

CSP Valve

3A3995J

EN

For the progressive delivery of mineral oil and grease for lubrication. For Professional Use Only.



Important Safety Instructions

Read all warnings and instructions in this manual and all related manuals. Keep these instructions.

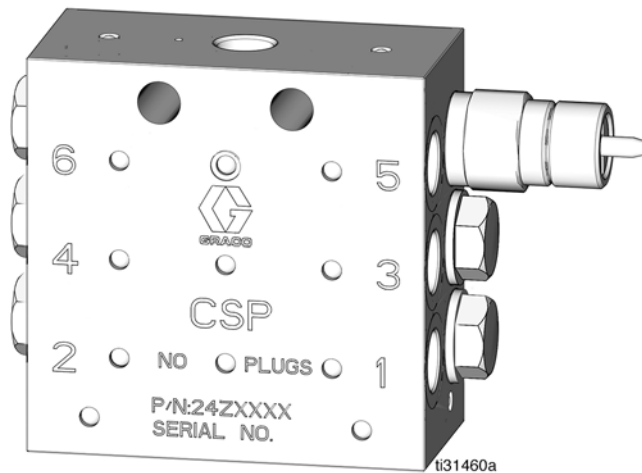
Related Manuals

3A3159 - Field Attachable Hose Fittings

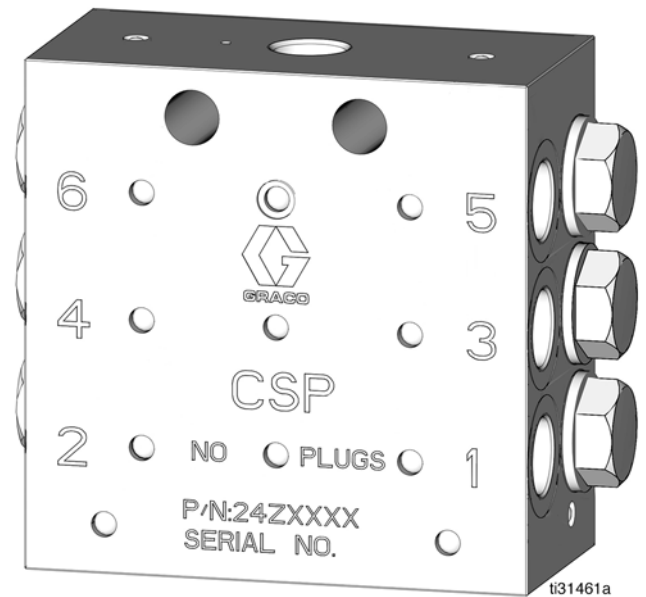
Models: See page 2

Maximum Operating Pressure - 5076 psi (350 bar, 35 MPa)

With Indicator Pin



Without Indicator Pin



Models*

Models*









*Lubricant output for these models: 0.2 cc per outlet and per stroke

Model	Inlet	No. of Outlets	Indicator Included
24Z477	1/8 in. BSPP	6	
24Z478	1/8 in. BSPP	8	
24Z479	1/8 in. BSPP	10	
24Z480	1/8 in. BSPP	12	
24Z481	1/8 in. BSPP	14	
24Z482	1/8 in. BSPP	16	
24Z483	1/8 in. BSPP	18	
24Z484	1/8 in. BSPP	20	
24Z485	1/8 in. BSPP	22	
24Z486	1/8 in. NPT	6	
24Z487	1/8 in. NPT	8	
24Z488	1/8 in. NPT	10	
24Z489	1/8 in. NPT	12	
24Z490	1/8 in. NPT	14	
24Z491	1/8 in. NPT	16	
24Z492	1/8 in. NPT	18	
24Z493	1/8 in. NPT	20	
24Z494	1/8 in. NPT	22	
24Z495	1/8 in. BSPP	6	✓
24Z496	1/8 in. BSPP	8	✓
24Z497	1/8 in. BSPP	10	✓
24Z498	1/8 in. BSPP	12	✓
24Z499	1/8 in. BSPP	14	✓
24Z500	1/8 in. BSPP	16	✓
24Z501	1/8 in. BSPP	18	✓
24Z502	1/8 in. BSPP	20	✓
24Z503	1/8 in. BSPP	22	✓

24Z504	1/8 in. NPT	6	✓
24Z505	1/8 in. NPT	8	✓
24Z506	1/8 in. NPT	10	✓
24Z507	1/8 in. NPT	12	✓
24Z508	1/8 in. NPT	14	✓
24Z509	1/8 in. NPT	16	✓
24Z510	1/8 in. NPT	18	✓
24Z511	1/8 in. NPT	20	✓
24Z512	1/8 in. NPT	22	✓

Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

 <h1 style="margin: 0;">WARNING</h1>	
    	<p>SKIN INJECTION HAZARD</p> <p>High-pressure fluid from dispensing device, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. Get immediate surgical treatment.</p> <ul style="list-style-type: none"> • Do not point dispensing device at anyone or at any part of the body. • Do not put your hand over the fluid outlet. • Do not stop or deflect leaks with your hand, body, glove, or rag. • Follow the Pressure Relief Procedure when you stop dispensing and before cleaning, checking, or servicing equipment. • Tighten all fluid connections before operating the equipment. • Check hoses and couplings daily. Replace worn or damaged parts immediately.
 	<p>EQUIPMENT MISUSE HAZARD</p> <p>Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> • Do not operate the unit when fatigued or under the influence of drugs or alcohol. • Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See Technical Data in all equipment manuals. • Use fluids and solvents that are compatible with equipment wetted parts. See Technical Data in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request Safety Data Sheet (SDS) from distributor or retailer. • Turn off all equipment and follow the Pressure Relief Procedure when equipment is not in use. • Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only. • Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards. • Make sure all equipment is rated and approved for the environment in which you are using it. • Use equipment only for its intended purpose. Call your distributor for information. • Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces. • Do not kink or over bend hoses or use hoses to pull equipment. • Keep children and animals away from work area. • Comply with all applicable safety regulations.

WARNING



PERSONAL PROTECTIVE EQUIPMENT

Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. Protective equipment includes but is not limited to:


- Protective eyewear, and hearing protection.
- Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.

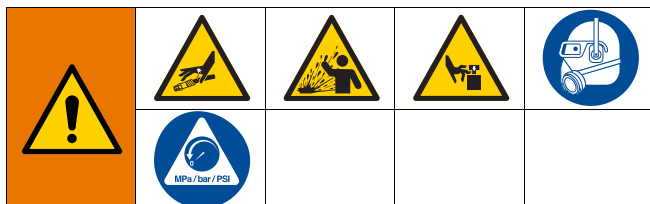
CALIFORNIA PROPOSITION 65

This product contains a chemical known to the State of California to cause cancer, birth defects or other reproductive harm. Wash hands after handling.

Installation

Pressure Relief Procedure

 Follow the Pressure Relief Procedure whenever you see this symbol.



This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, splashing fluid and moving parts, follow the Pressure Relief Procedure when you stop dispensing and before cleaning, checking, or servicing the equipment.

Loosen inlet connection (a) to allow lubricant to bleed from fitting and relieve pressure in block.

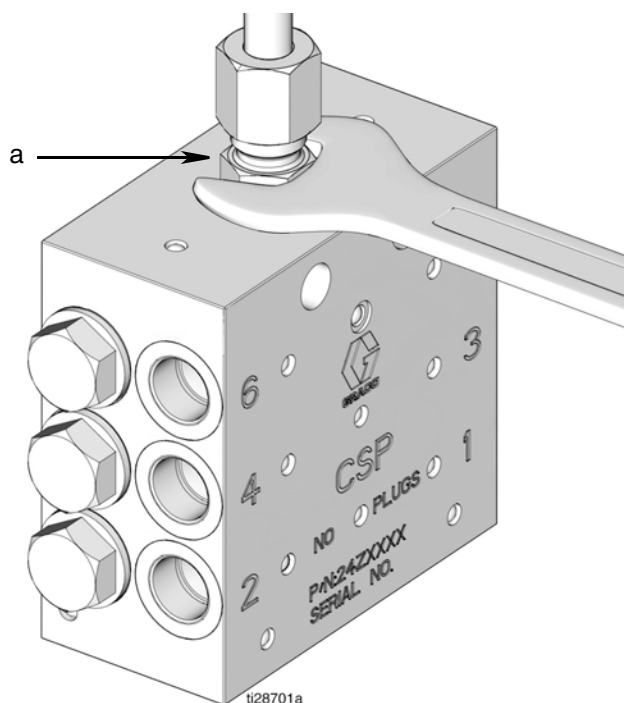


FIG. 1

Setup

The CSP valve is shipped ready to install in your system. It has been factory-tested and should not require any additional modification.

To install the CSP valve in your system:

Determine an appropriate mounting location for the CSP valve and mounting bracket (if required).

When mounting the CSP valve:

- the outlets must be in an easily accessible location. This will aid in troubleshooting in case the system is blocked.
- the indicator pins must be visible.

Output Combination

The output of a CSP valve outlet can be increased by plugging an adjacent outlet. When one or more outlets are plugged the output is a multiple of the standard output.

NOTE: Do not close or plug outlets numbered 1 and 2.

Outlet Fitting Installation

See FIG. 2.

