion diameter and align it to the yoke cross hole. (See photo 108, below.)

Photo 108

Photo 109

Photo 110

Photo 111

4. Align the yoke in an arbor press with the bearing assembly resting on the base of the press. (See photo 109, left.) Cover the yoke ear with a metal plate that has 0.25 inch (6.4 mm) minimum thickness. Push the yoke onto the bearing cup assembly until the installation height tool is flush with the cross hole face. **Do not remove the installation height tool.**

5. Flip yoke 180 degrees. Position the remaining installation height tool on the end of another bearing cup assembly. Place bearing cup assembly over trunnion diameter and align it to the yoke cross hole. Push the bearing cup assembly until both installation height tools are flush with the cross hole face. (See photo 110, left center.) **Remove and discard both installation height tools.**

6. Install **new** spring tabs and 8mm thread bolts. Make sure that no grease or foreign material is present between the contact areas of the spring tabs, bearing cups and yoke cross hole faces. Tighten bolts to the required torque. (See photo 111, bottom left.) See spring tab bolt torque specification Table JJ below. ▲ See warning, below.

SPRING TAB BOLT SPECIFICATIONS

SERIES	THREAD SIZE	HEAD SIZE	BOLT TORQUE Nm	BOLT TORQUE LB. FT.	KIT P/N*
SPL140	8mm x 1.00	8mm, 6 point	35-40	25-30	211941X
SPL170	8mm x 1.00	8mm, 6 point	35-40	25-30	211941X
SPL250	8mm x 1.00	8mm, 6 point	35-40	25-30	211941X

** Bolts are specially heat-treated.*
DO NOT substitute inferior grade bolts.

Table JJ

▲ ***WARNING***

Reuse of spring tabs or spring tab bolts or failure to properly tighten spring tab bolts to required specifications can cause the driveline to loosen and separate from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

7. Proceed to page 136 for installation of the driveshaft into the vehicle.

COMPANION FLANGE/FLANGE YOKE (S.A.E., DIN AND T-TYPE) SPRING TAB STYLE SPICER LIFE SERIES 140, 170 & 250

Caution – Be sure to carefully read all information on page 115 as well as grease recommendations and compatibility information in the lubrication section of this manual, before proceeding.

Note – Spicer Life replacement universal joint kits contain only enough grease to provide needle roller bearing protection during storage. It is therefore necessary to completely lubricate each universal joint kit after it is installed in the vehicle.

1. Remove needle retaining plugs from all bearing cup assemblies. Using a high-quality, N.L.G.I.*, E. P. Grade 2 lubricating grease, wipe each bearing cup assembly with grease. Fill all the cavities between the needle rollers. Also apply a liberal coating of grease on the bottom of each bearing cup assembly and on the lip of the seal. (See photo 112, below.) ▲ See warning, below.

**National Lubricating Grease Institute.*

▲ ***WARNING***

Inadequate lubrication can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

Photo 112

Caution – Spicer **DOES NOT** recommend wiping the outside of bearing cup assemblies or yoke cross holes with grease, oil or silicone based sprays. This could result in bearing cup assembly rotation in yokes. ▲ See warning, below.

▲ ***WARNING***

Rotating bearing cup assemblies can result in yoke cross hole wear and distortion. Distorted yokes can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

Photo 113

Photo 114

2. Position the journal cross into the yoke cross holes with grease zerk (nipple) fitting inward toward tubing. The double-headed, grease zerk (nipple) fitting should be perpendicular to yoke cross holes. (See photo 113, above.)

Failure to properly position the universal joint will result in the inability to grease the universal joint. ▲ See warning, below.

▲ *WARNING*

Inadequate lubrication can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

If using an arbor press proceed to step 3. If using a universal joint installation tool, follow the tool manufacturer's instructions, then proceed to page 147 for installation procedures for companion flange/flange yoke driveshaft assemblies.

3. Move one end of the journal cross to cause a trunnion to project through the cross hole beyond the outer machined face of the yoke ear. Take one bearing cup assembly and position an installation height tool on the end of a bearing cup. Place the bearing cup assembly over the protruding trunnion diameter and align it to yoke cross hole. (See photo 114, top right.)

4. Align the yoke in an arbor press with the bearing cup assembly resting on the base of the press. (See photo 115, below.) Cover the yoke ear with a metal plate 0.25 inch (6.4 mm) minimum thickness. Push the yoke onto the bearing cup assembly until the installation height tool is flush with the cross hole face. **Do not remove installation height tool**.

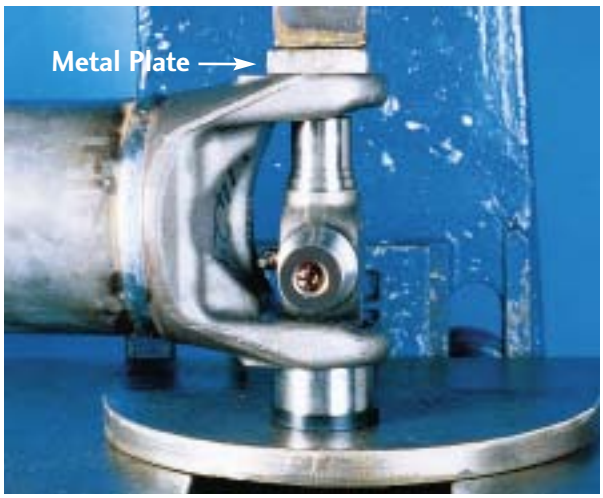

Photo 115

Photo 116

5. Flip yoke 180 degrees. Position remaining installation height tool on end of another bearing cup assembly. Place bearing cup assembly over trunnion diameter and align it to the yoke cross hole. Push the bearing cup assembly until both installation height tools are flush with cross hole face. (See photo 116, above.) **Remove both installation height tools**.

6. Position flange yoke cross holes over remaining trunnions.

7. Take one bearing cup assembly and position an installation height tool on the end of a bearing cup. Place the bearing cup assembly over one of the trunnion diameters and align it to flange yoke cross hole.

8. Align yoke in arbor press with the bearing cup assembly resting on the base of arbor press. Cover the yoke ear with a metal plate 0.25 inch (6.4mm) minimum thickness. Push the yoke onto the bearing cup assembly until the installation height tool is flush with cross hole face. **Do not remove installation height tool.**

9. Flip yoke 180 degrees. Position remaining installation height tool on last bearing cup assembly. Place bearing cup assembly over remaining trunnion diameter and align it to the flange yoke cross hole. Push the bearing cup assembly until both installation height tools are flush with cross hole face. **Remove and discard both installation height tools.**

10. Install **new** spring tabs and 8mm thread bolts, and torque to required specifications. Make sure that no grease or foreign material is present between the contact areas of the spring tabs, bearing cups and yoke cross hole faces. Tighten bolts to the required torque. See spring tab bolt specifications Table KK, below. ⏢ See warning, below.

SPRING TAB BOLT SPECIFICATIONS

SERIES	THREAD SIZE	HEAD SIZE	BOLT TORQUE Nm	BOLT TORQUE LB. FT.	KIT P/N*
SPL140	8mm x 1.00	8mm, 6 point	35-40	25-30	211941X
SPL170	8mm x 1.00	8mm, 6 point	35-40	25-30	211941X
SPL250	8mm x 1.00	8mm, 6 point	35-40	25-30	211941X

** Bolts are specially heat-treated.*
DO NOT substitute inferior grade bolts.

Table KK

⏢ ***WARNING***

Reuse of spring tab bolts or failure to properly tighten spring tab bolts to required specifications can cause the driveline to loosen and separate from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

11. Proceed to page 147 for installation of the driveshaft into the vehicle.

QUICK DISCONNECT™ SNAP RING STYLE SPICER LIFE SERIES 55, 70, 90 & 100

Caution – Be sure to carefully read all information on page 115 as well as grease recommendations and compatibility information in the lubrication section of this manual, before proceeding.

Required Tools

- Chisel
- Hammer
- Pliers – For Snap Rings

One of the following is recommended:

- Arbor Press, along with
  Bearing Cup Spacer
  Push Rod
  Metal Plate 0.25 inch (6.4 mm) thick,

or contact

- J & J Tool Co., Inc.
  Joint Puller
  1-800-221-4903
  Outside U. S. A. and Canada 1-215-256-9300,

or

- Tiger Tool Kit
  1-800-661-4660
  Outside U. S.A. and Canada 1-604-855-1133

Note – Spicer Life replacement universal joint kit bearing assemblies contain only enough grease to provide needle roller bearing protection during storage. It is therefore necessary to completely lubricate each bearing assembly. It is also necessary to fully lubricate the universal joint kit after it is installed in the vehicle.

Photo 117

1. Using a high quality N.L.G.I.*, E. P. Grade 2 lubricating grease, wipe each bearing cup assembly with grease. Fill all cavities between the needle rollers. Also apply a liberal coating of grease on the bottom of each bearing cup assembly and on the lip of the seal. (See photo 117, above.) ▲ See warning, below.

**National Lubricating Grease Institute*

▲ ***WARNING***

Inadequate lubrication can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

Caution – Spicer **DOES NOT** recommend wiping the outside of bearing cup assemblies or yoke cross holes with grease, oil or silicone-based sprays. This could result in bearing cup assembly rotation in yokes. ▲ See warning, below.

▲ ***WARNING***

Rotating bearing cup assemblies can result in yoke cross hole wear and distortion. Distorted yokes can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

Photo 118

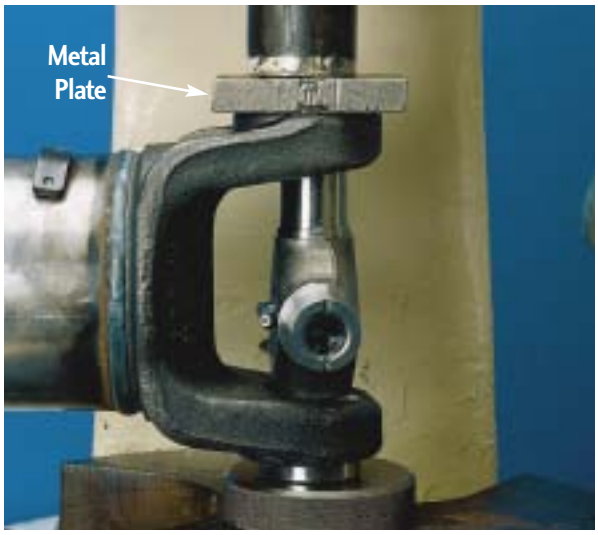

Photo 119

2. Position the journal cross into the yoke cross holes with grease zerk (nipple) fitting inward toward tubing. The double-headed, grease zerk (nipple) fitting should be perpendicular to the yoke cross holes. (See photo 118, above.)

Failure to properly position the universal joint kit will result in the inability to grease the universal joint. ▲ See warning, below.

▲ ***WARNING***

Inadequate lubrication can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

If using an arbor press, proceed to step 3. If using a universal joint installation tool, follow the tool manufacturer's instructions. Then proceed to page 136 for installation procedures for Quick Disconnect™ driveshaft assemblies.

3. Move one end of the journal cross to cause a trunnion to project through the cross hole beyond the outer machined face of the yoke ear. Place the bearing cup assembly over the protruding trunnion diameter and align it to the yoke cross hole.

Align the yoke in an arbor press with the bearing assembly resting on the base of the press (see photo 119, above.) Cover the yoke ear with a metal plate that has 0.25 inch (6.4 mm) minimum thickness. Push the yoke onto the bearing cup assembly until it is flush with the cross hole face.

4. Place a push rod that is smaller than the diameter of the bearing cup assembly under the bearing cup assembly and continue pressing into the yoke cross hole until far enough to install a snap ring. (See photo 120, below.)

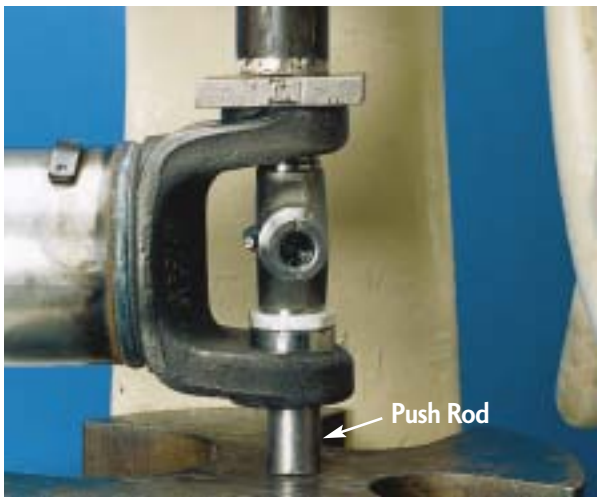

Photo 120

5. Remove yoke from arbor press. Install a snap ring using snap ring pliers.

6. Flip yoke 180 degrees. Place another bearing cup assembly over trunnion diameter and align it to yoke cross hole. Align yoke in arbor press with previously installed bearing cup assembly resting on base of press. Place a push rod that is smaller than the bearing cup assembly on top of the bearing cup assembly. Press bearing cup assembly into the yoke cross hole until far enough to install a snap ring. (See photo 121, below.)

Photo 121

7. Remove yoke from arbor press. Install a snap ring using snap ring pliers.

8. Seat installed snap rings into grooves using a small chisel or punch. (See photo 122, below.)

Photo 122

9. Flex the journal cross to make sure it moves smoothly and freely in the bearings.

If the joint is stiff, place a plate on the yoke ear and hit the plate with a hammer to seat the bearing cup assemblies. (See photo 123, below.) See warning, below.

Photo 123

WARNING

TO PREVENT *eye injury, always wear safety glasses when performing maintenance or service. Failure to wear safety glasses could result in serious personal injury and/or partial or complete vision loss.*

10. Flex the journal cross to make sure it moves smoothly and freely in the bearings. If not, disassemble and inspect the journal and bearing assemblies for skewed or dropped needle rollers. Reference removal procedures for universal joints, snap ring style, page 82.

11. Proceed to page 136 for installation of the driveshaft into the vehicle.

COMPANION FLANGE/FLANGE YOKE (S.A.E., DIN AND T-TYPE) SNAP RING STYLE SPICER LIFE SERIES 55, 70, 90 & 100

Caution – Be sure to carefully read all information on page 115 as well as grease recommendations and compatibility information in the lubrication section of this manual, before proceeding.

Note – Spicer Life replacement universal joint kit bearing assemblies contain only enough grease to provide needle roller bearing protection during storage. It is therefore necessary to completely lubricate each bearing assembly. It is also necessary to fully lubricate the universal joint kit after it is installed in the vehicle.

1. Using a high quality N.L.G.I.* Grade 2 lubricating grease, wipe each bearing cup assembly with grease. Fill all cavities between the needle rollers. Also apply a liberal coating of grease on the bottom of each bearing cup assembly and on the lip of the seal. (See photo 124, below.) ▲ See warning, below.

National Lubricating Grease Institute

▲ *WARNING*

Inadequate lubrication can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline could result in property damage, serious personal injury or death.

Photo 124

Caution – Spicer **DOES NOT** recommend wiping the outside bearing cup assemblies or yoke cross holes with grease, oil or silicone-based sprays. This could result in bearing cup assembly rotation in yokes. ▲ See warning, below.

▲ *WARNING*

Rotating bearing cup assemblies can result in yoke cross hole wear and distortion. Distorted yokes can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

2. Position the journal cross into the yoke cross holes with grease zerk (nipple) fitting inward toward tubing. The double-headed, grease zerk (nipple) fitting should be perpendicular to the yoke cross holes. (See photo 125, below.)

Failure to properly position the universal joint kit will result in the inability to grease the universal joint. ▲ See warning, step 1, regarding inadequate lubrication.

If using an arbor press, proceed to step 3. If using a universal joint installation tool, follow the tool manufacturer's instructions. Then proceed to page 147 for installation procedures for companion flange/flange yoke driveshaft assemblies.

Photo 125

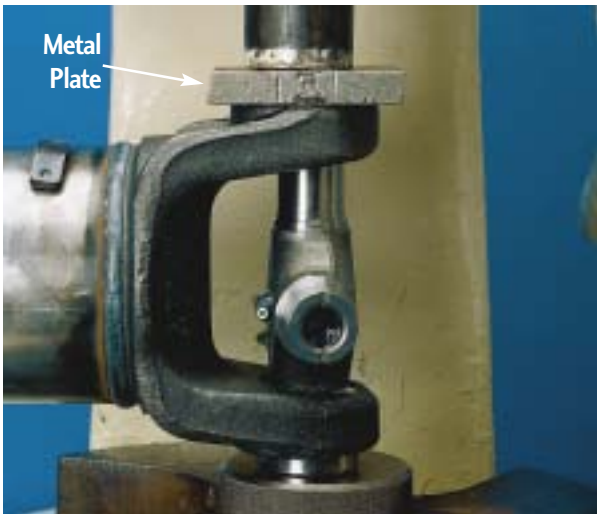

Photo 126

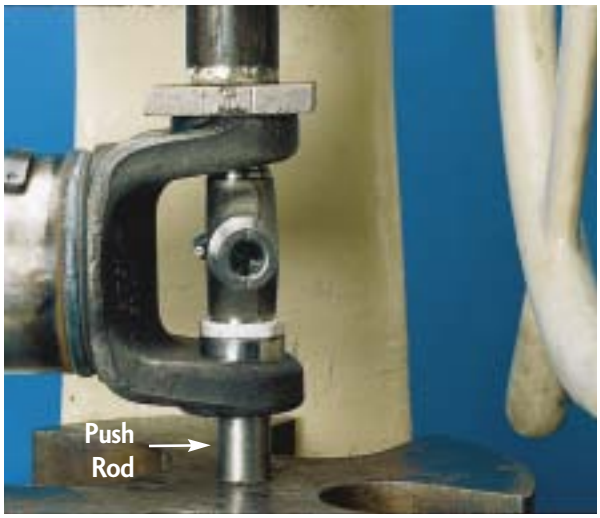

Photo 127

3. Move one end of the journal cross to cause a trunnion to project through the cross hole beyond the outer machined face of the yoke ear. Place the bearing cup assembly over the protruding trunnion diameter and align it to the yoke cross hole.

Align the yoke in an arbor press with the bearing assembly resting on the base of the press. (See photo 126, above.) Cover the yoke ear with a metal plate that has 0.25 inch (6.4 mm) minimum thickness. Push the yoke onto the bearing cup assembly until it is flush with the cross hole face.

4. Place a push rod that is smaller than the diameter of the bearing cup assembly under the bearing cup assembly and continue pressing into the yoke cross hole until far enough to install a snap ring. (See photo 127, top right.)

5. Remove yoke from arbor press. Install a snap ring using snap ring pliers.

6. Flip yoke 180 degrees. Place another bearing cup assembly over trunnion diameter and align it to yoke cross hole. Align yoke in arbor press with previously installed bearing cup assembly resting on base of press. Place a push rod that is smaller than the bearing cup assembly on top of the bearing cup assembly. Press bearing cup assembly into the yoke cross hole until far enough to install a snap ring. (See photo 128, below.)

7. Remove yoke from arbor press. Install a snap ring using snap ring pliers.

Photo 128

Photo 129

8. Seat the snap rings into grooves using a small chisel or punch. (See photo 129, above.)

9. Position flange yoke cross holes over remaining trunnions.

10. Place a bearing cup assembly over a protruding trunnion diameter and align it to the flange yoke cross hole.

11. Align the yoke in an arbor press with the bearing assembly resting on the base of the press. Cover the yoke ear with a metal plate that has 0.25 inch (6.4 mm) minimum thickness. Push the yoke onto the bearing cup assembly until it is flush with the cross hole face.

12. Place a push rod that is smaller than the diameter of the bearing cup assembly under the bearing cup assembly and continue pressing into the flange yoke cross hole until far enough to install a snap ring.

13. Remove yoke from arbor press. Install a snap ring using snap ring pliers.

14. Flip yoke 180 degrees. Place remaining bearing cup assembly over trunnion diameter and align it to flange yoke cross hole. Align yoke in arbor press with previously installed bearing cup assembly resting on base of press. Place a push rod that is smaller than the bearing cup assembly on top of the bearing cup assembly. Press bearing cup assembly into the yoke cross hole until far enough to install a snap ring.

15. Remove yoke from arbor press. Install a snap ring using snap ring pliers.

16. Seat the snap rings into grooves using a small chisel or punch.

17. Flex the journal cross to make sure it moves freely in bearings. If the joint is stiff, place a plate on the yoke ear and hit the plate with a hammer to seat the bearing cup assemblies. See warning, below.

WARNING

TO PREVENT *eye injury, always wear safety glasses when performing maintenance or service. Failure to wear safety glasses could result in serious personal injury and/or partial or complete vision loss.*

18. Flex the journal cross to make sure it moves smoothly and freely in bearings. If not, disassemble and inspect the journal and bearing assemblies for skewed or dropped needle rollers. Reference removal procedures for universal joints, snap ring style, page 82.

19. Proceed to page 147 for installation of the driveshaft into the vehicle.

INSTALLATION PROCEDURE FOR CENTER BEARINGS

SPICER LIFE SERIES 55, 70, 90, 100, 140, 170 & 250

Required Tools

- Six-Point Socket
  English 1 5/8," or
  Metric 41mm
- Soft-Faced Hammer
- Section of Tubing
- Air Gun or Ratchet

QUICK DISCONNECT™ YOKE STYLE SPICER LIFE SERIES 55, 70, 90, 100, 140, 170 & 250

1. Wipe the bearing surface of the midship tube shaft with a fine emery cloth.

2. Install a new slinger (included in center bearing replacement kit) on the midship tube shaft using a section of tubing to avoid damaging slinger. Make sure the slinger is completely seated against the midship tube shaft shoulder. (See photo 130, below.)

Photo 130

Photo 131

3. Before installing the new center bearing assembly, be sure to fill the entire cavity around the bearing with waterproof lubricant. (See photo 131, above.) Enough lubricant must be applied to fill the cavity to the extreme edge of the slinger surrounding the bearing. Lubricants **must** be waterproof. See Table LL, below for recommended lubricants. ▲ See warning, below.

▲ ***WARNING***

Inadequate lubrication can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

RECOMMENDED CENTER BEARING LUBRICANTS

LUBRICANTS	SOURCE
Rykon Premium No. 3	Amoco Oil Company
Amolith 8516	Amoco Oil Company
Van Talgar No. 4	Exxon Company

Table LL

Photo 132

Photo 133

4. Carefully align the new center bearing assembly with the ground surface of the midship tube shaft. Physically push the center bearing onto the midship tube shaft. (See photo 132, above.)

5. Press remaining slinger on end yoke using a section of tubing to avoid damaging slinger. (See photo 133, top right.)

6. Using a soft-faced hammer, tap the yoke onto midship tube shaft, **making sure phasing marks from driveshaft removal procedure are in line**. Continue to tap the yoke until it is completely seated against the center bearing.

7. Install a washer (if required) and **new** midship nut and torque nut to specifications. See midship nut specifications, Table MM, top right. ▲ See warning, below.

▲ ***WARNING***

Failure to torque midship nut to required specifications can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

MIDSHIP NUT SPECIFICATIONS

SERIES	NUT P/N	WASHER P/N	HEAD SIZE*	NUT TORQUE Nm	NUT TORQUE LB. FT.
SPL55	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD
SPL90	231502	N/A	1 5/8"	644-712	475-525
SPL100	TBD	TBD	TBD	TBD	TBD
SPL140	250-74-11	230123-6	41mm*	644-712	475-525
SPL170	250-74-11	230123-6	41mm*	644-712	475-525
SPL250	250-74-11	230123-6	41mm*	644-712	475-525

** A 1 5/8" socket may be used.*

Table MM

8. Proceed to page 136 for installation of the driveshaft into the vehicle.

COMPANION FLANGE/FLANGE YOKE STYLE (S.A.E., DIN AND T-TYPE) SPICER LIFE SERIES 55, 70, 90, 100, 140, 170 & 250

1. Wipe the bearing surface of the midship tube shaft with a fine emery cloth.

2. Install a new slinger (included in center bearing replacement kit) on the midship tube shaft using a section of tubing to avoid damaging slinger. Make sure the slinger is completely seated against the midship tube shaft shoulder. (See photo 134, below.)

Photo 134

3. Before installing the new center bearing assembly, be sure to fill the entire cavity around the bearing with a waterproof lubricant. (See photo 135, top right.) Enough lubricant must be applied to fill the cavity to the extreme edge of the slinger surrounding the bearing. Lubricants **must** be waterproof. See Table NN, top right, for recommended lubricants. ▲ See warning, below.

▲ *WARNING*

Inadequate lubrication can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

Photo 135

RECOMMENDED CENTER BEARING LUBRICANTS

LUBRICANTS	SOURCE
Rykon Premium No. 3	Amoco Oil Company
Amolith 8516	Amoco Oil Company
Van Talgar No. 4	Exxon Company

Table NN

4. Carefully align the center bearing assembly with the ground surface of the midship tube shaft. Physically push the center bearing onto the midship tube shaft. (See photo 136, below.)

Photo 136

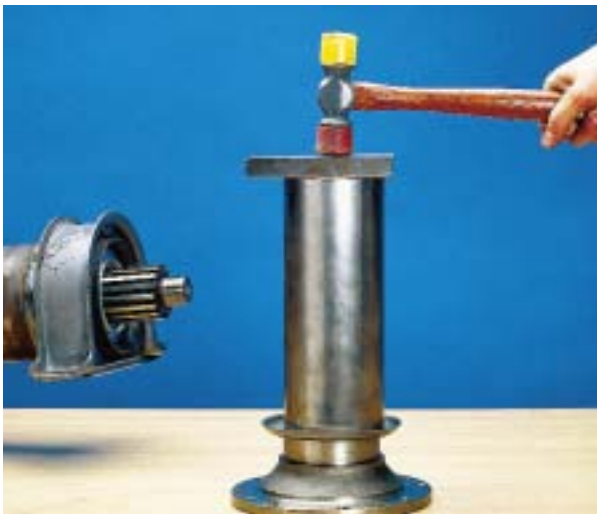

Photo 137

5. Press remaining slinger onto the companion flange using a section of tubing to avoid damaging slinger. (See photo 137, above.)

6. Using a soft-faced hammer, tap the companion flange onto the midship tube shaft, **making sure phasing marks from removal procedure are in line**. Continue to tap the companion flange until it is completely seated against the center bearing.

MIDSHIP NUT SPECIFICATIONS

SERIES	NUT P/N	WASHER P/N	HEAD SIZE	NUT TORQUE Nm	NUT TORQUE LB. FT.
SPL55	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD
SPL90	231502	N/A	15/8"	644-712	475-525
SPL100	TBD	TBD	TBD	TBD	TBD
SPL140	250-74-11	230123-6	41mm*	644-712	475-525
SPL170	250-74-11	230123-6	41mm*	644-712	475-525
SPL250	250-74-11	230123-6	41mm*	644-712	475-525

** A 1 5/8" socket may be used.*

Table PP

7. Install washer (if required) and **new** midship nut and torque nut to specifications. See midship nut specifications, Table PP, above. See warning, below.

WARNING

Failure to torque midship nut to required specifications can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

8. Proceed to page 147 for installation of the driveshaft into the vehicle.

OUTBOARD SLIP STYLE
SPICER LIFE SERIES 55, 70, 90 & 100

1. Wipe the bearing surface of the midship tube shaft with a fine emery cloth.

2. Install a new slinger (included in center bearing replacement kit) on the midship tube shaft using a section of tubing to avoid damaging slinger. Make sure the slinger is completely seated against the midship tube shaft shoulder. (See photo 138, top right.)

3. When replacing a center bearing assembly, be sure to fill the entire cavity around the bearing with a waterproof lubricant (see photo 139, center right.) Enough lubricant must be applied to fill the cavity to the extreme edge of the slinger surrounding the bearing. Lubricants **must** be waterproof. See Table QQ, bottom right for recommended lubricant.

▲ See warning, below.

▲ *WARNING*

Inadequate lubrication can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

4. Carefully align the center bearing assembly with the ground surface of midship tube shaft. Physically push the center bearing onto the midship tube shaft.

5. Proceed to page 136 for installation of the driveshaft into the vehicle.

Photo 138

Photo 139

RECOMMENDED CENTER BEARING LUBRICANTS

LUBRICANTS	SOURCE
Rykon Premium No. 3	Amoco Oil Company
Amolith 8516	Amoco Oil Company
Van Talgar No. 4	Exxon Company

Table QQ

INSTALLATION PROCEDURE FOR SLIP MEMBER BOOT

SPICER LIFE SERIES 55, 70, 100, 140, 170 & 250

Required Tools

- Boot Clamp Pliers
  Lisle Corporation Part Number: 30800, or
  Snap-On Part Number: YA3080
- Tape Measure or Ruler
- Soft-Faced Hammer (brass, plastic or rubber)
- Grease-Cutting Solvent

1. Clean **ALL** grease from yoke shaft and spline sleeve. Make sure grease-cutting solvent does not intrude into the tube through the vent hole in the spline sleeve plug. **Be sure the phasing marks made during disassembly are not removed.** (See photo 140, top right.)

2. After all traces of grease-cutting solvent have been removed from yoke shaft and spline sleeve, apply enough N.L.G.I*, E. P. Grade 2 grease (provided in slip member boot replacement kit) to fill the entire length of all teeth in the spline sleeve (see photo 141, right.) Wipe any excess grease on the **teeth** of the yoke shaft. ▲ See warning, below.
**National Lubricating Grease Institute*

Photo 140

Photo 141

▲ ***WARNING***

Inadequate lubrication can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

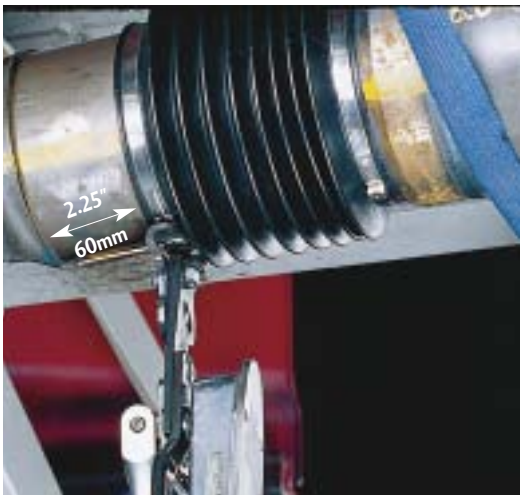

Photo 142

3. Measure and place a mark 2.25 inches (55-60mm) from yoke shaft shoulder with a marking stick, paint marker or other legible marking device. (See photo 142, above.)

4. Position a clamp on each end of the new boot. Slide the boot onto the **grease-free** yoke shaft shoulder.

5. Collapse the boot and insert the yoke shaft into the splined sleeve, **making sure phasing marks are in line.** Position the end of the boot at the 2.25 inches (55-60mm) mark made on the yoke shaft shoulder and tighten boot clamps to the specified torque. (See photo 142, above.) **Yoke shaft shoulder must be clean, dry and grease-free.** See boot clamp torque specification, Table RR, top right. See warning, below.

WARNING

Failure to properly install and tighten boot clamps could allow intrusion of contaminants and can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

BOOT CLAMP SPECIFICATIONS

SERIES	CLAMP P/N	CLAMP TORQUE Nm	LB. FT.
SPL55	TBD	TBD	TBD
SPL70	TBD	TBD	TBD
SPL100	TBD	TBD	TBD
SPL140	232757	136-180	100-130
SPL170	232493	136-180	100-130
SPL170*	232702	136-180	100-130
SPL250	232493	136-180	100-130

**high angle interaxle position only*

Table RR

6. Before the driveshaft is completely installed in the vehicle, slowly collapse and extend the driveshaft to make sure the boot clamps are stationary. If the clamps are not stationary, recheck for proper clamp torque. If clamps still are not stationary, repeat disassembly and assembly procedure. **DO NOT reuse clamps.** See warning, below.

WARNING

Reuse of boot clamps or failure to properly tighten boot clamps to required specifications could allow intrusion of contaminants onto slip member and can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

Quick Disconnect™ Style

Proceed to step 7.

Companion Flange/Flange Yoke (S.A.E., DIN and T-Type Style)

Proceed to step 9.

Quick Disconnect™ Style

7. If clamps are stationary, use a soft-faced hammer to tap universal joint into the end yoke. Make sure to align universal joint in end yoke, **matching up phasing marks made during removal to ensure original driveshaft orientation.**

QUICK DISCONNECT BOLT SPECIFICATIONS

SERIES	BOLT P/N*	THREAD SIZE	HEAD SIZE	BOLT TORQUE Nm	BOLT TORQUE LB. FT.
SPL55	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD
SPL90	6-73-412	0.375 in. - 24	3/8 in. 12 point	61-81	45-60
SPL100	TBD	TBD	TBD	TBD	TBD
SPL140	12-73-125M	12mm - 1.25	12 mm 12 point	135-160	100-120
SPL170	12-73-125M	12mm - 1.25	12 mm 12 point	135-160	100-120
SPL250	12-73-125M	12mm - 1.25	12 mm 12 point	135-160	100-120

** Bolts are specially heat-treated. DO NOT substitute inferior grade bolts.*

Table SS

8. Install the bearing retainers or **new** stamped straps and **new** bolts. Torque the bolts down evenly and to required specifications. Reference bolt specifications, Table SS, left. ▲ See warning, below. Check to make sure bearing cup assemblies are fully seated in the yoke ears.

▲ *WARNING*

Failure to torque bolts to specification can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

Companion Flange/Flange Yoke (S.A.E., DIN and T-Type Style)

9. Position the flange yoke face onto the companion flange, **aligning bolt holes and phasing marks.** Make sure flange yoke and companion flange are free from grease or other foreign material and are properly seated.

10. Install **new** bolts, washers (if required) and nuts. Reference hardware specifications, Table TT, below. Bolts must be torqued to required specifications. ▲ See warning, step 8.

COMPANION FLANGE/FLANGE YOKE STYLE (S.A.E., DIN AND T-TYPE) HARDWARE SPECIFICATIONS

SERIES	BOLT P/N*†	WASHER P/N	NUT P/N	DIAMETER, THREAD & LENGTH UNDER HEAD	BOLT TORQUE Nm	BOLT TORQUE FT. LBS.
SPL55	TBD	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD	TBD
SPL90	6-73-1219	500357-11	231421-3	.375" 24 x 1.188"	54-65	40-48
SPL100	TBD	TBD	TBD	TBD	TBD	TBD
SPL140	6-73-220	500357-11	231421-3	.375" 24 x 1.250"	54-65	40-48
	6-73-1227	500357-11	231421-3	.375" 24 x 1.688"	54-65	40-48
SPL170	7-73-122	500357-12	231421-4	.438" 20 x 1.375"	85-102	63-75
	7-73-228	500357-12	231421-4	.438" 20 x 1.750"	85-102	63-75
SPL250	7-73-122	500357-12	231421-4	.438" 20 x 1.375"	85-102	63-75
	7-73-228	500357-12	231421-4	.438" 20 x 1.750"	85-102	63-75

**Bolts are specially heat-treated. DO NOT substitute inferior grade bolts.*

† Approved Spicer hardware.

***Note**-Original equipment vehicle manufacturers' manuals may have alternate specified bolts or metric hardware. Refer to the original equipment service manual for bolt part numbers.*

Table TT

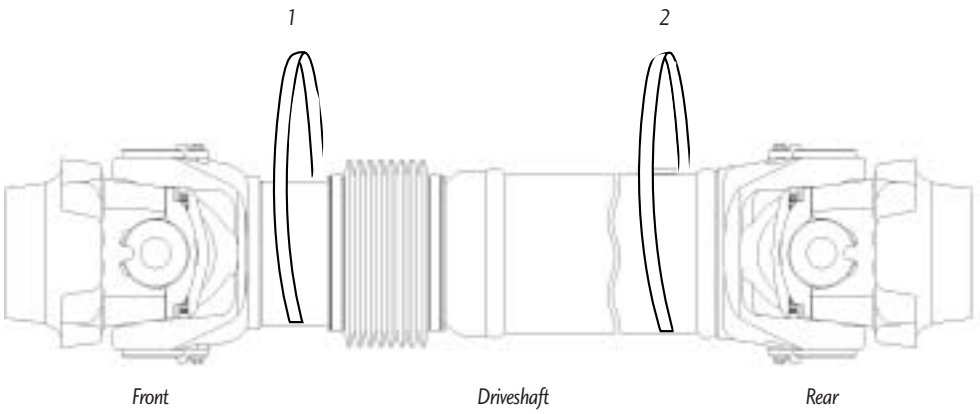

Figure Z,

INSTALLATION PROCEDURE FOR DRIVESHAFT ASSEMBLIES

SPICER LIFE SERIES 55, 70, 90, 100, 140, 170 & 250

Required Tools

- Support Straps
- Ratchet or Air Gun
- Appropriate 12-Point Socket
- Soft-Faced Hammer (Brass, Plastic or Rubber)

QUICK DISCONNECT™ YOKE STYLE

One-Piece Driveshafts

Position Support Straps

1. Position support straps as illustrated in Figure Z, above, to make sure that the driveshaft will be properly supported. ▲ See warning, below.

▲ ***WARNING***

ALWAYS *use support straps to prevent driveshaft from falling out of vehicle. Failure to use support straps can cause damage to driveshaft or result in property damage, serious personal injury or death.*

Attach support straps to frame rails or some structural part of the vehicle. **DO NOT** attach the support straps to fuel lines, oil lines, brake lines, or wiring. **DO NOT** entangle fuel lines, oil lines, brake lines, or wiring in the support straps. ▲ See warning, below.

▲ ***WARNING***

Attaching or entangling support straps to fuel, oil or brake lines or wiring can result in their damage. Damaged fuel, oil or brake lines or wiring can result in failure of the vehicle, which can result in property damage, serious personal injury or death.

Install Driveshaft

2. Place the driveshaft in the support straps. Be sure the driveshaft is placed back in its original orientation. ▲ See warning, below.

▲ ***WARNING***

Installation of a driveline out of original phase can cause vibration and failure of the driveline and attaching components. Failure of a driveline can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

3. Working from the **front end**, use a soft-faced hammer to tap the universal joint into the end yoke. Make sure to align

Photo 143

Photo 144

the universal joint in end yoke, **matching up the phasing marks made during removal to ensure original driveshaft orientation**. (See photo 143, above.)

4. Install the bearing retainers or **new** stamped straps and **new bolts** (see photo 144, top right.) Torque the bolts down evenly and to required specifications. Check to make sure the bearing cup assemblies are fully seated in the yoke ears. ▲ See warning, below.

▲ *WARNING*

Improperly seated bearing cup assemblies can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline could result in property damage, serious personal injury or death.

Reference bolt specifications, Table UU, bottom right. Bolts must be torqued to required specifications. ▲ See warning, below.

▲ *WARNING*

Failure to install new stamped straps and new bolts and to torque bolts to specifications can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

5. **Be sure the second support strap is in place, as illustrated in Figure Z, page 136.** It may be necessary to collapse the slip member assembly to allow clearance to install driveshaft into the rear end yoke.

Use a soft-faced hammer to tap universal joint into the rear end yoke. Make sure the bearing cup assemblies are fully and properly seated. ▲ See warning, step 4, regarding improperly seated bearing cup assemblies.

6. Repeat step 4.

7. Remove **all** support straps..

8. Completely relubricate all the universal joints and the slip member assembly (if slip member assembly is relubable) as described in the lubrication section of this manual.

QUICK DISCONNECT BOLT SPECIFICATIONS

SERIES	BOLT P/N*	THREAD SIZE	HEAD SIZE	BOLT TORQUE Nm	BOLT TORQUE LB. FT.
SPL55	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD
SPL90	6-73-412	0.375 in. - 24	3/8 in. 12 point	61-81	45-60
SPL100	TBD	TBD	TBD	TBD	TBD
SPL140	12-73-125M	12mm - 1.25	12 mm 12 point	135-160	100-120
SPL170	12-73-125M	12mm - 1.25	12 mm 12 point	135-160	100-120
SPL250	12-73-125M	12mm - 1.25	12 mm 12 point	135-160	100-120

** Bolts are specially heat-treated.*
DO NOT substitute inferior grade bolts.

Table UU

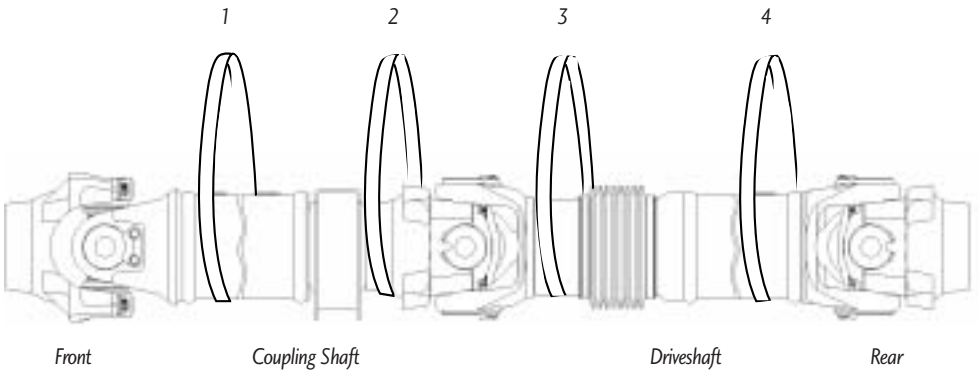

Figure AA

QUICK DISCONNECT™ YOKE STYLE

Two-Piece Driveshafts

Position Support Straps

1. Position support straps as illustrated in Figure AA, above, to make sure that the driveshaft will be properly supported at the slip member, behind the center bearing end fitting and in front of center bearing, with support straps. ▲ See warning, below.

