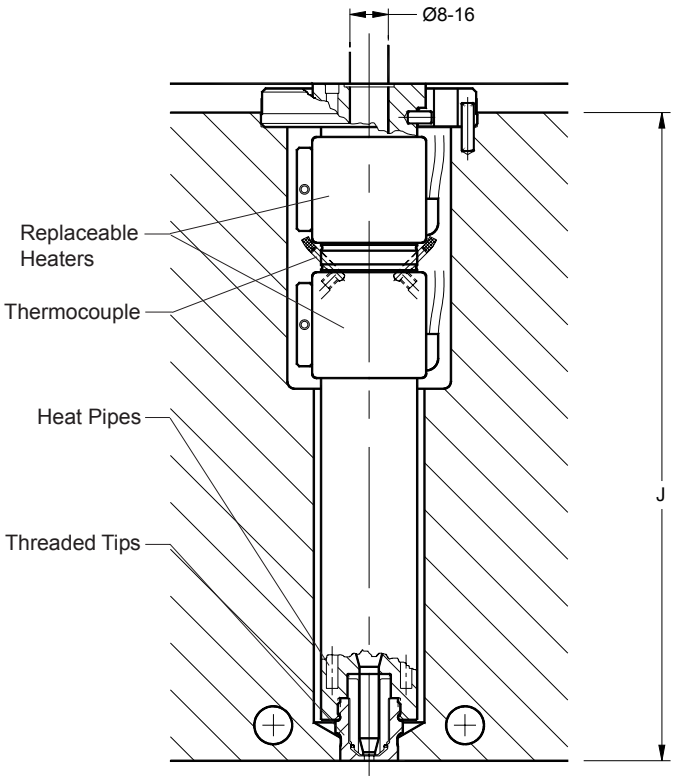
SR16 Hot Runner Nozzles are for medium part applications and are available with band heaters. In most cases one heater is required for operation. An installed spare may be installed if space allows. They are available in lengths from 75 to 375 (“J” dimension).

Suitable for all materials and available with eight Synventive Controlled Vestige (CV) tip options including valve gates for zero gate vestige applications.



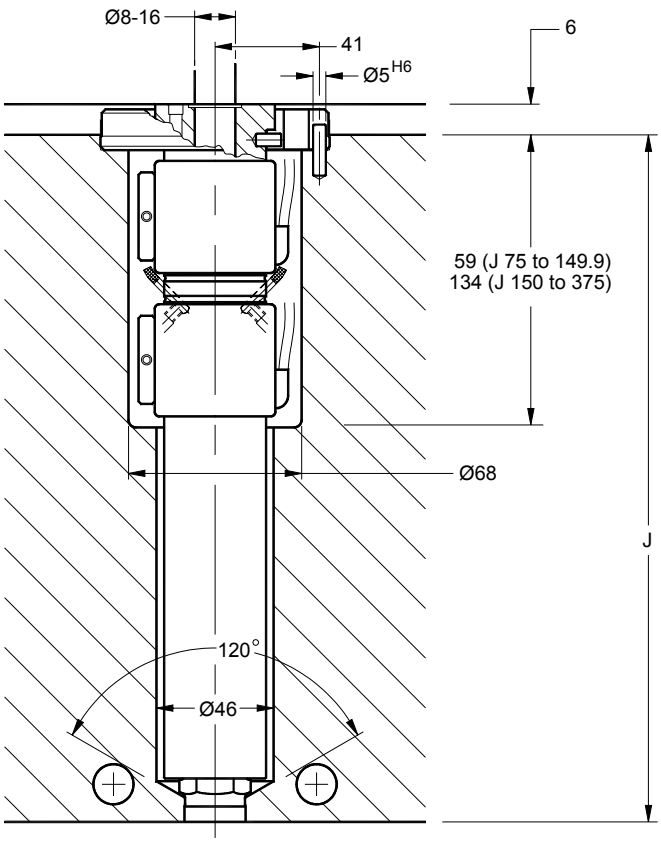
Features:
16mm maximum flow channel maximum
75 - 375 mold depth ("J" dimension)
Replaceable long life heater and thermocouple
500W or 600W/240V heaters
8 controlled vestige tip styles
Replaceable threaded tips
Internal heat pipes for temperature uniformity
For all plastics including those with fillers
24 tip dia

Band Heater

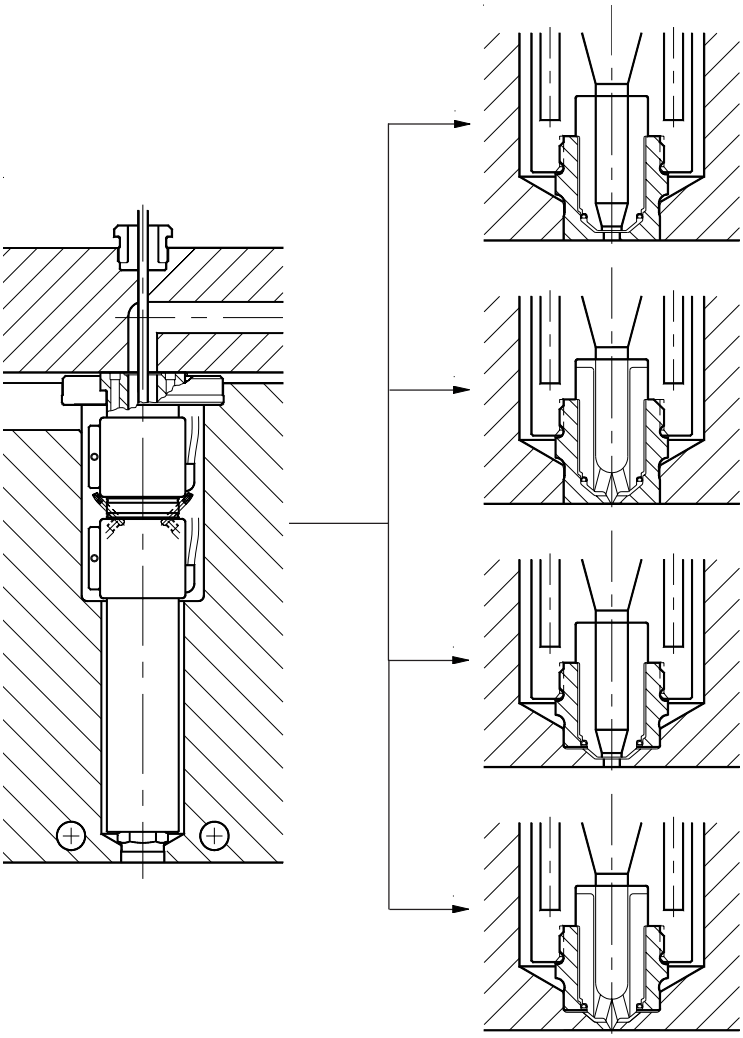
In most cases one heater is required for operation. If mold thickness allows a spare band heater and thermocouple will be installed.