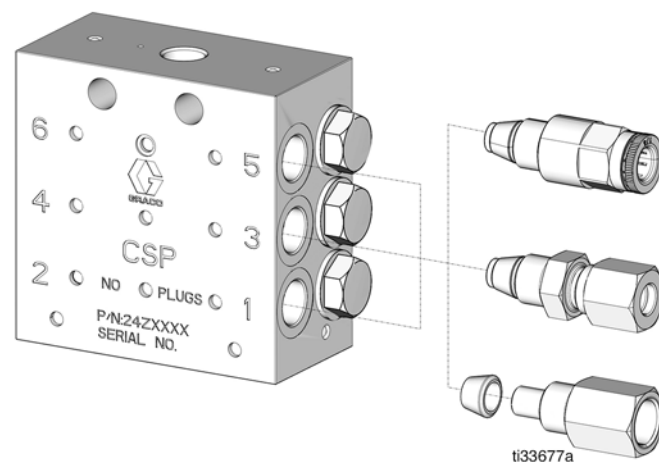


FIG. 2

NOTE:

- Always use Graco provided block outlet fittings with clamping ring in block outlet. Any fittings without a clamping ring will cause the lubrication system to fail.
- See CSP Divider Block Outlet Fittings, page 11 for a complete list of available outlet fittings.

System Monitoring

In a series progressive system the primary and secondary CSP valves can be connected with high pressure hoses so that every outlet is linked together.

If even one plunger in one of the CSP valves is not working, lubricant will no longer be supplied to any of the outlets.

If one of the secondary CSP valves is blocked, then the primary CSP valve will also be blocked and the entire system installed downstream from the pump stops working.

A cycle indicator makes it possible to monitor the operation of the entire system.

Cycle Indicator

A CSP valve can be equipped with a Cycle Indicator Pin. The indicator is connected to the plunger and moves back and forth during plunger movement and as lubricant is distributed.

NOTE: A micro limit switch/proximity switch/sensor can be installed to the cycle indicator to monitor the system electronically.

Electric System Monitoring

A system can be set up to use an electronic controller or to use a pump with a built in controller. A micro-limit/proximity switch/sensor can be installed to the cycle indicator on the CSP block and connected to the electronic controller. Together they can control the pump operating time by counting cycles until the preset number of cycles has occurred.

The system can be set up to indicate a fault if the preset run time has expired before the preset number of cycles were counted.

Operation

- Lubricant supply can either be continuous or intermittent.
- Every movement of the plunger delivers a fixed quantity of lubricant.
- The cycle repeats as long as lubricant is supplied to the inlet port.
- If the lubricant supply is interrupted, when restarted the cycle continues from the point it was previously stopped.
- Each plunger must complete its full movement before the next plunger can be moved.
- The failure of any one of the units causes the complete system to shut down.

Operation Sequence

Sequence 1

1. Lubricant enters through the inlet provided at the top of the block.
2. Lubricant fills the left side of plunger number 1 pushing the plunger to the right.
3. Plunger number 1 opens delivering lubricant to outlet number 1.

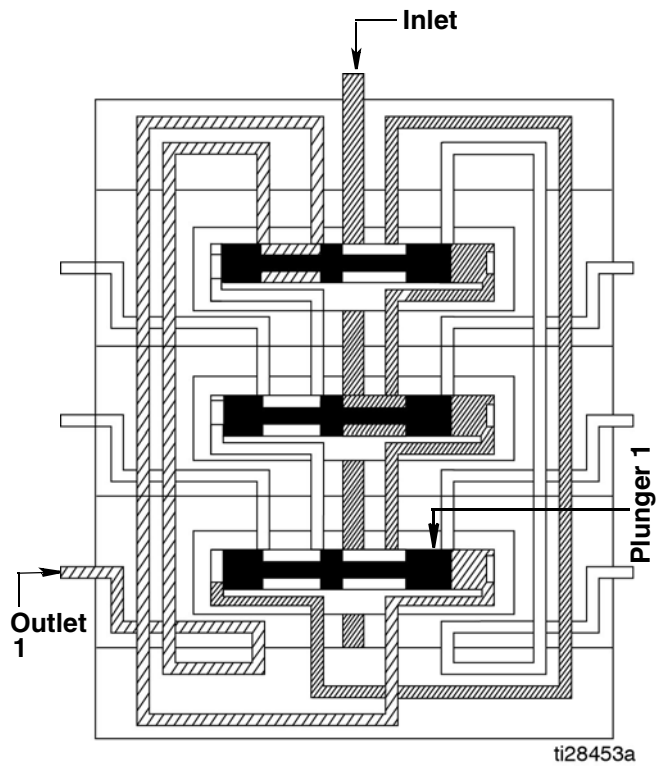


FIG. 3

Sequence 2

1. Lubricant fills the left side of plunger number 2 pushing the plunger to the right.
2. Plunger number 2 opens delivering lubricant to outlet number 4.

