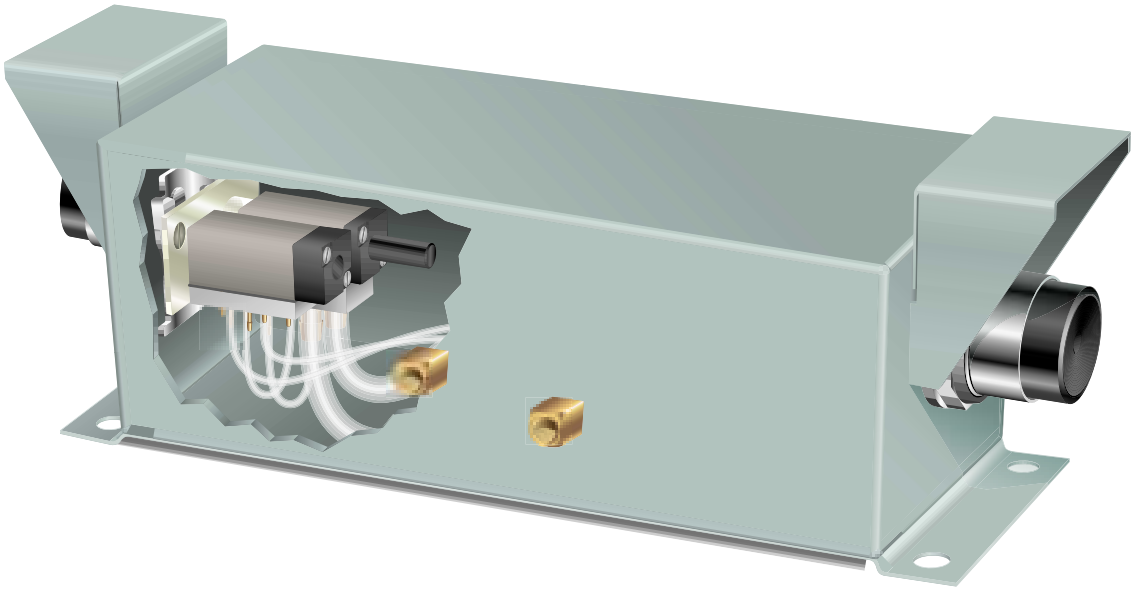
DYNAMCO

TWO HAND NON-TIE-DOWN CONTROLS
"SC" SERIES

Complete Engineered Solutions



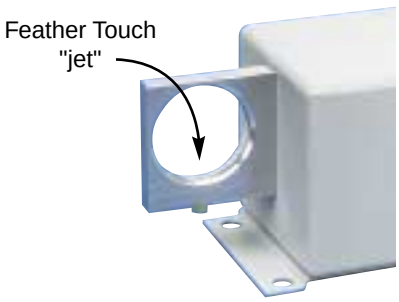
Dynamco's "SC" Series of Two Hand Non-Tie-Down controls offers an engineered and completely assembled control product that can be used "out of the box" to provide simple and cost effective safety in a variety of automated operations. Non-Tie-Down Controls act as a two hand start mechanism and require that both hands be placed on the control unit simultaneously (within a narrow time frame) to trigger an operation. This type of safety control helps insure that equipment operators keep their hands away from dangerous or moving machinery during a given process.

Three primary control philosophies are offered by Dynamco

- **Pulsed Output** – This system delivers a pulse of air to the System Output when both pushbuttons/jets are made simultaneously and both are held for the duration of the pulse. The length of this pulse is fixed by the system utilizing a fixed restrictor.
- **Maintained Output** – This system delivers a sustained output of air to the System Output when both pushbuttons/jets are made simultaneously. The duration of this output lasts as long as both pushbuttons/jets remain blocked. Releasing either or both pushbuttons/jets removes the air pressure from the System Output.
- **Maintained, Seal-In with Return** – This system is essentially a "Maintained Output" system with a "Seal-In" feature. This system delivers a sustained output of air to the System Output when both pushbuttons/jets are made simultaneously. This maintained output causes the machine to initiate a machine cycle. When the machine reaches a condition so that it is safe for the operator to release the pushbuttons/jets, the machine actuates a limit valve, which signals this to the control. The control then will keep the System Output signal maintained even after both pushbuttons/jets have been released, until the red STOP button is pushed by the operator or an automatic signal is received from the machine.

