

POROSITY MANAGEMENT GUIDE BOOK

Technologies & Consumables for Die casting

PATENT
PENDING



30
Years

GLOBAL PRESENCE



400+
Satisfied
Customers

22
Countries

110
Team
Members

30
Years

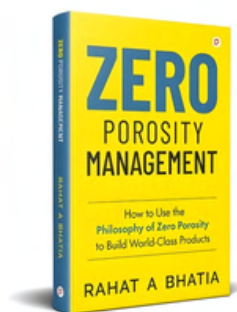
From The Promoter



Hi,

I am Rahat A Bhatia,

- ✓ Asia's #1 Die Casting Mold Cooling Expert
- ✓ With 32+ years of Global experience in Die Casting Processes
- ✓ Helped 400+ die casters reduce casting rejections and increase mold life across 22 countries, including South East Asia, Europe & Americas
- ✓ Author of widely acclaimed book "Zero Porosity Management"
- ✓ Regular Tech-talks at ALUCAST (Aluminum casters association of India) on Die-Casting innovations
- ✓ Been Subject speaker at NADCA USA
- ✓ Multiple Global Patented Solutions in Die Casting Industry
- ✓ Contributing services as Vice Chairman Alucast, (North India)



English



Japanese



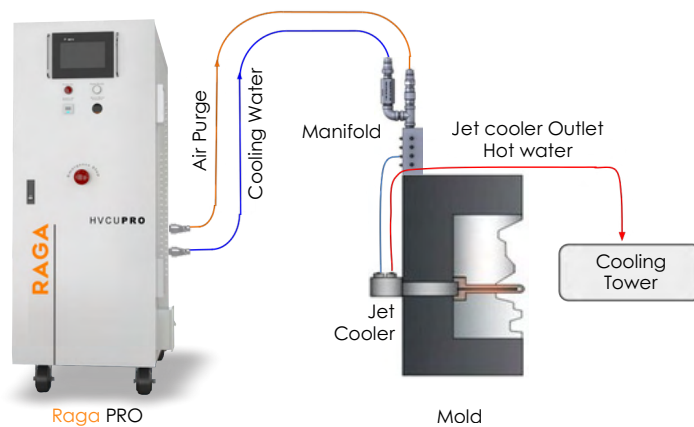
RAGA PRO

PRO is an entry level Jet Cooling machine, one of the first from Raga.

This comes for 20 pins and 2 systems configuration.

Simple and effective machine to reduce shrinkage porosity in castings.

Low maintenance and service cost.



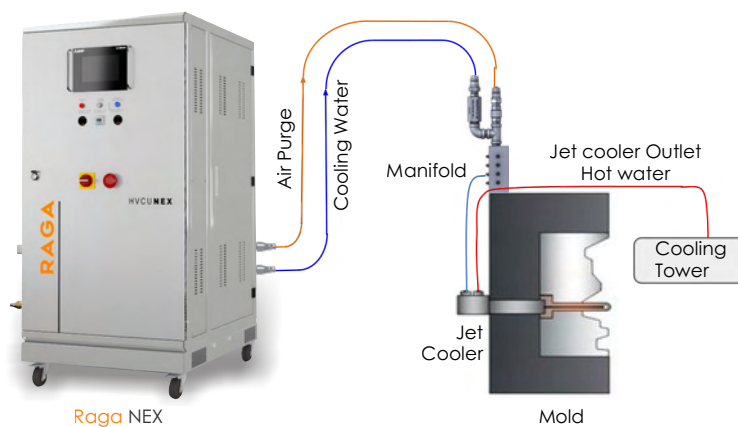


RAGA NEX

Proven & reliable Jet cooling technology for minimizing shrinkage porosity in thin sections & around core pin in a die casted part.

Casters trust this plug & play machine due to its optimal cost-performance & almost nil maintenance.

Machine conforms to international standards & spares.



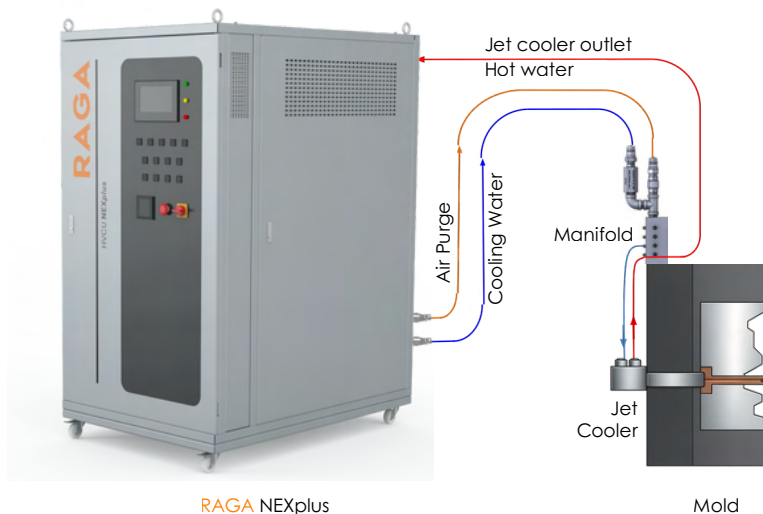


RAGA NEXplus

Introducing process controlled Jet Cooling for castings on complex Die casting machines.

Porosity challenges in castings are critical and need a highly specialized technology.

Inbuilt temperature control & scale free system making it truly CLOSED LOOP minimizing blockage in cooling lines.





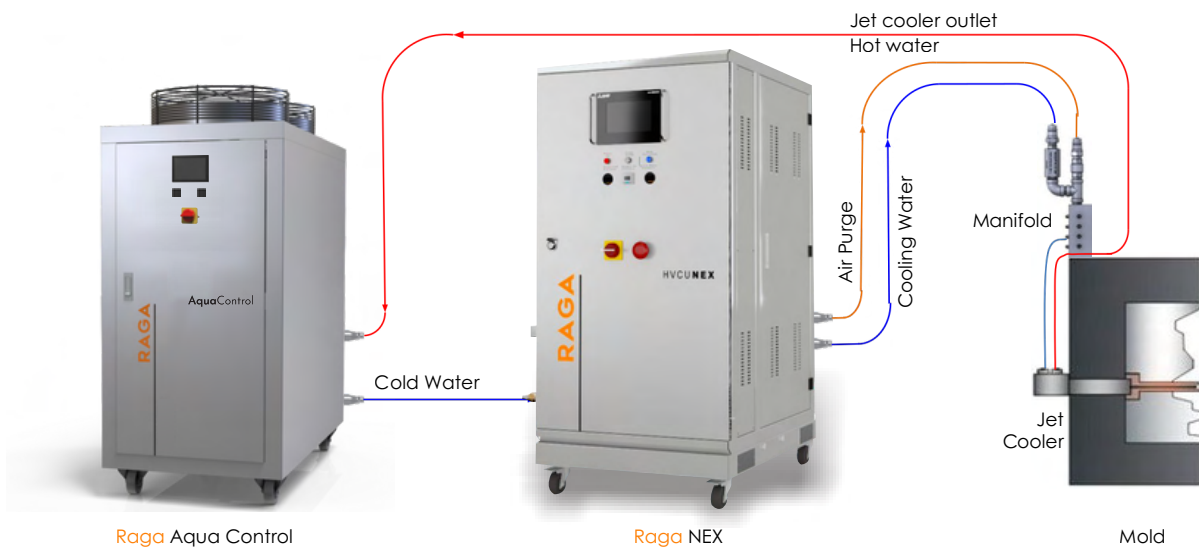
RAGA AquaControl

Water Temperature & Conductivity controller for Jet, Spot & Line cooling.

Close loop your existing or new Jet cooling machine.

Save water consumption cost and improve efficiency of mold cooling.

Reduce scaling in cooling line and improve casting quality.