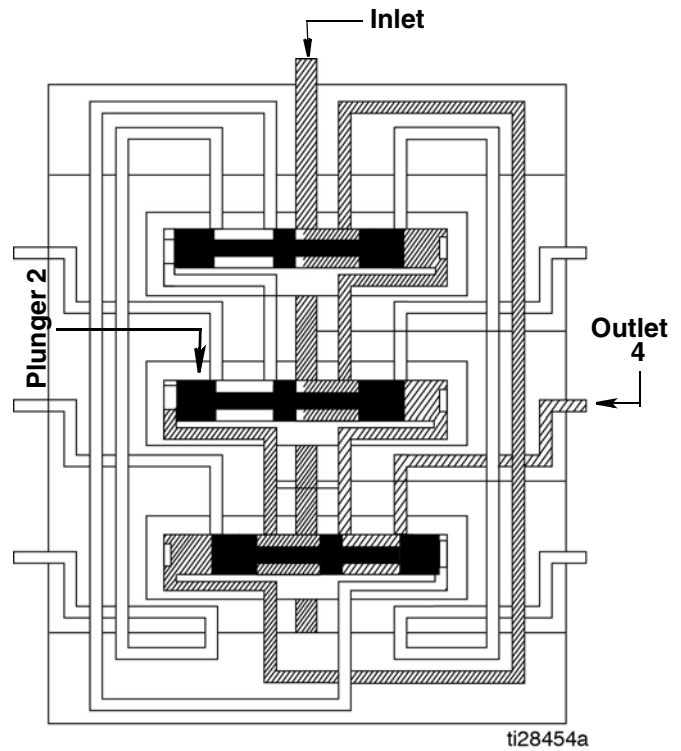


FIG. 4

Sequence 3

1. Lubricant fills the left side of plunger number 3 pushing the plunger to the right.
2. Plunger number 3 opens delivering lubricant to outlet number 6.

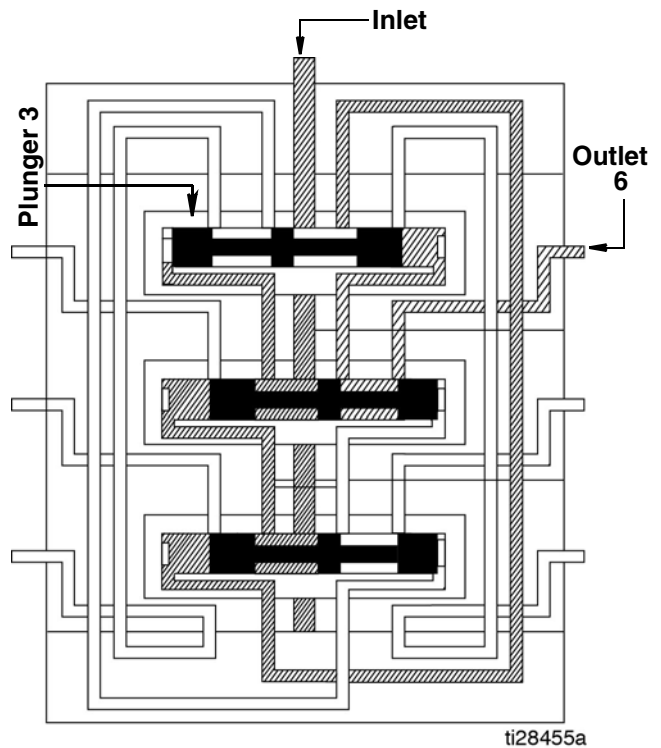


FIG. 5

Sequence 4

1. Lubricant fills the right side of plunger number 1 pushing the plunger to the left.
2. Plunger number 1 opens delivering lubricant to outlet number 2.

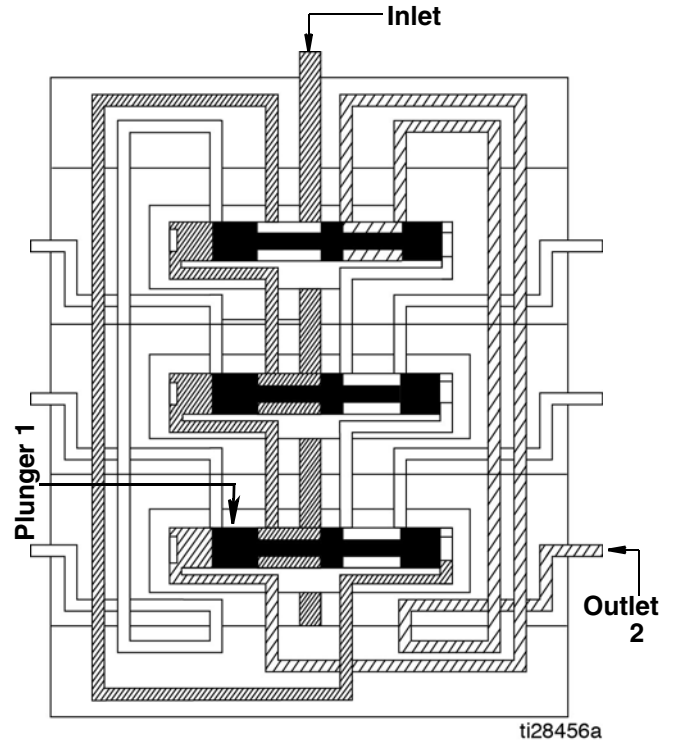


FIG. 6

Sequence 5

1. Lubricant fills the right side of plunger number 2 pushing the plunger to the left.
2. Plunger number 2 opens delivering lubricant to outlet number 3.

