SFR

水流分布器

Water Flow Regulators

日　期：2017 年 01 月

Date: Jan, 2017

版　本：Ver.B

Version: Ver.B

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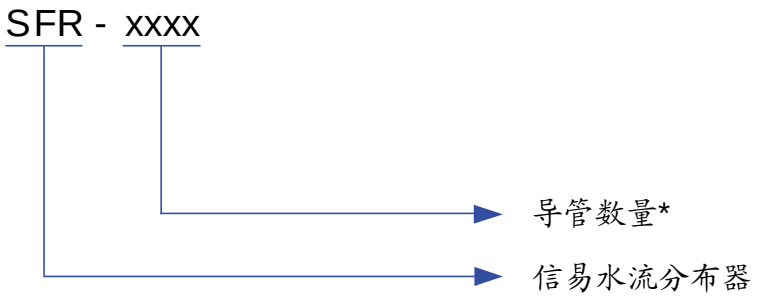
1. 概述

安装和使用本机前应仔细阅读使用说明书，以免造成人身事故或机器损坏。

SFR 系列水流分布器设计为搭配水式模温机、冷水机或冷却水塔使用，可同时连接多个模具接口，具有温度显示、流量显示和流量控制功能，可满足不同工作状况需求。模块式组合，装拆方便，是现代塑料工业提高效率的必备配件。

机型：SFR-600

1.1 编码原则



注：*
例如：SFR-200，导管数量为2
SFR-1000，导管数量为10

1.2 特点

- 模块化设计，扩充性能高，可依客户需求做搭配;
- 优化的结构设计，更长使用寿命;
- 可根据需求调节水流量，且具有流量显示功能，能在模具回路堵塞时即刻显示，避免不良品;
- 通过精确、可靠的模温控制，确保产品收缩的一致性;
- 装拆方便，维护清洁简单;
- 机械化设计，无能量消耗;
- 可视的流量显示，可直观调整所需流量;
- 采用精密的调节阀，可更精确调节水流量;
- 配备 3/8" 快速管接头供模具连接使用，亦可拆下此接头，内有 3/8" PT 的内牙供其它型号连接使用;
- 标配一支清洁用毛刷，方便保养;
- 可选配进出水弯头(附快速管接头)，成型机安装支架。

