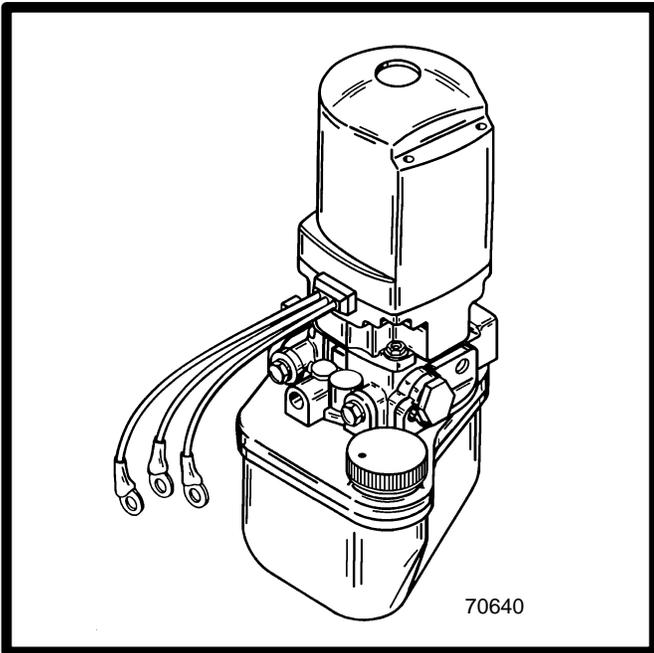


# POWER TRIM



# Table of Contents

	<b>Page</b>
Trim Pump Specifications .....	6 - 1
Valve Pressure Specifications .....	6 - 1
Electrical Specification .....	6 - 1
Torque Specification .....	6 - 1
Special Tools .....	6 - 1
Lubricants, Adhesives, and Sealers .....	6 - 1
Trim Pump Exploded View .....	6 - 2
Oildyne Trim Pump .....	6 - 2
Trim Cylinder Specifications .....	6 - 3
Torque Specifications .....	6 - 3
Lubricants, Sealers, and Adhesives .....	6 - 3
Special Tools .....	6 - 3
Special Information .....	6 - 4
Bravo Three Notice: Trim "In" Limit Blocks or Limit Pin .....	6 - 4
Trim "In" Limit Blocks - Removal, Installation or Adjustment .....	6 - 5
Trim Cylinder Exploded Views .....	6 - 6
Bravo and Blackhawk Trim Cylinders .....	6 - 6
Alpha One Gen. II Trim Cylinders .....	6 - 7
Alpha Trim System Components .....	6 - 8
Bravo Trim System Components .....	6 - 9
Trim System Wiring Diagrams .....	6 - 10
Single Power Trim .....	6 - 10
Dual Power Trim .....	6 - 11
Dual Trim Control Box .....	6 - 12
Power Trim Hydraulic Schematic .....	6 - 13

# Trim Pump Specifications

## Valve Pressure Specifications

VALVE	PRESSURE	
	PSI	kPa
Up Circuit	2200-2600	15173-17932
Down Circuit	400-600	2759-4138

## Electrical Specification

PUMP AMPERAGE DRAW	PRESSURE	
	PSI	kPa
115 Amps at:	2200-2600	15173-17932

## Torque Specification

DESCRIPTION	TORQUE		
	lb. in.	lb. ft.	N·m
Up Pressure Relief Valve		70	7.9
Down Pressure Relief Valve		70	7.9
Thermal Relief Valve		70	7.9
Pump-to-Adaptor Mounting Screws		70	7.9
Motor-to-Adaptor Mounting Screws		25	2.8
Hex Plug Retainers	38-50		51-67
“Up” Pressure Hydraulic Hose (Black)	100-150		11-16
“Down” Pressure Hydraulic Hose (Gray)	100-150		11-16

## Special Tools

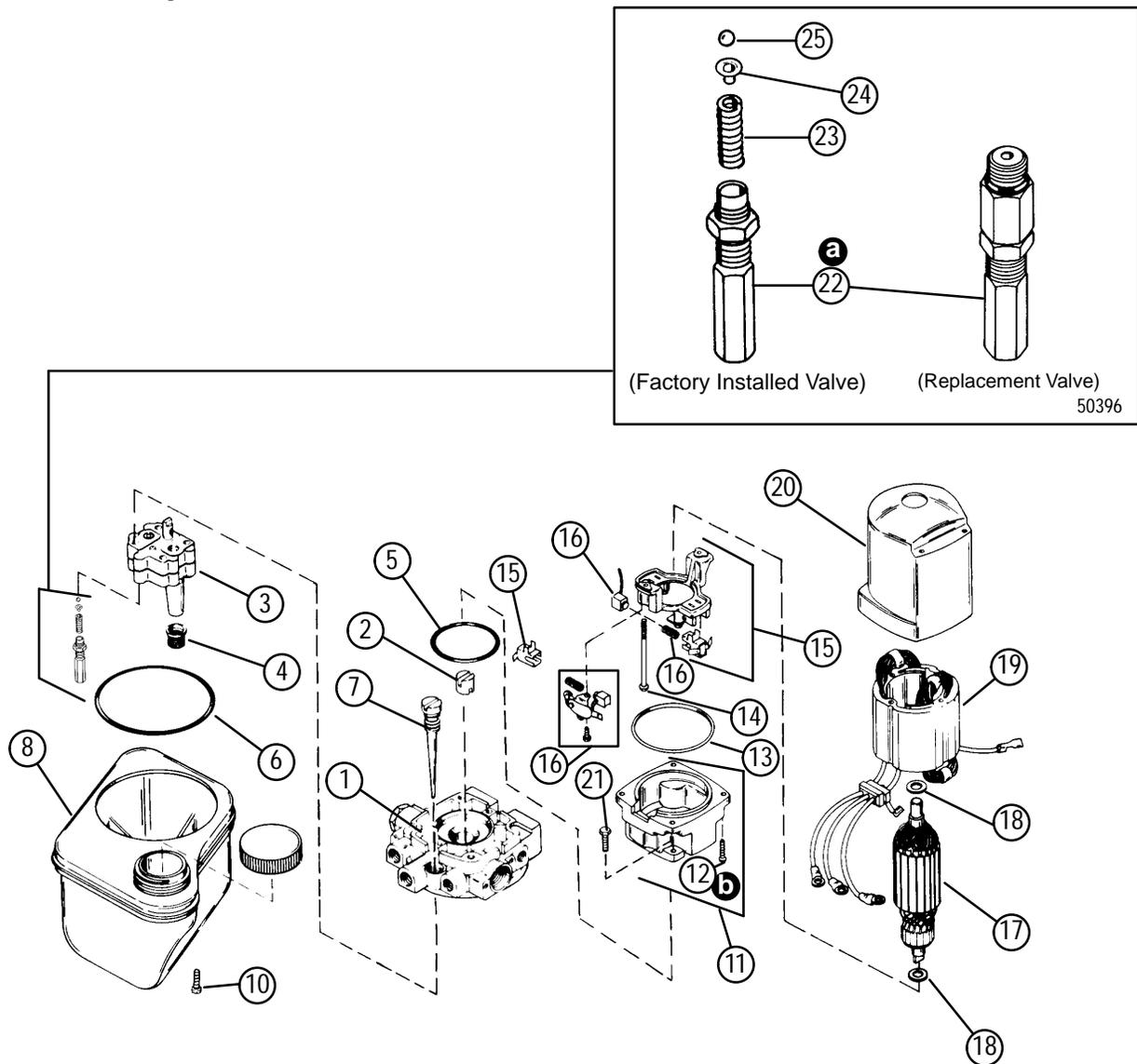
DESCRIPTION	PART NUMBER
Test Gauge Kit	91-52915A6
Torque Wrench (lb. in.)	91-66274

