



Annex

15 Annex

15.1 Units used

Symbol	Name	Physical quantity
Electricity		
Ω	Ohm	Resistance
K Ω	Kiloohm	Resistance
M Ω	Megaohm	Resistance
W	Watt	Power
Time		
min.	Minute	Time
s	Second	Time
Temperature		
$^{\circ}\text{C}$	Degree Celsius	Temperature
K	Kelvin	Temperature
$^{\circ}\text{F}$	Fahrenheit	Temperature
Length		
mm	Millimeter	Length
m	Meter	Length
"	Inch	Length
Pressure		
psi	Pounds per square inch	Pressure
bar	Bar	Pressure
Torque		
Nm	Newton meter	Torque
Foot-pounds	foot pounds	Torque

Glossary and List of Abbreviations

A	
activeGate®	activeGate® technologies are designed to facilitate perfect surface quality, stability and repeatability of injected molded parts by precisely controlling the flow. Elements of the activeGate® Control Systems are synflow, eGate, DynamicFeed, hGate, nuGate, VMI Monitoring.
Actuator cooling	See Temperature control of the Hot Runner System
A - Dimension	Distance between the top of the spacer plate and the top of the manifold
API nozzles	See section 2.1.1
APT nozzles	See section 2.1.2
B	
Balancing	Processing optimization, consisting in the determination of optimum parameters for the Hot Runner System and the injection molding machine.
C	
Cavity	Hollow space in the injection mold in the shape of the molded parts. It is filled with plastics during the injection process.
Cavity plate	Internal space of the injection mold in which the cavity is located.
Clamping plate	Steel plate used to attach the mold to the injection molding machine. The QCVG actuator is placed inside the clamping plate.
Coolant	Cooling fluid used to cool down the actuator. The coolant used should be properly modified, e.g. filtered water with an anti-corrosion and frostproof agent.
Cutout / cavity	Cutout (matrix) into which the Hot Runner System is incorporated. Also mold cavity, or cutout for the nozzle.



Annex

D

Dimension A See A-dimension

E

eGate® Equipment for valve gate systems to realize and control electrically a defined open/close and motion/position profile for each nozzle.

ELA series Electric operated actuators for valve gate systems

EVOH Ethylene vinyl alcohol copolymer

Expansion gap Z See dimension z

F

F0 point F0 point is the nozzle reference point. The nozzle tip may be cut to this point, but not beyond.

G

H

HB Hydraulic Actuator series The HB Hydraulic Actuator series is available with optional thermocouple, valve pin position sensor and SynCool3.

Heated inlet bushing (see: Inlet bushing, heated)

Heater Resistor element heating the Hot Runner System.

High-temperature assembly paste Temperature resistant assembly paste which enables resolvability of all threads.

Hot half Hot Runner System including the applicable cavity plates. They are already complete with cables, or hoses, fully assembled and ready for mounting.

Hot Runner manifold Steel block distributing the plastic. It forms the Hot Runner System together with nozzles, actuators, supply hoses and heating.

Hot Runner System Hot runner system, see section 2

HR manifold Hot runner manifold

HRC Hardness Rockwell Cone

Hydraulic operating fluid Operating fluid for hydraulic actuators that complies with requirements under classification 21/18/13 pursuant to ISO 4406.

HYC series Hydraulic operated actuators for valve gate systems

I

Inlet bushing, heated Hot runner nozzles where the contact surface for the machine nozzle is located directly on the nozzle head – either as a manifold or as a single nozzle.

Inlet bushing, unheated Short inlet bushing – in some cases heating is not necessary.

J

J-Type temperature sensor (thermocouple) Temperature sensor (thermocouple), type J.

K

L

List of adjustment values Sheet with values for the optimum setting of the injection molding machine and the Hot Runner System.

Dimension L The nominal dimension between the nozzle face (support ring nozzles) respectively the bottom of the manifold (threaded nozzles) and the F0 point.

