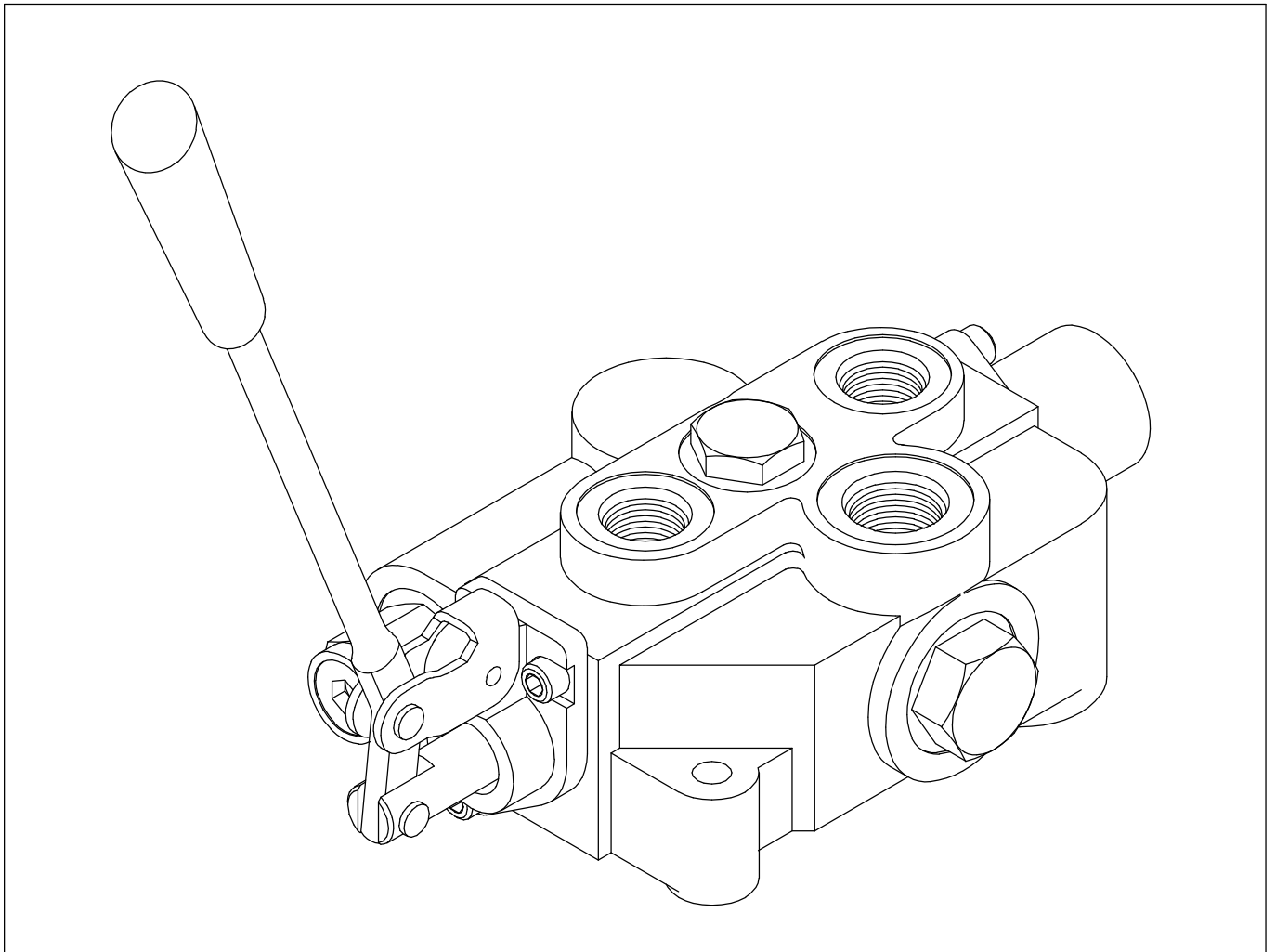


RD4100
MONO-BLOCK
DIRECTIONAL CONTROL VALVE
PARTS MANUAL



PRINCE MANUFACTURING CORPORATION



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2	SAFETY PRECAUTIONS
3	PORT IDENTIFICATION, MOUNTING DIMENSIONS, SPECS AND SPOOL IDENTIFICATION CHART
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5	RELIEF CARTRIDGES AND POWER BEYOND OPTIONS
6-8	SPOOL ATTACHMENT OPTIONS
9-10	HANDLE OPTIONS
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GENERAL SAFETY PRECAUTIONS FOR HYDRAULIC VALVES

1) ALL HYDRAULIC VALVES MUST BE PROPERLY INSTALLED INTO THE HYDRAULIC SYSTEM TO PREVENT PERSONAL INJURY AND/OR PROPERTY DAMAGE. FURTHER, THE IMPROPER SERVICING OF A VALVE MAY RESULT IN PERSONAL INJURY AND/OR PROPERTY DAMAGE. PLEASE READ AND UNDERSTAND ALL CATALOG AND SERVICE INFORMATION BEFORE STARTING. AS WITH ALL MECHANICAL WORK THE PROPER TOOLS, KNOWLEDGE, AND SAFETY EQUIPMENT ARE REQUIRED. ALWAYS WEAR SAFETY GLASSES.

2) MAKE SURE ALL PRESSURE HAS BEEN RELIEVED IN THE HYDRAULIC LINES BEFORE INSTALLING OR SERVICING A HYDRAULIC VALVE.



WARNING: ESCAPING HYDRAULIC FLUID UNDER PRESSURE CAN HAVE SUFFICIENT FORCE TO PENETRATE SKIN, CAUSING SERIOUS PERSONAL INJURY. DO NOT USE YOUR HAND TO CHECK FOR HYDRAULIC LEAKS.

3) BEFORE INSTALLING OR SERVICING A HYDRAULIC COMPONENT MAKE SURE ALL WEIGHT HAS BEEN REMOVED FROM THE CYLINDERS OR MOTORS BEFORE DISCONNECTING HYDRAULIC LINES.