## Lubricants, Adhesives, and Sealers

DESCRIPTION	PART NUMBER
Quicksilver Power Trim and Steering Fluid	92-90100A1
Quicksilver 2-4-C Marine Lubricant with Teflon	92-825407A12
Liquid Neoprene	92-25711-2

# Trim Pump Exploded View

## Oildyne Trim Pump



- 1 -Adaptor
- 2 -Coupling
- 3 -Pump
- 4 -Filter
- 5 -O-ring-Motor End
- 6 -O-ring, Reservoir End
- 7 -Dipstick
- 8 -Reservoir
- 9 -Cap (With Vent Hole)
- 10 -Screw (Includes O-ring)
- 11 -End Cap w/Bearing Screw
- 12 -Screw
- 13 -O-ring
- 14 -Screw
- 15 -Brush Holder Kit
- 16 -Brush set
- 17 -Armature
- 18 -Thrust Washer
- 19 -Field and Frame
- 20 -Housing

- 21 -Screw
- 22 -Relief Valve With:
- 23 -Spring
- 24 -Eyelet
- 25 -Check Ball

### Replacement Relief Valve Color Code:

Down Pressure: Green

Up Pressure: Blue

Thermal: Gold

### Torque Specifications

**a** 75 lb. in. (8 N·m)

**b** 25 lb. in. (2.8 N·m)

73519

# Trim Cylinder Specifications

## Torque Specifications

DESCRIPTION	TORQUE		
	lb. in.	lb. ft.	N-m
Piston Rod Bolt		15-20	20-27
End Cap		40-50	55-68
Anode Screw	30		3.4

## Lubricants, Sealers, and Adhesives

DESCRIPTION	PART NUMBER
Loctite 8831	92-823089-1
Quicksilver 2-4-C Marine Lubricant with Teflon	92-825407A12
Quicksilver Perfect Seal	92-34227--1
Quicksilver Power Trim and Steering Fluid	92-90100A12

## Special Tools

DESCRIPTION	PART NUMBER
Spanner Nut Wrench	91-821709
Large Pin Set	91-811907
Medium Pin Set	91-811908
Small Pin Set	91-811909

## Special Information

### Bravo Three Notice: Trim “In” Limit Blocks or Limit Pin

**NOTE:** Some earlier Bravo Three models will be equipped with Trim-In Limit Blocks, later model Bravo One, Two, and Three will have a Trim-In Limit Pin.

It has been brought to our attention that some boats (predominantly deep-Vee heavy boats) will roll up on their side under certain, specific, operating conditions. The roll can be either to port or starboard and may be experienced while moving straight ahead, or while making a turn. The roll occurs most frequently at or near maximum speed, with the drive unit trimmed at or near full “In”. While the boat will not roll completely over, the roll may be sufficient to unseat the operator or passengers, and thereby create an unsafe situation.

The roll is caused by “stern lift.” “Stern lift” can be created by excessive drive unit trim “In.” Under these extreme “stern lift”/“bow down” conditions instability can be created which may cause the boat to roll. Weight distribution to the stern can reduce “stern lift” and, in some circumstances, eliminate the condition. Weight distribution in the bow, port or starboard, may worsen the condition.

The Trim “In” limit devices reduce “stern lift” by preventing the drive unit from reaching the last few degrees of full trim under. While this device should reduce the rolling tendency, they may not eliminate the tendency entirely. The need for these trim “In” limit blocks or pin, and the effectiveness of them, can only be determined through boat testing and is ultimately the responsibility of the boat manufacturer.

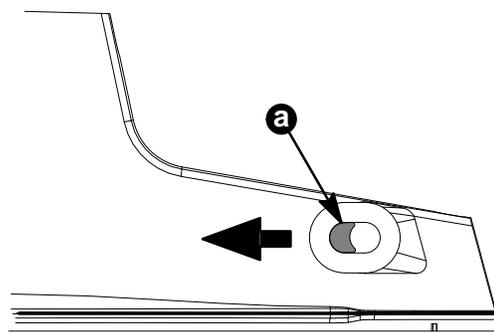
### **⚠ WARNING**

It is recommended that only qualified personnel remove or adjust the Trim “In” Limit Blocks or adjust the Trim-In Limit Pin. Boat must be water tested after removing or adjusting the device to ensure that the modified trim “In” range does not cause the boat to exhibit an undesirable boat handling characteristic if the drive unit is trimmed “In” at higher speeds. Increased trim “In” range may cause handling problems on some boats which could result in personal injury.

**IMPORTANT:** On Bravo One, Two, and Three Models, the “Trim-In Limit Pin” (if equipped), must be properly positioned before installing the trim cylinder anchor pin.

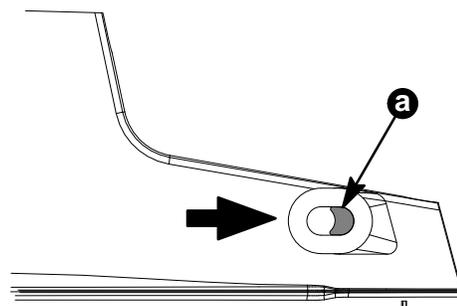
**NOTE:** When removing the stern drive unit, make a note of the position of the pin for reference when reinstalling the drive unit.

1. If equipped, ensure that the Trim-In -Limit Pin is positioned as shown for the appropriate Bravo model.



75157

### Bravo One and Two (Positioned Forward)



75158

### Bravo Three (Positioned Aft)

a - Trim-In Limit Pin

**IMPORTANT:** The position of the Trim-In Limit Pin on the Bravo Three stern drive unit should only be changed after the boat has been properly tested. Contact the boat manufacturer if you are not sure of the original position for a particular boat application.