所有的机器维修工作应由专业的维修人员来完成，该书说明适用于现场操作者及维修人员使用，第 6 章直接针对维修人员，其它章节适于操作者。

为了避免对机器的损害和对人的伤害，非经信易公司授权，任何人不得对机器的内部作任何修改， 否则本公司将不履行承诺。

我公司具有良好的售后服务，在您使用过程中，如有问题需解决，请与我公司或经销商联系。

总公司及台北厂:
Tel: (886) 2 2680 9119

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1.3 机器规格

1.3.1 SFR 系列外形尺寸

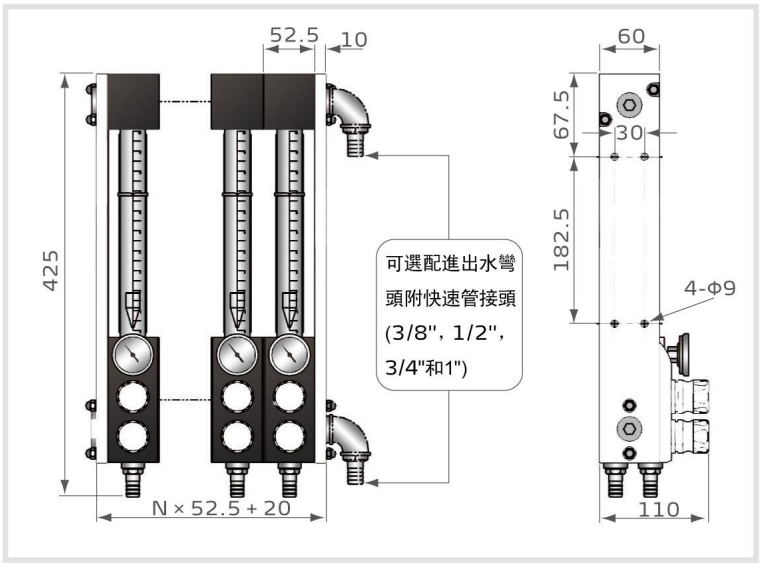


图 1-1: 外形尺寸图

表 1-1: 产品型号

型号	导管数量(N)
SFR-200	2
SFR-400	4
SFR-600	6
SFR-800	8
SFR-1000	10
SFR-1200	12

1.3.2 SFR 系列技术参数

最高温度：100℃（210℉）

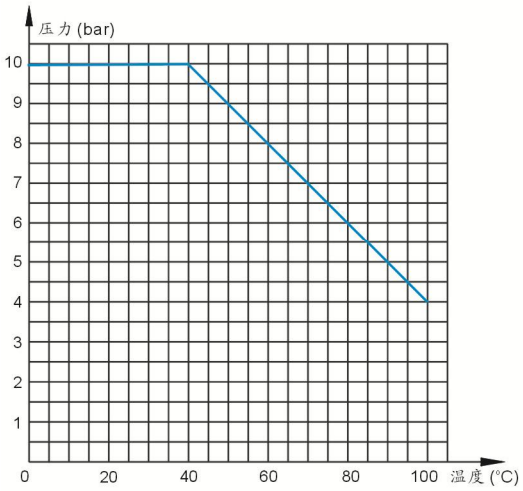
最高压力：10 bar

流量范围 (单管)：0~18 L/min

模具接头：3/8" 快速管接头

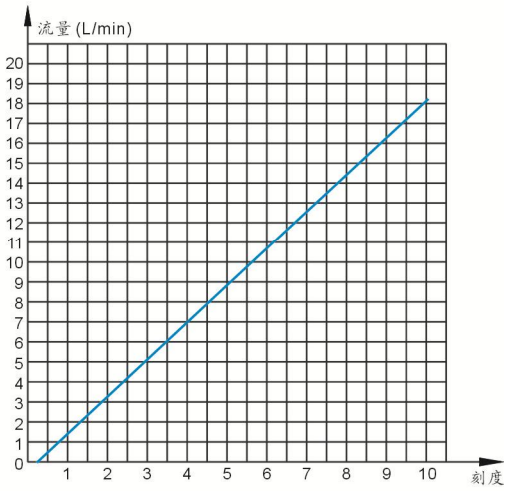
进出水口接头：3/4"PT 内牙

温度与压力适用曲线图



(此曲线与实际压力误差值为 ±5%)

温度与刻度曲线图



(此曲线与实际流量误差值为 ±0.5L/min)

图 1-2：技术参数图

1.4 安全规则

依照本说明书上的安全规则，避免造成人身伤害及机器损坏 。

1.4.1 安全标识

警告！小心！

此标志表示在该处应多加小心！

注意！

电控箱内所有安装电气元件的螺丝全部锁紧，无需定期检查！

1.5 免责声明

以下声明阐述了信易（包括其雇员、代理商、分销商）对任何购买或使用信易相关产品，包括选购件的购买者或用户所负责任之排除或限制。

信易对以下原因导致的任何损失、费用、开支、索赔或损害，不负责任。

1. 在使用本产品之前，不仔细阅读或不遵从产品说明书，从而导致粗心或错误地安装、使用、保养等。
2. 超出合理控制的行为、事件或事故，包括但不限于人为恶意或故意破坏、损坏，或异常电压、不可抗力、暴乱、火灾、洪水、暴风雨、地震等自然灾害而产生或导致的产品无法正常运行。
3. 非本公司认可的维修人员对设备所进行的增加、修改、拆卸、运输或修理。
4. 使用非信易指定的消耗品或油品。

2. 结构特征与工作原理

2.1 SFR 水流分布器工作原理

1) 循环水经进水口进入水流分布器;
2) 循环水经调节阀 1 进入模具;
3) 当循环水在模具内循环后，经水流分布器的调节阀 2 进入透明筒，可通过浮子的刻度读出水流量大小;
4) 循环水再经出水口回到模温机、冰水机或冷却水塔;
5) 温度计显示流经管道水流的温度。