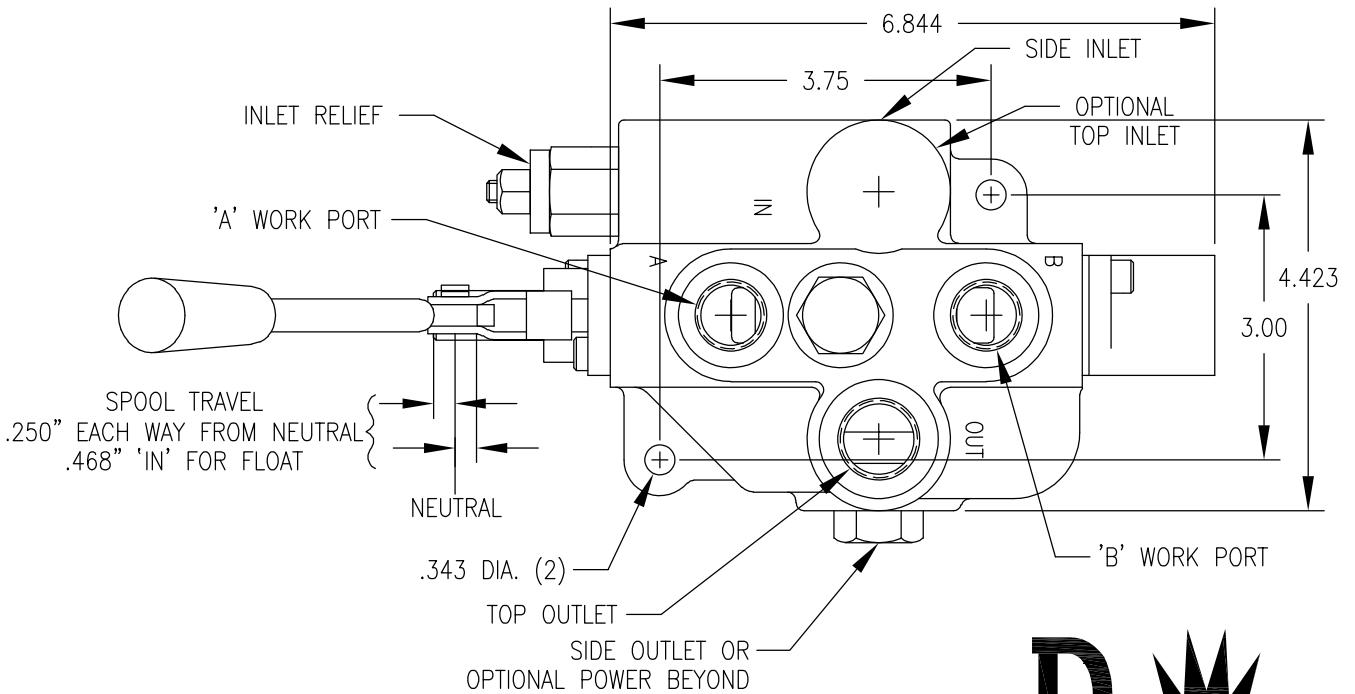
WARNING: DISCONNECTING THE HYDRAULIC LINES WHILE THE CYLINDER OR MOTOR IS UNDER LOAD MAY RESULT IN THE UNEXPECTED RAPID MOVEMENT OF MACHINE RESULTING IN SERIOUS PERSONAL INJURY.

4) DO NOT EXCEED THE OPERATING SPECIFICATIONS FOR PRESSURE, FLOW OR TEMPERATURE. ALL HYDRAULIC SYSTEMS REQUIRE A MEANS TO LIMIT THE MAXIMUM PRESSURE. THIS REQUIRES EITHER A PRESSURE RELIEF VALVE IN THE SYSTEM OR A PUMP THAT HAS PRESSURE COMPENSATION.

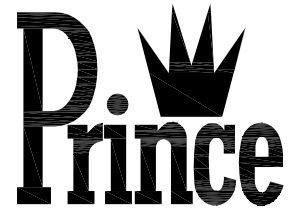


WARNING: OVERPRESSURE MAY CAUSE SUDDEN AND UNEXPECTED FAILURE OF A COMPONENT IN THE HYDRAULIC SYSTEM RESULTING IN SERIOUS PERSONAL INJURY. ALWAYS USE A GAUGE WHEN ADJUSTING A RELIEF VALVE.

RD4100 PORT IDENTIFICATION

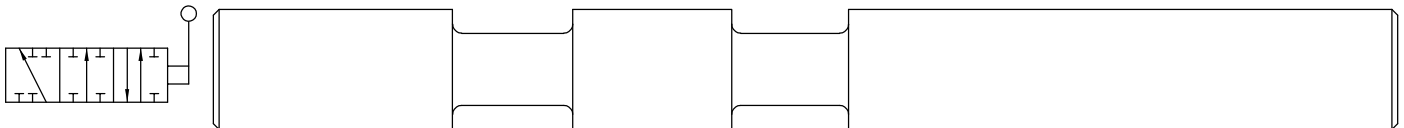


RD4100 SPECIFICATIONS:
 MAXIMUM OPERATING PRESSURE.....3000 PSI
 MAXIMUM OPERATING TEMPERATURE.....180°F
 RECOMENDED SYSTEM FILTRATION.....10 MICRON
 FLOW RATING.....15 GPM