Feather Touch Sensors

Dynamco's Non-Tie-Down Controls are available with traditional pushbuttons, or with "feather touch" sensors. The "feather touch" version, shown at right, uses small "jets" of air that, when blocked, trigger the control mechanism. This operates under the same philosophy as a pushbutton, except that it requires only minimal force from operators, greatly reducing fatigue and other issues associated with repetitive motion.



Principles of Operation

The figure shown below is the schematic diagram of a typical, two hand pushbutton, non-tie-down control utilizing "Maintained Output" control. With 50 - 70 psig of air supply present and neither pushbutton depressed, air flows through the normally passing flow path (Port 3 to Port 2) of Relay Valve RV1 (Ref. Line 1), through the normally passing flow paths (Port 5 to Port 4) of both pushbuttons PB1 and PB2 and pressurizes the Volume Chamber VOL. The air pressure in volume chamber VOL is connected to the input Port A of Shuttle Valve S1 (Ref. Line 3) and immediately passes through to its Output Port 1. Since PB1 and PB2 have not been depressed, there is no air flowing through their normally non-passing flow paths (Port 1 to Port 2) on Ref. Line 3. Also note that the air supply has been connected to the non-passing flow path (Port 3 to Port 4) of RV1 on Ref. Line 4.

When PB1 and PB2 are simultaneously depressed, the pressure contained in the Volume Chamber VOL is simultaneously allowed to:

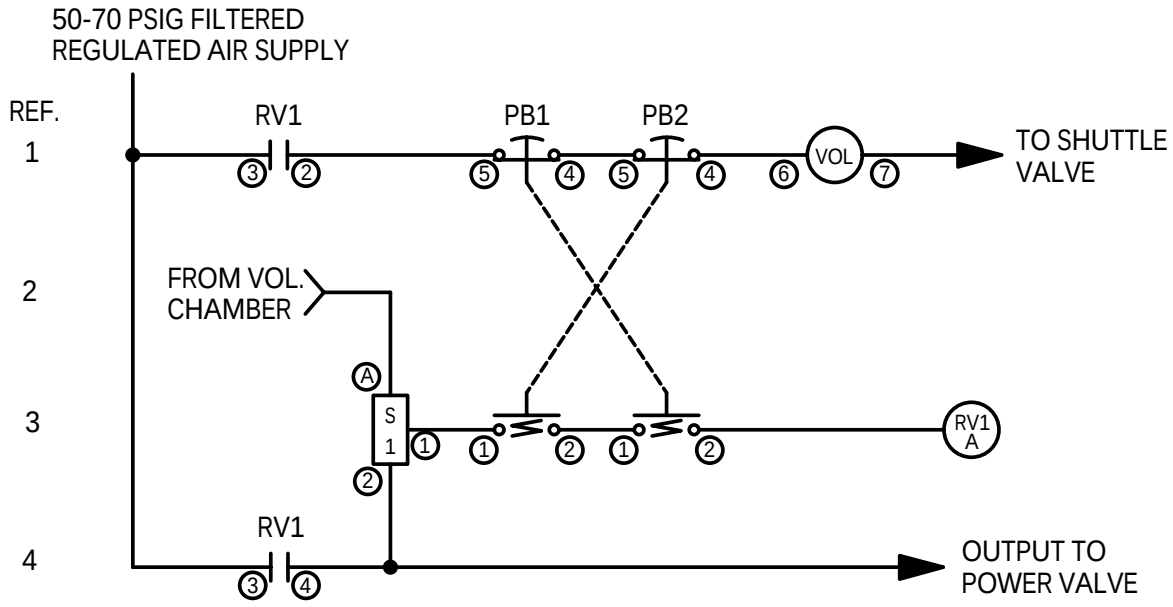
- Exhaust back through Port 4 of PB2 to atmosphere
- Flow through the Shuttle S1 and the flow paths of PB1 and PB2 (Port 1 to Port 2), which are now held passing, thus pressurizing the Relay Valve pilot (RV1A)