2.1.1 系统流程示意

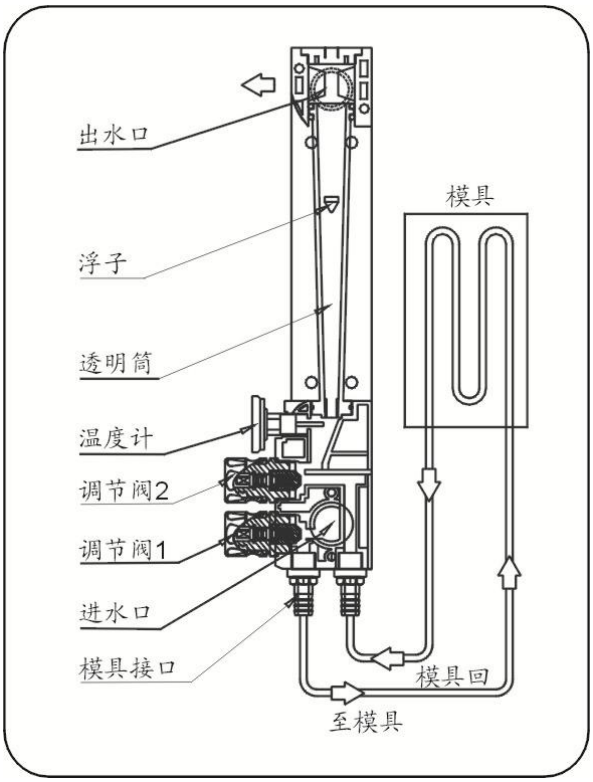
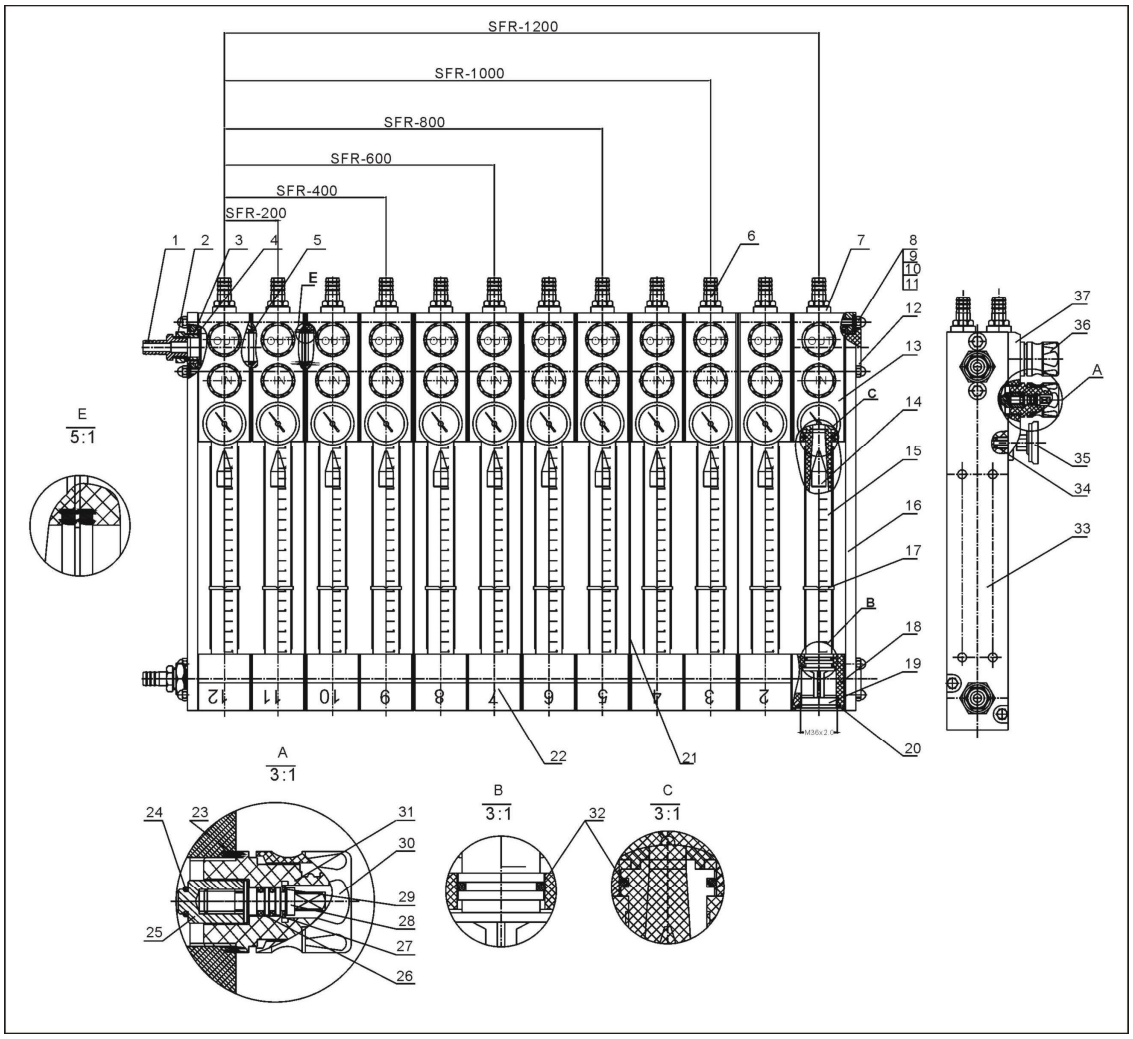


图 2-1: 系统流程示意

2.2 机器零件图

2.2.1 系统结构图



技术要求:
1.装配时各 O 型圈不能混用。
2.顶锥方向为尖头朝向阀体。
3.透明筒安装 0 刻度在阀体端。
4.按照规定装配完后试水各密封处不漏。
5.调节旋钮灵活、可靠。
注: 零件图中的阿拉伯数字详解见 2.2.2 材料明细表

图 2-2: 系统结构图

2.2.2 材料明细表

表 2-1: 材料明细表

序号	名称	物料编号	序号	名称	物料编号
1	外接管接头	BH12040000910	20	O 型密封圈 6	YR20363000000
2	外接管接头座	BH12040000810	21	隔板	BL26160500110
3	接头座固定环	YW05040000710	22	数字标签	YP31010000100
4	O 型密封圈 1	YR20283500000	23	O 型密封圈 3	YR20236200000
5	矩形密封圈	YR20401000000	24	O 型密封圈 5	YR20562600000
6	3/8"管接头	YW04135300000	25	调节器压块	YW05040000400
7	阀体接头内座	BH12400001210	26	O 型密封圈 7	YR20052500000
8	全螺柱	BH10624000010	27	O 型密封圈 4	YR20062000000
9	平垫圈	YW66061800000	28	调节器内杆	YW05040000300
10	弹簧垫圈	YW65006000100	29	开口挡圈	YW66000600000
11	盖形螺母	YW64006000100	30	调节器旋盖(IN)	YR40000000700
12	密封螺丝	YR40000000900	31	调节器固定座	YR40000000500
13	阀体	YR40004000000	32	O 型密封圈 2	YR20273000000
14	顶锥	YW04143500000	33	左侧固定板	BW20040000410
15	透明筒	YR40000001100	34	4 分单孔胶塞	YR30000400100
16	右侧固定板	BW20040000310	35	双金属温度计	YE90101100000
17	筒标尺	YW20004700000	36	调节器旋盖(OUT)	YR40040000800
18	连接座	YR40000001000	37	侧块	YR40000000600
19	螺纹调节件	YR40000001300			

3. 安装、调试

安装之前，请仔细阅读此章，必须按照以下的顺序安装!

