Duplex Commercial Pressurizer®-DCP

Thrush Company, Inc.

Pre-Engineered Two-Pump Booster

Reliable, Efficient and Easy

Thrush Duplex Commercial Pressurizer

Thrush **Duplex Commercial Pressurizers** are pre-engineered pressure booster packages that increase system pressure and maintain the flow necessary to meet changing system demands. The constant pressure feature is unique and sets Thrush DCPs apart from other booster packages. Constant pressure on the top floor of a building ensures not only adequate flow but also, the efficient operation of water use fixtures and appliances such as flush valves, washdown bowls, dishwashers, washing machines and shower heads. Pressure boosting, without constant control of pressure, will cause demand pressure fluctuations. This will result in either too little or too much operating pressure at critical fixtures and appliances resulting in improper operation.

Product Features

- Pre-engineered
- Standard PLC control
- Completely assembled to simplify installation
- Constant pressure at varying flows
- Flows up to 200 GPM
- Pressure boost to 65 PSI
- Can work as a lead/lag system or as a simplex system with 100% back-up
- Standard models in stock

DCP Quick Sizing Chart

Total Flow (GPM) \ Required Boost (PSIG)	30	35	40	45	50	55	60	65
40	DCP-60	DCP-60	DCP-60	DCP-60	DCP-75	DCP-75	DCP-75	DCP-100
50	DCP-60	DCP-60	DCP-60	DCP-60	DCP-75	DCP-75	DCP-75	DCP-100
60	DCP-60	DCP-60	DCP-60	DCP-60	DCP-75	DCP-75	DCP-75	DCP-100
70	DCP-60	DCP-60	DCP-60	DCP-60	DCP-75	DCP-75	DCP-75	DCP-100
80	DCP-60	DCP-60	DCP-60	DCP-60	DCP-75	DCP-75	DCP-75	DCP-100
90	DCP-60	DCP-60	DCP-60	DCP-60	DCP-75	DCP-75	DCP-75	DCP-100
100	DCP-60	DCP-60	DCP-60	DCP-60	DCP-75	DCP-75	DCP-75	DCP-100
110	DCP-60	DCP-60	DCP-60	DCP-60	DCP-75	DCP-75	DCP-75	DCP-100
120	DCP-60	DCP-60	DCP-60	DCP-60	DCP-75	DCP-75	DCP-75	DCP-100
130	DCP-75	DCP-75	DCP-75	DCP-75	DCP-75	DCP-75	DCP-75	DCP-100
140	DCP-75	DCP-75	DCP-75	DCP-75	DCP-75	DCP-75	DCP-75	DCP-100
150	DCP-75	DCP-75	DCP-75	DCP-75	DCP-75	DCP-75	DCP-75	DCP-100
160	DCP-100	DCP-100	DCP-100	DCP-100	DCP-100	DCP-100	DCP-100	DCP-100
170	DCP-100	DCP-100	DCP-100	DCP-100	DCP-100	DCP-100	DCP-100	DCP-100
180	DCP-100	DCP-100	DCP-100	DCP-100	DCP-100	DCP-100	DCP-100	DCP-100
190	DCP-100	DCP-100	DCP-100	DCP-100	DCP-100	DCP-100	DCP-100	DCP-100
200	DCP-100	DCP-100	DCP-100	DCP-100	DCP-100	DCP-100	DCP-100	DCP-100

Required Pressure (PSIG) - Minimum Suction Pressure (PSIG) = Required Boost (PSIG)

Typical Applications

Stand-Alone Pressure Booster System

High-rise buildings, apartment complexes, office buildings and many other commercial and industrial facilities. The Thrush DCP is engineered for use as a stand-alone system or as a supplemental package when additional boost in water pressure is required.

Multiple Installations on Alternate Floors

Pressurizers can provide incremental pressurization for blocks of floors. Eliminates the need for a large central booster system. Ideal for modular building techniques.

Hospital/Research Facilities

Ensure constant pressure at critical points of use such as laser equipment and lab cooling systems.

Industrial Point of Use

Provides required pressure of process lines at point of use. Hydraulic pressure, cooling and flushing.

Off-Peak Use

Provides minimum pressure during periods of low usage and keeps main booster system off.