The pulse of air shifts RV1, making RV1's normally non-passing flow path (Port 3 to Port 4) on Ref. Line 4 passing, thus supplying air to the Output Port of the control box to pressurize the appropriate power valve pilot. The air from RV1 (Port 4) also flows into the Input (Port 2) of Shuttle S1 (Ref. Line 3) and through the normally non-passing flow paths (Port 1 to Port 2, Ref. Line 3) of PB1 and PB2, holding the Relay Valve pilot (RV1A) pressurized. In this manner, the Output signal is "maintained" as long as both pushbuttons PB1 and PB2 are held depressed.

If either PB1 or PB2 (or both) are released, the flow path (Port 1 to Port 2, Ref. Line 3) of the respective pushbutton becomes non-passing, thereby interrupting the air supply to the Relay Pilot RV1A (Ref. Line 3). With the RV1A pilot exhausted, RV1 returns to its de-energized (or normal) state. With RV1 in its normal state, it's flow path (Port 3 to Port 4, Ref. Line 4) becomes non-passing, thus exhausting the Output back through Port 4 of RV1 to atmosphere.

A fraction of a second after Pushbuttons PB1 and PB2 are both released, the Volume Chamber VOL is recharged, and the system is again ready to supply a two hand non-tie-down start signal.

Dynamco's Two Hand Non-Tie-Down Controls are not to be used on machines where a mechanical clutch is tripped by the control signal, such as Full Revolution Clutch presses and machines. Furthermore, Dynamco's Two Hand Non-Tie-Down Controls are not to be used with Part Revolution Clutch presses and machines.



SC20120 & SC20220
Pushbutton Enclosure
Pulsed Output or
Maintained Output

1204-1
Filter, Regulator & Gage

SC20320
Pushbutton Enclosure
Maintained Output with
Seal-In & Return

1203-1
Miniature Filter, Regulator & Gage

Model Coding – Pushbutton Systems

	Pulsed Output	Maintained Output	Maintained Output with Seal-In & Return
Complete System	**SC20120**	**SC20220**	**SC20320**
Includes:			
• Pushbutton Control Enclosure	DCS318	DCS319	DCS320
• Filter / Regulator / Gage (Standard)	1204-1	1204-1	1204-1
• Heavy Duty Limit Valve	N/A	N/A	HDL30
• Limit Valve Lever Arm	N/A	N/A	301-1
• Schematic Drawing	1DCS335	1DCS323	1DCS286
System without Filter / Regulator / Gage	**SC20100**	**SC20200**	**SC20300**
Includes:			
• Pushbutton Control Enclosure	DCS318	DCS319	DCS320
• Heavy Duty Limit Valve	N/A	N/A	HDL30
• Limit Valve Lever Arm	N/A	N/A	301-1
• Schematic Drawing	1DCS335	1DCS323	1DCS286
Associated Components			
• Heavy Duty Limit Valve	N/A	N/A	HDL30
• Limit Valve Lever Arm	N/A	N/A	301-1
• Limit Valve Lever Arm (Adjustable)	N/A	N/A	301-4
• Filter / Regulator / Gage (Standard)	1204-1	1204-1	1204-1
• Filter / Regulator / Gage (Miniature)	1203-1	1203-1	1203-1