J Minimum = 75

J Maximum = 375



Thermal Gate Nozzle



CV10
- Filled and unfilled materials
- Open flow channel/higher flow
- 1.5 to 5.2 orifice diameter
- Patented seal
- Easier mold geometry

Dimensional data on Pages SR16-10, 11 & 12

CV11
- Filled and unfilled materials
- Cone point delivers more heat to gate
- 1.0 to 3.5 orifice diameter
- Patented seal
- Reduced vestige
- Easier mold geometry

Dimensional data on Pages SR16-13, 14 & 15

CV20
- Filled and unfilled materials
- Open flow channel/Higher flow
- 1.5 to 5.2 orifice diameter
- Patented seal
- No witness mark
- Easier color change

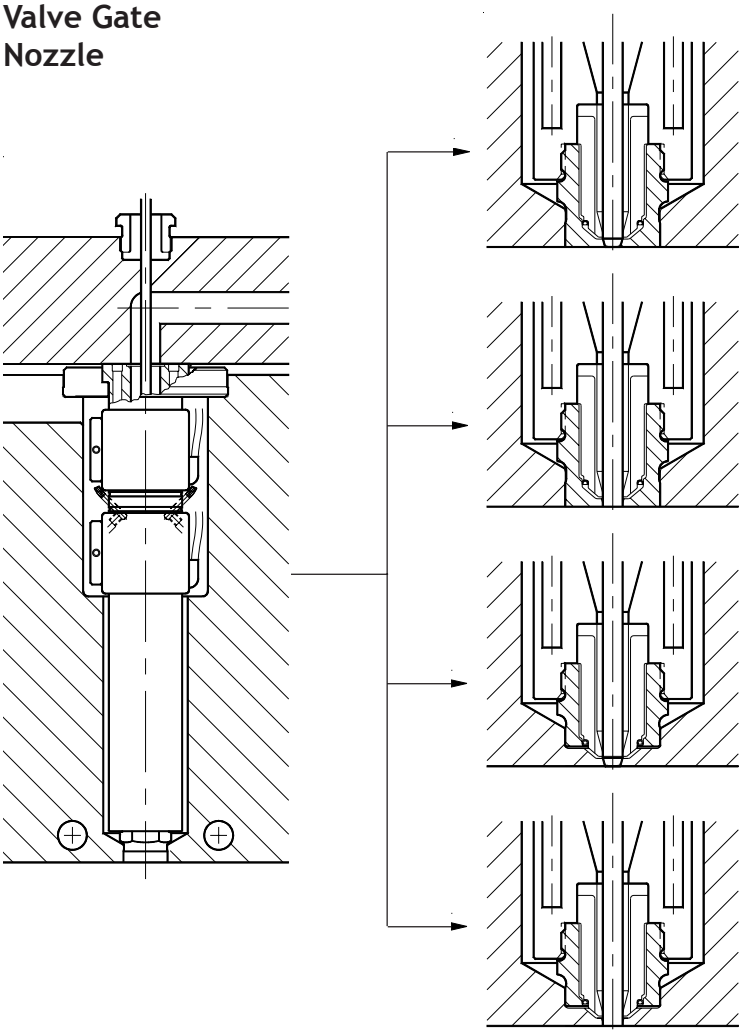
Dimensional data on Pages SR16-16, 17 & 18

CV21
- Filled and unfilled materials
- Cone point delivers more heat to the gate
- 1.0 to 3.5 orifice diameter
- Patented seal
- Reduced vestige
- No witness mark

Dimensional data on Pages SR16-19, 20 & 21

See page T16-5 to select a tip that suits your application

Valve Gate Nozzle



VG12
- Filled and unfilled materials
- “0” vestige
- Tapered shut off
- 3.9 orifice diameter
- Patented seal
- Easier mold geometry

Dimensional data on Pages SR16-22 & 23

VG12S
- Filled and unfilled materials
- “0” vestige
- Diametric shut off
- Materials having glass fibers
- 5.0 orifice diameter
- Patented seal
- Easier mold geometry

Dimensional data on Pages SR16-24 & 25

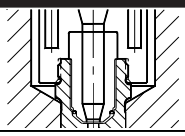
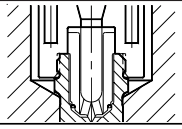
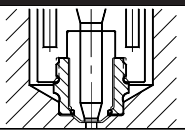
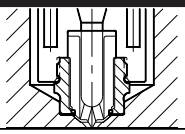
VG23
- Filled and unfilled materials
- “0” vestige
- Tapered shut off
- 3.9 orifice diameter
- Patented seal
- No witness mark

Dimensional data on Pages SR16-26 & 27

VG23S
- Filled and unfilled materials
- “0” vestige
- Diametric shut off
- Materials having glass fibers
- 5.0 orifice diameter
- Patented seal
- No witness mark

Dimensional data on Pages SR16-28 & 29

See page T16-6 to select a tip that suits your application

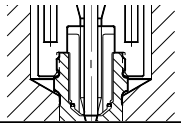
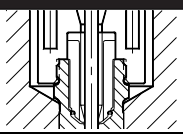
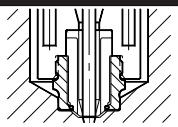
Tip Style \ Material	Additives	Semi-crystalline										Amorphous											
		PE	PP	PEEK	PPS	PET	PBT	PPO/PA	PA	PPA	POM	PMMA	ABS	ASA	SAN	PS	PC/ABS	PC	PES	PSU	PEI	PPO	TPE
CV10 	A	+	+	-	-	-	-	-	-	-	-	+	+	+	+	+	+	+	-	-	-	+	-
	B	+	+	-	-	-	-	-	-	-	-	-	+	-	-	-	+	+	-	-	-	+	-
	C	+	+	-	-	+	-	+	+	-	+	-	+	-	-	-	+	+	-	-	-	+	-
	D	+	+	-	-	-	-	-	-	-	-	-	+	-	-	-	+	+	-	-	-	+	-
CV11 	A	+	+	-	-	-	-	-	-	-	+	+	+	+	+	+	+	+	-	-	-	+	+
	B	0	0	-	-	-	-	-	-	-	+	-	+	+	-	-	+	+	-	-	-	+	+
	C	0	0	-	-	-	-	-	-	-	+	-	+	+	-	-	+	+	-	-	-	+	+
	D	+	+	-	-	-	-	-	-	-	+	+	+	+	+	+	+	+	-	-	-	+	+
CV20 	A	+	+	-	-	-	-	-	-	-	0	+	+	+	+	+	+	+	-	-	-	+	-
	B	+	+	-	-	-	+	-	-	-	0	-	+	-	-	+	+	+	-	-	-	+	-
	C	+	+	-	+	+	+	+	+	-	0	-	+	-	-	+	+	+	-	-	-	+	-
	D	+	+	-	-	-	-	-	-	-	0	+	+	+	-	+	+	+	-	-	-	+	-
CV21 	A	+	+	-	-	-	-	-	-	-	+	0	+	+	+	+	+	+	-	-	-	+	+
	B	+	+	-	-	-	-	-	-	-	+	0	0	-	+	+	0	0	-	-	-	+	+
	C	+	+	-	-	-	-	-	-	-	+	0	0	-	+	+	0	0	-	-	-	+	+
	D	+	+	-	-	-	-	-	-	-	+	0	0	-	-	+	0	0	-	-	-	+	+

