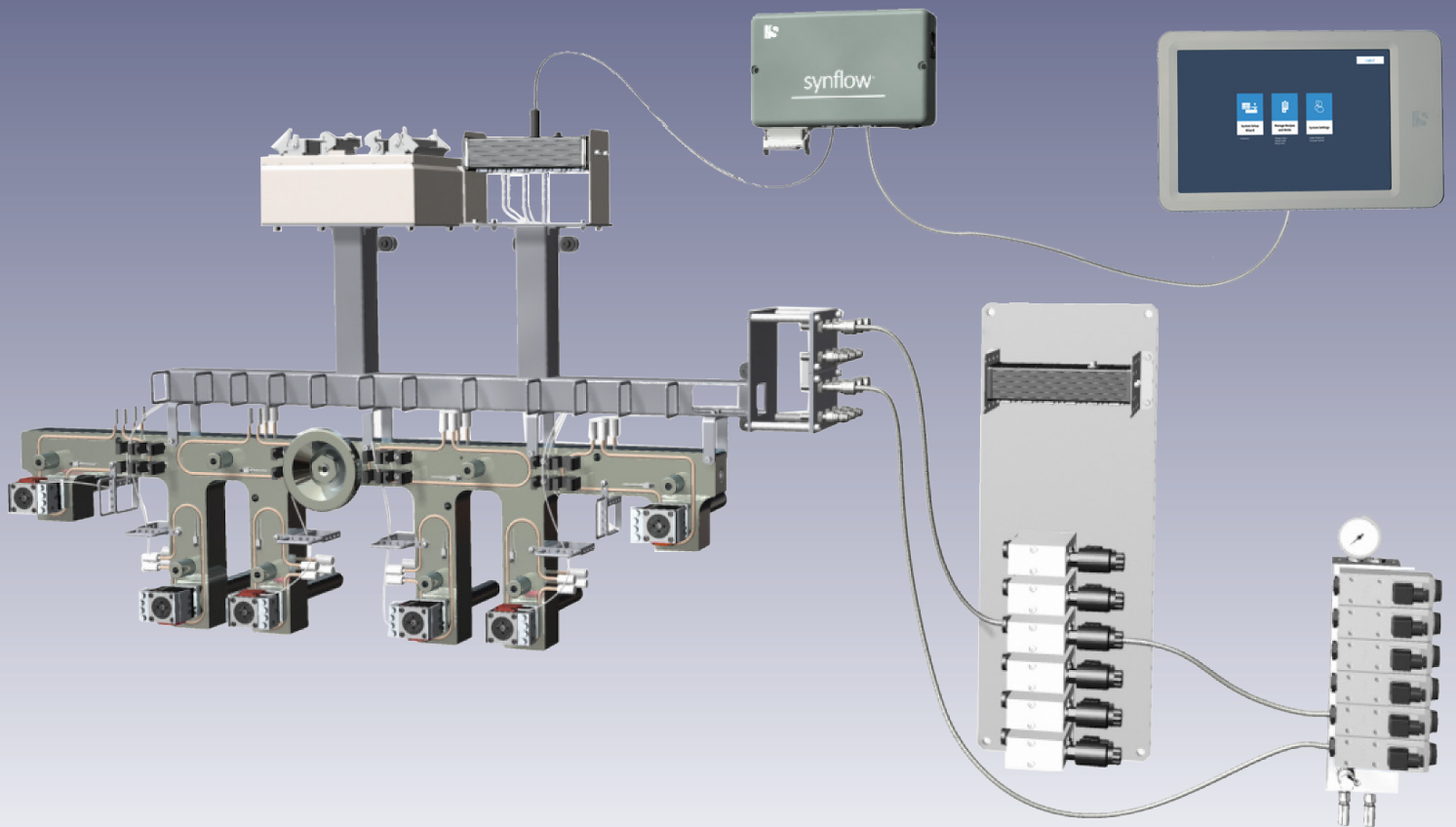


synflow® Field Installation Guide

Valve Pin Opening & Intermediate Position Control



Elevate your process

SVC-16-0017_EN-Rev02 (EN) 04 / 2019



Introduction

Dear Customers,

Thank you for purchasing a Synventive synflow® System. Our objective is to provide you with a product that is a good fit for the application, trouble free in performance, and support it with the best service in the industry. If problems occur during the use of this product please contact us at one of the locations provided.

This manual is designed as a reference document for the proper installation, operation and maintenance of Synventive synflow® Systems as well as a guideline for securing occupational health and safety in connection with the use of this system. Synventive does not warrant that the information is complete or accurate for every application. Synventive reserves the right to make changes to this document from time to time as new products are developed and new information identified.