## Trim “In” Limit Blocks - Removal, Installation or Adjustment

**IMPORTANT:** Prior to working on trim cylinders, make note of the position of Trim-In Limit Blocks, if so equipped.

### CAUTION

**Avoid transom/drive alignment error or interference, or casting damage. Always install Trim “in” Limit Blocks with letters facing up (toward the gimbal ring clevis).**

1. Disconnect the forward ends of both trim cylinders and remove the cylinders and their mounting hardware from the anchor pin. **DO NOT** disconnect the trim hoses.
2. Slide the anchor pin out of the gimbal ring. Follow instructions “a”, “b” or “c”:
  - a. **To remove blocks:** Continue to slide anchor pin out until the trim limit blocks fall off of the pin.
  - b. **To Install or adjust blocks to be 3/4 in. (19mm) of trim “In” limit:** Place block “A” on the port side and block “B” on the starboard side. Always install the blocks with the letter identifiers facing up (toward the gimbal ring clevis).

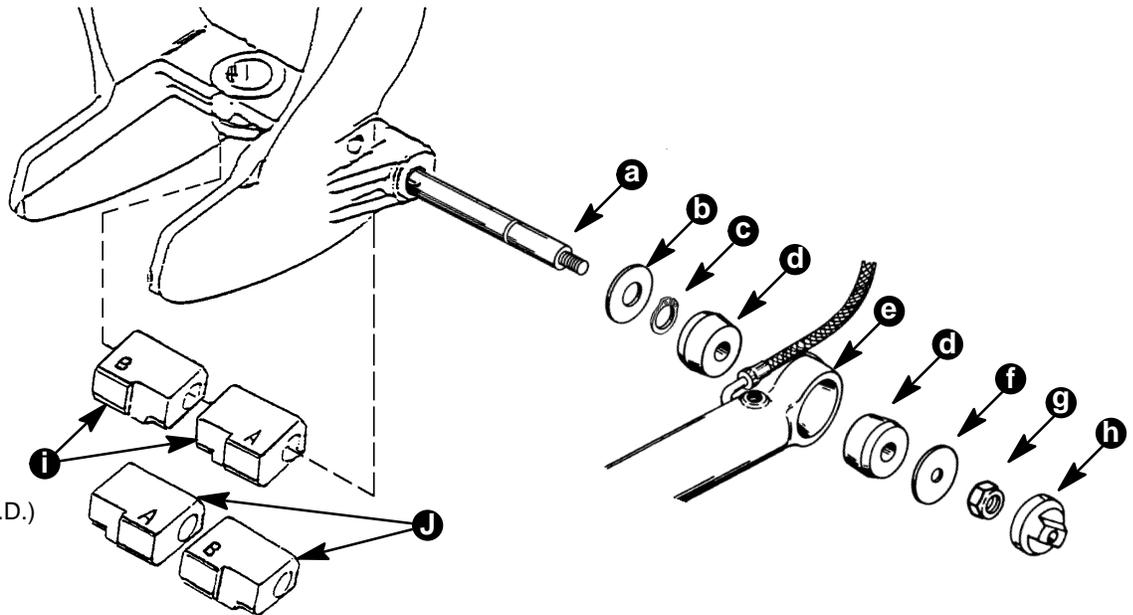
- c. **To Install or adjust blocks to be 1 in. (25mm) of trim “In” limit:** Place block “B” on the port side and block “A” on the starboard side. Always install the blocks with the letter identifiers facing up (toward the gimbal ring clevis).

3. Follow appropriate instructions “a” or “b”:
  - a. **After removal:** Push the anchor pin back through the gimbal ring.
  - b. **After installation or adjustment:** Push the anchor pin through the Trim “in” Limit Blocks and on through the gimbal ring.
4. Reinstall the trim cylinder(s) and mounting hardware.
5. Test the boat to ensure the proper trim “In” limit was chosen.

**NOTE:** If these Trim “In” Limit Blocks do not provide the proper trim “In” that is required for your application, the following Quicksilver kits are available (**DO NOT** use Trim “In” Limit Blocks with the following kits). The following kits require internal changes to the trim cylinders.