▲ ***WARNING***

ALWAYS *use support straps to prevent driveshaft from falling out of vehicle. Failure to use support straps can cause damage to driveshaft or result in property damage, serious personal injury or death.*

Attach support straps to frame rails or some structural part of the vehicle. **DO NOT** attach the support straps to fuel lines, oil lines, brake lines, or wiring. **DO NOT** entangle fuel lines, oil lines, brake lines, or wiring in the support straps. ▲ See warning, below.

▲ ***WARNING***

Attaching or entangling support straps to fuel, oil or brake lines or wiring can result in their damage. Damaged fuel, oil or brake lines or wiring can result in failure of the vehicle, which can result in property damage, serious personal injury or death.

Install Coupling Shaft

2. Place the coupling shaft in first and second support straps. **Be sure the coupling shaft is placed back in its original orientation.** ▲ See warning, below.

▲ ***WARNING***

Installation of a driveline out of original phase can cause vibration and failure of the driveline and attaching components. Failure of a driveline can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

3. Working from the **front** end, use a soft-faced hammer to tap the universal joint into the front end yoke. Make sure to align the universal joint in the front end yoke, **matching up phasing marks made during removal to ensure the driveshaft is reinstalled in its original orientation.**

4. Install the bearing retainers or **new** stamped straps and **new** bolts. Torque the bolts down evenly and to required specifications. Check to make sure the bearing cup assemblies are fully seated in yoke ears. ▲ See warning, below.

▲ ***WARNING***

Improperly seated bearing cup assemblies can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline could result in property damage, serious personal injury or death.

Reference bolt specifications, Table VV, below. Bolts must be torqued to required specifications. ▲ See warning, below.

▲ ***WARNING***

Failure to install new stamped straps and new bolts and to torque bolts to specification can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

QUICK DISCONNECT BOLT SPECIFICATIONS

SERIES	BOLT P/N*	THREAD SIZE	HEAD SIZE	BOLT TORQUE Nm	BOLT TORQUE LB. FT.
SPL55	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD
SPL90	6-73-412	0.375 in. - 24	3/8 in. 12 point	61-81	45-60
SPL100	TBD	TBD	TBD	TBD	TBD
SPL140	12-73-125M	12mm - 1.25	12 mm 12 point	135-160	100-120
SPL170	12-73-125M	12mm - 1.25	12 mm 12 point	135-160	100-120
SPL250	12-73-125M	12mm - 1.25	12 mm 12 point	135-160	100-120

** Bolts are specially, heat-treated.*
DO NOT substitute inferior grade bolts.

Table VV

Photo 145

5. **Be sure the second support strap is in place, as illustrated in Figure AA, page 138.** Lift the center bearing to the center bearing bracket on the cross member of the frame. Install proper center bearing bracket bolts, per vehicle manufacturer's recommendations. (See photo 145, above.) Torque bolts to vehicle manufacturer's required specifications. ▲ See warning, below.

▲ ***WARNING***

Failure to torque bolts to specification can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

Install Driveshaft

6. **Be sure the third and fourth support strap are in place, as illustrated in Figure AA, page 138.** Place the driveshaft in support straps. **Be sure the driveshaft is placed back in its original orientation.**

Center Position Yoke Style

Proceed to step 7, page 140.

Outboard Slip Style

Proceed to step 13, page 141.

Photo 146

Photo 147

Center Position Yoke Style

7. Working from the **rear end**, use a soft-faced hammer to tap the universal joint into the rear end yoke. Make sure to align the universal joint in the rear end yoke, **matching up phasing marks made during removal to ensure original driveshaft orientation**. (See photo 146, above.) See warning, below.

WARNING

Installation of a driveline out of original phase can cause vibration and failure of the driveline and attaching components. Failure of a driveline can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

8. Install bearing retainers or **new** stamped straps and **new** bolts. (See photo 147, above.) Torque the bolts down evenly and to required specifications. Check to make sure the bearing cup assemblies are fully seated in yoke ears. Table WW, right. See warning, below.

WARNING

Failure to install new stamped straps, new bolts and torque bolts to specification can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

QUICK DISCONNECT BOLT SPECIFICATIONS

SERIES	BOLT P/N*	THREAD SIZE	HEAD SIZE	BOLT TORQUE Nm	BOLT TORQUE LB. FT.
SPL55	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD
SPL90	6-73-412	0.375 in. - 24	3/8 in. 12 point	61-81	45-60
SPL100	TBD	TBD	TBD	TBD	TBD
SPL140	12-73-125M	12mm - 1.25	12 mm 12 point	135-160	100-120
SPL170	12-73-125M	12mm - 1.25	12 mm 12 point	135-160	100-120
SPL250	12-73-125M	12mm - 1.25	12 mm 12 point	135-160	100-120

** Bolts are specially heat-treated.*
DO NOT substitute inferior grade bolts.

Table WW

9. It may be necessary to collapse slip member assembly to allow clearance to install driveshaft into center bearing end yoke. Use a soft-faced hammer to tap universal joint into center bearing end yoke, matching up phasing marks made during removal to ensure original driveshaft orientation. See warning, step 7.

WARNING

Improperly seated bearing cup assemblies can cause driveline failure which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

10. Install bearing retainers or **new** stamped straps and **new** bolts. Torque the bolts down evenly and to required specifications. Check to make sure the bearing cup assemblies are fully seated in yoke ears. Reference bolt specifications, Table WW, above. ▲ See warning, below.

▲ ***WARNING***

Failure to install new stamped straps and torque bolts to specification can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

11 Completely relubricate all the universal joints and the slip member assemblies (if slip member assembly is relubable) as described in the lubrication section of this manual.

12. Remove **all** support straps.

Outboard Slip Style

13. Guide slip yoke onto midship stub shaft, **making sure phasing marks made during removal are in line**.
▲ See warning, below.

▲ ***WARNING***

Installation of a driveline out of original phase can cause vibration and failure of the driveline and attaching components. Failure of a driveline can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

14. Using a soft-faced hammer, tap universal joint into rear end yoke, matching up phasing marks made during removal to ensure original driveshaft orientation. ▲ See warning, step 13.

15. Install the bearing retainers or **new** stamped straps and **new** bolts. Torque the bolts down evenly and to required specifications. Check to make sure the bearing cup assemblies are fully seated in the yoke ears.
(See warning, top right)

QUICK DISCONNECT BOLT SPECIFICATIONS

SERIES	BOLT P/N*	THREAD SIZE	HEAD SIZE	BOLT TORQUE Nm	BOLT TORQUE LB. FT.
SPL55	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD
SPL90	6-73-412	0.375 in. - 24	3/8 in. 12 point	61-81	45-60
SPL100	TBD	TBD	TBD	TBD	TBD
SPL140	12-73-125M	12mm - 1.25	12 mm 12 point	135-160	100-120
SPL170	12-73-125M	12mm - 1.25	12 mm 12 point	135-160	100-120
SPL250	12-73-125M	12mm - 1.25	12 mm 12 point	135-160	100-120

** Bolts are specially heat-treated.*
DO NOT substitute inferior grade bolts.

Table XX

▲ ***WARNING***

Improperly seated bearing cup assemblies can cause driveline failure which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

Reference bolt specifications, Table XX, above. Bolts must be torqued to required specifications. ▲ See warning, below.

▲ ***WARNING***

Failure to install new stamped straps and properly tighten bearing retainer bolts can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

16. Remove **all** support straps.

17. Completely relubricate all the universal joints and the slip member assembly (if slip member assembly is relubable) as described in the lubrication section of this manual.

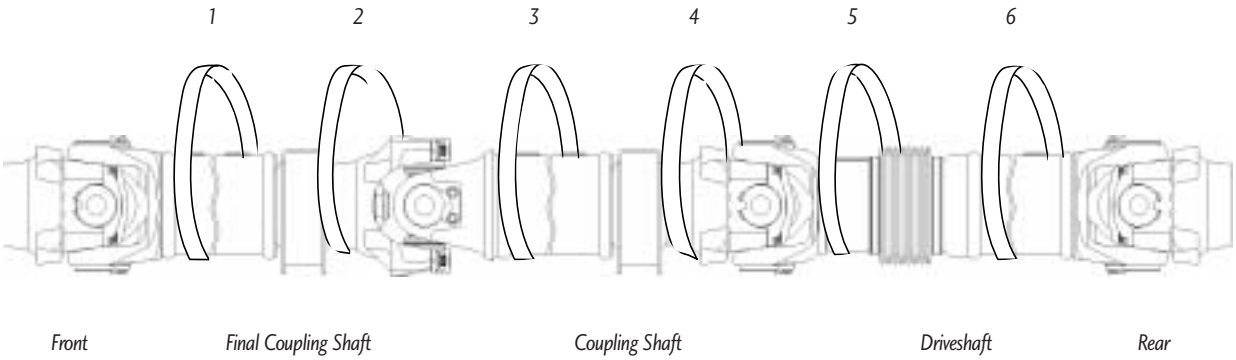

Figure BB

QUICK DISCONNECT™ YOKE STYLE

Multiple-Piece Driveshafts

Position Support Straps

1. Position support straps as illustrated in Figure BB, above, to make sure that the driveshaft will be properly supported at the slip member, behind the center bearing end fittings and in front of center bearing, with support straps. ▲ See warning, below.

▲ ***WARNING***

ALWAYS *use support straps to prevent driveshaft from falling out of vehicle. Failure to use support straps can cause damage to driveshaft or result in property damage, serious personal injury or death.*

Attach support straps to frame rails or some structural part of the vehicle. **DO NOT** attach the support straps to fuel lines, oil lines, brake lines, or wiring. **DO NOT** entangle fuel lines, oil lines, brake lines, or wiring in the support straps. ▲ See warning, below.

▲ ***WARNING***

Attaching or entangling support straps to fuel, oil or brake lines or wiring can result in their damage. Damaged fuel, oil or brake lines or wiring can result in failure of the vehicle, which can result in property damage, serious personal injury or death.

2. When working with multiple-piece driveshafts, start at **front** to install all **coupling shafts**.

Install Final Coupling Shaft

3. Place final **coupling shaft** in support straps. **Be sure the coupling shaft is placed back in its original orientation.** ▲ See warning, below.

▲ ***WARNING***

Installation of a driveline out of original phase can cause vibration and failure of the driveline and attaching components. Failure of a driveline can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

4. Working from the **front** end, use a soft-faced hammer to tap the universal joint into the front end yoke. Make sure to align the universal joint in the front end yoke, **matching up phasing marks made during removal to ensure the driveshaft is reinstalled in its original orientation.**

5. Install the bearing retainers or **new** stamped straps and **new** bolts. Torque the bolts down evenly and to required specifications. Check to make sure the bearing cup assemblies are fully seated in yoke ears. ▲ See warning, below.

▲ ***WARNING***

Improperly seated bearing cup assemblies can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline could result in property damage, serious personal injury or death.

QUICK DISCONNECT™ BOLT SPECIFICATIONS

SERIES	BOLT P/N*	THREAD SIZE	HEAD SIZE	BOLT TORQUE Nm	BOLT TORQUE LB. FT.
SPL55	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD
SPL90	6-73-412	0.375 in. - 24	3/8 in. 12 point	61-81	45-60
SPL100	TBD	TBD	TBD	TBD	TBD
SPL140	12-73-125M	12mm - 1.25	12 mm 12 point	135-160	100-120
SPL170	12-73-125M	12mm - 1.25	12 mm 12 point	135-160	100-120
SPL250	12-73-125M	12mm - 1.25	12 mm 12 point	135-160	100-120

** Bolts are specially heat-treated.*
DO NOT substitute inferior grade bolts.

Table YY

Reference bolt specifications, Table YY, above. Bolts must be torqued to required specifications. See warning, below.

WARNING

Failure to install new stamped straps and new bolts and to torque bolts to specifications can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

6. **Be sure the second support strap is in place, as illustrated in Figure BB, page 142.** Lift the center bearing to the center bearing bracket on the cross member of the frame. Install proper center bearing bracket bolts, per vehicle manufacturer's recommendations. (See photo 148, top right.) Torque bolts to vehicle manufacturer's required specifications. See warning, below.

WARNING

Failure to torque bolts to specification can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

Install Coupling Shaft(s)

7. **Be sure third and fourth support straps are in place as illustrated in figure BB, page 142.** Place coupling shaft in

Photo 148

support straps. Be sure the coupling shaft is placed back in its original orientation. See warning, below.

WARNING

Installation of a driveline out of original phase can cause vibration and failure of the driveline and attaching components. Failure of a driveline can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

8. Use a soft-faced hammer to tap the universal joint into the center bearing end yoke. Make sure to align the universal joint in the center bearing end yoke, **matching up phasing marks made during removal to ensure the driveshaft is reinstalled in its original orientation.**

9. Install the bearing retainers or **new** stamped straps and **new** bolts. Torque the bolts down evenly and to required specifications. Check to make sure the bearing cup assemblies are fully seated in yoke ears. See warning, below.

WARNING

Improperly seated bearing cup assemblies can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline could result in property damage, serious personal injury or death.

Reference bolt specifications, Table YY, above. Bolts must be torqued to required specifications. See warning, step 6.

Photo 149

Photo 150

10. **Be sure the fourth support strap is in place, as illustrated in Figure BB, page 142.** Lift the center bearing to the center bearing bracket on the cross member of the frame. Install proper center bearing bracket bolts, per vehicle manufacturer's recommendations. (See photo 148, page 143.) Torque bolts to vehicle manufacturer's required specifications. ▲ See warning, below.

▲ ***WARNING***

Failure to torque bolts to specification can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

11. Repeat steps 7 through 10 as necessary to install any remaining coupling shafts.

Install Driveshaft

12. **Be sure the fifth and sixth support straps are in place, as illustrated in Figure BB, page 142.** Place the **driveshaft** in support straps. **Be sure the driveshaft is placed back in its original orientation.**

Center Position Yoke Style

Proceed to step 13.

Outboard Slip Style

Proceed to step 19, page 145.

QUICK DISCONNECT™ BOLT SPECIFICATIONS

SERIES	BOLT P/N*	THREAD SIZE	HEAD SIZE	BOLT TORQUE Nm	BOLT TORQUE LB. FT.
SPL55	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD
SPL90	6-73-412	0.375 in. - 24	3/8 in. 12 point	61-81	45-60
SPL100	TBD	TBD	TBD	TBD	TBD
SPL140	12-73-125M	12mm - 1.25	12 mm 12 point	135-160	100-120
SPL170	12-73-125M	12mm - 1.25	12 mm 12 point	135-160	100-120
SPL250	12-73-125M	12mm - 1.25	12 mm 12 point	135-160	100-120

** Bolts are specially heat-treated.*
DO NOT substitute inferior grade bolts.

Table ZZ

Center Position Yoke Style

13. Working from the **rear end**, use a soft-faced hammer to tap the universal joint into the rear end yoke. Make sure to align the universal joint in the rear end yoke, **matching up phasing marks made during removal to ensure original driveshaft orientation**. (See photo 149, above.) ▲ See warning, below.

▲ ***WARNING***

Installation of a driveline out of original phase can cause vibration and failure of the driveline and attaching components. Failure of a driveline can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

14. Install bearing retainers or **new** stamped straps and **new** bolts. (See photo 150, page 144). Torque the bolts down evenly and to required specifications. Check to make sure the bearing cup assemblies are fully seated in yoke ears. Table ZZ, Page 144. ▲ See warning, below.

▲ ***WARNING***

Failure to install new stamped straps, new bolts and torque bolts to specification can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

15. It may be necessary to collapse the slip member assembly to allow clearance to install driveshaft into the center bearing end yoke. Use a soft-faced hammer to tap universal joint into center bearing end yoke, matching up phasing marks made during removal to ensure original driveshaft orientation. ▲ See warning, below.

▲ ***WARNING***

Improperly seated bearing cup assemblies can cause driveline failure which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

16. Install bearing retainers or **new** stamped straps and **new** bolts. Torque the bolts down evenly and to required specifications. Check to make sure the bearing cup assemblies are fully seated in yoke ears. Reference bolt specifications, Table AAA, above. ▲ See warnings, steps 14 and 15.

QUICK DISCONNECT BOLT SPECIFICATIONS

SERIES	BOLT P/N*	THREAD SIZE	HEAD SIZE	BOLT TORQUE Nm	BOLT TORQUE LB. FT.
SPL55	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD
SPL90	6-73-412	0.375 in. - 24	3/8 in. 12 point	61-81	45-60
SPL100	TBD	TBD	TBD	TBD	TBD
SPL140	12-73-125M	12mm - 1.25	12 mm 12 point	135-160	100-120
SPL170	12-73-125M	12mm - 1.25	12 mm 12 point	135-160	100-120
SPL250	12-73-125M	12mm - 1.25	12 mm 12 point	135-160	100-120

** Bolts are specially heat-treated.*
DO NOT substitute inferior grade bolts.

Table AAA

17. Completely relubricate all the universal joints and the slip member assembly (if slip member assembly is relubable) as described in the lubrication section of this manual.

18. Remove **all** support straps.

Outboard Slip Style

19. Guide slip yoke onto midship stub shaft, **making sure phasing marks made during removal are in line**. ▲ See warning, below.

▲ ***WARNING***

Installation of a driveline out of original phase can cause vibration and failure of the driveline and attaching components. Failure of a driveline can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

20. Using a soft-faced hammer to tap universal joint into rear end yoke, match up phasing marks made during removal to ensure original driveshaft orientation. ▲ See warning, step 19.

21. Install the bearing retainers or **new** stamped straps and **new** bolts. Torque the bolts down evenly and to required specifications. Check to make sure the bearing cup assemblies are fully seated in the yoke ears. ▲ See warning, below.

▲ ***WARNING***

Improperly seated bearing cup assemblies can cause driveline failure which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

Reference bolt specifications, page 145. Bolts must be torqued to required specifications. ▲ See warning, below.

▲ ***WARNING***

Failure to install new stamped straps and new bolts and to torque bolts to specification can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

22. Completely relubricate all the universal joints and the slip member assembly (if slip member assembly is relubable) as described in the lubrication section of this manual.

23. Remove **all** support straps.

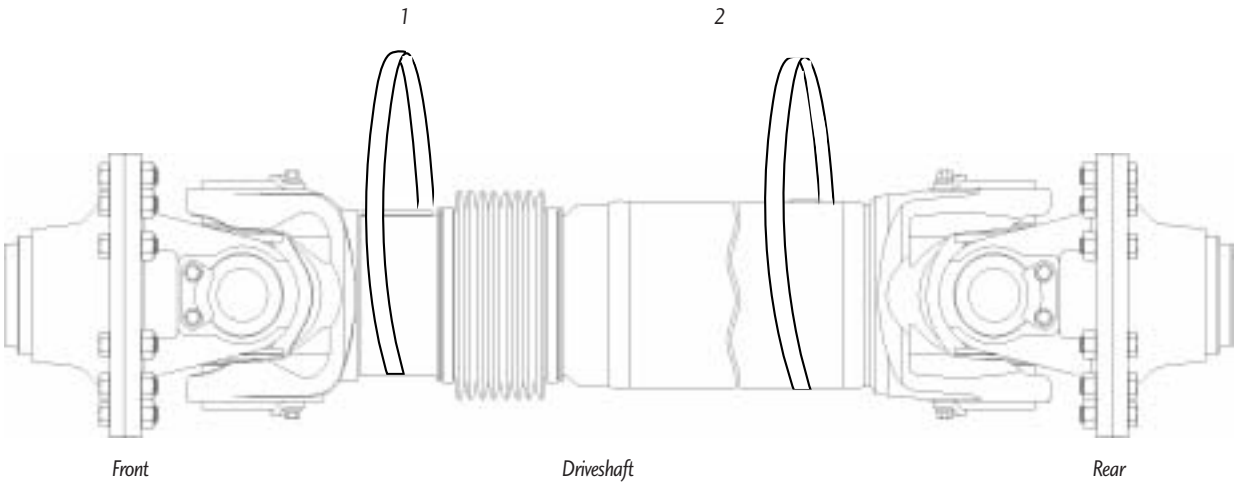

Figure CC, S.A.E.

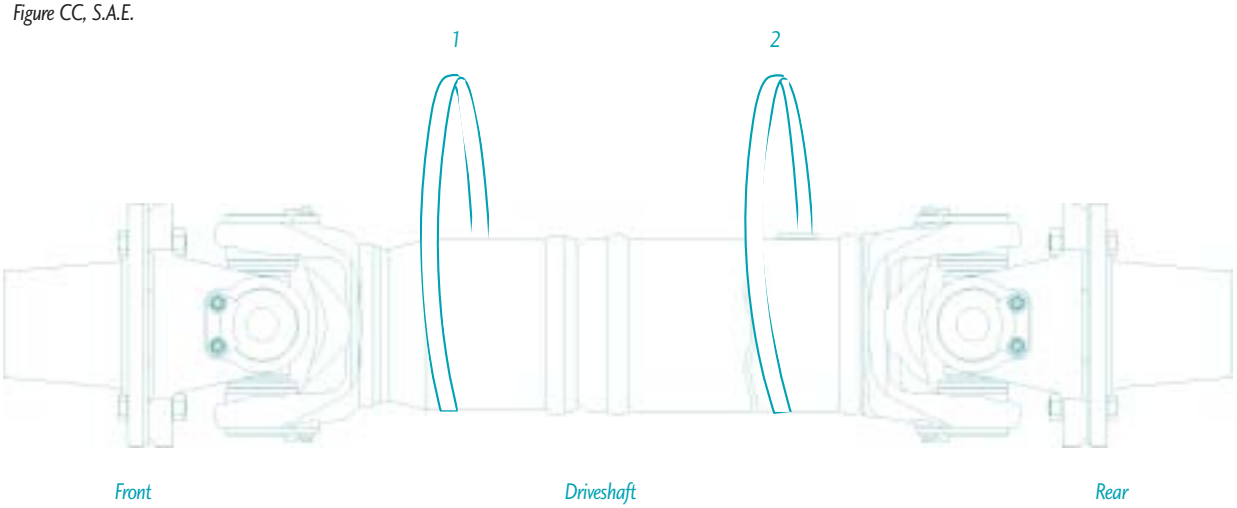

Figure DD, DIN and T-Type

COMPANION FLANGE/FLANGE YOKE STYLE (S.A.E, DIN AND T-TYPE)

One-Piece Driveshafts

Position Support Straps

1. Position support straps, as illustrated in Figure CC or DD, above, to make sure that the driveshaft will be properly supported. ▲ See warning, below.

▲ ***WARNING***

ALWAYS *use support straps to prevent driveshaft from falling out of vehicle. Failure to use support straps can cause damage to driveshaft or result in property damage, serious personal injury or death.*

Attach support straps to frame rails or some structural part of the vehicle. **DO NOT** attach the support straps to fuel lines, oil lines, brake lines, or wiring. **DO NOT** entangle fuel lines, oil lines, brake lines, or wiring in the support straps. ▲ See warning, below.

▲ ***WARNING***

Attaching or entangling support straps to fuel, oil or brake lines or wiring can result in their damage. Damaged fuel, oil or brake lines or wiring can result in failure of the vehicle, which can result in property damage, serious personal injury or death.

COMPANION FLANGE/FLANGE YOKE STYLE (S.A.E., DIN AND T-TYPE) HARDWARE SPECIFICATIONS

SERIES	BOLT P/N*†	WASHER P/N	NUT P/N	DIAMETER, THREAD & LENGTH UNDER HEAD	BOLT TORQUE Nm	BOLT TORQUE FT. LBS.
SPL55	TBD	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD	TBD
SPL90	6-73-1219	500357-11	231421-3	.375" 24 x 1.188"	54-65	40-48
SPL100	TBD	TBD	TBD	TBD	TBD	TBD
SPL140	6-73-220	500357-11	231421-3	.375" 24 x 1.250"	54-65	40-48
	6-73-1227	500357-11	231421-3	.375" 24 x 1.688"	54-65	40-48
SPL170	7-73-122	500357-12	231421-4	.438" 20 x 1.375"	85-102	63-75
	7-73-228	500357-12	231421-4	.438" 20 x 1.750"	85-102	63-75
SPL250	7-73-122	500357-12	231421-4	.438" 20 x 1.375"	85-102	63-75
	7-73-228	500357-12	231421-4	.438" 20 x 1.750"	85-102	63-75

**Bolts are specially heat-treated. DO NOT substitute inferior grade bolts.*
† Approved Spicer hardware.
***Note**-Original equipment vehicle manufacturers' manuals may have alternate specified bolts or metric hardware. Refer to the original equipment service manual for bolt part numbers.*

Table BBB

Install Driveshaft

2. Place the driveshaft in the support straps. **Be sure the driveshaft is placed back in its original orientation.** ▲ See warning, below.

▲ ***WARNING***

Installation of a driveline out of original phase can cause vibration and failure of the driveline and attaching components. Failure of a driveline can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

Photo 151

3. Working from the **front end**, position the flange yoke face onto the companion flange, **aligning bolt holes and phasing marks**. Make sure flange yoke and companion flange are **free from grease** or other foreign material and properly seated. ▲ See warning, below.

▲ ***WARNING***

Improperly seated flange yoke and companion flanges can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

4. Install **new bolts**, washers (if required) and nuts. (See photo 151, above.) Reference hardware specifications, Table BBB, above. Bolts must be torqued to required specifications. ▲ See warning, below.

▲ ***WARNING***

Failure to torque bolts to specification can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

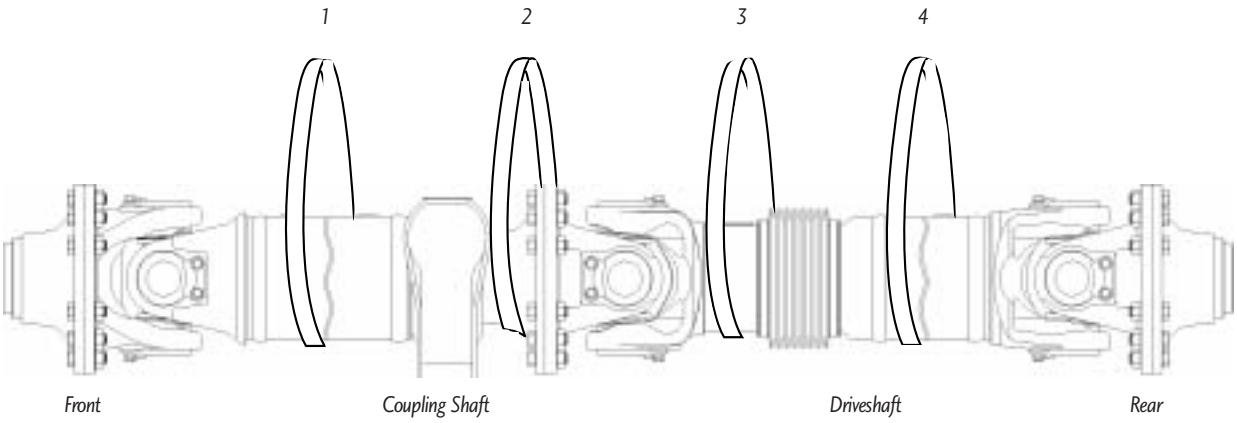

Figure EE, S.A.E.

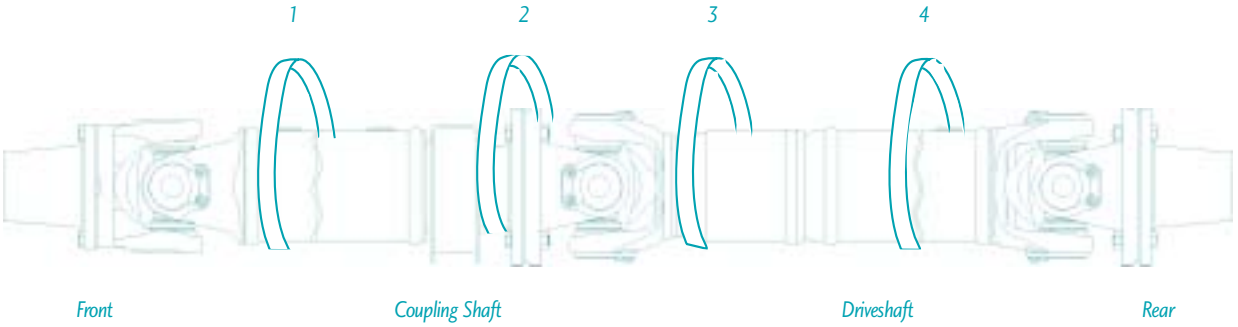

Figure FF, DIN and T-Type

5. **Be sure the second support strap is in place, as illustrated in Figure CC or DD, page 147.** It may be necessary to collapse slip member assembly to allow clearance to install the driveshaft into the front companion flange.

6. Repeat step 4.

7. Completely relubricate all universal joints and the slip member assembly (if slip member assembly is relubable) as described in the lubrication section of this manual.

8. Remove **all** support straps.

COMPANION FLANGE/FLANGE YOKE STYLE (S.A.E., DIN AND T-TYPE)

Two-Piece Driveshafts

Position Support Straps

1. Position support straps, as illustrated in Figure EE or FF, above, for the appropriate style driveshaft being serviced. Make sure that the driveshaft will be properly supported at the slip member, behind the center bearing end fitting and in front of center bearing, with support straps. ▲ See warning, below.

▲ ***WARNING***

ALWAYS *use support straps to prevent driveshaft from falling out of vehicle. Failure to use support straps can cause damage to driveshaft or result in property damage, serious personal injury or death.*

COMPANION FLANGE/FLANGE YOKE STYLE (S.A.E., DIN AND T-TYPE) HARDWARE SPECIFICATIONS

SERIES	BOLT P/N*†	WASHER P/N	NUT P/N	DIAMETER, THREAD & LENGTH UNDER HEAD	BOLT TORQUE Nm	BOLT TORQUE FT. LBS.
SPL55	TBD	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD	TBD
SPL90	6-73-1219	500357-11	231421-3	.375" 24 x 1.188"	54-65	40-48
SPL100	TBD	TBD	TBD	TBD	TBD	TBD
SPL140	6-73-220	500357-11	231421-3	.375" 24 x 1.250"	54-65	40-48
	6-73-1227	500357-11	231421-3	.375" 24 x 1.688"	54-65	40-48
SPL170	7-73-122	500357-12	231421-4	.438" 20 x 1.375"	85-102	63-75
	7-73-228	500357-12	231421-4	.438" 20 x 1.750"	85-102	63-75
SPL250	7-73-122	500357-12	231421-4	.438" 20 x 1.375"	85-102	63-75
	7-73-228	500357-12	231421-4	.438" 20 x 1.750"	85-102	63-75

**Bolts are specially heat-treated. DO NOT substitute inferior grade bolts.*
† Approved Spicer hardware.
***Note**-Original equipment vehicle manufacturers' manuals may have alternate specified bolts or metric hardware. Refer to the original equipment service manual for bolt part numbers.*

Table CCC

Attach support straps to frame rails or some structural part of the vehicle. **DO NOT** attach the support straps to fuel lines, oil lines, brake lines, or wiring. **DO NOT** entangle fuel lines, oil lines, brake lines, or wiring in the support straps. ▲ See warning, below.

▲ *WARNING*

Attaching or entangling support straps to fuel, oil or brake lines or wiring can result in their damage. Damaged fuel, oil or brake lines or wiring can result in failure of the vehicle, which can result in property damage, serious personal injury or death.

Install Coupling Shaft

2. Place the **coupling shaft** in the first and second support straps. **Be sure the coupling shaft is placed back in its original orientation.** ▲ See warning, below.

▲ *WARNING*

Installation of a driveline out of original phase can cause vibration and failure of the driveline and attaching components. Failure of a driveline can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

3. Working from the **front** end, position the flange yoke face onto the companion flange, **aligning bolt holes and phasing marks**. Make sure the flange yoke and companion flange are **free from grease** or other foreign material and properly seated. ▲ See warning, below.

▲ *WARNING*

Improperly seated flange yoke and companion flanges can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

4. Install **new** bolts, washers (if required) and nuts. (See photo 152, page 151.) Reference hardware specifications, Table CCC, above. Bolts must be torqued to required specifications. ▲ See warning, below.

▲ *WARNING*

Failure to torque bolts to specification can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

Photo 152

5. **Be sure the second support strap is in place, as illustrated in Figures EE or FF, page 149**. Lift the center bearing to the center bearing bracket on the cross member of the frame. Install proper center bearing bracket bolts per vehicle manufacturer's recommendations. Torque bolts to vehicle manufacturer's specifications. ▲ See warning, below.

▲ ***WARNING***

Failure to torque bolts to specification can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

Install Driveshaft

6. **Be sure the third and fourth support straps are in place, as illustrated in Figures EE or FF, Page 149.** Place driveshaft in support straps. **Be sure the driveshaft is placed back in its original orientation.** ▲ See warning, below.

▲ ***WARNING***

Installation of a driveline out of original phase can cause vibration and failure of the driveline and attaching components. Failure of a driveline can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

7. Working from the **rear end**, position the flange yoke face onto the companion flange, **aligning bolt holes and phasing marks**. Make sure the flange yoke and companion flange are **free from grease** or other foreign material and properly seated. ▲ See warning, below.

▲ ***WARNING***

An improperly seated flange yoke and companion flange can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

8. Install **new** bolts, washers (if required) and nuts. Reference hardware specifications, Table CCC, page 150. Bolts must be torqued to required specifications. ▲ See warning, step 5.

9. It may be necessary to collapse slip member assembly to allow clearance to install the driveshaft into the center bearing companion flange.

10. At center bearing, position the flange yoke face onto the companion flange, **aligning bolt holes and phasing marks.** Make sure the flange yoke and companion flange are free from grease or other foreign material and properly seated. ▲ See warning, step 7.

11. Install **new** bolts, washers (if required) and nuts. Reference appropriate hardware specifications, Table CCC, page 150. Bolts must be torqued to required specifications. ▲ See warning, step 5.

12. Completely relubricate all universal joints and the slip member assembly (if slip member assembly is relubable) as described in the lubrication section of this manual.

13. Remove **all** support straps.

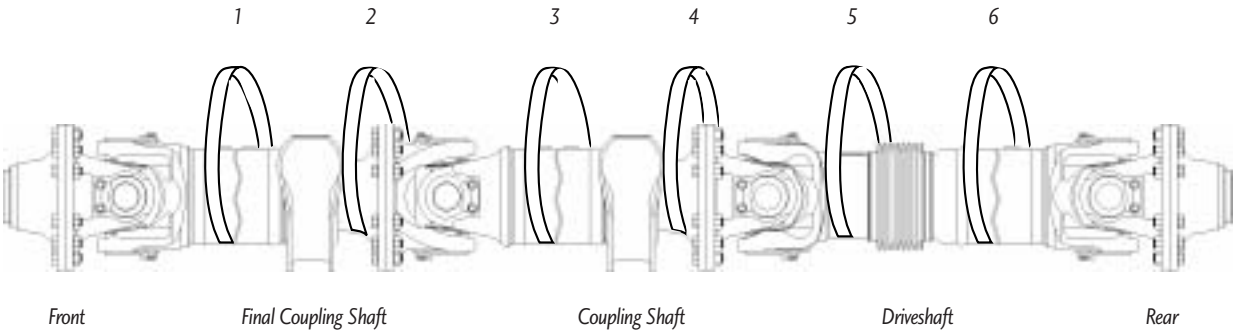

Figure GG

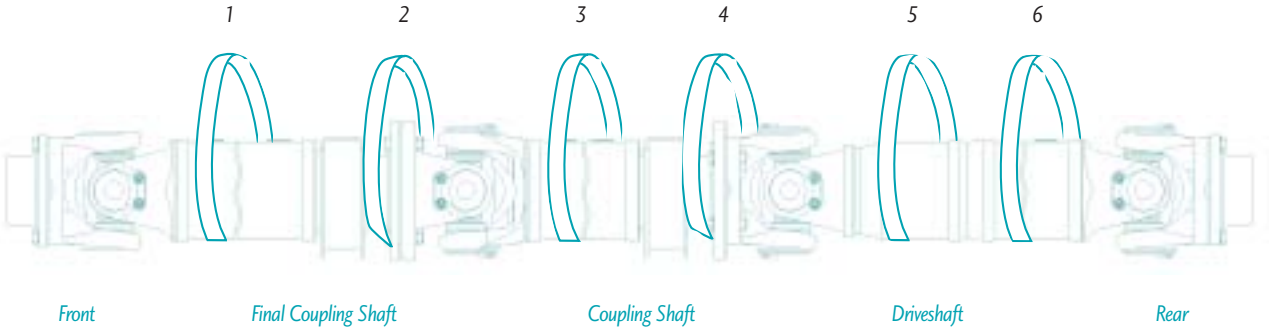

Figure HH

COMPANION FLANGE/FLANGE YOKE STYLE (S.A.E, DIN AND T-TYPE)

Multiple-Piece Driveshaft

Position Support Straps

1. Position support straps, as illustrated in Figure GG or HH, above, for appropriate style driveshaft being serviced. Make sure that the driveshaft will be properly supported at the slip member, behind the center bearing end fittings and in front of center bearings, with support straps. See warning, below.

WARNING

ALWAYS *use support straps to prevent driveshaft from falling out of vehicle. Failure to use support straps can cause damage to driveshaft or result in property damage, serious personal injury or death.*

Attach support straps to frame rails or some structural part of the vehicle. **DO NOT** attach the support straps to fuel lines, oil lines, brake lines, or wiring. **DO NOT** entangle fuel lines, oil lines, brake lines, or wiring in the support straps. See warning, below.

WARNING

Attaching or entangling support straps to fuel, oil or brake lines or wiring can result in their damage. Damaged fuel, oil or brake lines or wiring can result in failure of the vehicle, which can result in property damage, serious personal injury or death.

2. When working with multiple-piece driveshafts, start at the **front** to install all **coupling shafts**.

COMPANION FLANGE/FLANGE YOKE STYLE (S.A.E., DIN AND T-TYPE) HARDWARE SPECIFICATIONS

SERIES	BOLT P/N*†	WASHER P/N	NUT P/N	DIAMETER, THREAD & LENGTH UNDER HEAD	BOLT TORQUE Nm	BOLT TORQUE FT. LBS.
SPL55	TBD	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD	TBD
SPL90	6-73-1219	500357-11	231421-3	.375" 24 x 1.188"	54-65	40-48
SPL100	TBD	TBD	TBD	TBD	TBD	TBD
SPL140	6-73-220	500357-11	231421-3	.375" 24 x 1.250"	54-65	40-48
	6-73-1227	500357-11	231421-3	.375" 24 x 1.688"	54-65	40-48
SPL170	7-73-122	500357-12	231421-4	.438" 20 x 1.375"	85-102	63-75
	7-73-228	500357-12	231421-4	.438" 20 x 1.750"	85-102	63-75
SPL250	7-73-122	500357-12	231421-4	.438" 20 x 1.375"	85-102	63-75
	7-73-228	500357-12	231421-4	.438" 20 x 1.750"	85-102	63-75

**Bolts are specially heat-treated. DO NOT substitute inferior grade bolts.*
† Approved Spicer hardware.
***Note**-Original equipment vehicle manufacturers' manuals may have alternate specified bolts or metric hardware. Refer to the original equipment service manual for bolt part numbers.*

Table DDD

Install Final Coupling Shaft

3. Place final **coupling shaft** in the first and second support straps. **Be sure the coupling shaft is placed back in its original orientation.** See warning, below.

WARNING

Installation of a driveline out of original phase can cause vibration and failure of the driveline and attaching components. Failure of a driveline can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

4. Working from the **front** end, position the flange yoke face onto the companion flange, **aligning bolt holes and phasing marks**. Make sure the flange yoke and companion flange are **free from grease** or other foreign material and properly seated. See warning, below.

WARNING

Improperly seated flange yoke and companion flanges can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

Photo 153

5. Install **new** bolts, washers (if required) and nuts. (See photo 153, above.) Reference hardware specifications, Table DDD, above. Bolts must be torqued to required specifications. See warning, below.

WARNING

Failure to torque bolts to specification can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

COMPANION FLANGE/FLANGE YOKE STYLE (S.A.E., DIN AND T-TYPE) HARDWARE SPECIFICATIONS

SERIES	BOLT P/N*†	WASHER P/N	NUT P/N	DIAMETER, THREAD & LENGTH UNDER HEAD	BOLT TORQUE Nm	BOLT TORQUE FT. LBS.
SPL55	TBD	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD	TBD
SPL90	6-73-1219	500357-11	231421-3	.375" 24 x 1.188"	54-65	40-48
SPL100	TBD	TBD	TBD	TBD	TBD	TBD
SPL140	6-73-220	500357-11	231421-3	.375" 24 x 1.250"	54-65	40-48
	6-73-1227	500357-11	231421-3	.375" 24 x 1.688"	54-65	40-48
SPL170	7-73-122	500357-12	231421-4	.438" 20 x 1.375"	85-102	63-75
	7-73-228	500357-12	231421-4	.438" 20 x 1.750"	85-102	63-75
SPL250	7-73-122	500357-12	231421-4	.438" 20 x 1.375"	85-102	63-75
	7-73-228	500357-12	231421-4	.438" 20 x 1.750"	85-102	63-75

**Bolts are specially heat-treated. DO NOT substitute inferior grade bolts.*
† Approved Spicer hardware.
***Note**-Original equipment vehicle manufacturers' manuals may have alternate specified bolts or metric hardware. Refer to the original equipment service manual for bolt part numbers.*

Table EEE

6. **Be sure to second support strap is in place as illustrated in Figures GG or HH, page 152**. Lift the center bearing to the center bearing bracket on the cross member of the frame. Install proper center bearing bracket bolts per vehicle manufacturer's recommendations. Torque bolts to vehicle manufacturer's required specifications. See warning, below.