RAGA MOLD COOLING PERFORMANCE MONITORING SYSTEM

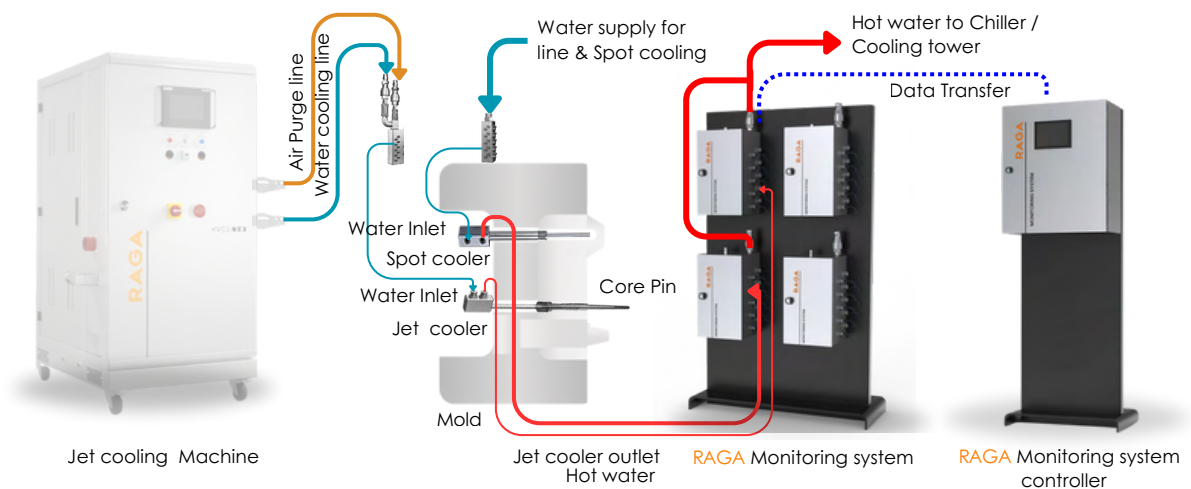
Brings traceability in Jet, Spot & Line Cooling.

Standalone unit mounted near or on Platen to monitor output water.

Detect failures like blockage, breakage & leakage for individual core pin and cooling line.

Can be installed with any existing Jet Cooling system.

With the Raga Jet Cooling machine, the monitoring system transfer data directly to the unit, so no separate controller required.





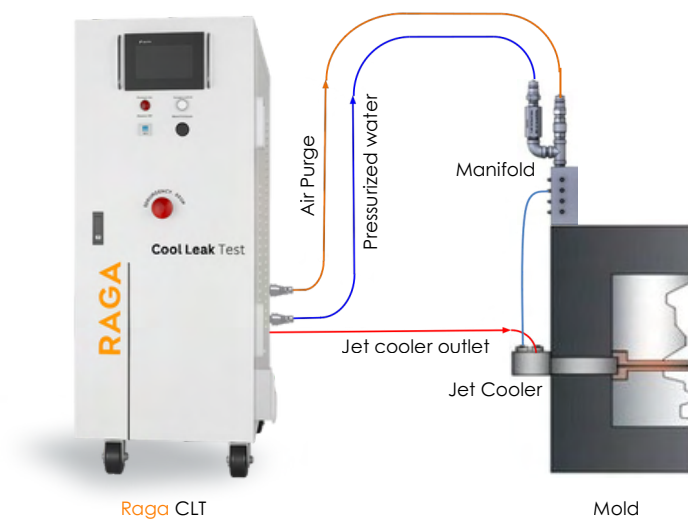
RAGA COOL LEAK TEST Offline monitoring

Fully automated PLC-based control system to test jet cooling lines at 18 Bar water pressure.

Detects blockages, leaks, and breakages in cooling lines.

Measure flow rate of every Jet cooler outlet water.

Air pressure drop test to detect leakage.



Jet Cooling



TECHNICAL SPECIFICATIONS		RAGA PRO	RAGA NEX	RAGA NEXplus
CORE PINS COOLED	Nos	20	20 40 60 100	20 40 60 100
COOLING CHANNELS	Nos	02	02 04 06	02 04 06
INBUILT TEMP CONTROLLED		×	×	✓
INBUILT DEIONIZER		×	×	✓
FLOW RATE MEASURE / CHANNEL		×	✓	✓
AIR & WATER PRESSURE MEASURE		✓	✓	✓
CORE PIN BREAKAGE DETECTION		×	✓	✓
CURVE PER CHANNEL DISPLAY		×	✓	✓
ERROR DIAGNOSTIC & RECORDING		✓	✓	✓
TOUCH SCREEN HMI		Delta 7"	Mitsubishi 7"	Mitsubishi 10"
DATA STORAGE & TRANSFER MOLD/ PRODUCTION		05/200	16/200	16/200
WATER TANK (L)		-	-	60-200
STANDARD/CERTIFIED		-	CE	CE
PHASE LOSS PROTECTION DEVICES		×	✓	✓
PHASE REVERSAL PROTECTION		×	✓	✓
EARTH LEAKAGE PROTECTION & DETECTION		×	✓	✓
PROTECTION AGAINST RESIDUAL VOLTAGE, EARTH FAULT, RESIDUAL CURRENT CIRCUIT BREAK		×	✓	✓
OVER/UNDER VOLTAGE PROTECTION		×	✓	✓
DIMENSION (HxWxD)	mm	1000x650	1000x650	1200x800

AquaControl



TECHNICAL SPECIFICATIONS		RAGA AquaControl 50	RAGA AquaControl 75
COOLING CAPACITY	kW	17.5	26
TANK CAPACITY	L	100	150
TEMPERATURE (MIN)	°C	16	16
TEMPERATURE MEASURE		✓	✓
TDS (MIN)	PPM	20	20
AMOUNT OF WATER PROCESS (AT 200 PPM)	L	2000	2000
TDS MEASURE		✓	✓
POWER CONSUMPTION	kW	6.7	8.5

Monitoring System & Cool Leak Test



TECHNICAL SPECIFICATIONS		RAGA MONITORING SYSTEM 04	RAGA MONITORING SYSTEM 08	RAGA MONITORING SYSTEM 16	RAGA CLT	RAGA CLT _{plus}
NO OF CONNECTIONS	Nos	04	08	16	10	10
MAXIMUM WORKING PRESSURE	Bar	20	20	20	20	20
FLOW RATE (MIN)	lpm	0.5	0.5	0.5	NA	0.5
TEMPERATURE (MAX)	C	100	100	100	NA	NA
CONNECTION SIZE (TUBE)	mm	4/6/8	4/6/8	4/6/8	4/6/8	4/6/8
POWER SUPPLY	V	220; 1P	220; 1P	220; 1P	440; 3P	440; 3P
WATER TEST PRESSURE	Bar	NA	NA	NA	16	16
DIMENSION (HXWXD)	mm	300x350x210	380x350x210	600x430x210	1300x650x1000	1300x650x1000

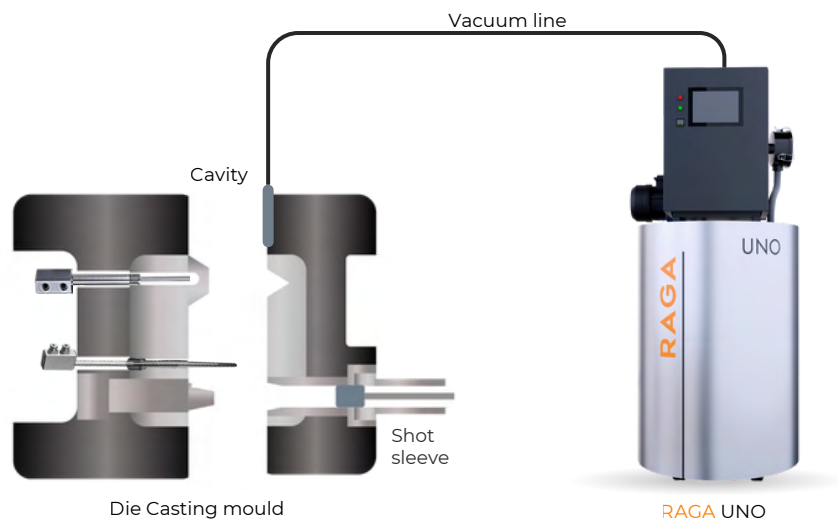


RAGA UNO

The low cost vacuum system UNO welcomes you to the world of vacuum die casting.

Easy to use and maintain.

Plug & play machine serves up to 800 ton die casting machine.



