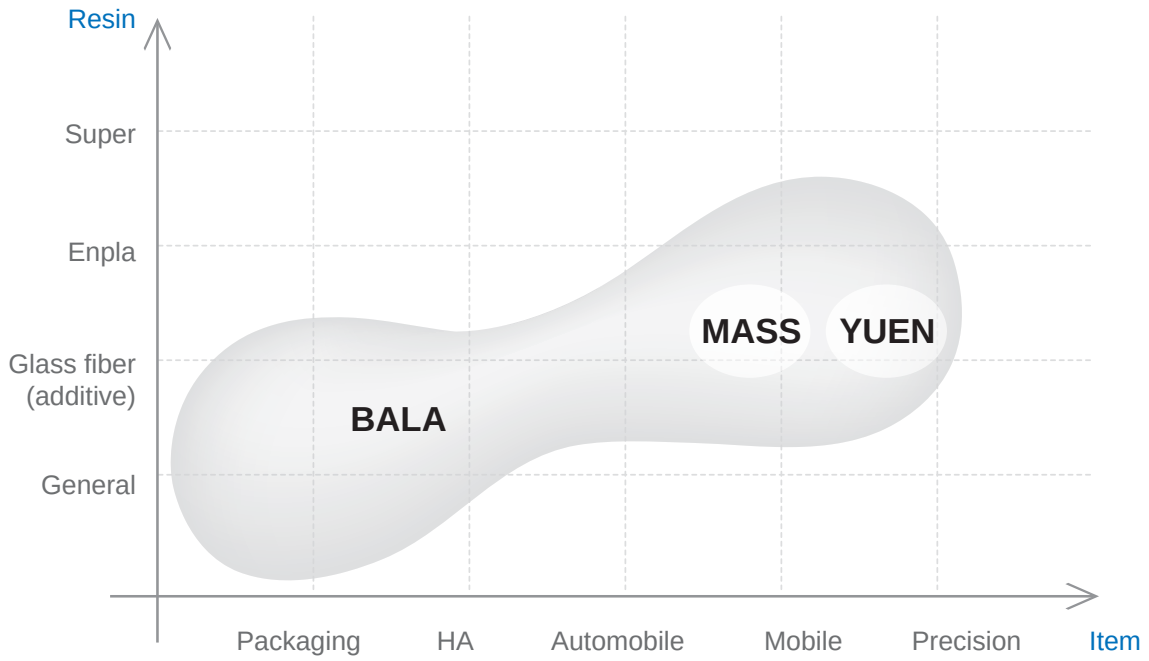
YUDO

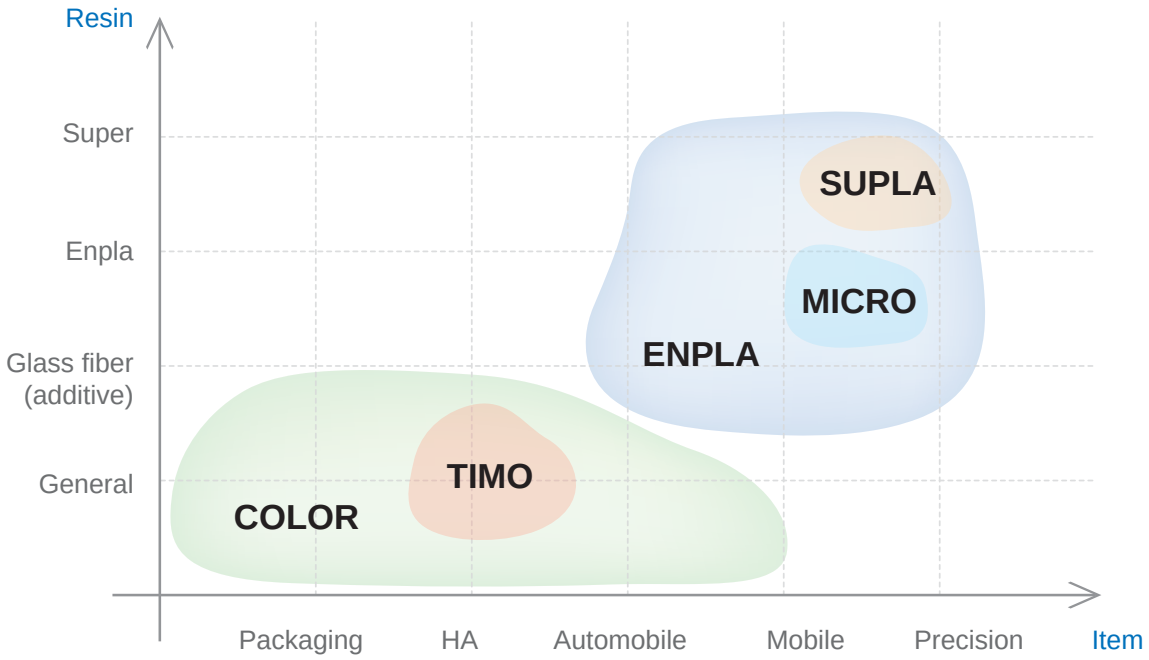
WINA GUIDE BOOK

WINA concept

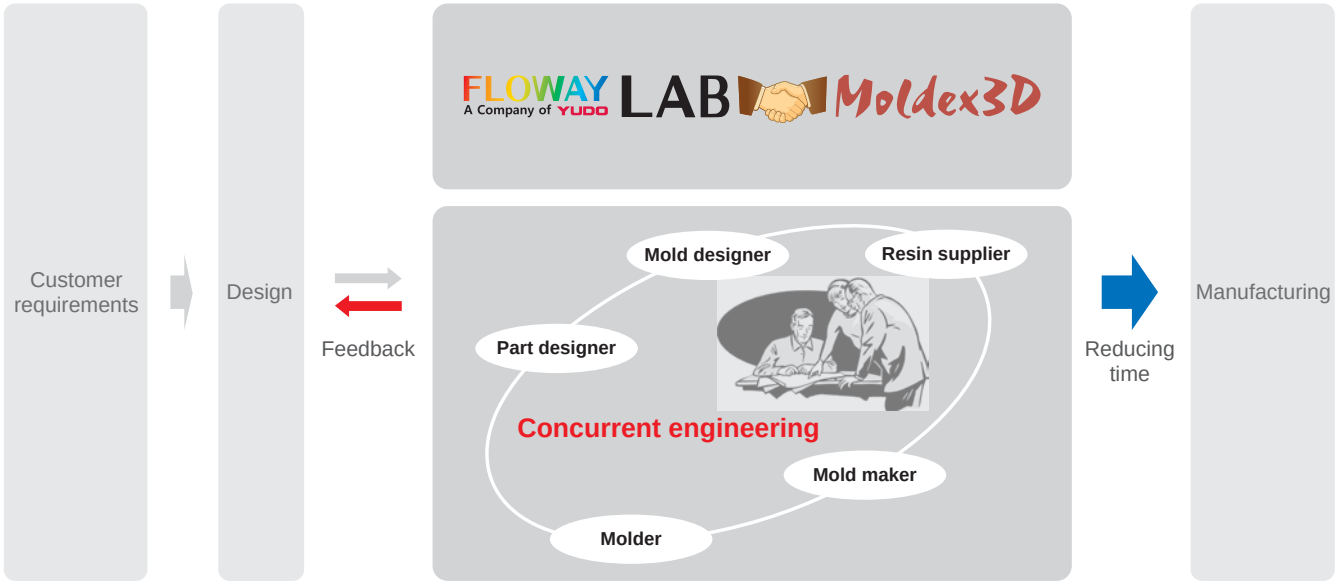


· Existing YUDO product focused on commodity resin application.
· With increase in types of resin, requirement for special and optimizes hot runner system is necessary.

· With WINA series, YUDO incorporated the best-in-class nozzle series to cater for specific resin application.
· There are seven series of nozzle ranging from general purpose to highly specialized super engineering plastic application.