The above table defines which tip styles are best suited for a given material.

Note:
The selection table is meant to be a guide for the initial selection of the tip style. It is based on the more common grades of material. Synventive will verify the correct tip selection as part of the quote/order process.

Additive Index
A - None
B - Fillers
C - Glass Fiber
D - Flame retardants

+	Very suitable
0	Suitable
-	Not suitable

Tip Style \ Material	Additives	Semi-crystalline										Amorphous											
		PE	PP	PEEK	PPS	PET	PBT	PPO/PA	PA	PPA	POM	PMMA	ABS	ASA	SAN	PS	PC/ABS	PC	PES	PSU	PEI	PPO	TPE
VG12 	A	+	+	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	+	+
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	D	0	0	-	-	0	0	-	0	-	0	0	0	0	0	0	0	0	-	-	-	+	0
VG12S 	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	+	+	-	-	0	0	0	0	-	+	-	+	-	+	+	+	+	-	-	-	+	0
	C	+	+	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	+	0
	D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VG23 	A	+	+	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	+	+
	B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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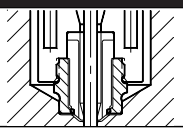
VG23S 	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	+	+	-	-	+	+	0	+	-	0	0	+	-	0	+	+	+	-	-	-	+	0
	C	+	+	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	+	0
	D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

The above table defines which tip styles are best suited for a given material.

Note:
The selection table is meant to be a guide for the initial selection of the tip style. It is based on the more common grades of material. Synventive will verify the correct tip selection as part of the quote/order process.

Additive Index
A - None
B - Fillers
C - Glass Fiber
D - Flame retardants

+	Very suitable
0	Suitable
-	Not suitable

Maximum flow rate of hot runner nozzles varies depending on the melt index of the material being processed.

The flow rate of any hot runner nozzle is controlled by three factors:

1) Flow bore size

2) Melt temperature, viscosity vs shear rate relationship.

3) The cavity wall thickness, flow length from the gate, mold temperature and required fill rate.

The last two factors can combine to change the maximum shot capacity by a factor of 5 or more. Synventive uses computerized flow analysis to assure the correct nozzle is chosen.

Material	Tip Style		
	CV10/CV20	CV11(NS)/CV21(N-S)	VG12(S)/VG23(S)
ABS	485 gm/sec	100 gm/sec	210 gm/sec
PC	550 gm/sec	100 gm/sec	105 gm/sec
PPO	525 gm/sec	100 gm/sec	225 gm/sec
PBT	775 gm/sec	150 gm/sec	125 gm/sec
PBT/PC	320 gm/sec	100 gm/sec	250 gm/sec
PC/ABS	550 gm/sec	100 gm/sec	250 gm/sec
PS	525 gm/sec	100 gm/sec	225 gm/sec
PP	1000 gm/sec	200 gm/sec	425 gm/sec
PA	1025 gm/sec	200 gm/sec	400 gm/sec
POM	340 gm/sec	50 gm/sec	140 gm/sec
PE	985 gm/sec	200 gm/sec	400 gm/sec
Acrylic	575 gm/sec	100 gm/sec	200 gm/sec
PVC	340 gm/sec	50 gm/sec	140 gm/sec
TPR	-	100 gm/sec	225 gm/sec

Example

Material: PE

Tip style: CV10

Maximum flow rate:
985 grams/second

Note:
Values in the table do not include reinforced materials or materials with fillers.

This table lists the normal gate orifice required to fill an average cavity of the listed wall thickness and surface area.

The orifice diameter is based on the flow and freeze characteristics of each type of plastic at its normal processing conditions. It is not dependent on whether the cavity is fed by a hot or cold runner.

Some of the listed wall thickness and surface area combinations are not applicable to all plastics because of the flow length to wall ratios of each material. Consult plastic supplier's processing recommendations.

Due to the gate limitations of each hot runner nozzle, the actual gate may be slightly smaller or larger than the tabulated orifice.