**23-806445A3** - Trim “In” Limit Spacer Kit - Limits Trim “In” by 1/4 or 1/2 in.

**23-806445A2** - Trim “In” Limit Spacer Kit - Limits Trim “In” by 1-1/4 or 1-1/2 in.

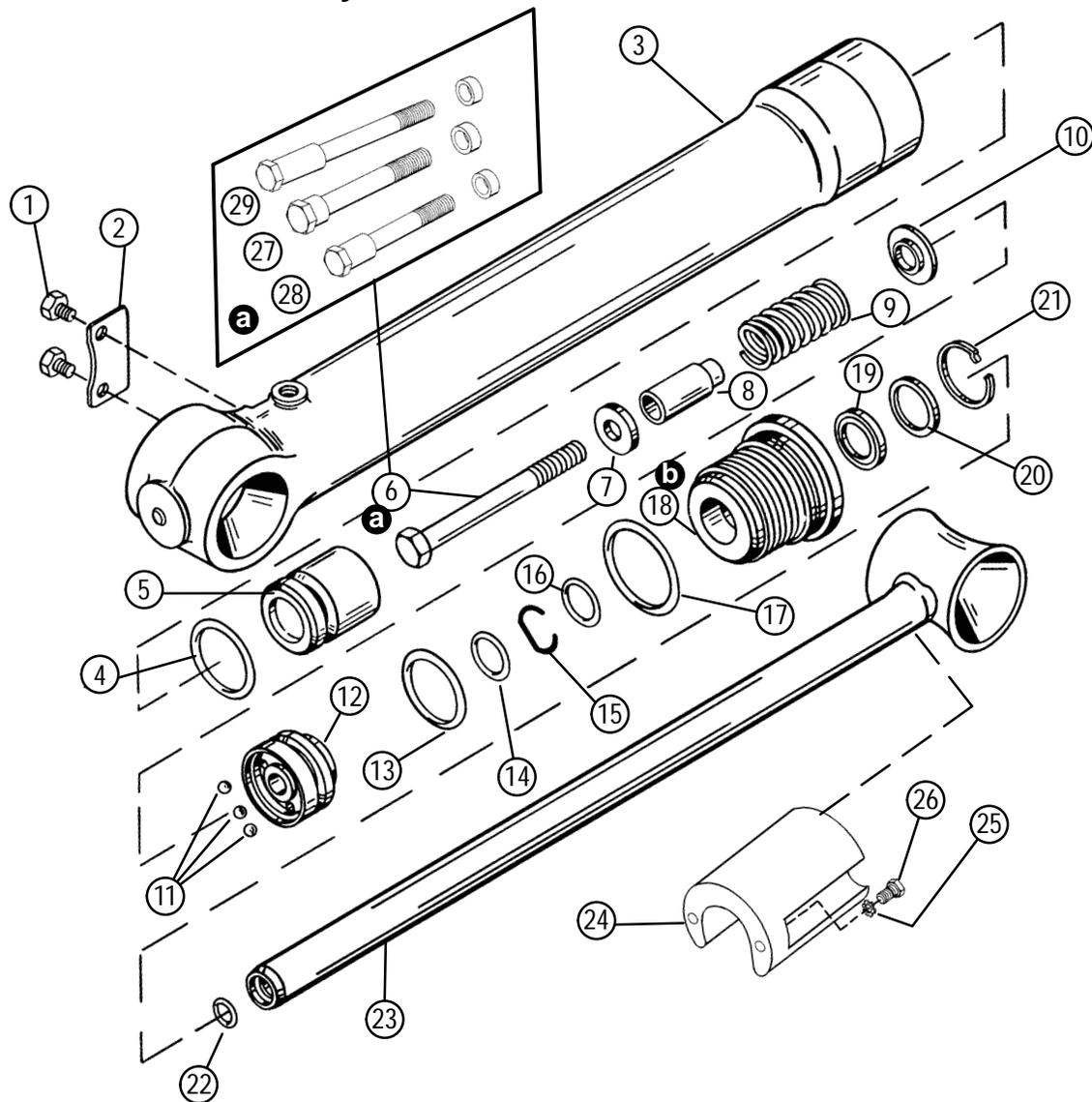


- a - Anchor Pin
- b - Flat Washer (Large I.D.)
- c - Snap Ring
- d - Rubber Bushings (2)
- e - Trim Cylinder
- f - Flat Washer (Small I.D.)
- g - Lock Nut
- h - Plastic Cap
- i - Limits The Trim “IN” by 1 in. (25 mm)
- j - Limits the Trim “IN” By 3/4 In. (19mm)

74516

# Trim Cylinder Exploded Views

## Bravo and Blackhawk Trim Cylinders



7334c

- 1 - Screws
- 2 - Clamping Plate
- 3 - Trim Cylinder
- 4 - O-Ring
- 5 - Floating Piston
- 6 - Bolt
- 7 - Washer
- 8 - Spring Guide
- 9 - Spring
- 10 - Spring Guide Washer
- 11 - Check Balls
- 12 - Shock Piston
- 13 - O-Ring
- 14 - Small O-Ring
- 15 - Continuity Spring
- 16 - Small O-Ring
- 17 - Large O-Ring
- 18 - End Cap
- 19 - Rod Scraper
- 20 - Washer
- 21 - Retaining Ring

- 22- Small O-Ring
- 23- Piston Rod
- 24- Anode
- 25- Star Washer
- 26- Screw
- 27- Trim-In Limit Spacers (1/4 in.)
- 28- Trim-In Limit Spacers (3/4 in.)
- 29- Trim-In Limit Spacers (1-1/4 in.)

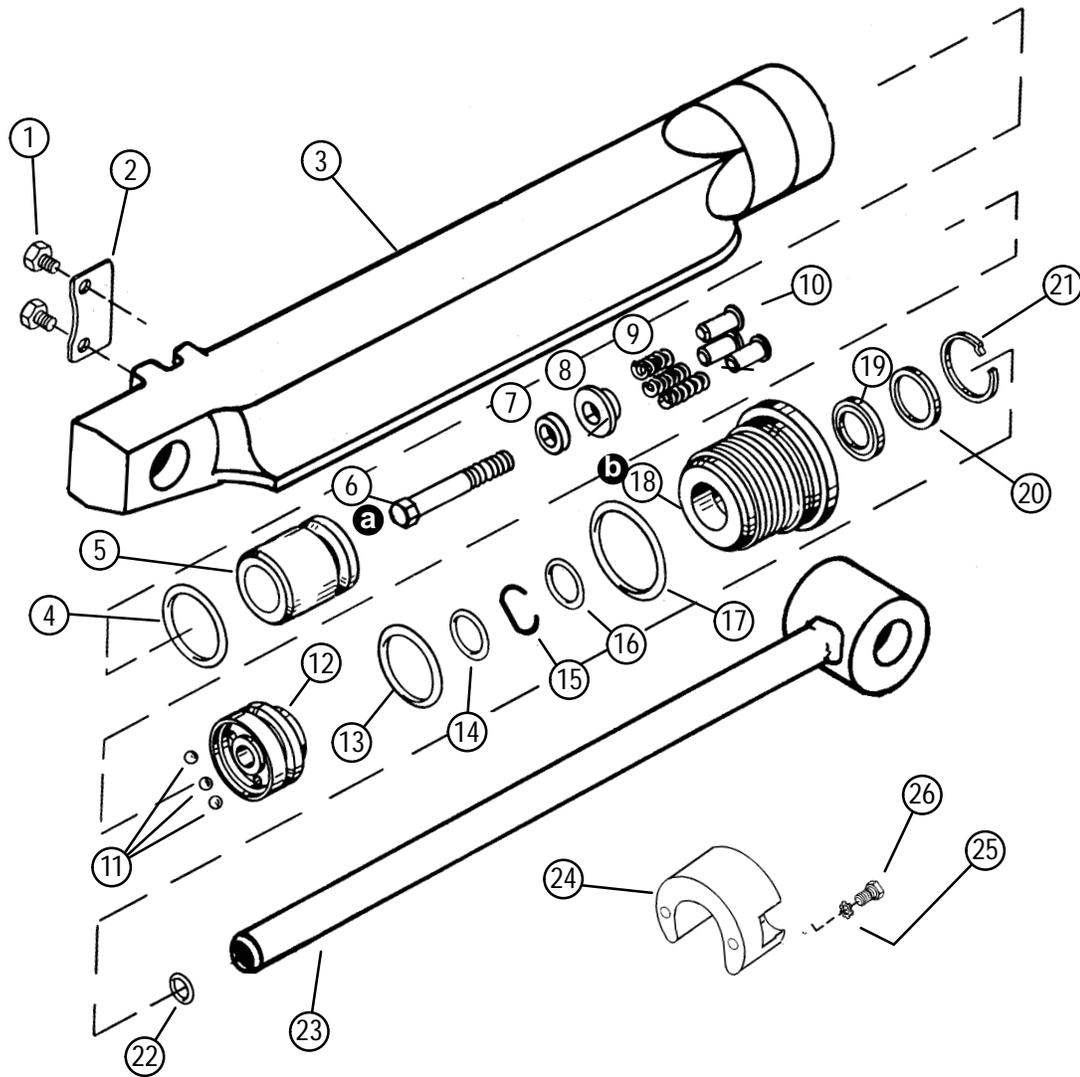
### Lubricants, Sealers and Adhesives

Lubricate all internal parts with Quicksilver Power Trim and Steering Fluid before reassembling

### Torque Specification

- a** 15-20 lb. ft. (20-27 N-m)
- b** 40-50 lb. ft. (55-68 N-m)

