政鈺機械股份有限公司

GMA MACHINERY ENTERPRISE CO., LTD.

GEAR PUMP

齒輪計量泵

Product features

- 高節能 High energy saving
- 高壽命 Long life cycle
- 高精度 High precision
- 品質保證 Quality assurance
- 獨特流道設計 Exclusive manifold design

高節能高壽命

GMA在自動化生產製造齒輪泵過程中，嚴格管控每個工法的加工精度，特別是關鍵部件上經過加熱過程的熱漲冷縮，精度亦可控制在0.01mm範圍內，進而使生產中回流率降低至2%。

High energy saving and long life cycle

GMA applies strict and precise automated-process to manufacture gear pump. With precision up to 0.01 mm for key components , GMA is able to cut reflux rate down to 2%.

高品質

獨家設計軸套之潤滑溝，出、入料部位無滯留區，換色快，減少滯留所造成的裂化，保證製品品質。

High quality

To ensure high quality product, GMA designs exclusive lubrication groove of the bearing which decreases polymer degradation and stagnation and help color change fast.

高精度

GMA高精度的齒輪泵，能提高輸送的精確性且出口壓力可達350bar，另可提供高壓型齒輪泵，出口壓力可達 500bar。

High precision

GMA's high precision gear pump provides high transmission accuracy with outlet pressure up to 350 Bar, Also offer high pressure type up to 500 bar as optional type.

獨特流道設計

流道採虹吸原理設計，以達到流體快速流動潤滑的效果。

Exclusive manifold design

Manifold design is based on Siphon principle for fast polymer flow and lubrication.

Product function description

- 穩定原料供應 Reliable Polymer supply
- 高效穩定的壓力控制 Efficient and stable pressure control
- 增加產能 Increase capacity

穩定原料供應 Stable polymer supply

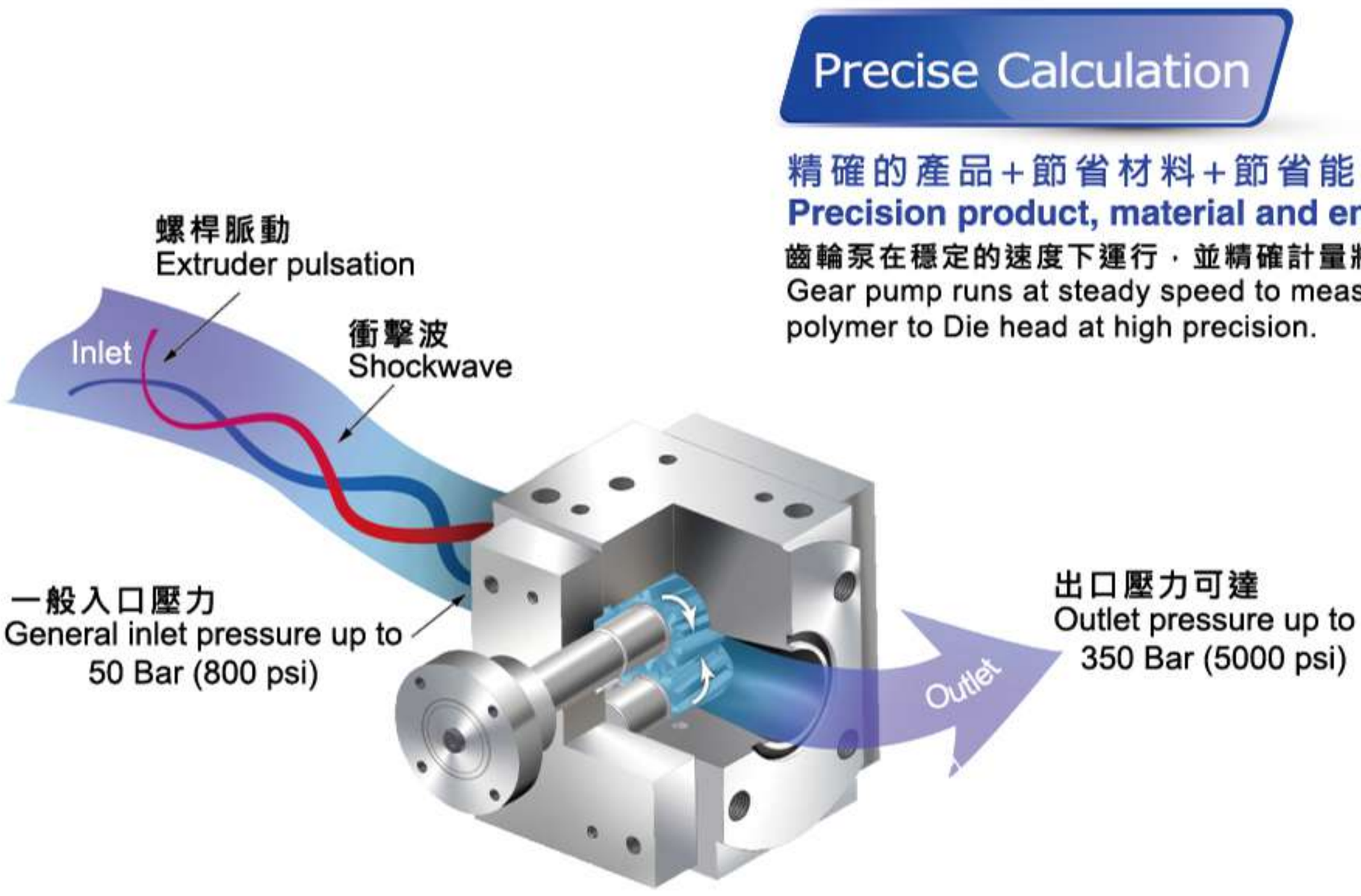
齒輪泵能夠消除押出機的脈動式波動，由於壓力恆定可保證穩定的吐出量，不僅可以提高製品質量，也能減少原料浪費。