Dimension Lc Depth of center support in mold plate

Dimension Lcs Length of center support

Dimension Lsp Spacer ring length

Dimension Lms Support pad length

M

Machine Injection molding machine

Manifold V-37 Manifold 37 mm (1.46") thickness and a width of 36 mm (1.42")

Manifold V-42 Manifold 42 mm (1.65") thickness and a width of 50 mm (1.97")

Manifold V-45 Manifold 45 mm (1.77") thickness and a width of 50 mm (1.97")

Manifold V-50 Manifold 50 mm (1.97") thickness and a width of 60 mm (2.36")

Manifold V-55 Manifold 55 mm (1.97") thickness and a width of 80 mm (3.15")

Manifold V-65 Manifold 65 mm (2.56") thickness and a width of 80 mm (3.15")



Annex

Manifold VH	Manifold 80 mm (3.15") thickness and a width of 87 mm (3.43")
Manifold VI	Manifold 85 mm (3.35") thickness and a width of 97 mm (3.82")
Manifold channel	Drilled channel in the manifold that conveys the melt.
Mold temperature control	Mold heating or cooling using a fluid pump or similar control unit.
Material safety data sheet (MSDS)	Contains data typical for a specific plastic, such as processing temperature, specified health and safety information etc.
N	
Nominal dimension	See Dimension L
O	
Open (thermal gate) system	System without a moving valve pin, with thermally controlled gate.
P	
PB Pneumatic Actuator series	The PB Pneumatic Actuator series is available with optional thermocouple, valve pin position sensor and SynCool3.
Plastification unit	Screw and barrel of the injection molding machine
Plate actuation	Plate actuation is a synchronized needle opening and is ideal for high cavitation molds.
PLUG 'N PLAY® Hot Runner System	The PLUG 'N PLAY® hot runner system is supported by the thrust pads, center support and positioning dowels. It is not screwed to the cavity plate. The system can be assembled without adjustment.
PNC series	Pneumatic operated actuators for valve gate systems.
PPE	Personal protective equipment
Pre-chamber isolation	The nozzle tip does not pass through the cavity plate and is located in a pre-chamber. The plastic in the pre-chamber isolates the melt flow.
Q	
QCVG	"Quickcouple valve gate" actuator, placed inside mold plate.
R	
Ra	Mean roughness value, surface roughness after machining
S	
Screwed (threaded) manifold nozzles	Hot runner nozzles screwed into the manifold.
Single valve gate nozzles	Single valve gate nozzles are hot runner nozzles with the inlet bushing directly mounted on the nozzle head. The Single Valve Gate system closes the nozzle tip using a moving valve pin.
Sprue bushing	Hot runner nozzles sprue bushing are hot runner nozzles with the inlet bushing directly mounted on the nozzle head.
Support ring nozzles	Support ring nozzles are hot runner nozzles whose connection to the manifold consists of a face fit, so that during heating the thermally expanding manifold can "slide" over the nozzle heads.
Spacer plate	Steel plate in which a cutout for the Hot Runner System is located.
SynCool®	The SynCool® technology provides passive actuator cooling which may eliminate the need for dedicated cooling lines. It also allows the operator on certain applications at <280°C operating & <80°C mold temperature, to switch off the complete system including the mold and actuator cooling without the risk of decomposing the hydraulic oil.
synflow®	synflow® equipment enables valve pin opening velocity and intermediate pin holding control for hydraulic valve gate hot runner systems.
T	
Temperature control of the Hot Runner System	Cooling and heating of the Hot Runner System, maintaining temperature within a specified range.
Temperature controller	Temperature control of the machine
Temperature sensor (thermocouple)	Sensor that measures temperature in specific heated zones of the Hot Runner System, allowing temperature control. Synventive Hot Runner Systems use almost exclusively J type sensors, unless specifically requested by the customer.
Temperature sensor (thermocouple), type J	Temperature sensor whose (+) cable is made of ferrous metal and (-) cable of copper and nickel.
Torque table	List of torques for Synventive parts. See section 13
U	
V	
Valve gate system	System that closes the nozzle tip using a moving valve pin.
VP series	Pneumatically controlled actuators located in mould plate.