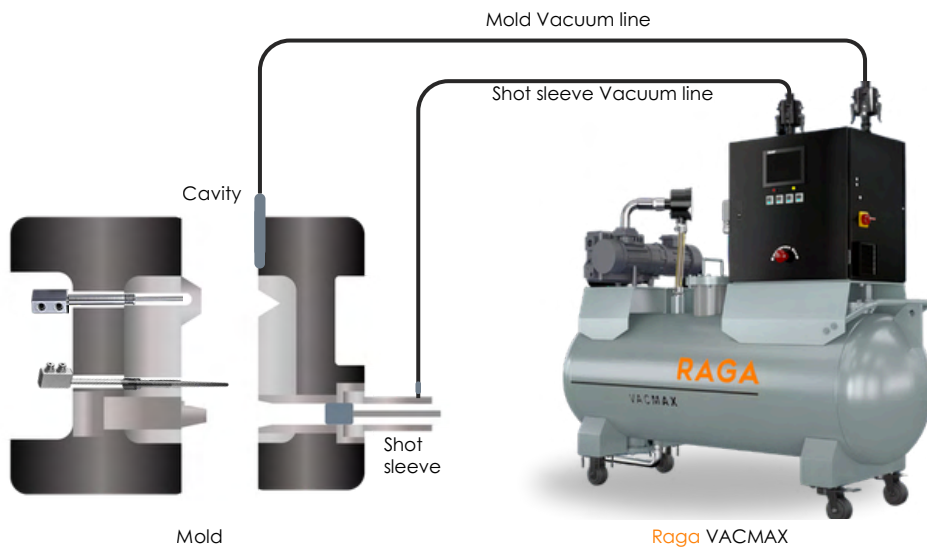


RAGA VACMAX

Efficiency and flexibility makes Vacmax series, a uniquely acceptable vacuum system.

Two stage evacuation from shot sleeve & mold add high value in minimizing gas porosity.

Serves purpose & saves you tons of money.



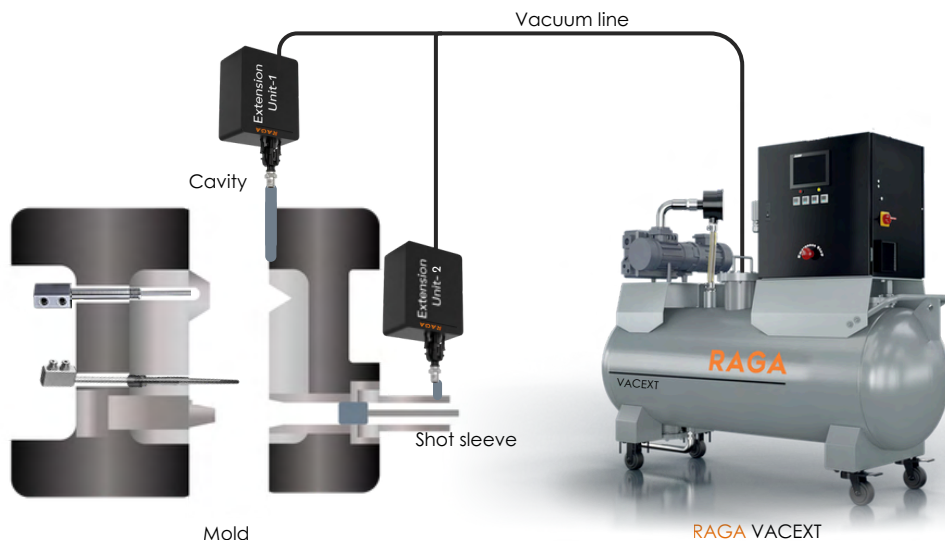


RAGA VACEXT

Extension unit mounted close to the mold reduces actuation time and improves vacuum efficiency.

Vacuum solution for high tonnage casting.

Can connect up to 4 extensions unit with one VACEXT.



Vacuum

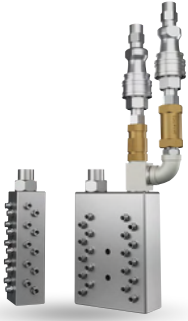


TECHNICAL SPECIFICATIONS		RAGA UNO	RAGA VACMAX	RAGA VACEXT
VACUUM TANK SIZE	l	300	250 500 800	500 800 1000
PUMP CAPACITY	m ³ /h	40	25 40 63	40 63 100
VACUUM CHANNELS	Nos	01	02	Upto 04
VACUUM EVACUATION SECTION	mm ²	01x500	02x500	Upto 04x500
VACUUM PRESSURE IN TANK & CHANNEL MEASURE		✓	✓	✓
VACUUM LEAK TEST		×	✓	✓
CURVE PER CHANNEL DISPLAY		×	✓	✓
ERROR DIAGNOSTIC & RECORDING		×	✓	✓
TOUCH SCREEN HMI		Mitsubishi 7"	Mitsubishi 7"	Mitsubishi 7"
DATA STORAGE & TRANSFER MOLD/ PRODUCTION		16/200	16/200	16/200
DCM	†	Up to 800	Up to 600 Up to 1400 Up to 1800	Up to 1400 Up to 1800 Up to 3200
DIMENSION (HxWxD)	mm	800X800	1600x600 1900x750 2000x800	1900x750 2000x800 2500x800

MOLD COOLING OPTIMIZATION DEVICES

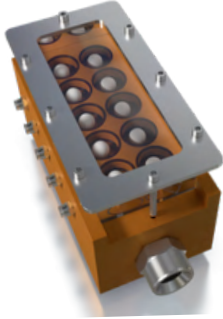


RAGA BLOCK TYPE MANIFOLD



Made up of single block steel material making it more durable.
Connects all incoming or / and outgoing cooling tubes at one junction.
Block type manifold - One way connects inlet supply & distributes to jet coolers.
Block type manifold - Two way connects inlet & outlet supply to & from jet coolers.

RAGA VISUAL FLOW MANIFOLD

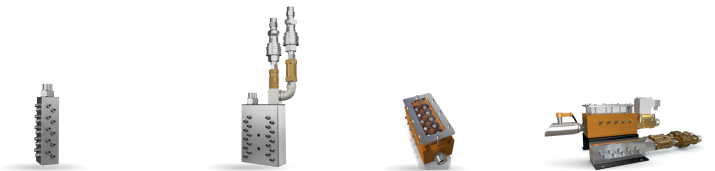


Outlet manifold which indicates blockage or breakage of core pins visually.
Rolling balls indicate flow of water & abnormality if any.
Simple & effective solution

RAGA PIN BREAKAGE DETECTION DEVICE



Prevents accidents by detecting breakage of core pin or cooling channel after every shot.
Stops jet cooling operation if abnormality found. Sturdy & easy to install.
Integrable with existing jet cooling machine.



		RAGA Block Type Manifold One way 10	RAGA Block Type Manifold Two way 10	RAGA Visual Flow Manifold- 10	RAGA Pin Breakage Detecting Device-10
NOS OF TUBE CONNECTION TUBE		10	10+10	10	10
TUBE CONNECTION THREAD SIZE		1/8	1/8	1/8	1/8
MAIN CONNECTION THREAD SIZE	Rc	1/2	1/2	3/4	1/2
WORKING PRESSURE (BAR)	Bar	16	16	16	16
MAXIMUM WORKING TEMP.	°C	100	100	100	100
POWER SUPPLY DC	V	NA	NA	NA	24
DIMENSION HXWXD	mm	140x40x40	140x100x40	153x75x87	530x200x175
ORDERING CODE		BTMW1-10	BTMW2-10	VFM-10	PBDD-10

Separately available for manifolds

Description	Image	Details	Ordering Code	MOQ
Fluide diverting joint		G½" Water hose connection G½" BSPT Air hose connection With Non return valve	HAM-012	1 Unit
			HAM-034	
Main connection Fitting		G½" thread both side	HAM-012	1 Pc
		G¾" thread both side	HAM-034	
One touch fitting		G½" thread and 4mm tube connection	CP04	10 Pc
		G½" thread and 6mm tube connection	CP06	
Fluoropolymer Tube		Outer Ø4mm, inner Ø2.5mm, Blue	FPT-04-2.5-BL	20 m
		Outer Ø4mm, inner Ø2.5mm, Red	FPT-04-2.5-RE	
		Outer Ø4mm, inner Ø2.5mm, White	FPT-04-2.5-N	
		Outer Ø6mm, inner Ø4mm, Blue	FPT-06-04-BL	
		Outer Ø6mm, inner Ø4mm, Red	FPT-06-04-RE	
		Outer Ø6mm, inner Ø4mm, White	FPT-06-04-N	
O-Ring			VFM-OR-01	10 Pc
Revolving Ball			VFM-O-01	10 Pc
Solenoid Valve			PBDD-SV-01	1 Pc
Pressure Sensor			PBDD-PS-01	1 Pc
Sensor Cable			PBDD-SC-01	1 Pc
Mounting Bracket			BTM-MB-01	1 Pc
Mounting Bracket			VFM-MB-01	1 Pc