Gear pump can eliminate pulsatile fluctuations of extruder, which leads to steady output volume as a result of constant pressure. This not only improves product quality but also reduce material wastes.

高效穩定的壓力控制 Efficient and stable pressure control

齒輪泵能提供一個穩定塑料壓力，能很快地進入生產狀態，提高生產速度。

Gear pump enables reliable polymer pressure for fast production introduction and improved production speed.



Precise Calculation

精確的產品+節省材料+節省能源 Precision product, material and energy saving

齒輪泵在穩定的速度下運行，並精確計量將塑料輸送到模具
Gear pump runs at steady speed to measure and transmit polymer to Die head at high precision.

增加產能 Increase capacity

安裝齒輪泵後，壓力最大值處於出口端，壓力恆定可保證穩定的吐出量，這能使得押出機內部壓力降低，溫度曲線平緩，溫升狀況降低，熔體的黏度下降，同時降低押出機的負荷，故可延長押出機的使用壽命。並減少押出機回流量及能源的浪費，進而增加生產產能。

Gear pump maximizes pressure at outlet after assembling. Constant pressure ensures stable discharge volume, which reduces pressure within extruder, smooths temperature curve, mitigates temperature rise, lowers viscosity level of melted material, and reduces load of extruder. All these lead to longer extruder life cycle, reducing reflux and energy consumption of extrusion machine, and improving production capacity.

橡膠/透明矽利康齒輪計量泵
獨家專利技術

Rubber/transparent silicon gear pump
Exclusive and patented technology

注重每個細節
Focusing at each and every detail

流道中最細小的邊角也會導致流體的滯留，從而影響產品質量的問題，GMA精密的製造工藝，在入口及出口的流道進行了全面的優化設計製造，保證物料流動非常流暢無慮，能製造出高品質的產品。

Even the tiniest conor in manifold could hamper flow of melted material and lead to poor product quality. Thanks to GMA's advanced technology based comprehensive and optimized inlet and outlet manifold design and manufacturing, material can flow smoothly within extruder and provide quality products.