3.1 安装注意事项

1) 水流分布器必须垂直安装在无振动的基座上，不应有明显的倾斜，其安装高度，应便于对浮子读数，读数时，视线与浮子水平。循环水自下而上流过水流分布器。
2) 进水口的最大流量不得大于水流分布器的最大处理量（每导管最大流量为18L/min）。
3) 选配成型机支架与主进出水接头时，其安装方式如下图所示，成型机支架 1 用附送螺钉固定在注塑机模板上，成型机支架 2 安装在成型机支架 1 的上面，并用梅花螺母锁紧，水流分布器与成型机支架 2 之间使用附送的螺钉固定。
4) 如模具水流需求量小于进水口的流量时，需用管道连通其它导管作分流循环。

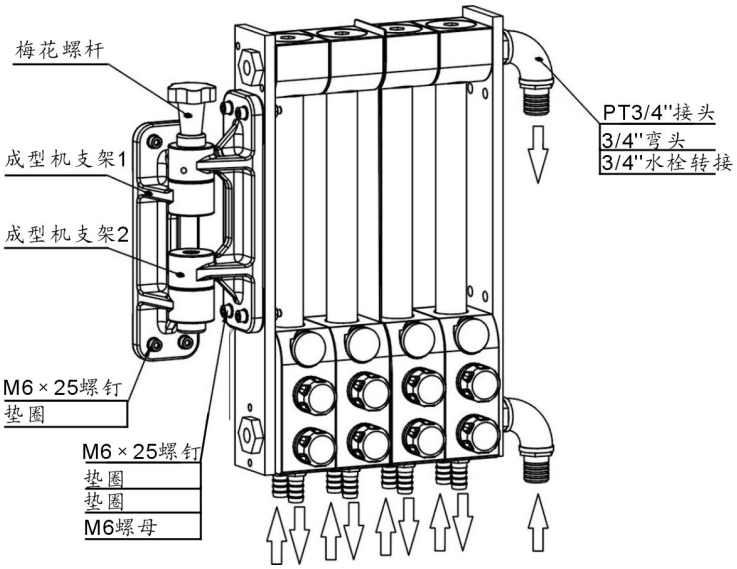


图 3-1: 机器安装注意图

5) 用于杂质较多的循环水时，水流分布器进水口前应加装净水器。
6) 循环水压力须稳定，如压力不稳定，会造成浮子波动，不能正确测量。

注意!

此水流分布器仅可用于净水，不可用于其它液体或气体。

4. 使用、操作

4.1 调节流量

水流分布器通过两个调节阀调整流量。调节流量时，应先如图拔起阀门，顺时针旋转可减少流量，逆时针旋转可增大流量，调节完后压下调节阀。

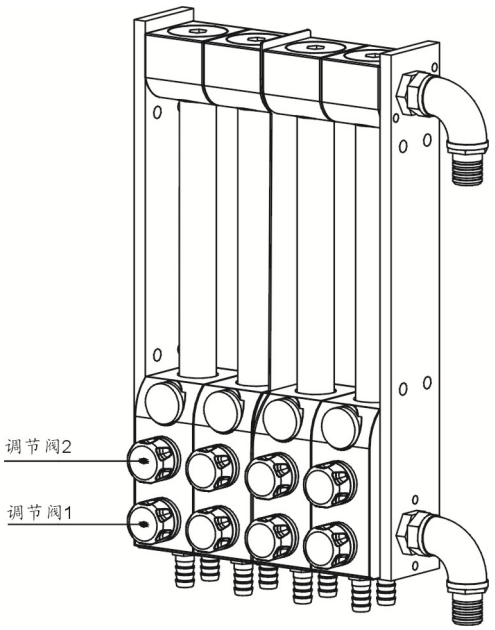


图 4-1: 调节流量图

注意!

调节阀在压下的情况下是无法调节流量的。

5. 故障排除

故障现象	可能原因	排除方法
水流分布器漏水	螺母未拧紧 密封圈损坏 水压过高	拧紧螺母 更换密封圈 降低水压
测温不准	温度计损坏 温度计有水垢	更换温度计 清理水垢
无法调节流量	阀门故障 管路堵塞	更换阀门 清理管路
流量显示不准确	浮子有大磨损 浮子和塑料管积垢	更换浮子 清除水垢

6. 维修与保养

所有的维修必须由专业的人员来完成，以避免造成人身伤害及损坏机器。

6.1 清除水垢

水流分布器使用一段时间后，浮子和塑料管会积聚有水垢，请定期检查。当发现流量不准确时，用砂纸或布清理浮子上的水垢；塑料管请使用试管刷清洗。

6.2 维修保养记录表

6.2.1 机器资料

机器型号 _____ 序号_____ 生产日期 _____

6.2.2 安装检查

☐检查透明筒有无破裂

☐检查接头是否连接好

☐检查水流分布器有无漏水

☐检查流量调节阀能否正常工作

☐检查温度计能否正常工作

6.2.3 日检

☐检查流量调节阀能否正常工作

☐检查温度计是否正常工作

☐检查有无漏水

6.2.4 周检

☐检查浮子、透明筒有无水垢

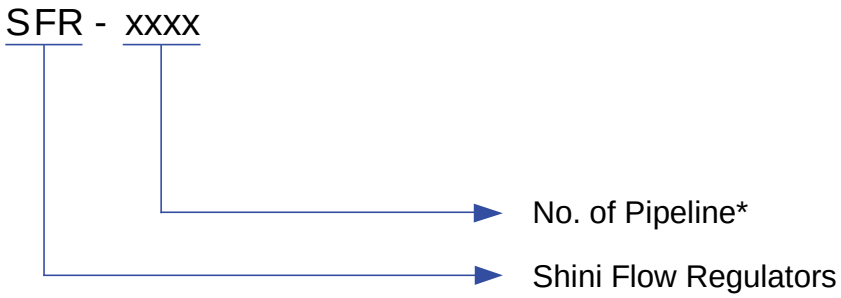
7. General Description

Read this manual carefully before operation to prevent damage of the machine or personal injuries.