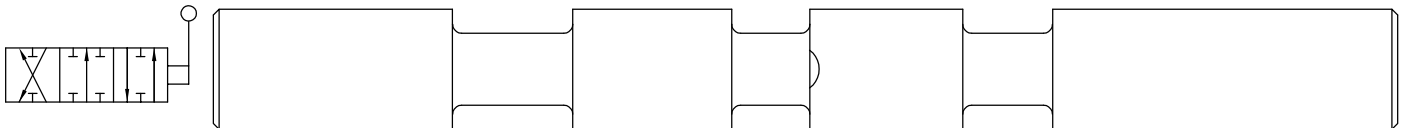


RD4100 SPOOLS

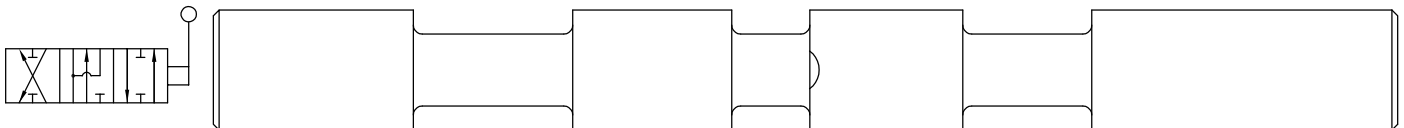
OPTION 'A', 3 WAY 3 POSITION, WORK PORT BLOCKED IN NEUTRAL



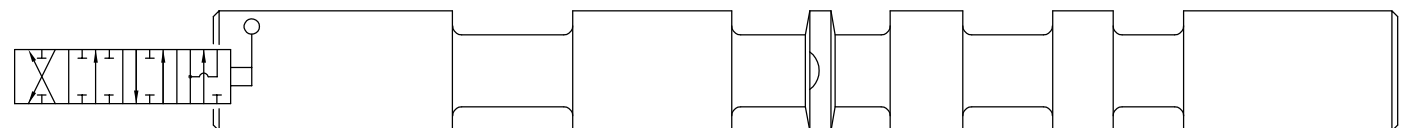
OPTION 'B', 4 WAY 3 POSITION TANDEM CENTER, WORK PORTS BLOCKED IN NEUTRAL



OPTION 'C', 4 WAY 3 POSITION MOTOR, WORK PORTS OPEN IN NEUTRAL



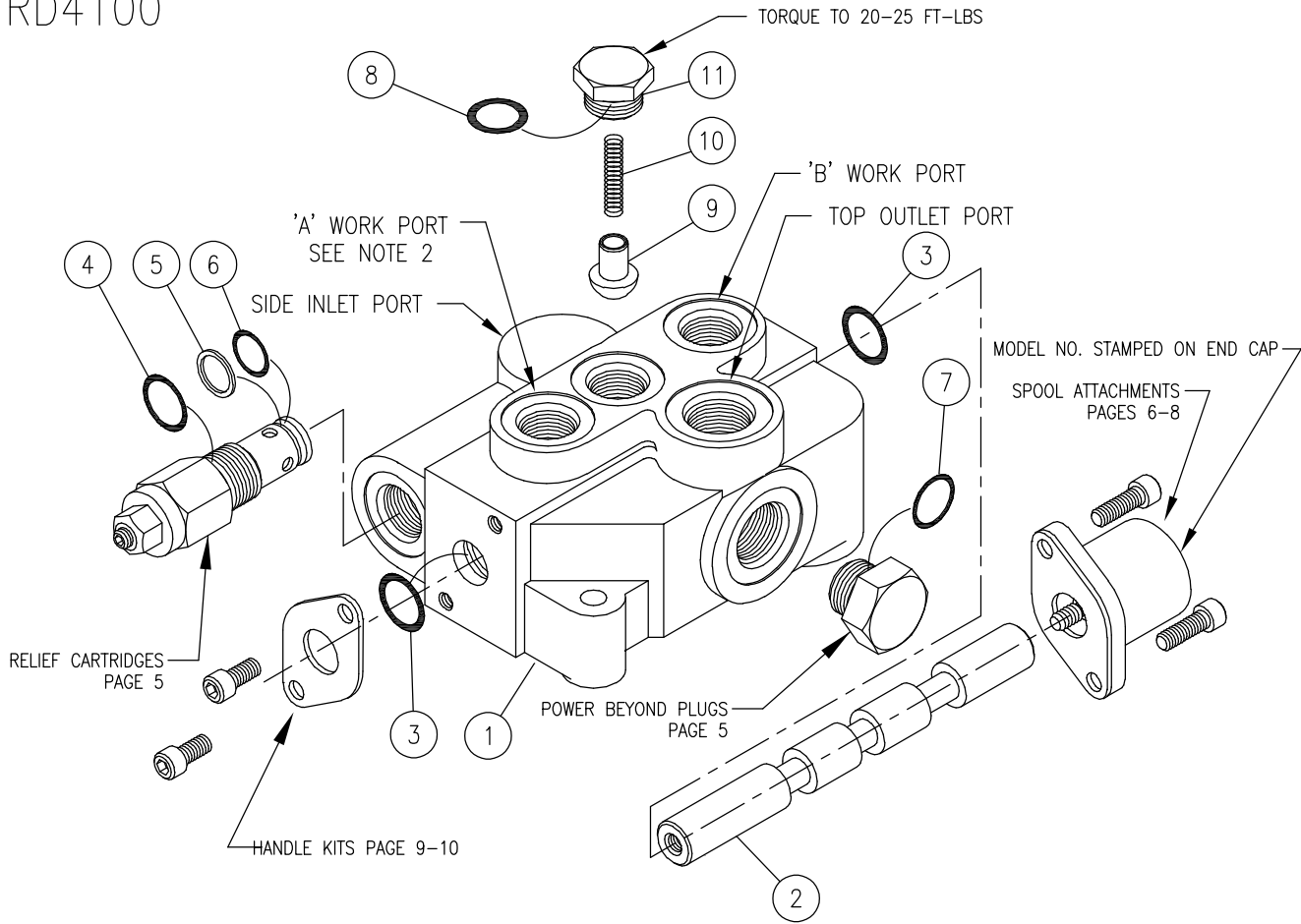
OPTION 'D', 4 WAY 4 POSITION TANDEM CENTER FLOAT, WORK PORTS BLOCKED IN NEUTRAL



NOTE:

SPOOLS ARE NOT AVAILABLE AS REPAIR PARTS. THIS INFORMATION IS FOR IDENTIFICATION PURPOSES ONLY.

RD4100



USES BODY CASTING #C-685

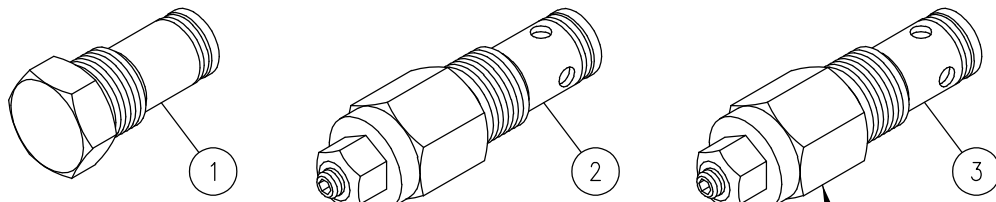
RD4100 SINGLE SPOOL MONO-BLOCK VALVE

ITEM	QTY	PART NO.	DESCRIPTION
1	1	-	1 SPOOL VALVE BODY
2	1	SEE NOTE 1	SPOOL
3	2	240000114	114 O-RING
4	1	240000908	908 O-RING
5	1	240019014	014 BACK-UP
6	1	240000014	014 O-RING
7	1	240000910	910 O-RING
8	1	240000908	908 O-RING
9	1	670100001	LOAD CHECK POPPET
10	1	670300007	LOAD CHECK SPRING
11	1	671600001	LOAD CHECK PLUG

} THESE ARE MATCHED PARTS & ARE NOT SOLD SEPARATELY.
 } SEAL KIT, P/N 660541001 (PLUS OTHERS)
 } LOAD CHECK KIT, P/N 660150015

NOTES:

1. SEE SPOOL IDENTIFICATION CHART ON PAGE 3.
2. VALVES WITH 3-WAY SPOOLS HAVE THE 'A' WORK PORT PLUGGED.
3. SPOOL SEAL INSTALLATION PROCEDURE: INSTALL O-RING IN THE GROOVE ON HANDLE END OF VALVE. PUSH SPOOL THRU FROM ATTACHMENT END JUST FAR ENOUGH TO EXPOSE THE REAR O-RING GROOVE. INSTALL O-RING AND PUSH SPOOL BACK. LUBRICATE SEALS BEFORE INSTALLATION.



RELIEF PRESSURE ON ITEMS 2 & 3 CAN BE ADJUSTED BY LOOSENING LOCK NUT AND TURNING SET SCREW CLOCKWISE TO INCREASE PRESSURE & COUNTERCLOCKWISE TO DECREASE PRESSURE.