特點 Features

- 齒軸冷卻功能。
- 特殊流道設計。
- 外洩式功能，在高壓下穩定的輸送能力。
- 穩定控制溫度。
- 提高橡膠製品品質穩定性。
- 提高橡膠擠出產能。

- gear shaft cooling function
- special manifold design
- discharge function for stable transmission ability under high pressure
- reliable temperature control
- improve rubber product quality
- increase rubber extruder capacity

運用範圍 Application

專門用於矽利康、聚丁橡膠、氯丁二烯橡膠、EPDM、NBR、SBR、天然橡膠等高黏度，高彈性的齒輪泵。經過特殊流道設計，使得齒輪泵可以在高壓下提供穩定的輸送能力。

Specific gear pump for high viscosity and elasticity material such as silicone, butadiene rubber, chloroprene rubber, EPDM, NBR, SBR, and natural rubber. Special manifold design enables stable transmission by gear pump under high pressure.

極佳容積效率&增壓功能 Excellent volume efficiency and pressurization function

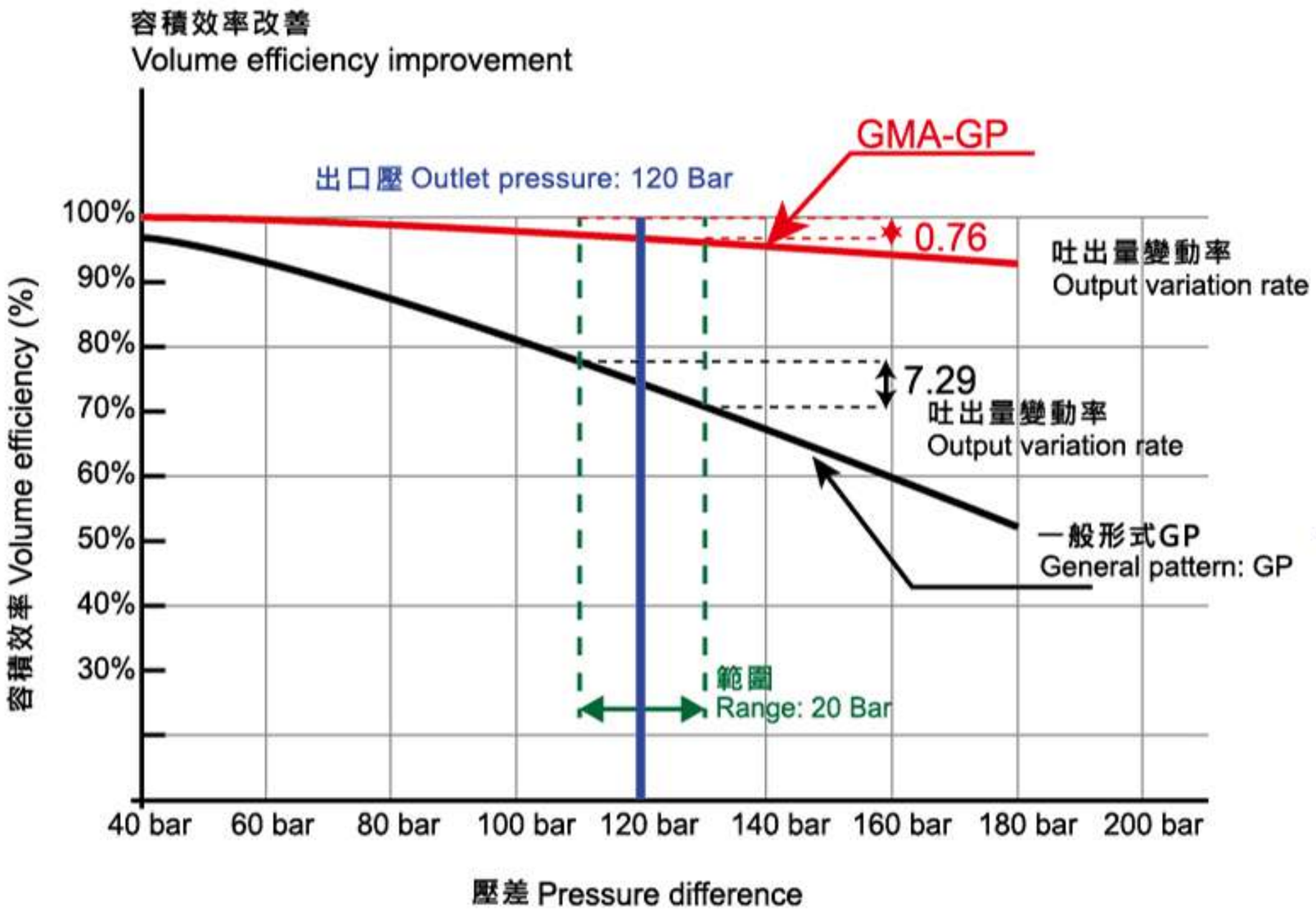
當升壓超過100bar時，容積效率迅速降低，因此傳統的齒輪泵要增加壓力時，會使得傳輸容積效率降低。(如圖參考)