How to develop WINA

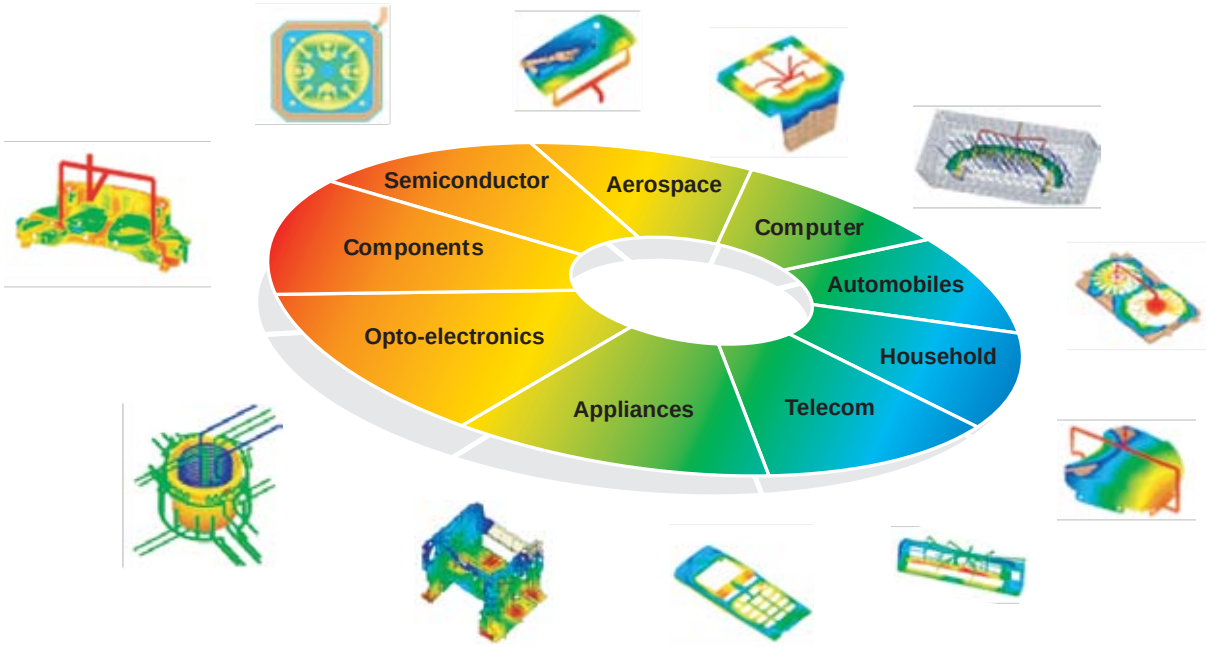


HRS design based on CAE analysis

YUDO systems are optimized by CAE analysis at the initial development stage. YUDO simulation team, FLOWAY LAB, cooperates with Moldex3D program developer, CORE-TECH to build up database.

Integrated engineering

YUDO has been successfully verifying systems with various injection professionals for 30 years. YUDO will provide customers with the highest quality product and technical support in the world. This is possible because of highest technical skill, endless research and development, and creative challenge in the hot runner industry.



Optimum structure and material assortment as per properties of items and resins

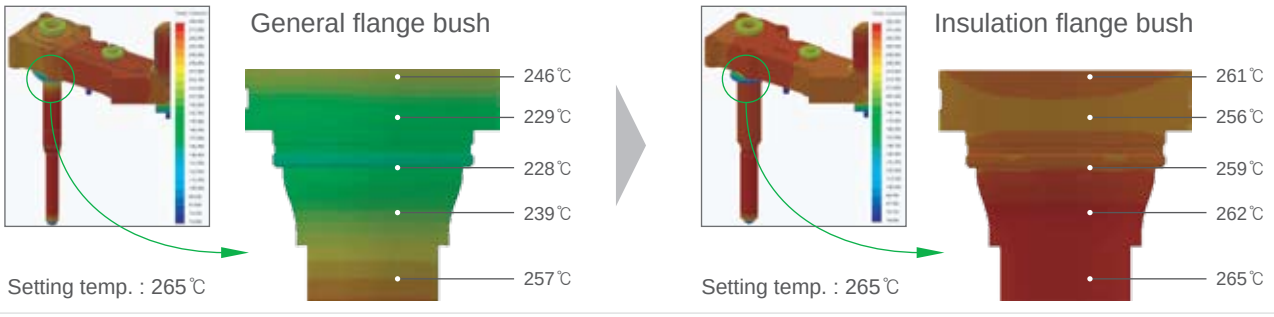
We develop various structures and unique materials to maximize performance according to the requirements of various resins. WINA series is classified to provide optimum solution for properties of items by differentiating the performance. WINA is the highest level of system to provide all kinds of injection industries with various solutions based on a wide range of application experience.

Brief technology introduction

Today YUDO holds 63 patents and 16 pending patents worldwide.
The WINA is a premium series product designed with the latest technology for optimum molding solution.

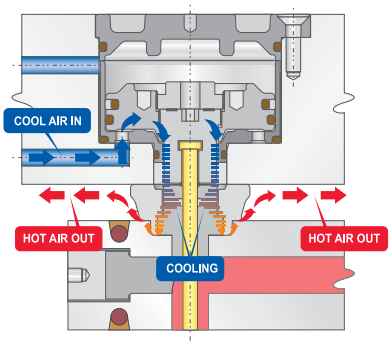
Insulation effect by flange bush - Patent pending

Existing flange bush is round. All area of round flange bush touches plate, thus it causes heat loss. Newly developed flange bush for WINA is geometrically shaped to minimize the heat conductivity from nozzle by reducing the contact point between mold and flange bush. Thus, it maximizes fluidity of resin. Enhanced insulation effect improves color change performance and reduces the injection pressure.



Cool Pin Cylinder - Patent

Every time that compressed air actuates piston, compressed air is injected into cool pin bush, thus resin leakage between valve pin and pin guide bush is perfectly prevented by cooling effect.



F.M.C (Flexible molding control)

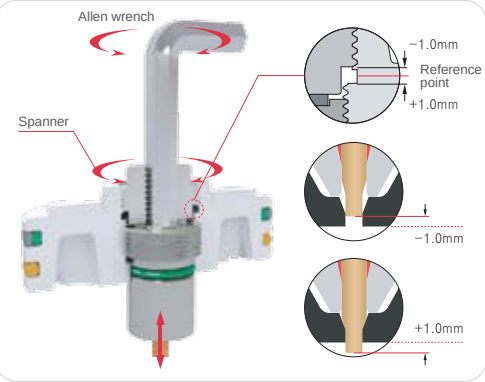
· F.M.C is adopted when we need to adjust injection volume individually for the characteristic of mold or mold die, so customer now can have another choice of mechanical adjusting method for injection volume of each nozzle.

· F.M.C equipped with worm and worm wheel mechanism installed to cylinder for valve pin movement, and provided stable structure to set required injection volume. With this mechanism, we can move weld line location as desired, and mold unsymmetrical mold life family mold in a die.