# Alpha One Gen. II Trim Cylinders



74859

- 1 - Screws
- 2 - Clamping Plate
- 3 - Trim Cylinder
- 4 - O-Ring
- 5 - Floating Piston
- 6 - Bolt
- 7 - Spacer
- 8 - Spring Guide Washer
- 9 - Springs
- 10- Check Ball Eyelets
- 11- Check Balls
- 12- Shock Piston
- 13- O-Ring
- 14- Small O-Ring
- 15- Continuity Spring
- 16- Small O-Ring
- 17- Large O-Ring
- 18- End Cap
- 19- Rod Scraper
- 20- Washer
- 21- Retaining Ring

- 22- Small O-Ring
- 23- Piston Rod
- 24- Anode
- 25- Star Washer
- 26- Screw

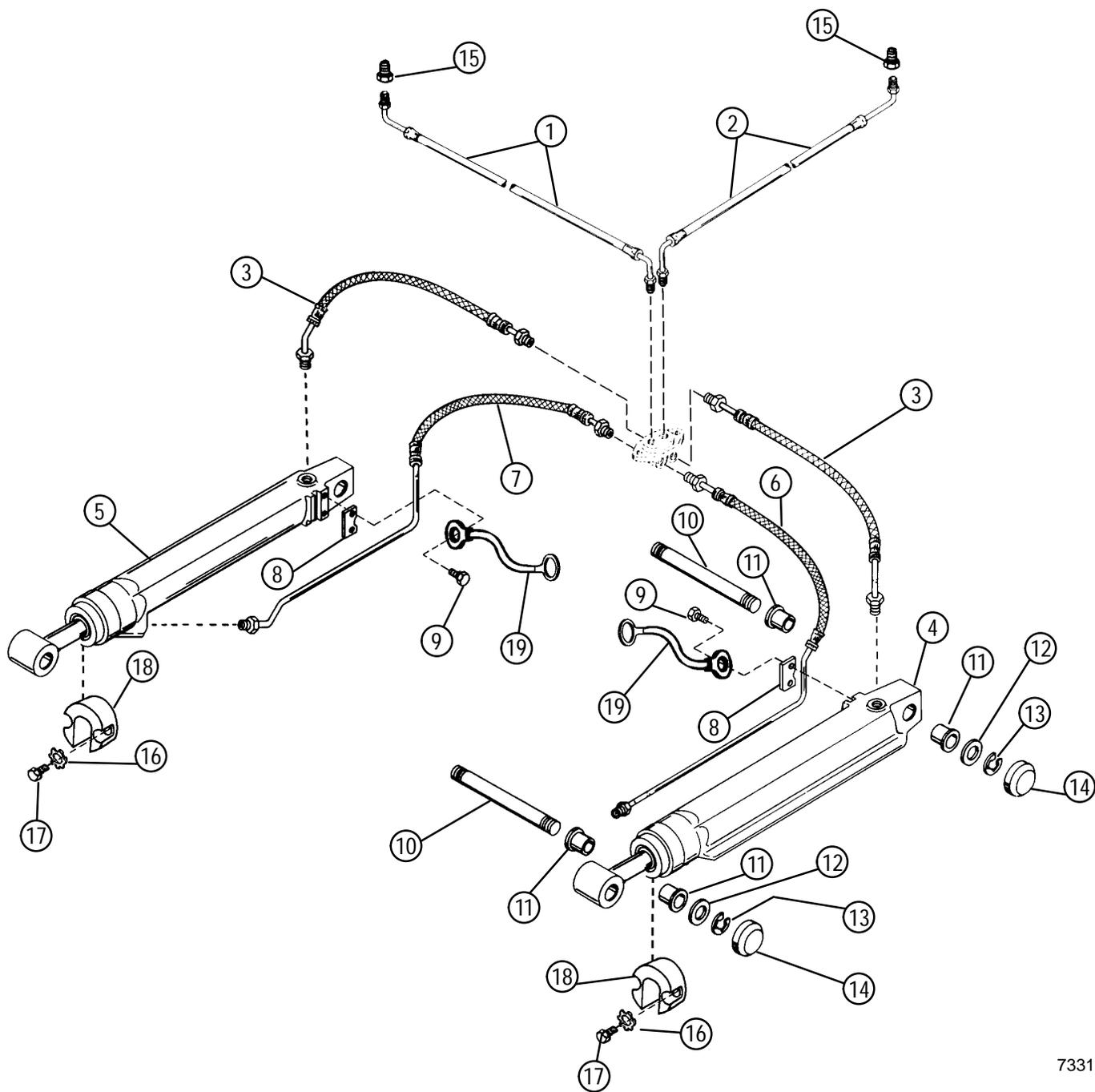
## Lubricants, Sealers and Adhesives

Lubricate all internal parts with Quicksilver Power Trim and Steering Fluid before reassembling

## Torque Specification

- a** 15-20 lb. ft. (20-27 N·m)
- b** 40-50 lb. ft. (55-68 N·m)