Conventional gear pump suffers reduced transmission volume efficiency when rising temperature goes above 100 Bars. (See chart for reference.)

當升壓量從110bar到130bar時，傳統齒輪泵減少的容積效率約為7%幅度，GMA齒輪泵能保持在低於1%的降幅的優越效能!

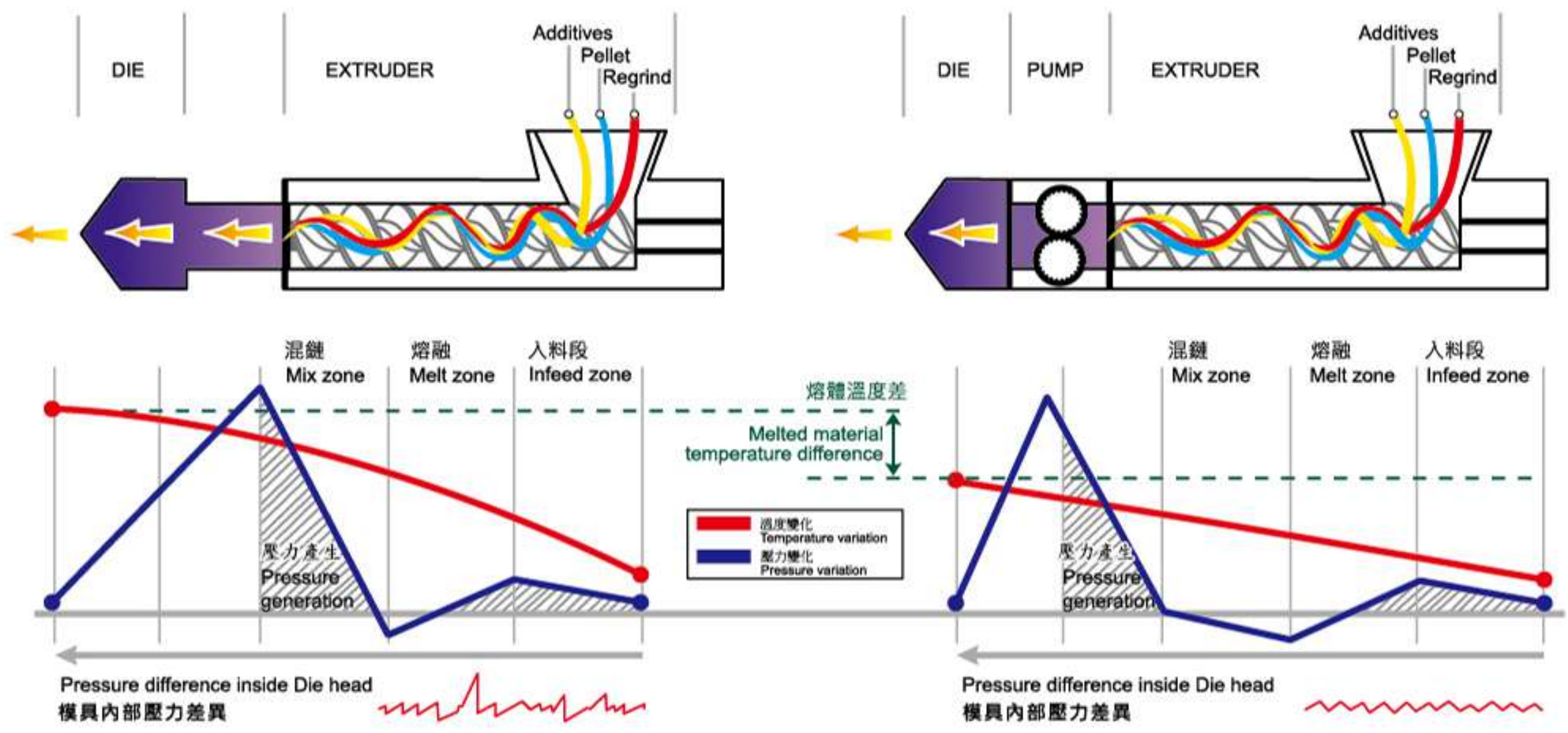
GMA齒輪泵在產品設計上，是在追求每個內部結構部件之間間隙相互配合精度，經精算過的相互配合精度產生良好的容積效率。