This manual contains essential information, to ensure its general applicability to Synventive synflow® Systems. The customer is exclusively responsible for the protection of their personnel and equipment. Synventive is not liable for any personal injury or damage caused by improper use, installation or handling of the product. This product should only be installed and used by fully trained and qualified personnel. The customer is required to provide the necessary personal protective equipment, such as protective gloves, hearing protection, protective shields etc. In no case does this document provided by Synventive release the customer from its obligations.

This manual is intended for tooling and molding personnel who install and maintain the synflow® System. It should be forwarded with the synflow® System when shipped to the molder or between molding locations.

This document is copyright protected and it is intended exclusively for the users of Synventive synflow® Systems. It may not be copied and distributed without the written consent of Synventive Molding Solutions.

Yours faithfully,

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Table of Contents

1	Preparing & Installing synflow® Components	5
1.1	Installation Overview	5
1.2	Product Specifications.....	5
1.3	synflow® Component Overview (Replacement Parts).....	6
1.4	Controller Installation & Tablet Installation	7
2	Connecting synflow® Components	8
3	Options.....	9
3.1	eFRV Plate Installation.....	9
4	Annex	11
4.1	Disposal	11
4.2	Patents	11
4.3	Global Offices / Sales Agencies	12



Danger Symbols Definitions



Danger

indicates an imminent hazardous situation which may result in death or serious injury.



Warning

indicates a dangerous situation that may lead to irreversible injury.



Caution

indicates a dangerous situation that may lead to reversible injury.

NOTICE

Notice

indicates a situation that may lead to material damage and provides additional information on proper procedures and trouble-free labor without the possibility of personal injury.

Mandatory Safety Signs of the Personal Protective Equipment

	Read the user instruction		Wear safety shoes		Wear close-fitting working cloth
	Wear headgear		Wear protective goggles		Wear face protection
	Wear work gloves		Wear apron against high temperature		Wear hearing protection

Warning Symbols

	General warning		Warning of electrical danger		Warning of hot surface
	Warning of overhead load		Warning of fork lift trucks operating		Warning of falling objects
	Warning of oxidising materials				



Preparing & Installing synflow® Components

1 Preparing & Installing synflow® Components

! DANGER**Danger to Life by Electric Shock**

Electrical work must be carried out by qualified persons.

For any work on the controllers, check that the system is properly grounded.

For first aid contact your medical / safety representing.

Acronym

IMM: Injection Molding Machine

eFRV: electrical Flow Restrictor Valve

1.1 Installation Overview

synflow® obtains and sends data and control signals, so careful attention is needed to ensure all components are installed and connected per the instructions found herein. Failure to correctly install synflow® and its related components may result in noise generation, signal interference, inconsistent performance and/or no operation at all. Should you encounter difficulty, please contact Synventive.



Read the user instruction

1.2 Product Specifications

Current	100 / 240 VAC 1 Phase / N / PE (+/- 10%) 50 / 60 Hz 1.0-5.0 A
Temperature	0 - 50 °C (32 - 122 °F)
Humidity	<95 % no condensate



Preparing & Installing synflow® Components

1.3 synflow® Component Overview (Replacement Parts)

	Controller Kit 1-24 Zones	SF3-24Z-SCK-01	
a)	Controller	SF3-24ZC-01	
b)	AC Power Cord, EU	IL13EU1H053100200	
c)	AC Power Cord, US/CA	IL13US1SVT3100183	
d)	AC Power Cord, CN	6051.2030	
e)	Hexagon Socket Cap Screw DIN912	DIN912-M8x75-12.9	
f)	Metric Hex Nut M8x1.25mm	DIN934-M8x1.25-SS	
g)	Washer For M8	DIN125x8	
	Controller Cable Kit, 7m Long	SF3-CBK-70-01	
	Drive Cable	SF3-DRV-JC-01	
	Position (Signal) Cable	VMI-SC01-7000	
	Tablet (Display) Kit	SF3-SDK-01	
	Tablet	SF3-TBLT-01	
	Tablet Cable	SF3-UI-JC-01	
	Junction Boxes	See Below	
	12 Zone Position JB	SF3-12Z-JB-01	
	24 Zone Position JB	SF3-24Z-JB-01	
	12 Zone Potentiometer JB (QCVG16M06 only)	SF3-12Z-JB-02	
	24 Zone Potentiometer JB (QCVG16M06 only)	SF3-24Z-JB-02	
	12 Zone Drive JB	SF3-12Z-DRV-01	
	24 Zone Drive JB	SF3-24Z-DRV-01	
	12 Zone Position/Drive Combo JB*	SF3-12Z-CMB-01	
	12 Zone Potentiometer/Drive Combo JB (QCVG16M06 only)	SF3-12Z-CMB-02	
	Mounting Bracket*	VMI-16ZJBE-MB	
	M6 Socket Cap Screw DIN912*	DIN912-M6x12-12.9	
	eFRV Kit^	SF200-2000-IVK-##	
	In-line eFRV	SF100-5000-01-01	
	Sandwich eFRV (not shown)	SF3-SV01 - SF3 Sandwich Valve Assembly	
	eFRV Cable (## = -20: 2 m, ## = -60: 6 m)	SF200-2000-JC##-01	
	eFRV M6 and M5 Mounting Bolts (not shown)	DIN912-M6X150-12.9 (-01/-03) DIN912-M5X120-12.9 (-02/-04)	