A.D piston

· With previous cylinders, we have no other options but to dismantle whole cylinder and valve pin parts and to adjust the valve pin length when there is valve pin projection problem which is caused by mold base thickness tolerance or thermal expansion. But, we can simply adjust the valve pin height by applying A.D.P system.

· The height of valve pin in A.D.P system can be adjusted by 2 screws located in the center of piston. To adjust height of valve pin height, insert hexagon wrench into the piston screw hole and rotate the wrench.



Premium hot runner solution - WINA series

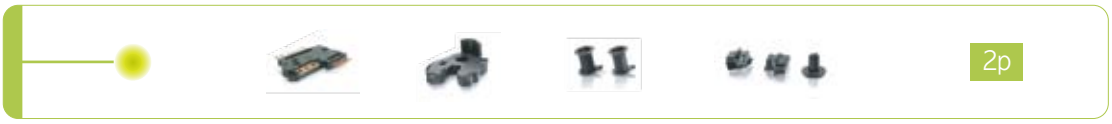
COLOR

The best solution for color changeing mold

ENPLA

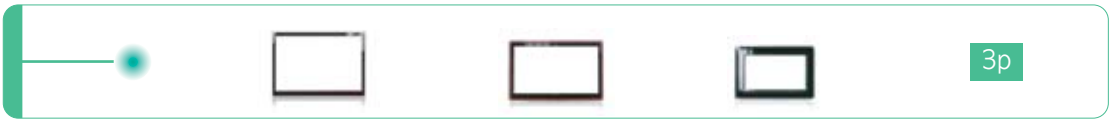
Hot runner for engineering plastic

SUPLA



Ultimate solution for super engineering plastic

TIMO



Precise & long nozzle for reverse mold

CLEAR

Transparent Application

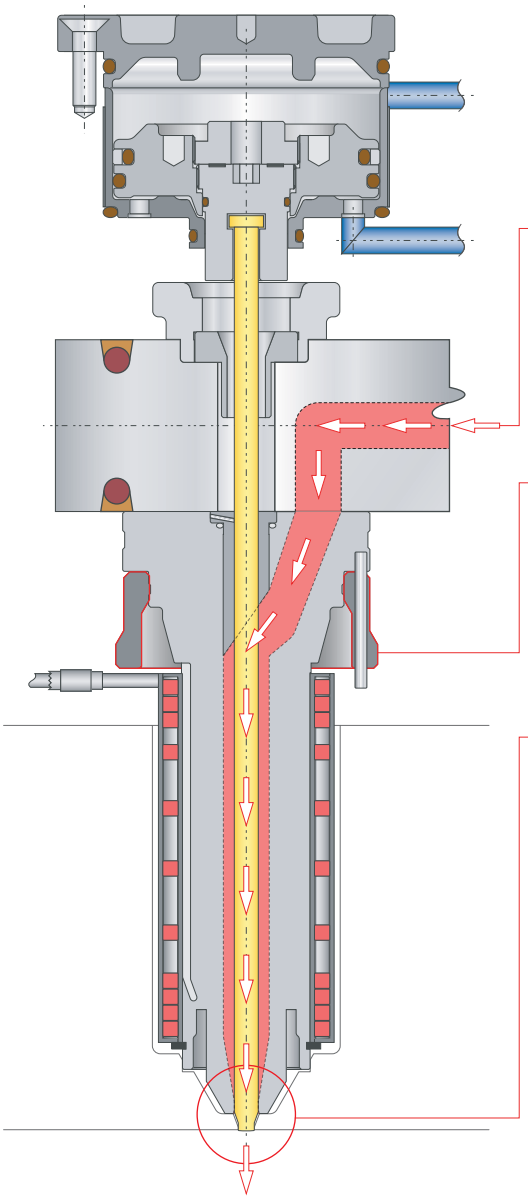
MICRO

Micro pitch valve gate for multi cavity mold

BIGMO

Multi-purpose system for medium & large mold

Color change within 5~15 shot



1. The best solution of color change

With the distinctive melt channel, advanced thermal balance, and cutting-edge machining, WINA COLOR delivers unmatched color change performance and assuring productivity.

2. Optimized resing channel structure

The diagonal structure of Nozzle's melting channel minimizes the resistance of resin passing through the pin guide bush. The melting channel structure of WINA COLOR not only reduce the shear stress, but also get rid of possible dead spot in the channel.

3. Patent pending Nozzle flange insulation design

A patent pending 'Insulation flange bush' without additional heating minimizes the heat conductivity and meet the required temperature. As a result, it will reduce the resistance of melting channel and result in a quick color change.

4. Nozzle tip design

Tip and Gate machining are designed to minimize the heat conductivity and prevent the resin overflow heading to the gate. One-body type of Tip and Nozzle eliminates potential plastic leakage between components and it's robustness provides less dimensional variation caused by high injection pressure and thermal expansion.