DEVICE SELECTION CHART



		VISUAL FLOW MANIFOLD	PIN BREAKAGE DETECTION DEVICE	FLOW SENSING + INDICATION DEVICE	MOLD COOLING PERFORMANCE MONITORING SYSTEM
		INDICATES VISUALLY WATER FLOW	INDICATES LEAKAGE / BREAKAGE	INDICATES WATER IS FLOWING OR NOT	MEASURES FLOW RATE & TEMPERATURE FOR EACH LINE AND GENERATES DATA EVERY SHOT
DETECTION DURING SOLIDIFICATION	LEAKAGE	✓	×	✓	✓
	BREAKAGE	✓	×	✓	✓
	BLOCKAGE	✓	×	✓	✓
DETECTION AFTER EJECTION	LEAKAGE	×	✓	×	✓
	BREAKAGE	×	✓	×	✓
	BLOCKAGE	×	✓	×	✓
MEASURE, RECORD & GENERATE ALARM	FLOW RATE	×	×	×	✓
	TEMPERATURE	×	×	×	✓
OPERATOR INDEPENDENT		×	✓	✓	✓
PREDICTIVE INFORMATION		×	×	×	✓
CONNECTION WITH NON RAGA JET COOLING MACHINE		✓	×	✓	✓

HIGH LIFE MOLD & INJECTION CONSUMABLES



RAGA JET COOLER

Facilitates high pressure water & air into thin channels and slender holes of core pins during casting process

Improved material and design gives higher life.

Available in 6 variants & with quick delivery.



Applications



Jet Cooler JCT with Core Pin



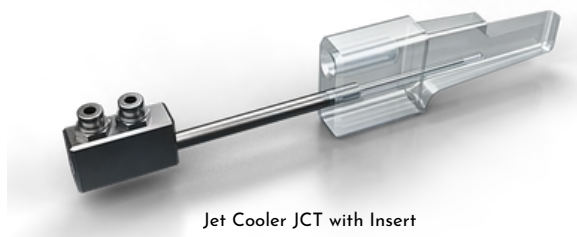
Jet Cooler JCO with Core Pin



Jet Cooler JCR with Core Pin



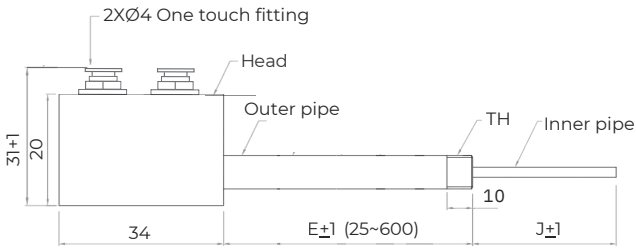
Jet Cooler JCI with Core Pin



Jet Cooler JCT with Insert

RAGA JET COOLER

Thread Type (JCT)

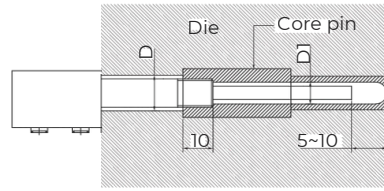


Available Sizes in mm

Outer Pipe			Inner Pipe		Die Hole D	Pin Hole (Min) D1	High Flow Inner Pipe	
OD	ID	TH	OD	ID			OD	ID
4	2	M4x0.7	1.2	0.9	5	2	1.5	1.2
6	3	M6x1.0	1.2	0.9	7	2	1.5	1.2
			1.8	1.35		2.5	1.8	1.5
8	4	Rc1/16	1.8	1.35	9	2.5	1.8	1.5
			2.3	1.8		3	2.3	2
10	5	Rc1/8	1.8	1.35	11	2.5	1.8	1.5
			2.3	1.8		3	2.3	2
			2.8	2.3		4	2.8	2.5



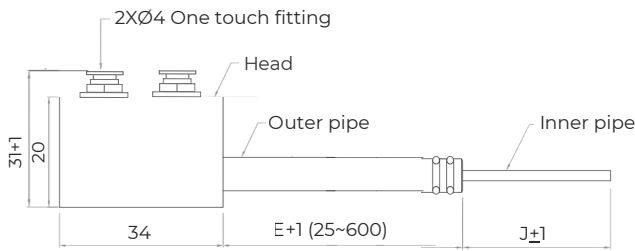
Installation Dimensions



Optional

Description	Image	Details	Ordering Code
One Touch Fitting for Tube connection		For 4mm Tube	CP04
		For 6mm Tube	CP06
Marking		Part Number writing Maximum 6 English Letters and Numbers - Font size 3mm	M. XXXXXX Example: MJCP12

O-Ring Type (JCO)

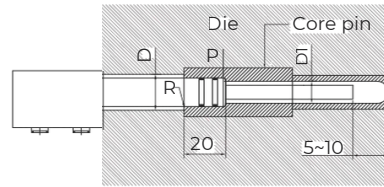


Available Sizes in mm

Outer Pipe		Inner Pipe		Die Hole D	Pin Hole (Min) D1	O-Ring Hole size P	High Flow Inner Pipe	
OD	ID	OD	ID				OD	ID
6	3	1.2	0.9	7	2	6.3	1.5	1.2
		1.8	1.35		2.5		1.8	1.5
8	4	1.8	1.35	9	2.5	8.2	1.8	1.5
		2.3	1.8		3		2.3	2
10	5	1.8	1.35	11	2.5	10	1.8	1.5
		2.3	1.8		3		2.3	2
		2.8	2.3		4		2.8	2.5



Installation Dimensions



Optional

Description	Image	Details	Ordering Code
One Touch Fitting for Tube connection		For 4mm Tube	CP04
		For 6mm Tube	CP06
Marking		Part Number writing Maximum 6 English Letters and Numbers - Font size 3mm	M. XXXXXX Example: MJCP12

Separately Available

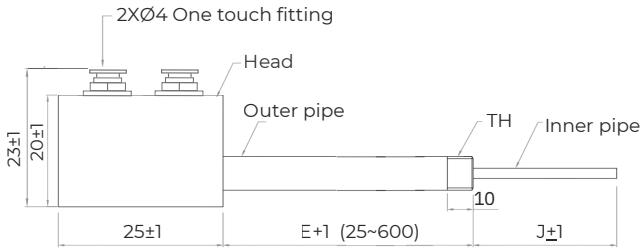
Description	Image	Details	Ordering Code	MOQ
Fluoropolymer Tube		Outer Ø4mm, inner Ø2.5mm, Blue	FPT-04-2.5-BL	20 m
		Outer Ø4mm, inner Ø2.5mm, Red	FPT-04-2.5-RE	
		Outer Ø4mm, inner Ø2.5mm, White	FPT-04-2.5-N	
		Outer Ø6mm, inner Ø4mm, Blue	FPT-06-04-BL	
		Outer Ø6mm, inner Ø4mm, Red	FPT-06-04-RE	
		Outer Ø6mm, inner Ø4mm, White	FPT-06-04-N	

Ordering Code Example

Part Type	Outer Pipe	Inner Pipe OD/ID	E	J	Connector	Engraving	Final Code
JCT/JCO	6	1.2/0.9	50	210	CP06	M. JCP12	JCT/JCO-6-1.2/0.9-50-210-CP06-M. JCP12

RAGA JET COOLER

Thread Type Compact (JCT-C)

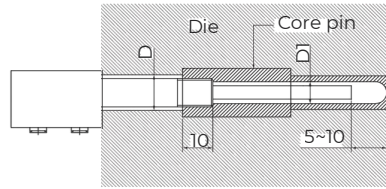


Available Sizes in mm

Outer Pipe			Inner Pipe		Die Hole	Pin Hole (Min)	High Flow Inner Pipe	
OD	ID	TH	OD	ID			D	D1
4	2	M4x0.7	1.2	0.9	5	2	1.5	1.2
6	3	M6x1.0	1.2	0.9	7	2.5	1.5	1.2
			1.8	1.35			1.8	1.5