Orifice Diameter Guideline mm(inch)											
Part Area		Wall thickness mm/(inch)									
sq mm	sq inch	0.75 (0.03)	1.00 (0.04)	1.25 (0.05)	1.50 (0.06)	1.75 (0.07)	2.00 (0.08)	2.25 (0.09)	2.50 (0.10)	3.00 (0.13)	4.00 (0.16)
600		0.90	0.90	0.90	0.90	0.90	0.90	0.95	1.00	1.12	1.27
	1.0	0.035	0.035	0.035	0.035	0.035	0.035	0.037	0.039	0.044	0.050
1200		0.90	0.90	0.90	0.92	1.00	1.05	1.12	1.17	1.32	1.50
	2.0	0.035	0.035	0.035	0.036	0.039	0.041	0.044	0.046	0.052	0.059
1800		0.90	0.90	0.95	1.02	1.10	1.17	1.25	1.30	1.47	1.68
	3.0	0.035	0.035	0.037	0.040	0.043	0.046	0.049	0.051	0.058	0.066
2400		0.90	0.90	1.02	1.10	1.20	1.25	1.35	1.40	1.58	1.78
	4.0	0.035	0.035	0.040	0.043	0.047	0.049	0.053	0.055	0.062	0.070
3000		0.90	0.95	1.07	1.17	1.25	1.32	1.42	1.47	1.65	1.88
	5.0	0.035	0.037	0.042	0.046	0.049	0.052	0.056	0.058	0.065	0.074
6000		1.00	1.12	1.27	1.37	1.50	1.58	1.68	1.76	1.98	2.26
	10.0	0.038	0.044	0.050	0.054	0.059	0.062	0.066	0.069	0.078	0.089
12,000		1.17	1.32	1.53	1.65	1.78	1.88	2.00)	2.08	2.36	2.67
	20.0	0.046	0.052	0.060	0.065	0.070	0.074	0.079	0.082	0.093	0.105
18,000		1.30	1.47	1.68	1.83	1.96	2.06	2.21	2.31	2.62	2.97
	30.0	0.051	0.058	0.066	0.072	0.077	0.081	0.087	0.091	0.103	0.117
24,000		1.37	1.58	1.80	1.96	2.10	2.24	2.39	2.49	2.80	3.18
	40.0	0.054	0.062	0.071	0.077	0.083	0.088	0.094	0.098	0.110	0.125
30,000		1.45	1.65	1.90	2.06	2.24	2.36	2.51	2.64	2.95	3.35
	50.0	0.057	0.065	0.075	0.081	0.088	0.093	0.099	0.104	0.116	0.132
36,000		1.53	1.73	1.98	2.16	2.34	2.46	2.64	2.77	3.10	3.53
	60.0	0.060	0.068	0.078	0.085	0.092	0.097	0.104	0.109	0.122	0.139
42,000		1.58	1.80	2.08	2.26	2.41	2.57	2.75	2.87	3.23	3.66
	70.0	0.062	0.071	0.082	0.089	0.095	0.101	0.108	0.113	0.127	0.144
48,000		1.65	1.88	2.13	2.34	2.51	2.64	2.82	2.97	3.33	3.79
	80.0	0.065	0.074	0.084	0.092	0.099	0.104	0.111	0.117	0.131	0.149
54,000		1.70	1.93	2.21	2.39	2.60	2.72	2.92	3.05	3.43	3.89
	90.0	0.067	0.076	0.087	0.094	0.102	0.107	0.115	0.120	0.135	0.153
60,000		1.73	1.98	2.26	2.46	2.64	2.80	3.00	3.12	3.53	3.99
	100.0	0.068	0.078	0.089	0.097	0.104	0.110	0.118	0.123	0.139	0.157
90,000		1.93	2.18	2.51	2.72	2.92	3.10	3.30	3.45	3.89	4.42
	120.0	0.076	0.086	0.099	0.107	0.115	0.122	0.130	0.136	0.153	0.174
120,000		-	2.36	2.70	2.92	3.10	3.33	3.56	3.73	4.20	4.75
	200.0	-	0.093	0.106	0.115	0.124	0.131	0.155	0.147	0.165	.187
180,000		-	-	2.97	3.23	3.48	3.68	3.94	4.15	4.62	5.26
	300.0	-	-	0.117	0.127	0.137	0.145	0.155	0.162	0.182	0.207
240,000		-	-	-	3.48	3.76	3.98	4.22	4.42	4.98	5.54
	400.0	-	-	-	0.137	.148	0.156	0.166	0.174	0.196	0.218

Material Factors

Use tabulated orifice for PE, PP, PS, SAN and PUR.

Use tabulated orifice x 1.15 for POM, PC, PPO and ABS.

Use tabulated orifice x 1.30 for Acrylic, PA, PET, and PBT

Use tabulated orifice x 1.50 for PVC.

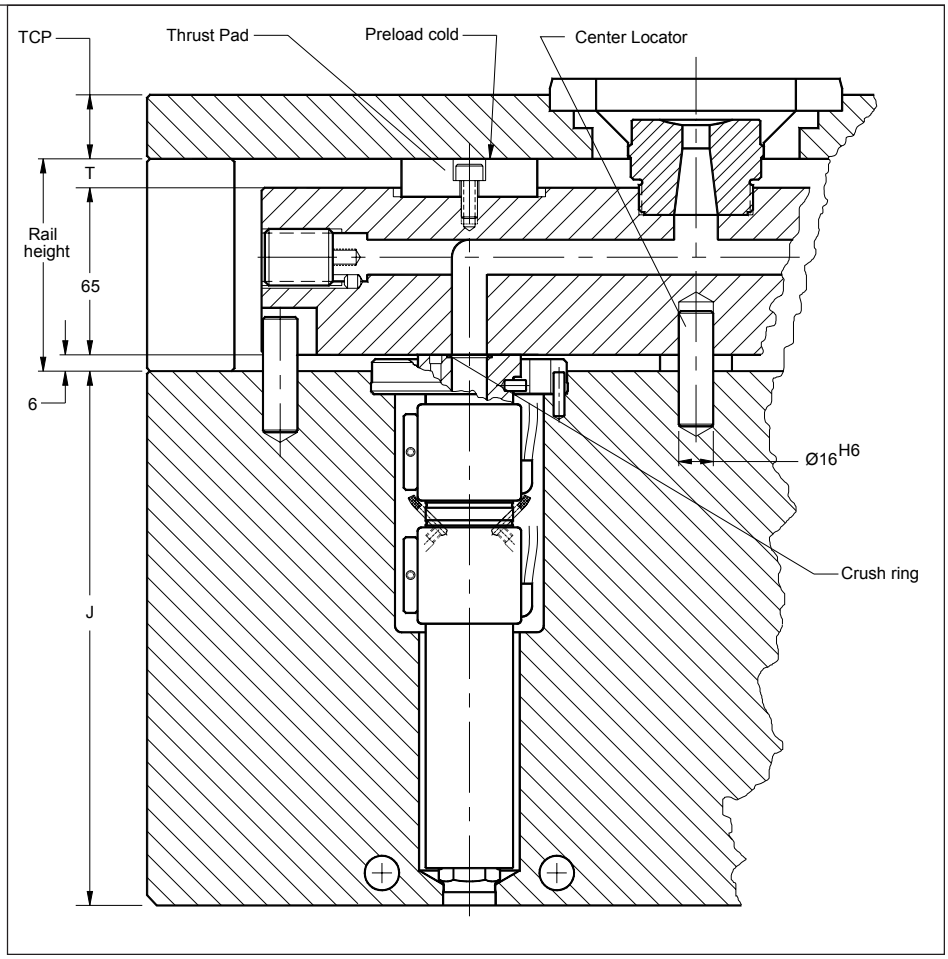
For non-reinforced PA, PET and PBT the minimum orifice diameter should be 4.0. For reinforced PA, PET and PBT the minimum orifice diameter should be 4.0.

Part Area is total outside area and not the projected area of the part.

SR16 hot runner systems are designed with a preload between the thrust pads and the mold plates in the cold condition. As the manifold heats an additional sealing force is created.