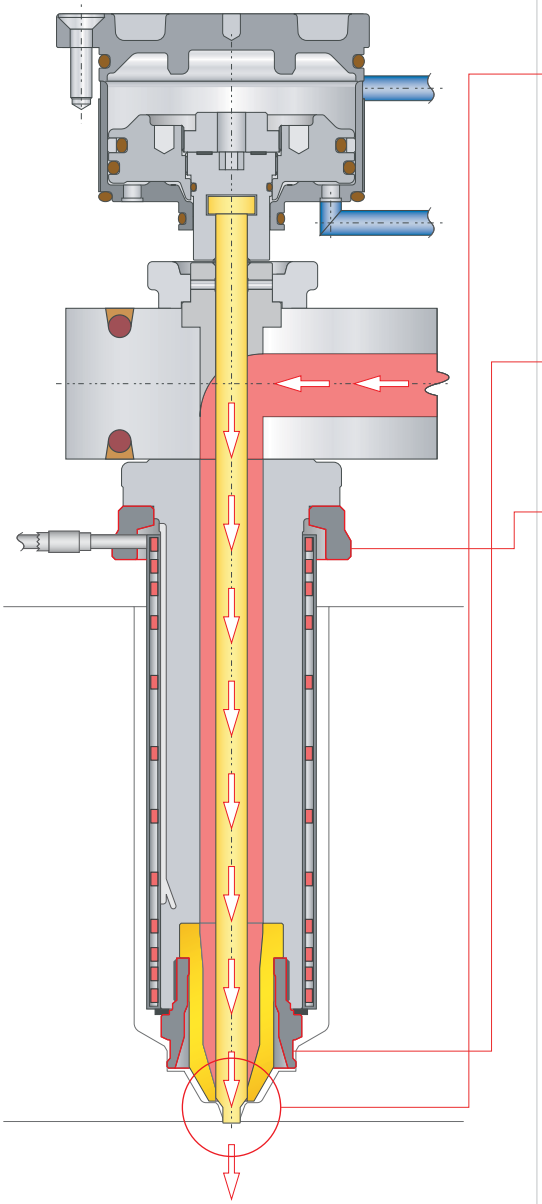
5. Unequaled manufacturing process

An additional processes, 'Super horning' and ultra-sonic cleaning, improve the channel surface as the mirror surface level.

Sample

Application : Mobile phone, Home appliance etc, Variable color mold.
Resin : PP, PE, PS, ABS, PMMA, PC etc.

ENPLA is designed for demanding engineering plastic application including abrasive resin application.



ENPLA

1. Ultra thermal tip

YUDO independently develops the tip material, SUHO-11 and SUHO-12, which are regarded as an ideal material due to superior heat conductivity to TZM. The improved heat conductivity of SUHO prevents the gate caking during the filling and holding process so that it results in assuring the tolerance of product.

2. Low heat conductivity from nozzle to cavity

An unique in-thread structure and the design of union are designed to reduce the heat conductivity by 20%

3. Extension mold life by patent pending insulation technology

The patent pending 'Insulation flange bush' is to not only meet the desired nozzle temperature, also maximize the insulation performance between manifold and nozzle flange. As a result, it result in sustaining the strength and improving the life cycle of a high temperature mold.

4. Guaratees the abrasion resistance

All components applied with the heat treatment and special coating position the WINA ENPLA as the most reliable solution for engineering plastic with 60% G/F and over.

SUPLA

1. Unequaled solution for super engineering plastic

Based on the WINA ENPLA, WINA SUPLA is optimized for super engineering resin. To be available at the extreme injection condition of 350℃ and over, every part and structure of WINA SUPLA are required to pass the additional processes and customized material selection.