# Alpha Trim System Components

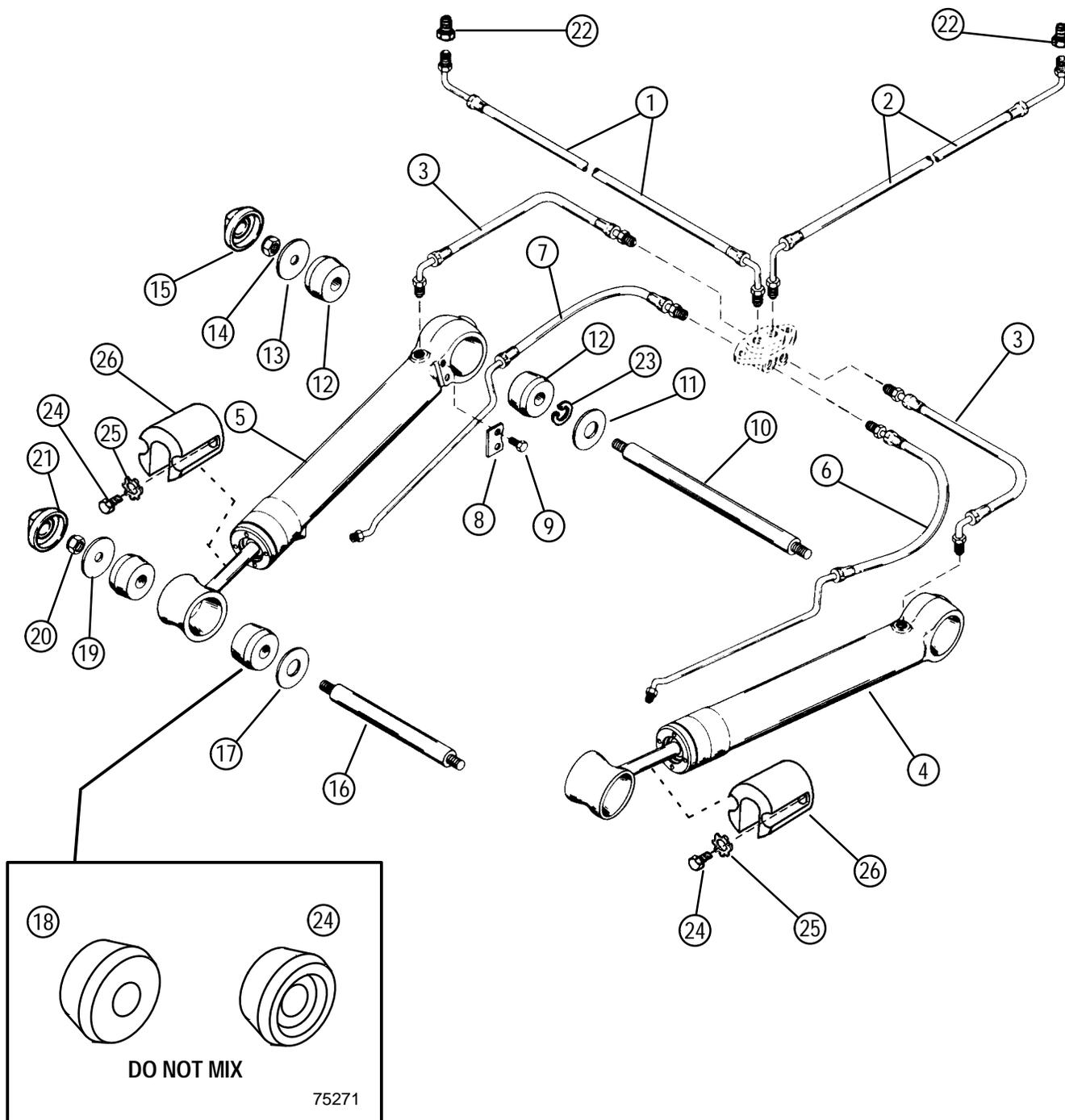


73311

- 1 - "In"/"Down" Hydraulic Hose (Gray)
- 2 - "Up"/"Out" Hydraulic Hose (Black)
- 3 - Hydraulic Hose (Trim Cylinder to Connector)
- 4 - Trim Cylinder (Starboard)
- 5 - Trim Cylinder (Port)
- 6 - Trim Cylinder Hose (Starboard)
- 7 - Trim Cylinder Hose (Port)
- 8 - Plate
- 9 - Screw
- 10 - Pin
- 11 - Bushing

- 12 - Washer
- 13 - E-ring
- 14 - Cap
- 15 - Connector (Trim Pump)
- 16 - Screw
- 17 - Star Washer
- 18 - Anode
- 19 - Continuity Wire

# Bravo Trim System Components



- 1 - "In"/"Down" Hose to Trim Pump (Gray)
- 2 - "Up"/"Out" Hose to Trim Pump (Black)
- 3 - Hose to Trim Cylinder
- 4 - Starboard Trim Cylinder
- 5 - Port Trim Cylinder
- 6 - Starboard Trim Cylinder Hose
- 7 - Port Trim Cylinder Hose
- 8 - Plate
- 9 - Screw
- 10- Front Pin
- 11- Washer
- 12- Bushing

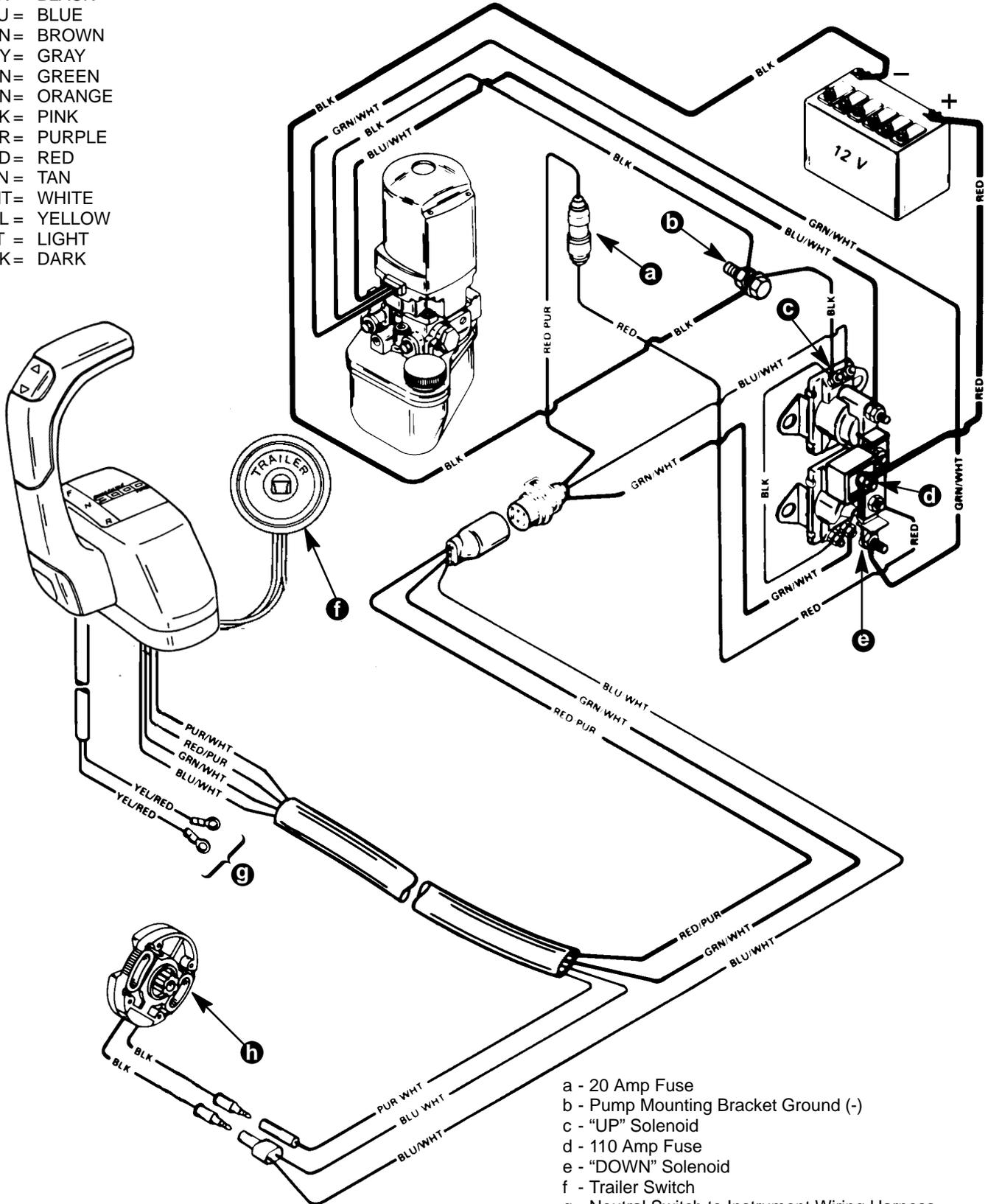
- 13- Washer
- 14- Nut
- 15- Cap
- 16- Rear Pin
- 17- Washer
- 18- Bushing (Early Style)
- 19- Washer
- 20- Nut
- 21- Cap
- 22- Connector (Trim Pump)
- 23- Retainer
- 24- Bushing (Later Style)