Annex

W

X

Dimension x1

Depth of the center support in VC/VD Manifold

Y

Z

Dimension z

Expansion joint Z on manifolds with support ring nozzles due to thermal expansion. If set correctly, it creates the seal between the nozzle face and the manifold.

15.2 Patents

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EU Patents: 1218161, 1223018, 1223019, 1223020, 1295693, 1810812, 2328735, 2501533, 2504145, 2519392, 2550144, 2620266, 2631059, 2744636, 2888091, 2900449, 2925503, 2931491, 2986432, 2996858, 3013549, 3003680, 3003681, 3092115, 3019323, 3148767, 3209476, 3271129, 3326777, 3271130, 3240666, 3247545

CN Patents: CN100406232C, CN102149528B, CN1205013C, CN102770257B, CN1391512A, ZL200510072806.2, ZL201080030322.0, ZL201080060140.8, ZL201180040206.1, ZL201180040565.7, ZL201280075053.9, ZL201280075135.3, ZL201380056011.5, ZL201380054800.5, ZL201380064632.8, ZL201380069040.5, ZL201410693084.1, ZL201480009037.9, ZL201480034175.2, ZL201480039036.9, ZL201480039033.5, ZL201410424996.9, ZL201510005814.9, ZL201480049316.8, ZL201480034180.3, ZL201480016087.x, ZL201480077490.3

CA Patents: 2385016, 2390267, 2663872, 2671300

JP Patents: 5615975



Annex

15.3 Global Offices / Sales Agencies

Australia & New Zealand

Contact: Andrew Dovey
Mobile : +61 415 532 895
Email: adovey@synventive.com

Brazil

Synventive Molding Solutions Ltda.
Rua Wallace Barnes, 301 - Distrito Industrial
Campinas - Sao Paulo
CEP 13054-701
Tel.: +55 (19) 3725 1092
Fax: +55 (19) 3725 1096
Email: contato@synventive.com

Canada

Synventive Molding Solutions Canada Inc.
Windsor Service Center
5350 Pulleyblank Street
Oldcastle, ON N0R 1L0
Tel.: +1 978 646 3482
Email: info@synventive.com

China - Suzhou

Synventive Molding Solutions (Suzhou) Co. Ltd.
12B Gang Tian Industrial Square
Suzhou Industrial Park, China 215021
Tel.: +86 512 6283 8870
Fax: +86 512 6283 8890
Email: infohrcn@synventive.com

China - Shenzhen

Synventive Molding Solutions (Suzhou) Co. Ltd.
Shenzhen Branch
No.712-715, 7th Floor Information Tower
Baoyunda Logistics Center
QianJin 2nd road, Bao'an District, Shenzhen
Tel.: + 86 755 3311 9297
Fax: + 86 755 3311 9296
Email: infohrhk@synventive.com

Czech Republic

Synventive Molding Solutions s.r.o.
Sezemická 2757/2
193 00 Praha 9 - Horní Počernice
Tel.: +420 226 20 30 00
Fax: +420 226 20 30 11
Email: infohrcz@synventive.com

France

Synventive Molding Solutions SAS
23, Boucle de la Ramée
38070 Saint Quentin-Fallavier
Tel.: +33 (0) 4 7499 1600
Fax: +33 (0) 4 7494 3481
Email: infohfr@synventive.com

Germany

Synventive Molding Solutions GmbH
Heimrodstraße 10
64625 Bensheim
Tel.: +49 (0) 6251 93 320
Fax: +49 (0) 6251 93 3290
Email: infohrde@synventive.com

India

Synventive Molding Solutions JBJ Pvt. Ltd.
Suite #10, Vatika Business Centre, Level-5
Baner Road, Baner
Pune 411045, Maharashtra, India
Tel.: +91 20 40111 313
Tel.: +91 20 40111 250
Email: lkurup@synventive.com

Italy

Synventive Molding Solutions Srl.
Via Carlo Viola, 74
11026 Pont St. Martin (AO)
Tel.: +39 0125 193 1110
Email: infohrit@synventive.com