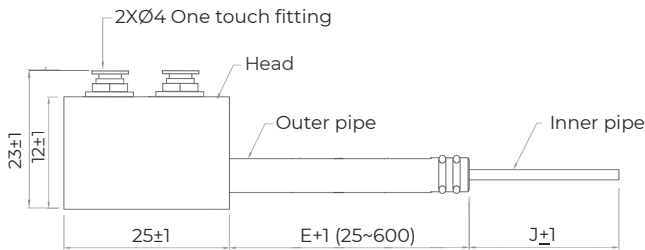
Installation Dimensions



Optional

Description	Image	Details	Ordering Code
One Touch Fitting for Tube connection		For 4mm Tube	CP04M5
Marking		Part Number writing Maximum 6 English Letters and Numbers - Font size 3mm	M. XXXXXX Example: MJCP12

O-Ring Type Compact (JCO-C)

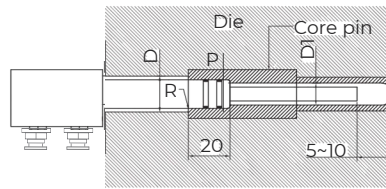


Available Sizes in mm

Outer Pipe		Inner Pipe		Die Hole	Pin Hole (Min)	O-Ring Hole size	High Flow Inner Pipe	
OD	ID	OD	ID				D	D1
6	3	1.2	0.9	7	2.5	6.3	1.5	1.2
		1.8	1.35				1.8	1.5



Installation Dimensions



Optional

Description	Image	Details	Ordering Code
One Touch Fitting for Tube connection		For 4mm Tube	CP04M5
Marking		Part Number writing Maximum 6 English Letters and Numbers - Font size 3mm	M. XXXXXX Example: MJCP12

Separately Available

Description	Image	Details	Ordering Code	MOQ
Fluoropolymer Tube		Outer Ø4mm, inner Ø2.5mm, Blue	FPT-04-2.5-BL	20 m
		Outer Ø4mm, inner Ø2.5mm, Red	FPT-04-2.5-RE	
		Outer Ø4mm, Inner Ø2.5mm, White	FPT-04-2.5-N	

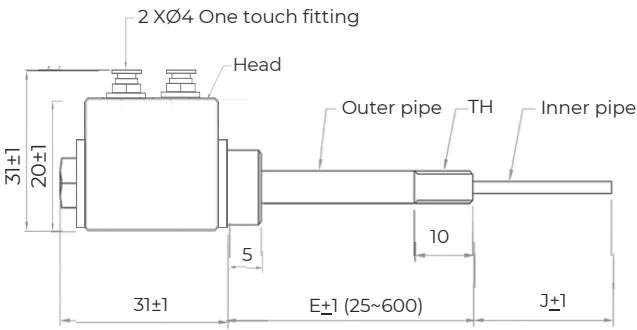
Ordering Code Example

Part Type	Outer Pipe	Inner Pipe OD/ID	E	J	Connector	Engraving	Final Code
-----------	------------	------------------	---	---	-----------	-----------	------------

JCT-C/JCO-C . 6 . 1.2/0.9 . 50 . 210 . CP04M5 . M. JCP12 JCT/JCO-C-6-1.2/0.9-50-210-CP04M5. JCP12

RAGA JET COOLER

Roto Type (JCR)

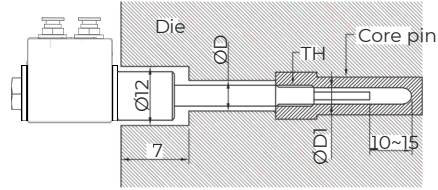


Available Sizes in mm

Outer Pipe		Inner Pipe		Thread Size	Die Hole	Pin Hole (Min)	High Flow Inner Pipe	
OD	ID	OD	ID	TH	D	D1	OD	ID
4	2	1.2	0.9	M4x0.7	5	2	1.5	1.2
6	3	1.2	0.9	M6x1.0	7	2	1.5	1.2
		1.8	1.35				1.8	1.5
8	4	1.8	1.35	Rc1/16	9	2.5	1.8	1.5
		2.3	1.8				2.3	2
10	5	1.8	1.35	Rc1/8	11	2.5	1.8	1.5
		2.3	1.8				2.3	2
		2.8	2.3				2.8	2.5



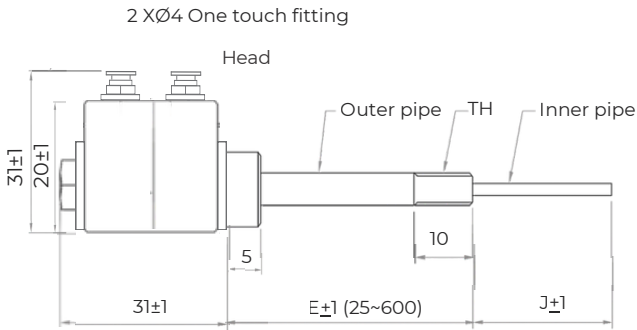
Installation Dimensions



Optional

Description	Image	Details	Ordering Code
One Touch Fitting for Tube connection		For 4mm Tube	CP04R
		For 6mm Tube	CP06R
Marking		Part Number writing Maximum 6 English Letters and Numbers - Font size 3mm	M. XXXXXX Example: M.JCP12

Isolated Type (JCI)

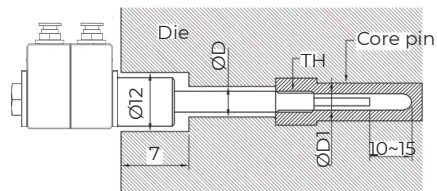


Available Sizes in mm

Outer Pipe		Inner Pipe		Thread Size	Die Hole	Pin Hole (Min)	High Flow Inner Pipe	
OD	ID	OD	ID	TH	D	D1	OD	ID
4	2	1.2	0.9	M4x0.7	5	2	1.5	1.2
6	3	1.2	0.9	M6x1.0	7	2	1.5	1.2
		1.8	1.35				1.8	1.5
8	4	1.8	1.35	Rc1/16	9	2.5	1.8	1.5
		2.3	1.8				2.3	2
10	5	1.8	1.35	Rc1/8	11	2.5	1.8	1.5
		2.3	1.8				2.3	2
		2.8	2.3				2.8	2.5



Installation Dimensions



Optional

Description	Image	Details	Ordering Code
One Touch Fitting for Tube connection		For 4mm Tube	CP04R
		For 6mm Tube	CP06R
Marking		Part Number writing Maximum 6 English Letters and Numbers - Font size 3mm	M. XXXXXX Example: M.JCP12

Separately Available

Description	Image	Details	Ordering Code	MOQ
Fluoropolymer Tube		Outer Ø4mm, inner Ø2.5mm, Blue	FPT-04-2.5-BL	20 m
		Outer Ø4mm, inner Ø2.5mm, Red	FPT-04-2.5-RE	
		Outer Ø4mm, inner Ø2.5mm, White	FPT-04-2.5-N	
		Outer Ø6mm, inner Ø4mm, Blue	FPT-06-04-BL	
		Outer Ø6mm, inner Ø4mm, Red	FPT-06-04-RE	
		Outer Ø6mm, inner Ø4mm, White	FPT-06-04-N	

Ordering Code Example

Part Type	Outer Pipe	Inner Pipe	E	J	Connector	Engraving	Final Code
JCR/JCI	8	2.3/1.8	176	24	CP06R	M. JCP12	JCR/JCI-8-2.3/1.8-176-24-CP06R-M. JCP12

RAGA COREPIN



Reduce breakdown by use of long life RAGA core pin.

Core pins used to create holes in die casting are fitted & part of a die casting mold.

Precisely machined and ground custom pins are made from high quality DIN 1.2344/AISI H-13.

Vacuum Heat treatment, nitriding & coating enhances life of the core pins.

RAGA JET COOLED CORE PIN

Jet cooled (JC) core pins are an integral & most important part of the jet cool system.

Casters prefer RAGA JC Core pins for their life and deep hole concentricity.