Installation

1. Pressure boosting is accomplished with Thrush end suction centrifugal pumps. Depending on the **Pressurizer** model, city pressure can be boosted to 65 psi and flows to 200 gallons per minute when used as a lead/lag system.

2. Pressure regulation is controlled by our unique **Boostrol**® valve which regulates and maintains a constant pressure regardless of fluctuating supply pressure or changing flow demand. Our **Boostrol** valve is also field adjustable to meet the application, and is a check valve that prevents water from flowing back into the city supply and controls minimum run time for the pump. This ensures that whenever system demand requires the pump to start, it will run for a minimum of three minutes no matter how short the demand.

Pressurizer Construction

Standard PLC Control

3. Water storage is contained in a pre-pressurized diaphragm-type hydro-pneumatic storage vessel which provides a pressurized reservoir of water for leak load and minimum usage. This keeps the pump from starting for small infrequent demands.

4. Operation of the **Pressurizer** is controlled with a pump pressure switch set with a 20 psi differential system that starts at low end and shuts down at high end. All DCPs also have a low suction shut-down to prevent negative pressure draw on city mains and protect the pump from running dry.

Proudly Made in the USA

Standard Specifications

Model	DCP-60	DCP-75	DCP-100
Operating Conditions			
Max. Flow (GPM)	120	150	200
Max. Regulated Boost (PSIG)	45	60	65
Min. Suction Press. (PSIG)	5	5	5
Pressure Switch Range (PSIG)	0-150	0-150	0-150
Factory Differential Setting (PSIG)	20	20	20
Pump Cut-In (PSIG)	35	40	45
Pump Cut-Out (PSIG)	55	60	65
Factory PRV Discharge Setting (PSIG)	40	50	55
Pump Flow Rate @ PRV Setting (GPM)	30	35	50
Factory Tank Pre-Charge (PSIG)	33	38	43
Max. Operating Pressure (PSIG)	125	125	125
Max. Operating Temperature (DEG F)	120	120	120

Components & Equipment				
Pumps	Model	1.25 x 1.5 x 7 HPC e300		
Motors	Horsepower	3	5	7.5
	Electrical (Volts/Hz/Ph)	208-230/460V/60Hz/3Ph		
PRV	Model	Thrush 1.5" Boostrol		
Panel	Enclosure	NEMA 1		
	Electrical Characteristics	208 or 230 or 460V/60Hz/3Ph		
Tank*	Model	44 Gal. diaphragm style		
Manifolds	Type	Thrush Multi-position Quick-link		
	Material	Copper		
	Field Connections	2.5" NPTM		
Skid	Material	Combination structural, fabricated, and welded steel.		

* 68 Gal. diaphragm style tank with 125 PSIG ASME rating optional.

Thrush

Engineer's Specifications
Duplex Commercial Pressurizer (DCP) - Standard Construction
Models DCP-60, DCP-75, and DCP-100

Sheet 1

General System Specification:

Furnish and install a Thrush duplex package pressure booster system. The booster system will be a Thrush model DCP-(60, 75, or 100) Duplex Commercial Pressurizer. The booster system will be capable of maximum total flow of (120, 150, or 200) GPM and a maximum regulated boost of (45, 60, or 65) PSIG. The booster system will be capable of maintaining a discharge pressure of ____ PSIG when supplied by a minimum suction pressure of ____ PSIG.

The Duplex Commercial Pressurizer (DCP) will be a fully factory assembled, wired, and tested package pressure boosting system. The booster system will be a skid-mounted package consisting of two Thrush pumps, two Thrush **Boostrol**® pressure regulating valves, electrical control panel, Thrush Multi-position Quick-link suction and discharge manifolds, panel mounted suction and discharge pressure gauges, isolation valves on each connection to the manifolds, and a pre-piped hydro-pneumatic storage tank. The DCP will be assembled and mounted on a common skid. The skid will be constructed of a combination of structural, formed, and welded steel. The system shall be shipped with all components, but with the manifolds unattached to prevent damage during shipment. The system will be assembled by the manufacturer of the pumps and PRVs.