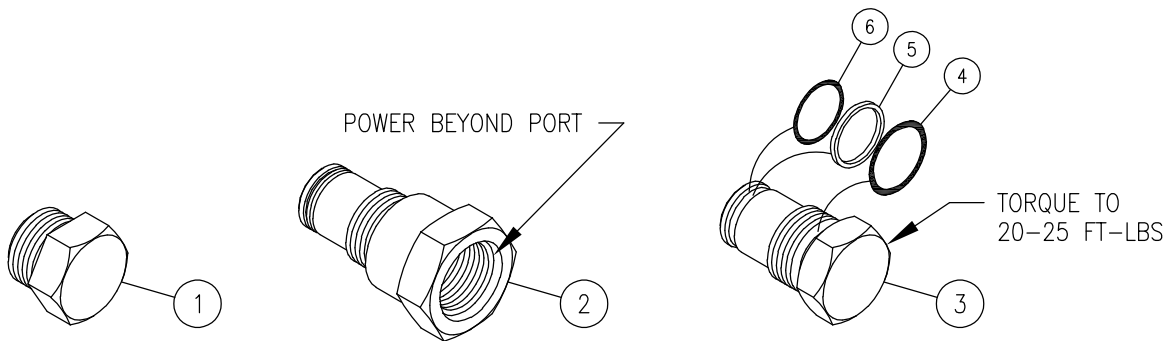
INSTALLATION TORQUE FOR ALL RELIEF CARTRIDGES: 20-25 FT-LBS



WARNING: OVERPRESSURE MAY CAUSE SUDDEN AND UNEXPECTED FAILURE OF A COMPONENT IN THE HYDRAULIC SYSTEM RESULTING IN SERIOUS PERSONAL INJURY. ALWAYS USE A GAUGE WHEN ADJUSTING A RELIEF VALVE.

RELIEF CARTRIDGES

ITEM	PART NO.	DESCRIPTION
1	660280004	NO RELIEF PLUG (OPTION 1)
2	660280009*	ADJUSTABLE DIRECT ACTING RELIEF 1500-3000 PSI (OPTION 5)
3	660280011*	ADJUSTABLE DIRECT ACTING RELIEF 500-1500 PSI (OPTION 4)
* CARTRIDGES ORDERED AS SEPERATE PARTS ARE NOT PRESET.		



POWER BEYOND OPTIONS

ITEM	PART NO.	DESCRIPTION
1	200400030	OPTION B, OPEN CENTER CONVERSION PLUG (INCL. SEAL)
2	660280001	OPTION C, POWER BEYOND OUTLET W/ #8 SAE/ORB POWER BEYOND PORT (INCL. SEALS)
3	660280002	OPTION D, CLOSED CENTER OUTLET PLUG (INCL. SEALS)
4	240000910	-910 O-RING
5	240019016	BACK-UP WASHER
6	240000016	-016 O-RING
} SEAL KIT, P/N 660580003		

OPTION B: OPEN CENTER CONVERSION PLUG

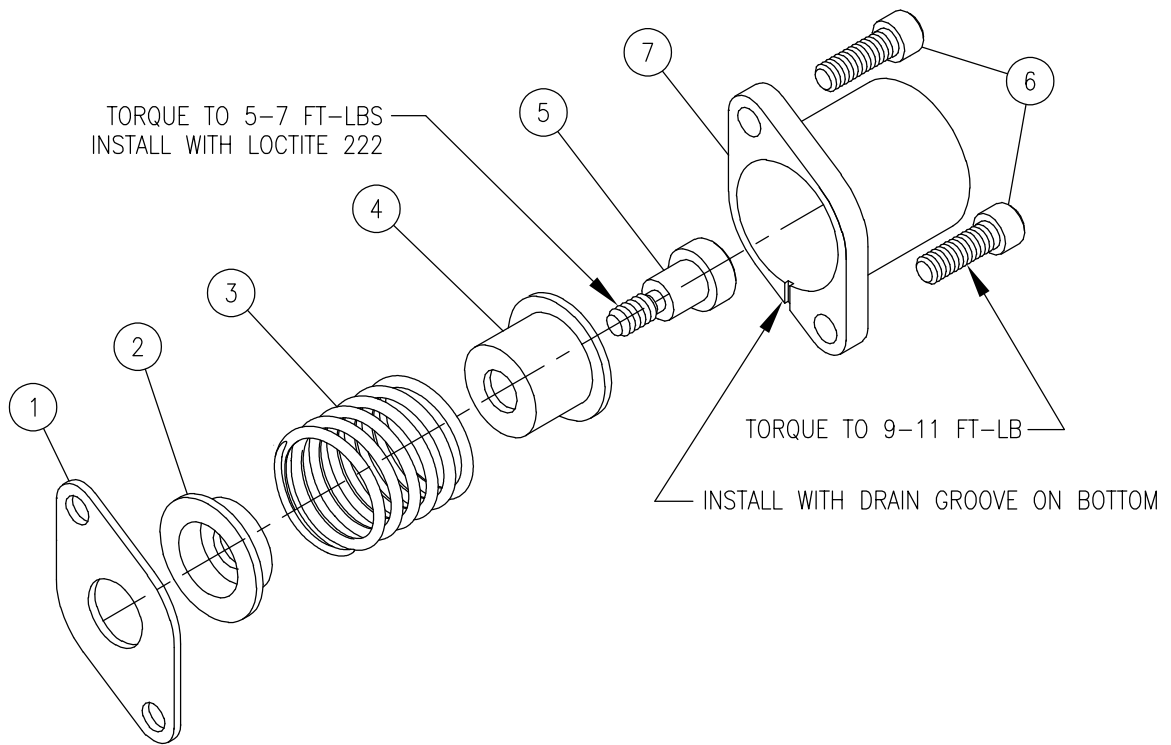
This is the standard outlet option. This option allows for conversion in the field for power beyond or closed center applications. When the spool is in neutral the inlet is unloaded to tank.

OPTION C: POWER BEYOND PLUG WITH #8 SAE BEYOND PORT

This option provides for a high pressure power beyond port. This would be used if a valve is to be added downstream. The outlet must be connected to tank. When spool is in neutral the inlet is connected to the power beyond port.

OPTION D: CLOSED CENTER PLUG

This option provides for closed center operation. This is typically used with a variable displacement pressure compensated pump or in a system with an unloading valve. When the spool is in neutral the inlet port is blocked.