Custom made pins go through stringent quality checks to ensure straightness of holes & dimensions.



FEATURES

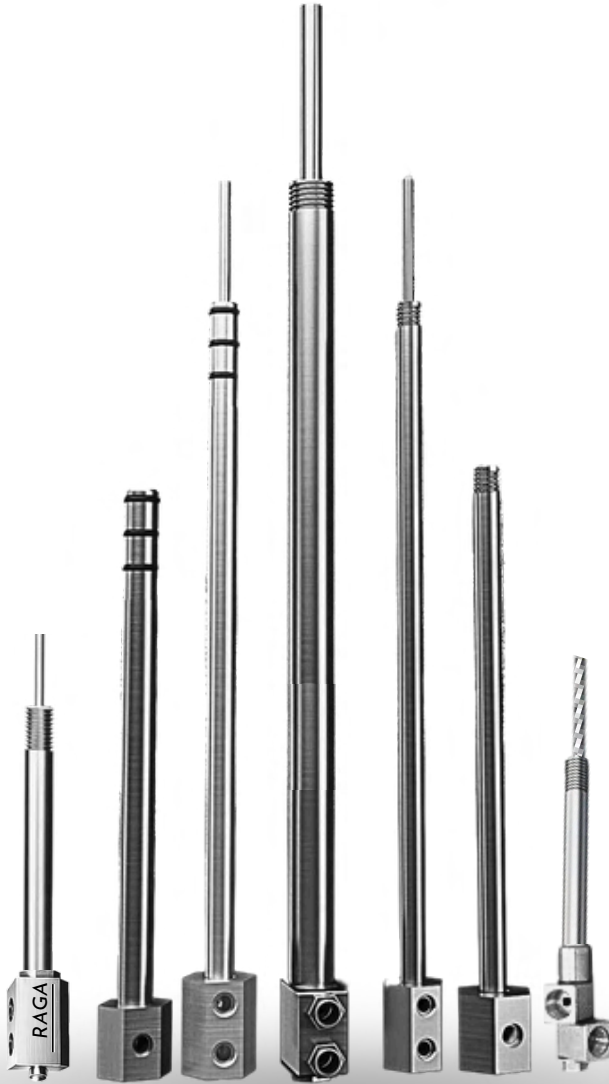
Hole: Min Dia 2mm & Max length 600mm
Casting Dia: Min 4mm

Core Pin Material

Material	Recommended Hardness (HRC)	Remarks
H13/DIN 1.2344/ SKD61/STD61	44-47	General material for die casting core pins
DAC	44-47	Hitachi make general material for Die casting core pins
DAC-Magic	46-50	Hitachi DAC- Magic have High toughness, and high thermal strength

Core Pin Surface Treatment

Surface treatment	Treatment method	Treatment temp. °C	Heat resistance temp. °C	Surface Hardness (HV)	Thickness/ Depth of surface treatment (µm)	Water resistance	Heat resistance	Soldering resistance	Corrosion resistance	Fatigue resistance
Tiain	PVD	550	800	2800	4	✓	✓	✓	NA	NA
Alcrona	PVD	550	1100	3200	4	✓	✓	✓	NA	NA
Nitriding	Nitriding	550	500	800-1200	40-100	NA	NA	NA	✓	✓



RAGA SPOT COOLER

Minimize mold breakdown and maintenance time using RAGA SPOT COOLERS.

Made in Stainless steel gives high life and more heat removal rate.

Stainless steel heads outperform brass ones:

Better efficiency: Stainless steel's low thermal conductivity maintains optimal water temperature.

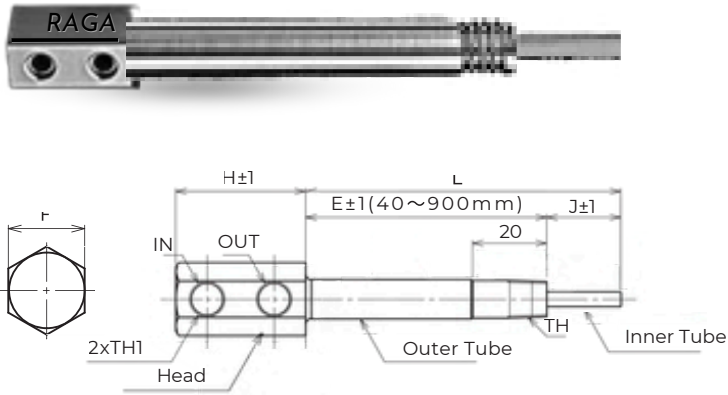
Longer lifespan: Stainless steel resists corrosion, ensuring durability.

Reduced maintenance: Stainless steel heads experience less clogging.

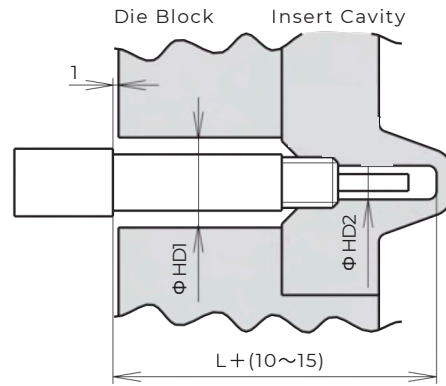
Safety: Stainless steel eliminates health risks associated with brass. Stainless steel Spot coolers last 50% longer than brass.

RAGA SPOT COOLER

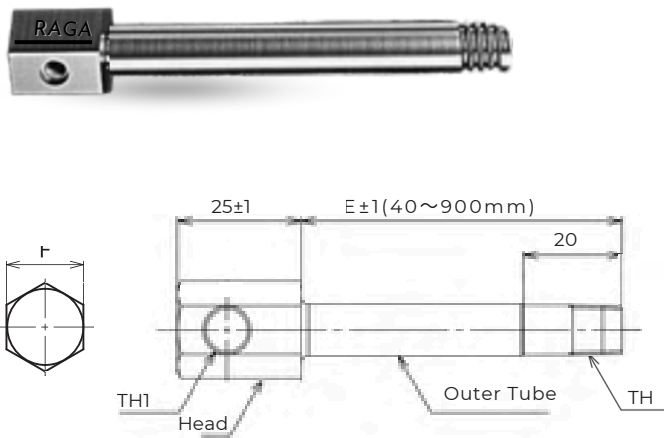
Thread Type (SCT) SCT-W2



Installation Dimensions



SCT-W1



Optional

Description	Image	Details	Ordering Code
One touch connector		For 6mm Tube	CP06
		For 8mm Tube	CP08
Hose Nipple Connector		For 8mm Tube	NP08
		For 10mm Tube	NP10
Hex Adaptor		G1/8" External thread	HAM018
		G1/4" External thread	HAM014
Marking		Part Number writing (Maximum 6 English Letters and Numbers Font size 3mm)	M. XXXXXX

Available Sizes in mm

Size/TH (Rc)	Outer Pipe		Inner Pipe		Head Size			Die Block Hole	Insert Hole
	OD	ID	OD	ID	TH1 (Rc)	H	F	HD1	HD2
1/8"	10.5	5.7	4	2	1/8	35	17	15	6
					1/4	40	24		
1/4"	13.8	7.8	6	4	1/8	35	19	17	8
					1/4	40	24		
3/8"	17.3	10.9	8	6	1/8	35	21	22	12
					1/4	40	29		
1/2"	21.7	16.1	10	8	1/8	35	24	26	16
					1/4	40	29		