WARNING

Failure to torque bolts to specification can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

Install Coupling Shaft(s)

7. **Be sure third and fourth support straps are in place, as illustrated in Figures GG or HH, Page 152.** Place coupling shaft in support straps. Be sure the coupling shaft is placed back in its original orientation. See warning, top right.

WARNING

Installation of a driveline out of original phase can cause vibration and failure of the driveline and attaching components. Failure of a driveline can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

8. Working from the center bearing end fitting, position the flange yoke face onto the companion flange, **aligning bolt holes and phasing marks**. Make sure the flange yoke and companion flange are **free from grease** or other foreign material and properly seated. See warning, below.

WARNING

Improperly seated flange yoke and companion flanges can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

9. Install **new** bolts, washers (if required) and nuts. Reference hardware specifications, Table EEE, page 154. Bolts must be torqued to required specifications. ▲ See warning, below.

▲ ***WARNING***

Failure to torque bolts to specification can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

10. **Be sure the fourth support strap is in place, as illustrated in Figures GG or HH, Page 152.** Lift the center bearing to the center bearing bracket on the cross member of the frame. Install and torque center bearing bracket bolts per vehicle manufacturer's recommendations. ▲ See warning, Step 12.

11. Repeat Steps 7 through 10 as necessary to install any remaining coupling shafts.

Install Driveshaft

12. Place the **driveshaft** in the fifth and sixth support straps. **Be sure the driveshaft is placed back in its original orientation.** ▲ See warning, below.

▲ ***WARNING***

Installation of a driveline out of original phase can cause vibration and failure of the driveline and attaching components. Failure of a driveline can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

13. Working from the **rear end**, position the flange yoke face onto the companion flange, **aligning bolt holes and phasing marks**. Make sure the flange yoke and companion flange are **free from grease** or other foreign material and properly seated. ▲ See warning, above right.

▲ ***WARNING***

An improperly seated flange yoke and companion flange can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

14. Install **new** bolts, washers (if required) and nuts. Reference hardware specifications, Table EEE, page 154. Bolts must be torqued to required specifications. ▲ See warning, step 9.

15. It may be necessary to collapse slip member assembly to allow clearance to install the driveshaft into the center bearing companion flange.

16. At center bearing, position the flange yoke face onto the companion flange, **aligning bolt holes and phasing marks**. Make sure the flange yoke and companion flange are **free from grease** or other foreign material and properly seated. ▲ See warning, step 13.

17. Install **new** bolts, washers (if required) and nuts. Reference hardware specifications, Table EEE, page 154. Bolts must be torqued to required specifications. ▲ See warning, step 9.

18. Completely relubricate all universal joints and slip member assemblies (if slip member assemblies are relubable) as described in the lubrication section of this manual.

19. Remove **all** support straps.

TABLE OF CONTENTS

Before You Get Started.....21

Lubrication.....22
Recommended Lubricants 22
Grease Compatibility 23

Lubrication Intervals – Universal Joints 24

Lubrication Procedures – Universal Joints.....25

Releasing U-Joint Bearing Seal Tension.....26
Quick Disconnect™ – Spring Tab Style.....26
Companion Flange/Flange Yoke Style 29
Snap Ring.....30
Quick Disconnect™ 30
Companion Flange/Flange Yoke.....33

Lubrication Intervals – Relubable Slip Members 34

Lubrication Procedure – Relubable Slip Members 35

Lubrication Procedure – Center Bearings.....35

SPICER LIFE SERIES™
LUBRICATION OF U-JOINTS, SLIP MEMBERS & CENTER BEARINGS

Before You Get Started

Note – Spicer Life Series™ driveshafts are found on vehicles throughout the world. Therefore, this manual includes worldwide terminology. These terms have been highlighted in teal.

Caution – Under no circumstances should individuals attempt to perform driveline service and/or maintenance procedures for which they have not been trained or do not have the proper tools and equipment. ▲ See warning, below.

▲ ***WARNING***

Failure to take commonsense, precautionary measures when working on a vehicle or other machinery could result in property damage, serious personal injury or death. In order to avoid property damage, serious personal injury or death, you must:

1. **ALWAYS** wear safety glasses when performing maintenance or service. Failure to wear safety glasses can result in personal injury and/or partial or complete vision loss.

2. **NEVER** go under a vehicle while the engine is running. Be sure the vehicle's engine is off, and keys are removed from ignition.

3. **NEVER** go under or work on a vehicle that is not on a level or flat surface.

4. **NEVER** work on a driveshaft without blocking the vehicle's wheels and releasing all parking brakes. ▲ See warning, below.

▲ ***WARNING***

Failure to release all parking brakes and failure to place transmission in neutral can result in torque being applied to the driveshaft. Disconnecting a driveshaft with applied torque can result in property damage, serious personal injury or death.

5. **NEVER** lift a vehicle without the appropriate weight-rated, vehicle-support equipment.

6. **NEVER REMOVE** a driveshaft from the vehicle without keeping the vehicle's transmission in neutral. ▲ See warning, step 4.

7. **CAUTION** – Spicer Life Series™ driveshaft assemblies can weigh in excess of 100 pounds (46 kilograms). Be sure to use proper lifting techniques when handling Spicer Life Series driveshafts. More than one person may be needed when handling driveshaft assemblies.

8. **ALWAYS** use support straps to prevent the driveshaft from falling out of vehicle during the removal and installation process.

9. **NEVER** heat components or use sledgehammers or floor jacks to remove the driveshaft from vehicle.

Note – For driveshaft applications that have pillow blocks, dampers, parking brakes or retarders, refer to these component manufacturers' or the original equipment vehicle manufacturers' service manuals for proper procedures.

Note – Spicer Life Series™ 140, 170 and 250 driveshaft assemblies and components are metric. To eliminate any confusion between S.A.E. and metric threaded fasteners, the metric fasteners have been color coded gold. Spicer Life metric fasteners include spring tab bolts, bearing retainer bolts and midship nuts.

LUBRICATION

SPICER LIFE SERIES™ 55, 70, 90, 100, 140, 170 & 250

Lack of proper lubrication is one of the most common causes of universal joint and slip member problems. When properly applied, relubable Spicer Life™ universal joints which are adequately relubricated at recommended intervals will meet or exceed vehicle operation requirements.

Note – Spicer Life Series™ replacement universal joint kits contain only enough grease to provide needle roller bearing protection during storage. It is therefore necessary to completely lubricate each replacement kit prior to assembly into the yokes.

Inadequate relubrication intervals and failure to properly lubricate the universal joints will cause universal joint failures. Proper relubrication flushes the universal joints, thus removing abrasive contaminants from the bearings. Relubable slip members must also be adequately relubricated to prevent slip member failure. ▲ See warning, below.

▲ ***WARNING***

Inadequate lubrication can cause driveline failure which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death. In order to avoid driveline failure, including driveline separation, you must:

1. Carefully review the lubrication specifications found in this manual.
2. Be sure that you relubricate at the recommended intervals.
3. Be sure that you use only recommended lubricants that meet the criteria listed.
4. Carefully follow driveshaft inspection procedures as outlined in this manual.

RECOMMENDED LUBRICANTS FOR RELUBABLE UNIVERSAL JOINTS AND SLIP MEMBERS

Standard Application

Spicer recommends that the following requirements be met for any lubricant that will be used to service most vehicular, industrial and all auxiliary driveshaft applications.

- Use a good quality **E.P. (extreme pressure)** grease
- Timkin Test Load - 50 Lbs./23 Kg. **minimum**
- Meeting N.L.G.I.* E.P., **Grade 2** specifications
- Grease must have an operating range of +325˚F to -10˚F (+163˚C to -23˚C)

**National Lubricating Grease Institute*

Consult your local lubricant source for greases that meet these specifications.

Note – There are numerous instances when special lubrication is required by vehicle specifications or customer request. The lubrication recommendations listed in this manual are prescribed by Spicer Driveshaft Division engineering. Any alternate lubricants, or lubrication procedures, are the responsibility of the user.

GREASE COMPATIBILITY*

When greases made from different thickeners are mixed, the mixture may result in lower service performance or physical properties than either of the original component products. This reduction in lubricant performance is called incompatibility. It may show up in any of several areas, such as:

1. Lower heat resistance;
2. Change in consistency, usually softening; or
3. Decrease in shear stability.

Mixtures which show none of these changes are considered compatible. Incompatibility is not always caused by the thickener, since each of the greases in the mixture is a complete package – thickener, fluid, and additives. Sometimes the thickener of one grease is incompatible with the fluid or the additives present in the second grease. If the mixture proves to be significantly softer, less shear stable, or less heat resistant than the original grease, the mixture shall be deemed incompatible. ▲ See warning, below.

▲ ***WARNING***

Incompatible lubricants/greases which are applied to universal joints and/or slip members, can result in failure of the driveline and can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

Incompatibility is best determined in service or in service-related tests; it is not predictable. Certain thickener combinations often have been found unsatisfactory and are generally so recognized. These would include lithium and sodium greases and organo-clay and most soap greases. **Contact your local lubricant supplier for grease compatibility information.**

To help reduce the effects of incompatible greases, make sure to thoroughly purge all four bearing seals on each universal joint with the new grease. Purge seals until the **fresh** grease is visible on the outside of all four bearing seals.

It is recommended that all purged grease be wiped clean to prevent discharge into the general environment.

** Grease compatibility information – from National Lubricating Grease Institute*

LUBRICATION INTERVALS FOR RELUBABLE UNIVERSAL JOINTS

SPICER LIFE SERIES™ 55, 70, 90, 100, 140, 170 & 250

Lubrication intervals vary depending on the service requirements and operating conditions of the vehicle or machine. Table F, below, shows the recommended universal joint lubrication intervals for various types of service.

UNIVERSAL JOINT MAXIMUM LUBRICATION INTERVALS

SERIES	CITY	ON-HWY.	LINEHAUL	OFF-HWY.*	INDUSTRIAL*
SPL 250, 170 & 140	25,000 Mi. 40,000 Km. or 3 Months (which ever comes first)	100,000 Mi. 160,000 Km. or 6 Months (which ever comes first)	100,000 Mi. 160,000 Km. or 6 Months (which ever comes first)	25,000 Mi. 40,000 Km. or 3 Months (which ever comes first)	500 Hrs.
SPL 100, 90, 70 & 55	8,000 Mi. 12,800 Km. or 3 Months (which ever comes first)	15,000 Mi. 24,000 Km. or 3 Months (which ever comes first)	15,000 Mi. 24,000 Km. or 3 Months (which ever comes first)	8,000 Mi. 12,800 Km. or 3 Months (which ever comes first)	500 Hrs.

City *is defined as all applications that require a minimum of 90% of operation time within city limits.*

On-highway *is defined as all applications requiring less than 10% of operating time on gravel, dirt or unpaved roads.*

Off-highway *is defined as all applications requiring more than 10% of operating time on gravel, dirt or unpaved roads.*

Linehaul *is defined as 100% of operation time on smooth concrete or asphalt.*

** Relubrication intervals for off-highway and industrial use vary depending on the application and operating conditions. In general, to obtain maximum life, relubrication on industrial applications should occur every 500 hours for normal service and every 250 hours for continuous service or severe environmental conditions.*

Table F

LUBRICATION PROCEDURE FOR UNIVERSAL JOINTS

SPICER LIFE SERIES™ 55,70, 90, 100, 140, 170 & 250

Required Tools

- N.L.G.I. Grade-2, E.P. Grease
- Grease Gun

May Need – If bearing(s) will not purge

- Ratchet or Air Gun
- Appropriate 12-Point Socket
- C-Clamp
- Extra Bearing Retainer or Stamped Strap Bolts
- Extra Stamped Straps
- Brass Hammer or Soft-Faced Hammer

1. Use the recommended lubricant to purge **all** four seals of each universal joint. This flushes abrasive contaminants from each bearing assembly and assures proper filling of all four bearings.

Make sure **fresh** grease is evident at all universal joint bearing seals. (See photo 14, below.)

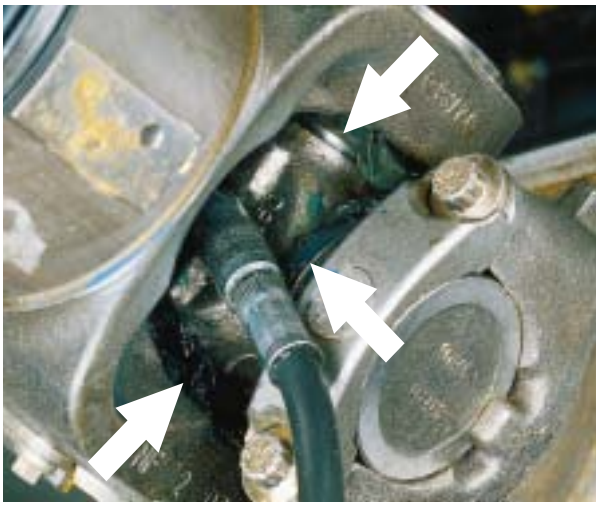

Photo 14

2. If any of the seals fail to purge, try to move the driveshaft from side to side while applying grease gun pressure. On two-headed zerk (nipple) fittings, try greasing from the opposite lube fitting.

Note – Due to the superior sealing capability of the Spicer Life design, there will occasionally be one or more bearing assembly seals that will not purge.

3. If any bearing cup assemblies fail to purge, releasing seal tension may be necessary. See table of contents for page listings for releasing seal tension of Quick Disconnect,™ Companion Flange/Flange Yoke (S.A.E., DIN and T-Type) or Snap Ring Styles.

PROCEDURE FOR RELEASING UNIVERSAL JOINT BEARING SEAL TENSION

QUICK DISCONNECT™ – SPRING TAB STYLE

Note – It will be necessary to have additional bearing retainer or stamped strap bolts and stamped straps in order to complete the following instructions. It may also be necessary to have additional spring tabs and spring tab bolts.

1. Utilizing a brass hammer and wearing safety glasses, sharply strike inboard yoke on lug ear **once**, to firmly seat bearing against spring tab and relieve tension across span. ▲ See warning, below. Rotate shaft 180 degrees and repeat procedure on opposite lug ear.

Apply grease gun pressure and purge **all** four bearings until **fresh grease** is seen at **all** four bearing seals.

▲ ***WARNING***

To prevent serious eye injury, always wear safety glasses when performing maintenance or service. Failure to wear safety glasses can result in serious personal injury, partial or complete vision loss.

2. If striking lug ears does not cause purging, remove and discard spring tab bolts and spring tabs. ▲ See warning, below. Repeat step 1.

▲ ***WARNING***

Failure to properly tighten bolts, reuse of spring tabs, reuse of spring tab bolts, or use of inferior grade bolts can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

If **all** four bearings purge fresh grease, **replace used spring tabs and spring tab bolts with new**. Torque spring tab bolts to required specifications. (See Table G, below.) ▲ See warning, step 2.

SPRING TAB BOLT SPECIFICATIONS

SERIES	THREAD SIZE	HEAD SIZE	BOLT TORQUE* Nm	BOLT TORQUE* LB. FT.	KIT P/N
SPL 140	8mm-1.00	8mm, 6 point	35-40	20-25	211941X
SPL 170	8mm-1.00	8mm, 6 point	35-40	20-25	211941X
SPL 250	8mm-1.00	8mm, 6 point	35-40	20-25	211941X

**Spicer bolts are specially heat-treated.*
***DO NOT** substitute with inferior grade bolts.*

Table G

If bearings still do not purge, removal of the universal joint kit from the end yoke is needed to determine cause of blockage. Follow steps 3-10 for proper removal of universal joint kit from end yoke.

Mark Driveshaft ("Phasing Marks")

3. With a marking stick, paint marker or other legible marking device, mark all bearing positions in relation to yokes and bearing retainers at the effected universal joint. (See figure A, page 27.) This assures proper reassembly of the driveshaft into the vehicle, in its original position. ▲ See warning, below.

▲ ***WARNING***

Reassembly of a driveline out of original phase can cause vibration and failure of the driveline and attaching components. Failure of a driveline can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

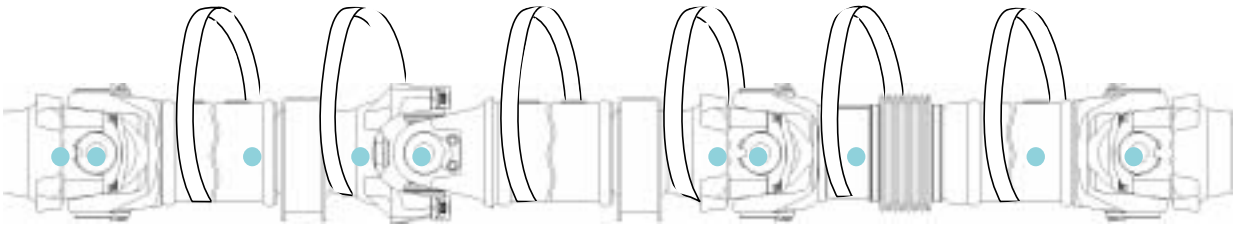

Figure A

Position Support Strap

4. Working at the effected universal joint, support the driveshaft with a support strap at the appropriate location, as illustrated in Figure A. Attach support straps to frame rails or some structural part of the vehicle. ▲ See warning, below.

▲ ***WARNING***

ALWAYS *use support straps to prevent driveshaft from falling out of vehicle. Failure to use a support strap can cause damage to driveshaft or result in property damage, serious personal injury or death.*

DO NOT attach the support straps to fuel lines, oil lines, brake lines, or wiring. **DO NOT** entangle fuel lines, oil lines, brake lines or wiring in the support straps. ▲ See warning, below.

▲ ***WARNING***

Attaching or entangling support straps to fuel, oil or brake lines or wiring can result in their damage. Damaged fuel, oil or brake lines or wiring can result in failure of the vehicle which can result in property damage, serious personal injury or death.

Disconnect Driveshaft

5. Remove the bearing retainers and bolts at the effected universal joint. Reference bolt specifications, Table H, page 28. (See photo 15, below.) Bearing retainer bolts with nylon lock patch **CANNOT** be reused. Loosening or removing bearing retainer bolts requires replacement of used bolts with new. ▲ See warning, below.

Photo 15

▲ ***WARNING***

DO NOT *reuse spring tabs, spring tab bolts, bearing retainer bolts, or use inferior grade bolts. Reuse of spring tabs, spring tab bolts, bearing retainer bolts or the use of inferior grade bolts can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

Note – New cold formed bearing retainers **DO NOT** need to be replaced. (See photo 16, below.) Replace only if damaged.

Photo 16, Bearing Retainers

BOLT SPECIFICATIONS – QUICK DISCONNECT™

SERIES	BOLT P/N*	THREAD SIZE	HEAD SIZE	BOLT TORQUE Nm	BOLT TORQUE LB. FT.
SPL 140	12-73-125M	12mm - 1.25	12mm, 12 point	135-160	100-120
SPL 170	12-73-125M	12mm - 1.25	12mm, 12 point	135-160	100-120
SPL 250	12-73-125M	12mm - 1.25	12mm, 12 point	135-160	100-120

** Spicer bolts are specially heat-treated.*
***DO NOT** substitute with inferior grade bolts.*

Table H

Photo 17

6. It may be necessary to unseat bearing cup assemblies by tapping on yoke or bearing cup with a soft-faced hammer. (See photo 17, above.) Once the bearing cup assemblies are free, allow the driveshaft to rest on support strap.

Purging Inboard Bearings

7. Apply a c-clamp around the outboard bearings. Apply grease gun pressure. Completely purge both inboard bearings. (See photo 18, below.)

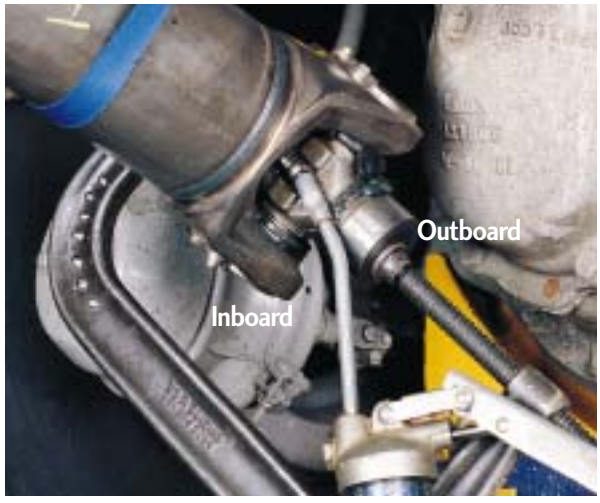

Photo 18

Purging Outboard Bearings

8. If outboard bearings fail to purge, slightly loosen c-clamp and reapply grease gun pressure until both outboard bearings purge.

9. After **all** four bearings purge fresh grease, re-tighten c-clamp to squeeze out excess grease and wipe clean. This will ease installation of universal joint kit back into yoke. Install universal joint kit in the yoke using new bearing retainer bolts, and torque bolts to the required specifications. Reference bolt torque specifications (Table H, page 28). ▲ See warning, below.

▲ ***WARNING***

DO NOT *reuse bearing retainer bolts or use inferior grade bolts. Reuse of bearing retainer bolts or the use of inferior grade bolts can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

10. If the bearings still will not purge, complete removal of the universal joint kit is needed to determine cause of blockage. See removal section of this manual for proper procedures on removing Spicer Quick Disconnect™ style driveshaft assemblies and spring tab style universal joints.

COMPANION FLANGE/FLANGE YOKE STYLE S.A.E., DIN AND T-TYPE

Note – It will be necessary to have additional flange bolts, nuts and washers (if applicable) in order to complete the following instructions. It may also be necessary to have additional spring tabs and spring tab bolts.

1. Utilizing a brass hammer and wearing safety glasses, sharply strike yoke on inboard and outboard lug ears **once**, to firmly seat bearings against spring tabs and relieve tension across span. ▲ See warning, below. Rotate shaft 180 degrees and repeat procedure on opposite inboard and outboard lug ears. (See photos 19 & 20, below.)

Apply grease gun pressure and purge **all** four bearings until **fresh grease** is seen at **all** four bearing seals.

▲ ***WARNING***

To prevent serious eye injury, always wear safety glasses when performing maintenance or service. Failure to wear safety glasses could result in serious personal injury, and/or partial or complete vision loss.

Photo 19

Photo 20

2. If striking lug ears does not cause purging, remove and discard spring tab bolts and spring tabs. Repeat step 1.

If **all** four bearings purge fresh grease, **replace used spring tabs and spring tab bolts with new.** Torque spring tab bolts to proper specifications. (See Table J, below.)
▲ See warning, below.

▲ ***WARNING***

Failure to properly tighten spring tab bolts, reuse of spring tabs, reuse of spring tab bolts, or use of inferior grade bolts, can cause the driveline to loosen and separate from the vehicle or machine. A separated driveline can result in property damage, serious personal injury or death.

SPRING TAB BOLT SPECIFICATIONS

SERIES	THREAD SIZE	HEAD SIZE	BOLT TORQUE Nm	BOLT TORQUE LB. FT.	KIT P/N*
SPL140	8mm - 1.00	8mm, 6 point	35-40	25-30	211941X
SPL170	8mm - 1.00	8mm, 6 point	35-40	25-30	211941X
SPL250	8mm - 1.00	8mm, 6 point	35-40	25-30	211941X

** Spicer bolts are specially heat-treated.*
***DO NOT** substitute with inferior grade bolts.*

Table J

3. If the bearings still do not purge, complete removal of the universal joint kit is needed to determine cause of blockage. See removal section of this manual for proper procedures on removing companion flange/flange yoke (S.A.E., DIN and T-Type) spring tab style driveshaft assemblies and universal joints.

SNAP RING STYLE

Note – For Quick Disconnect™ snap ring style driveshaft assemblies, it will be necessary to have additional stamped straps and stamped strap bolts to complete the following instructions. It may also be necessary to have additional snap rings.

Note – For companion flange/flange yoke, (S.A.E., DIN and T-Type), snap ring style driveshaft assemblies, it will be necessary to have additional flange bolts, nuts and washers (if applicable) to complete the instructions on page 33. It may also be necessary to have additional snap rings.

Quick Disconnect™ Style

1. Utilizing a brass hammer and wearing safety glasses, sharply strike inboard yoke on lug ear once to try to firmly seat bearing against spring tab and relieve tension across span. ▲ See warning, below. Rotate shaft 180 degrees and repeat procedure on opposite lug ear.

Apply grease gun pressure and purge **all** four bearings until **fresh grease** is seen at **all** four bearing seals.

▲ ***WARNING***

To prevent serious eye injury, always wear safety glasses when performing maintenance or service. Failure to wear safety glasses can result in serious personal injury, and/or partial or complete vision loss.

If striking lug ears does not cause purging, removal of the universal joint kit from the end yoke is needed to determine cause of blockage. Follow steps 2-9 for proper removal of universal joint kit from end yoke.

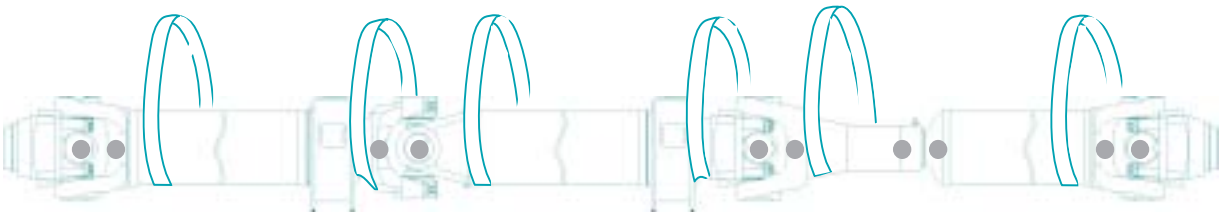

Figure B

Mark Driveshaft ("Phasing Marks")

2. With a marking stick, paint marker or other legible marking device, mark all bearing positions in relation to yokes at the effected universal joint as illustrated in figure B. This assures proper reassembly of the driveshaft into the vehicle, in its original position. ▲ See warning, below.

▲ ***WARNING***

Reassembly of a driveline out of original phase can cause vibration and failure of the driveline and attaching components. Failure of a driveline can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

Position Support Strap

3. Working at the effected universal joint, support the driveshaft with a support strap at the appropriate location, as illustrated in Figure B, above. ▲ See warning, below.

▲ ***WARNING***

***ALWAYS** use support straps to prevent driveshaft from falling out of vehicle. Failure to use a support strap can cause damage to driveshaft or result in property damage, serious personal injury or death.*

Attach support straps to frame rails or some structural part of the vehicle. **DO NOT** attach the support straps to fuel lines, oil lines, brake lines, or wiring. **DO NOT** entangle fuel lines, oil lines, brake lines or wiring in the support straps. ▲ See warning, below.

▲ ***WARNING***

Attaching support straps to fuel, oil or brake lines or wiring can result in their damage. Damaged fuel, oil or brake lines or wiring can result in failure of the vehicle which can result in property damage, serious personal injury or death.

Disconnect Driveshaft

4. Remove bearing retainers or stamped straps (if applicable) at the effected universal joint. Discard bolts. Reference bolt specifications. (See Table K, right.) Stamped straps and stamped strap bolts or bearing retainer bolts **CANNOT** be reused. Loosening or removing bolts requires replacement of used bolts with new. Torque new bolts to required specifications. Reference bolt specifications. (See Table K, right.) ▲ See warning, below.

Note – New cold formed bearing retainers **DO NOT** need to be replaced. (See photo 21, below.) Replace only if damaged.

Note – Stamped straps **MUST BE** replaced. (See photo 22, below.) ▲ See warning, below.

Photo 21, Bearing Retainers

Photo 22, Stamped Straps

▲ ***WARNING***

DO NOT *reuse bearing retainer or stamped strap bolts, stamped straps, or use inferior grade bolts. Reuse of bearing retainer or stamped strap bolts, stamped straps and the use of inferior grade bolts can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

QUICK DISCONNECT™ BOLT SPECIFICATIONS

SERIES	BOLT P/N*	THREAD SIZE	HEAD SIZE	BOLT TORQUE Nm	BOLT TORQUE LB. FT.
SPL 55	TBD	TBD	TBD	TBD	TBD
SPL 70	TBD	TBD	TBD	TBD	TBD
SPL 90	6-73-412	0.375" - 24	3/8" 12 point	61-81	45-60
SPL 100	TBD	TBD	TBD	TBD	TBD

** Spicer bolts are specially heat-treated.*

Table K

5. It may be necessary to unseat bearing cup assemblies by tapping on yoke or bearing cup with a soft-faced hammer. Once the bearing cup assemblies are free, allow the driveshaft to rest on support strap.

Purging Inboard Bearings

6. Apply a c-clamp around the outboard bearings. Apply grease gun pressure. Completely purge both inboard bearings.

Purging Outboard Bearings

7. If outboard bearings fail to purge, slightly loosen c-clamp and reapply grease gun pressure until both outboard bearings purge.

8. After **all** four bearings purge fresh grease, re-tighten c-clamp to squeeze out excess grease and wipe clean. This will ease installation of universal joint kit back into yoke. Install universal joint kit, with new bolts, in the yoke and torque bolts to the required specifications. Reference bolt specifications. (See Table K, above.) ▲ See warning, step 4.

9. If bearings still will not purge, complete removal of the universal joint kit is needed to determine cause of blockage. See removal section of this manual for proper procedures on removing Spicer Quick Disconnect™ snap ring style driveshaft assemblies and universal joints.

Companion Flange/Flange Yoke (S.A.E., DIN and T-Type) Style

1. Utilizing a brass hammer and wearing safety glasses, sharply strike yoke on inboard and outboard lug ears **once**, to firmly seat bearings against snap rings and relieve tension across span. ▲ See warning, below. Rotate shaft 180 degrees and repeat procedure on opposite inboard and outboard lug ears.

Apply grease gun pressure and purge **all** four bearings until **fresh grease** is seen at **all** four bearing seals.

▲ ***WARNING***

To prevent serious eye injury, always wear safety glasses when performing maintenance or service. Failure to wear safety glasses can result in serious personal injury, and/or partial or complete vision loss.

2. If striking lug ears does not cause purging, remove snap rings in lug ears of the bearing(s) that are not purging. Repeat above instructions. If **all** four bearings purge fresh grease, replace snap rings.

Note – Spicer snap rings can be reused if they **ARE NOT** severely corroded or distorted. If corroded or distorted, replace used snap rings with new. (See Table L, below.)

OUTSIDE SNAP RINGS

	P/N
SPL 55	TBD
SPL 70	TBD
SPL 90	5-7-29
SPL 100	TBD

Table L

3. If the bearings still do not purge, complete removal of the universal joint kit is needed to determine cause of blockage. See removal section of this manual for proper procedures on removing companion flange/flange yoke (S.A.E., DIN and T-Type) style driveshaft assemblies and snap ring style universal joints.

LUBRICATION INTERVALS FOR RELUBABLE SLIP MEMBERS

SPICER LIFE SERIES™ 90

Lubrication cycles vary depending on the service requirements and operating conditions of the vehicle or machine. Table M, below, shows a recommended lubrication cycle for slip members for various types of service.

SLIP MEMBER MAXIMUM LUBRICATION INTERVALS

SERIES	CITY	ON-HWY.	LINEHAUL	OFF-HWY.*	INDUSTRIAL*
SPL 90	8,000 Mi. 12,800 Km. or 3 Months (which ever comes first)	15,000 Mi. 24,000 Km. or 3 Months (which ever comes first)	15,000 Mi. 24,000 Km. or 3 Months (which ever comes first)	8,000 Mi. 12,800 Km. or 3 Months (which ever comes first)	500 Hrs.

City *is defined as all applications that require a minimum of 90% of operation time within city limits.*

On-highway *is defined as all applications requiring less than 10% of operating time on gravel, dirt or unpaved roads.*

Off-highway *is defined as all applications requiring more than 10% of operating time on gravel, dirt or unpaved roads.*

Linehaul *is defined as 100% of operation time on smooth concrete or asphalt.*

** Lubrication intervals for off-highway and industrial use vary depending on the application and operating conditions. In general, to obtain maximum life, lubrication on industrial applications should occur every 500 hours for normal service and every 200 hours for continuous service or severe environmental conditions.*

Table M

LUBRICATION PROCEDURE FOR RELUBABLE SLIP MEMBERS

SPICER LIFE SERIES™ 90

1. Apply grease gun pressure to the lube fitting until lubricant appears at the seal. Always use a E.P., Grade 2 specification, N.L.G.I grease, on Glidecote® and steel splines. Spicer recommends the same lubricant used for universal joints. Lubricate slip members at the lubrication intervals prescribed in Table M, page 34.

Caution – In cold temperatures, be sure to activate the slip member by driving the vehicle sufficiently to cause displacement of the grease prior to its stiffening. Failure to do so could cause the excess lubricant to stiffen in the cold weather and force the welch plug out. The end of the spline would then be open to collect contaminants and can result in driveline failure. ▲ See warning, below.

▲ ***WARNING***

A contaminated slip member can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

LUBRICATION FOR CENTER BEARINGS

SPICER LIFE SERIES™ 55, 70, 90, 100, 140, 170 & 250

All Spicer manufactured center bearings are permanently lubricated. No attempt should be made to add or change grease within the bearing itself.

However, when replacing a center bearing assembly, it is necessary to fill the entire cavity around the bearing with waterproof grease to shield the bearing from water and contaminants. The quantity of lubricant should be sufficient to fill the cavity to the extreme edge of the slinger surrounding the bearing. (See photo 23, below.)

Lubricants must be waterproof. See recommended lubricant Table N, below.

Photo 23

RECOMMENDED CENTER BEARING LUBRICANTS

LUBRICANT	SOURCE
Rykon Premium No. 3	Amoco Oil Company
Amolith 8516	Amoco Oil Company
Van Talgar No. 4	Exxon Company

Table N

Note – For relubable center bearings (pillow block) use original component manufacturer's recommended lubricants and lubrication intervals.

TABLE OF CONTENTS

Before You Get Started 39

Removal Procedure For End Fittings 40

Removal Procedure For Driveshaft Assemblies 40

Quick Disconnect™ Yoke Style

One-Piece 41

Two-Piece 46

Multiple-Piece 51

Companion Flange/Flange Yoke Style
(S.A.E., DIN and T-Type)

One-Piece 57

Two-Piece 61

Multiple-Piece 65

**Replacement Procedure For
Grease Zerk (Nipple) Fittings Or Plugs** 70

Universal Joints 70

Slip Member Assembly 71

Removal Procedures For Universal Joint Kits 72

Spring Tab Style 73

Snap Ring Style 82

**Replacement Procedure For
Damaged Slip Member Boot** 89

Removal Procedure For Center Bearings 94

Quick Disconnect™ Yoke Style 95

Companion Flange/Flange Yoke Style
(S.A.E., DIN and T-Type) 101

Outboard Slip Style 107

SPICER LIFE SERIES™ DRIVESHAFT REMOVAL

Before You Get Started

Note – Spicer Life Series™ driveshafts are found on vehicles throughout the world. Therefore, this manual includes world-wide terminology. These terms have been highlighted in teal.

Caution – Under no circumstances should individuals attempt to perform driveline service and/or maintenance procedures for which they have not been trained or do not have the proper tools and equipment. ▲ See warning, below.

▲ ***WARNING***

Failure to take commonsense, precautionary measures when working on a vehicle or other machinery could result in property damage, serious personal injury or death. In order to avoid property damage, serious personal injury or death, you must:

1. **ALWAYS** wear safety glasses when performing maintenance or service. Failure to wear safety glasses can result in personal injury and/or partial or complete vision loss.

2. **NEVER** go under a vehicle while the engine is running. Be sure the vehicle's engine is off, and keys are removed from ignition.

3. **NEVER** go under or work on a vehicle that is not on a level or flat surface.

4. **NEVER** work on a driveshaft without blocking the vehicle's wheels and releasing all parking brakes. ▲ See warning, below.

▲ ***WARNING***

Failure to release all parking brakes and failure to place transmission in neutral can result in torque being applied to the driveshaft. Disconnecting a driveshaft with applied torque can result in property damage, serious personal injury or death.

5. **NEVER** lift a vehicle without the appropriate weight-rated, vehicle-support equipment.

6. **NEVER REMOVE** a driveshaft from the vehicle without keeping the vehicle's transmission in neutral. ▲ See warning, step 4.

7. **CAUTION** – Spicer Life Series™ driveshaft assemblies can weigh in excess of 100 pounds (46 kilograms). Be sure to use proper lifting techniques when handling Spicer Life Series driveshafts. More than one person may be needed when handling driveshaft assemblies.

8. **ALWAYS** use support straps to prevent the driveshaft from falling out of vehicle during the removal and installation process.

9. **NEVER** heat components or use sledgehammers or floor jacks to remove the driveshaft from vehicle.

Note – For driveshaft applications that have pillow blocks, dampers, parking brakes or retarders, refer to these component manufacturers' or the original equipment vehicle manufacturers' service manuals for proper procedures.

Servicing a Spicer Life Series™ Driveshaft

The following components are serviceable:

- Universal Joint Kits
- Boot Kits
- Quick Disconnect™ End Yokes
- S.A.E., DIN and T-Type Flange Yokes
- S.A.E., DIN and T-Type Companion Flanges
- Bearing Retainers and Bolts or Stamped Straps and Bolts
- Spring Tabs and Bolts
- Center Bearing Assemblies
- Grease Zerk (Nipple) Fittings

Note – Spicer Life Series™ 140, 170 and 250 driveshaft assemblies and components are metric. To eliminate any confusion between S.A.E. and metric threaded fasteners, the metric fasteners have been color coded gold. Spicer Life metric fasteners include spring tab bolts, bearing retainer bolts and midship nuts.

REMOVAL PROCEDURE FOR END FITTINGS

SPICER LIFE SERIES™ 55, 70, 90, 100, 140, 170 & 250

Refer to the transmission, axle or transfer case original equipment manufacturers' service and maintenance manuals for removal procedure.

Refer to the Table of Contents for removal of center bearing end fittings.

REMOVAL PROCEDURE FOR DRIVESHAFT ASSEMBLIES

SPICER LIFE SERIES™ 55, 70, 90, 100, 140, 170 & 250

Required Tools

- Ratchet or Air Gun
- Appropriate 12-Point Sockets
  - English 3/8"
  - Metric 12mm
- Bench Vice
- Soft-Faced Hammer
  Brass, Plastic or Rubber
- Support Straps
- Appropriate Spicer Alignment Bar (See photos 24 or 25)
- Emery cloth and/or fine-toothed file

Photo 24, Spicer Alignment Bar, Quick Disconnect Style

Photo 25, Spicer Alignment Bar, Companion Flange/Flange Yoke Style (S.A.E., DIN and T-Type)

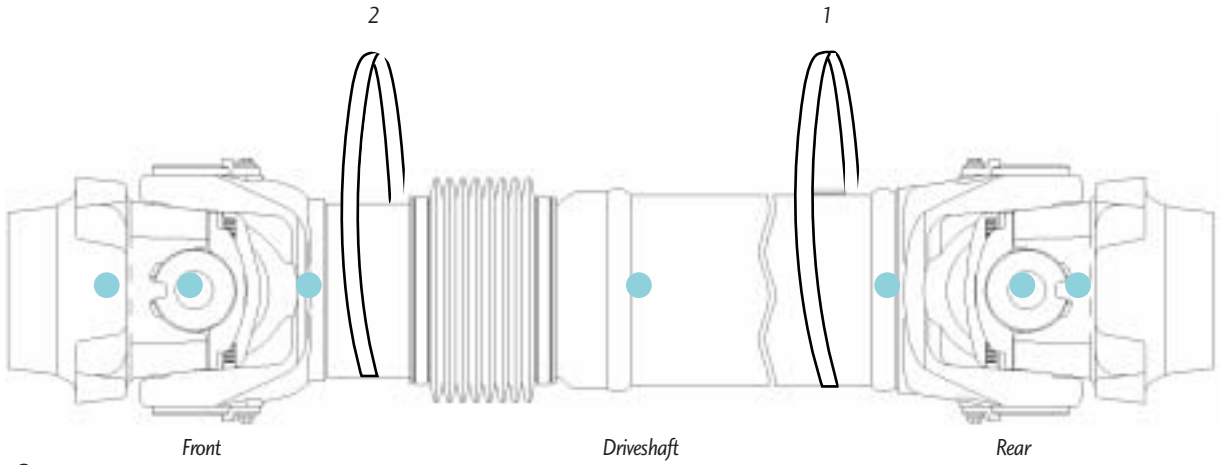

Figure C

QUICK DISCONNECT™ YOKE STYLE

One-Piece Driveshaft

Caution – Be sure to carefully read all information on page 39 before proceeding.

Mark Driveshaft ("Phasing Marks")

1. It is imperative to mark all the mating components of a driveshaft, as illustrated in Figure C, above. Mark the driveshaft with a marking stick, paint marker or other legible marking device. In addition, be sure to mark all bearing positions, spline positions, shaft locations and all bearing retainers. This assures proper reassembly of the driveshaft into the vehicle, in its original position. ▲ See warning, below.