SFR series water flow regulators are designed to work with mould heaters, water chillers and cooling towers, which can be connected to more than one mould connectors. They have the function like temperature and flowrate displays, flowrate control in order to meet the requirement of different working conditions. Modularized combination ensures convenient installation and maintenance. It is a necessary device for modern plastic industry to improve its moulding efficiency.

Model: SFR-600

7.1 Coding Principle



Note: *
For example: SFR-200, 2 pipelines
SFR-1000,10 pipelines

7.2 Feature

- Modularized design and great expandability, which can be configured on client's demand.
- Optimal structure design, longer service life.
- Flowrate is adjustable according to different demand and has temperature and flowrate display function, which can display immediately whenever there is clogging in the mould circulation loops so as to avoid producing defective products.
- Ensure the conformity of product's shrinkage by accurate and reliable mould temperature control.
- Convenient for both mounting and demounting, easy for cleaning and maintenance.
- Purely mechanical structure with no power consumption.
- Viewable flowrate display helps fast adjusting to required rate.
- Adopts precise adjusting valve, which can adjust the flowrate more accurately.
- Mould connectors (3/8" male quick-release connector) are supplied as standard. For connecting with other sizes, they can be unscrewed to leave 3/8" PT female threads.
- Cleaning brush is supplied as standard for easy maintenance of flow tubes.
- Water connection elbows with quick-release connectors (3/8", 1/2", 3/4" and 1"), and machine mounting bracket are optionally available.

All service work should be carried out by a person with technical training or corresponding professional experience. The manual contains instructions for both handling and servicing. Chapter 6, which contains service instructions intended for service engineers. Other chapters contain instructions for the daily operator.

Any modifications of the machine must be approved by SHINI in order to avoid personal injury and damage to machine. We shall not be liable for any damage caused by unauthorized change of the machine.

Our company provides excellent after-sales service. Should you have any problem during using the machine, please contact the company or the local vendor.

Headquarter and Taipei factory:
Tel: (886) 2 2680 9119

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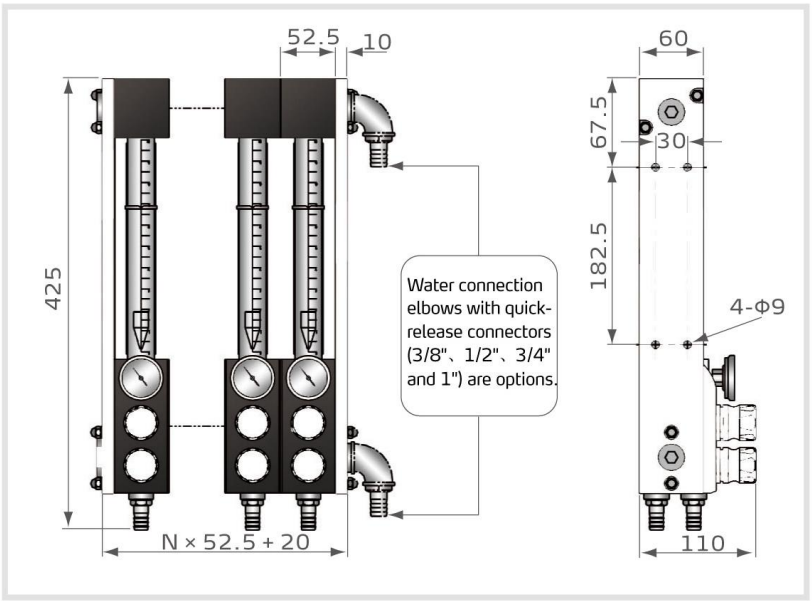
Tel: (86) 769 8111 6600

Shini Plastics Technologies India Pvt.Ltd.:
Tel: (91) 250 3021 166

7.3 Technical Specifications

7.3.1 SFR Series Outline Dimensions



Picture 7-1: Series Outline dimensions

Table 7-1: Model

Model	Pipe No. (N)
SFR-200	2
SFR-400	4
SFR-600	6
SFR-800	8
SFR-1000	10
SFR-1200	12