Japan

Synventive Molding Solutions K.K.
6F of Masuni No. 1 Building
2-4-6 Shin-Yokohama
Kouhoku-ku, Yokohama City, Kanagawa Pref.
Japan 222-0033
Tel: +81 45 472 1239
Fax: +81 45 472 1163
Email: infohrjp@synventive.com

Mexico

Ramos Arizpe
Coahuila
Tel.: +528 44 181 2581
Fax: +1 978 646 3600
Email: jgomez@synventive.com

Netherlands

Synventive Molding Solutions B.V.
Windmolen 5
4751 VM Oud Gastel
Tel.: +31 (0) 85 2733 742
Fax: +31 (0) 85 2733 744
Email: infohml@synventive.com

Poland

Synventive Molding Solutions
s.r.o. Sp. Z o.o. Oddział w Polsce
ul. Dworcowa 76, 85-010 Bydgoszcz
Tel.: +48 (0) 22 401 75 31
Fax: +48 (0) 22 401 75 32
Email: infohrpl@synventive.com

Portugal

Synventive Molding Solutions Lda
Rua Dr. Manuel Ribeiro de Oliveira R/C
2400-178 Leiria
Tel.: +351 244 829 790
Fax: +351 244 829 799
Email: infohrpt@synventive.com

Russia

Intos - Service LLC.
nab. Chernoy rechki, 41
197342 St. Petersburg
Tel.: +7(812)702-50-14
Fax: +7(812)702-50-14
info@intos-spb.ru

Scandinavia

Contact:
Synventive Molding Solutions
Heimrodstraße 10
64625 Bensheim / Germany
Tel.: +45 33 93 1629
Fax: +45 33 93 6130
Email: infohrsc@synventive.com

Singapore

Synventive Molding Solutions Pte Ltd.
Block 5000, Techplace II
#04-10, Ang Mo Kio Ave 5
Singapore 569870
Tel.: +65 6536 8093
Fax: +65 6536 5660
Email: infohrsg@synventive.com

Slovakia

Synventive Molding Solutions s.r.o.-org. zl.
Gogol'ova 18, 851 01 Bratislava
Tel.: +421 2 63 82 92 48
Fax: +421 2 63 82 92 48
Email: infohrsk@synventive.com

South Africa

Sync Tooling
2, Cradock Road
6021 Uitenhage
Tel : +27 72 2112269
Email: infohrde@synventive.com

South Korea

Synventive Molding Solutions South Korea Office.
#606, 104Prugio 1Cha, No. 661
Gyeong in-Ro, Guro-gu,
Seoul 152-887 Korea
Tel : +82 2 3439 7242
Fax: +82 2 3439 7243
Email: infohrkr@synventive.com

Thailand

Synventive Thailand.
Unit A3, 3rd Floor, Goldenland Pavilion Building
153/3 Soi Mahardlekluang 1,
Rajdamri Road Lumpini,
Pathumwan, Bangkok 10330 Thailand
Tel: +66 (0) 2 652 1411
E-Mail: infohrth@synventive.com

Turkey

Türkiye Istanbul İrtibat Bürosu
Bagdat Cad. 49/6
34724 Feneryolu – Kadıköy, Istanbul
Tel: +90 216 541 43 14
Fax: +90 216 541 43 17
E-Mail: infohrtr@synventive.com

United Kingdom

Synventive Molding Solutions Ltd.
The Pinnacle 160 Midsummer Boulevard
Milton Keynes MK9 1FF
Tel.: 00800 7968 3684
Fax: 00800 3297 9683
Email: uk@synventive.com

USA - Peabody, MA

Synventive Molding Solutions
10 Centennial Drive
Peabody, MA 01960
Tel.: +1 978 750 8065
Fax: +1 978 646 3600
Email: info@synventive.com

USA - Livonia, MI

Synventive Molding Solutions
Michigan Service Center
37487 Schoolcraft Rd
Livonia, MI 48150
Tel.: +1 734 591 2129
Fax: +1 978 646 3600
Email: info@synventive.com