Pump Specification:

The DCP pumps will be Thrush model 1-1/4 x 1-1/2 x 7 HPC e300 close coupled, end suction, centrifugal type with tangential discharge and be rated for a maximum working pressure of 175 PSIG and a maximum operating temperature of 250°F. The pumps will be bronze-fitted, assembled with a replaceable cartridge seal assembly with slip-fit bronze shaft sleeve, and the motor shaft shall be isolated and sealed from the working fluid. The pumps will be horizontally mounted. The pump motors will be 3500 RPM, (3, 5, or 7.5 HP), open drip proof enclosure, tri-voltage, three phase motors.

Pressure Regulating Valve Specification:

The DCP pressure regulating valves (PRV) will be Thrush model 1-1/2" **Boostrol**® control valves. The valves will be combination pressure regulating and check valves. The valves shall be specifically designed for use in conjunction with a hydro-pneumatic storage tank and a control system designed to pressurize the system, fill the storage tank, and shut off the pumps during periods of no water usage. The valves shall be fitted with a time-delay tank-fill port designed to control pump minimum run time during periods of no water usage. The valves shall have bronze bodies, regulator cases, and end caps.

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Engineer's Specifications
Duplex Commercial Pressurizer (DCP) - Standard Construction
Models DCP-60, DCP-75, and DCP-100
Sheet 2

Manifold and Piping Specification:

The DCP manifolds will be Thrush Multi-position Quick-link manifolds. The manifolds will be capable of being attached for right or left suction and right or left discharge field connections. The manifolds will be of sweated copper construction with integral pump and PRV isolation valves. The isolation valves will be bronze ball valves and have union connections for quick field attachment.

Standard Tank Specification: (non-code)

The DCP hydro-pneumatic storage tank will be a diaphragm style draw-down tank and be rated for a maximum working pressure of 125 PSIG and a maximum operating temperature of 200°F. The tank will be sized to allow a minimum pump run time of three minutes under correct operation settings. The tank will be suitable for potable water applications, skid mounted, pre-pressurized,* and pre-piped to the DCP.

*Maximum shipping pressure is 30 PSIG. Systems requiring higher tank charge pressure will require field charging.

Optional Tank Specification: (ASME code)

The DCP hydro-pneumatic storage tank will be an ASME code diaphragm style draw-down tank and be rated for a maximum working pressure of 125 PSIG and a maximum operating temperature of 200°F. The tank will be sized to allow a minimum pump run time of three minutes under correct operation settings. The tank will be suitable for potable water applications, skid mounted, pre-pressurized,* and pre-piped to the DCP.

*Maximum shipping pressure is 30 PSIG. Systems requiring higher tank charge pressure will require field charging.

Control Specification:

- UL listed, NEMA/CSA 1 enclosure
- Incoming power characteristics per specific DCP model
- Main disconnect switch (HP rated) complete with door interlocked handle
- 1 thermomagnetic motor protector per pump (Overload and short circuit protection)
- 1 across-the-line contactor per pump (HP rated)
- 1 control transformer 120V secondary complete with secondary circuit breaker
- 1 HOA selector switch for each pump
- Panel mounted indicator lights:
  - 1 POWER ON - white
  - 1 PUMP RUN per pump - green
  - 1 LOW SUCTION - red
  - 1 NO-FLOW SHUT-DOWN - amber
- Automatic pump alternation without time clock
- Adjustable current sensing relay(s) with time delay to control lag pump operation
- No-Flow Shut-Down controls and circuitry to fill the hydro-pneumatic tank and shut off the lead pump during periods of no water usage
- PLC control as standard with minimum run timers
- Low-suction shut down and pressure switch with adjustable time delay
- Automatic transfer to non-operating pump in event of motor overload or short circuit
- All pressure switches mounted inside control panel