7.3.2 SFR Series Technical Parameters

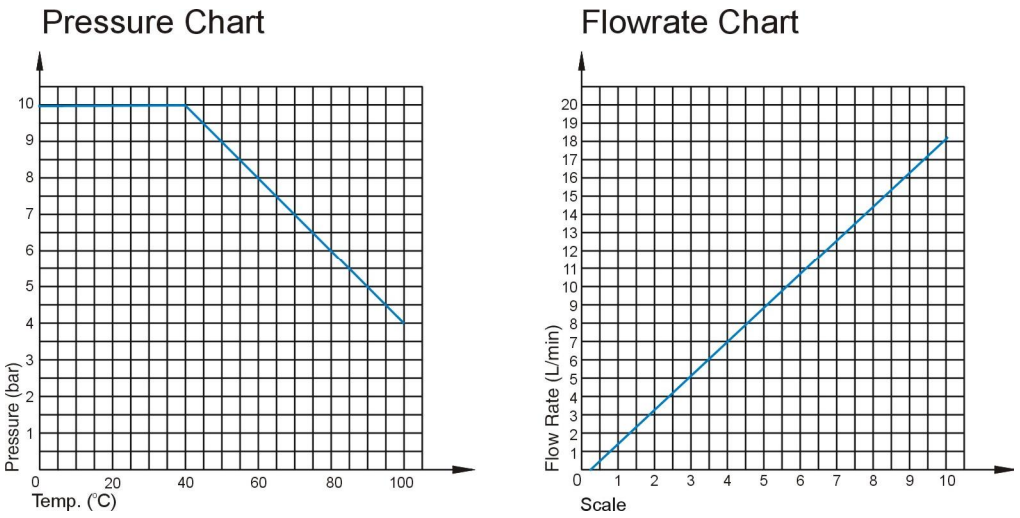
Max. Temperature: 100℃ (210℉)

Max. Pressure: 10 bar

Flowrate range: 0 ~ 18 ltr. / Min (each)

Mould connectors: 3 / 8" quick-release

Water connectors: 3 / 4" PT female thread



Picture 7-2: Chart

7.4 Safety Regulations

Strictly abide by the following safety regulations to prevent damage of the machine or personal injuries.

7.4.1 Safety Signs and Labels

Warning! Danger!

Take great care when this sign appears !

Attention!

No need for regular inspection because all the electrical parts in the control unit are fixed tightly!

7.5 Exemption Clause

The following statements clarify the responsibilities and regulations born by any buyer or user who purchases products and accessories from Shini (including employees and agents).

Shini is exempted from liability for any costs, fees, claims and losses caused by reasons below:

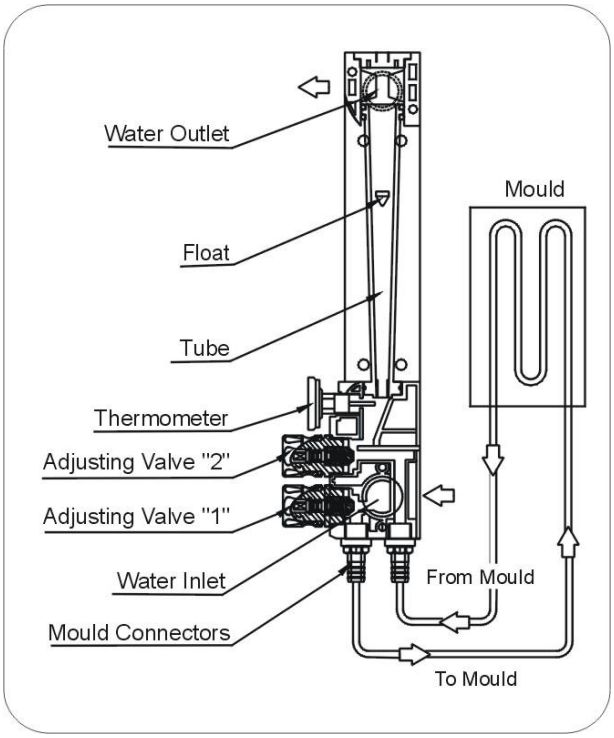
1. Any careless or man-made installations, operation and maintenances upon machines without referring to the Manual prior to machine using.
2. Any incidents beyond human reasonable controls, which include man-made vicious or deliberate damages or abnormal power, and machine faults caused by irresistible natural disasters including fire, flood, storm and earthquake.
3. Any operational actions that are not authorized by Shini upon machine, including adding or replacing accessories, dismantling, delivering or repairing.
4. Employing consumables or oil media that are not appointed by Shini.

8. Structure Characteristics and Working Principle

8.1 Working Principle of SFR

1) Circulating water comes into flow regulator via water inlet.
2) Then the circulating water comes into mould via the adjusting valve "1".
3) After the circulating water completing its circulating in the mould, it will go back to the flow tubes via the flow regulator's return water inlet and the adjusting valve "2". Flowrate can be observed in the flow tubes.
4) Circulating water returns to the mould temperature controllers, water chillers or cooling tower via water outlet.
5) Thermometer displays the temperature of pipe flow.