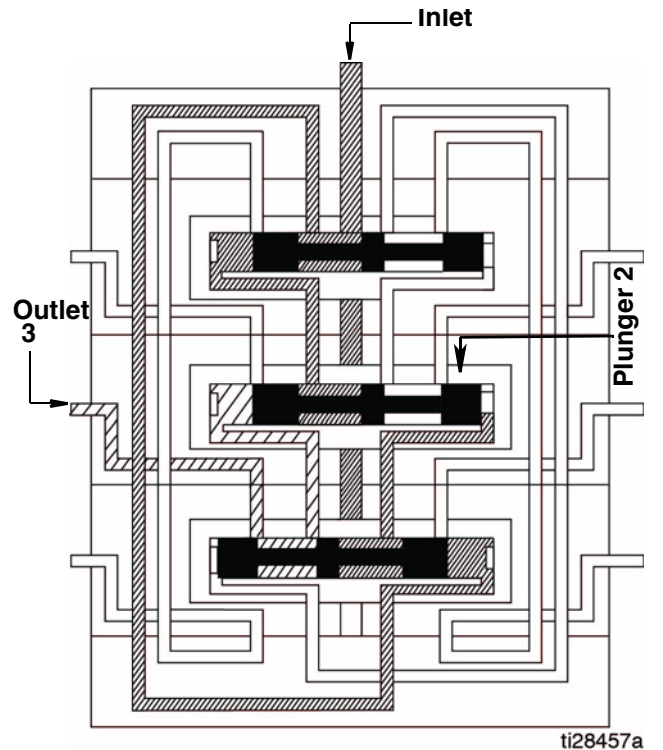


FIG. 7

Sequence 6

1. The final sequence completes the cycle. Lubricant fills the right side of plunger number 3.
2. Plunger number 3 opens, delivering lubricant to outlet number 5.

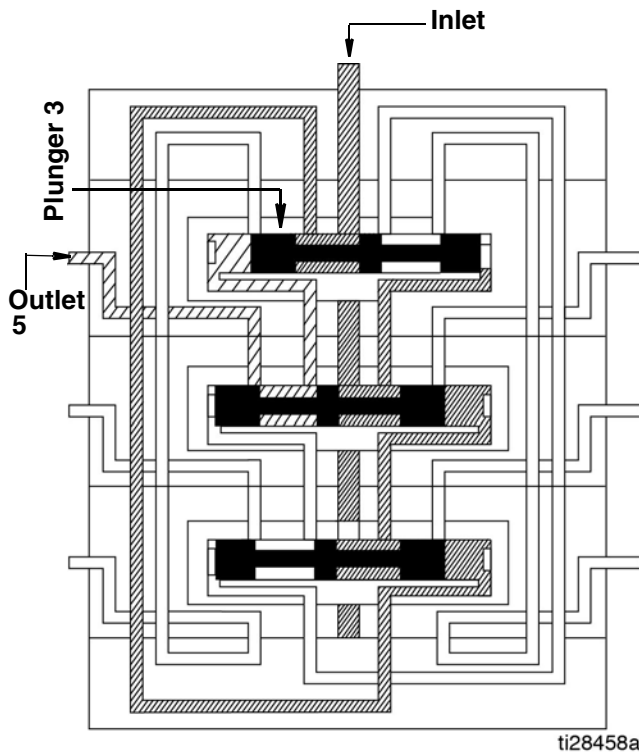


FIG. 8

Blockages

Cleaning a blockage requires a higher than normal pumping pressure. Depending on the application or system design, a blockage will usually result in a complete loss of lubricant flow into the total system and no bearing will be receiving lubrication.

The loss of flow due to a blockage is first indicated with the higher than normal system pressure that is developed by the pump as it attempts to overcome this blockage. Higher pressure is limited, isolated and signaled through the use of various performance indicators, reset and relief, incorporated into the system design. Contact your Graco distributor for available parts.

Cleaning Valves

NOTICE

- Dirt and foreign material will damage lubricating equipment. Perform all service and disassembly under the cleanest possible conditions.
- Hard or sharp metal objects such as punches, screwdrivers, and picks can scratch and damage piston bore. When cleaning these surfaces use a brass rod and hand pressure only.

1. Remove end plugs only and try to move each piston back and forth without removing the piston from the valve section.

If all pistons move freely and there is no indication of a more serious problem:

2. Replace end plugs.

Contamination Blockage

If dirt, foreign material or any other form of contamination is found in a valve, cleaning that valve will only temporarily solve contamination blockage problems. The source of the contamination must be eliminated for satisfactory service.

The system filtering method must be investigated, filter elements should be inspected and cleaned if necessary.