SPRING CENTER SPOOL ATTACHMENT (OPTION A)

ITEM	QTY	PART NO.	DESCRIPTION
1	1	670500044	RETAINER PLATE
2	1	671400037	STOP CUP, INNER
3	1	670300030*	SPRING, CENTERING
4	1	671400036	STOP CUP, OUTER
5	1	671900010	ADAPTER, SPOOL
6	2	170003080	CAP SCREW
7	1	671400033	END CAP

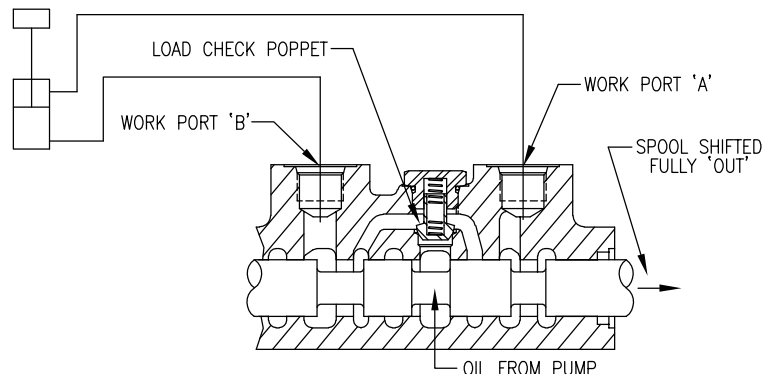
} CONVERSION KIT, P/N 660180001 }
 } SPRING CENTER KIT, P/N 660180135 }

* THE STANDARD CENTERING SPRING CAN BE REPLACED BY MEDIUM HEAVY SPRING 670300031, OR WITH LIGHT CENTERING SPRING 670300036.

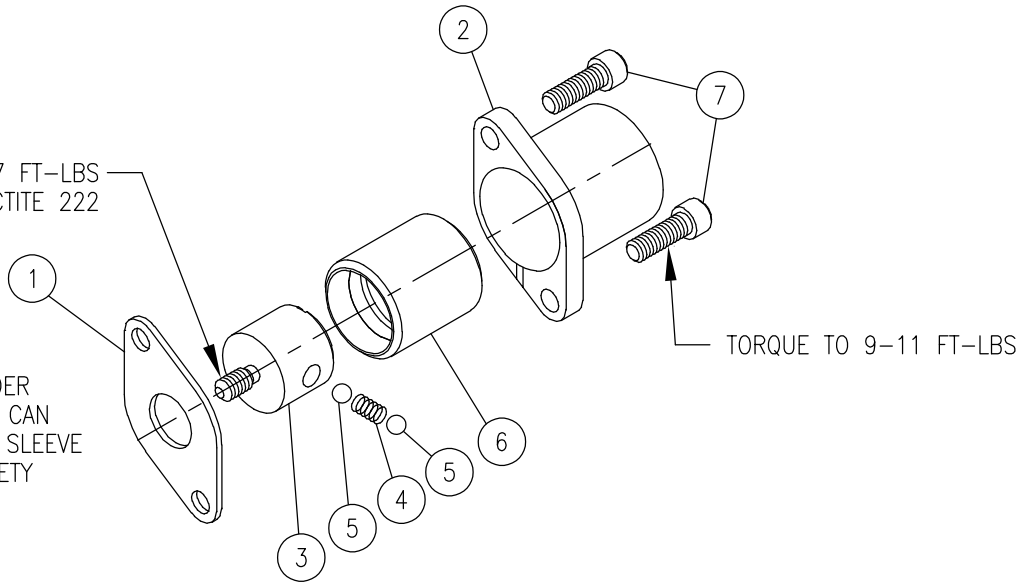
LOAD CHECK DESCRIPTION:

The load check feature is standard on all RD-4100 series valve. The load check will prevent the fall of a cylinder as the spool is shifted. It also prevents the backflow of oil from the work port to the inlet. As shown to the right, the pump must build up enough pressure to overcome the pressure on the work port caused by the weight of the load before the cylinder can move.

PLEASE NOTE that the load check has nothing to do with how well the valve will hold up a cylinder with the spool in neutral. The load check is functional only when the spool is shifted.



TORQUE TO 5-7 FT-LBS
INSTALL WITH LOCTITE 222

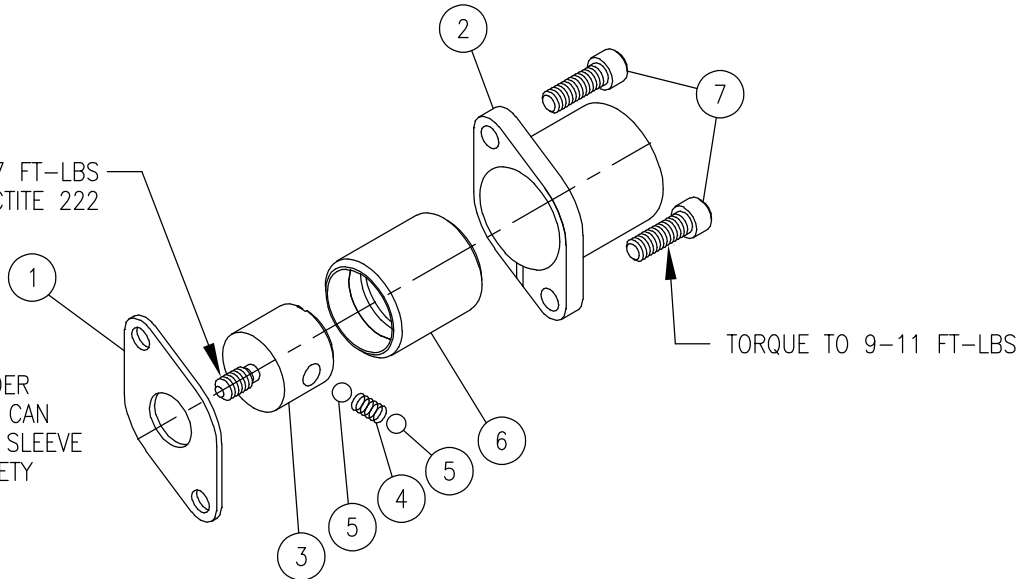


IMPORTANT NOTE:
DETENT BALLS ARE UNDER
SPRING PRESSURE AND CAN
FLY OUT WHEN DETENT SLEEVE
IS REMOVED. WEAR SAFETY
GLASSES.

3 POSITION DETENT SPOOL ATTACHMENT (OPTION B)

ITEM	QTY	PART NO.	DESCRIPTION
1	1	670500044	RETAINER PLATE
2	1	671400033	END CAP
3	1	670700035	DETENT RETAINER
4	1	670300025	SPRING, DETENT
5	2	230009009	STEEL BALL
6	1	670700034	DETENT SLEEVE
7	2	170003080	CAP SCREW
			CONVERSION KIT, P/N 660180002
			3 POSITION DETENT KIT, P/N 660180136