Sample

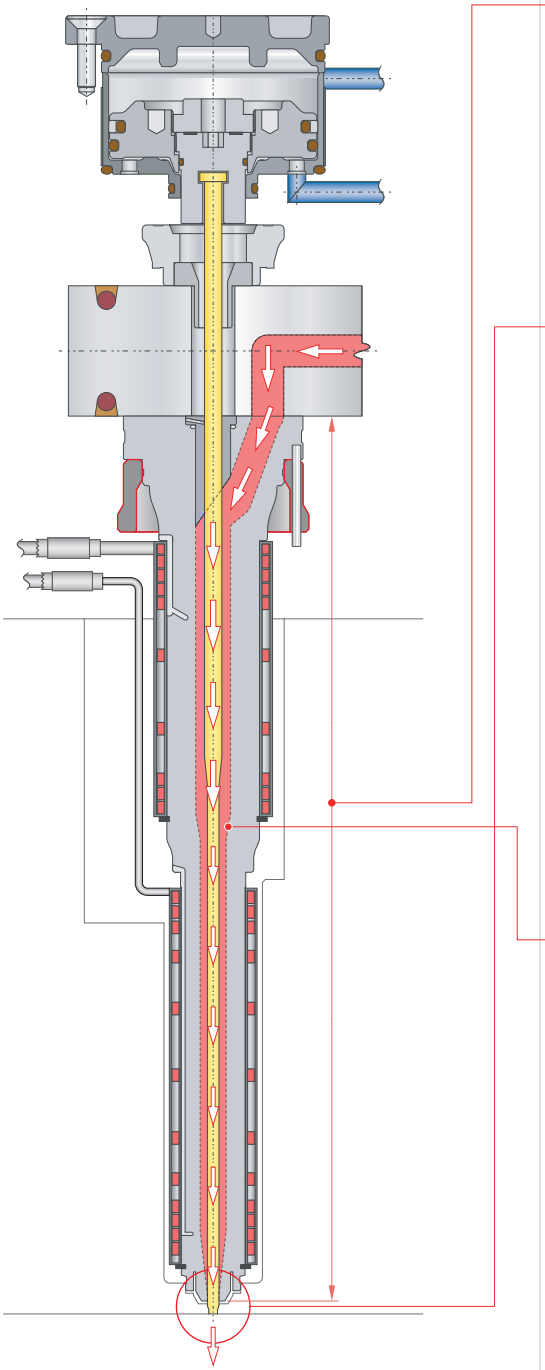
ENPLA

Application : Automobile, Relay, Engine parts, Gear etc.
Resin : PA66+GF15~45%, PBT+GF10~50% etc.

SUPLA

Application : Semi conductor, Connectors, Bobbin, Memory parts etc.
Resin : PA66+GF40%, PPS+GF60%, PPA+GF30%, LCP+GF40% etc.

Direct gate to core / Slim two step design



1. Precise & long nozzle for reverse mold

WINA TIMO is specially designed for the core injection and direct injection mold. It attributes the direct gate application to a wide range of nozzle length from 250mm to 500 mm. Technically, the TIMO nozzle is machined to maintain the same axle within 0.03mm on 500 mm nozzle and adopt the heat expansion so that it is fundamentally free from the core damage.

2. Nozzle design easy to apply and design mold

Customers can apply the limitless core cooling structure to the direct gating thanks to the step-down shape and ultra slim fore-end of nozzle. WINA TIMO is technically applicable from small to giant size molds.

3. Effective and stable temperature control

Due to the assuring temperature control of WINA TIMO, it reduces the resin transmutation during the injection molding process and is recognized as the best solution for the high glossy products and the mold using transparent resins such as PC, PMMA, etc. YUDO heater is designed to match the characteristic of long nozzle system. The heaters and step-down TIMO nozzles are engineered to control the temperature within 5% in all sectors of the hot runner system during the injection molding process.

4. Less pressure drop

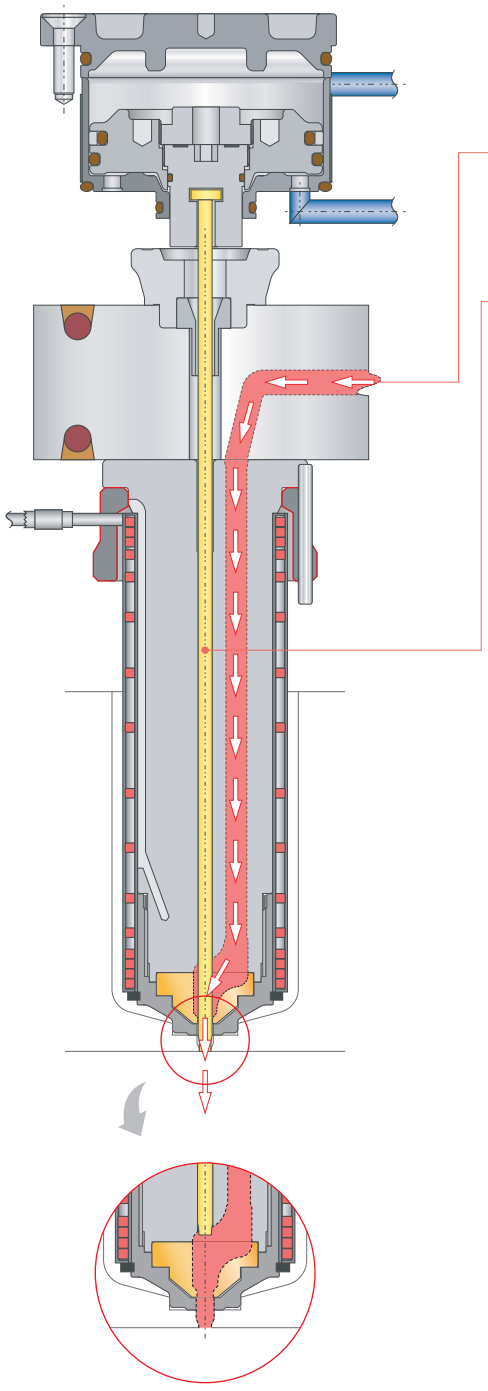
An unique step-down channel of TIMO nozzles presents how YUDO can control the pressure of the melting channel. Thanks to its reliable performance, industry leading customers adopting the reverse mold continue to appoint YUDO as a sole hot runner provider. In particular, YUDO is regarded as the best hot runner solution provider in the field of visual display products such as TV, monitor, notebook. Currently, YUDO is providing more than 3,000 MODU systems a year for every TV manufacturers.