The reservoir filling method should be reviewed to eliminate any chance of foreign material entering the reservoir during filling.

Separation Blockage

If a hard wax or soap-like material is found in the valve section, grease separation is occurring. This means that the oil is being squeezed from the grease at normal system operating pressure and the grease thickener is being deposited in the divider valve. Cleaning the divider valve will only temporarily solve the problem. Consult your lubricant supplier for recommendations on alternate lubricants and your local Graco distributor to verify compatibility with centralized lubricating systems.

Accessories

CSP Divider Block Inlet Fittings

Part No.	Description	Qty
17L442◆	FITTING, push to connect, 1/4 inch hose stud x 1/8 inch NPT male straight, 2000 psi (13.79 MPa, 137.9 bar)	1
17L449◆	FITTING, push to connect, 6 mm stud x 1/8 BSPT male 90°, 2000 psi (13.79 MPa, 137.9 bar)	1
17L545◆	FITTING, push to connect, 6mm stud x 1/8 BSPT male straight, 2000 psi (13.79 MPa, 137.9 bar)	1
17L546	FITTING, compression, 6 mm x 1/8 BSPT male 90°, 3000 psi (20.68 MPa, 206.8 bar)	1
17L548	FITTING, compression, 6 mm x 1/8 BSPT male straight, 3000 psi (20.68 MPa, 206.8 bar)	1
17T780	FITTING, compression, 6 mm x 1/8 NPT male straight, 3000 psi (20.68 MPa, 206.8 bar)	1
17T781	FITTING, compression, 6 mm x 1/8 NPT male 90°, 3000 psi (20.68 MPa, 206.8 bar)	1

◆ Always connect fittings to Graco designed stud to ensure your connections.

CSP Divider Block Outlet Doubling Plug

Part No.	Description	Qty
17L651✿	PLUG, outlet doubling, 3000 psi (20.68 MPa, 206.8 bar)	1

✿ Torque to 10-12 ft.-lbs (13.56-16.27 N•m)

CSP Divider Block Outlet Fittings

Part No.	Description	Qty
17Y692★	FITTING, compression with check valve, 1/4 inch tube, 1000 psi (6.9 MPa, 69 bar)	1
17L440★	FITTING, push to connect, 1/4 inch OD tube x M10 with check valve, 625 psi (4.31 MPa, 43.1 bar)	1
17L441◆★	FITTING, push to connect, 1/4 inch hose stud x M10 with check valve, 2000 psi (13.79 MPa, 137.9 bar)	1
17L458◆★	FITTING, push to connect, 6 mm hose stud x M10 with check valve, 2000 psi (13.79 MPa, 137.9 bar)	1
17L543★	FITTING, push to connect, valve outlet, 6 mm OD tube, 1000 psi (6.9 MPa, 69 bar)	1
17L550★	FITTING, compression, valve outlet, 6 mm OD tube, with check valve, 3000 psi (20.68 MPa, 206.8 bar)	1
17Y693★	ADAPTER, M10 x 1/8 NPT female, with check valve, 5076 psi (35 MPa, 350 bar)	1
17Y689	Fitting, push to connect, 6 mm stud x 1/8 NPT male, straight, 2000 psi (13.79 MPa, 137.9 bar)	

NOTE:

Always use Graco outlet fittings for your applications.

◆ Always connect fittings to Graco designed stud to ensure your connections.

★ Torque to 12-14 ft.-lbs (16.27 - 18.98 N•m)

Lubrication Point Fittings (English Threads)

Part No.	Description	Qty
17L652‡	FITTING, push to connect, 1/4 inch OD tube x 1/8 inch NPT male 90°, 625 psi (4.31 MPa, 43.1 bar)	1
17L653‡	FITTING, push to connect, 1/4 inch OD tube x 1/8 inch NPT male straight, 625 psi (4.31 MPa, 43.1 bar)	1
17L547◆	FITTING, push to connect, 1/4 inch stud x 1/4 NPT male straight, 2000 psi (13.79 MPa, 137.9 bar)	1
17T782	FITTING, compression, 6 mm x 1/4 NPT male straight, 3000 psi (20.68 MPa, 206.8 bar)	1
17T783	FITTING, compression, 6 mm x 1/4 NPT male 90°, 3000 psi (20.68 MPa, 206.8 bar)	1

◆ Always connect fittings to Graco designed stud to ensure your connections.

‡ Used ONLY for connection to Nylon tube.