73554

# Trim System Wiring Diagrams

## Single Power Trim

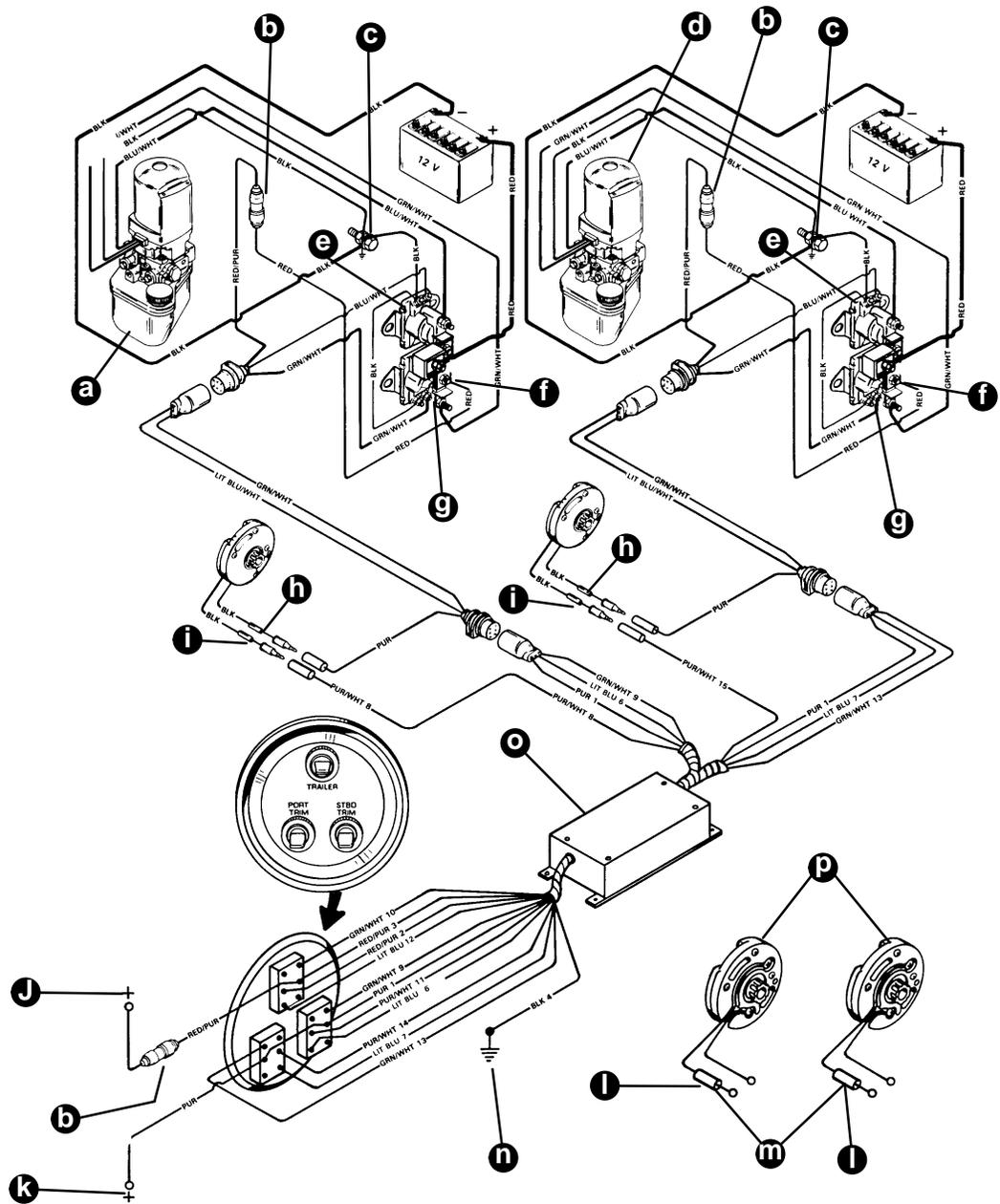
BLK = BLACK  
 BLU = BLUE  
 BRN = BROWN  
 GRY = GRAY  
 GRN = GREEN  
 ORN = ORANGE  
 PNK = PINK  
 PUR = PURPLE  
 RED = RED  
 TAN = TAN  
 WHT = WHITE  
 YEL = YELLOW  
 LIT = LIGHT  
 DRK = DARK



- a - 20 Amp Fuse
- b - Pump Mounting Bracket Ground (-)
- c - "UP" Solenoid
- d - 110 Amp Fuse
- e - "DOWN" Solenoid
- f - Trailer Switch
- g - Neutral Switch to Instrument Wiring Harness
- h - Trim Limit Switch

# Dual Power Trim

- BLK = BLACK
- BLU = BLUE
- BRN = BROWN
- GRY = GRAY
- GRN = GREEN
- ORN = ORANGE
- PNK = PINK
- PUR = PURPLE
- RED = RED
- TAN = TAN
- WHT = WHITE
- YEL = YELLOW
- LIT = LIGHT
- DRK = DARK