HDL30 Heavy Duty Limit Valve
with 301-1 Arm

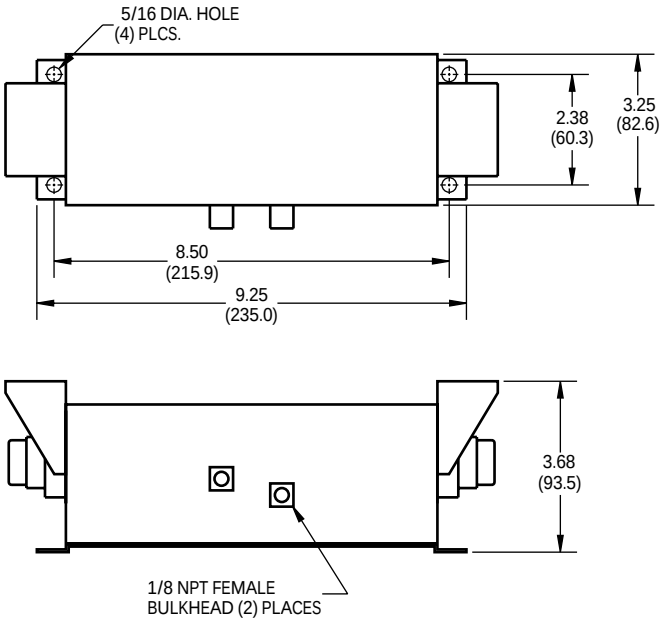
SC30120 & SC30220
Feather Touch Enclosure
Pulsed Output or
Maintained Output

SC30320
Feather Touch Enclosure
Maintained Output with
Seal-In & Return

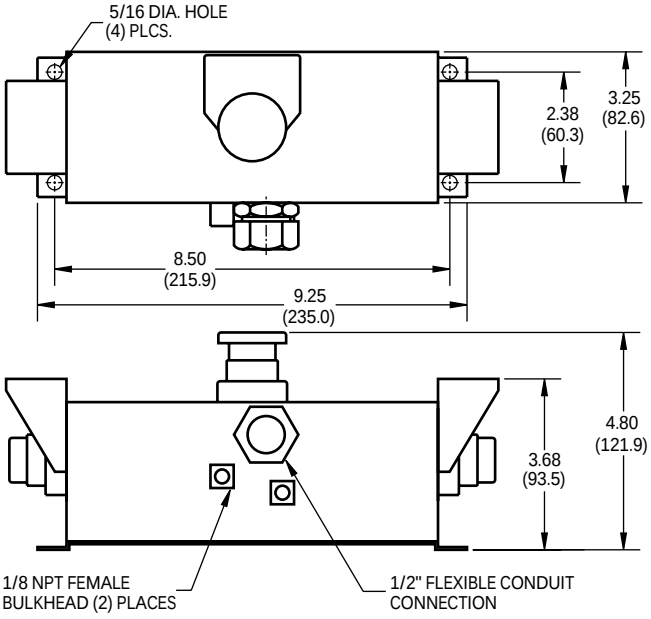
Model Coding – Feather Touch Systems

	Pulsed Output	Maintained Output	Maintained Output with Seal-In & Return
Complete System	**SC30120**	**SC30220**	**SC30320**
Includes:			
• Pushbutton Control Enclosure	DCS1304	DCS1303	DCS1305
• Filter / Regulator / Gage (Standard)	1204-1	1204-1	1204-1
• Heavy Duty Limit Valve	N/A	N/A	HDL30
• Limit Valve Lever Arm	N/A	N/A	301-1
• Schematic Drawing	1DCS1304-0	1DCS1303-0	1DCS1305-0
System without Filter / Regulator / Gage	**SC30100**	**SC30200**	**SC30300**
Includes:			
• Pushbutton Control Enclosure	DCS1304	DCS1303	DCS1305
• Heavy Duty Limit Valve	N/A	N/A	HDL30
• Limit Valve Lever Arm	N/A	N/A	301-1
• Schematic Drawing	1DCS1304-0	1DCS1303-0	1DCS1305-0
Associated Components			
• Heavy Duty Limit Valve	N/A	N/A	HDL30
• Limit Valve Lever Arm	N/A	N/A	301-1
• Limit Valve Lever Arm (Adjustable)	N/A	N/A	301-4
• Filter / Regulator / Gage (Standard)	1204-1	1204-1	1204-1
• Filter / Regulator / Gage (Miniature)	1203-1	1203-1	1203-1