The thrust pads are made of a low conductivity material and should only be replaced with an equivalent Synventive part.

Excessive contact with the mold will cause heat sinks and affect the system performance. Contact with the mold must be limited to specified areas.



Minimum rail height = 81 (thermal gates).

Support ring nozzles do not line up with the sub-runners in the manifold in the cold condition. As the manifold heats up the manifold sub-runner locations expand to the correct location.

Variable	Description
T	Top air gap
J	Mold depth
TCP	Top clamp plate

T = Rail height - 6 - 65 (manifold)

Minimum T = 10 (thermal gates)

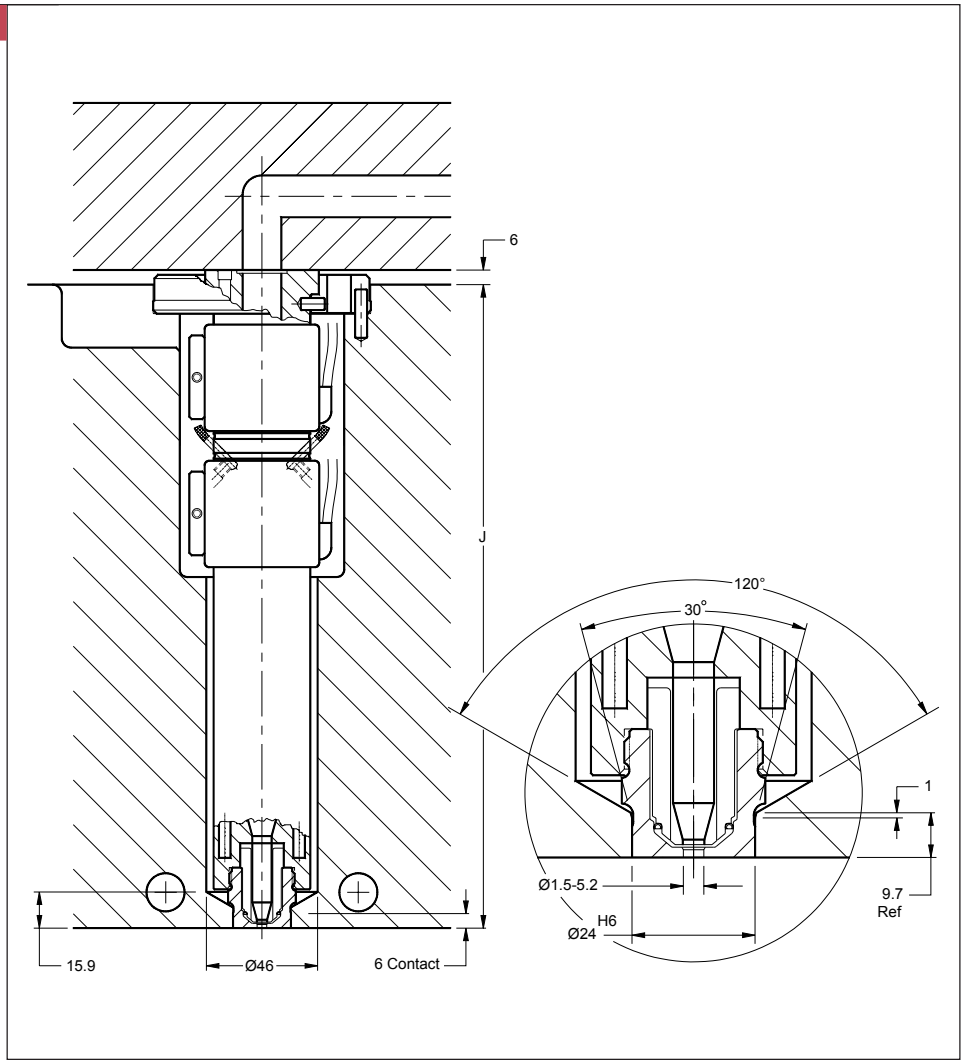
SR16 CV10

Filled and unfilled materials.

Easy orifice size changes by straight reaming

Open flow bore

Heat pipes for isothermal operation.



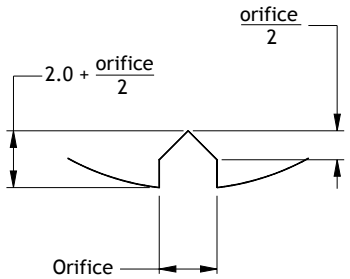
The front face of the tip must be in contact with plastic.

Cooling is required in the gate area.

Heater Style	J Min	J Max	Heater Qty	Watts/ Volts
Band (38 long)	75	149.9	1	500W /240V
Band (51 long)	150	375	2	600W /240V (each)

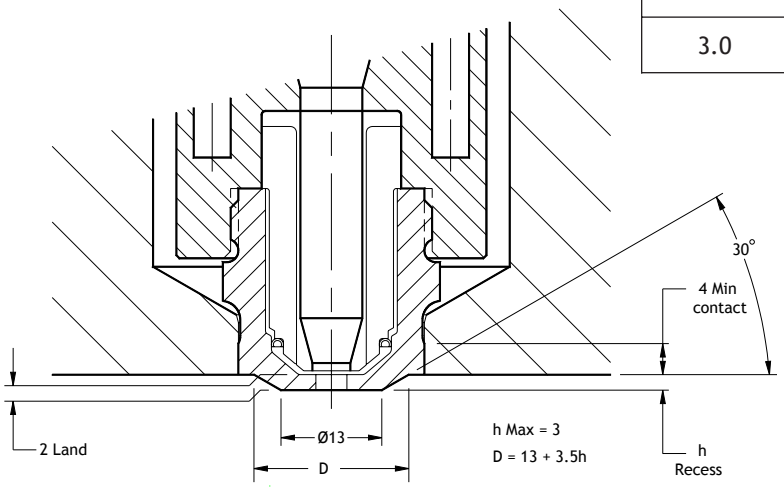
Recessed gates are used to reduce vestige height above the part surface or keep the vestige below the part surface.

For most materials CV10 vestige height is equal to 2.0 + orifice/2. If the vestige height relative to the possible gate recess depth (h) is too great, use of a CV11 tip is recommended.