Lubrication Point Fittings (Metric Threads)

Part No.	Description	Qty
17L455‡	FITTING, push to connect, 6 mm tube x M10 tapered male straight, 1000 psi (6.9 MPa, 69 bar)	1
17L456‡	FITTING, push to connect, 6 mm tube x M8 tapered male straight, 1000 psi (6.9 MPa, 69 bar)	1
17L457‡	FITTING, push to connect, 6 mm tube x M6 tapered male straight, 1000 psi (6.9 MPa, 69 bar)	1
17R567‡	FITTING, push to connect, 6 mm tube x 1/8 BSPT male straight 1000 psi (6.9 MPa, 69 bar)	1
17R568‡	FITTING, push to connect, 6 mm tube x 1/8 BSPT male 90°, 1000 psi (6.9 MPa, 69 bar)	1
17R569◆	FITTING, push to connect, 6 mm stud x 1/4 BSPT male, straight, 2000 psi (13.79 MPa, 137.9 bar)	1
17R570◆	FITTING, push to connect, 6mm stud x 1/4 BSPT male 90°, 2000 psi (13.79 MPa, 137.9 bar)	1
17R571	FITTING, compression, 6 mm x 1/4 BSPT male straight, 3000 psi (20.68 MPa, 206.8 bar)	1

17R572	FITTING, compression, 6 mm x 1/4 BSPT male 90°, 3000 psi (20.68 MPa, 206.8 bar)	1
17R573	FITTING, compression, 6 mm x M6 tapered male straight, 3000 psi (20.68 MPa, 206.8 bar)	1
17R575	FITTING, compression, 6 mm x M8 tapered male straight, 3000 psi (20.68 MPa, 206.8 bar)	1
17R577	FITTING, compression, 6 mm x M10 tapered male straight, 3000 psi (20.68 MPa, 206.8 bar)	1
17R574	FITTING, compression, 6 mm x M6 tapered male 90°, 3000 psi (20.68 MPa, 206.8 bar)	1
17R576	FITTING, compression, 6 mm x M8 tapered male 90°, 3000 psi (20.68 MPa, 206.8 bar)	1
17R578	FITTING, compression, 6 mm x M10, tapered male 90°, 3000 psi (20.68 MPa, 206.8 bar)	1
17L446‡	FITTING, push to connect, elbow, 6 mm x M10 tapered male 90°, 1000 psi (6.9 MPa, 69 bar)	1
17L447‡	FITTING, push to connect, 6 mm tube x M8 tapered male 90°, 1000 psi (6.9 MPa, 69 bar)	1
17L448‡	FITTING, push to connect, 6 mm tube x M6 tapered male 90°, 1000 psi (6.9 MPa, 69 bar)	1

‡ Used ONLY for connection to Nylon tube.

◆ Always connect fittings to Graco designed stud to ensure your connections.

1/8 inch ID Hose End Fittings (connect to 1/4 inch PTC fittings) ◆

Maximum working pressure - 3000 psi (20.68 MPa, 206.8 bar)

Part No.	Description	Qty
17L437	STUD, 90°, 1/8 inch hose x PTC fitting	1
17L438	STUD, straight, 1/8 inch hose x PTC fitting	1
17L647	SLEEVE, hose, 1/8 inch ID	1

8.6 MM OD Hose End Fittings (connect to 6 MM PTC fittings) ◆

Maximum working pressure - 3000 psi (20.68 MPa, 206.8 bar)

Part No.	Description	Qty
17L648	SLEEVE, hose, 8.6 mm	1
17L649	STUD, straight, 8.6 mm hose x PTC fitting	1
17L650	STUD, 90°, 8.6 mm hose x PTC fitting	1

8.6 MM OD Hose End Fittings (connect to 6 MM compression fittings) ◆

Maximum working pressure - 3000 psi (20.68 MPa, 206.8 bar)

Part No.	Description	Qty
17L648	SLEEVE, hose, 8.6 mm	1
17R565	STUD, straight, 8.6 mm hose x compression fitting, BLK	1
17R566	STUD, 90°, 8.6 mm hose x compression fitting, BLK	1

◆ For complete Warnings and instructions, see related manual 3A3159.

6 MM OD Nylon Tube

Maximum working pressure - 1000 psi (6.9 MPa, 69 bar)

Part No.	Description	Qty
17S556	TUBE, 6 MM x 25 M	1
17S557	TUBE, 6 MM x 50 M	1
17S558	TUBE, 6 MM x 100 M	1
17S559	TUBE, 6 MM x 200 M	1

8.6 MM OD High Pressure Hose

Maximum working pressure - 3000 psi (20.68 MPa, 206.8 bar)

Part No.	Description	Qty
17S552	HOSE, 8.6 MM x 25 M	1
17S553	HOSE, 8.6 MM x 50 M	1
17S554	HOSE, 8.6 MM x 100 M	1
17S555	HOSE, 8.6 MM x 200 M	1