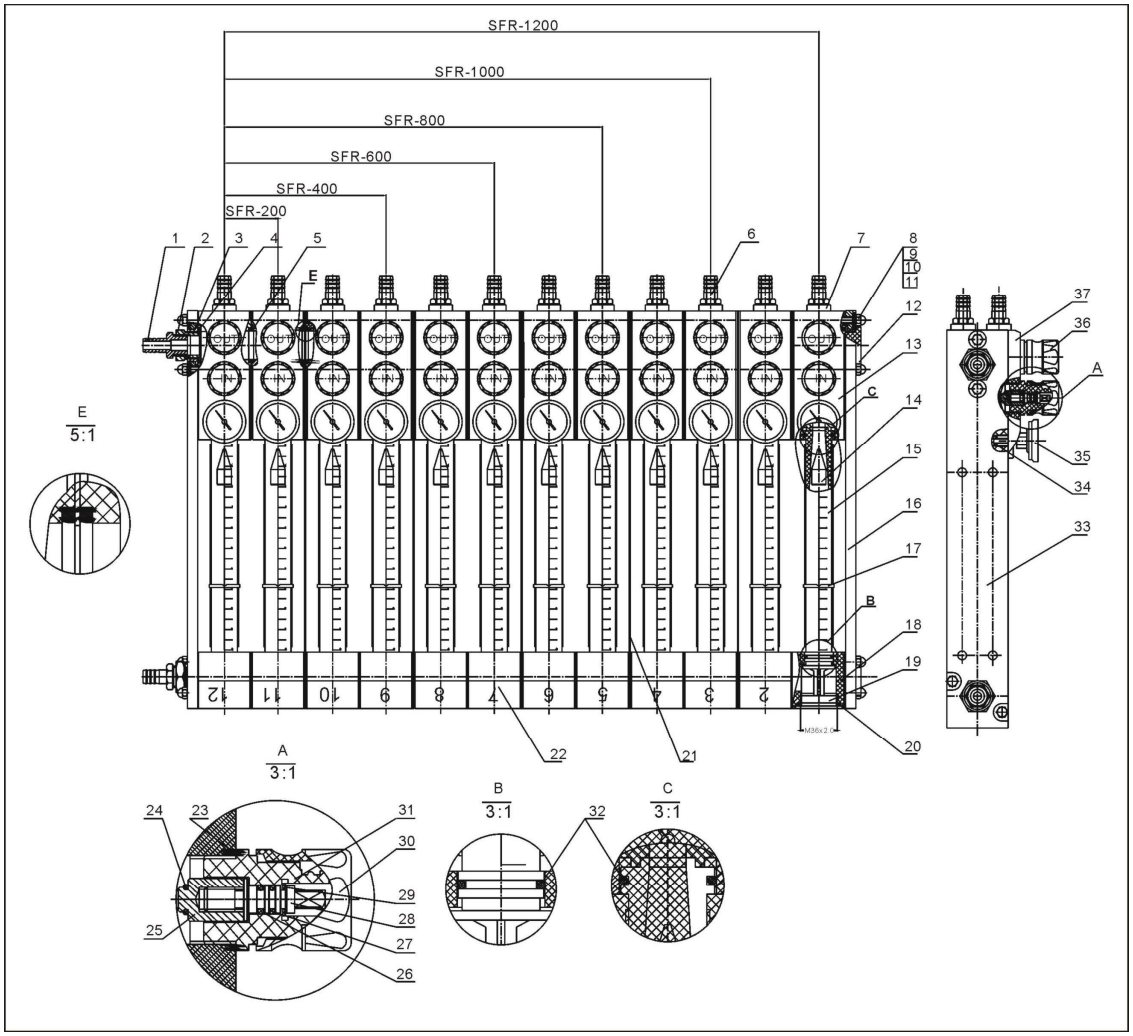
8.1.1 System Flow



Picture 8-1: System flow

8.2 Assembly Drawing

8.2.1 Assembly Drawing



Technical requirements:

1. No mixed use of various O type rings is allowed in assembling.
2. Face direction is that the pointed end faces valve body.
3. Zero installation graduation of transparent collet is on valve body.
4. Test water and find out no water leakage in every sealing place after assembling in accordance with regulations.
5. Adjust knob, flexible and reliable.

Remarks: please refer to material list 8.2.2 for specific explanation of the Arabic numbers in parts drawing.

Picture 8-2: Assembly drawing

8.2.2 Parts List

Table 8-1: Parts list

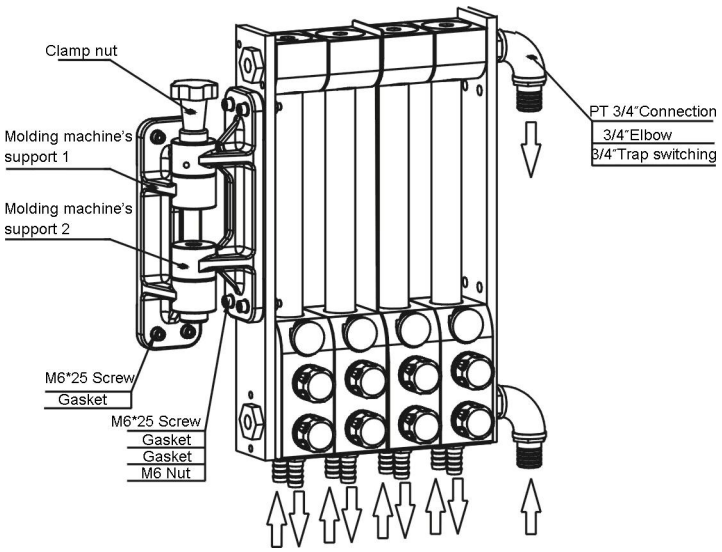
No.	Name	Part No.	No.	Name	Part No.
1	External pipe connector	BH12040000910	20	O type seal ring 6	YR20363000000
2	External pipe connector base	BH12040000810	21	Clapboard	BL26160500110
3	Connector base fixed ring	YW05040000710	22	Number label	YP31010000100
4	O type seal ring 1	YR20283500000	23	O type seal ring 3	YR20236200000
5	Rectangular seal ring	YR20401000000	24	O type seal ring 5	YR20562600000
6	3 / 8" Pipe's connector	YW04135300000	25	Regulator block	YW05040000400
7	Inside base of valve body connector	BH12400001210	26	O type seal ring 7	YR20052500000
8	Full bolt	BH10624000010	27	O type seal ring 4	YR20062000000
9	Flat gasket	YW66061800000	28	Regulator inner lever	YW05040000300
10	Spring washer	YW65006000100	29	E-rings	YW66000600000
11	Cap nut	YW64006000100	30	Regulator screw cap (IN)	YR40000000700
12	Seal screw	YR40000000900	31	Regulator fixing seat	YR40000000500
13	Valve body	YR40004000000	32	O type seal ring 2	YR20273000000
14	Face cone	YW04143500000	33	Left fixing plate	BW20040000410
15	Transparent collet	YR40000001100	34	4" Single-pore rubber plug	YR30000400100
16	Right fixing plate	BW20040000310	35	Bimetallic thermometer	YE90101100000
17	Collet measuring scale	YW20004700000	36	Regulator screw cap (OUT)	YR40000000800
18	Connection base	YR40000001000	37	Lateral mass	YR40000000600
19	Screw thread adjustment parts	YR40000001300			