Sample




Application : TV front cover, Home appliance, Core injection molding.
Resin : PC, HIPS, ABS, PMMA, PC+ABS etc.

Optimum solution for transparent lens application



1. Transparent application

WINA CLEAR is dedicated to the transparent product such as LGP, LENS, sun-roof etc.

2. Natural balance of flow channel

Our experience and know-how for last 30 years achieves an ideal natural balance of hot runner channel.

3. Free from flow mark

To get rid of chronic problems of transparent items such as "Melt Line", WINA CLEAR apply the separated valve pin and melt flow channel as well as is engineered to achieve the stable temperature control within 5% variation. These two factors prevent the melt line problem and assure an ideal melt flow from nozzle locator to a head of nozzle.

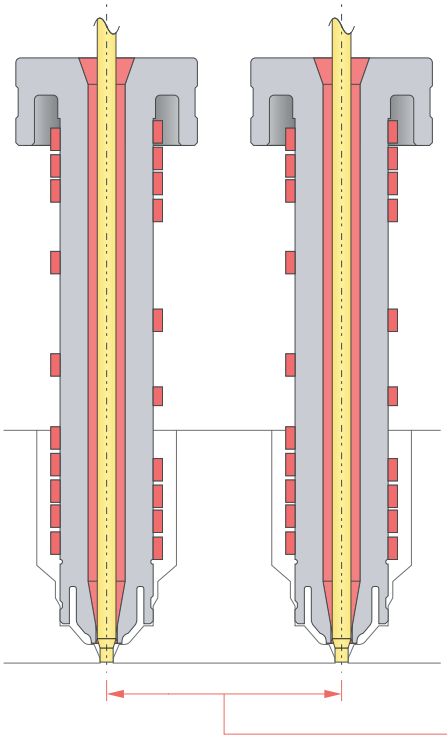
4. Free from sticking

Thanks to differentiated processes and special surface treatment of manifold and nozzle channel, WINA CLEAR prevents the resin from sticking to the channel and sustain the channel clean and transparent.

Sample

Application : Lamps, Clear Lens, Light guide panel, Front frame, Sun-roof, Cosmetic etc.
Resin : PMMA, PC.

Improve productivity 200%
Saving resin cost by 50% / Reducing cycle time by 20%



1. Ultra-micro pitch valve gate for multi cavity mold

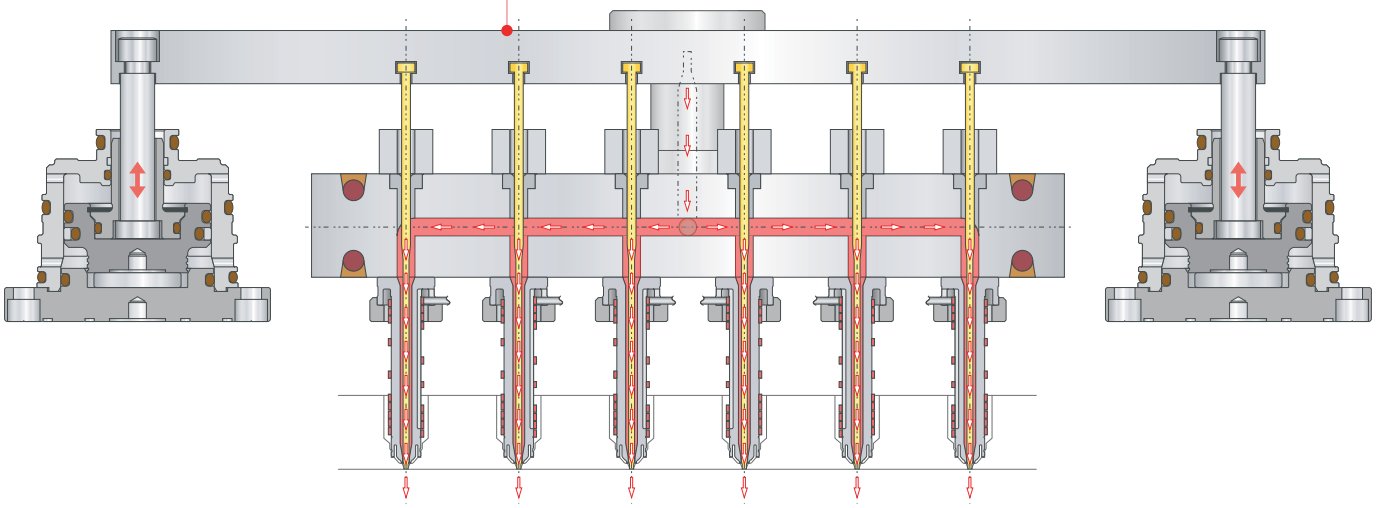
WINA MICRO is specialized for micro size and multi-cavity products such as the maximum 768 cavity products and minimum 8mm of the pitch with the open gate system. It is particularly applicable to LED lead frame which utilizes the super engineering plastic such as PA9T, PPA, LCP as well as an ultra micro closure with PP, PE, TPE.