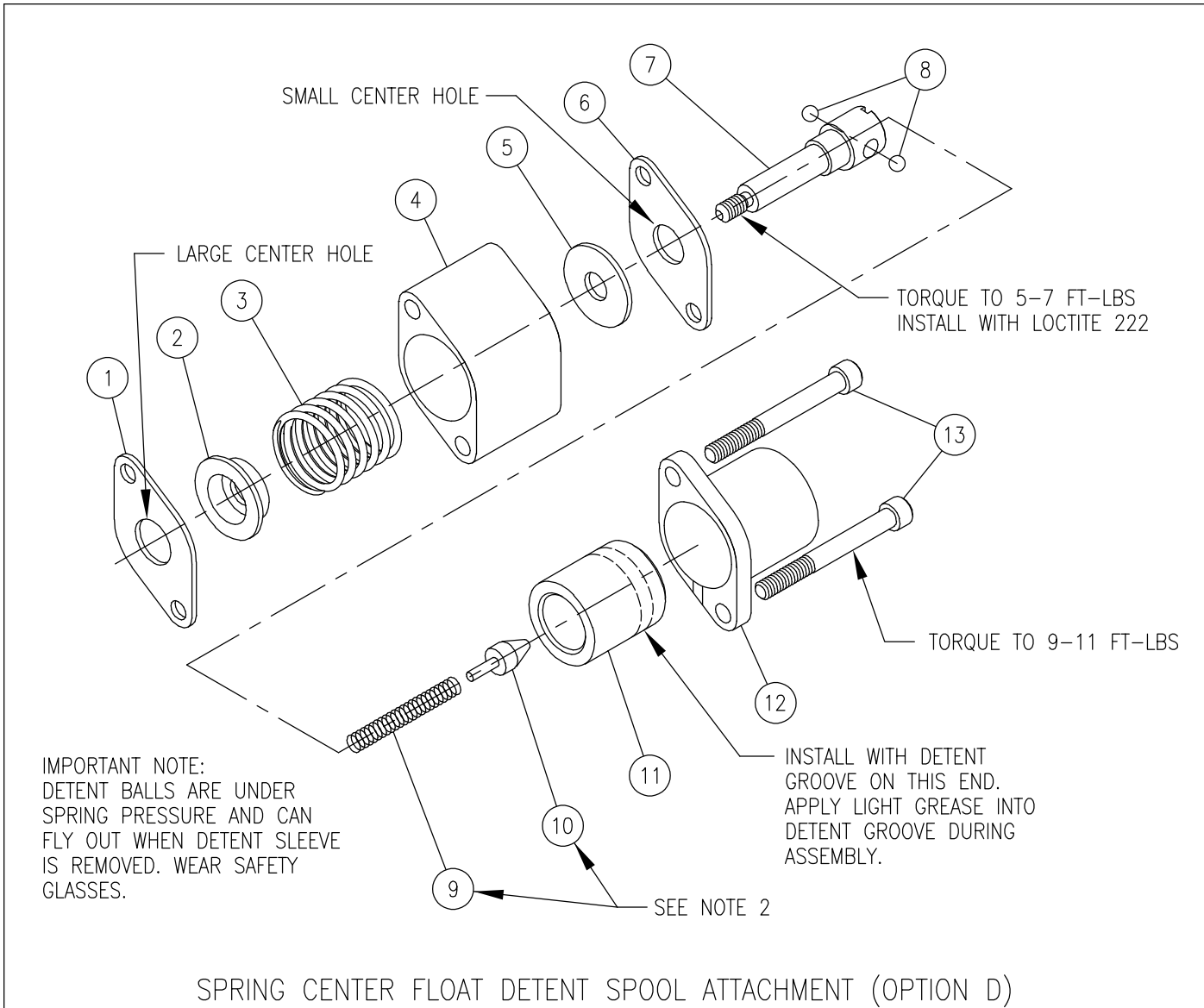
TORQUE TO 5-7 FT-LBS
INSTALL WITH LOCTITE 222



IMPORTANT NOTE:
DETENT BALLS ARE UNDER
SPRING PRESSURE AND CAN
FLY OUT WHEN DETENT SLEEVE
IS REMOVED. WEAR SAFETY
GLASSES.

1 POSITION DETENT SPOOL ATTACHMENT (OPTION C)

ITEM	QTY	PART NO.	DESCRIPTION
1	1	670500044	RETAINER PLATE
2	1	671400033	END CAP
3	1	670700035	DETENT RETAINER
4	1	670300025	SPRING, DETENT
5	2	230009009	STEEL BALL
6	1	670700033	DETENT SLEEVE
7	2	170003080	CAP SCREW
			CONVERSION KIT, P/N 660180003
			1 POSITION DETENT KIT, P/N 660180137



SPRING CENTER FLOAT DETENT SPOOL ATTACHMENT (OPTION D)

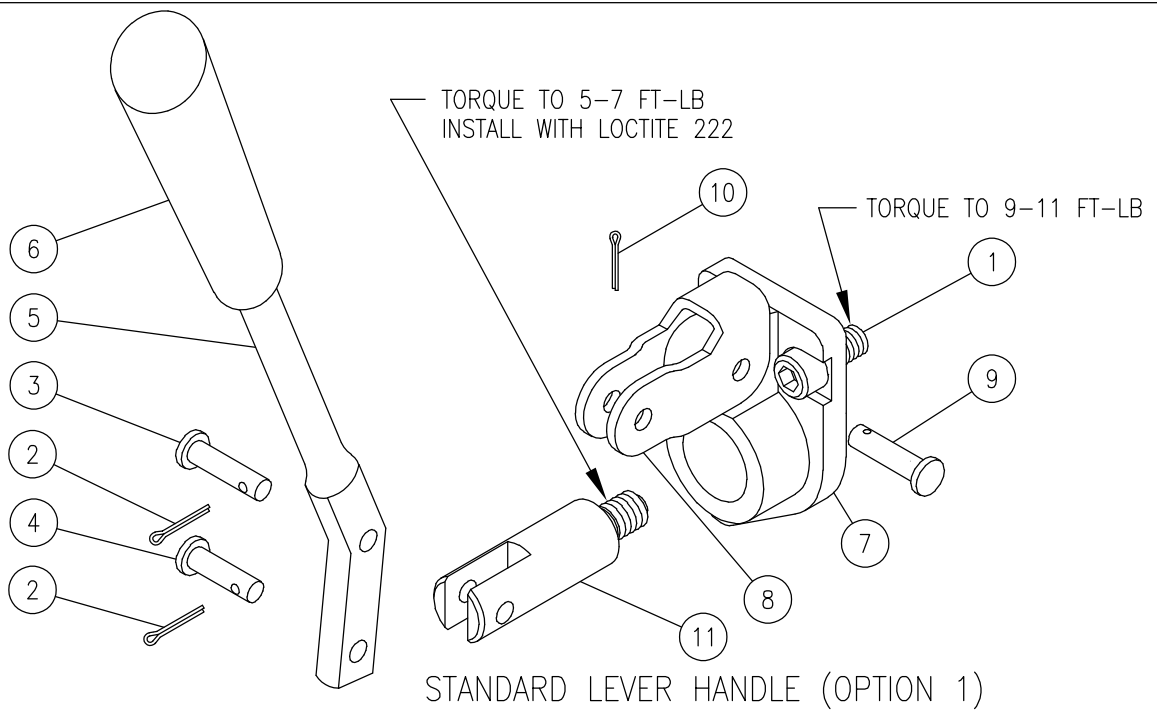
ITEM	QTY	PART NO.	DESCRIPTION
1	1	670500044	RETAINER PLATE
2	1	671400037	STOP CUP
3	1	670300031	SPRING, CENTERING
4	1	671200007	FLOAT SPACER
5	1	670500043	WASHER
6	1	670500048	RETAINER PLATE
7	1	670700037	FLOAT DETENT RETAINER
8	2	230009009	STEEL BALL
9	1	670300032	SPRING, DETENT
10	1	670100009	FLOAT DETENT POPPET
11	1	670700036	FLOAT DETENT SLEEVE
12	1	671400033	END CAP
13	2	170003027	CAP SCREW