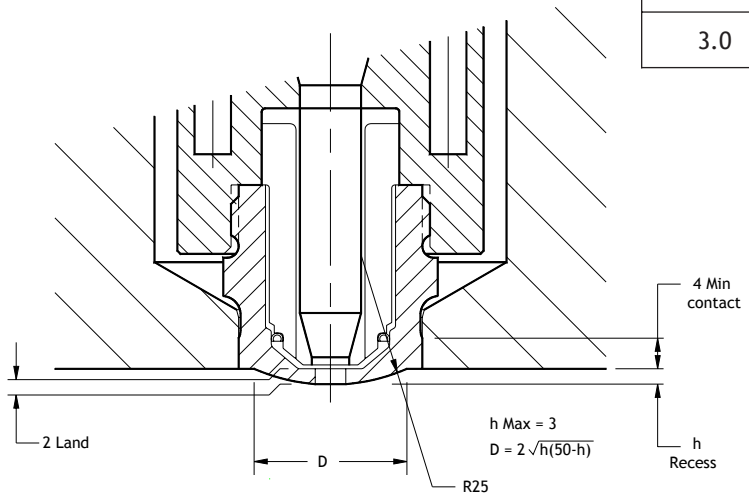
Values in tables are for materials not having glass fibers. Consult Synventive for vestige height when using glass fillers.

Conical Recess	
h	D
1.0	16.5
1.5	18.2
2.0	20.0
2.5	21.8
3.0	23.5



Conical Recess

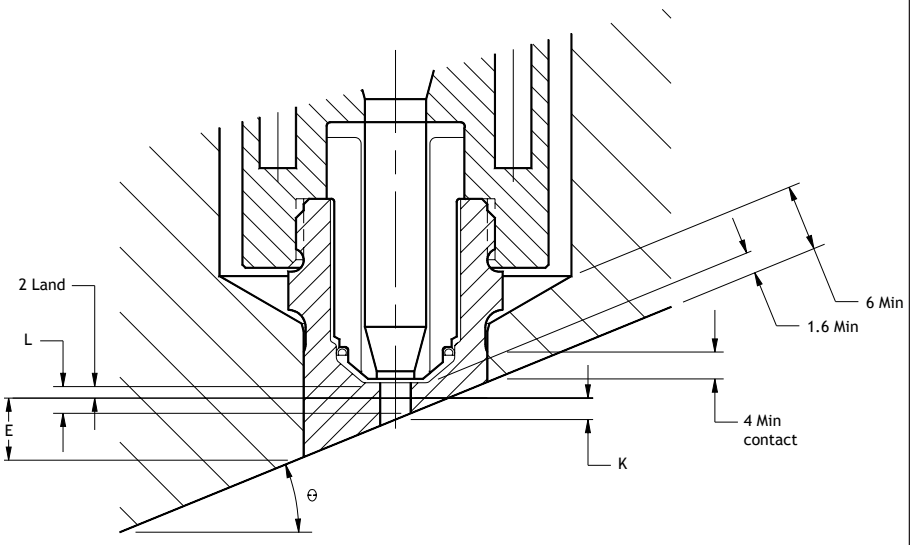
Spherical Recess	
h	D
1.0	14.0
1.5	17.1
2.0	19.6
2.5	21.8
3.0	23.8



Spherical Recess

When gating onto an angled mold contour the vestige height may be increased depending on the angle.

K is the increase in vestige height required to maintain 1.6 wall, 6 wall and/or 4 minimum contact.



$\theta \leq 6^\circ$; K= 0

E = 12TANθ

$L = 2 - \frac{\text{Orifice Dia.}}{2}$ TANθ

$6^\circ < \theta \geq 26^\circ$; $K = 4.2\text{TAN}\theta + \frac{1.6}{\text{COS }\theta} - 2$

E = K + 12TANθ

$L = 2 + K - \frac{\text{Orifice Dia.}}{2}$ TANθ

$\theta > 26^\circ$; K= 23TANθ - 9.9

E = K + 12TANθ

$L = 2 + K - \frac{\text{Orifice Dia.}}{2}$ TANθ

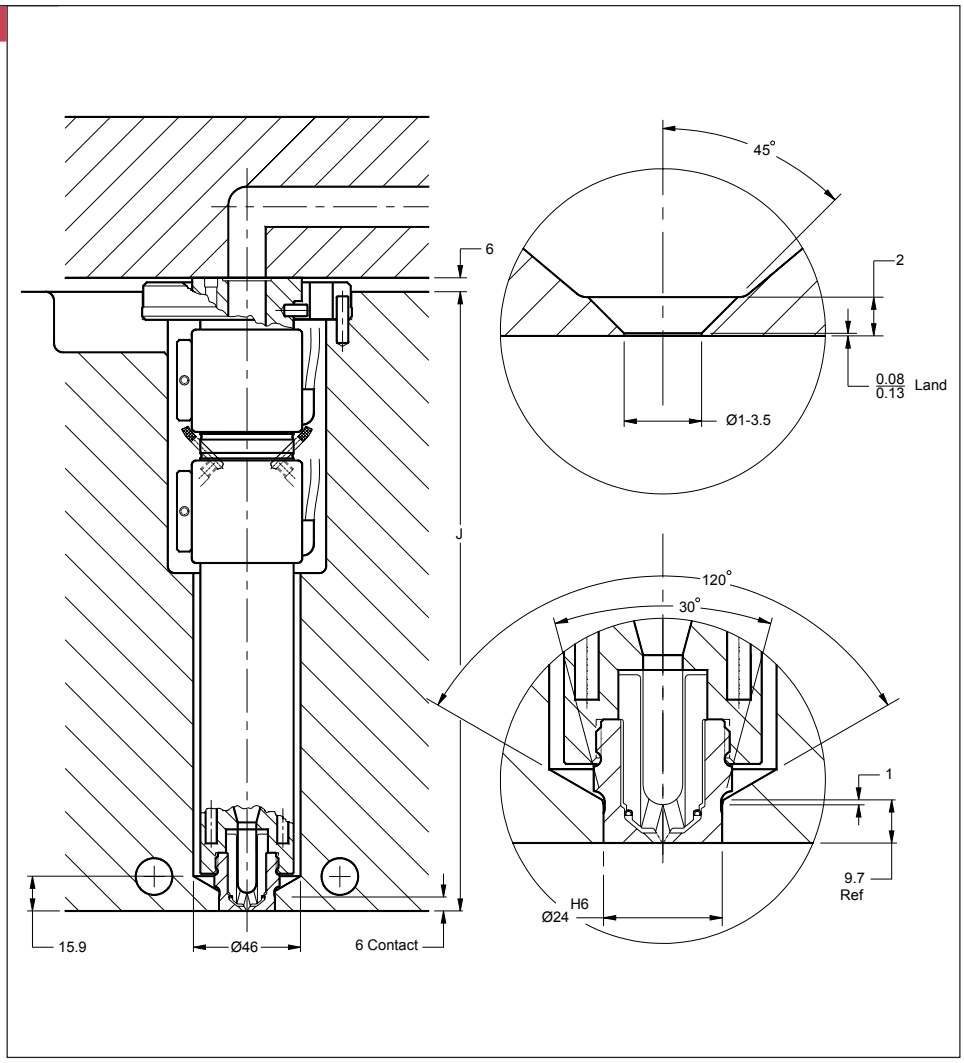
Angled Mold Contour

SR16 CV11

Filled and unfilled materials.