Separately available

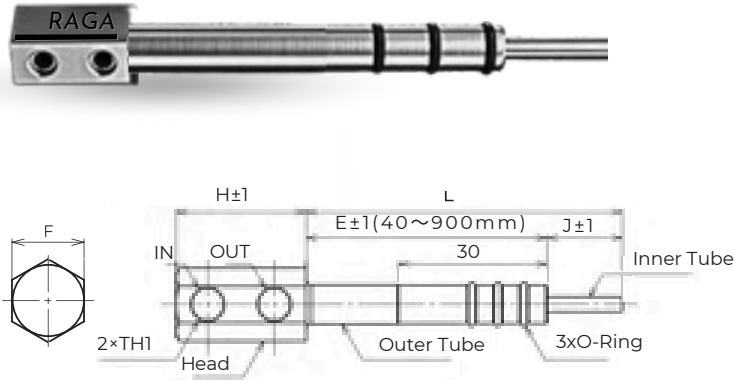
Description	Image	Details	Ordering Code	MOQ
Rubber Hose		Outer Ø12mm Inner Ø6.3mm-Blue RH08-BL		20m
		Outer Ø16mm Inner Ø9.5mm-Blue RH10-BL		
		Outer Ø12mm Inner Ø6.3mm-Red RH08-RE		
		Outer Ø16mm Inner Ø9.5mm-Red RH10-RE		
Steel Braided Hoses		G1/4"; 1m; Black coupler	SH14-1-BK	1 Pc
		G1/4"; 2m; Black coupler	SH14-2-BK	
		G1/4"; 5m; Black coupler	SH14-5-BK	
		G1/4"; 1m; Red coupler	SH14-1-RE	
		G1/4"; 2m; Red coupler	SH14-2-RE	
		G1/4"; 5m; Red coupler	SH14-5-RE	

Ordering Code Example

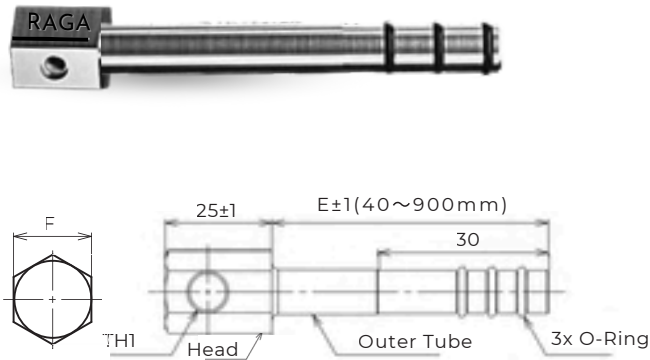
Part Type	Outer Pipe	Head size	E	J	Connector	Marking	Final Code
SCT-W2	1/2	1/8	176	135	CP06	M. 09	SCT-W2-1/2-1/8-176-135-CP06-M. 09
SCT-W1	1/4	1/4	95		HAM014		SCT-W1-1/4-1/4-95-HAM014

RAGA SPOT COOLER

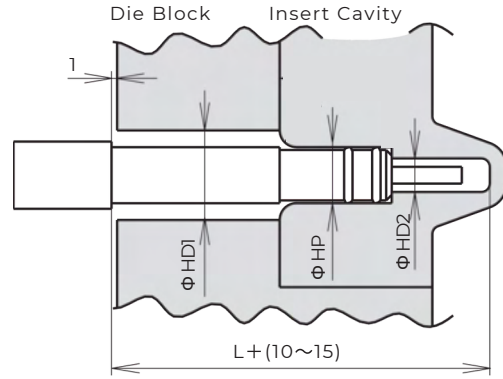
O-Ring Type (SCO) SCO-W2



SCO-W1



Installation Dimensions



Optional

Description	Image	Details	Ordering Code
One touch connector		For 6mm Tube	CP06
		For 8mm Tube	CP08
Hose Nipple Connector		For 8mm Tube	NP08
		For 10mm Tube	NP10
Hex Adaptor		1/8" External thread	HAM018
		1/4" External thread	HAM014
Marking		Part Number writing (Maximum 6 English Letters and Numbers Font size 3mm)	M. XXXXXX

Available Sizes mm

Outer Pipe		Inner Pipe		Head Size			Die Block Hole	O-Ring Fit Hole	Insert Hole	
Size	OD	ID	OD	ID	TH1 (Rc)	H	F	HD1	HP	HD2
1/8	10.5	5.7	4	2	1/8	35	17	15	11	6
					1/4	40	24			
1/4	13.8	7.8	6	4	1/8	35	19	17	13	8
					1/4	40	24			
3/8	17.3	10.9	8	6	1/8	35	21	22	18	12
					1/4	40	29			
1/2	21.7	16.1	10	8	1/8	35	24	26	22	16
					1/4	40	29			

Separately available

Description	Image	Details	Ordering Code	MOQ
Rubber Hose		Outer Ø12mm Inner Ø6.3mm-Blue	RH08-BL	20m
		Outer Ø16mm Inner Ø9.5mm-Blue	RH10-BL	
		Outer Ø12mm Inner Ø6.3mm-Red	RH08-RE	
		Outer Ø16mm Inner Ø9.5mm-Red	RH10-RE	
Steel Braided Hoses		1/4"; 1m; Black coupler	SH14-1-BK	1 Pc
		1/4"; 2m; Black coupler	SH14-2-BK	
		1/4"; 5m; Black coupler	SH14-5-BK	
		1/4"; 1m; Red coupler	SH14-1-RE	
		1/4"; 2m; Red coupler	SH14-2-RE	
		1/4"; 5m; Red coupler	SH14-5-RE	

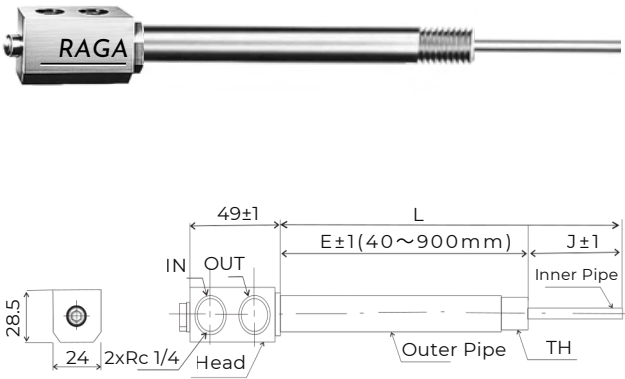
Ordering Code Example

Part Type	Outer Pipe	Head size	E	J	Connector	Marking	Final Code
SCO-W1	1/2	1/8	176		CP06	M. 09	SCO-W1-1/2-1/8-176-CP06-M. 09
SCO-W2	3/4	1/4	245	67		M. MC23	SCO-W2-3/4-1/4-245-67-M. MC23

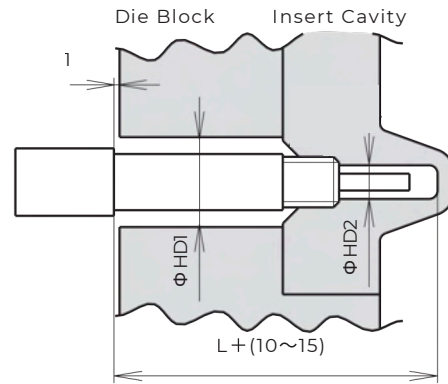
RAGA SPOT COOLER

Roto Type (SCR)

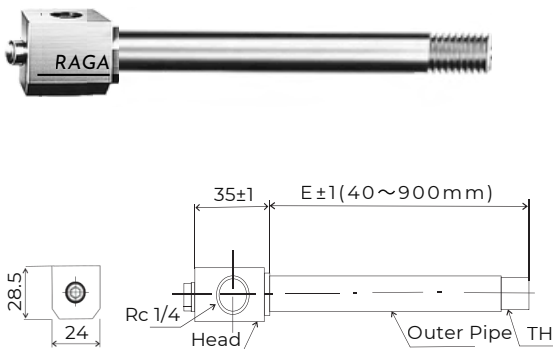
SCR -W2



Installation Dimensions



SCR -W1



Optional

Description	Image	Details	Ordering Code
One touch connector		For 6mm Tube	CP06
		For 8mm Tube	CP08
Hose Nipple Connector		For 8mm Tube	NP08
		For 10mm Tube	NP10
Hex Adopter		G1/4" External thread	HAM014
Marking		Part Number writing (Maximum 6 English Letters and Numbers Font size 3mm)	M. XXXXXX

Available Sizes in mm

Outer Pipe		Inner Pipe		Die Block Hole	Insert Hole	
Size/TH (Rc)	OD	ID	OD	ID	HD1	HD2
1/8"	10.5	5.7	5	4	15	6
1/4"	13.8	7.8	5	4	17	8
3/8"	17.3	10.9	8	7	22	12
1/2"	21.7	16.1	8	7	26	16