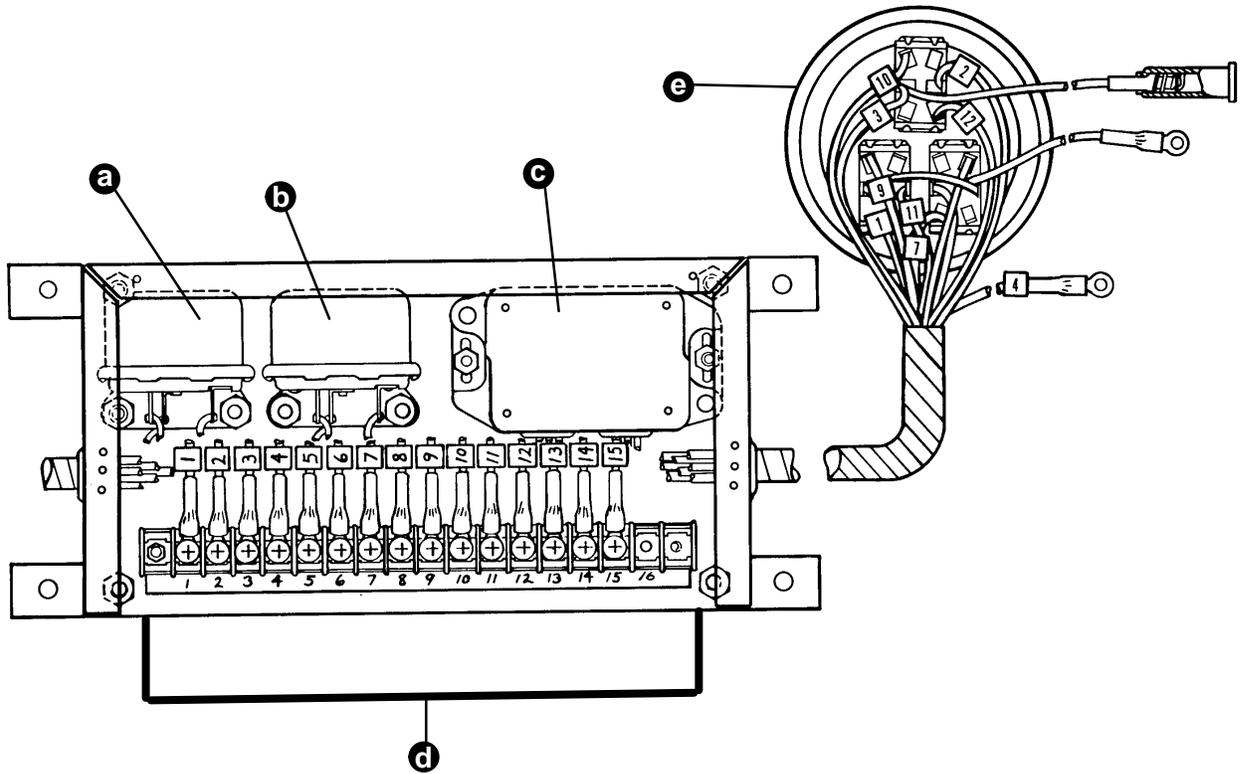


22123

- a - Starboard Trim Pump
- b - 20 Amp Fuse
- c - Pump Mounting Bracket Ground (-)
- d - Port Trim Pump
- e - "Up" Solenoid
- f - 110 Amp Fuse
- g - "Down" Solenoid
- h - Purple Sleeve
- i - Blue Sleeve
- j - Connect to Power Supply Side of the Ignition Switch

- k - Connect to "I" Terminal on Gauge or 12 volt source on the Switched side of the Ignition Switch
- l - Brown Sleeve
- m - Connect to Trim Position Sender Terminal Block or Mercathode controller (If Installed)
- n - (-) Negative to Ground
- o - Control Box
- p - Trim Position Senders

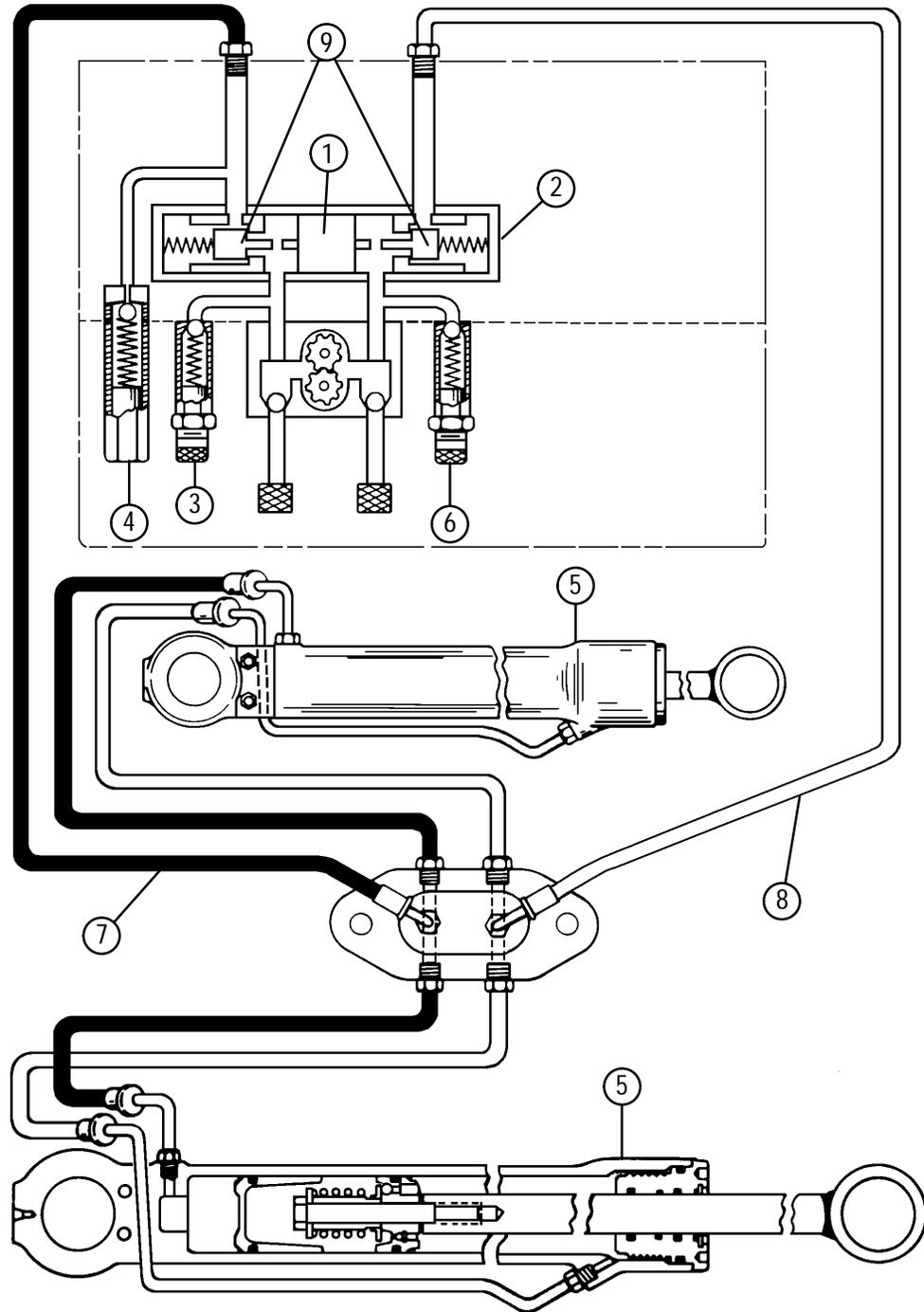
# Dual Trim Control Box



22129

- a - Relay No. 1
- b - Relay No. 2
- c - Diode Module
- d - Terminal Block
- e - Control Panel

# Power Trim Hydraulic Schematic



- 1 - Shuttle
- 2 - Pump Adaptor
- 3 - "Up"/"Out" Pressure Relief Valve
- 4 - Thermal Relief Valve
- 5 - Trim Cylinder
- 6 - "In"/"Down" Pressure Relief Valve
- 7 - "Up"/"Out" Hose
- 8 - "In"/"Down" Hose
- 9 - Pilot Check Valves

73552