More heat in gate area for semi-crystalline materials

Heat pipes for isothermal operation.



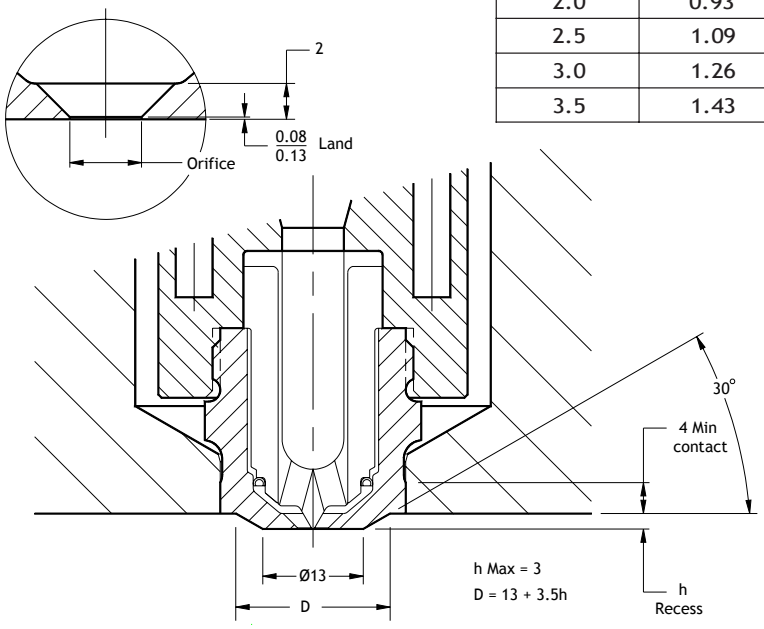
The front face of the tip must be in contact with plastic.

Cooling is required in the gate area.

Heater Style	J Min	J Max	Heater Qty	Watts/ Volts
Band (38 long)	75	149.9	1	500W/240V
Band (51 long)	150	375	2	600W/240V (each)

Recessed gates are used to reduce vestige height above the part surface or keep the vestige below the part surface.

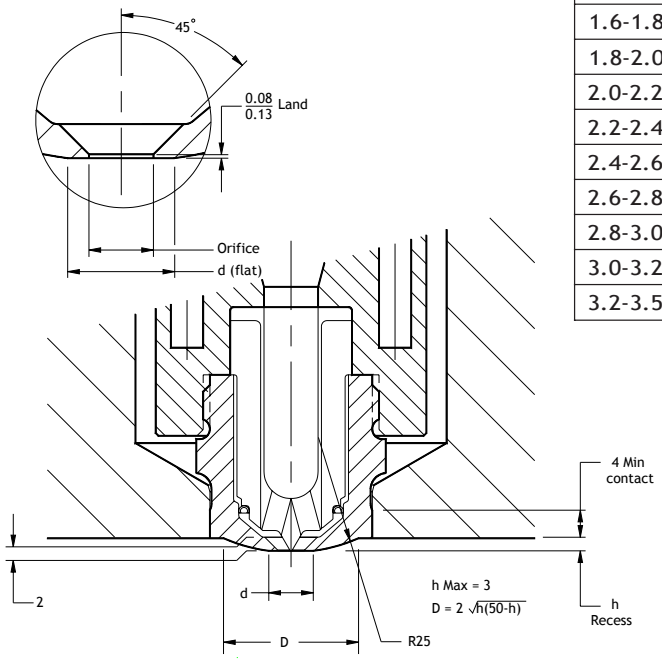
Conical Recess		
Orifice	h	D
1.0	0.59	15.1
1.5	0.76	15.7
2.0	0.93	16.3
2.5	1.09	16.8
3.0	1.26	17.4
3.5	1.43	18.0



Conical Recess

Values in tables are for materials not having glass fibers. Consult Synventive for vestige height when using glass fillers.

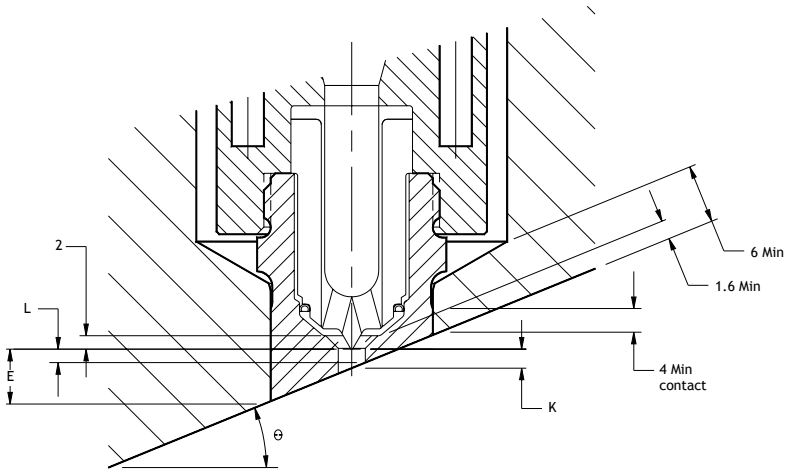
Spherical Recess			
Orifice	h	d	D
1.0-1.2	0.65	1.45	11.33
1.2-1.4	0.72	1.65	11.91
1.4-1.6	0.79	1.85	12.47
1.6-1.8	0.86	2.05	13.00
1.8-2.0	0.93	2.25	13.51
2.0-2.2	1.00	2.45	14.00
2.2-2.4	1.06	2.65	14.41
2.4-2.6	1.12	2.85	14.80
2.6-2.8	1.18	3.05	15.18
2.8-3.0	1.26	3.25	15.67
3.0-3.2	1.32	3.45	16.03
3.2-3.5	1.40	3.65	16.50



Spherical Recess

When gating onto an angled mold contour the vestige height may be increased depending on the angle.

K is the increase in vestige height required to maintain 0.13 land, 1.6 wall, 6 wall and/or 4 minimum contact.