SEE NOTE 2

SPRING CENTER FLOAT DETENT KIT;
P/N 660180051

NOTES:

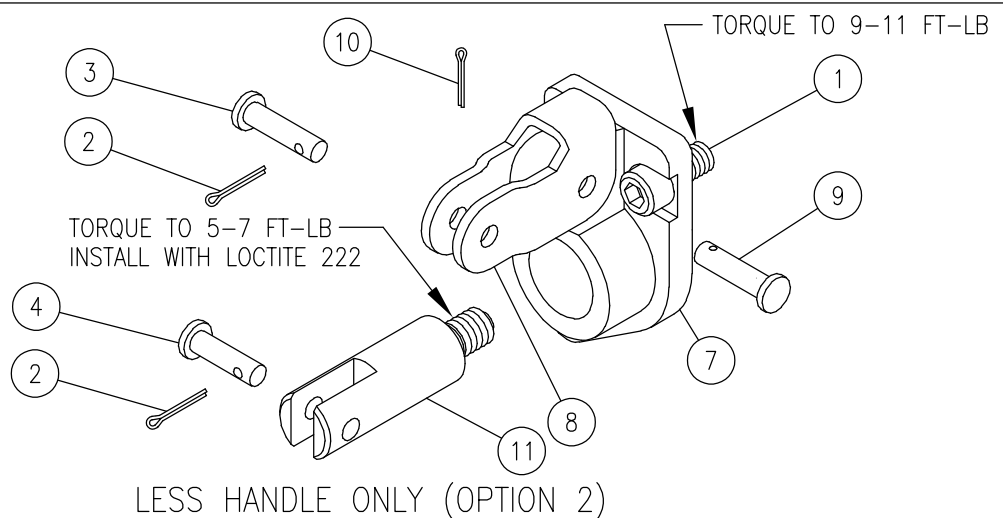
1. THIS OPTION CANNOT BE ADDED IN THE FIELD. MUST BE USED WITH FLOAT SPOOL OPTION 'D'.
2. INSTALL ITEMS 9 & 10 INTO ITEM 7 AND COMPRESS SPRING BY PRESSING ON POPPET WITH A DOWEL. INSTALL STEEL BALLS, ITEM 8, AND SLIDE DETENT SLEEVE, ITEM 11, OVER RETAINER, ITEM 7.



STANDARD LEVER HANDLE (OPTION 1)

ITEM	QTY	PART NO.	DESCRIPTION
1	2	170003017	CAP SCREW
2	2	220001512	COTTER PIN
3	1	671700012	CLEVIS PIN
4	1	671700014	CLEVIS PIN
5	1	670400012	HANDLE
6	1	670400020	HANDLE KNOB
7	1	671400040	CLEVIS
8	1	670500047	LINK
9	1	671700014	CLEVIS PIN
10	1	220001512	COTTER PIN
11	1	671900011	SPOOL ADAPTER

PIN KIT; 660180031
 HANDLE KIT; P/N 660180011
 CLEVIS SUB-ASSY; P/N 660180032
 COMPLETE HANDLE KIT; P/N 660180005

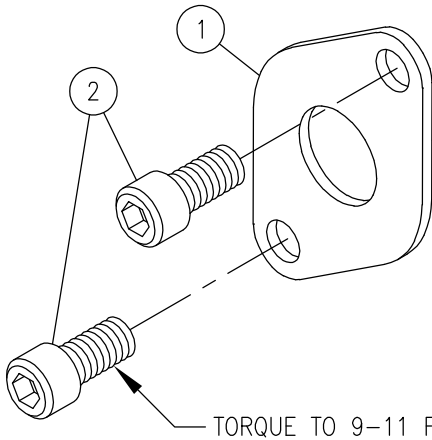


LESS HANDLE ONLY (OPTION 2)

ITEM	QTY	PART NO.	DESCRIPTION
1	2	170003017	CAP SCREW
2	2	220001512	COTTER PIN
3	1	671700012	CLEVIS PIN
4	1	671700014	CLEVIS PIN
5	1	671400040	CLEVIS
6	1	670500047	LINK
7	1	671700014	CLEVIS PIN
8	1	220001512	COTTER PIN
9	1	671900011	SPOOL ADAPTER

PIN KIT; P/N 660180031
 COMPLETE KIT; P/N 660180142
 CLEVIS SUB-ASSY; P/N 660180032

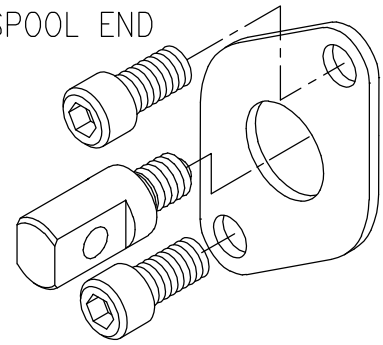
LESS COMPLETE HANDLE
(HANDLE OPTION 3)



ITEM	QTY	PART NO.	DESCRIPTION
1	1	670500044	RETAINER PLATE
2	2	170003017	CAP SCREW

LESS HANDLE, TANG SPOOL END
(HANDLE OPTION 5)