Pushbutton

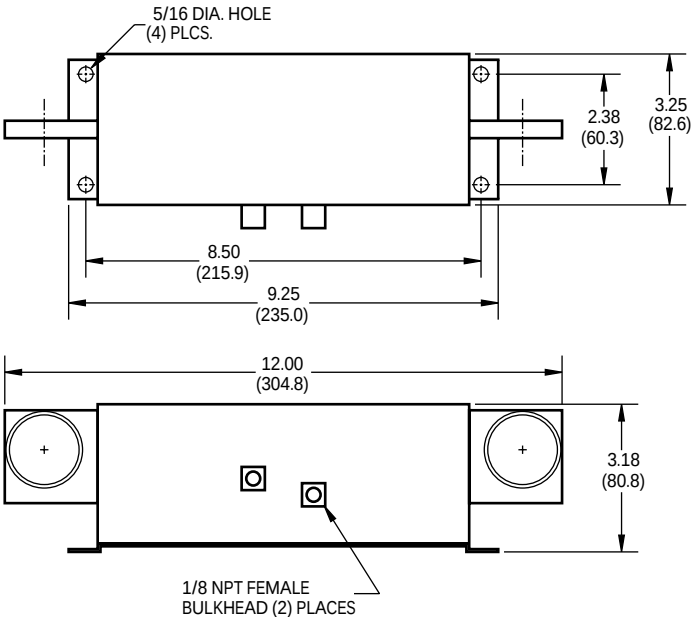


SC20120 & SC20220
Pushbutton Enclosure
Pulsed Output or Maintained Output

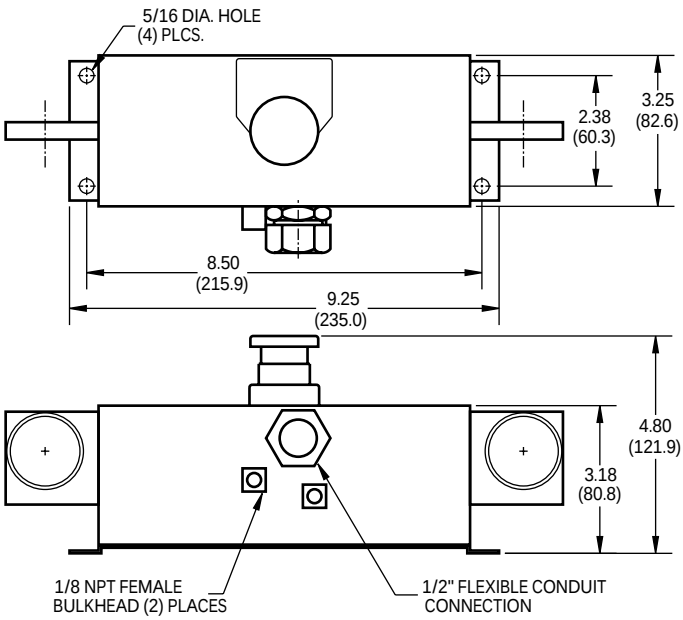


SC20320
Pushbutton Enclosure
Maintained Output with Seal-In & Return

Feather Touch



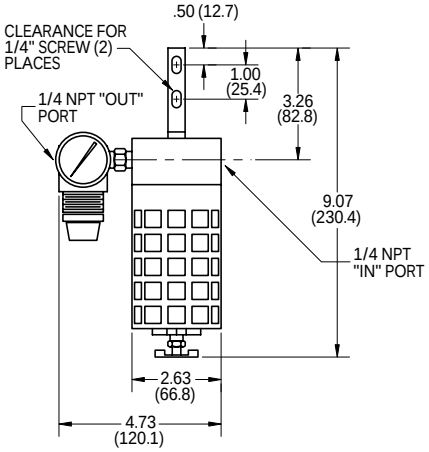
SC30120 & SC30220
Feather Touch Enclosure
Pulsed Output or Maintained Output