When pressure rises from 110 Bar to 130 Bar, volume efficiency of convention gear pump may go down about 7% while its GMA counterpart dip less than 1%！ GMA gear pump is designed with optimized precision of gaps between internal components, which, in turn, leads to good volume efficiency based on comprehensive calculation.



比較一般形式齒輪泵與GMA齒輪泵排出量的波動圖

Fluctuation of output of GMA gear pump VS. general one



吐出量規格表 Output volume specification

Application		Sheet	Sheet	Sheet	Sheet	Sheet	Film
		LDPE, LLDPE	PC	PMMA	HI-PS	PP	A-PET
Viscosity (Pas)		1500-4000	1000-2500	2000-4000	2000-4000	1000-2000	1300-2000
Density at melt		0.73	1.08	1.09	0.93	0.73	1.17
	Specific Volume	rpm kg/h	rpm kg/h	rpm kg/h	rpm kg/h	rpm kg/h	rpm kg/h
20	2.1	155/13.5	78/10.2	116/15.2	124/13.8	156/13.6	158/22.3
22	4.7	155/30.5	78/23	116/34	124/31	156/30.5	158/50
28	10.2	148/63	70/44	114/72	120/65	151/64	145/100
36	25.6	132/140	62/100	104/165	110/150	141/150	139/240
45	46.3	125/240	62/180	94/270	96/235	125/240	128/400
56	92.6	107/410	62/360	85/490	92/450	117/450	118/735
70	176	102/750	56/610	76/830	82/760	106/775	107/1265
90	371	87/1350	52/1200	66/1520	72/1410	96/1480	96/2415
110	716	77/2300	42/1880	57/2520	62/2360	86/2550	86/4140

Type	GP Standard	GPDC Standard forward blowing type	GPJ Standard type (with cooling sleeve)	GPH High pressure type	GPHDC High pressure type with outward injection	GPHJ High pressure type (with cooling sleeve)
Application	1. Suitable for every kind of polymer, except PTFE,PPS 2. Superior volumetric Efficiency 3. Forward blowing design is suitable for heat sensitive polymer and sticky polymer 4. Suitable for high viscosity material					
Size	22 ~ 110			28 ~ 110		
Viscosity (Pas)	Max.30,000 Pas					
Operating Temperature	Max.350°C					
Suction Pressure	Max.200 Bar					
Discharge Pressure	Max.350 Bar			Max.500 Bar		
Pressure Difference	Max.250 Bar			Max.400 Bar		
Material	Housing：Alloyed steel Bearings：Tool steel(special treatment) Gear shaft：Tool steel (special treatment)					
Heating	Cartridge Heater/ Heat Transfer oil					

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GMA MACHINERY ENTERPRISE CO., LTD.
ISO 9001 BUREAU VERITAS Certification

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