9. Installation and Debugging

Read this chapter carefully before installation. Install as following orders to avoid any accident!

9.1 Installation Notice

1) Water flow distributor must be installed vertically on vibration free base without any evident slope, its installation height should facilitate the float scale reading, and the line of sight should be in level with float. The circulating water runs through the distributor from top to bottom.
2) The max. flow rate of the water inlet should be less than the max. processing rate (max. flowrate for each pipe is 18L / min).
3) Refer to the installation method in the following chart while selecting molding machine's support and main inlet-and-outlet connection. Use screws in attachment to fix molding machine's support 1on injection machine's template, install forming machine's support 1 on the top of forming machine's support 1 and lock it tightly with clamp nut, and use screws in attachment to fix water flow regulator and forming machine's support 2 tightly.
4) It is necessary to connect with other pipes for distributary circulation when water flow requirement of mould is less than that in water inlet. (Refer to the following chart)



Picture 9-1: Installation notice

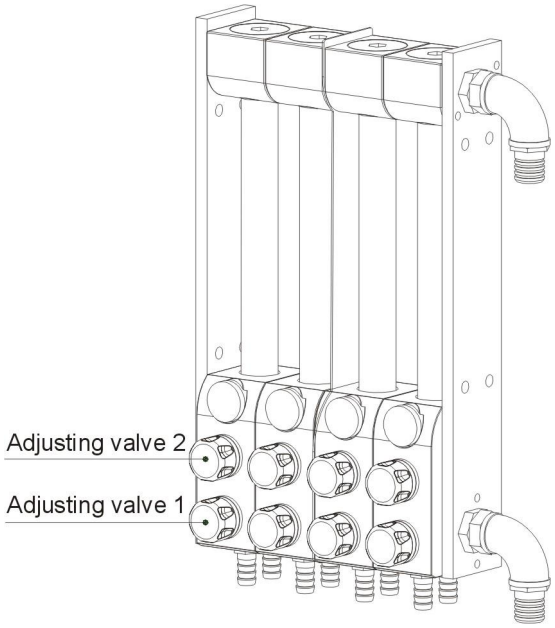
5) May need to mount water filter at the water inlet if it is using water that contains much impurities.
6) The pressure of the circulating water needs to be stable or it will cause the float fluctuation and incorrect readings.

 Only applicable to purified water not for any other liquid or gas.

10. Operation Guide

10.1 Flowrate Adjusting

Water distributor adjusts the flowrate via two adjusting valves. When adjusting flowrate, first pull up the valve as indicated by the figure, turn clockwise to decrease the flowrate while increase its flowrate by turning it anticlockwisely. Press down the adjusting valve when finish.



Picture 10-1: Flowrate adjustment

The adjusting valve may not be able to adjust when it is pressed down.

11. Trouble-shooting

Failures	Possible Reasons	Solutions
Water leakage.	The nut has not been locked up. The seal ring is damaged. Too high water pressure.	Tighten up the screw. Change the seal ring. Reduce water pressure.
Incorrect temp.	Thermometer is damaged. Furring in thermometer.	Change the thermometer. Cleaning or change
Can not adjust flowrate.	Valve fails. Pipe clog.	Change valve. Clean the pipeline.
Incorrect flowrate display.	Great abrasion on float. Furring on float and plastic pipe.	Change float. Clean furring.

12. Maintenance and Repair

All stuff concerning repair must be conducted by professionals to avoid machine damage or harm to human body.

12.1 Clean the Furring

There are furring gatherred around the float and plastic pipe after using for a while, so please check periodically. If incorrect flowrate is found, please clean the furring on float by using sand paper or cloth, while use pipe brush to clean the plastic pipe.

12.2 Maintenance Schedule

12.2.1 About the Machine

Model:_____ SN: _____ Manufacturing date: _____

12.2.2 Installation Check

- ☐ Inspect if transparent collet is cracked.
- ☐ Check to see if the joint has been connected.
- ☐ Check if there is any water leakage.
- ☐ Inspect if water flow regulation valve works in normal state
- ☐ Check the thermometer to see if it can work normally.

12.2.3 Daily Check

- ☐ Inspect if water flow regulation valve works in normal state.
- ☐ Check the thermometer to see if it can work normally.
- ☐ Check if there is any water leakage.

12.2.4 Weekly Check

- ☐ Inspect if there is furring in bobber and transparent collet.