Duplex Commercial Pressurizer

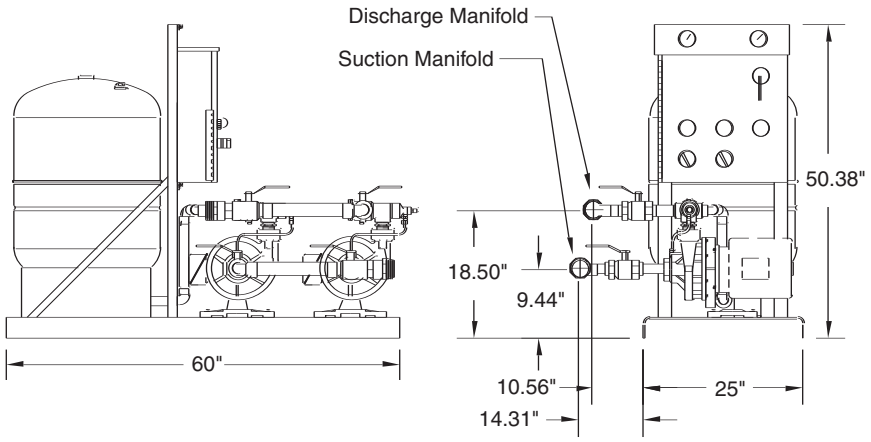
Model Reference

Part Number	Model	Volt.	Hz.	Ph.	Tank Type
2202-2010	DCP-60-1	208	60	3	STD
2202-2020	DCP-60-2	240	60	3	STD
2202-2030	DCP-60-3	480	60	3	STD
2202-2011	DCP-60-4	208	60	3	ASME
2202-2021	DCP-60-5	240	60	3	ASME
2202-2031	DCP-60-6	480	60	3	ASME
2202-2040	DCP-75-1	208	60	3	STD
2202-2050	DCP-75-2	240	60	3	STD
2202-2060	DCP-75-3	480	60	3	STD
2202-2041	DCP-75-4	208	60	3	ASME
2202-2051	DCP-75-5	240	60	3	ASME
2202-2061	DCP-75-6	480	60	3	ASME
2202-2070	DCP-100-1	208	60	3	STD
2202-2080	DCP-100-2	240	60	3	STD
2202-2090	DCP-100-3	480	60	3	STD
2202-2071	DCP-100-4	208	60	3	ASME
2202-2081	DCP-100-5	240	60	3	ASME
2202-2091	DCP-100-6	480	60	3	ASME

Shipping Weights

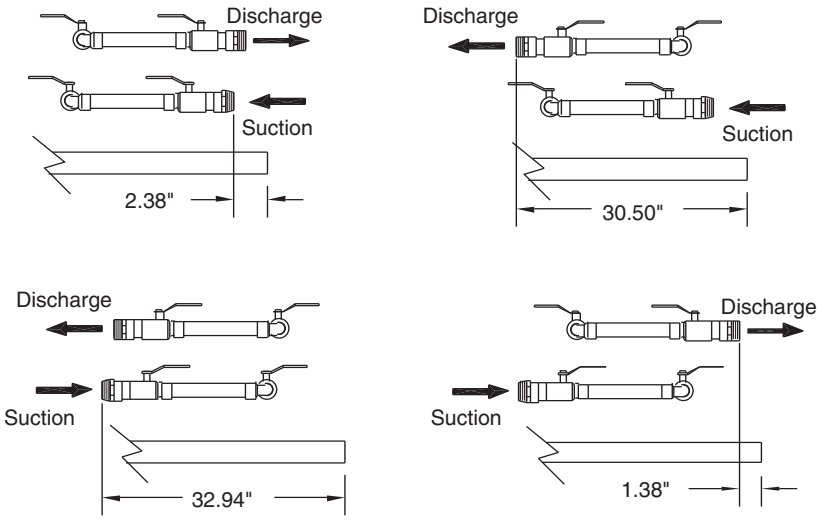
Model	With Standard Tank (lbs.)	With ASME Tank (lbs.)
DCP-60	532	673
DCP-75	562	733
DCP-100	608	749

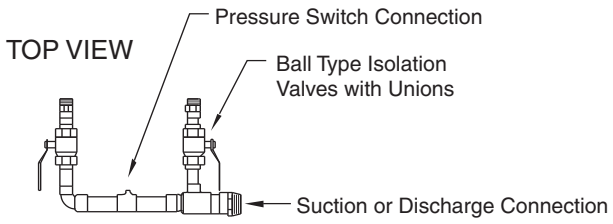
Dimensional Data DCP - 60, 75 & 100



Multi-position Quick-link Manifolds

(Field connection options)





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