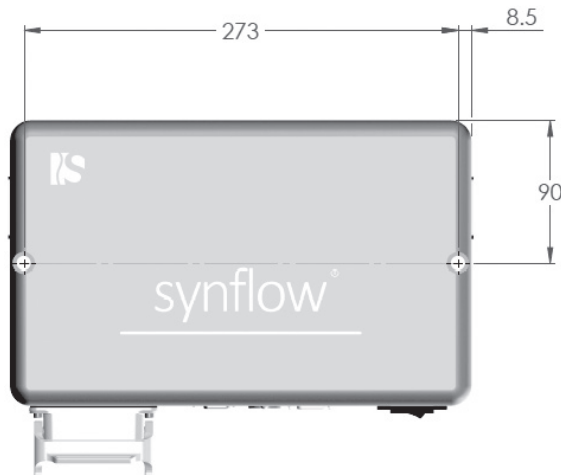
^ ## = (-01) : In-line w/ 2 m Cable, (-02): Sandwich w/ 2 m Cable, (-03) : In-line w/ 6 m Cable, (-04) : Sandwich w/ 6 m Cable



Preparing & Installing synflow® Components

1.4 Controller Installation & Tablet Installation

The synflow® Controller is designed to be mounted on the Injection Molding Machine (IMM), preferably on the operator-side.



Doc007623.png

- 1) Locate an area that is adjacent to the top of the IMM and is free from moving machinery and chemicals that might cause damage.
- 2) Drill two M8 clearance (or drill and tap two M8 threaded holes) per the locations shown.
- 3) Secure by using supplied M8 Screws, Washers, and Nuts.

NOTICE

The synflow® Tablet (SF3-TBLT-01) features 4 strong magnets on the rear of the enclosure for quick mounting and removal.

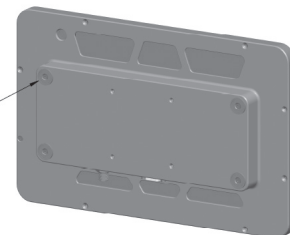
- 1) Place the Tablet on any ferritic (iron, steel) surface as on the IMM's control panel, adjacent to the IMM's screen.

NOTICE

- The cable must reach the controller and should be protected from excessive heat and mechanical damage.
- The tablet may be repositioned or removed at any time.



Doc007611.png



Doc007624.png



Doc007625.png

Alternatively, the Tablet can be mounted using a standard Mounting Arm having a VESA 75x75 mounting pattern (not sold by Synventive).



Connecting synflow® Components

2 Connecting synflow® Components

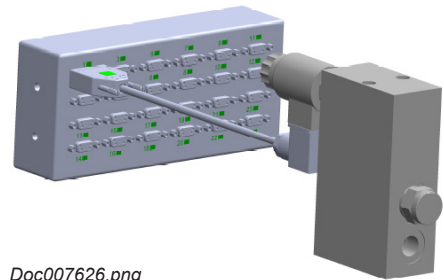
The synflow® components are connected to the Controller via cables.

NOTICE

All connections must be made or broken with the power off.

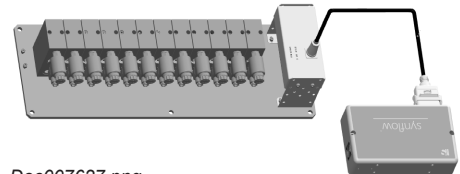
Make the connections as follows:

- 1) Establish a connection with the Drive JB Cable (SF200-2000-JC##-01) between the eFRV and the Driver Junction Box. A green rectangle (■) symbol is on the D-Sub Shell of the eFRV Cable and Drive Junction box.