▲ ***WARNING***

Reassembly of a driveline out of original phase can cause vibration and failure of the driveline and attaching components. Failure of a driveline can result in separation of driveline from the vehicle, which can result in property damage, serious personal injury or death.

Position Support Straps

2. Working from the **rear** end, support the driveshaft with support straps, as illustrated in Figure C, above. ▲ See warning, below.

▲ ***WARNING***

***ALWAYS** use support straps to prevent driveshaft from falling out of vehicle. Failure to use support straps can cause damage to driveshaft or result in property damage, serious personal injury or death.*

Attach support straps to frame rails or some structural part of the vehicle. **DO NOT** attach the support straps to fuel lines, oil lines, brake lines, or wiring. **DO NOT** entangle fuel lines, oil lines, brake lines, or wiring in the support straps. ▲ See warning, below.

▲ ***WARNING***

Attaching or entangling support straps to fuel, oil or brake lines or wiring can result in their damage. Damaged fuel, oil or brake lines or wiring can result in failure of the vehicle, which can result in property damage, serious personal injury or death.

Photo 26

Disconnect Driveshaft

3. **Be sure first support strap is in place as illustrated in figure C, page 41.** Remove the bearing retainers or stamped straps and bolts at rear end. Discard bolts. Discard stamped straps (if applicable). (See photo 26, above.) Reference bolt specifications, Table P, below.

QUICK DISCONNECT BOLT SPECIFICATIONS

SERIES	BOLT P/N*	THREAD SIZE	HEAD SIZE	BOLT TORQUE Nm	BOLT TORQUE LB. FT.
SPL55	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD
SPL90	6-73-412	0.375 in. - 24	3/8 in., 12 point	61-81	45-60
SPL100	TBD	TBD	TBD	TBD	TBD
SPL140	12-73-125M	12mm - 1.25	12 mm, 12 point	135-160	100-120
SPL170	12-73-125M	12mm - 1.25	12 mm, 12 point	135-160	100-120
SPL250	12-73-125M	12mm - 1.25	12 mm, 12 point	135-160	100-120

** Bolts are specially heat-treated.*
DO NOT substitute with inferior grade bolts.

Table P

Bearing retainers **CAN** be reused **if there is no damage**. (See photo 27, below.) If damaged, replace.

Photo 27, Bearing Retainers

Stamped straps **CANNOT** be reused. (See photo 28, below.) See warning, below.

Photo 28, Stamped Straps

WARNING

***DO NOT** reuse bearing retainer bolts, stamped straps, stamped strap bolts, damaged bearing retainers, or use inferior grade bolts. Reuse of bearing retainer bolts, stamped straps, stamped strap bolts, damaged bearing retainers or the use of inferior grade bolts can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

Photo 29

4. It may be necessary to unseat bearing cup assemblies by tapping on yoke or bearing cup with a soft-faced hammer. (See photo 29, above.) Once the bearing cup assemblies are free, collapse the driveshaft until both bearing assemblies clear the open end yoke cross holes. Allow the driveshaft to rest on support strap.

Remove Driveshaft

5. **Be sure second support strap is in place as illustrated in Figure C, page 41**. Remove bearing retainers or stamped straps and bolts at the **front** end. Discard bolts. ▲ See warning, below.

▲ ***WARNING***

DO NOT *reuse bearing retainer bolts, stamped straps, stamped strap bolts, damaged bearing retainers, or use inferior grade bolts. Reuse of bearing retainer bolts, stamped straps, stamped strap bolts, damaged bearing retainers or the use of inferior grade bolts can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

6. It may be necessary to unseat bearing cup assemblies by tapping on yoke or bearing cup with a soft-faced hammer. Once the driveshaft is free, remove the driveshaft from the support straps and take it to a work bench area. ▲ See warning, below. Be sure to follow the end yoke inspection steps.

▲ ***WARNING***

Driveshaft assemblies can weigh in excess of 100 pounds (46 kilograms). Make sure to use proper lifting techniques when handling driveshafts. More than one person may be needed when handling driveshaft assemblies.

Inspect End Yokes

7. Check all end yokes for looseness. Take hold of end yoke with both hands. Try to move it vertically and horizontally to feel any looseness. There should **NOT** be any looseness in the end yokes relative to the input or output shafts to which they are connected. ▲ See warning, below.

▲ ***WARNING***

A loose end yoke can result in driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

If looseness is evident, the end yoke needs to be replaced. Refer to the transmission, axle or transfer case original equipment manufacturers' service and maintenance manuals for removal procedures.

8. Visually inspect all end yoke retaining nuts or bolts for any gaps between mating surfaces. See warning, below.

WARNING

A loose end yoke retaining nut or bolt can result in driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

If gaps are present, consult transmission, axle or transfer case original equipment manufacturers' specifications for proper fastening.

9. Inspect all end yoke cross hole surfaces and bolt hole threads for damage. If the bolt hole threads are damaged, the yoke must be replaced. See warning, below.

WARNING

Failure to replace damaged driveline components can cause driveline failure, which can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

Refer to the transmission, axle or transfer case original equipment manufacturers' service and maintenance manuals for removal procedures.

Photo 30

Raised metal or fretting on open yoke cross holes can be removed with a fine-toothed file and/or emery cloth. (See photo 30, above.) See warning, below.

WARNING

***DO NOT** deform yoke cross holes by removing excessive metal. Raised metal or deformed yoke cross holes can be a cause of cross and bearing failure, which can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.*

Photo 31

10. Inspect the end yoke cross holes for distortion using the appropriate Spicer alignment bar. (See photo 31, above.) Slide alignment bar through both cross holes simultaneously. If alignment bar will not pass through both cross holes simultaneously, cross holes are distorted and end yoke must be replaced. ▲ See warning, below.

▲ *WARNING*

Failure to replace damaged driveline components can cause driveline failure, which can result in separation of driveline from vehicle. A separated driveline can result in property damage, personal injury or death.

Refer to the transmission, axle or transfer case original equipment manufacturers' service and maintenance manuals for removal procedures.

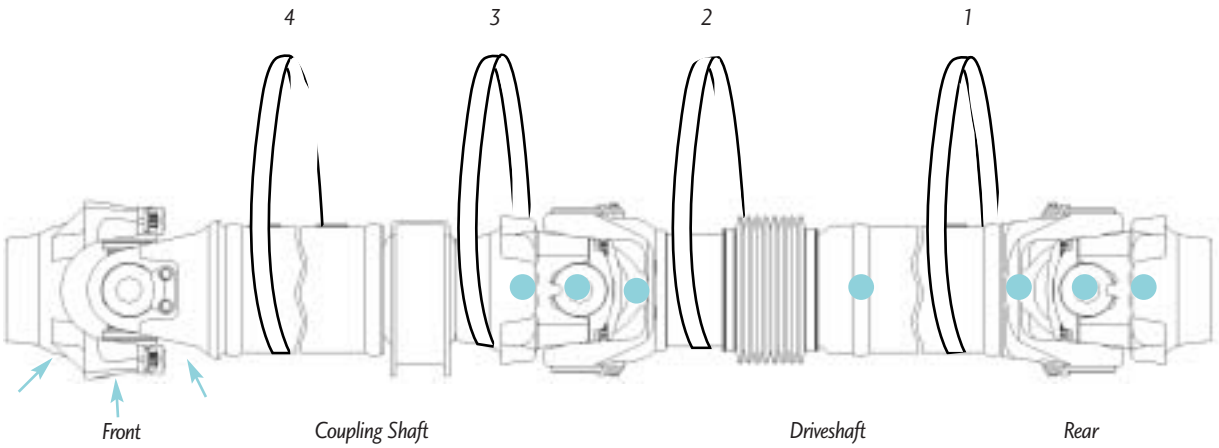

Figure D

QUICK DISCONNECT™ YOKE STYLE

Two-Piece Driveshaft

Caution – Be sure to carefully read all information on page 39 before proceeding.

Mark Driveshaft ("Phasing Marks")

1. It is imperative to mark all the mating components of a driveshaft, as illustrated in Figure D, above. Mark the driveshaft with a marking stick, paint marker or other legible marking device. In addition, be sure to mark all bearing positions, spline positions, shaft locations and all bearing retainers. This assures proper reassembly of the driveshaft into the vehicle, in its original position. ▲ See warning, below.

▲ ***WARNING***

Reassembly of a driveline out of original phase can cause vibration and failure of the driveline and attaching components. Failure of a driveline can result in separation of driveline from the vehicle, which can result in property damage, serious personal injury or death.

Position Support Straps

2. Working from the **rear** end, support the driveshaft with support straps as illustrated in Figure D, above. Be sure to support the shaft assembly at the rear, at the slip member, behind the center bearing end fitting and in front of center bearing, with support straps. ▲ See warning, below.

▲ ***WARNING***

***ALWAYS** use support straps to prevent driveshaft from falling out of vehicle. Failure to use support straps can cause damage to driveshaft or result in property damage, serious personal injury or death.*

Attach support straps to frame rails or some structural part of the vehicle. **DO NOT** attach the support straps to fuel lines, oil lines, brake lines, or wiring. **DO NOT** entangle fuel lines, oil lines, brake lines, or wiring in the support straps. ▲ See warning, below.

▲ ***WARNING***

Attaching or entangling support straps to fuel, oil or brake lines or wiring can result in their damage. Damaged fuel, oil or brake lines or wiring can result in failure of the vehicle, which can result in property damage, serious personal injury or death.

Photo 32

Disconnect Driveshaft

3. **Be sure first support strap is in place as illustrated in figure D, page 46.** Remove the bearing retainers or stamped straps and bolts at **rear** end. Discard bolts. Discard stamped straps (if applicable). (See photo 32, above.) Reference bolt specifications, Table Q, below.

QUICK DISCONNECT™ BOLT SPECIFICATIONS

SERIES	BOLT P/N*	THREAD SIZE	HEAD SIZE	BOLT TORQUE Nm	BOLT TORQUE LB. FT.
SPL55	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD
SPL90	6-73-412	0.375 in. - 24	3/8 in., 12 point	61-81	45-60
SPL100	TBD	TBD	TBD	TBD	TBD
SPL140	12-73-125M	12mm - 1.25	12 mm, 12 point	135-160	100-120
SPL170	12-73-125M	12mm - 1.25	12 mm, 12 point	135-160	100-120
SPL250	12-73-125M	12mm - 1.25	12 mm, 12 point	135-160	100-120

** Bolts are specially heat-treated.*
DO NOT substitute with inferior grade bolts.

Table Q

Bearing retainers **CAN** be reused **if there is no damage**. (See photo 33, below.) If damaged, replace.

Photo 33, Bearing Retainers

Stamped straps **CANNOT** be reused. (See photo 34, below.) See warning, below.

Photo 34, Stamped Straps

WARNING

DO NOT *reuse bearing retainer bolts, stamped straps, stamped strap bolts, damaged bearing retainers, or use inferior grade bolts. Reuse of bearing retainer bolts, stamped straps, stamped strap bolts, damaged bearing retainers or the use of inferior grade bolts can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

Photo 35

4. It may be necessary to unseat bearing cup assemblies by tapping on yoke or bearing cup with a soft-faced hammer. (See photo 35, above.) Once the bearing cup assemblies are free, collapse the driveshaft until both bearing assemblies clear the open end yoke cross holes. Allow the driveshaft to rest on support strap.

Remove Driveshaft

5. **Place the second support strap as illustrated in Figure D, page 46.** Remove the bearing retainers or stamped straps and bolts at center bearing yoke position. Reference bolt specifications, Table Q, page 47. Discard bolts. Discard stamped straps (if applicable). ▲ See warning, below.

▲ ***WARNING***

DO NOT *reuse bearing retainer bolts, stamped straps, stamped strap bolts, damaged bearing retainers, or use inferior grade bolts. Reuse of bearing retainer bolts, stamped straps, stamped strap bolts, damaged bearing retainers or the use of inferior grade bolts can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

6. It may be necessary to unseat bearing cup assemblies by tapping on yoke or bearing cup with a soft-faced hammer. Once driveshaft is free, collapse the driveshaft until both bearing assemblies clear the open yoke cross holes. Allow the driveshaft to rest on support strap. Remove the driveshaft from the support straps and take it to a work bench area. ▲ See warning, below. Be sure to follow end yoke inspection (steps 10-13, page 49).

▲ ***WARNING***

Driveshaft assemblies can weigh in excess of 100 pounds (46 kilograms). Make sure to use proper lifting techniques when handling driveshafts. More than one person may be needed when handling driveshaft assemblies.

Remove Coupling Shaft

7. **Be sure the third support strap is in place, as illustrated in Figure D, page 46.** Remove the center bearing bracket bolts and allow the shaft to rest on the support strap. (See photo 36, below.)

Photo 36

8. **Be sure the fourth support strap is in place, as illustrated in Figure D, page 46.** Remove bearing retainers or stamped straps and bolts at front end. Reference bolt specifications Table Q, page 47. Discard bolts. Discard stamped straps (if applicable). ▲ See warning, below.

▲ ***WARNING***

DO NOT *reuse bearing retainer bolts, stamped straps, stamped strap bolts, damaged bearing retainers, or use inferior grade bolts. Reuse of bearing retainer bolts, stamped straps, stamped strap bolts, damaged bearing retainers or the use of inferior grade bolts can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

9. It may be necessary to unseat bearing cup assemblies by tapping on yoke or bearing cup with a soft-faced hammer. Once the coupling shaft is free, remove the coupling shaft from the support straps and take it to a work bench area. ▲ See warning, below. Be sure to follow end yoke inspection (steps 10-13).

▲ ***WARNING***

Driveshaft assemblies can weigh in excess of 100 pounds (46 kilograms). Make sure to use proper lifting techniques when handling driveshafts. More than one person may be needed when handling driveshaft assemblies.

Inspect End Yokes

10. Check all end yokes for looseness. Take hold of end yoke with both hands. Try to move it vertically and horizontally to feel any looseness. There should **not** be any looseness in the end yokes relative to the input or output shafts to which they are connected. ▲ See warning, below.

▲ ***WARNING***

A loose end yoke can result in driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

If looseness is evident, the end yoke needs to be replaced. Refer to the transmission, axle or transfer case original equipment manufacturers' service and maintenance manuals for removal procedures.

11. Visually inspect all end yoke retaining nuts or bolts for any gaps between mating surfaces. ▲ See warning, below.

▲ ***WARNING***

A loose end yoke retaining nut or bolt can result in driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

If gaps are present, consult transmission, axle or transfer case original equipment manufacturers' specifications for proper fastening.

12. Inspect all end yoke cross hole surfaces and bolt hole threads for damage. If the bolt hole threads are damaged, the yoke must be replaced. ▲ See warning, below.

▲ ***WARNING***

Failure to replace damaged driveline components can cause driveline failure, which can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

Refer to the transmission, axle or transfer case original equipment manufacturers' service and maintenance manuals for removal procedures.

Photo 37

Raised metal or fretting on open yoke cross holes can be removed with a fine-toothed file and/or emery cloth. (See photo 37, above.) ▲ See warning, below.

▲ ***WARNING***

DO NOT *deform yoke cross holes by removing excessive metal. Raised metal or deformed yoke cross holes can be a cause of cross and bearing failure, which can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.*

Photo 38

13. Inspect the end yoke cross holes for distortion using the appropriate Spicer alignment bar. (See photo 38, above.) Slide alignment bar through both cross holes simultaneously. If alignment bar will not pass through both cross holes simultaneously, cross holes are distorted and yoke must be replaced. ▲ See warning, below.

▲ ***WARNING***

Failure to replace damaged driveline components can cause driveline failure, which can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

Refer to the transmission, axle or transfer case original equipment manufacturers' service and maintenance manuals for removal procedures.

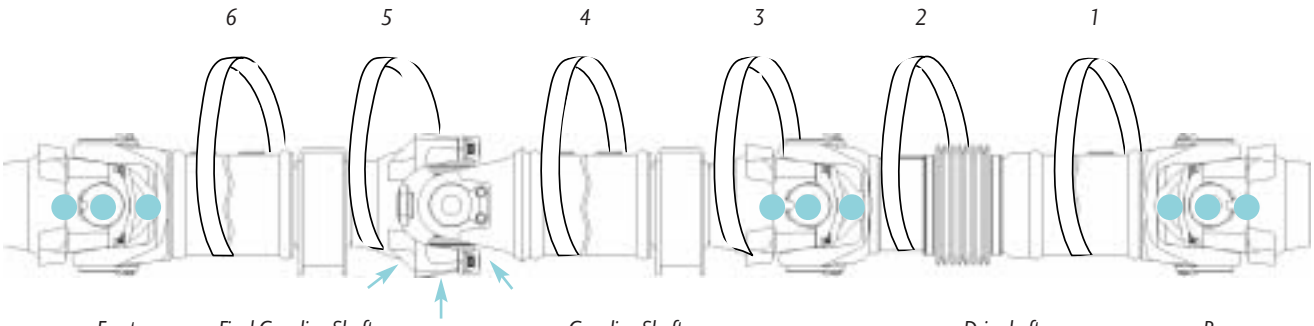

Figure E

QUICK DISCONNECT™ YOKE STYLE

Multiple-Piece Driveshaft

Caution – Be sure to carefully read all information on page 39 before proceeding.

Note – When working with multiple-piece driveshafts, it may be necessary to remove the entire driveline assembly. Work from the **rear** end forward. The driveshaft will need to be disconnected, **first**, in order to allow clearance for the removal of any coupling shaft. Work on only one connection at a time. Be sure to properly position the support straps as illustrated in Figure E, above.

Mark Driveshaft ("Phasing Marks")

1. It is imperative to mark all the mating components of a driveshaft, as illustrated in Figure E, above. Mark the driveshaft with a marking stick, paint marker or other legible marking device. In addition, be sure to mark all bearing positions, spline positions, shaft locations and all bearing retainers. This assures proper reassembly of the driveshaft into the vehicle, in its original position. ▲ See warning, below.

▲ ***WARNING***

Reassembly of a driveline out of original phase can cause vibration and failure of the driveline and attaching components. Failure of a driveline can result in separation of driveline from the vehicle, which can result in property damage, serious personal injury or death.

Position Support Straps

2. Working from the **rear** end, support the driveshaft at the rear, at the slip member, behind the center bearing end fittings and in front of center bearings, with support straps, as illustrated in Figure E, above. ▲ See warning, below.

▲ ***WARNING***

***ALWAYS** use support straps to prevent driveshaft from falling out of vehicle. Failure to use support straps can cause damage to driveshaft or result in property damage, serious personal injury or death.*

Attach support straps to frame rails or some structural part of the vehicle. **DO NOT** attach the support straps to fuel lines, oil lines, brake lines, or wiring. **DO NOT** entangle fuel lines, oil lines, brake lines, or wiring in the support straps. ▲ See warning, below.

▲ ***WARNING***

Attaching or entangling support straps to fuel, oil or brake lines or wiring can result in their damage. Damaged fuel, oil or brake lines or wiring can result in failure of the vehicle, which can result in property damage, serious personal injury or death.

Photo 39

Disconnect Driveshaft

3. **Be sure first support strap is in place as illustrated in Figure E, page 51.** Remove the bearing retainers or stamped straps and bolts at **rear** end. Discard bolts. Discard stamped straps (if applicable). (See photo 39, above.) Reference bolt specifications, Table R, below.

QUICK DISCONNECT™ BOLT SPECIFICATIONS

SERIES	BOLT P/N*	THREAD SIZE	HEAD SIZE	BOLT TORQUE Nm	BOLT TORQUE LB. FT.
SPL55	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD
SPL90	6-73-412	0.375 in. - 24	3/8 in., 12 point	61-81	45-60
SPL100	TBD	TBD	TBD	TBD	TBD
SPL140	12-73-125M	12mm - 1.25	12 mm, 12 point	135-160	100-120
SPL170	12-73-125M	12mm - 1.25	12 mm, 12 point	135-160	100-120
SPL250	12-73-125M	12mm - 1.25	12 mm, 12 point	135-160	100-120

** Bolts are specially heat-treated.*
DO NOT substitute with inferior grade bolts.

Table R

Bearing retainers **CAN** be reused **if there is no damage**. (See photo 40, below.) If damaged, replace.

Photo 40, Bearing Retainers

Stamped straps **CANNOT** be reused. Discard bolts. (See photo 41, below.) ▲ See warning, below.

Photo 41, Stamped Straps

▲ ***WARNING***

DO NOT *reuse bearing retainer bolts, stamped straps, stamped strap bolts, damaged bearing retainers, or use inferior grade bolts. Reuse of bearing retainer bolts, stamped straps, stamped strap bolts, damaged bearing retainers or the use of inferior grade bolts can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

Photo 42

Photo 43

4. It may be necessary to unseat bearing cup assemblies by tapping on yoke or bearing cup with a soft-faced hammer. (See photo 42, above.) Once the bearing cup assemblies are free, collapse the driveshaft until both bearing assemblies clear the open yoke cross holes. Allow the driveshaft to rest on support strap.

Remove Driveshaft

5. **Be sure second support strap is in place as illustrated in Figure E, page 51**. Remove bearing retainers or stamped straps and bolts at the center bearing position yoke. Reference bolt specifications Table R, page 52. Discard bolts. Discard stamped straps (if applicable). ▲ See warning, below.

▲ ***WARNING***

DO NOT *reuse bearing retainer bolts, stamped straps, stamped strap bolts, damaged bearing retainers, or use inferior grade bolts. Reuse of bearing retainer bolts, stamped straps, stamped strap bolts, damaged bearing retainers or the use of inferior grade bolts can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

6. It may be necessary to unseat bearing cup assemblies by tapping on yoke or bearing cup with a soft-faced hammer. Once driveshaft is free, collapse the driveshaft until both bearing assemblies clear the open yoke cross holes. Allow the driveshaft to rest on support strap. Remove the driveshaft from the support straps and take it to a work bench area. ▲ See warning, below. Be sure to follow end yoke inspection (steps 13-16, page 55).

▲ ***WARNING***

Driveshaft assemblies can weigh in excess of 100 pounds (46 kilograms). Make sure to use proper lifting techniques when handling driveshafts. More than one person may be needed when handling driveshaft assemblies.

Remove Coupling Shaft(s)

7. **Position third support strap as illustrated in Figure E, page 51.** Remove the center bearing bracket bolts and allow the shaft to rest on the support strap.
(See photo 43, above.)

8. **Be sure the fourth support strap is in place as illustrated in Figure E, page 51.** Remove bearing retainers or stamped straps and bolts at next center bearing position yoke. Reference bolt torque specifications Table R, page 52. Discard bolts. Discard stamped straps (if applicable). ▲ See warning, below.

▲ ***WARNING***

DO NOT *reuse bearing retainer bolts, stamped straps, stamped strap bolts, damaged bearing retainers, or use inferior grade bolts. Reuse of bearing retainer bolts, stamped straps, stamped strap bolts, damaged bearing retainers or the use of inferior grade bolts can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

9. It may be necessary to unseat bearing cup assemblies by tapping on yoke or bearing cup with a soft-faced hammer. Once coupling shaft is free, remove from support straps and take to a workbench area. ▲ See warning, below. Be sure to follow the end yoke inspection (steps 13-16, page 55).

▲ ***WARNING***

Driveshaft assemblies can weigh in excess of 100 pounds (46 kilograms). Make sure to use proper lifting techniques when handling driveshafts. More than one person may be needed when handling driveshaft assemblies.

10. For driveline assemblies with more than two coupling shafts, repeat steps 7 through 9 as necessary. Place support straps on additional coupling shafts as previously described.

Removal of Final Coupling Shaft

11. **Be sure the final support strap is in place as illustrated in Figure E, page 51.** Remove bearing retainers or stamped straps and bolts at front end. Reference bolt specifications, Table R, page 52. Discard bolts. Discard stamped straps (if applicable). ▲ See warning, step 8.

12. It may be necessary to unseat bearing cup assemblies by tapping on yoke or bearing cup with a soft-faced hammer. Once final coupling shaft is free, remove from support straps and take it to a work bench area. ▲ See warning, below. Be sure to follow the end yoke inspection (steps 13-16, pages 55 and 56).

▲ ***WARNING***

Driveshaft assemblies can weigh in excess of 100 pounds (46 kilograms). Make sure to use proper lifting techniques when handling driveshafts. More than one person may be needed when handling driveshaft assemblies.

Inspect End Yokes

13. Check end yokes for looseness. Take hold of end yoke with both hands. Try to move it vertically and horizontally to feel any looseness. There should **NOT** be any looseness in the end yokes relative to the input or output shafts to which they are connected. ▲ See warning, below.

▲ ***WARNING***

A loose end yoke can result in driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

If looseness is evident, the end yoke needs to be replaced. Refer to the transmission, axle or transfer case original equipment manufacturers' service and maintenance manuals for removal procedures.

14. Visually inspect end yoke retaining nuts or bolts for any gaps between mating surfaces. ▲ See warning, below.

▲ ***WARNING***

A loose end yoke retaining nut or bolt can result in driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

If gaps are present, consult transmission, axle or transfer case original equipment manufacturers' specifications for proper fastening.

15. Inspect all end yoke cross hole surfaces and bolt hole threads for damage. If the bolt hole threads are damaged, the yoke must be replaced. ▲ See warning, below.

▲ ***WARNING***

Failure to replace damaged driveline components can cause driveline failure, which can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

Refer to the transmission, axle or transfer case original equipment manufacturers' service and maintenance manuals for removal procedures.

Raised metal or fretting on open yoke cross holes can be removed with a fine-toothed file and/or emery cloth. (See photo 44, below.) ▲ See warning, below.

▲ ***WARNING***

DO NOT *deform yoke cross holes by removing excessive metal. Raised metal or deformed yoke cross holes can be a cause of cross and bearing failure, which can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.*

Photo 44

Photo 45

16. Inspect the end yoke cross holes for distortion using the appropriate Spicer alignment bar. (See photo 45, above.) Slide alignment bar through both cross holes simultaneously. If alignment bar will not pass through both cross holes simultaneously, cross holes are distorted and yoke must be replaced. ▲ See warning, below.

▲ ***WARNING***

Failure to replace damaged driveline components can cause driveline failure, which can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

Refer to the transmission, axle or transfer case original equipment manufacturers' service and maintenance manuals for removal procedures.

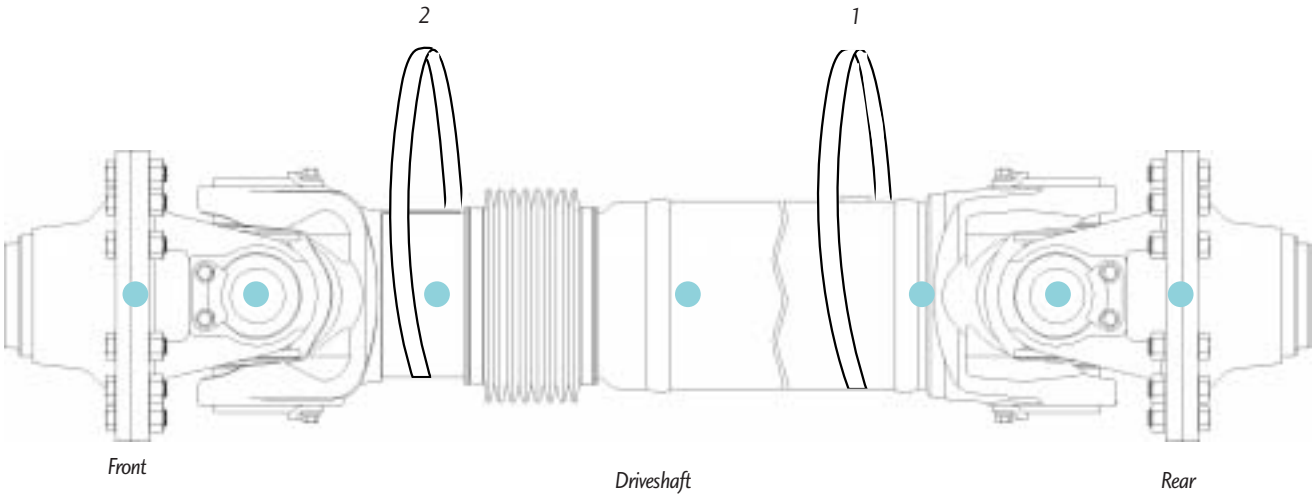

Figure F, S.A.E.

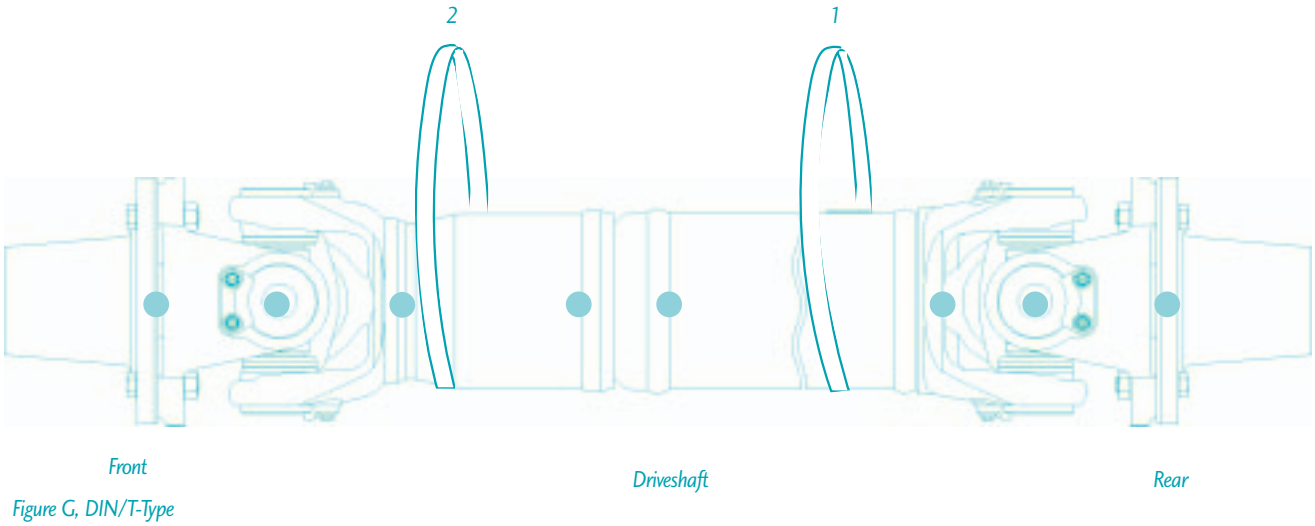

Figure G, DIN/T-Type

COMPANION FLANGE/FLANGE YOKE STYLE (S.A.E., DIN AND T-TYPE)

One-Piece Driveshaft

Caution – Be sure to carefully read all information on page 39 before proceeding.

Mark Driveshaft ("Phasing Marks")

1. It is imperative to mark all mating components of a driveshaft, as illustrated in Figure F or G, above. Mark the driveshaft with a marking stick, paint marker or other legible marking device. In addition, be sure to mark all bearing positions, spline positions, and shaft locations. This assures proper reassembly of the driveshaft into the vehicle, in its original position. ▲ See warning, below.

▲ ***WARNING***

Reassembly of a driveline out of original phase can cause vibration and failure of the driveline and attaching components. Failure of a driveline can result in separation of driveline from the vehicle, which can result in property damage, serious personal injury or death.

COMPANION FLANGE/FLANGE YOKE STYLE (S.A.E., DIN AND T-TYPE) HARDWARE SPECIFICATIONS

SERIES	BOLT P/N*†	WASHER P/N	NUT P/N	DIAMETER, THREAD & LENGTH UNDER HEAD	BOLT TORQUE Nm	BOLT TORQUE FT. LBS.
SPL55	TBD	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD	TBD
SPL90	6-73-1219	500357-11	231421-3	.375" 24 x 1.188"	54-65	40-48
SPL100	TBD	TBD	TBD	TBD	TBD	TBD
SPL140	6-73-220	500357-11	231421-3	.375" 24 x 1.250"	54-65	40-48
	6-73-1227	500357-11	231421-3	.375" 24 x 1.688"	54-65	40-48
SPL170	7-73-122	500357-12	231421-4	.438" 20 x 1.375"	85-102	63-75
	7-73-228	500357-12	231421-4	.438" 20 x 1.750"	85-102	63-75
SPL250	7-73-122	500357-12	231421-4	.438" 20 x 1.375"	85-102	63-75
	7-73-228	500357-12	231421-4	.438" 20 x 1.750"	85-102	63-75

**Bolts are specially heat-treated. DO NOT substitute inferior grade bolts.*

† Approved Spicer hardware.

***Note**-Original equipment vehicle manufacturers' manuals may have alternate specified bolts or metric hardware. Refer to the original equipment service manual for bolt part numbers.*

Table S

Position Support Straps

2. Working from the **rear** end, support the driveshaft with support straps, as illustrated in Figure F or G, page 57.
▲ See warning, below.

▲ *WARNING*

***ALWAYS** use support straps to prevent driveshaft from falling out of vehicle. Failure to use support straps can cause damage to driveshaft or result in property damage, serious personal injury or death.*

Attach support straps to frame rails or some structural part of the vehicle. **DO NOT** attach the support straps to fuel lines, oil lines, brake lines, or wiring. **DO NOT** entangle fuel lines, oil lines, brake lines, or wiring in the support straps.
▲ See warning, below.

▲ *WARNING*

Attaching or entangling support straps to fuel, oil or brake lines or wiring can result in their damage. Damaged fuel, oil or brake lines or wiring can result in failure of the vehicle, which can result in property damage, serious personal injury or death.

Disconnect Driveshaft

3. **Be sure first support strap is in place as illustrated in Figure F or G, page 57.** Remove and discard flange bolts, washers and nuts at **rear** end. Reference hardware specifications, Table S, above. (See photo 46, below.)
▲ See warning, below.

▲ *WARNING*

***DO NOT** reuse flange bolts, washers or nuts or use inferior grade bolts. Reuse of flange bolts, washers or*

Photo 46

nuts or use of inferior grade bolts can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

4. It may be necessary to unseat pilot or serrated connection by tapping on one side of flange with a soft-faced hammer. Once the connection is free, collapse the driveshaft and allow it to rest on support strap.

Remove Driveshaft

5. **Be sure to use the second support strap as illustrated in Figure F or G, page 57.** Remove and discard flange bolts, washers and nuts at **front** end. ▲ See warning, below.

▲ ***WARNING***

DO NOT *reuse flange bolts, washers or nuts or use inferior grade bolts. Reuse of flange bolts, washers or nuts or use of inferior grade bolts can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

6. It may be necessary to unseat pilot or serrated connection by tapping on one side of the flange with a soft-faced hammer. Once the connection is free, remove the driveshaft from the support straps and take it to a work bench area. ▲ See warning, below. Be sure to follow the flange inspection (steps 7-10).

▲ ***WARNING***

Driveshaft assemblies can weigh in excess of 100 pounds (46 kilograms). Make sure to use proper lifting techniques when handling driveshafts. More than one person may be needed when handling driveshaft assemblies.

Inspect Companion Flanges/Flange Yokes (S.A.E., DIN and T-Type Style)

7. Inspect all flange bolt hole threads or through holes for damage. If the bolt hole threads or through holes are damaged, the flange must be replaced. ▲ See warning, below.

▲ ***WARNING***

Failure to replace damaged driveline components can cause driveline failure, which can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

For removal procedures for companion flanges, refer to the original equipment manufacturers' service and maintenance manuals. For removal procedures for flange yokes, see removal of universal joints in this manual.

8. Inspect all flange faces for galling or damage. If damaged, the flange must be replaced. ▲ See warning, above.

For removal procedures for companion flanges, refer to the original equipment manufacturers' service and maintenance manuals. For removal procedures for flange yokes, see removal of universal joints in this manual.

9. Visually inspect all companion flange retaining nuts or bolts for any gaps between mating surfaces. ▲ See warning, below.

▲ ***WARNING***

A loose companion flange retaining nut or bolt can result in driveline failure which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

If gaps are present, consult transmission, axle or transfer case original equipment manufacturers' specifications for proper fastening.

10. Check all companion flanges for looseness. Take hold of companion flange with both hands. Try to move it vertically and horizontally to feel any looseness. There should **NOT** be any looseness in the companion flanges relative to the input or output shafts to which they are connected. ▲ See warning, below.

▲ ***WARNING***

A loose companion flange can result in driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

If looseness is evident, the companion flange needs to be replaced. Refer to the transmission, axle or transfer case original equipment manufacturers' service and maintenance manuals for removal procedures.

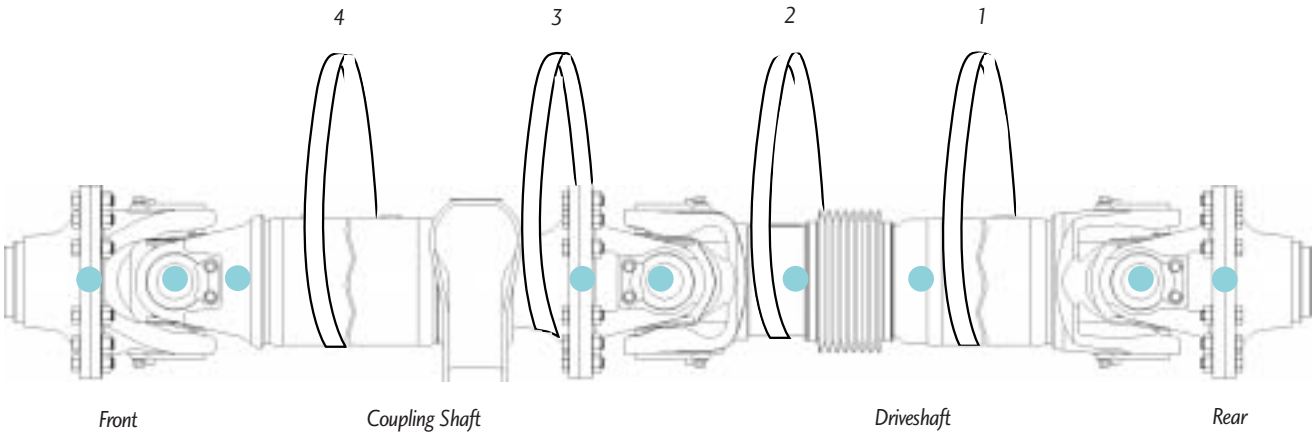

Figure H, S.A.E.

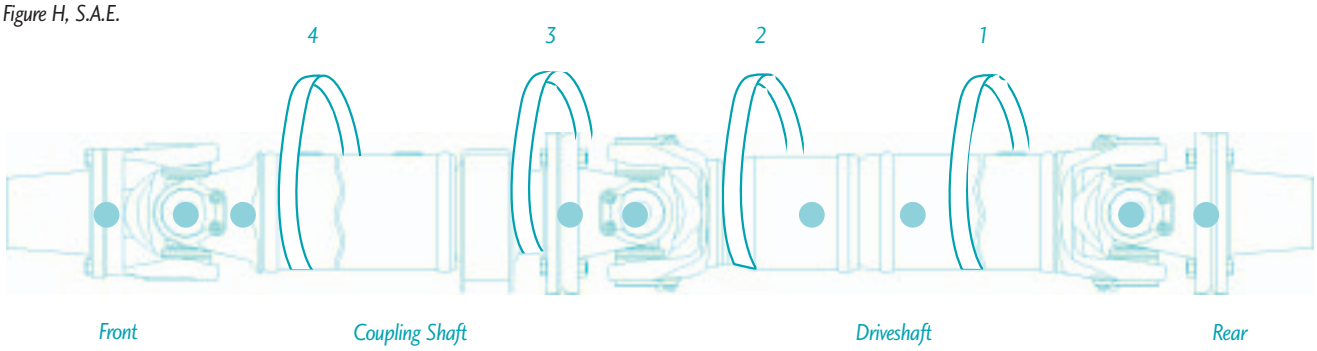

Figure J, DIN/T-Type

COMPANION FLANGE/FLANGE YOKE STYLE (S.A.E., DIN AND T-TYPE)

Two-Piece Driveshaft

Caution – Be sure to carefully read all information on page 39 before proceeding.

Mark Driveshaft ("Phasing Marks")

1. It is imperative to mark all the mating components of a driveshaft, as illustrated in Figure H or J, above. Mark the driveshaft with a marking stick, paint marker or other legible marking device. In addition, be sure to mark all bearing positions, spline positions, and shaft locations. This assures proper reassembly of the driveshaft into the vehicle, in its original position. ▲ See warning, above right.

▲ ***WARNING***

Reassembly of a driveline out of original phase can cause vibration and failure of the driveline and attaching components. Failure of a driveline can result in separation of driveline from the vehicle, which can result in property damage, serious personal injury or death.

Position Support Straps

2. Working from the **rear** end, support the driveshaft with support straps as illustrated in Figure H or J, above. Be sure to support the shaft assembly at the slip member, behind the center bearing end fitting and in front of center bearing, with support straps. ▲ See warning, below.