2. Dual cylinder

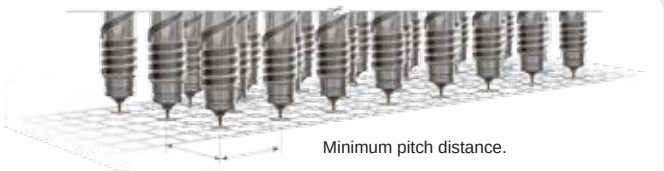
Dual cylinders are designed to supply the powerful operating-force by Max 450kgf with 8 bar(Air) in order to operate 8~24 nozzle at the same time.

3. Impove productivity / Save resin consumption

On the LED lead frame mold, WINA MICRO reduces the cycle time by 20% and save the resin consumption up to 50% by removing the cold runner and sprue. In the horizontal Injection molding machine, it is possible to improve productivity up to max 200% with 2 rows of lead frame structure.



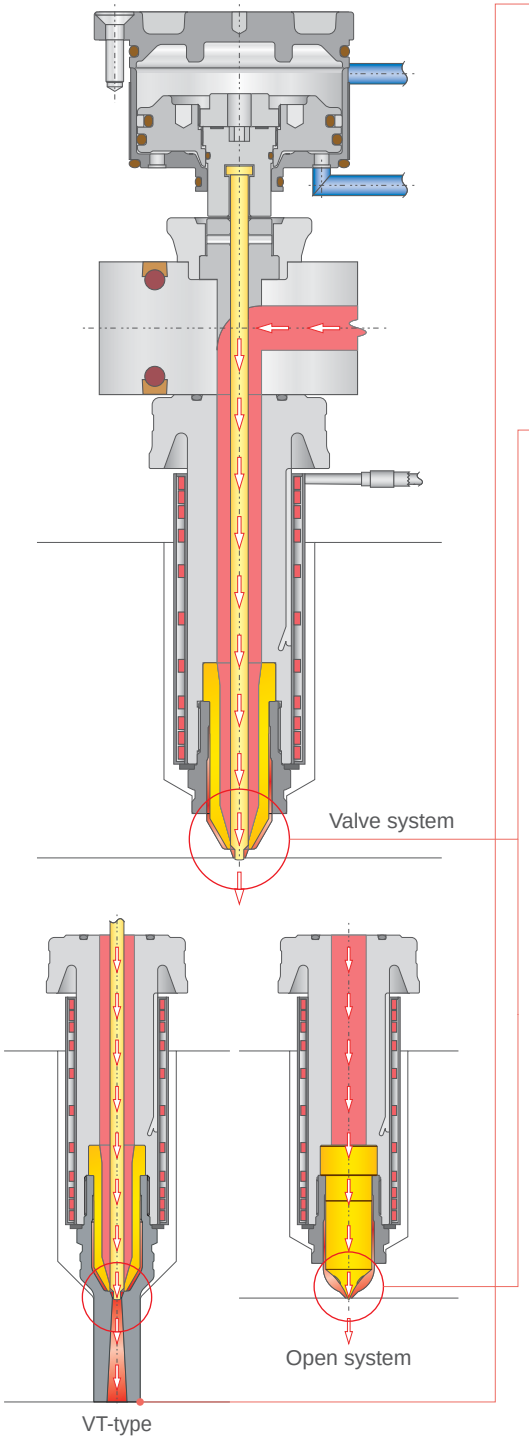
Sample



Application : LED lead frame, Micro switch, Engineering-multi cavity.
Resin : PA+GF33%, PPA+GF40%, LCP+GF40%.

No. of Cav. : 128 / 256 / 384.

Multi-purpose hot runner system.



1. Multi-purpose system for midium & large mold

WINA BIGMO is the multi-purpose hot runner system for minimum & large size mold. Our R&D team integrates 30 years experience and know-how into the WINA BIGMO in order to meet various injection molding condition. For example, The semi-sprue type hot runner nozzle and VT-type are designed to apply to a giant size mold such as bumper and IP and provide customers with easy handling and maintenance solution. We can provide not only fully assembled-MODU system but independent HRS system such as ECO-MODU and screw MODU system.

2. 100% order-made nozzle length

The BIGMO series is designed to meet customers' various needs so that the nozzle length of WINA BIGMO is 100% customized product and it has the various gate style such as valve, open system and semi hot runner style with the tip bush.

3. Advanced system accordign to changing injection molding concept

Recently injection molding products tend to be thinner and lighter. Especially, the concept of the ultra thin plate molding is spreading out to every injection molding products. It means that hot runner system should be suitable of the extremely high pressure and temperature. WINA BIGMO will be the best solution of new industry trend.

Sample

Application : Automobile, TV, Home appliance, Packaging etc.
Resin : Multi-purpose resin. (PP, PS, ABS, PC+ABS)

www.yudo.com

Any question? Access to http://qna.yudo.com