Doc007626.png

- 2) Establish a connection with the eFRV Cable (SF3-DRV-JC-01) between the Controller and the Driver Junction Box, backside (shown at the right image, on a plate with valves).

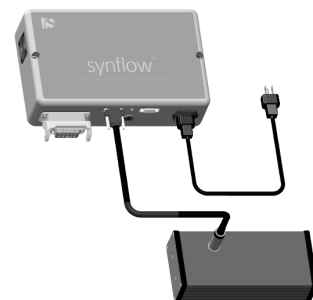


Doc007627.png

- 3) Establish a connection with the Position Signal Cable (VMI-SC01-7000) between the Controller and the back of the Position Junction Box.
- 4) Connect the controller Power Cord to the main 110V - 240V power source.

NOTICE

Failure to connect ground will result in system malfunction.

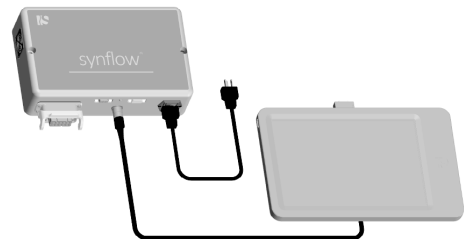


Doc007628.png

- 5) Establish a connection with the Tablet Cable (SF3-UI-JC-01) between the Controller Box and the Tablet connector at the bottom of the Tablet.

NOTICE

Reference the synflow® User Guide for next steps.



Doc007629.png

NOTICE

The Position Sensors are supplied pre-connected by Synventive for all pre-wired systems.

A red ellipse (●) symbol is on the D-Sub Shell of the Position Cable and Position Junction box.

A red triangle (▲) symbol is on the D-Sub Shell of the Potentiometer Cable and Potentiometer Junction box



Options

3 Options

synflow® is available with:

- Sandwich eFRVs, which are mounted in between the main Hydraulic Manifold and each applicable Directional Control Valve.
- In-Line eFRVs, which are mounted in between the Directional Control Valves and hydraulic cylinders.

NOTICE

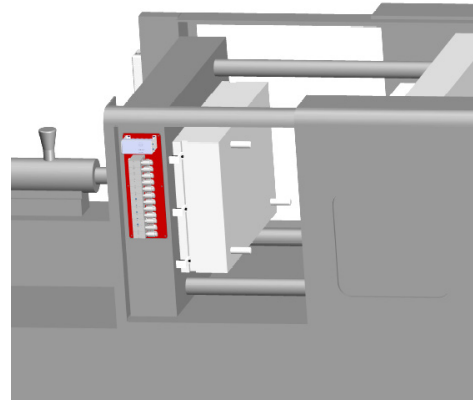
Ensure hydraulic fluid and hoses used with either eFRV style is free of any obvious particles. Otherwise, eFRVs can become contaminated and lead to performance issues.

3.1 eFRV Plate Installation

Description

The synflow® eFRV Plate facilitates the use of synflow® without needing to purchase eFRVs and associated junction box for every mold, resulting in significant cost savings when many molds are being considered.

Secure remote interface mounted on IMM.



Doc007630.png

Mounting

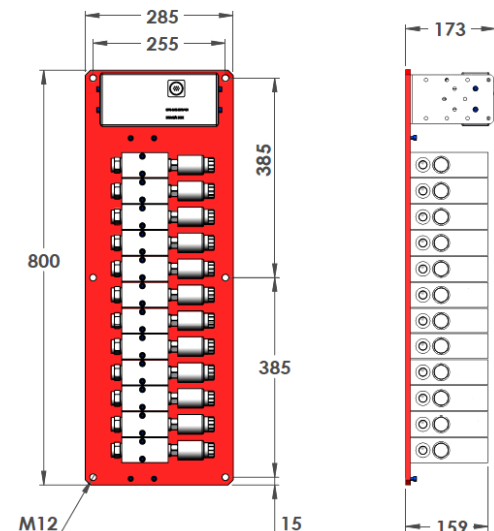
The plate is designed to be mounted on the Injection Molding Machine using at least 4 of the 6 clearance M12 clearance holes.