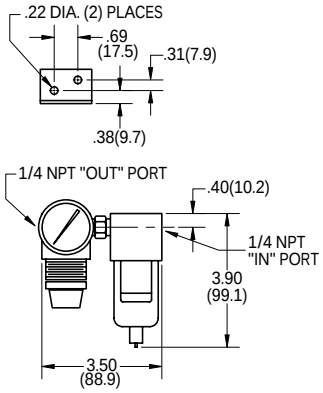
SC30320
Feather Touch Enclosure
Maintained Output with Seal-In & Return

Dimensions

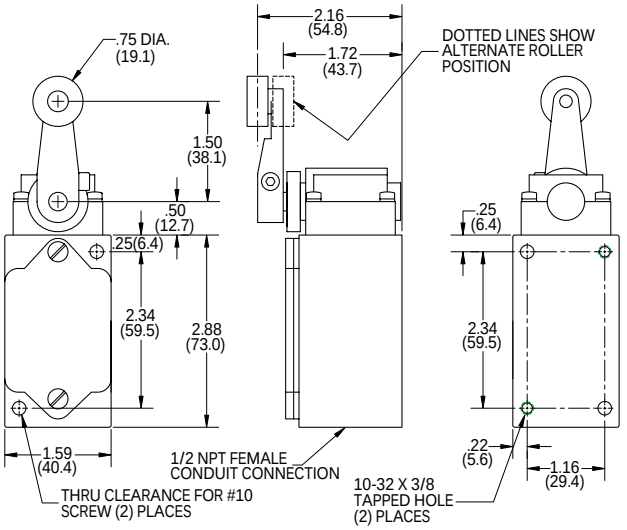
Accessories



1204-1
Filter, Regulator & Gage



1203-1
Miniature Filter,
Regulator & Gage



HDL30 Heavy Duty Limit Valve
with 301-1 Arm

Installation & Maintenance

Air Supply

Dynamco Two Hand Non-Tie-Down Controls are designed to work with proper filtration on normal shop air which is un-lubricated. The filters and regulators supplied by Dynamco are adequate for virtually any manufacturing plant. In the event that another manufacturer's filters are used, they should be of equivalent type and performance. Air pressure must be regulated to 50 - 70 psig.

Installation

Determine a suitable location and mounting for the enclosure so as to be a safe distance from the nearest pinch point and bolt the enclosure to a suitable rigid mounting. Mount the Filter / Regulator / Gage Assembly to an appropriate place near the enclosure, and connect the OUT Port of the Filter / Regulator / Gage Assembly to the bulkhead fitting marked IN on the enclosure. Then, connect the OUT bulkhead fitting on the enclosure to the appropriate equipment to receive the system Output Signal.

Connect an air supply to the IN Port of the Filter / Regulator / Gage Assembly. After setting the regulator to 50 - 70 psig, the system is ready to test. Operate the system in every possible way to try and defeat the system. If, after complete function testing, no malfunctions occur, the system is ready for use.

Power Valves

Dynamco Two Hand Non-Tie-Down Controls must cooperate with the power valve on a machine which causes the first and successive motions to occur. Dynamco Two Hand Controls are designed to cooperate only with a spring return type power valve so that in the event the pilot of the power valve is exhausted, the power valve spring will return it to a condition which will put the machine back in its starting or safe position. Dynamco Two Hand Controls are not recommended for use with double-pilot or detented type power valves for the first machine motion. Power valves are not supplied as part of the Dynamco Two Hand Control System because the flow capacity, etc. must be determined for each specific machine.

Maintenance

There is virtually no maintenance associated with the normal operation of the Dynamco Two Hand Non-Tie-Down Control System. Since the system operates on clean, dry air, there is no lubricator to fill or keep in adjustment. Further, there are no time delays or orifices to adjust. However, daily inspections should take place to check for damage, leakage, etc. If these conditions are present, the appropriate component should be replaced. Filters should also be checked and drained as required. This daily inspection should also include functional testing of the system. If any malfunction should occur, the system must be deactivated and the appropriate portion replaced before resuming operation.

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