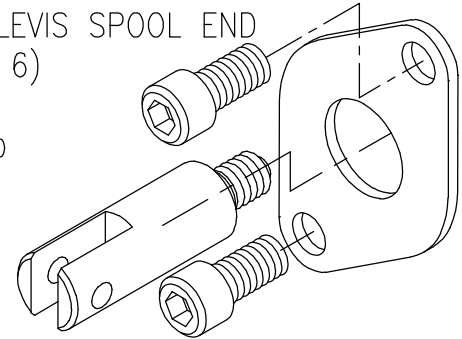
.250 DIA. PIN HOLE
.365 TANG WIDTH



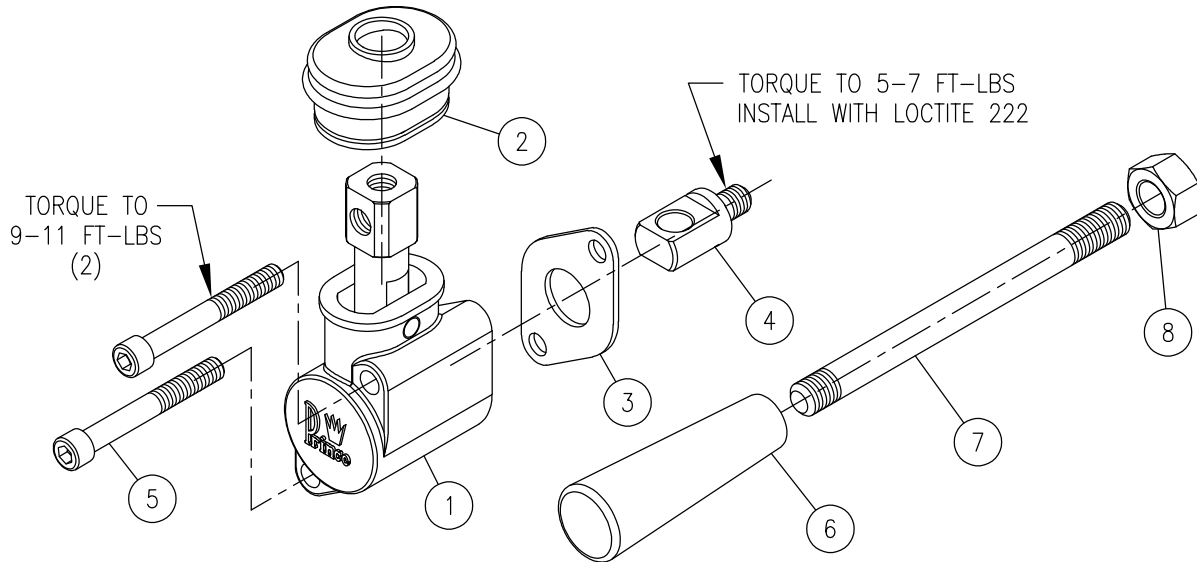
ITEM	QTY	PART NO.	DESCRIPTION
1	1	670500044	RETAINER PLATE
2	2	170003017	CAP SCREW
3	1	671900012	SPOOL ADAPTER, TANG

LESS HANDLE, CLEVIS SPOOL END
(HANDLE OPTION 6)

.187 DIA. PIN HOLE
NOM. SLOT WIDTH .250



ITEM	QTY	PART NO.	DESCRIPTION
1	1	670500044	RETAINER PLATE
2	2	170003017	CAP SCREW
3	1	671900011	SPOOL ADAPTER, CLEVIS



ENCLOSED HANDLE ASSY. (HANDLE OPTION 11)

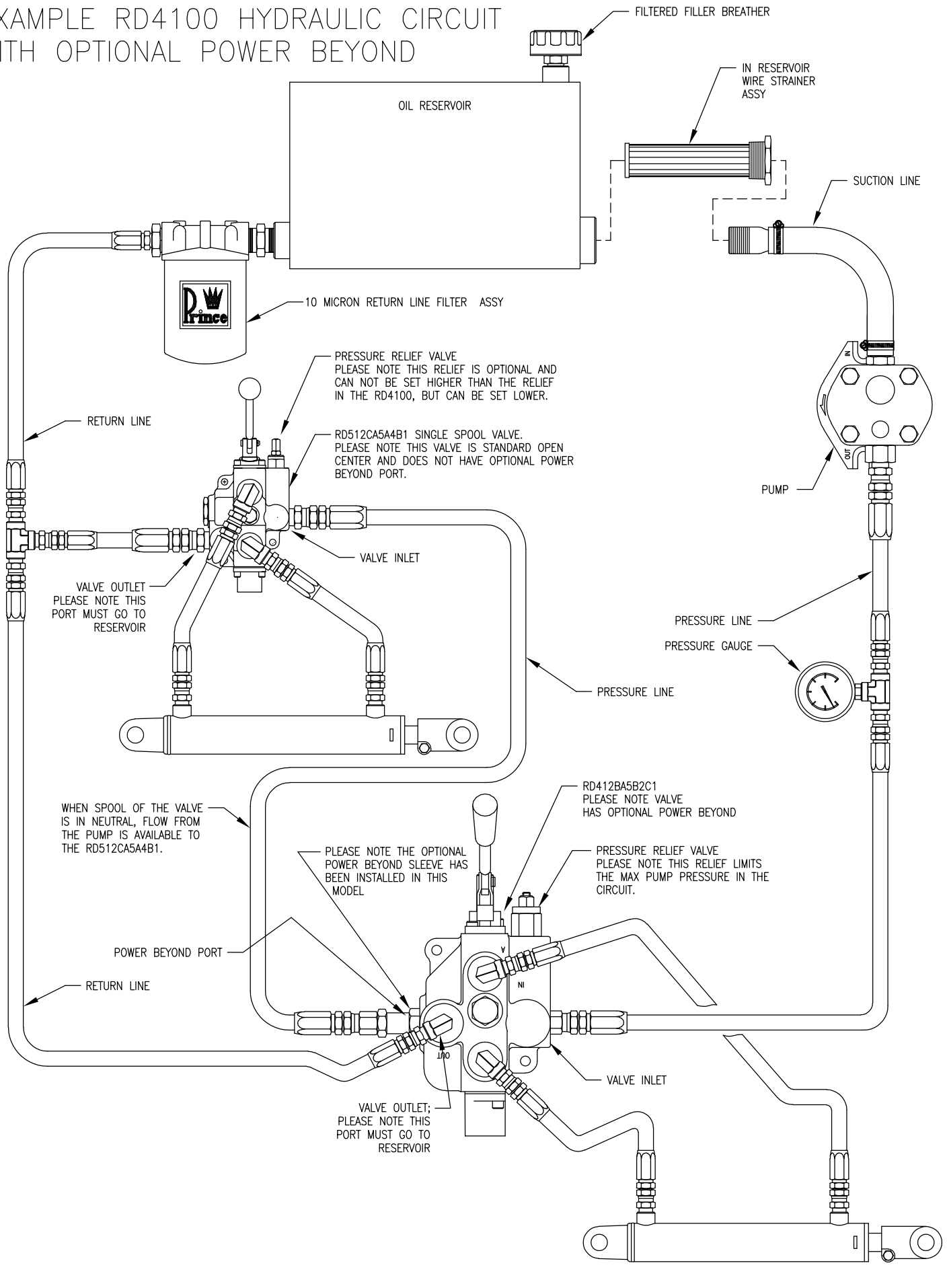
ITEM	QTY	PART NO.	DESCRIPTION
1	1	660380012	ENCLOSED HANDLE SUB-ASSY.
2	1	671300045	BOOT (INCLUDED IN ITEM 1)
3	1	670500044	RETAINER PLATE
4	1	671900089	SPOOL ADAPTER
5	2	170003019	CAP SCREW
6	1	670400020	HANDLE KNOB
7	1	670400083	HANDLE
8	1	220000129	HEX NUT

ENCL. HANDLE ASSY
P/N 660180149

HANDLE KIT
P/N 660180150

COMPLETE ENCL HANDLE KIT
P/N 660180183

EXAMPLE RD4100 HYDRAULIC CIRCUIT WITH OPTIONAL POWER BEYOND





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