▲ ***WARNING***

***ALWAYS** use support straps to prevent driveshaft from falling out of vehicle. Failure to use support straps can cause damage to driveshaft or result in property damage, serious personal injury or death.*

COMPANION FLANGE/FLANGE YOKE STYLE (S.A.E., DIN AND T-TYPE) HARDWARE SPECIFICATIONS

SERIES	BOLT P/N*†	WASHER P/N	NUT P/N	DIAMETER, THREAD & LENGTH UNDER HEAD	BOLT TORQUE Nm	BOLT TORQUE FT. LBS.
SPL55	TBD	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD	TBD
SPL90	6-73-1219	500357-11	231421-3	.375" 24 x 1.188"	54-65	40-48
SPL100	TBD	TBD	TBD	TBD	TBD	TBD
SPL140	6-73-220	500357-11	231421-3	.375" 24 x 1.250"	54-65	40-48
	6-73-1227	500357-11	231421-3	.375" 24 x 1.688"	54-65	40-48
SPL170	7-73-122	500357-12	231421-4	.438" 20 x 1.375"	85-102	63-75
	7-73-228	500357-12	231421-4	.438" 20 x 1.750"	85-102	63-75
SPL250	7-73-122	500357-12	231421-4	.438" 20 x 1.375"	85-102	63-75
	7-73-228	500357-12	231421-4	.438" 20 x 1.750"	85-102	63-75

**Bolts are specially heat-treated. DO NOT substitute inferior grade bolts.*
† Approved Spicer hardware.
***Note**-Original equipment vehicle manufacturers' manuals may have alternate specified bolts or metric hardware. Refer to the original equipment service manual for bolt part numbers.*

Table T

Attach support straps to frame rails or some structural part of the vehicle. **DO NOT** attach the support straps to fuel lines, oil lines, brake lines, or wiring. **DO NOT** entangle fuel lines, oil lines, brake lines, or wiring in the support straps. ▲ See warning, below.

▲ *WARNING*

Attaching or entangling support straps to fuel, oil or brake lines or wiring can result in their damage. Damaged fuel, oil or brake lines or wiring can result in failure of the vehicle, which can result in property damage, serious personal injury or death.

Photo 47

Disconnect Driveshaft

3. **Be sure first support strap is in place as illustrated in Figures H or J, page 61.** Remove and discard flange bolts, washers and nuts at **front** end. (See photo 47, right.) Reference hardware specifications, Table T, above. ▲ See warning, below.

▲ *WARNING*

***DO NOT** reuse flange bolts, washers or nuts or use inferior grade bolts. Reuse of flange bolts, washers or nuts or use of inferior grade bolts can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

4. It may be necessary to unseat pilot or serrated connection by tapping on one side of flange with a soft-faced hammer. Once the connection is free, collapse the driveshaft and allow it to rest on support strap.

Remove Driveshaft

5. **Place the second support strap as illustrated in Figure H or J, page 61.** Remove and discard flange bolts, washers and nuts at center bearing end fitting position. Reference hardware specifications, Table T, page 62. ▲ See warning, below.

▲ ***WARNING***

DO NOT *reuse flange bolts, washers or nuts or use inferior grade bolts. Reuse of flange bolts, washers or nuts or use of inferior grade bolts can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

6. It may be necessary to unseat pilot or serrated connection by tapping on one side of flange with a soft-faced hammer. Once the connection is free, remove the driveshaft from the support straps and take it to a work bench area. ▲ See warning, below. Be sure to follow the flange inspection (steps 10-13).

▲ ***WARNING***

Driveshaft assemblies can weigh in excess of 100 pounds (46 kilograms). Make sure to use proper lifting techniques when handling driveshafts. More than one person may be needed when handling driveshaft assemblies.

Remove Coupling Shaft

7. **Be sure the third support strap is in place as illustrated in Figures H or J, page 61.** Remove the center bearing bracket bolts and allow shaft to rest on support strap.

8. **Be sure the fourth support strap is in place as illustrated in Figures H or J, page 61.** Remove and discard flange bolts, washers and nuts at **front** end. Reference hardware specifications, Table T, page 62. ▲ See warning, step 5.

9. It may be necessary to unseat pilot or serrated connection by tapping on one side of flange with a soft-faced hammer. Once the connection is free, remove the coupling shaft from the support straps and take it to a work bench area. ▲ See warning, step 6. Be sure to follow the flange inspection (steps 10-13).

Inspect Companion Flanges/Flange Yokes (S.A.E., DIN and T-Type Style)

10. Inspect all flange bolt hole threads or through holes for damage. If the bolt hole threads or through holes are damaged, the flange must be replaced. ▲ See warning, below.

▲ ***WARNING***

Failure to replace damaged driveline components can cause driveline failure, which can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

For removal procedures for companion flanges, refer to the equipment manufacturers' service and maintenance manuals. For removal procedures for flange yokes, see removal of universal joints in this manual.

11. Inspect all flange faces for galling or damage. If damaged, the flange must be replaced. ▲ See warning, step 10.

For removal procedures for companion flanges, refer to the equipment manufacturers' service and maintenance manuals. For removal procedures for flange yokes, see removal of universal joints in this manual.

12. Visually inspect all companion flange retaining nuts or bolts for any gaps between mating surfaces. ▲ See warning, below.

▲ ***WARNING***

A loose companion flange retaining nut or bolt can result in driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

If gaps are present, consult transmission, axle or transfer case original equipment manufacturers' specifications for proper fastening.

13. Check all companion flanges for looseness. Take hold of companion flange with both hands. Try to move it vertically and horizontally to feel any looseness. There should **NOT** be any looseness in the companion flanges relative to the input or output shafts to which they are connected. ▲ See warning, below.

▲ ***WARNING***

A loose companion flange can result in driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

If looseness is evident, the companion flange needs to be replaced. Refer to the transmission, axle or transfer case original equipment manufacturers' service and maintenance manuals for removal procedures.

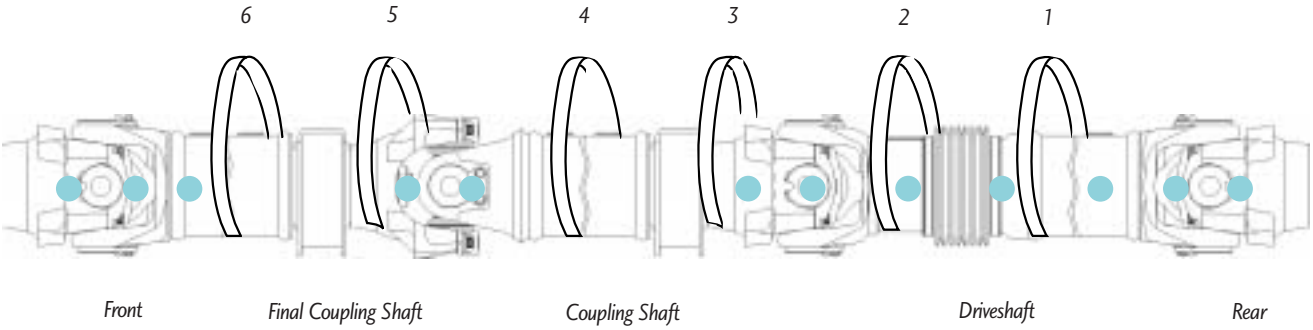

Figure K, S.A.E.

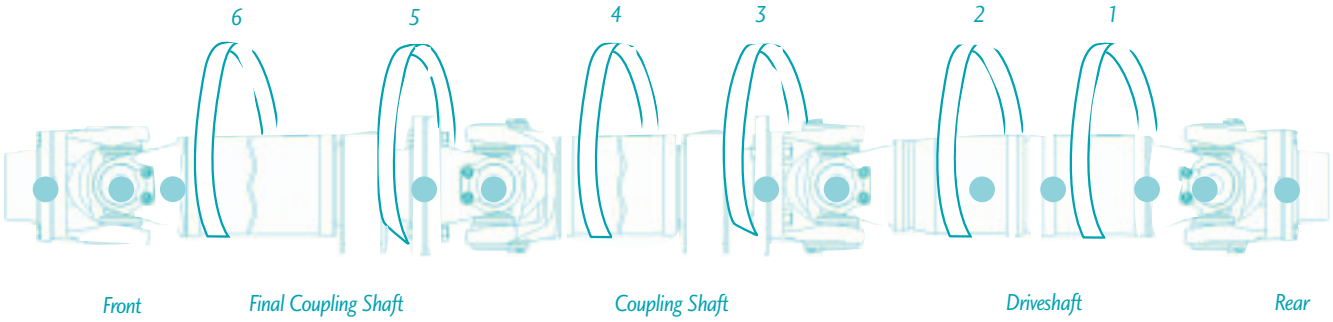

Figure L, DIN/T-Type

COMPANION FLANGE/FLANGE YOKE STYLE (S.A.E., DIN AND T-TYPE)

Multiple-Piece Driveshaft

Caution – Be sure to carefully read all information on page 39 before proceeding.

Note – When working with multiple-piece driveshafts, it may be necessary to remove the entire assembly. Work from **rear** end forward. The driveshaft will need to be disconnected **first** in order to allow clearance for the removal of any coupling shaft. Work on only one connection at a time. Be sure to properly position the support straps as illustrated in Figure K or L, above.

Mark Driveshaft ("Phasing Marks")

1. It is imperative to mark all mating components of a driveshaft, as illustrated in Figure K or L, above. Mark the driveshaft with a marking stick, paint marker or other legible marking device. In addition, be sure to mark all bearing positions, spline positions, and shaft locations. This assures proper reassembly of the driveshaft into the vehicle, in its original position. ▲ See warning, below.

▲ ***WARNING***

Reassembly of a driveline out of original phase can cause vibration and failure of the driveline and attaching components. Failure of a driveline can result in separation of driveline from the vehicle which can result in property damage, serious personal injury or death.

COMPANION FLANGE/FLANGE YOKE STYLE (S.A.E., DIN AND T-TYPE) HARDWARE SPECIFICATIONS

SERIES	BOLT P/N*†	WASHER P/N	NUT P/N	DIAMETER, THREAD & LENGTH UNDER HEAD	BOLT TORQUE Nm	BOLT TORQUE FT. LBS.
SPL55	TBD	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD	TBD
SPL90	6-73-1219	500357-11	231421-3	.375" 24 x 1.188"	54-65	40-48
SPL100	TBD	TBD	TBD	TBD	TBD	TBD
SPL140	6-73-220	500357-11	231421-3	.375" 24 x 1.250"	54-65	40-48
	6-73-1227	500357-11	231421-3	.375" 24 x 1.688"	54-65	40-48
SPL170	7-73-122	500357-12	231421-4	.438" 20 x 1.375"	85-102	63-75
	7-73-228	500357-12	231421-4	.438" 20 x 1.750"	85-102	63-75
SPL250	7-73-122	500357-12	231421-4	.438" 20 x 1.375"	85-102	63-75
	7-73-228	500357-12	231421-4	.438" 20 x 1.750"	85-102	63-75

**Bolts are specially heat-treated. DO NOT substitute inferior grade bolts.*
† Approved Spicer hardware.
***Note**-Original equipment vehicle manufacturers' manuals may have alternate specified bolts or metric hardware. Refer to the original equipment service manual for bolt part numbers.*

Table U

Position Support Straps

2. Working from the **rear** end forward, support the driveshaft with support straps as illustrated in Figure K or L, page 65. Be sure to support the shaft assembly at the slip member, behind the center bearing end fitting, and in front of center bearing, with support straps. ▲ See warning, below.

▲ ***WARNING***

***ALWAYS** use support straps to prevent driveshaft from falling out of vehicle. Failure to use support straps can cause damage to driveshaft or result in property damage, serious personal injury or death.*

Attach support straps to frame rails or some structural part of the vehicle. **DO NOT** attach the support straps to fuel lines, oil lines, brake lines, or wiring. **DO NOT** entangle fuel lines, oil lines, brake lines, or wiring in the support straps. ▲ See warning, above right.

▲ ***WARNING***

Attaching or entangling support straps to fuel, oil or brake lines or wiring can result in their damage. Damaged fuel, oil or brake lines or wiring can result in failure of the vehicle, which can result in property damage, serious personal injury or death.

Disconnect Driveshaft

3. **Be sure the first support strap is in place as illustrated in Figure K or L, page 65.** Remove and discard flange bolts, washers and nuts at **rear** end. (See photo 48, page 67.) Reference hardware specifications, Table U, above. ▲ See warning, below.

▲ ***WARNING***

***DO NOT** reuse flange bolts, washers or nuts or use inferior grade bolts. Reuse of flange bolts, washers or nuts or use of inferior grade bolts can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

Photo 48

4. It may be necessary to unseat pilot or serrated connection by tapping on one side of flange with a soft-faced hammer. Once the connection is free, collapse the driveshaft and allow it to rest on support strap.

Remove Driveshaft

5. **Place the second support strap as illustrated in Figure K or L, page 65.** Remove and discard flange bolts, washers and nuts at center bearing end fitting position. Reference hardware specifications, Table U, page 66. ▲ See warning, below.

▲ ***WARNING***

DO NOT *reuse flange bolts, washers or nuts or use inferior grade bolts. Reuse of flange bolts, washers or nuts or use of inferior grade bolts can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

6. It may be necessary to unseat pilot or serrated connection by tapping on one side of flange with a soft-faced hammer. Once the connection is free, remove the driveshaft from the support straps and take it to a work bench area. ▲ See warning, above right. Be sure to follow the flange inspection (steps 13-16, pages 68-69).

▲ ***WARNING***

Driveshaft assemblies can weigh in excess of 100 pounds (46 kilograms). Make sure to use proper lifting techniques when handling driveshafts. More than one person may be needed when handling driveshaft assemblies.

Remove Coupling Shaft(s)

7. **Be sure the third support strap is in place as illustrated in Figures K or L, page 65.** Remove the center bearing bracket bolts and allow shaft to rest on support strap.

8. **Be sure the fourth support strap is in place as illustrated in Figures K or L, page 65.** Remove and discard flange bolts, washers and nuts at next center bearing end fitting. Reference hardware specifications, Table U, page 66. ▲ See warning, step 5.

9. It may be necessary to unseat pilot or serrated connection by tapping on one side of flange with a soft-faced hammer. Once the connection is free, remove the coupling shaft from the support straps and take it to a work bench area. ▲ See warning, step 6. Be sure to follow the flange inspection (steps 13-16, pages 68-69).

10. For driveline assemblies with more than two coupling shafts, repeat steps 7 through 9 as necessary. Place support straps on additional coupling shafts as previously described.

Removal of Final Coupling Shaft

11. **Be sure the final support strap is in place as illustrated in Figures K or L, page 65.** Remove flange bolts, washers and nuts at front end. Reference hardware specifications Table U, page 66. ▲ See warning, below.

▲ ***WARNING***

Do not reuse flange bolts, washers or nuts or use inferior grade bolts. Reuse of flange bolts, washers or nuts or use of inferior grade bolts can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

12. It may be necessary to unseat pilot or serrated connection by tapping on one side of flange with a soft-faced hammer. Once the connection is free, remove the final coupling shaft from the support straps and take it to a work bench area. ▲ See warning, below. Be sure to follow the flange inspection (steps 13-16).

▲ ***WARNING***

Driveshaft assemblies can weigh in excess of 100 pounds (46 kilograms). Make sure to use proper lifting techniques when handling driveshafts. More than one person may be needed when handling driveshaft assemblies.

Inspect Companion Flanges/Flange Yokes (S.A.E., DIN and T-Type Style)

13. Inspect all flange bolt hole threads or through holes for damage. If the bolt hole threads or through holes are damaged, the flange must be replaced. ▲ See warning, below.

▲ ***WARNING***

Failure to replace damaged driveline components can cause driveline failure, which can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

For the removal of companion flanges, refer to the equipment manufacturers' service and maintenance manuals. For the removal of the flange yokes, see removal of universal joints in this manual.

14. Inspect all flange faces for galling or damage. If damaged, the flange must be replaced. ▲ See warning, above.

For the removal of companion flanges, refer to the equipment manufacturers' service and maintenance manuals. For the removal of the flange yokes, see removal of universal joints in this manual.

15. Visually inspect all companion flange retaining nuts or bolts for any gaps between mating surfaces. ▲ See warning, below.

▲ ***WARNING***

A loose companion flange retaining nut or bolt can result in driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

If gaps are present, consult transmission, axle or transfer case original equipment manufacturers' specifications for proper fastening.

16. Check all companion flanges for looseness. Take hold of companion flange with both hands. Try to move it vertically and horizontally to feel any looseness. There should **NOT** be any looseness in the companion flanges relative to the input or output shafts to which they are connected. ▲ See warning, below.

▲ ***WARNING***

A loose companion flange can result in driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

If looseness is evident, the companion flange needs to be replaced. Refer to the transmission, axle or transfer case original equipment manufacturers' service and maintenance manuals for removal procedures.

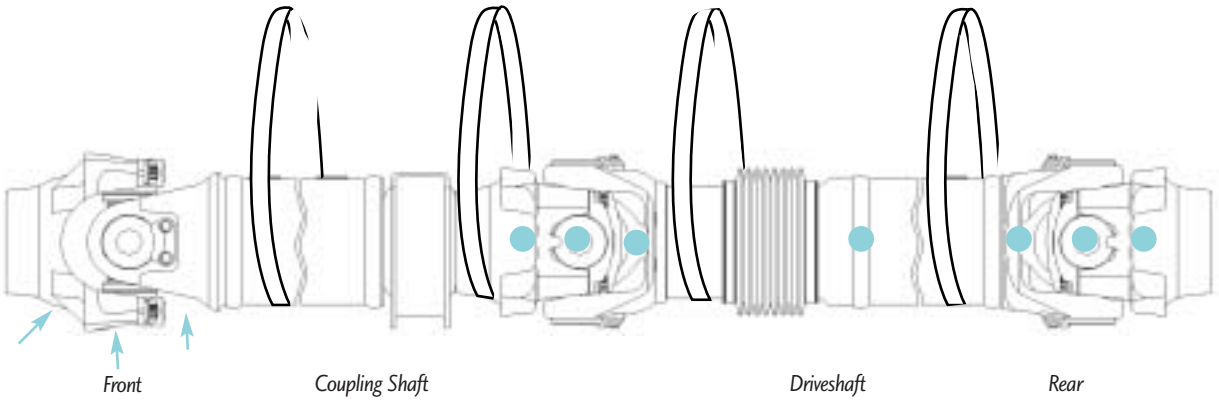

Figure M

REPLACEMENT PROCEDURE FOR GREASE ZERK (NIPPLE) FITTINGS OR PLUGS

SPICER LIFE SERIES™ 90,100,140,170 & 250

Caution – Be sure to carefully read all information on page 39 before proceeding.

Required Tools

- Open-ended wrench or pliers

UNIVERSAL JOINTS

Note – When working with multiple-piece driveshafts, it may be necessary to remove the entire assembly. Work from **rear** end forward. The driveshaft will need to be disconnected to allow clearance for the disconnection of any coupling shaft. Work on only one connection at a time. Be sure to properly position the support straps.

Follow removal procedures for the appropriate style driveshaft being serviced. (See page listings at right.) Follow steps until reaching effected universal joint grease zerk (nipple) fitting or plug. Then proceed to step one in this section.

Quick Disconnect Style
One-Piece.....41
Two-Piece.....46
Multiple-Piece 51

Companion Flange/Flange Yoke Style
One-Piece 57
Two-Piece.....61
Multiple-Piece 65

Remove Effected Grease Zerk (Nipple) Fitting or Plug

1. Tilt the universal joint kit or flange yoke and universal joint kit to allow access to effected grease zerk (nipple) fitting or plug. Using pliers or an open-ended wrench, turn grease zerk (nipple) fitting or plug counter-clockwise, until it is removed from the journal cross. (See photo 49, below.) Discard the grease zerk (nipple) fitting or plug.

Photo 49

Grease Zerk (Nipple) Fitting Only

Check for threads in the journal. If threads are present, proceed to next step. If threads are not present, replacement of universal joint kit is necessary. See disassembly procedure for universal joint kits:

- Spring Tab Style, pages 73 to 81.
- Snap Ring Style, pages 82 to 88.

Note – Pressed-in style grease zerk fittings are **NOT** serviceable. Replacement of universal joint kit is required. Press-in grease zerk (nipple) fittings were discontinued in August, 1997.

2. Thoroughly wipe clean the grease zerk (nipple) fitting or plug threaded hole.

Install New Grease Zerk (Nipple) Fitting or Plug

3. Install new grease zerk (nipple) fitting (Spicer part number 232830) or plug. Tighten to minimum 15 ft. lbs. (20 Nm). Then continue to turn only until grease zerk (nipple) fitting is correctly positioned. (See photo 49 for correct grease zerk (nipple) fitting position.) ▲ See warning, below.

▲ ***WARNING***

*Hand tightening of grease zerk (nipple) fittings or plugs is **NOT** recommended. Grease zerk (nipple) fittings or plug will eventually vibrate loose and fall out of journal. Prolonged operation with missing grease zerk (nipple) fittings or plug allows contaminants into the universal joint. Invasion of contaminants into the universal joint can degrade the lubricant and cause universal joint damage, which can result in separation of the driveline from the vehicle. A separated driveline can cause property damage, serious personal injury or death.*

Reconnect Driveshaft or Coupling Shaft

Follow installation procedures for the appropriate style driveshaft being serviced. (See page listings, top right.)

Note – Be sure to completely lubricate the universal joint kit following lubrication procedures on page 25.

Quick Disconnect Style

One-Piece 136
Two-Piece 138
Multiple-Piece.....142

Companion Flange/Flange Yoke Style

One-Piece 146
Two-Piece 149
Multiple-Piece.....152

SLIP MEMBER ASSEMBLY SPICER LIFE SERIES™ 90

Remove Effected Grease Zerk (Nipple) Fitting

1. Using pliers or an open-ended wrench, turn grease zerk (nipple) fitting counter-clockwise, until it is removed from the slip yoke seal. Discard the grease zerk (nipple) fitting.

2. Thoroughly wipe clean the grease zerk (nipple) fitting threaded hole.

Install New Grease Zerk (Nipple) Fitting

3. Install new grease zerk (nipple) fitting (Spicer part number 500174-1). Tighten to 31-55 in. lbs. (3.5-6.2 Nm). ▲ See warning, below.

▲ ***WARNING***

*Hand tightening of slip member grease zerk (nipple) fittings is **NOT** recommended. Grease zerk (nipple) fittings will eventually vibrate loose and fall out of slip member. Prolonged operation with missing grease zerk (nipple) fittings allows contaminants into the slip member. Invasion of contaminants into the slip member can degrade the lubricant and cause slip member damage, which can result in separation of the driveline from the vehicle. A separated driveline can cause property damage, serious personal injury or death.*

REMOVAL PROCEDURE FOR UNIVERSAL JOINT KITS

SPICER LIFE SERIES™ 55, 70, 90, 100, 140, 170 & 250

Required Tools

- Support Straps
- Ratchet or Air Gun
- Appropriate Spicer Alignment Bar
  (See photo 50 or 51, right.)

Spicer Life Series™ 140, 170 & 250

- 12-Point Sockets
  English 3/8"
  Metric 12mm
- 6-Point, 8mm Socket

Spicer Life Series™ 55, 70, 90 &100

- Pliers for Snap Rings

One of the following is recommended:

- Three-ton (minimum) Arbor Press
  (for Spicer Life Series™ 55, 70, 90, 100, 140, 170 & 250) and
  Bearing Cup Spacer, and
  Push Rod
  or
- J & J Universal Joint Puller 4LIFE (see photo 52, right)
  (for Spicer Life Series™ 140, 170 & 250)
  1-800-221-4903
  Outside U.S. and Canada 215-256-9300
  or
- Tiger Tool MARK 1A (see photo 53, right)
  or TGLS-597 (not shown)
  (for Spicer Life Series™ 140, 170 & 250)
  1-800-661-4661
  Outside U.S. and Canada 604-855-1133

Photo 50, Spicer Alignment Bar Kit Quick Disconnect Style

Photo 51, Spicer Alignment Bar, Full Round Style

Photo 52

Photo 53

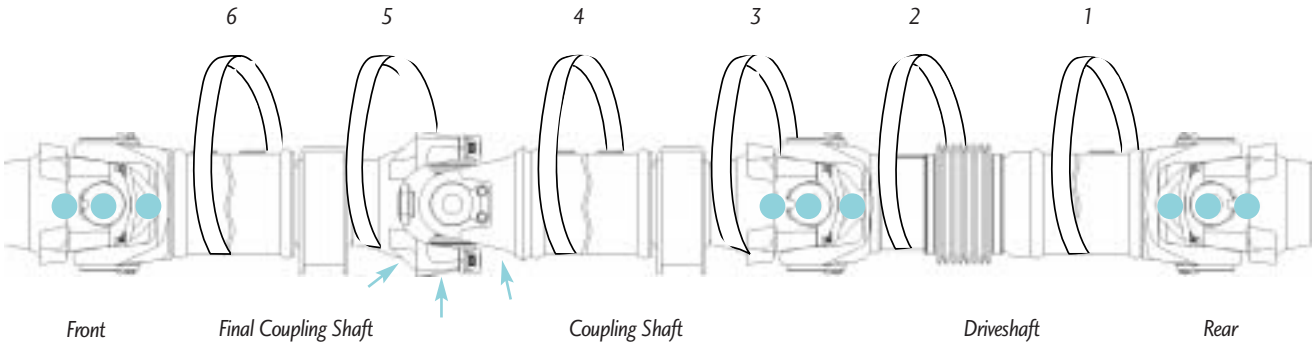

Figure N Quick Disconnect

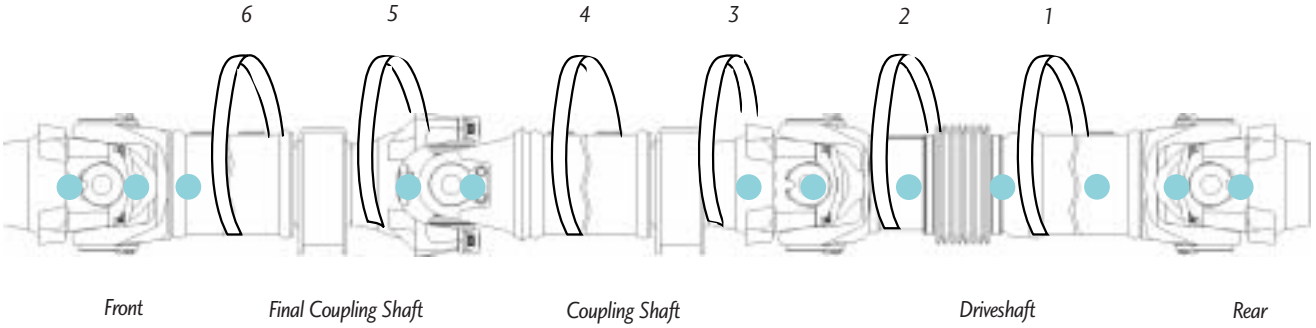

Figure P, S.A.E.

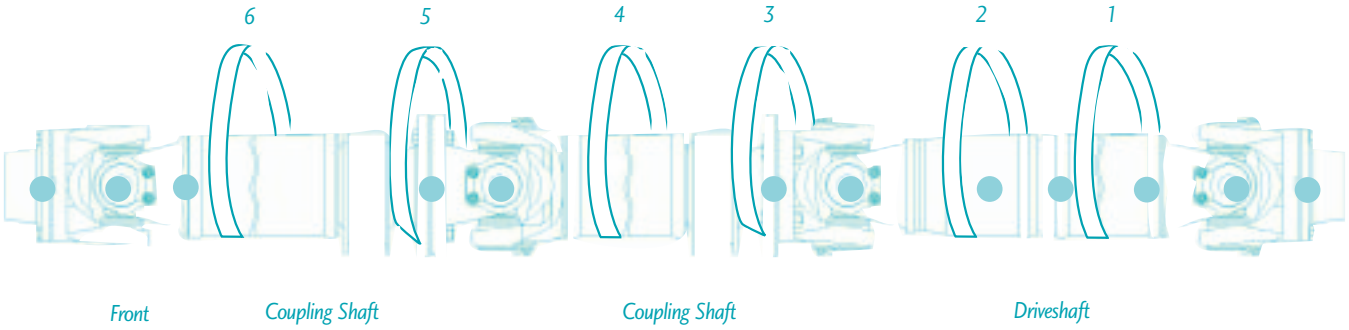

Figure Q, DIN/T-Type

SPRING TAB STYLE SPICER LIFE SERIES™ 140, 170 & 250

Caution – Be sure to carefully read all information on page 39 before proceeding.

Note – When working with multiple-piece driveshafts, it may be necessary to remove the entire driveline assembly to reach the effected universal joint. Work from the rear end forward. The driveshaft will need to be disconnected to allow clearance for the removal of any coupling shaft. Work on only one connection at a time. Be sure to properly position support straps.

Note – For more detailed driveshaft assembly removal procedures, see removal procedure for driveshaft assemblies in table of contents.

Mark Driveshaft ("Phasing Marks")

1. It is imperative to mark all mating components of the driveshaft or coupling shaft with the effected universal joint(s). Mark the driveshaft or coupling shaft with a marking stick, paint marker or other legible marking device. In addition, be sure to mark bearing positions. This assures

proper reassembly of the driveshaft or coupling shaft into the vehicle, in its original position. ▲ See warning, below.

▲ ***WARNING***

Reassembly of a driveline out of original phase can cause vibration and failure of the driveline and attaching components. Failure of a driveline can result in separation of driveline from the vehicle, which can result in property damage, serious personal injury or death.

Position Support Straps

2. Working on the driveshaft assembly section with the effected universal joint(s), place support straps as illustrated in Figure N, P or Q, page 73, for the appropriate style driveshaft being serviced.

Driveshaft

Be sure to position support straps 1 and 2. ▲ See warning, below.

Coupling Shaft(s)

Be sure to position support straps 2, 3 and 4. ▲ See warning, below.

Final Position Coupling Shaft

Be sure to position support straps 4, 5 and 6. ▲ See warning, below.

▲ ***WARNING***

***ALWAYS** use support straps to prevent driveshaft from falling out of vehicle. Failure to use support straps can cause damage to driveshaft or result in property damage, serious personal injury or death.*

Attach support straps to frame rails or some structural part of the vehicle. **DO NOT** attach the support straps to fuel lines, oil lines, brake lines, or wiring. **DO NOT** entangle fuel lines, oil lines, brake lines, or wiring in the support straps. ▲ See warning, below.

▲ ***WARNING***

Attaching or entangling support straps to fuel, oil or brake lines or wiring can result in their damage. Damaged fuel, oil or brake lines or wiring can result in failure of the vehicle, which can result in property damage, serious personal injury or death.

For removal of a **driveshaft** with an effected universal joint, follow steps 3-6.

For removal of **coupling shaft(s)** with an effected universal joint, follow steps 3-11.

For removal of the **final position coupling shaft** with an effected universal joint, follow steps 3-15.

Disconnect Driveshaft

3. Remove bearing retainers and bolts or companion flange bolts, washers and nuts at the effected universal joint. Reference bolt specifications Table V, below, or hardware specifications Table W, page 75.

QUICK DISCONNECT™ BOLT SPECIFICATIONS

SERIES	BOLT P/N*	THREAD SIZE	HEAD SIZE	BOLT TORQUE Nm	BOLT TORQUE LB. FT.
SPL55	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD
SPL90	6-73-412	0.375 in. - 24	3/8 in., 12 point	61-81	45-60
SPL100	TBD	TBD	TBD	TBD	TBD
SPL140	12-73-125M	12mm - 1.25	12 mm, 12 point	135-160	100-120
SPL170	12-73-125M	12mm - 1.25	12 mm, 12 point	135-160	100-120
SPL250	12-73-125M	12mm - 1.25	12 mm, 12 point	135-160	100-120

** Bolts are specially heat-treated.*
DO NOT substitute with inferior grade bolts.

Table V

COMPANION FLANGE/FLANGE YOKE STYLE (S.A.E., DIN AND T-TYPE) HARDWARE SPECIFICATIONS

SERIES	BOLT P/N*†	WASHER P/N	NUT P/N	DIAMETER, THREAD & LENGTH UNDER HEAD	BOLT TORQUE Nm	BOLT TORQUE FT. LBS.
SPL55	TBD	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD	TBD
SPL90	6-73-1219	500357-11	231421-3	.375" 24 x 1.188"	54-65	40-48
SPL100	TBD	TBD	TBD	TBD	TBD	TBD
SPL140	6-73-220	500357-11	231421-3	.375" 24 x 1.250"	54-65	40-48
	6-73-1227	500357-11	231421-3	.375" 24 x 1.688"	54-65	40-48
SPL170	7-73-122	500357-12	231421-4	.438" 20 x 1.375"	85-102	63-75
	7-73-228	500357-12	231421-4	.438" 20 x 1.750"	85-102	63-75
SPL250	7-73-122	500357-12	231421-4	.438" 20 x 1.375"	85-102	63-75
	7-73-228	500357-12	231421-4	.438" 20 x 1.750"	85-102	63-75

**Bolts are specially heat-treated. DO NOT substitute inferior grade bolts.*
† Approved Spicer hardware.
***Note**-Original equipment vehicle manufacturers' manuals may have alternate specified bolts or metric hardware. Refer to the original equipment service manual for bolt part numbers.*

Table W

Bearing retainers **CAN** be reused **if there is no damage**. (See photo 54, below.) If damaged, replace with new. ▲ See warning, below.

Photo 54, Bearing Retainers

Bearing retainer bolts or companion flange bolts, washers and nuts **CANNOT** be reused. Discard bolts and/or hardware, replace with new. ▲ See warning, below.

▲ *WARNING*

***DO NOT** reuse bearing retainer bolts, damaged bearing retainers, companion flange bolts, washers or nuts or use inferior grade bolts. Reuse of bearing retainer bolts, damaged bearing retainers, companion flange bolts, washers or nuts or the use of inferior grade bolts can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

4. It may be necessary to unseat bearing cup assemblies, pilot or serrated connection by tapping on tube yoke or bearing cup with a soft-faced hammer. (See photo 55, below.) Once the bearing cup assemblies or connections are free, collapse the driveshaft until both bearing cup assemblies clear the open cross holes or flange yoke pilot is disconnected. Allow the driveshaft to rest on support strap.

Photo 55

Remove Driveshaft

5. **Be sure the second support strap is in place as illustrated in Figure N, P or Q, page 73.** Remove bearing retainers and bolts or companion flange bolts, washers and nuts at the opposite end of the driveshaft. Reference bolt specifications, Table V, page 74, or hardware specifications, Table W, page 75. Discard bearing retainer bolts or companion flange bolts, washers and nuts.

Bearing retainers **CAN** be reused **if there is no damage**. If damaged, replace with new. ▲ See warning, below.

Bearing retainer bolts or companion flange bolts, washers and nuts **CANNOT** be reused. Discard bolts and/or hardware replace with new. ▲ See warning, below.

▲ ***WARNING***

DO NOT *reuse bearing retainer bolts, damaged bearing retainers, companion flange bolts, washers or nuts or use inferior grade bolts. Reuse of bearing retainer bolts, damaged bearing retainers, companion flange bolts, washers or nuts or the use of inferior grade bolts can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

6. Remove driveshaft from support straps and take it to a work bench area. ▲ See warning, below. If the driveshaft was the section of the driveline assembly with the effected universal joint, proceed to step 15, page 78.

▲ ***WARNING***

Driveshaft assemblies can weigh in excess of 100 pounds (46 kilograms). Make sure to use proper lifting techniques when handling driveshafts. More than one person may be needed when handling driveshaft assemblies.

Disconnect Coupling Shaft(s)

7. **Be sure the third and fourth support straps are in proper position as illustrated in Figure N, P or Q, page 73.**

8. Remove bearing retainers and bolts or companion flange bolts, washers and nuts at the center bearing end fitting. Discard bearing retainer bolts or companion flange bolts, washers and nuts.

Bearing retainers **CAN** be reused **if there is no damage**. If damaged, replace. ▲ See warning, step 5.

Bearing retainer bolts or companion flange bolts, washers or nuts **CANNOT** be reused. Discard bolts, washers and nuts and replace with new. ▲ See warning, step 5.

Remove Coupling Shaft(s)

9. Remove center bearing bracket bolts. Allow shaft to rest on support straps.

10. Remove bearing retainers and bolts or companion flange bolts, washers and nuts at next center bearing end fitting. Discard bearing retainer bolts or companion flange bolts, washers and nuts. ▲ See warning, step 5.

11. It may be necessary to unseat bearing cup assemblies, pilot or serrated connections by tapping on tube yokes or bearing cups with a soft-faced hammer. Once bearing cup assemblies or connections are free, remove coupling shaft from support straps and take it to a work bench area. ▲ See warning, below. If the coupling shaft was the section of the driveline assembly with the effected universal joint, proceed to step 15, page 78.

Note – It may be necessary to repeat steps 7-11 in order to access the coupling shaft with the effected universal joint.

▲ ***WARNING***

Driveshaft assemblies can weigh in excess of 100 pounds (46 kilograms). Make sure to use proper lifting techniques when handling driveshafts. More than one person may be needed when handling driveshaft assemblies.

Disconnect Final Position Coupling Shaft

12. **Be sure the fifth and sixth support straps are in place as illustrated in Figure N, P, or Q, page 73.** Remove final center bearing bracket bolts. Allow shaft to rest on support straps.

Remove Final Position Coupling Shaft

13. Remove bearing retainer bolts or companion flange bolts, washers and nuts from front end fitting. Discard bearing retainer bolts or companion flange bolts, washers and nuts. ▲ See warning, below.

Bearing retainers **CAN** be reused **if there is no damage**. If damaged, replace. ▲ See warning, below.

Bearing retainer bolts or companion flange bolts, washers or nuts **CANNOT** be reused. Discard bolts, washers and nuts and replace with new. ▲ See warning, below.

▲ ***WARNING***

DO NOT *reuse bearing retainer bolts, damaged bearing retainers, companion flange bolts, washers or nuts or use inferior grade bolts. Reuse of bearing retainer bolts, damaged bearing retainers, companion flange bolts, washers or nuts or the use of inferior grade bolts can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

14. It may be necessary to unseat bearing cup assemblies, pilot or serrated connections by tapping on tube yokes or bearing cups with a soft-faced hammer. Once bearing cup assemblies or connections are free, remove final position coupling shaft from support straps and take it to a work bench area. ▲ See warning, step 11.

Photo 56, Quick Disconnect Style

Photo 57, Companion Flange Style

Remove Universal Joint Kit

15. Remove and discard spring tabs and bolts. Reference bolt specifications, Table X, right. (See photos 56 or 57, above). ▲ See warning, below.

Companion Flange/Flange Yoke Style (S.A.E., DIN and T-Type)

If using an arbor press, proceed to step 16.

Quick Disconnect™ Style

If using an arbor press, proceed to step 20.

If using a universal joint puller, follow manufacturer's instructions.

▲ ***WARNING***

DO NOT *reuse spring tabs, spring tab bolts or use inferior grade bolts. Reuse of spring tabs, spring tab bolts and use of inferior grade bolts, can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

SPRING TAB BOLT SPECIFICATIONS

SERIES	THREAD SIZE	HEAD SIZE	BOLT TORQUE Nm	BOLT TORQUE LB. FT.	KIT P/N*
SPL140	8mm x 1.00	8mm, 6 point	35-40	25-30	211941X
SPL170	8mm x 1.00	8mm, 6 point	35-40	25-30	211941X
SPL250	8mm x 1.00	8mm, 6 point	35-40	25-30	211941X

** Bolts are specially heat-treated.*
DO NOT substitute with inferior grade bolts.

Table X

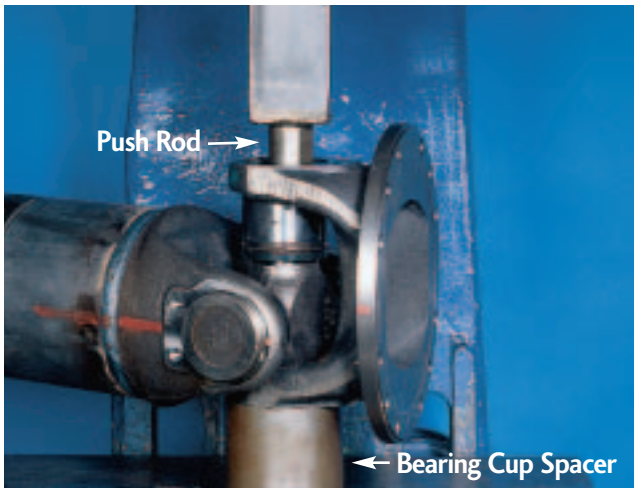

Photo 58, Companion Flange Style

Photo 59, Companion Flange Style

Companion Flange/Flange Yoke Style (S.A.E., DIN and T-Type) Style

16. To remove flange yoke, place bearing cup spacer onto the base of the arbor press and under flange yoke. (See photo 58, above.) If the arbor is larger than the bearing cup diameter, a smaller diameter push rod will be needed to avoid damaging the yoke or bearing.

Using an arbor press, press down on the upper bearing cup assembly until the shoulder of the journal cross makes contact with the inside of flange yoke ear. (See photo 58, above.)

Caution – DO NOT over press the bearing cup and journal cross. This can damage the inside of the yoke ear.

17. Bearing cup is not designed to drop out of flange yoke. It will be necessary to use a soft-faced hammer to tap the partially pressed-out bearing cup from side to side, to "walk" the bearing cup out of flange yoke ear. (See photo 59, top right.)

Remove the bearing cup from flange yoke ear and trunnion.

18. Place flange yoke in arbor press with remaining bearing cup face down. Using a push rod, press on end of the journal cross trunnion until the shoulder of the journal cross makes contact with the inside of flange yoke ear. (See photo 60, below.) Repeat step 17.