Hose Guard

Use with 8.6 mm OD high pressure hose

Part No.	Description	Qty
123147	GUARD, hose, 9 mm ID, 10 M	1

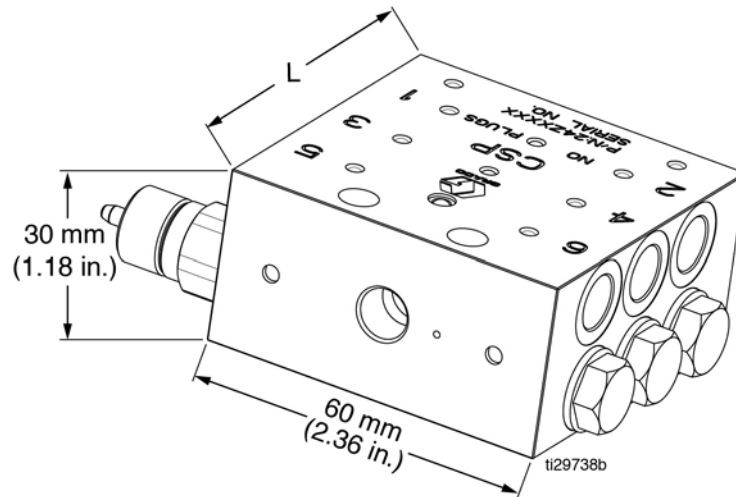
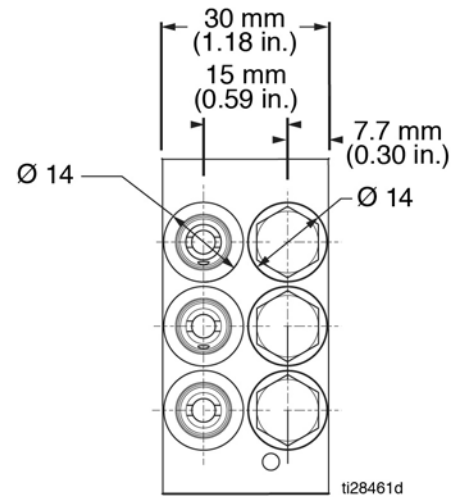
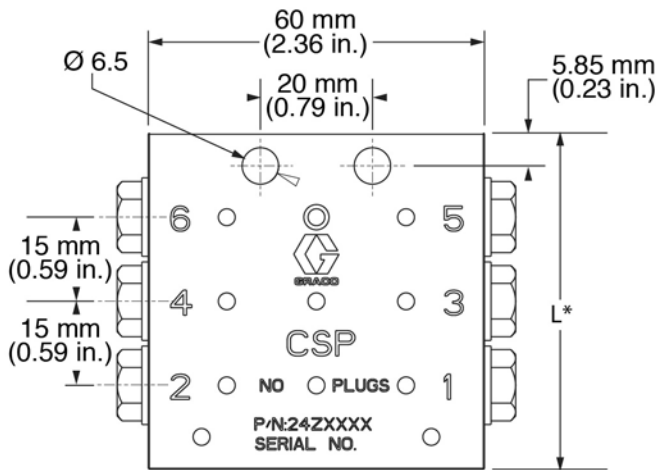
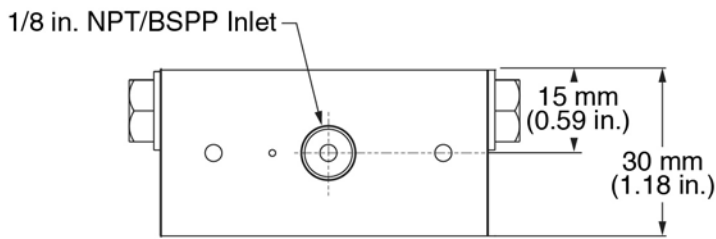
Block Installation Kit

Part No.	Description	Qty
26A478	KIT, weld stud	1
	STUD, M6 x 45	2
	NUT, M6, lock	2
	WASHER	2
26A479	KIT, plate	1
	PLATE	1
	NUT, M6 w/o lock	4

Technical Data

CSP Valve		
	US	Metric
Type	Divider valve	
Model	See Models, page 2 and 3	
Lubricant Output (per outlet, per cycle)	0.012 cubic inch	0.2 cc
Minimum Operating Pressure	350 psi	24.1 bar, 2.41 MPa
Maximum Operating Pressure	5076 psi	350 bar, 35 MPa
Inlet Connection Size	1/8 inch BSPP, 1/8 inch NPT	
Outlet Connection Size	M10 x 1 (f)	
Maximum Working Temperature	212°F	100°C
No. of Outlets (L, page 15)	LENGTH	
6 outlets	2.4 in.	60 mm
8 outlets	3.0 in.	75 mm
10 outlets	3.5 in.	90 mm
12 outlets	4.0 in.	105 mm
14 outlets	4.5 in.	120 mm
16 outlets	5.25 in.	135 mm
18 outlets	6.0 in.	150 mm
20 outlets	6.5 in.	165 mm
22 outlets	7.0 in.	180 mm
Monitoring	Cycle indicator / Limit switch / Proximity switch	
Lubricant	Max up to #2 NLGI grade	
Material of Construction	Carbon Alloy Steel	

Dimensions



*This dimension varies and is determined by the number of outlets. See No. of Outlets, page 14 for this dimension.

Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

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In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

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