In selecting the plate location, please consider:

- Size of the entire assembly
- Fact that electronics are present (should not get wet)
- eFRV valves are located in-line with the directional control valves and the hot runner's hydraulic cylinders

NOTICE

Note that the preferred orientation is with the junction box on the top so that hydraulic fluid cannot enter the box



Doc007631.png



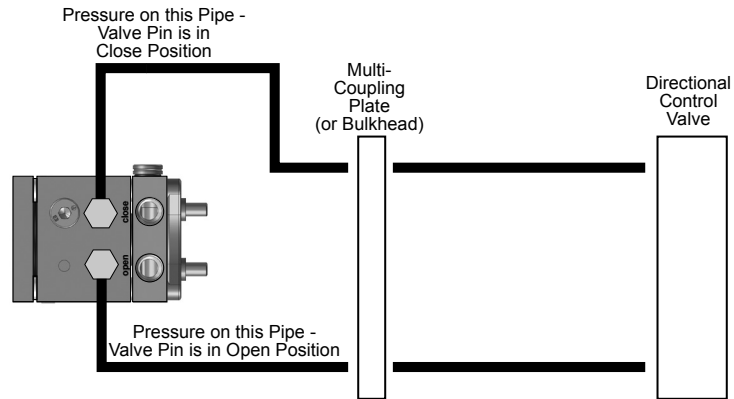
Options

Connecting the eFRV Plate

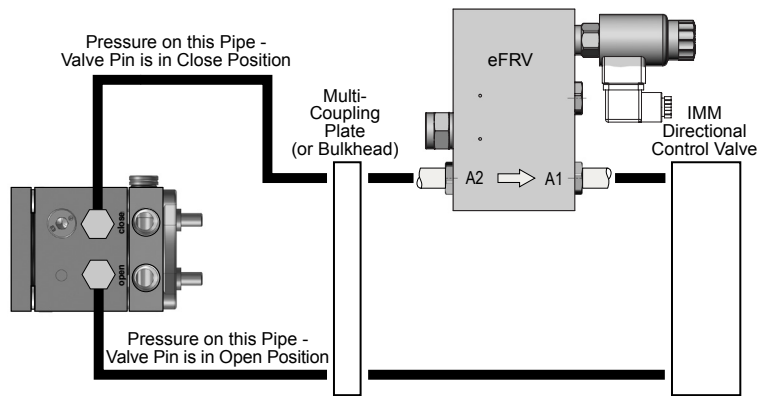
With the eFRV plate mounted on the machine, the hydraulic connections must be made. The user may use quick connects, but keep in mind that when synflow® is not used, the valves are in an open position; there is no reason to disconnect unused valves.

synflow® controls the pin speed by controlling the oil that leaves the cylinder's closed port as oil pushes the piston to the open position.

- 1) Break the connection from the Directional Control Valve to the cylinder closed port of the Multi-Coupling Plate (or Bulkhead), as shown in Figure Doc005201.ai.
- 2) Fit a line from the cylinder closed pressure line from the Directional Control Valve to the eFRV's "A1" port, as shown in Figure Doc005202.ai.
- 3) Fit a line from the eFRV's "A2" port that will be connected to the tool's bulkhead fittings of the Multi-Coupling Plate (or Bulkhead) for the cylinder closed position, again, as shown in Figure Doc005202.ai.
- 4) Verify that the arrangement has been established per Figures Doc005201.ai & Doc005202.ai.
- 5) Turn off the synflow® Controller.
- 6) Connect the synflow® Controller to the Drive Junction Box located on the eFRV Plate.



Doc005201.ai



Doc005202.ai

NOTICE

For best performance, minimize hose or pipe lengths from Directional Control Valve-to-eFRV and eFRV-to-Multi-Coupling Plate (or Bulkhead) whenever possible.

Contact Synventive if hose or pipe lengths greater than 4.5 m (15') are required.



4 Annex

4.1 Disposal

Disposal of synflow® systems should involve the recycling of basic materials. Synventive rejects any responsibility for health and safety risks to personnel or other damages caused by the re-use of individual parts for a purpose other than the originally specified purpose.

- Remove electrical components (heating, temperature sensors) and process through your recycling program.
- Dismantle cables and dispose them in accordance with local environmental regulations.

NOTICE

Metal parts must be separated for recycling (scrapping, collection points).

It is necessary to comply with the instructions from competent firms authorized to dispose of the specific materials.

4.2 Patents

Please note the copyright protection reminder pursuant to DIN ISO 16016. The specified patents are the property of Synventive Molding Solutions. Their distribution and dissemination is permitted only subject to approval.

The products are protected by US, CA, CN, JP and European Community patents published on WEB.

<http://www.synventive.com/Patents.aspx?terms=us%20patents>

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