19. Remove flange yoke from journal cross. Continue to Quick Disconnect™ style, step 21, for complete removal of universal joint.

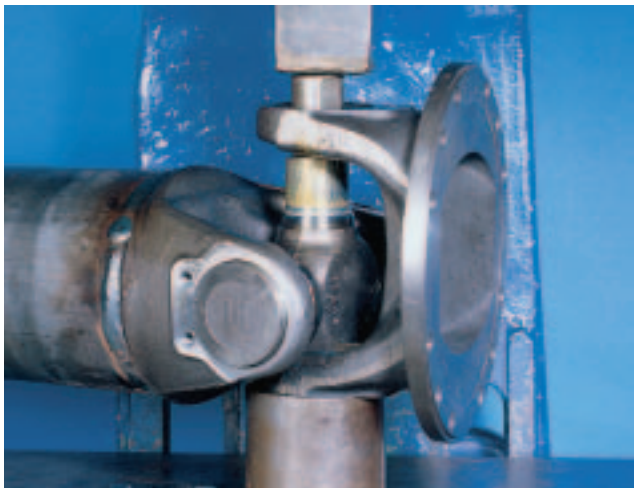

Photo 60

Photo 61, Correct Positioning

Photo 62, Incorrect Positioning

Quick Disconnect™ Style

20. Remove the outboard bearing cup assemblies.

21. Make sure universal joint cross assembly is not tilted in the yoke. (See photos 61 and 62, above.) Place bearing cup spacer onto the base of the arbor press and under the yoke. If the arbor is larger than the bearing cup diameter, a smaller diameter push rod will be needed to avoid damaging the yoke or bearing.

Using an arbor press, press down on the upper bearing cup assembly until the shoulder of the journal cross makes contact with the inside of the yoke ear. (See photo 63, below.)

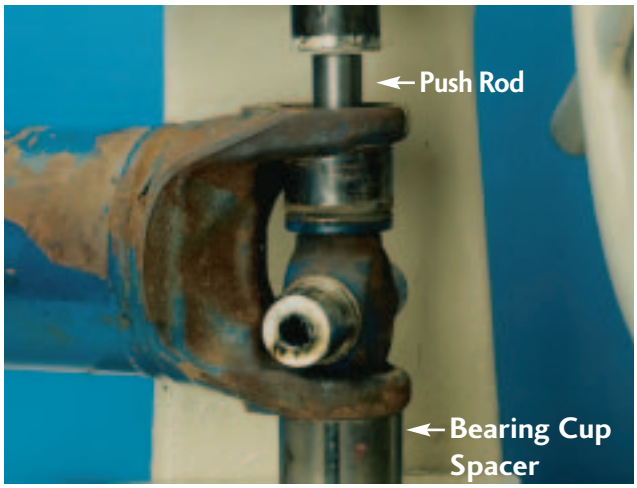

Photo 63

Caution – **DO NOT** over press the bearing cup and journal cross. This can damage the inside of the yoke ear.

22. The bearing cup is not designed to drop out of the yoke. It will be necessary to use a soft-faced hammer to tap the partially pressed-out bearing cup from side to side, to "walk" the bearing cup out of the yoke ear. (See photo 64, below.)

Remove the bearing cup from the trunnion.

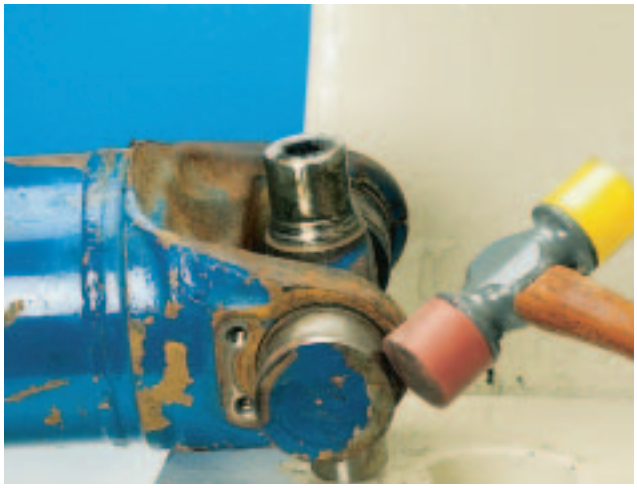

Photo 64

Photo 65

Photo 66

23. Place the yoke in the press, with the remaining bearing cup face down. (See photo 65, above.) Using a push rod, press on end of the journal cross trunnion. Continue to press down on the journal cross trunnion until the shoulder of the journal cross makes contact with the inside of the yoke ear.

24. Repeat step 22.

25. Remove the journal from the yoke.

Inspect Tube Yoke and Flange Yoke (if applicable)

26. Inspect the tube yoke and flange yoke (if applicable) cross hole surfaces for damage or raised metal. Raised metal or fretting can be removed from yoke cross holes with a fine-toothed file and/or emery cloth. (See photo 66, top right.) See warning, below.

WARNING

DO NOT *deform yoke cross holes by removing excessive metal. Raised metal or deformed yoke cross holes can be a cause of cross and bearing problems and can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.*

27. Inspect the tube yoke or flange yoke (if applicable) for distorted cross holes using an appropriate Spicer alignment bar. Slide alignment bar through both cross holes simultaneously. If alignment bar will not pass through both cross holes simultaneously, the cross holes are distorted and the shaft assembly must be replaced. (See photo 67, below.) See warning, below.

WARNING

Failure to replace a damaged driveline can cause driveline failure, which can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

Photo 67

Install New Universal Joint Kit

28. Proceed to installation of universal joint kits, spring tab style, pages 116 to 121.

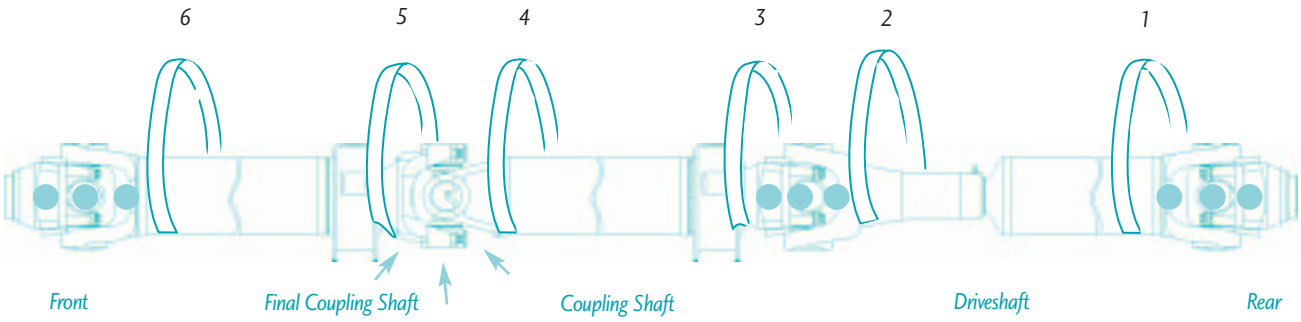

Figure R, Quick Disconnect

SNAP RING STYLE SPICER LIFE SERIES™ 55, 70, 90, AND 100

Caution – Be sure to carefully read all information on page 39 before proceeding.

Note – When working with multiple-piece driveshafts, it may be necessary to remove the entire driveline assembly to reach the effected universal joint. Work from the rear end forward. The driveshaft will need to be disconnected to allow clearance for the removal of any coupling shaft. Work on only one connection at a time. Be sure to properly position support straps.

Note – For more detailed driveshaft assembly removal procedures, see removal of driveshaft assemblies in table of contents.

Mark Driveshaft ("Phasing Marks")

1. It is imperative to mark all mating components of the driveshaft or coupling shaft with the effected universal joint(s). Mark the driveshaft or coupling shaft with a marking stick, paint marker or other legible marking device. In addition, be sure to mark bearing positions. This assures proper reassembly of the driveshaft or coupling shaft into the vehicle, in its original position. ▲ See warning, below.

▲ ***WARNING***

Reassembly of a driveline out of original phase can cause vibration and failure of the driveline and attaching components. Failure of a driveline can result in separation of driveline from the vehicle, which can result in property damage, serious personal injury or death.

Position Support Straps

2. Working on the driveshaft assembly section with the effected universal joint(s), place support straps as illustrated in Figure R, above.

Driveshaft

Be sure to position support straps 1 and 2. ▲ See warning, below.

Coupling Shaft(s)

Be sure to position support straps 2, 3 and 4. ▲ See warning, below.

Final Position Coupling Shaft

Be sure to position support straps 4, 5 and 6. ▲ See warning, below.

▲ ***WARNING***

ALWAYS *use support straps to prevent driveshaft from falling out of vehicle. Failure to use support straps can cause damage to driveshaft or result in property damage, serious personal injury or death.*

Attach support straps to frame rails or some structural part of the vehicle. **DO NOT** attach the support straps to fuel lines, oil lines, brake lines, or wiring. **DO NOT** entangle fuel lines, oil lines, brake lines, or wiring in the support straps. ▲ See warning, below.

▲ *WARNING*

Attaching or entangling support straps to fuel, oil or brake lines or wiring can result in their damage. Damaged fuel, oil or brake lines or wiring can result in failure of the vehicle, which can result in property damage, serious personal injury or death.

For removal of a **driveshaft** with an effected universal joint, follow steps 3-6.

For removal of **coupling shaft(s)** with an effected universal joint, follow steps 3-11.

For removal of **final position coupling shafts** with an effected universal joint, follow steps 3-14.

Disconnect Driveshaft

3. Remove bearing retainers or stamped straps. Discard stamped straps, bearing retainer bolts, stamped strap bolts or companion flange bolts, washers and nuts at the effected universal joint. Reference bolt specifications, Table Y, above right, or hardware specifications Table Z, page 84.

QUICK DISCONNECT™ BOLT SPECIFICATIONS

SERIES	BOLT P/N*	THREAD SIZE	HEAD SIZE	BOLT TORQUE Nm	BOLT TORQUE LB. FT.
SPL55	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD
SPL90	6-73-412	0.375 in. - 24	3/8 in., 12 point	61-81	45-60
SPL100	TBD	TBD	TBD	TBD	TBD
SPL140	12-73-125M	12mm - 1.25	12 mm, 12 point	135-160	100-120
SPL170	12-73-125M	12mm - 1.25	12 mm, 12 point	135-160	100-120
SPL250	12-73-125M	12mm - 1.25	12 mm, 12 point	135-160	100-120

** Bolts are specially heat-treated.*
DO NOT substitute with inferior grade bolts.

Table Y

Bearing retainers **CAN** be reused **if there is no damage**. (See photo 68, below.) If damaged, replace with new. ▲ See warning, below.

Stamped straps (see photo 69, below), bearing retainer bolts, stamped strap bolts or companion flange bolts, washers and nuts **CANNOT** be reused. Discard stamped straps and bolts or companion flange bolts, washers and nuts and replace with new. ▲ See warning, below

Photo 68, Bearing Retainers

Photo 69, Stamped Straps

▲ *WARNING*

DO NOT *reuse bearing retainer or stamped strap bolts, stamped straps, companion flange bolts, washers or nuts or use inferior grade bolts. Reuse of bearing retainer or stamped strap bolts, stamped straps, companion flange bolts, washers or nuts or the use of inferior grade bolts can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

COMPANION FLANGE/FLANGE YOKE STYLE (S.A.E., DIN AND T-TYPE) HARDWARE SPECIFICATIONS

SERIES	BOLT P/N*†	WASHER P/N	NUT P/N	DIAMETER, THREAD & LENGTH UNDER HEAD	BOLT TORQUE Nm	BOLT TORQUE FT. LBS.
SPL55	TBD	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD	TBD
SPL90	6-73-1219	500357-11	231421-3	.375" 24 x 1.188"	54-65	40-48
SPL100	TBD	TBD	TBD	TBD	TBD	TBD
SPL140	6-73-220	500357-11	231421-3	.375" 24 x 1.250"	54-65	40-48
	6-73-1227	500357-11	231421-3	.375" 24 x 1.688"	54-65	40-48
SPL170	7-73-122	500357-12	231421-4	.438" 20 x 1.375"	85-102	63-75
	7-73-228	500357-12	231421-4	.438" 20 x 1.750"	85-102	63-75
SPL250	7-73-122	500357-12	231421-4	.438" 20 x 1.375"	85-102	63-75
	7-73-228	500357-12	231421-4	.438" 20 x 1.750"	85-102	63-75

**Bolts are specially heat-treated. DO NOT substitute inferior grade bolts.*
† Approved Spicer hardware.
***Note**-Original equipment vehicle manufacturers' manuals may have alternate specified bolts or metric hardware. Refer to the original equipment service manual for bolt part numbers.*

Table Z

4. It may be necessary to unseat bearing cup assemblies, pilot or serrated connection by tapping on tube yoke or bearing cup with a soft-faced hammer. Once the bearing cup assemblies or connections are free, collapse the driveshaft until both bearing cup assemblies clear the open yoke cross or flange yoke pilot is disconnected. Allow the driveshaft to rest on support strap.

Remove Driveshaft

5. **Be sure the second support strap is in place as illustrated in Figure R, page 82**. Remove bearing retainers or stamped straps and bolts or companion flange bolts, washers and nuts at the opposite end of the driveshaft. Reference bolt specifications Table Y, page 83, or hardware specifications, Table Z, above. Discard stamped straps and bearing retainer or stamped strap bolts or companion flange bolts, washers and nuts.

Stamped straps, bearing retainer bolts, stamped strap bolts, or companion flange bolts, washers and nuts **CANNOT** be reused. Discard stamped straps and bolts or companion flange bolts, washers and nuts and replace with new. ⏢ See warning, below.

⏢ ***WARNING***

***DO NOT** reuse bearing retainer or stamped strap bolts, stamped straps, damaged bearing retainers, companion flange bolts, washers or nuts or use inferior grade bolts. Reuse of bearing retainer or stamped strap bolts, stamped straps, damaged bearing retainers, companion flange bolts, washers or nuts or the use of inferior grade bolts can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

6. Remove driveshaft from support straps and take it to a work bench area. ▲ See warning, below. If the driveshaft was the section of the driveline assembly with the effected universal joint, proceed to step 15, page 86.

▲ ***WARNING***

Driveshaft assemblies can weigh in excess of 100 pounds (46 kilograms). Make sure to use proper lifting techniques when handling driveshafts. More than one person may be needed when handling driveshaft assemblies.

Disconnect Coupling Shaft(s)

7. **Be sure the third and fourth support straps are in proper position as illustrated in Figure R, page 82.**

8. Remove bearing retainers or stamped straps. Discard stamped straps, bearing retainer bolts, stamped strap bolts or companion flange bolts, washers and nuts at the center bearing end fitting.

Bearing retainers **CAN** be reused **if there is no damage.** If damaged, replace. ▲ See warning, below.

Stamped straps, bearing retainer, stamped strap bolts or companion flange bolts, washers and nuts **CANNOT** be reused. Discard stamped straps and bolts or companion flange bolts, washers and nuts and replace with new. ▲ See warning, below.

▲ ***WARNING***

DO NOT *reuse bearing retainer or stamped strap bolts, stamped straps, damaged bearing retainers, companion flange bolts, washers or nuts or use inferior grade bolts. Reuse of bearing retainer or stamped strap bolts, stamped straps, damaged bearing retainers, companion flange bolts, washers or nuts or the use of inferior grade bolts can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

Remove Coupling Shaft(s)

9. Remove center bearing bracket bolts. Allow shaft to rest on support straps.

10. Remove bearing retainers and bearing retainer bolts or stamped straps and bolts or companion flange bolts, washers and nuts at next center bearing position. Discard all stamped straps, bearing retainer or stamped strap or companion flange bolts, washers, and nuts. ▲ See warning, step 8.

11. It may be necessary to unseat bearing cup assemblies, pilot or serrated connections by tapping on tube yokes or bearing cups with a soft-faced hammer. Once bearing cup assemblies or connections are free, remove coupling shaft from support straps and take it to a work bench area. ▲ See warning, step 6. If the coupling shaft was the section of the driveline assembly with the effected universal joint, proceed to step 15, page 86.

Note – It may be necessary to repeat steps 7-11 in order to access the coupling shaft with the effected universal joint.

Disconnect Final Position Coupling Shaft

12. **Be sure fifth and sixth support straps are in place as illustrated in Figure R, page 82.** Remove final center bearing bracket bolts. Allow shaft to rest on support straps.

Remove Final Coupling Shaft

13. Remove and discard bearing retainers or stamped straps and bolts or companion flange bolts, washers and nuts from front end fitting. ▲ See warning, step 8.

Bearing retainers **CAN** be reused **if there is no damage.** If damaged, replace. ▲ See warning, step 8.

Photo 70

14. It may be necessary to unseat bearing cup assemblies, pilot or serrated connection by tapping on tube yoke or bearing cup with a soft-faced hammer. Once bearing cup assemblies or connection is free, remove final position coupling shaft from support straps and take it to a work bench area. ▲ See warning, below.

▲ ***WARNING***

Driveshaft assemblies can weigh in excess of 100 pounds (46 kilograms). Make sure to use proper lifting techniques when handling driveshafts. More than one person may be needed when handling driveshaft assemblies.

Remove Universal Joint Kit(s)

15. Using snap-ring pliers, remove all snap rings. (See photo 70, above.) If snap rings are severely corroded or out-of-round, snap rings must be replaced. ▲ See warning, below.

▲ ***WARNING***

DO NOT *reuse severely corroded or out-of-round snap rings. Reuse of snap rings can cause universal joint failure and can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

Companion Flange/Flange Yoke Style (S.A.E., DIN and T-Type)

If using an arbor press, proceed to step 16.

Quick Disconnect™ Style

If using an arbor press, proceed to step 20.

If using a universal joint puller, follow manufacturers' instructions.

Companion Flange/Flange Yoke Style (S.A.E., DIN and T-Type) Style

16. To remove flange yoke, place bearing cup spacer onto the base of the arbor press and under flange yoke. If the arbor is larger than the bearing cup diameter, a smaller diameter push rod will be needed to avoid damaging the yoke or bearing.

Using an arbor press, press down on the upper bearing cup assembly until the shoulder of the journal cross makes contact with the inside of flange yoke ear.

Caution – **DO NOT** over press the bearing cup and journal cross. This can damage the inside of the yoke ear.

17. Bearing cup is not designed to drop out of flange yoke. It will be necessary to use a soft-faced hammer to tap the partially pressed-out bearing cup from side to side, to "walk" the bearing cup out of flange yoke ear.

Remove the bearing cup from flange yoke ear and trunnion.

18. Place flange yoke in arbor press with remaining bearing cup face down. Using a push rod, press on end of the journal cross trunnion until the shoulder of the journal cross makes contact with the inside of flange yoke ear. Repeat step 17.

19. Remove flange yoke from journal cross. Continue to Quick Disconnect™ style, step 21, for complete removal of universal joint.

Photo 71, Correct Positioning

Photo 72, Incorrect Positioning

Quick Disconnect™ Style

20. Remove the outboard bearing cup assemblies.

21. Make sure the universal joint cross assembly is not tilted in yoke. (See photos 71, top left, and 72, center left.)

22. Place bearing cup spacer onto the base of the arbor press and under the yoke. If the arbor is larger than the bearing cup diameter, a smaller diameter push rod will be needed to avoid damage to the yoke or bearing.

Using the arbor press, press down on the upper bearing cup assembly until the shoulder of the journal cross makes contact with the inside of the yoke ear. (See photo 73, bottom left.) Bearing cup is not designed to drop out of yoke.

Caution – **DO NOT** over press the bearing cup and journal cross. This can damage the inside of the yoke ear.

23. Grip the bearing cup in bench vice. (See photo 74, below.) Strike the yoke ear with a soft-faced hammer until bearing is removed.

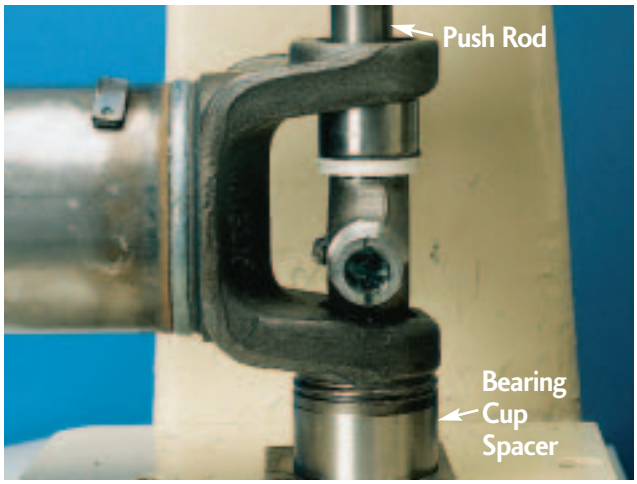

Photo 73

Photo 74

24. Place the yoke in the arbor press with remaining bearing cup face down. Using a push rod, press on the end of journal cross trunnion. (See photo 75, top right.) Continue to press down on journal cross trunnion until the shoulder of the journal cross makes contact with the inside of yoke ear. Bearing cup is not designed to drop out of yoke. Repeat step 23.

25. Remove journal cross from yoke.

Inspect Tube Yoke and Flange Yoke (if applicable)

26. Inspect the tube yoke and flange yoke (if applicable) cross hole surfaces for damaged or raised metal. Raised metal or fretting can be removed from yoke cross holes with a fine-toothed file and/or emery cloth. (See photo 76, right.) ▲ See warning, below.

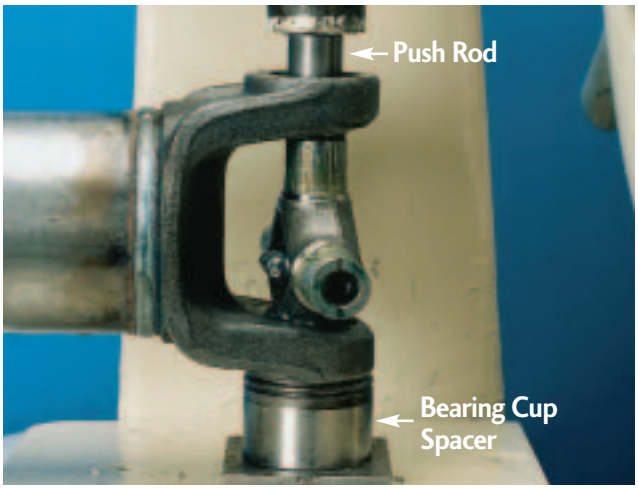

Photo 75

Photo 76

▲ ***WARNING***

DO NOT *deform yoke cross holes by removing excessive metal. Raised metal or deformed yoke cross holes can be a cause of cross and bearing problems and can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.*

27. Inspect the yoke for distorted cross holes using the appropriate Spicer alignment bar. Slide alignment bar through both cross holes simultaneously. If alignment bar will not pass through both cross holes simultaneously, cross holes are distorted and the shaft assembly must be replaced. ▲ See warning, below.

▲ ***WARNING***

Failure to replace a damaged driveline can cause driveline failure, which can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

Install New Universal Joint Kit

28. Proceed to installation of universal joint kits, snap ring style, pages 122 to 127.

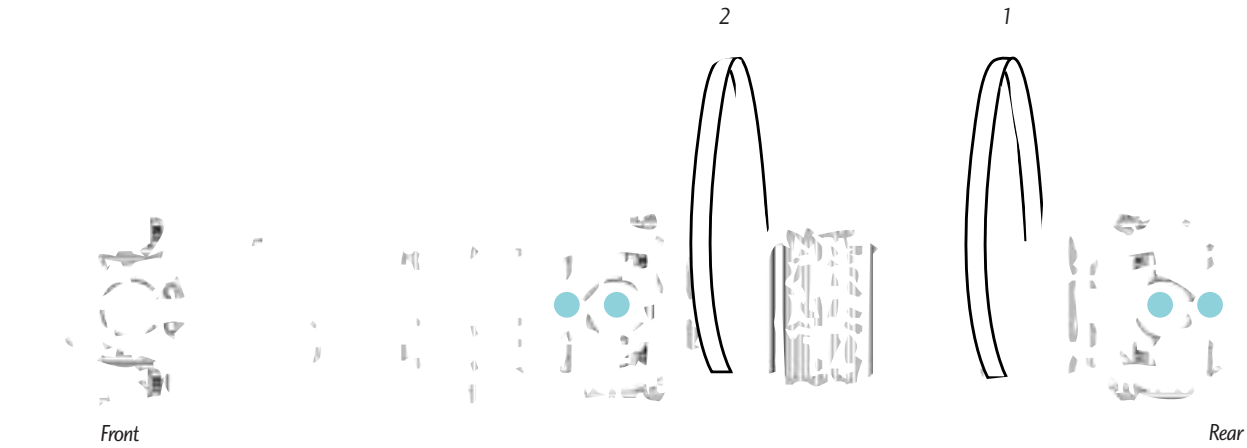

Figure S, Quick Disconnect

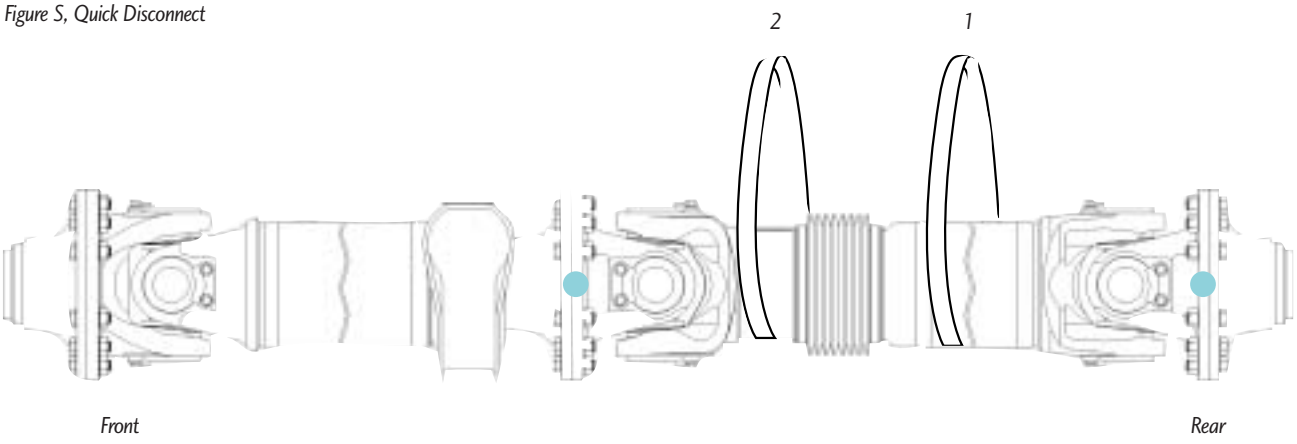

Figure T, S.A.E.

REPLACEMENT PROCEDURE FOR DAMAGED SLIP MEMBER BOOT

SPICER LIFE SERIES™ 55, 70, 100, 140, 170 & 250

Caution – Be sure to carefully read all information on page 39 before proceeding.

Required Tools

- Support Straps
- Ratchet or Air Gun
- 12-Point Sockets
  English 3/8," or
  Metric 12mm
- Soft-Faced Hammer
- Chisel

Caution – Seal can style slip member assemblies are **NOT** serviceable. If seal can or seal is damaged, replacement of the complete driveshaft assembly is necessary. (See Figure U, below.)

Figure U

Mark Driveshaft ("Phasing Marks")

1. It is imperative to mark all mating components of the driveshaft, as illustrated in Figure S or T, above, for the appropriate style driveshaft being serviced. Mark the driveshaft with a marking stick, paint marker or other legible marking device.

For Quick Disconnect™ style, be sure to mark all the bearing positions, spline positions, shaft locations and bearing retainers (if applicable).

For companion flange/flange yoke (S.A.E.) style, be sure to mark all the flange positions, spline positions and shaft locations. This assures proper reassembly of the driveshaft into the vehicle, in its original position. ▲ See warning, below.

▲ ***WARNING***

Reassembly of a driveline out of original phase can cause vibration and failure of the driveline and attaching components. Failure of a driveline can result in separation of driveline from the vehicle, which can result in property damage, serious personal injury or death.

Position Support Straps

2. Working from the **rear**, position support straps 1 and 2 as illustrated in Figure S or T, page 89, for the appropriate style of driveshaft being serviced. ▲ See warning, below.

▲ ***WARNING***

ALWAYS *use support straps to prevent driveshaft from falling out of vehicle. Failure to use support straps can cause damage to driveshaft or result in property damage, serious personal injury or death.*

Attach support straps to frame rails or some structural part of the vehicle. **DO NOT** attach support straps to gas lines, oil lines, brake lines, or wiring. **DO NOT** entangle gas lines, oil lines, brake lines, or wiring in support straps. ▲ See warning, below.

▲ ***WARNING***

Attaching or entangling support straps to fuel, oil or brake lines or wiring can result in their damage. Damaged fuel, oil or brake lines or wiring can result in failure of the vehicle, which can result in property damage, serious personal injury or death.

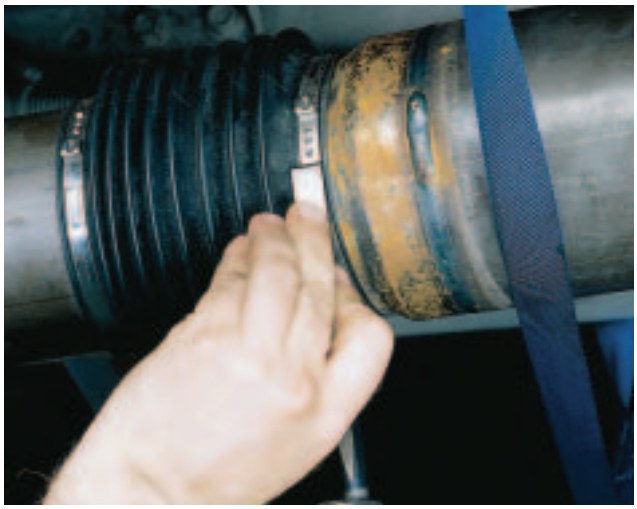

Photo 77

Remove Boot Clamps

3. Remove and discard both boot clamps. Clamps may be separated using a chisel to disengage locking hooks. (See photo 77, above.) **DO NOT reuse clamps**. ▲ See warning, below.

▲ ***WARNING***

Reuse of boot clamps could allow intrusion of contaminants into slip member and can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

Clean and Mark Spline Sleeve and Weld Ring

Caution – The following step is an additional marking process to that described in step one. Be sure to mark as directed.

4. Completely collapse the boot toward the yoke shaft to expose weld ring and spline sleeve area. Wipe weld ring and spline sleeve areas clean.

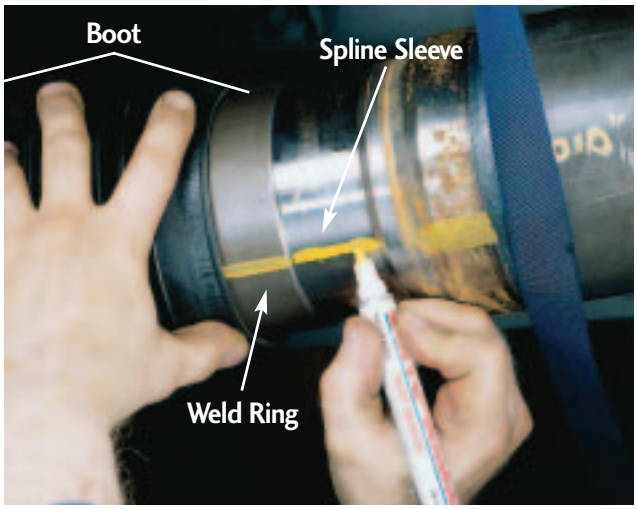

Photo 78

Photo 79

5. Mark spline sleeve and end of weld ring with a marking stick, paint marker or other legible marking device. (See photo 78, above.) This assures that the slip member can be reassembled in its original phased condition. ▲ See warning, below.

▲ ***WARNING***

Reassembly of a driveline out of original phase can cause vibration and failure of the driveline and attaching components. Failure of a driveline can result in separation of driveline from the vehicle, which can result in property damage, serious personal injury or death.

Disconnect Driveshaft

6. For Quick Disconnect™ style, remove bearing retainers and bolts or stamped straps and bolts at center bearing end fitting. Reference bolt specifications, Table AA, right. (See photo 79, top right.) Discard bolts.

QUICK DISCONNECT™ BOLT SPECIFICATIONS

SERIES	BOLT P/N*	THREAD SIZE	HEAD SIZE	BOLT TORQUE Nm	BOLT TORQUE LB. FT.
SPL55	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD
SPL90	6-73-412	0.375 in. - 24	3/8 in., 12 point	61-81	45-60
SPL100	TBD	TBD	TBD	TBD	TBD
SPL140	12-73-125M	12mm - 1.25	12 mm, 12 point	135-160	100-120
SPL170	12-73-125M	12mm - 1.25	12 mm, 12 point	135-160	100-120
SPL250	12-73-125M	12mm - 1.25	12 mm, 12 point	135-160	100-120

** Bolts are specially heat-treated.*
DO NOT substitute with inferior grade bolts.

Table AA

Bearing retainers **CAN** be reused **if there is no damage**. If damaged, replace. Stamped straps **CANNOT** be reused. **DO NOT** reuse the bolts. Discard bolts. ▲ See warning, below.

▲ ***WARNING***

DO NOT *reuse bearing retainer bolts, damaged bearing retainers, stamped straps or stamped strap bolts or use inferior grade bolts. Reuse of bearing retainer bolts, damaged bearing retainers, stamped straps or stamped strap bolts or the use of inferior grade bolts can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

COMPANION FLANGE/FLANGE YOKE STYLE (S.A.E., DIN AND T-TYPE) HARDWARE SPECIFICATIONS

SERIES	BOLT P/N*†	WASHER P/N	NUT P/N	DIAMETER, THREAD & LENGTH UNDER HEAD	BOLT TORQUE Nm	BOLT TORQUE FT. LBS.
SPL55	TBD	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD	TBD
SPL90	6-73-1219	500357-11	231421-3	.375" 24 x 1.188"	54-65	40-48
SPL100	TBD	TBD	TBD	TBD	TBD	TBD
SPL140	6-73-220	500357-11	231421-3	.375" 24 x 1.250"	54-65	40-48
	6-73-1227	500357-11	231421-3	.375" 24 x 1.688"	54-65	40-48
SPL170	7-73-122	500357-12	231421-4	.438" 20 x 1.375"	85-102	63-75
	7-73-228	500357-12	231421-4	.438" 20 x 1.750"	85-102	63-75
SPL250	7-73-122	500357-12	231421-4	.438" 20 x 1.375"	85-102	63-75
	7-73-228	500357-12	231421-4	.438" 20 x 1.750"	85-102	63-75

**Bolts are specially heat-treated. DO NOT substitute inferior grade bolts.*
† Approved Spicer hardware.
Note-*Original equipment vehicle manufacturers' manuals may have alternate specified bolts or metric hardware. Refer to the original equipment service manual for bolt part numbers.*

Table BB

For companion flange/flange yoke (S.A.E.) style, remove and discard flange bolts, washers and nuts. Reference bolt specifications, Table BB, above. See warning, below.

WARNING

DO NOT *reuse flange bolts, washers or nuts or use inferior grade bolts. Reuse of flange bolts, washers and nuts or the use of inferior grade bolts can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

7. For Quick Disconnect™ style, it may be necessary to unseat bearing cup assemblies by tapping on one bearing cup with a soft-faced hammer. Once the bearing cup assemblies are free, collapse the driveshaft until both bearing assemblies clear the open yoke cross holes. Allow the driveshaft to rest on support straps. See warning, below.

For companion flange/flange yoke (S.A.E.) style, it may be necessary to unseat pilot or serrated connection by tapping on one side of the flange with a soft-faced hammer. Allow the driveshaft to rest on support straps. See warning, below.

WARNING

Driveshaft assemblies can weigh in excess of 100 pounds (46 kilograms). Make sure to use proper lifting techniques when handling driveshafts. More than one person may be needed when handling driveshaft assemblies.

Photo 80

Remove Slip Member Boot

8. Remove the yoke shaft and boot from the spline sleeve. Discard boot. (See photo 80, above.) ▲ See warning, below.

▲ ***WARNING***

Yoke shaft assemblies can weigh in excess of 50 pounds (23 kilograms). Make sure to use proper lifting techniques when handling yoke shafts.

Inspect Yoke Shaft and Spline Sleeve

9. Inspect the yoke shaft spline surface for damage. If the splines are damaged, missing or twisted, or any Glidecote® is missing, complete driveshaft replacement is necessary. ▲ See warning, below.

▲ ***WARNING***

Failure to replace damaged driveline components can cause driveline failure, which can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

10. Inspect the spline sleeve for damage. If the splines are damaged, missing or twisted, complete driveshaft replacement is necessary. ▲ See warning, step 9.

11. Inspect the entire slip assembly for contaminants. If the slip assembly shows evidence of rust or the lube is severely contaminated, complete driveshaft replacement is necessary. ▲ See warning, step 9.

Reassemble Slip Member Boot

12. Proceed to installation of slip member boot, pages 133 to 135.

REMOVAL PROCEDURE FOR CENTER BEARINGS

SPICER LIFE SERIES™ 55, 70, 90, 100, 140, 170 & 250

Caution – Be sure to carefully read all information on page 39 before proceeding.

Required Tools

- Support Straps
- Bearing Puller
- Flange or Yoke Puller
- 6-Point Socket for Midship Nut
- 12-Point Sockets
  English 3/8", or
  Metric 12mm
- Spicer Alignment Bar (see photo 81 or 82, top right and right)

Photo 81, Spicer Alignment Bar Kit, Quick Disconnect Style

Photo 82, Spicer Alignment Bar, Companion Flange/Flange Yoke Style

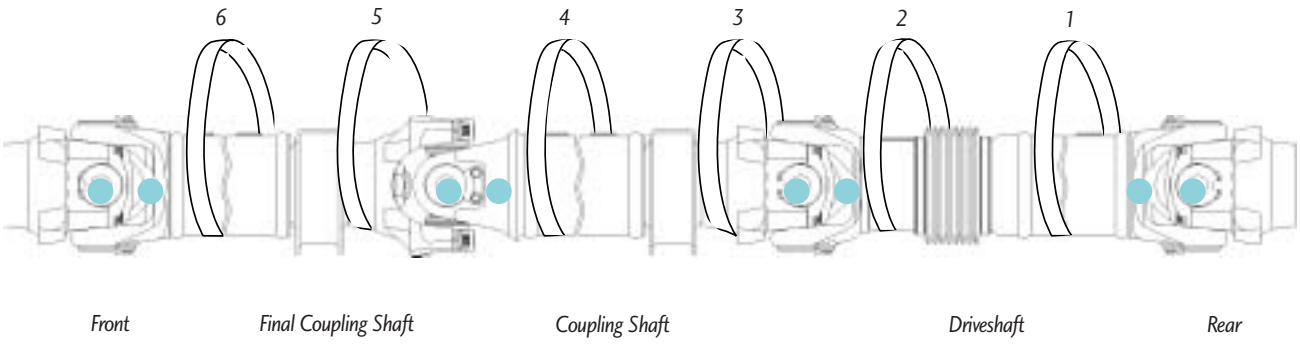

Figure V, Quick Disconnect™

QUICK DISCONNECT™ YOKE STYLE

Caution – Be sure to carefully read all information on page 39 before proceeding.

Note – When working with multiple-piece driveshafts, it may be necessary to remove the entire driveline assembly. Work from the rear end forward. The driveshaft will need to be disconnected to allow clearance for the removal of any coupling shaft. Work on only one connection at a time. Be sure to properly position support straps.

Mark Driveshaft ("Phasing Marks")

1. It is imperative to mark all mating components of the driveshaft, as illustrated in Figure V, above. Mark the driveshaft with a marking stick, paint marker or other legible marking device. In addition, be sure to mark all bearing positions, spline positions, shaft locations and all bearing retainers. This assures proper reassembly of the driveshaft into the vehicle, in its original position. ▲ See warning, below.

▲ ***WARNING***

Reassembly of a driveline out of original phase can cause vibration and failure of the driveline and attaching components. Failure of a driveline can result in separation of driveline from the vehicle, which can result in property damage, serious personal injury or death.

Position Support Straps

2. Working from the **rear** end forward, position support straps 1 through 6 (as needed) as illustrated in Figure V, above. ▲ See warning, below.

▲ ***WARNING***

***ALWAYS** use support straps to prevent driveshaft from falling out of vehicle. Failure to use support straps can cause damage to driveshaft or result in property damage, serious personal injury or death.*

Attach support straps to frame rails or some structural part of the vehicle. **DO NOT** attach support straps to gas lines, oil lines, brake lines, or wiring. **DO NOT** entangle gas lines, oil lines, brake lines, or wiring in support straps. ▲ See warning, below.

▲ ***WARNING***

Attaching or entangling support straps to fuel, oil or brake lines or wiring can result in their damage. Damaged fuel, oil or brake lines or wiring can result in failure of the vehicle, which can result in property damage, serious personal injury or death.