Separately available

Description	Image	Details	Ordering Code	MOQ
Rubber Hose		Outer Ø12mm Inner Ø6.3mm-Blue	RH08-BL	20m
		Outer Ø16mm Inner Ø9.5mm-Blue	RH10-BL	
		Outer Ø12mm Inner Ø6.3mm-Red	RH08-RE	
		Outer Ø16mm Inner Ø9.5mm-Red	RH10-RE	
Steel Braided Hoses		G1/4"; 1m; Black coupler	SH14-1-BK	1 Pc
		G1/4"; 2m; Black coupler	SH14-2-BK	
		G1/4"; 5m; Black coupler	SH14-5-BK	
		G1/4"; 1m; Red coupler	SH14-1-RE	
		G1/4"; 2m; Red coupler	SH14-2-RE	
		G1/4"; 5m; Red coupler	SH14-5-RE	

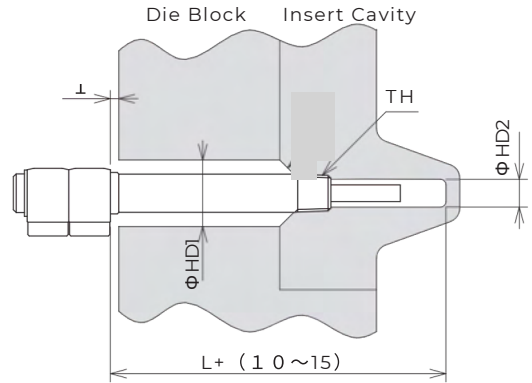
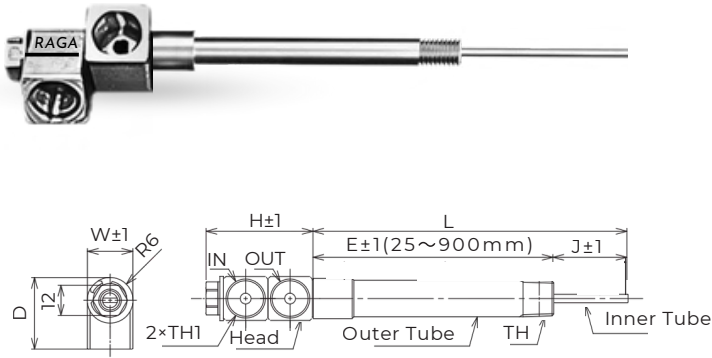
Ordering Code Example

Part Type	Outer Pipe	Inner Pipe OD/ID	E	J	Connector	Marking	Final Code
SCR-W1	3/4	-	170	-	NP08	M. MC23	SCR-W1-3/4-170-NP08-M. MC23
SCR-W2	3/4	8/6	260	67	-	-	SCR-W2-3/4-8/6-260-67

RAGA SPOT COOLER

Isolated Type (SCI)
SCI -W2

Installation Dimensions



Available Sizes in mm

Outer Pipe		Inner Pipe		Head			Die Block Hole	Insert Hole		
Size/TH (Rc)	OD	ID	OD	ID	TH1 (Rc)	H	W	D	HD1	HD2
1/8"	10.5	5.7	4	2	1/8"	40	18	25	15	6
					1/4"	46				
1/4"	13.8	7.8	6	4	1/8"	40	18	25	17	8
					1/4"	46				
3/8"	17.3	10.9	8	6	1/8"	40	18	25	22	12
					1/4"	46				
1/2"	21.7	16.1	10	8	1/4"	46	22	30	26	16

Optional

Description	Image	Details	Ordering Code
One touch connector		For 6mm Tube	CP06
		For 8mm Tube	CP08
Hose Nipple Connector		For 8mm Tube	NP08
		For 10mm Tube	NP10
Hex Adaptor		G1/8" External thread	HAM018
		G1/4" External thread	HAM014
Marking		Part Number writing (Maximum 6 English Letters and Numbers Font size 3mm)	M. XXXXXX

Separately available

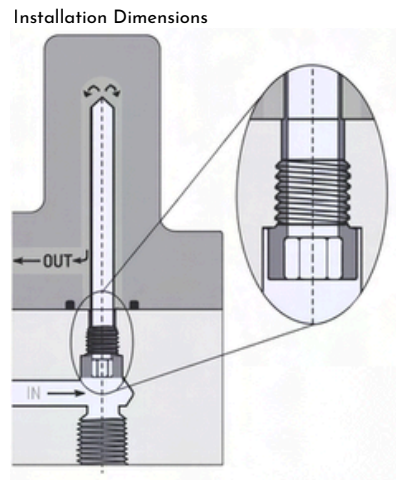
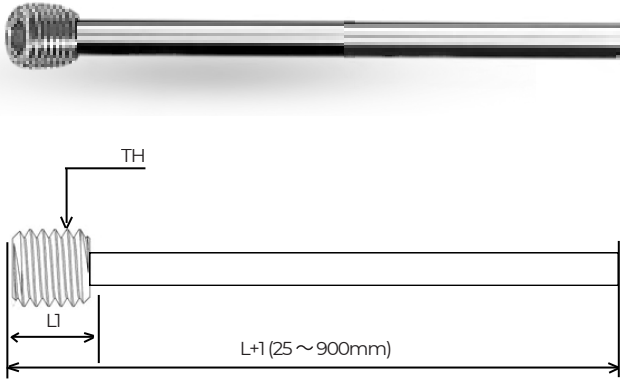
Description	Image	Details	Ordering Code	MOQ
Rubber Hose		Outer Ø12mm Inner Ø6.3mm-Blue	RH08-BL	20m
		Outer Ø16mm Inner Ø9.5mm-Blue	RH10-BL	
		Outer Ø12mm Inner Ø6.3mm-Red	RH08-RE	
		Outer Ø16mm Inner Ø9.5mm-Red	RH10-RE	
Steel Braided Hoses		G1/4"; 1m; Black coupler	SH14-1-BK	1 Pc
		G1/4"; 2m; Black coupler	SH14-2-BK	
		G1/4"; 5m; Black coupler	SH14-5-BK	
		G1/4"; 1m; Red coupler	SH14-1-RE	
		G1/4"; 2m; Red coupler	SH14-2-RE	
		G1/4"; 5m; Red coupler	SH14-5-RE	

Ordering Code Example

Part Type	Outer Pipe	E	J	Connector	Marking	Final Code
SCI-W2	1/2	176	143	CP06	M. 09	SCI-W2-1/2-176-143-CP06-M. 09

RAGA SPOT COOLER

Inner Pipe Assembly (IPA)



Available Sizes in mm

Thread Size	Screw Length	Outer Dia	Inner Dia
TH	L1	OD	ID
M5/M8	10	1.2	0.85
		1.5	1.2
		1.8	1.35
		1.8	1.5
		2.3	1.8
		2.3	2.0
		2.8	2.3
M8	15	4	3
		5	4
G1/8" / M10	15	6	5
		8	7

ORDERING CODE EXAMPLE

Part Type	TH	OD	Length	Marking	Final Code
IPA	G1/4	10	310	M. AD18	IPA-G1/4-10-310-M. AD18



RAGA Vacuum Shot Sleeve

RAGA SHOT SLEEVE

Long life RAGA SHOT SLEEVES come in fully or partially cooled with one or two part options.

High quality AISIH-13/DIN1.2344 is precisely machined, ground, hardened & Nitrided.

Casters use the RAGA Vacuum Shot Sleeve to significantly reduce gate-area porosity.

RAGA's twin-stage Vacuum System connects to the sleeve and the mold, extracting air through four wide cross-section channels during the first injection phase.



RAGA PLUNGER TIP

RAGA PLUNGER TIP reduces breakdown time due to plunger tip change.

Made with high quality AISIH-13/DIN1.2344, it gives multiple times more life than cast iron.

Precisely machined & grounded.

Results in higher sleeve life.



RAGA SPRUE BUSH & DIFFUSER

Refined material structure and heat treatment makes SPRUE BUSH & DIFFUSER more durable.

High quality AISI H-13/DIN 1.2344 is precisely machined, ground, hardened & Nitrided.

With options of integral/jacket/conformal cooling makes it thermally balanced.

Diffuser is ground blue matched with thermal clearances.

CLIENTELE





Raga Group is a world renowned name for Technologies and Consumables in the die casting industry.

Over the last thirty years, Raga has served OEM's and Tier-I companies involved in die casting across the world.

Raga's line of products is developed based on close analysis of the die casting process and its environment.

This has helped us deliver innovative products and equipment to global standards.

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Jet Cooling



Vaccum

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