QUICK DISCONNECT™ BOLT SPECIFICATIONS

SERIES	BOLT P/N*	THREAD SIZE	HEAD SIZE	BOLT TORQUE Nm	BOLT TORQUE LB. FT.
SPL55	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD
SPL90	6-73-412	0.375 in. - 24	3/8 in., 12 point	61-81	45-60
SPL100	TBD	TBD	TBD	TBD	TBD
SPL140	12-73-125M	12mm - 1.25	12 mm, 12 point	135-160	100-120
SPL170	12-73-125M	12mm - 1.25	12 mm, 12 point	135-160	100-120
SPL250	12-73-125M	12mm - 1.25	12 mm, 12 point	135-160	100-120

** Bolts are specially heat-treated.*
DO NOT substitute with inferior grade bolts.

Table CC

Photo 83

Disconnect Driveshaft

3. With all support straps securely in place, disconnect the driveshaft from the coupling shaft by removing the bearing retainers and bolts or stamped straps and bolts. Reference bolt specifications, Table CC, above. If bearing retainers are not damaged, they can be reused. Stamped straps **CANNOT** be reused. **DO NOT** reuse the bolts. Discard bolts. ▲ See warning, below.

▲ ***WARNING***

DO NOT *reuse bearing retainer bolts or damaged bearing retainers, stamped straps or stamped strap bolts, or use inferior grade bolts. Reuse of bearing retainer bolts or damaged bearing retainers, stamped straps or stamped strap bolts, or use of inferior grade bolts can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

4. It may be necessary to unseat bearing cup assemblies by tapping on yoke or bearing cup with a soft-faced hammer. Once the bearing cup assemblies are free, collapse the driveshaft until both bearing assemblies clear the open yoke cross holes. Allow driveshaft to rest on support strap.

If disconnecting the driveshaft has allowed access to the effected center bearing, proceed to step 9. **DO NOT** at this point remove coupling shaft with the effected center bearing from the vehicle.

If the effected center bearing has not been reached, proceed to step 5 to remove coupling shaft(s) to reach coupling shaft with effected center bearing.

Remove Coupling Shaft(s)

5. **Be sure the third support strap is in place as illustrated in Figure V, page 95.** Remove the center bearing bracket bolts and allow the shaft to rest on the support strap. (See photo 83, above.)

6. **Be sure the fourth support strap is in place as illustrated in Figure V, page 95.** Remove bearing retainers or stamped straps and bolts on end yoke. Reference bolt specifications Table CC, left. Discard bolts. Discard stamped straps (if applicable). ▲ See warning, step 3.

7. It may be necessary to unseat bearing cup assemblies by tapping on yoke or bearing cup with a soft-faced hammer. Once coupling shaft is free, remove coupling shaft from support straps and take to a work bench area. ▲ See warning, below.

▲ ***WARNING***

Driveshaft assemblies can weigh in excess of 100 pounds (46 kilograms). Make sure to use proper lifting techniques when handling driveshafts. More than one person may be needed when handling driveshaft assemblies.

8. Repeat steps 5-7 as necessary to obtain access to the effected center bearing. **DO NOT** at this point remove coupling shaft with the effected center bearing from the vehicle.

Inspect Center Bearing End Yoke

9. Inspect the center bearing end yoke cross hole surfaces and bolt hole threads for damage. If the bolt hole threads are damaged, the yoke must be replaced. ▲ See warning, below.

▲ ***WARNING***

Failure to replace damaged driveline components can cause driveline failure, which can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

10. Check the center bearing end yoke for looseness, back-lash and broken back. Take hold of center bearing end yoke with both hands. Try to move it vertically and horizontally to feel any looseness. There should **NOT** be any movement in the center bearing end yoke relative to the midship tube shaft to which it is connected. If any of these conditions are present, the center bearing end yoke or midship tube shaft must be replaced. ▲ See warning, below.

▲ ***WARNING***

A loose end fitting can result in driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

11. Inspect the center bearing end yoke cross hole surfaces for damage or raised metal. Raised metal or fretting can be removed from yoke cross holes with a fine-toothed file and/or emery cloth. ▲ See warning, below.

▲ ***WARNING***

***DO NOT** deform yoke cross holes by removing excessive metal. Raised metal or deformed yoke cross holes can be a cause of cross and bearing failure, which can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.*

12. Inspect the center bearing end yoke for distorted cross holes using the appropriate Spicer alignment bar. Slide alignment bar through both cross holes simultaneously. If alignment bar will not pass through both cross holes simultaneously, cross holes are distorted and yoke must be replaced. ▲ See warning, step 9.

Note – If effected center bearing was in the final coupling shaft, repeat same inspection steps on front end yoke prior to reinstallation of final coupling shaft into vehicle.

MIDSHIP NUT SPECIFICATIONS					
SERIES	NUT P/N	WASHER P/N	HEAD SIZE	NUT TORQUE Nm	LB. FT.
SPL55	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD
SPL90	231502	N/A	1 5/8"	644-712	475-525 Lb.Ft.
SPL100	TBD	TBD	TBD	TBD	TBD
SPL140	250-74-11	230123-6	41mm*	644-712	475-525 Lb.Ft.
SPL170	250-74-11	230123-6	41mm*	644-712	475-525 Lb.Ft.
SPL250	250-74-11	230123-6	41mm*	644-712	475-525 Lb.Ft.

** A 1 5/8" socket may be used.*

Table DD

Remove Midship Nut on Center Bearing Yoke

13. Remove midship nut. Reference midship nut specifications Table DD, above. (See photo 84, below.) Discard nut. If washer is damaged, discard and replace. Otherwise, reuse washer. See warning, below.

WARNING

DO NOT *reuse midship nut. Reuse of midship nut can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

Photo 84

Photo 85

Mark Center Bearing End Yoke Counterbore

Caution – The following step is an additional marking process to that described in step one. Be sure to mark as directed.

14. Mark the counterbore of end yoke to midship "nose" with marking stick, paint marker or other legible marking device. This assures proper reassembly of the center bearing end yoke in its original phased position. (See photo 85, above.) See warning, below.

WARNING

Reassembly of a driveline out of original phase can cause vibration and failure of the driveline and attaching components. Failure of a driveline can result in separation of driveline from the vehicle, which can result in property damage, serious personal injury or death.

Disconnect Coupling Shaft With Effected Center Bearing

15. Remove center bearing bracket bolts. (See photo 86, page 99.) Allow coupling shaft to rest on support strap.

Remove Coupling Shaft With Effected Center Bearing

16. Remove bearing retainers or stamped straps and bolts from end yoke. Discard bolts and stamped straps. ▲ See warning, below.

▲ ***WARNING***

DO NOT *reuse bearing retainer bolts, stamped straps, stamped strap bolts, damaged bearing retainers or use inferior grade bolts. Reuse of bearing retainer bolts, stamped straps, stamped strap bolts, damaged bearing retainers or the use of inferior grade bolts can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

17. It may be necessary to unseat bearing cup assemblies by tapping on yoke or bearing cup with a soft-faced hammer. Once the coupling shaft is free, remove from support straps and take it to a work bench area. ▲ See warning, below.

▲ ***WARNING***

Driveshaft assemblies can weigh in excess of 100 pounds (46 kilograms). Make sure to use proper lifting techniques when handling driveshafts. More than one person may be needed when handling driveshaft assemblies.

Remove Center Bearing End Yoke

18. Using a puller, follow the tool manufacturer's instructions to remove the Quick Disconnect™ yoke. (See photo 87, center right.) The yoke has a press fit and should **NOT** be removed with a hammer. If the yoke is loose enough to be removed by hand, the entire coupling shaft must be replaced. Remove and discard slinger from the yoke. ▲ See warning, below.

▲ ***WARNING***

Failure to replace damaged driveline components can cause driveline failure, which can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

Photo 86

Photo 87

Inspect Center Bearing End Yoke Splines

19. Visually inspect the splines of the center bearing end yoke. If the yoke splines are damaged, missing or twisted, the yoke must be replaced. If the yoke hub is cracked, the yoke must be replaced ▲ See warning, step 18.

Inspect Midship

20. Visually inspect the midship splines and threads. If the splines or threads are damaged, missing or twisted, replacement of the entire coupling shaft is necessary. ▲ See warning, step 18.

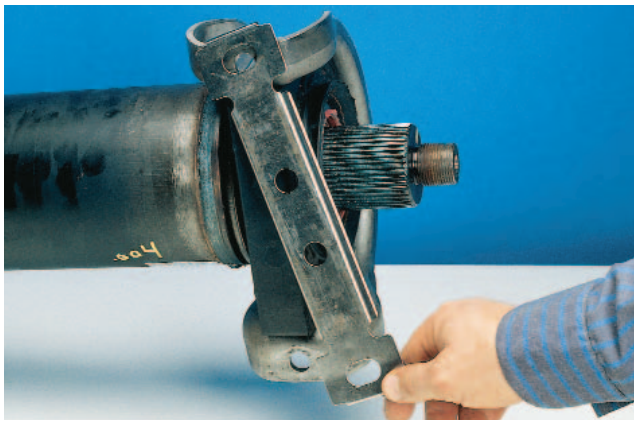

Photo 88

Remove Center Bearing

21. On some Spicer center bearing assemblies, a metal retainer spans the outside center bearing bracket. If present, remove metal retainer and discard. (See photo 88, above.)

22. Remove and discard center bearing bracket. (See photo 89, top right.) Remove and discard rubber cushion. (See photo 90, right.)

23. Using a puller, follow the tool manufacturer's instructions to remove the bearing assembly from the midship. (See photo 91, right.) Discard the center bearing.

Inspect Midship Bearing Diameter

24. Inspect midship for wear on the bearing diameter. If the midship is damaged from a seized bearing, replacement of the entire coupling shaft is necessary. (See photo 92, right.) ▲ See warning, below.

▲ ***WARNING***

Failure to replace damaged driveline components can cause driveline failure, which can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

25. If no damage is apparent, remove slinger and proceed to installation of center bearing, Quick Disconnect™ Yoke Style, pages 128 to 132.

Photo 89

Photo 90

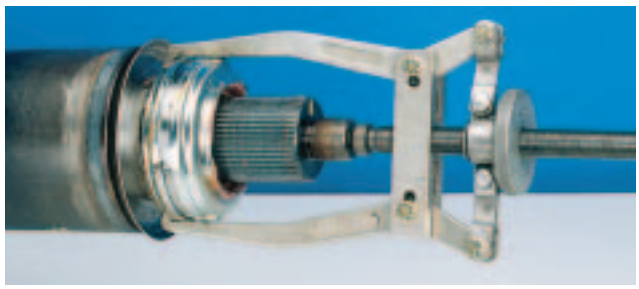

Photo 91

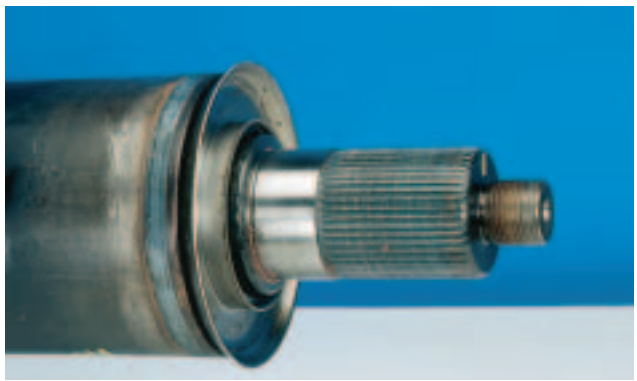

Photo 92

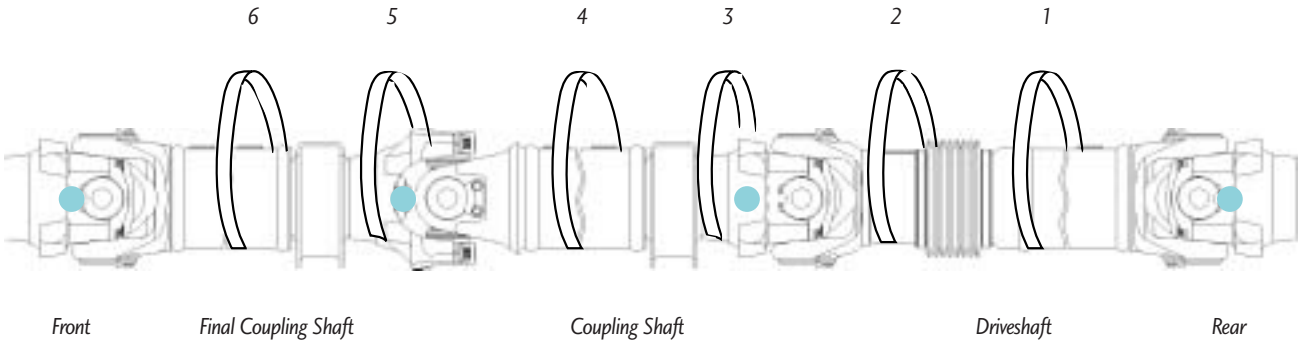

Figure W, S.A.E.

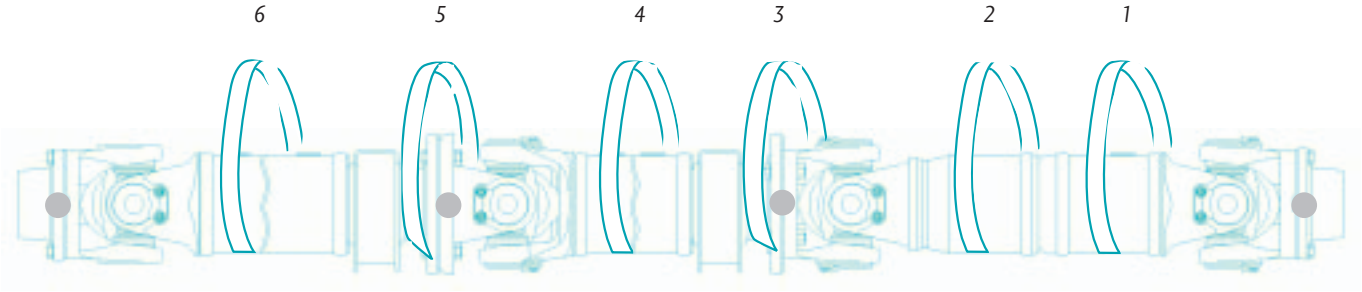

Figure X, DIN and T-Type

COMPANION FLANGE/FLANGE YOKE (S.A.E., DIN AND T-TYPE STYLE)

Caution – Be sure to carefully read all information on page 39 before proceeding.

Note – When working with multiple-piece driveshafts, it may be necessary to remove the entire driveline assembly. Work from the **rear** end forward. The driveshaft will need to be disconnected in order to allow clearance for the removal of any coupling shaft. Work on only one connection at a time. Be sure to properly position support straps.

Mark Driveshaft ("Phasing Marks")

1. It is imperative to mark all mating components of the driveshaft, as illustrated in Figure W or X, above. Mark the driveshaft with a marking stick, paint marker or other legible marking device. In addition, be sure to mark all flange positions, spline positions, and shaft locations. This assures proper reassembly of the driveshaft into the vehicle, in its original position. ▲ See warning, below.

▲ ***WARNING***

Reassembly of a driveline out of original phase can cause vibration and failure of the driveline and attaching components. Failure of a driveline can result in separation of driveline from the vehicle, which can result in property damage, serious personal injury or death.

Position Support Straps

2. Working from the **rear** end forward, position support straps 1 through 6 (as needed) as illustrated in Figure W or X, above. ▲ See warning, below.

▲ ***WARNING***

ALWAYS *use support straps to prevent driveshaft from falling out of vehicle. Failure to use support straps can cause damage to driveshaft or result in property damage, serious personal injury or death.*

COMPANION FLANGE/FLANGE YOKE STYLE (S.A.E., DIN AND T-TYPE) HARDWARE SPECIFICATIONS

SERIES	BOLT P/N*†	WASHER P/N	NUT P/N	DIAMETER, THREAD & LENGTH UNDER HEAD	BOLT TORQUE Nm	BOLT TORQUE FT. LBS.
SPL55	TBD	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD	TBD
SPL90	6-73-1219	500357-11	231421-3	.375" 24 x 1.188"	54-65	40-48
SPL100	TBD	TBD	TBD	TBD	TBD	TBD
SPL140	6-73-220	500357-11	231421-3	.375" 24 x 1.250"	54-65	40-48
	6-73-1227	500357-11	231421-3	.375" 24 x 1.688"	54-65	40-48
SPL170	7-73-122	500357-12	231421-4	.438" 20 x 1.375"	85-102	63-75
	7-73-228	500357-12	231421-4	.438" 20 x 1.750"	85-102	63-75
SPL250	7-73-122	500357-12	231421-4	.438" 20 x 1.375"	85-102	63-75
	7-73-228	500357-12	231421-4	.438" 20 x 1.750"	85-102	63-75

**Bolts are specially heat-treated. DO NOT substitute inferior grade bolts.*
† Approved Spicer hardware.
***Note**-Original equipment vehicle manufacturers' manuals may have alternate specified bolts or metric hardware. Refer to the original equipment service manual for bolt part numbers.*

Table EE

Attach support straps to frame rails or some structural part of the vehicle. **DO NOT** attach support straps to gas lines, oil lines, brake lines, or wiring. **DO NOT** entangle gas lines, oil lines, brake lines, or wiring in support straps. See warning, below.

WARNING

Attaching or entangling support straps to fuel, oil or brake lines or wiring can result in their damage. Damaged fuel, oil or brake lines or wiring can result in failure of the vehicle, which can result in property damage, serious personal injury or death.

Disconnect Driveshaft

3. With support straps securely in place, disconnect the driveshaft from the coupling shaft by removing the companion flange bolts. Reference hardware specifications, Table EE, above. **DO NOT** reuse companion flange bolts, washers or nuts. See warning, top right. Allow driveshaft to rest on the support straps.

WARNING

***DO NOT** reuse companion flange bolts, washers or nuts or use inferior grade bolts. Reuse of companion flange bolts, washers or nuts or the use of inferior grade bolts can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

4. It may be necessary to unseat pilot or serrated connection by tapping on one side of the flange with a soft-faced hammer. Once the connection is free, collapse the driveshaft and allow it to rest on support strap.

If disconnecting the driveshaft has allowed access to the effected center bearing, proceed to step 9. **DO NOT** at this point remove coupling shaft with the effected center bearing from the vehicle.

If the effected center bearing has not been reached, proceed to step 5 to remove coupling shaft(s) to reach coupling shaft with effected center bearing.

Photo 93

Disconnect Coupling Shaft

5. **Be sure the third support strap is in place as illustrated in Figure W or X, page 101.** Remove the center bearing bracket bolts and allow the shaft to rest on the support strap. (See photo 93, above.)

Remove Coupling Shaft

6. **Be sure the fourth support strap is in place as illustrated in Figure W or X, page 101.** Remove companion flange, bolts, washers and nuts. Reference hardware specifications, Table EE, page 102. Discard companion flange bolts, washers and nuts. ▲ See warning, below.

▲ ***WARNING***

DO NOT *reuse companion flange bolts, washers or nuts, or use inferior grade bolts. Reuse of companion flange bolts, washers or nuts, or the use of inferior grade bolts can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

7. It may be necessary to unseat pilot or serrated connection by tapping on one side of the flange with a soft-faced hammer. Once coupling shaft is free, remove the coupling shaft from support straps and take to a work bench area. ▲ See warning, below.

▲ ***WARNING***

Driveshaft assemblies can weigh in excess of 100 pounds (46 kilograms). Make sure to use proper lifting techniques when handling driveshafts. More than one person may be needed when handling driveshaft assemblies.

8. Repeat steps 5-7 as necessary to obtain access to the effected center bearing. **DO NOT** at this point remove coupling shaft, with the effected center bearing, from the vehicle.

Inspect Center Bearing Flange

9. Inspect all flange faces for galling or damage. If damaged, the flange must be replaced. ▲ See warning, step 10.

10. Visually inspect the center bearing flange. Check the flange for looseness, backlash and broken back. Take hold of center bearing flange with both hands. Try to move it vertically and horizontally to feel any looseness. There should **NOT** be any movement. If any of these conditions are present, the entire shaft must be replaced. ▲ See warning, below.

▲ ***WARNING***

Failure to replace damaged driveline components can cause driveline failure, which can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

Note – If effected center bearing was in the final coupling shaft, repeat the same inspection steps on front flange prior to reinstallation of final coupling shaft into vehicle.

MIDSHIP NUT SPECIFICATIONS					
SERIES	NUT P/N	WASHER P/N	HEAD SIZE	NUT TORQUE Nm	NUT TORQUE LB. FT.
SPL55	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD
SPL90	231502	N/A	1 5/8"	644-712	475-525 Lb.Ft.
SPL100	TBD	TBD	TBD	TBD	TBD
SPL140	250-74-11	230123-6	41mm*	644-712	475-525 Lb.Ft.
SPL170	250-74-11	230123-6	41mm*	644-712	475-525 Lb.Ft.
SPL250	250-74-11	230123-6	41mm*	644-712	475-525 Lb.Ft.

** A 1 5/8" socket may be used.*

Table FF

Remove Midship Nut on Center Bearing Flange

11. Remove and discard midship nut. Reference midship nut specifications, Table FF, above. If washer is damaged, discard and replace. Otherwise, reuse washer. See warning, below.

WARNING

DO NOT *reuse midship nut. Reuse of midship nut can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

Mark Center Bearing Flange Counterbore

Caution – The following step is an additional marking process to that described in step 1. Be sure to mark as directed.

12. Mark the counterbore of the companion flange to midship "nose" with a marking stick, paint marker or other legible marking device. This assures proper reassembly of the companion flange in its original phased position. See warning, below.

WARNING

Reassembly of a driveline out of original phase can cause vibration and failure of the driveline and attaching components. Failure of a driveline can result in separation of driveline from the vehicle, which can result in property damage, serious personal injury or death.

Disconnect Coupling Shaft With Effected Center Bearing

13. Remove center bearing bracket bolts and allow shaft to rest on support strap.

Remove Coupling Shaft With Effected Center Bearing

14. Remove and discard flange bolts, washers and nuts at end fitting. See warning, below.

WARNING

DO NOT *reuse flange bolts, washers or nuts or use inferior grade bolts. Reuse of flange bolts, washers or nuts or the use of inferior grade bolts can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

15. It may be necessary to unseat pilot or serrated connection by tapping on one side of the flange with a soft-faced hammer. Once the connection is free, remove coupling shaft from support straps and take it to a work bench area. See warning, below.

WARNING

Driveshaft assemblies can weigh in excess of 100 pounds (46 kilograms). Make sure to use proper lifting techniques when handling driveshafts. More than one person may be needed when handling driveshaft assemblies.

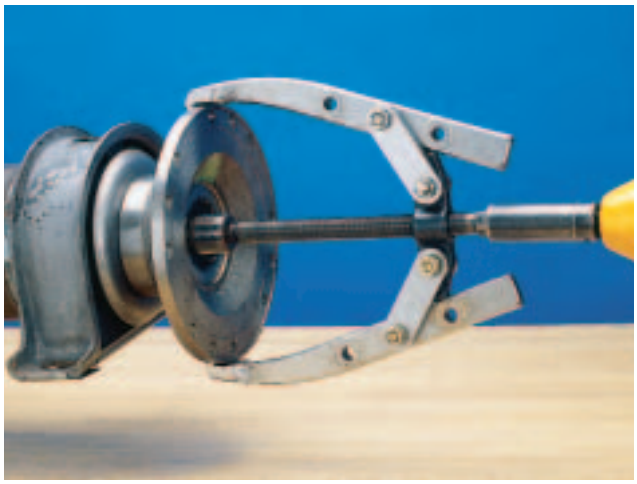

Photo 94

Photo 95

Remove Center Bearing Companion Flange

16. Using a puller, follow the tool manufacturer's instructions to remove the center bearing companion flange. (See photo 94, above.) Flange has a press fit and should **NOT** be removed with a hammer. If flange is loose enough to be removed by hand, the entire coupling shaft should be replaced. ▲ See warning, below. Remove and discard the slinger from the flange.

▲ ***WARNING***

Failure to replace damaged driveline components can cause driveline failure, which can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

Inspect Center Bearing Flange

17. Visually inspect the center bearing companion flange splines and bolt hole threads or through holes. If the splines are damaged, missing or twisted, the entire coupling shaft should be replaced. If the center bearing flange hub is cracked, the pilots have damage or burrs, or bolt hole threads or through holes are damaged, replace the center bearing flange. ▲ See warning, step 16.

Inspect Midship

18. Visually inspect the midship splines and threads. If splines or threads are damaged, missing or twisted, replacement of the entire coupling shaft is necessary. ▲ See warning, below.

▲ ***WARNING***

Failure to replace damaged driveline components can cause driveline failure, which can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

Remove Center Bearing

19. On some Spicer center bearing assemblies, a metal retainer spans the outside center bearing bracket. If present, remove the metal retainer and discard. (See photo 95, above.)

Photo 96

Photo 97

Remove and discard the center bearing bracket. (See photo 96, above.) Remove and discard the rubber cushion. (See photo 97, top right.)

20. Using a puller, follow the tool manufacturer's instructions to remove the bearing assembly from the midship. (See photo 98, center right.) Discard the center bearing.

Inspect Midship Bearing Diameter

21. Inspect midship for wear on bearing diameter. If midship is damaged from a seized bearing, replacement of entire coupling shaft is necessary. (See photo 99, bottom right.) ▲ See warning, below.

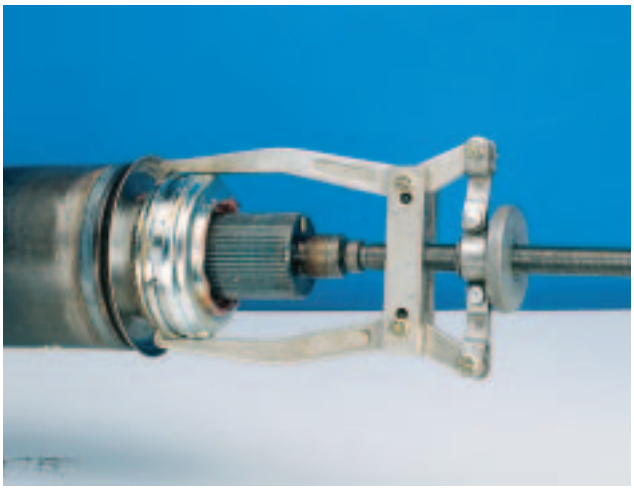

Photo 98

▲ ***WARNING***

Failure to replace damaged driveline components can cause driveline failure, which can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

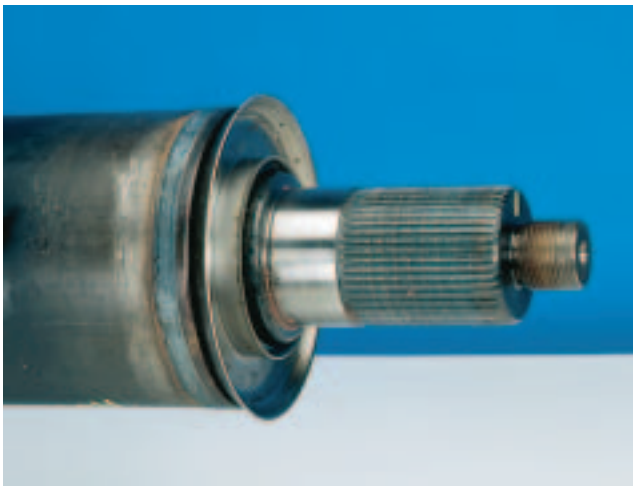

Photo 99

22. If no damage is apparent, remove slinger and discard. Proceed to installation of center bearing companion flange/flange yoke (S.A.E., DIN and T-Type) style, pages 128 to 132.

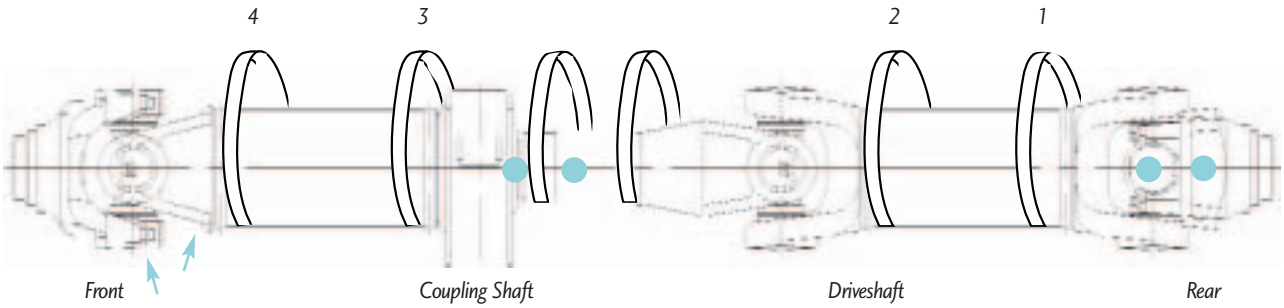

Figure Y, Quick Disconnect

OUTBOARD SLIP STYLE SPICER LIFE SERIES 55, 70, 90 & 100

Caution – Be sure to carefully read all information on page 39 before proceeding.

Note – When working with multiple-piece driveshafts, it may be necessary to remove the entire driveline assembly. Work from **rear** end forward. The driveshaft will need to be disconnected **first** in order to allow clearance for the removal of any coupling shaft. Work on only one connection at a time. Be sure to properly position support straps.

Mark Driveshaft ("Phasing Marks")

1. It is imperative to mark all mating components of a driveshaft, as illustrated in Figure Y above. Mark driveshaft with a marking stick, paint marker or other legible marking device.

Quick Disconnect™ Style

Be sure to mark all bearing positions, spline positions, shaft locations, bearing retainers (if applicable) and stamped straps.

Companion Flange/Flange Yoke (S.A.E., DIN and T-Type) Style

Be sure to mark all flange positions, spline positions and shaft locations.

This assures proper reassembly of the driveshaft into the vehicle, in its original position. ▲ See warning, below.

▲ ***WARNING***

Reassembly of a driveline out of original phase can cause vibration and failure of the driveline and attaching components. Failure of a driveline can result in separation of driveline from the vehicle, which can result in property damage, serious personal injury or death.

Position Support Straps

2. Working from the **rear** end forward, position support straps 1 through 4 (as needed) as illustrated in Figure Y, above. ▲ See warning, below.

▲ ***WARNING***

***ALWAYS** use support straps to prevent driveshaft from falling out of vehicle. Failure to use support straps can cause damage to driveshaft or result in property damage, serious personal injury or death.*

Attach support straps to frame rails or some structural part of the vehicle. **DO NOT** attach support strap to gas lines, oil lines, brake lines, or wiring. **DO NOT** entangle gas lines, oil lines, brake lines, or wiring in support strap. ▲ See warning, below.

▲ ***WARNING***

Attaching or entangling support straps to fuel, oil or brake lines or wiring can result in their damage. Damaged fuel, oil or brake lines or wiring can result in failure of the vehicle, which can result in property damage, serious personal injury or death.

Quick Disconnect™ Style

Proceed to step 3.

Companion Flange/Flange Yoke Style (S.A.E., DIN and T-Type) Style Proceed to step 10.

QUICK DISCONNECT™ BOLT SPECIFICATIONS

SERIES	BOLT P/N*	THREAD SIZE	HEAD SIZE	BOLT TORQUE Nm	BOLT TORQUE LB. FT.
SPL55	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD
SPL90	6-73-412	0.375 in. - 24	3/8 in., 12 point	61-81	45-60
SPL100	TBD	TBD	TBD	TBD	TBD
SPL140	12-73-125M	12mm - 1.25	12 mm, 12 point	135-160	100-120
SPL170	12-73-125M	12mm - 1.25	12 mm, 12 point	135-160	100-120
SPL250	12-73-125M	12mm - 1.25	12 mm, 12 point	135-160	100-120

** Bolts are specially heat-treated.*
DO NOT substitute with inferior grade bolts.

Table GG

Disconnect Driveshaft Quick Disconnect™ Style

3. With support straps securely in place, remove bearing retainers or stamped straps and bolts at **rear** end. Reference bolt specifications, Table GG, above. If bearing retainers are not damaged, they can be reused. **DO NOT** reuse stamped straps or any bolts. ▲ See warning, below.

▲ ***WARNING***

DO NOT *reuse bearing retainer or stamped strap bolts, stamped straps, damaged bearing retainers or use inferior grade bolts. Reuse of bearing retainer or stamped strap bolts, stamped straps, damaged bearing retainers or use of inferior grade bolts can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

4. It may be necessary to unseat bearing cup assemblies by tapping on yoke or bearing cup with a soft-faced hammer. Once the bearing cup assemblies are free, collapse the driveshaft until both bearing assemblies clear the open yoke cross holes. Allow driveshaft to rest on support strap.

Remove Driveshaft

5. Slide driveshaft off of outboard midship tube shaft at slip yoke. Remove driveshaft from vehicle and take to work bench area. ▲ See warning, below.

▲ ***WARNING***

Driveshaft assemblies can weigh in excess of 100 pounds *(46 kilograms)*. Make sure to use proper lifting techniques when handling driveshafts. More than one person may be needed when handling driveshaft assemblies.

If disconnecting the driveshaft has allowed access to the effected center bearing, proceed to step 17.

If the effected center bearing has not been reached, proceed to step 6 to remove coupling shaft(s).

Disconnect Coupling Shaft

6. **Be sure the third support strap is in place as illustrated in Figure Y, page 107.** Remove the center bearing bracket bolts and allow the shaft to rest on the support strap.

Remove Coupling Shaft

7. **Be sure the fourth support strap is in place as illustrated in Figure Y, page 107.** Remove bearing retainers or stamped straps and bolts on end yoke. Reference bolt specifications, Table GG, top left. Discard bolts. Discard stamped straps (if applicable). ▲ See warning, step 3.

COMPANION FLANGE/FLANGE YOKE STYLE (S.A.E., DIN AND T-TYPE) HARDWARE SPECIFICATIONS

SERIES	BOLT P/N*†	WASHER P/N	NUT P/N	DIAMETER, THREAD & LENGTH UNDER HEAD	BOLT TORQUE Nm	BOLT TORQUE FT. LBS.
SPL55	TBD	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD	TBD
SPL90	6-73-1219	500357-11	231421-3	.375" 24 x 1.188"	54-65	40-48
SPL100	TBD	TBD	TBD	TBD	TBD	TBD
SPL140	6-73-220	500357-11	231421-3	.375" 24 x 1.250"	54-65	40-48
	6-73-1227	500357-11	231421-3	.375" 24 x 1.688"	54-65	40-48
SPL170	7-73-122	500357-12	231421-4	.438" 20 x 1.375"	85-102	63-75
	7-73-228	500357-12	231421-4	.438" 20 x 1.750"	85-102	63-75
SPL250	7-73-122	500357-12	231421-4	.438" 20 x 1.375"	85-102	63-75
	7-73-228	500357-12	231421-4	.438" 20 x 1.750"	85-102	63-75

**Bolts are specially heat-treated. DO NOT substitute inferior grade bolts.*
† Approved Spicer Hardware.
***Note**-Original equipment vehicle manufacturers' manuals may have alternate specified bolts or metric hardware. Refer to the original equipment service manual for bolt part numbers.*

Table HH

8. It may be necessary to unseat bearing cup assemblies by tapping on yoke or bearing cup with a soft-faced hammer. Once coupling shaft is free, remove the coupling shaft from support straps and take it to a work bench area. ▲ See warning, below.

▲ ***WARNING***

Driveshaft assemblies can weigh in excess of 100 pounds (46 kilograms). Make sure to use proper lifting techniques when handling driveshafts. More than one person may be needed when handling driveshaft assemblies.

9. Repeat steps 6-8 as necessary to obtain access to the effected center bearing, once the effected centering bearing has been reached. **DO NOT** at this point remove coupling shaft from vehicle. It will be necessary to continue with pages 98-100, steps 13 to 25, for Quick Disconnect™ style.

Disconnect Driveshaft – Companion Flange/Flange Yoke (S.A.E., DIN and T-Type) Style

10. With support straps securely in place, remove and discard companion flange bolts, washers and nuts from rear end. Reference companion flange bolt torque specifications, Table HH, above. **DO NOT** reuse companion flange bolts, washers and nuts. ▲ See warning, below.

▲ ***WARNING***

***DO NOT** reuse companion flange bolts, washers or nuts or use inferior grade bolts. Reuse of companion flange bolts, washers or nuts or the use of inferior grade bolts can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

11. It may be necessary to unseat pilot or serrated connection by tapping on one side of the flange with a soft-faced hammer. Once the connection is free, collapse the driveshaft and allow it to rest on support strap.

Remove Driveshaft

12. Slide driveshaft off outboard midship shaft at slip yoke. Remove driveshaft from vehicle and take to work bench area. See warning, below.

WARNING

Driveshaft assemblies can weigh in excess of 100 pounds (46 kilograms). Make sure to use proper lifting techniques when handling driveshafts. More than one person may be needed when handling driveshaft assemblies.

If disconnecting the driveshaft has allowed access to the effected center bearing, proceed to step 17.

If the effected center bearing has not been reached, proceed to step 13 to remove coupling shaft(s).

Disconnect Coupling Shaft

13. **Be sure the third support strap is in place as illustrated in Figure Y, page 107.** Remove the center bearing bracket bolts and allow the shaft to rest on the support strap.

Remove Coupling Shaft

14. **Be sure the fourth support strap is in place as illustrated in Figure Y, page 107.** Remove companion flange bolts, washers and nuts on flange. Reference bolt specifications, Table HH, page 109. Discard bolts, washers and nuts. See warning, below.

WARNING

DO NOT *reuse companion flange bolts, washers or nuts, or use inferior grade bolts. Reuse of companion flange bolts, washers or nuts, or the use of inferior grade bolts can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

15. It may be necessary to unseat pilot or serrated connection by tapping on one side of the flange with a soft-faced hammer. Once coupling shaft is free, remove the coupling shaft from support straps and take to a work bench area. See warning, step 12.

16. Repeat steps 13-15 as necessary to obtain access to the effected center bearing. Once the effected center bearing has been reached, **DO NOT** now remove coupling shaft from vehicle.

At this point it will be necessary to continue with pages 104-106, steps 11-22, for companion flanger/flanger yoke style.

Inspect Midship Tube Shaft

17. Visually inspect midship tube shaft, looking for wear on spline surface. If splines are damaged, missing or twisted, or Glidecote® is missing, replacement of entire coupling shaft is necessary. See warning, below.

WARNING

Failure to replace damaged driveline components can cause driveline failure, which can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

Remove Coupling Shaft With Effected Center Bearing – Quick Disconnect Style

Proceed to step 18.

Remove Coupling Shaft With Effected Center Bearing – Companion Flange/Flange Yoke (S.A.E., DIN and T-Type) Style

Proceed to step 20.

Quick Disconnect™ Style

18. Remove center bearing bracket bolts. Allow coupling shaft to rest on support strap.

Remove bearing retainers or stamped straps and bolts at end yoke. Discard bolts. If bearing retainers are not damaged, they **CAN** be reused. **DO NOT** reuse stamped straps or any bolts. ▲ See warning, below.

▲ ***WARNING***

DO NOT *reuse bearing retainer or stamped strap bolts, stamped straps, damaged bearing retainers, or use inferior grade bolts. Reuse of bearing retainer or stamped strap bolts, stamped straps, damaged bearing retainers, or the use of inferior grade bolts can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

19. It may be necessary to unseat bearing cup assemblies by tapping on yoke or bearing cup with a soft-faced hammer. Once the coupling shaft is free, remove from support straps and take it to a work bench area. ▲ See warning, below. Proceed to step 22.

▲ ***WARNING***

Driveshaft assemblies can weigh in excess of 100 pounds (46 kilograms). Make sure to use proper lifting techniques when handling driveshafts. More than one person may be needed when handling driveshaft assemblies.

Companion Flange/Flange Yoke (S.A.E., DIN and T-Type) Style

20. Remove center bearing bracket bolts and allow shaft to rest on support strap.

Remove and discard flange bolts, washers and nuts at flange. ▲ See warning, below.

▲ ***WARNING***

DO NOT *reuse flange bolts, washers or nuts or use inferior grade bolts. Reuse of flange bolts, washers or nuts or the use of inferior grade bolts can cause driveline failure, which can result in separation of driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.*

21. It may be necessary to unseat pilot or serrated connection by tapping on one side of the flange with a soft-faced hammer. Once the connection is free, remove coupling shaft from support straps and take it to a work bench area. ▲ See warning, step 19. Proceed to step 22.

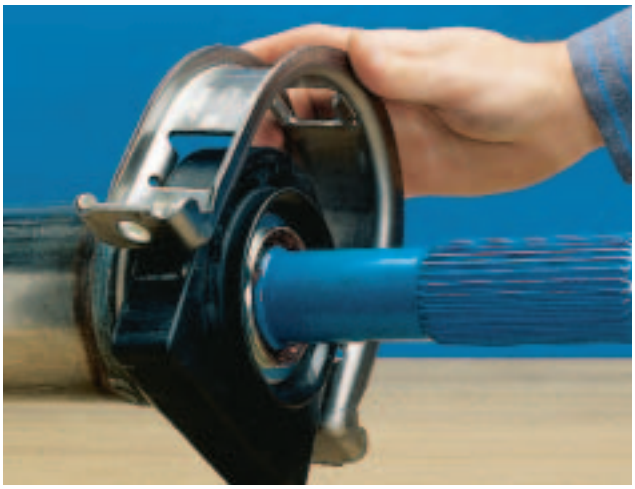

Photo 100

Photo 101

Remove Center Bearing

22. On some Spicer center bearing assemblies, a metal retainer spans the outside center bearing bracket. If present, remove metal retainer and discard. Remove and discard center bearing bracket. (See photo 100, above.) Remove and discard rubber cushion. (See photo 101, top right.)

23. Using a puller, follow tool manufacturer's instructions to remove the bearing assembly from the midship tube shaft. (See photo 102, center right.) Discard center bearing.

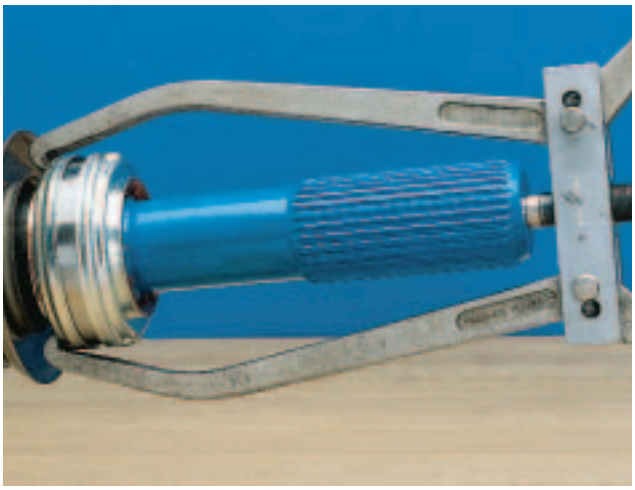

Photo 102

Inspect Midship Tube Shaft Bearing Diameter

24. Inspect the midship tube shaft for wear on the bearing diameter. If the midship tube shaft is damaged, replacement of the entire coupling shaft is necessary. (See photo 103, bottom right.) ▲ See warning, below.

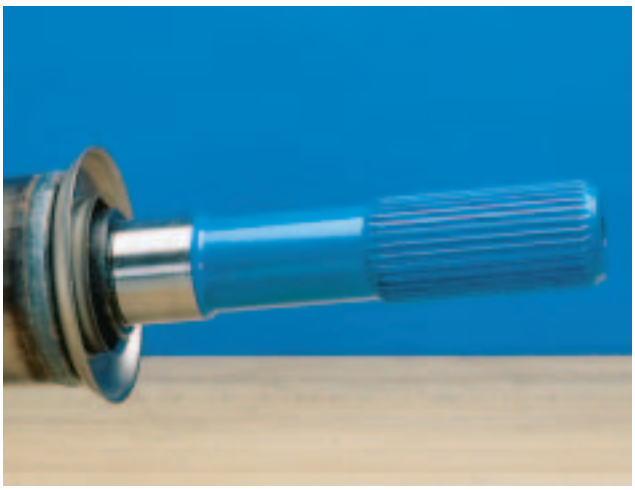

Photo 103

▲ ***WARNING***

Failure to replace damaged driveline components can cause driveline failure, which can result in separation of driveline from vehicle. A separated driveline can result in property damage, serious personal injury or death.

25. If no damage is apparent, remove slinger and discard. Proceed to installation of center bearing outboard slip style driveshafts, pages 128-132.

TABLE OF CONTENTS

Before You Get Started 9

Driveshaft Assembly Inspection Procedures 10
- End Fittings 10
- Universal Joints 12
  - Relubable Style 12
  - Permanently Lubricated Plug Style 13
  - Permanently Lubricated Net-Formed Style 13
- Slip Member Assembly 14
  - Relubable Style 14
  - Permanently Lubricated Style 16
- Tubing 16
- Center Bearings 17

SPICER LIFE SERIES™ INSPECTION

Before You Get Started

Note – Spicer Life Series™ driveshafts are found on vehicles throughout the world. Therefore, this manual includes worldwide terminology. These terms have been highlighted in teal.

Caution – Under no circumstances should individuals attempt to perform driveline service and/or maintenance procedures for which they have not been trained or do not have the proper tools and equipment. ▲ See warning, below.

▲ ***WARNING***

Failure to take commonsense, precautionary measures when working on a vehicle or other machinery could result in property damage, serious personal injury or death. In order to avoid property damage, serious personal injury or death, you must:

1. **ALWAYS** wear safety glasses when performing maintenance or service. Failure to wear safety glasses can result in personal injury and/or partial or complete vision loss.

2. **NEVER** go under a vehicle while the engine is running. Be sure the vehicle's engine is off, and keys are removed from ignition.

3. **NEVER** go under or work on a vehicle that is not on a level or flat surface.

4. **NEVER** work on a driveshaft without blocking the vehicle's wheels and releasing all parking brakes. ▲ See warning, below.

▲ ***WARNING***

Failure to release all parking brakes and failure to place transmission in neutral can result in torque being applied to the driveshaft. Disconnecting a driveshaft with applied torque can result in property damage, serious personal injury or death.

5. **NEVER** lift a vehicle without the appropriate weight-rated, vehicle-support equipment.

6. **NEVER REMOVE** a driveshaft from the vehicle without keeping the vehicle's transmission in neutral. ▲ See warning, step 4.

7. **CAUTION** – Spicer Life Series™ driveshaft assemblies can weigh in excess of 100 pounds (46 kilograms). Be sure to use proper lifting techniques when handling Spicer Life Series™ driveshafts. More than one person may be needed when handling driveshaft assemblies.

8. **ALWAYS** use support straps to prevent the driveshaft from falling out of vehicle during the removal and installation process.

9. **NEVER** heat components or use sledgehammers or floor jacks to remove the driveshaft from vehicle.

Note – For driveshaft applications that have pillow blocks, dampers, parking brakes or retarders, refer to these component manufacturers' or the original equipment vehicle manufacturers' service manuals for proper procedures.

Note – Spicer Life Series™ 140, 170 and 250 driveshaft assemblies and components are metric. To eliminate any confusion between S.A.E. and metric threaded fasteners, the metric fasteners have been color coded gold. Spicer Life metric fasteners include spring tab bolts, bearing retainer bolts and midship nuts.

DRIVESHAFT ASSEMBLY INSPECTION PROCEDURES

SPICER LIFE SERIES™ 55, 70, 90, 100, 140, 170 & 250

Spicer Life Series™ driveshafts should be carefully inspected at recommended original equipment vehicle manufacturers' service intervals and/or at Spicer recommended lubrication intervals as shown in Table A, below.

Note – The following procedures are to be performed **prior to** any lubrication of universal joints or slip members. The addition of lubricant can mask the looseness in a component that is beginning to show wear and may be in need of replacement.

END FITTINGS

1. Visually inspect all input and output end-fitting retaining nuts or bolts for any gaps between mating surfaces. If gaps are present, consult transmission, axle or transfer case original equipment manufacturers' service and maintenance manuals for proper fastener specifications. ▲ See warning, below.

▲ ***WARNING***

A loose end-fitting retaining nut or bolt can result in driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

Photo 1

2. Check all input and output end fittings for looseness or broken back. Take hold of the end fitting with both hands. Try to move it vertically and horizontally to feel any looseness. (See photo 1, above.)

There should **NOT** be any movement in the end fittings

UNIVERSAL JOINT MAXIMUM LUBRICATION INTERVALS

SERIES	CITY	ON-HWY.	LINEHAUL	OFF-HWY.*	INDUSTRIAL*
SPL 250, 170 & 140	25,000 Mi. 40,000 Km. or 3 Months (whichever comes first)	100,000 Mi. 160,000 Km. or 6 Months (whichever comes first)	100,000 Mi. 160,000 Km. or 6 Months (whichever comes first)	25,000 Mi. 40,000 Km. or 3 Months (whichever comes first)	500 Hrs.
SPL 100, 90, 70 & 55	8,000 Mi. 12,800 Km. or 3 Months (whichever comes first)	15,000 Mi. 24,000 Km. or 3 Months (whichever comes first)	15,000 Mi. 24,000 Km. or 3 Months (whichever comes first)	8,000 Mi. 12,800 Km. or 3 Months (whichever comes first)	500 Hrs.

City *is defined as all applications that require a minimum of 90% of operation time within city limits.*

On-highway *is defined as all applications requiring less than 10% of operating time on gravel, dirt or unpaved roads.*

Off-highway *is defined as all applications requiring more than 10% of operating time on gravel, dirt or unpaved roads.*

Linehaul *is defined as 100% of operation time on smooth concrete or asphalt.*

** Relubrication intervals for off-highway and industrial use vary depending on the application and operating conditions. In general, to obtain maximum life, relubrication on industrial applications should occur every 500 hours for normal service and every 250 hours for continuous service or severe environmental conditions.*

Table A

relative to the output or input shafts to which they are connected. See warning, below.

WARNING

A loose end fitting can result in driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

If looseness is evident, consult transmission, axle or transfer case original equipment manufacturers' service and maintenance manuals for proper end fitting specifications.

3. If the end fittings are tight, check for excessive radial looseness of the transmission output shaft and axle input and output shaft splines relative to the end fitting.

Take hold of the end fitting with both hands, rotate left to right, feeling for play or backlash. If radial looseness is evident, end fittings or input or output shafts may be in need of replacement. (See photo 2, below.) See warning, below.

WARNING

A loose end fitting, due to transmission or axle input and/or output shaft spline wear or end fitting spline wear, can result in driveline failure. Driveline failure can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

Photo 2

4. Visually inspect for damaged bearing retainers or stamped straps, loose bearing retainer bolts or strap bolts, loose companion flange bolts and nuts, loose or missing spring tabs or spring tab bolts, damaged tangs on end fittings, damaged or missing snap rings, and rotating bearing cups. See warning, below.

If any of these situations are evident, replacement of the components is necessary. Refer to the removal and installation sections of this manual for proper replacement procedures.

WARNING

Loose, missing or damaged bearing retainers or stamped straps, retaining nuts, bolts, spring tabs or spring tab bolts, end-fitting tangs, snap rings, or rotating bearing cups can result in driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

Photo 3

Photo 4, Relubable Style

UNIVERSAL JOINTS

5. Check for excessive looseness across the ends of the universal joint bearing cup assemblies and trunnions. Take hold of the inboard yoke on the driveshaft with both hands. Try to move yoke vertically and horizontally. (See photo 3, above.)

There should be less than .006 in. (.15mm) movement in the universal joint kit relative to the inboard or outboard yokes. If looseness is greater than .006 in. (.15mm), the universal joint kit must be replaced. ▲ See warning, below.

▲ *WARNING*

Excessive looseness across ends of universal joint bearing cup assemblies can cause imbalance or vibration in the driveshaft assembly. Imbalance or vibration can cause component wear, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

6. Visually inspect all universal joint kits in the driveshaft assembly.

Relubable Style

7. Check for the presence of all grease zerk (nipple) fittings. (See photo 4, above). Grease zerk (nipple) fittings should not be missing, loose or fractured. ▲ See warning, below.

▲ *WARNING*

A missing, loose or fractured grease zerk (nipple) fitting eliminates the ability to relubricate the universal joint. Neglecting to properly relubricate or inadequate lubrication can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

If grease zerk (nipple) fitting is loose, tighten to required specifications. (See Table B, below.)

If grease zerk (nipple) fitting is fractured, replace grease zerk (nipple) fitting and tighten to required specifications. (See Table B, below.)

UNIVERSAL JOINT GREASE ZERK (NIPPLE) FITTING SPECIFICATIONS

SERIES	GREASE ZERK P/N	MIN. ZERK TORQUE Nm	MIN. ZERK TORQUE FT. LB.
SPL90, SPL100, SPL140, SPL170 SPL250	232830	20.5	15.0

Table B

Photo 5, Permanently Lubricated Plug Style

Photo 6, Permanently Lubricated Net-Form Style

If grease zerk (nipple) fitting is missing, the entire universal joint kit needs to be replaced. Refer to the removal and installation sections of this manual for proper replacement procedures.

Permanently Lubricated Plug Style

8. Permanently lubricated plug style universal joint kits do not contain grease zerk (nipple) fittings, only a plug. (See photo 5, above.) Make sure plug is not missing, loose or fractured.

If the plug is loose, tighten to required specifications. (See Table B, step 7.) ▲ See warning, below.

▲ ***WARNING***

A missing, loose or fractured plug allows contaminants to invade the universal joint kit. Invasion of contaminants into the universal joint kit can degrade lubricant and can cause universal joint damage, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

If a plug is missing or fractured, the entire universal joint kit needs to be replaced. Refer to the removal and installation sections of this manual for proper replacement procedures. ▲ See warning, step 8.

Permanently Lubricated Net-Formed Style

9. Net-formed universal joints do not contain grease zerk (nipple) fittings or plugs and are not relubable. (See photo 6, above.)

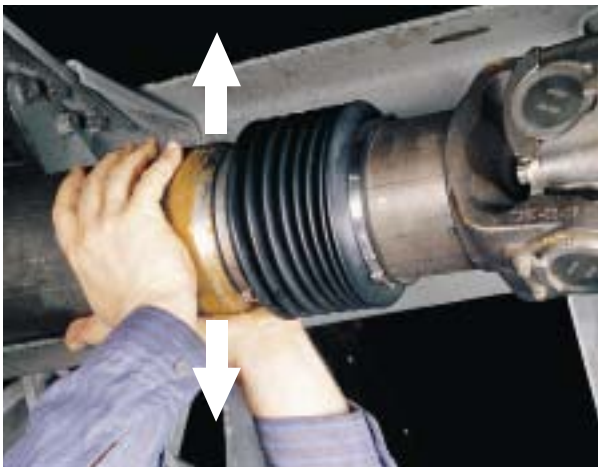

Photo 7

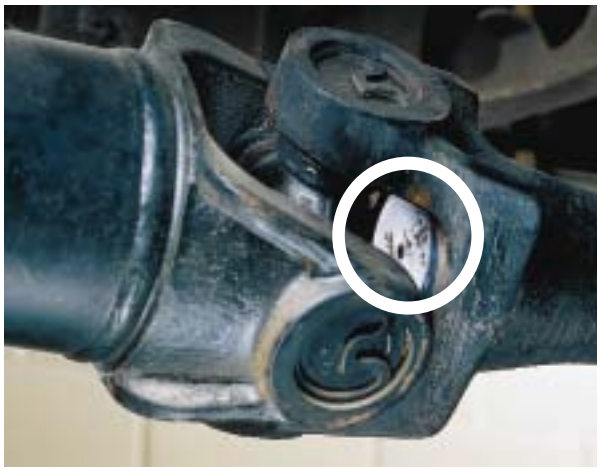

Photo 8

SLIP MEMBER ASSEMBLY

10. Check the slip member assembly for excessive radial looseness. Using a dial indicator, take hold of the tubing near the slip member with both hands and try to move vertically, up and down relative to the ground. There should be limited looseness in the slip member assembly. (See photo 7, above.) See warning, below.

If looseness is greater than .012 in. (.30mm) or greater as read on dial indicator, replacement of the slip member assembly is necessary. Refer to the removal and installation sections of this manual for proper replacement procedures.

WARNING

Excessive radial looseness can cause imbalance or vibration in the driveshaft assembly. Imbalance or vibration can cause component wear, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

Relubable Style

11. For an inboard and outboard slip yoke assembly design, check to be sure the slip yoke welch plug is not loose, missing or damaged. (See photo 8, above.) See warning, below.

If any of these situations are evident, replacement of the slip yoke and professional rebalancing of the driveshaft is necessary. Refer to the removal and installation sections of this manual for proper replacement procedures for slip members.

WARNING

A loose, missing or damaged welch plug allows contaminants to invade the slip member assembly. Invasion of contaminants into the slip member assembly can degrade the lubricant and cause slip member component damage, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

Photo 9

Photo 10

12. Visually inspect for the presence of the grease zerk (nipple) fitting, if applicable, on the slip yoke. (See photo 9, above.) Grease zerk (nipple) fittings should not be missing, loose or fractured. ▲ See warning, below.

▲ *WARNING*

A missing, loose or fractured grease zerk (nipple) fitting eliminates the ability to relubricate the slip member assembly. Neglecting to properly relubricate or inadequate lubrication can cause driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

If grease zerk (nipple) fitting is loose, tighten to required specifications. (See Table C, below.)

SLIP MEMBER GREASE ZERK (NIPPLE) FITTING SPECIFICATIONS

SERIES	GREASE ZERK P/N	THREAD SIZE	ZERK TORQUE Nm	ZERK TORQUE IN. LB.
SPL90	500174-1	0.25"-28	3.5-6.2	31-55

Table C

If grease zerk (nipple) fitting is missing or fractured, the slip members may need to be replaced. Be sure to follow step 10 for inspection of radial looseness in slip member assembly.

If slip member assembly is within acceptable limits as stated in step 10, (page 14) install new grease zerk (nipple) fitting and tighten to required specifications. (See Table C, below). Be sure to completely relubricate slip member assembly with recommended lubricant. See lubrication section of this manual for proper procedures.

Refer to the removal and installation sections of this manual for proper replacement procedures for slip members.

13. Check the slip yoke seal. (See photo 10, above.) Make sure the seal is properly attached to the slip yoke and is not loose or damaged. ▲ See warning, below.

If any of these situations are evident, replacement of slip member assembly is necessary. Refer to the removal and installation sections of this manual for proper replacement procedures for slip members.

▲ *WARNING*

A loose or damaged slip yoke seal allows contaminants to invade the slip member assembly. Invasion of contaminants into the slip member assembly can degrade the lubricant and cause slip member component damage, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

Permanently Lubricated Style

14. Check yoke shaft boot (see photo 11, below) or seal can. Make sure the boot or seal can is properly attached to the yoke shaft and tube sleeve and no damage or looseness is apparent. Visually inspect boot for tears. Inspect boot or seal can for punctures. Inspect boot clamps for damage. ▲ See warning, below.

Photo 11

If any of these situations are evident, replacement of slip member assembly is necessary. Refer to the removal and installation sections of this manual for proper replacement procedures for permanently lubricated slip members.

▲ ***WARNING***

A loose or damaged slip member boot or seal can allows contaminants to invade the slip member assembly. Invasion of contaminants into the slip member assembly can degrade the lubricant and can cause slip member component damage, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

TUBING

15. Check the driveshaft for bent or dented tubing. If either of these situations is evident, replacement of the complete driveshaft assembly or tube is necessary. ▲ See warning, below.

▲ ***WARNING***

Bent or dented tubing can cause imbalance or vibration in the driveshaft assembly. Imbalance or vibration can cause component wear, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

16. Make certain there is no buildup of foreign material on the driveshaft. ▲ See warning, below.

▲ ***WARNING***

Buildup of foreign material on a driveshaft can cause imbalance or vibration in the driveshaft assembly. Imbalance or vibration can cause component wear, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

If found, buildup should be removed carefully to avoid damaging the driveshaft. (See Table D, below.)

REMOVAL OF FOREIGN MATERIAL

FOREIGN MATERIAL TYPE	REMOVAL METHOD
Asphalt, Tar or Undercoating	Mineral spirits or any appropriate solvent
Mud	Rinse off with water

Table D

Photo 12

CENTER BEARINGS

17. Visually inspect all center bearings, end-fitting midship nuts for any gaps between the mating surfaces. (See photo 12, above.) ▲ See warning, below.

Be sure to repeat steps 2 and 3, for all center bearing end fittings for broken back and backlash.

▲ *WARNING*

A loose center bearing end-fitting midship nut can result in driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

If gaps are present and steps 2 and 3 have been followed, see Table E, top right, for proper torque specifications and refer to the removal section of this manual for proper driveshaft removal procedures.

MIDSHIP NUT SPECIFICATIONS

SERIES	NUT P/N	WASHER P/N	HEAD SIZE	NUT TORQUE Nm	NUT TORQUE LB. FT.
SPL55	TBD	TBD	TBD	TBD	TBD
SPL70	TBD	TBD	TBD	TBD	TBD
SPL90	231502	N/A	1 5/8"	644-712	475-525
SPL100	TBD	TBD	TBD	TBD	TBD
SPL140	250-74-11	230123-6	41mm*	644-712	475-525
SPL170	250-74-11	230123-6	41mm*	644-712	475-525
SPL250	250-74-11	230123-6	41mm*	644-712	475-525

** A 1 5/8" socket may be used.*

Table E

18. Inspect the center bearing bracket bolts for looseness. (See photo 13, below.) ▲ See warning, below.

Photo 13

If looseness is evident, retighten center bearing bracket bolts. Consult the vehicle manufacturers' specifications for proper bolt torque. Check the alignment of the bracket before tightening the bolts. Bracket should not be skewed.

▲ *WARNING*

Loose center bearing bracket bolt(s) can result in driveline failure, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

19. Visually inspect the center bearing rubber cushion for damage. Make sure the slingers are not rubbing against the rubber cushion. Verify that the rubber cushion is properly seated in the metal bracket. ▲ See warning, below.

If any of these situations are evident, replacement of the center bearing assembly is necessary. Refer to the removal and installation sections in this manual for proper center bearing replacement instructions.

▲ ***WARNING***

Damaged center bearings or center bearing components can cause imbalance or vibration in the driveshaft assembly. Imbalance or vibration can cause component wear, which can result in separation of the driveline from the vehicle. A separated driveline can result in property damage, serious personal injury or death.

SPICER LIFE SERIES™ FEATURES & BENEFITS

Note – Spicer Life Series™ driveshafts are found on vehicles throughout the world. Therefore, this manual includes worldwide terminology. These terms have been highlighted in teal.

This manual encompasses inspection, lubrication, removal and installation procedures for Spicer Life Series™ 55, 70, 90, 100, 140, 170 and 250 driveshaft assemblies.

IMPORTANT FEATURES OF A SPICER LIFE SERIES™ DRIVESHAFT

Spicer offers a complete range of driveshaft solutions to meet the full spectrum of needs in medium and heavy duty applications. The Spicer Life Series™ driveshafts have been designed and developed to stand up to the wear and tear of heavy hauling tasks. They are the first driveshafts in the industry to be compatible with advancing powertrain specifications for higher engine torque and lower axle ratios. No one does more than Spicer in meeting the needs of the marketplace.

Spicer Life Series™ driveshafts offer:

- Longer life
- Lower lifetime maintenance
- Increased strength for higher engine torque and lower axle ratios
- Smaller driveshaft rotating diameter

A driveshaft that transmits high torque loads must be durable and strong. Spicer uses forged steel and high strength cast yokes to provide the necessary rigidity to maintain bearing alignment under torque loads. Spicer Life Series Quick Disconnect™ end yokes reduce the time to remove or install the driveshaft, equating up to a 75% labor savings for service. Applications requiring flange connections, S.A.E., DIN and cross-serrated T-Flanges are available. A new cold-formed, bearing retainer provides structural rigidity and reduces bearing movement which may result from overloading. New patented spring tabs, found on heavy duty Spicer Life Series™ assemblies and bearing retainers, increase bearing retention, reduce wear and optimize bearing capacity.

Spicer Life Series™ award winning* universal joint kits are specifically designed to give extended driveshaft life. Flat-ended needle bearings are used to withstand oscillating loads while the driveshaft is rotating and to eliminate skewing in the bearing cup. Thrust washers significantly reduce end galling on trunnion ends and lower universal joint operating temperature. Synthetic rubber seals and plastic seal guards provide lubricant retention and help prevent the entry of foreign material, significantly increasing universal joint life. The centrally located grease zerk (nipple) fitting increases the strength of the journal cross and allows more torque carrying capacity.

High-strength steel tubing is used to provide maximum torque carrying capacity at minimum practical weight. Increased tube diameter allows a higher critical speed and longer one-piece driveshafts. This increased stiffness also improves noise, vibration and harshness. New slip member booting or alternative seal can offers better protection against environmental contaminants, increases component life, and is lubricated for the life of the product.

The new integral tube sleeve and yoke shaft design, found on heavy duty Spicer Life Series™ designs, along with larger diameter involute splines, creates greater strength and torsional stiffness with less weight. This new design leads to improved balance and less slip effort, resulting in reduced noise and vibration for the entire driveshaft system. Spicer Glidecote,® found in all slip member assemblies, reduces friction, thereby lowering thrust loads under high torque. This nylon coating also prevents spline wear and extends life.

Automotive News PACE AWARD

**Spicer Driveshaft Division won the Automotive News PACE award for this bearing's innovative design, product and process technology.*

GLOSSARY

Balancing – A procedure by which the mass distribution of a rotating body is checked and, if necessary, altered in order to ensure that the vibration at a frequency corresponding to an operating speed at the supporting bearings is within specified limits.

Ball Yoke – See Tube Yoke.

Bearing Cross Hole – See Cross Hole.

Bearing Cup Assembly – Consists of a bearing cup with needle rollers generally held in place by a seal guard and bearing seal. Sometimes the assembly includes a thrust washer.

Bearing Cup – A cup-shaped member used as the bearing bore of a bearing cup assembly and for positioning a thrust end of a cross trunnion.

Bearing Retainer – A heavy, formed metal cap, used solely in Spicer Life Series,® to retain a bearing cup assembly in Quick Disconnect™ end yoke or flange yoke designs.

Bearing Seal – A flexible member of a bearing cup assembly which prevents the escape of lubricant from or entry of foreign matter into a bearing.

Bearing Strap – A narrow, stamped metal plate used to retain a bearing cup assembly in a half-round end yoke or flange yoke design.

Boot – A flexible member which prevents the escape of lubricant from or entry of foreign matter into the slip spline members.

Boot Clamp – A thin adjustable band used to hold the boot in position on the slip spline members.

Boot Seal – See Boot.

Center Bearing – Consists of a rolling element bearing isolated in rubber and a bracket configuration for attachment to the vehicle frame.

Companion Flange – A fixed flange member that attaches a driveshaft to another drivetrain component.

Coupling Shaft – The coupling member or members of a multiple-piece driveline which consists of a universal joint, tube, center bearing, and a slip or fixed spline shaft.

Coupling Shaft Length (Center Line to Center Line or ℄ to ℄) – The distance between the outermost universal joint centers on a driveshaft. Coupling shafts with fixed centers, it is the nominal dimension.

Cross – See Journal Cross.

Cross Hole– A through hole in each lug ear of a yoke used to locate a bearing cup assembly.

Deflector – See Slinger.

Driveline – An assembly of one or more coupling shafts and a driveshaft with provisions for axial movement, which transmits torque and/or rotary motion at a fixed or varying angular relationship from one drivetrain component to another.

Driveshaft – An assembly of one or two universal joints connected to a tubular shaft member which accommodates axial movement.

Driveshaft Length (Center Line to Center Line or ℄ to ℄) – The distance between the outermost universal joint centers on a driveshaft. On driveshafts with variable length centers, it is usually measured in the compressed or installed lengths.

Ear – One of two projecting parts of a yoke symmetrically located with respect to the yoke's rotational axis.

End Fitting – An end yoke or companion flange (including S.A.E., DIN and T-Type styles) that attaches a driveshaft to another drivetrain component.

End Yoke – A Quick Disconnect™ yoke that attaches a driveshaft to another drivetrain component.

Flange Yoke – A full-round or Quick Disconnect™ style yoke which attaches a driveshaft to a companion flange.

Flinger – See Slinger.

Glidecote® – The blue, nylon, wear-resistant coating on Spicer yoke shafts and tube shafts.

Grease Zerk (Nipple) Fitting – The fitting on the shoulder or center of a journal cross or on a relubable slip spline that allows for lubrication.

Quick Disconnect™ Cross Hole – A semicircular hole located on the end of each lug ear of some end yoke and flange yoke designs used to locate a bearing cup assembly.

Inboard Yokes – Yokes that make up the ends of a driveshaft or coupling shaft assembly, i.e. tube yokes, slip yokes, yoke shafts, and center bearing end yokes.

Installation Height Tools – Round, indexing tools that are supplied with all Spicer Life Series® replacement universal joint kits to ensure proper bearing cup assembly installation specifications.

Journal Cross– The core component of a universal joint which is an intermediate drive member with four equally spaced trunnions in the same plane.

Lug Ear – See Ear.

Midship Shaft – A machined element consisting of spline teeth, a pilot for a center bearing and a piloting hub that attaches to the tube of a coupling shaft assembly.

Needle Rollers – One of the rolling elements of a bearing cup assembly.

Outboard Yokes – Yokes that are not a part of a driveshaft or coupling shaft assembly, i.e. transmission, axle, transfer case end yokes and/or companion flanges.

Phase Angle – The relative rotational position of each yoke on a driveshaft or driveline.

Pillow Block – Consists usually of a rolling element bearing and a bracket configuration for attachment.

Pressure Relief Hole – A hole in the welch plug of Spicer slip yokes that allows air to escape from the slip member assembly.

Purge – The act of flushing old grease and contaminants from universal joint kits and slip member assemblies with fresh grease.

Retaining Ring – See Snap Ring.

Retaining Ring Groove – See Snap Ring Groove.

Round Bearing Assembly – See Bearing Cup Assembly.

Seal Can – A metal "can" that permanently seals the slip member on a driveshaft. Usually found on European-style driveshaft assemblies.

Seal Guard – A covering member used to protect a bearing seal on the bearing cup assembly.

Serrated Flange – See T-Flange.

Shaft Support Bearing – See Center Bearing.

Slinger – A stamped metal or non-metal ring which prevents the entry of foreign matter into a center bearing, transmission, axle or transfer case.

Slip – The total permissible length of axial travel.

Slip Yoke – A yoke which accommodates axial movement.

Slip Yoke Plug – See Welch Plug.

Slip Yoke Seal – Pop-on or threaded ring that contains a seal that protects the slip member assembly from environmental contaminants and retains lubricant.

Snap Ring – A removable member used as a shoulder to retain and position a bearing cup assembly in a yoke cross hole.

Snap Ring Groove – A groove used to locate a snap ring.

Spline – A machined element consisting of integral keys (spline teeth) or keyways (spaces) equally spaced around a circle or portion thereof.

Spline Sleeve – A patented tubular-type, machined element consisting of internal splines which is attached to a tube or tube yoke in a driveshaft assembly. Found only in Spicer Life Series® driveshaft assemblies.

Spring Tab – A patented stamped metal plate that takes the place of a bearing plate and acts as a structural member by reducing looseness in a universal joint kit. Found only on Spicer Life Series® driveshaft assemblies.

Stub Shaft – See Tube Shaft.

Tang – A nib of metal found on Quick Disconnect™ end yoke and/or flange yoke style cross holes, used to locate a bearing cup assembly.

T-Flange – A companion flange and flange yoke design which has a serrated flange face. Found most often in European applications.

T-Type Flange – See T-Flange.

Thrust Washer – A washer found in the bottom of a bearing cup assembly that reduces needle roller friction, bearing heat and guards against end galling on the journal cross trunnions.

Tube – The tubular connecting member of a driveshaft. Pipe or piping is not an equivalent.

Tubing – See Tube.

Tube O. D. (outside diameter) – The outside diameter of a tube.

Tube Yoke – A inboard yoke with a piloting hub for attachment to a tube or spline sleeve.

Tube Shaft – A machined element consisting of spline teeth and a piloting hub that attaches to the tube of a driveshaft assembly.

Trunnion(s) – Any of the four projecting journals of a cross.

Universal Joint – A mechanical device which can transmit torque and/or rotary motion from one shaft to another at fixed or varying angles of intersection of the shaft axes. Consisting usually of a journal cross, grease zerk (nipple) fitting and four bearing cup assemblies.

Universal Joint Kit – See Universal Joint.

U-Joint – See Universal Joint.

Welch Plug – A plug in the slip yoke face that seals off one end of the spline opening. Also known as a slip yoke plug.

Weld Yoke – See Tube Yoke.

Yoke Lug Ear Cross Hole – See Cross Hole.

Yoke Shaft – A slip member yoke with a male machined spline used for axial movement.

Spicer Life Series™ Driveshaft – Quick Reference

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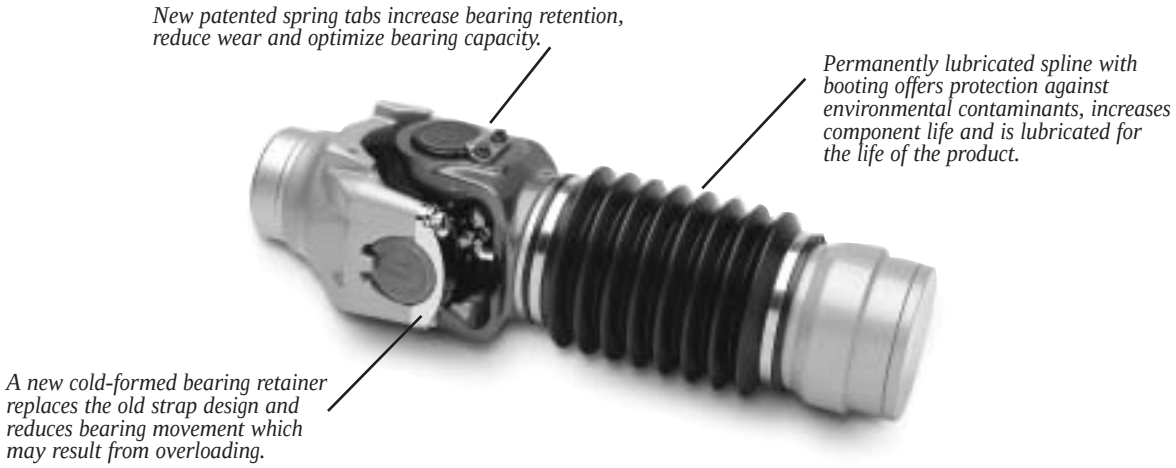

Maximum Lubrication* Cycles

Type of Service	Distance	Time
City	25,000 Mi./40,000 Km	or 6 months whichever comes first
On Highway	100,000 Mi./160,000 Km	or 6 months whichever comes first
On/Off Highway	25,000 Mi./40,000 Km	or 6 months whichever comes first
Highway/Industrial	500 hours for normal service and severe environmental conditions	250 hours for continuous service or whichever comes first

*Spicer recommends use of a high quality N.L.G.I., E.P. GRADE 2 lubricating grease

Bearing Retainer* Bolt Torque Specifications

Series	Socket Size	Bolt Torque	Assembly P/N
SPL140	12mm-12 point	135-160 Nm/100-120 Lb. Ft.	140-70-18X
SPL170	12mm-12 point	135-160 Nm/100-120 Lb. Ft.	170-70-18X
SPL250	12mm-12 point	135-160 Nm/100-120 Lb. Ft.	250-70-18X

*Spicer Life Series™ bearing retainers *MAY BE RE-USED* if not damaged. Spicer Life Series bearing retainer bolts *MAY NOT BE* re-used. Order bolt P/N 12-73-125M for all series.

Spring Tab Bolt* Torque Specifications

Series	Socket Size	Bolt Torque	Assembly P/N
SPL140	8mm - 6 point	35-40 Nm/20-25 Lb. Ft.	211941X
SPL170	8mm - 6 point	35-40 Nm/20-25 Lb. Ft.	211941X
SPL250	8mm - 6 point	35-40 Nm/20-25 Lb. Ft.	211941X

*Spicer Life Series™ spring tabs and bolts *MAY NOT BE* re-used. Order assembly part number.

Midship Nut Torque Specifications

Series	Nut P/N*	Nut Torque	Washer P/N
SPL140	250-74-11	644-712 Nm/475-525 Lb. Ft.	230123-6
SPL170	250-74-11	644-712 Nm/475-525 Lb. Ft.	230123-6
SPL250	250-74-11	644-712 Nm/475-525 Lb. Ft.	230123-6

*Wrench size 41mm

Boot Clamp Torque Specifications

Series	Clamp P/N	Clamp Torque	Assembly P/N
SPL140	232757	136-180 Nm/100-130 Lb. Ft.	212046X
SPL170	232493	136-180 Nm/100-130 Lb. Ft.	211959X
SPL170*	232702	136-180 Nm/100-130 Lb. Ft.	211987X
SPL250	232493	136-180 Nm/100-130 Lb. Ft.	211959X

*Used in high angle interaxle positions only.

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Spicer Life Series™ Part Number Interchange

Description	Spicer Life Series Part Number	PACCAR	Navistar	Volvo	Freightliner	Mack
Spicer Life 170 U-Joint Kit	SPL170X		2500678C91	3947697	SP SPL170X	2104 SPL170X
Spicer Life 170 Bearing Retainer Kit	170-70-18X		2500674C91	3947699		2104 1707018X
Spicer Life Series Bearing Retainer Bolt	12-73-125M	12-73-125M	3513117C1	8082078	SP 12 73 125M	41AM7
Spicer Life Series Spring Tab Kit	211941X					
Spicer Life Series Boot Kit	211959X		2500671C91	3947801		
Spicer Life Series Boot Clip	232493			3947802		
Spicer Life Series Boot Kit	211987X		2500684C91	3947803		
Spicer Life Series Boot Clip	232702			3947804		
Spicer Life Series 170 Coupling Shaft End Yoke	170-4-11-1		2500658C1			2104 1704111
Eaton Tandem Axle	170-4-241-1X	170-4-241-X		8081933		176MU41P12 170MU51P36
Eaton Tandem Axle	170-4-161-1X					
Eaton Tandem Axle	170-4-201-1X	170-4-201-1X	3513133C91	8081927		176MU41P11 170MU51P25
Eaton Tandem Axle	170-4-221-1X	170-4-221-1X	3513134C91		SP 170-4-221-1X	
Eaton Tandem Axle	170-4-261-1X	170-4-261-1X				
Eaton Tandem Axle	170-4-281-1X	170-4-281-1X	3513135C91	8081932		176MU41P13 170MU51P37
Fuller Transmission	170-4-481-1X	170-4-481-1X	3513675C91	8081923		176MU41P20 176MU51P5
Fuller Transmission	170-4-521-1X	170-4-521-1X	3514642C91	8081924		176MU41P21 170MU51P6
Fuller Transmission	170-4-461-1X					170MU51P8
Rockwell Single Axle	170-4-671-1X	170-4-671-1X	3513842C91	8081937		176MU41P18 170MU51P31
Rockwell Single Axle	170-4-721-1X	170-4-721-1X	3514643C91	8081926		176MU41P22 170MU51P18
Spicer Single Axle	170-4-901-1X	170-4-901-1X	3517065C91			

Spicer Life Series™ Part Number Interchange

Description	Spicer Life Series Part Number	PACCAR	Navistar	Volvo	Freightliner	Mack
Spicer Life 250 U-Joint Kit	SPL250X		2500680C91	3947698	SP SPL250X	2104 SPL250X
Spicer Life 250 Bearing Retainer Kit	250-70-18X		2500675C91	3947800	SP 250 70 18X	2104 2507018X
Spicer Life Series Bearing Retainer Bolt	12-73-125M	12-73-125M	3513117C91	8082078	SP 12 73 125M	41AM7
Spicer Life Series Spring Tab Kit	211941X					
Spicer Life Series Boot Kit	211959X		2500671C91	3947801		
Spicer Life Series Boot Clip	232493			3947802		
Spicer Life Series 250 Coupling Shaft End Yoke	250-4-21-1			3947962		2104 2504211
Fuller Transmission	250-4-241-1X	250-4-241-1X	3513838C91	8081941		1NPN61008 181MU41P9 125MU53P6
Rockwell Tandem Axle	250-4-351-1X	250-4-351-1X	351839C91	3969891 8081943	SP 250 4 351 1X	181MU41P7 125MU53P16
Fuller Transmission	250-4-561-1	250-4-561-1	3519832C1			
Eaton Tandem Axle	250-4-61-1X					
Mack Transmission	250-4-621-1X					181MU41P4 125MU53P3
Eaton Tandem Axles	250-4-81-1X	250-4-81-1X	3517493C91	8081944		181MU41P5 125MU53P22

Spicer Life Series™ Part Numbering System for Driveshaft Assemblies

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Assemblies: AAABBCDEEE-FFFF

AAA	=	Series
BB	=	Description (see below)
C	=	End Fitting on Slip End (Bearing End for Coupling Shaft)
D	=	End Fitting on Tight End
EEE	=	Spicer Sequential Number
FFFF	=	Tube Length (In millimeters)

Example: 250DS25001-1234M*

Series	=	250 (SPL250)
Description	=	DS (Driveshaft)
End Fitting (Slip)	=	2 (Flange Yoke)
End Fitting (Tight)	=	5 (Journal Cross)
Sequence No.	=	001 of 999
Tube Length	=	1234 Millimeters

*M denotes millimeters

Description:

Driveshaft	=	DS
Coupling Shaft	=	CS
Short Couple	=	SC
Jack Shaft	=	JS
Steering Shaft	=	ST
Double Cardan Shaft	=	DC
System Balance	=	SB
Individual Joint	=	IJ
Double Joint	=	DJ
Dyno Shaft	=	DY
Other	=	NA

End Fittings:

No Fittings/Other	=	0
Companion Flange	=	1
Flange Yoke	=	2
Slip Yoke	=	3
End Yoke	=	4
Journal	=	5

Spicer Life Series™ Part Numbering System for Components

Components: AAA-BB-CCCC-DE*

AAA	=	Series
BB	=	Part Description (see below)
CCCC	=	Spicer Sequential Number
D	=	Denotes Half Round
E	=	Denotes Assembly

*D and/or E may or may not be present in the component part number.

Description:

Companion Flange	=	1
Flange Yoke	=	2
Slip Yoke	=	3
End Yoke	=	4
Tube Yoke	=	28
Yoke Shaft	=	82

Example: 250-4-241-1X*

Series	=	250 (SPL250)
Description	=	4 (End Yoke)
Sequence Number	=	241 (11-9999)
Half Round	=	1
Assembly	=	X

*The part number used in this example is a Spicer Life Series™ 250 half round end yoke assembly.