$\Theta \leq 7^\circ$; $K = \frac{\text{Orifice Dia.}}{2} \text{TAN}\Theta$

$E = \frac{24 + \text{Orifice Dia.}}{2} \text{TAN}\Theta$

$L = 0.13$

$7^\circ < \Theta \geq 27^\circ$; $K = 4.2\text{TAN}\Theta + \frac{1.6}{\text{COS}\Theta} + \frac{\text{Orifice Dia.} - 1}{2} \text{Tan}\Theta - 2$

$E = K + 12\text{TAN}\Theta$

$L = 0.13 + K - \frac{\text{Orifice Dia.}}{2} \text{TAN}\Theta$

$\Theta > 27^\circ$; $K = 23\text{TAN}\Theta - 9.9$

$E = K + 12\text{TAN}\Theta$

$L = 0.13 + K - \frac{\text{Orifice Dia.}}{2} \text{TAN}\Theta$

Angled Mold Contour

SR16 CV20

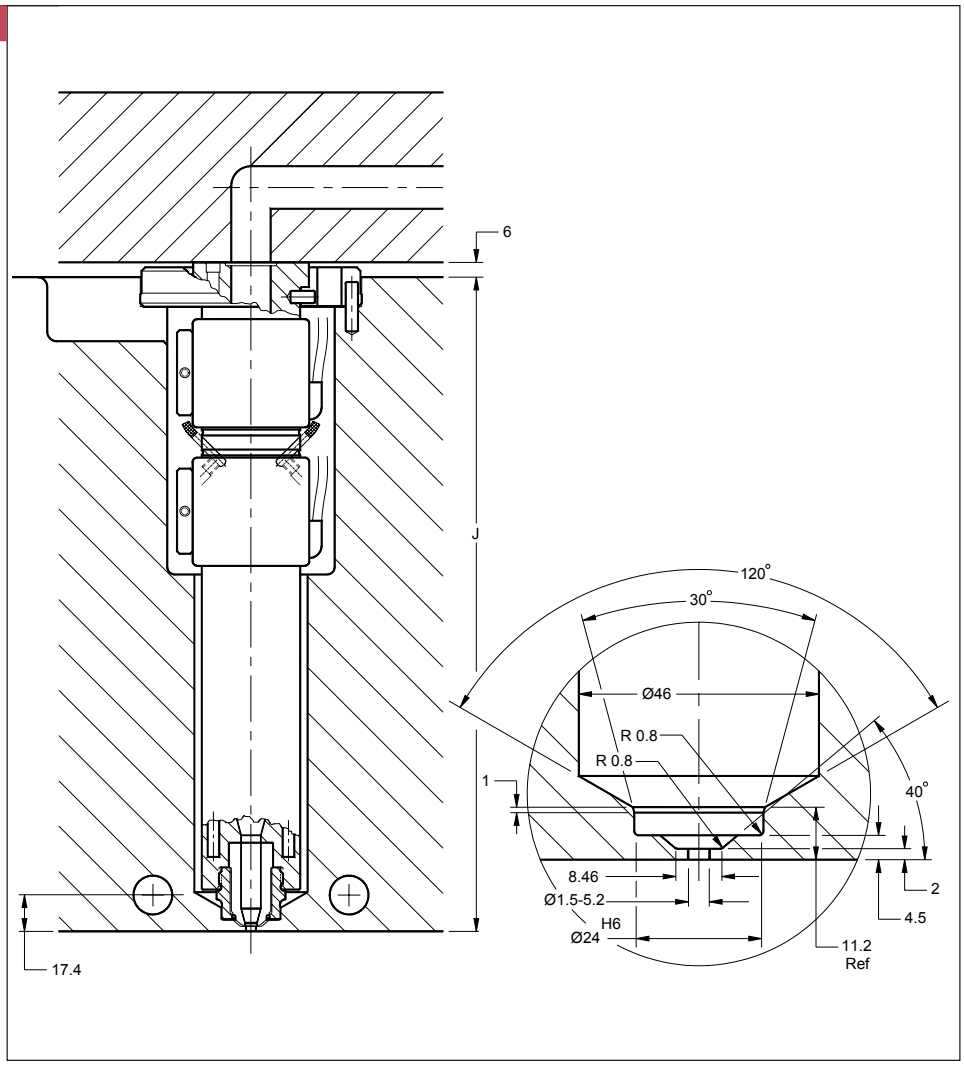
Filled and unfilled materials.

Easy orifice size changes by straight reaming .

No tip witness mark on part.

Open flow bore.

Heat pipes for isothermal operation.

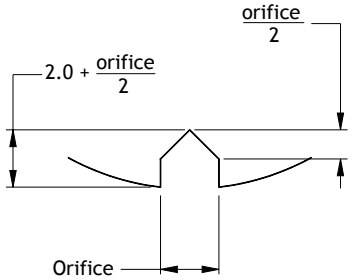


Cooling is required in the gate area.

Heater Style	J Min	J Max	Heater Qty	Watts/ Volts
Band (38 long)	75	149.9	1	500W /240V
Band (51 long)	150	375	2	600W /240V (each)

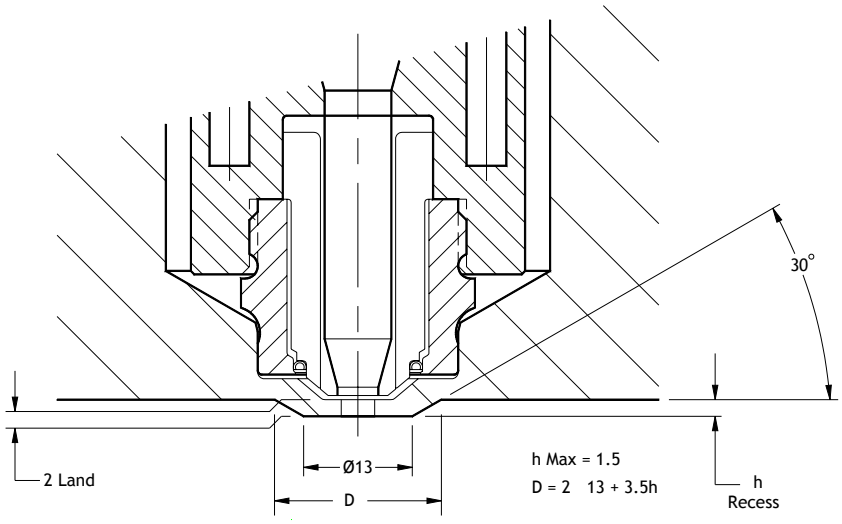
Recessed gates are used to reduce vestige height above the part surface or keep the vestige below the part surface.

For most materials CV10 vestige height is equal to 2.0 + orifice/2. If the vestige height relative to the possible gate recess depth (h) is too great, use of a CV11 tip is recommended.



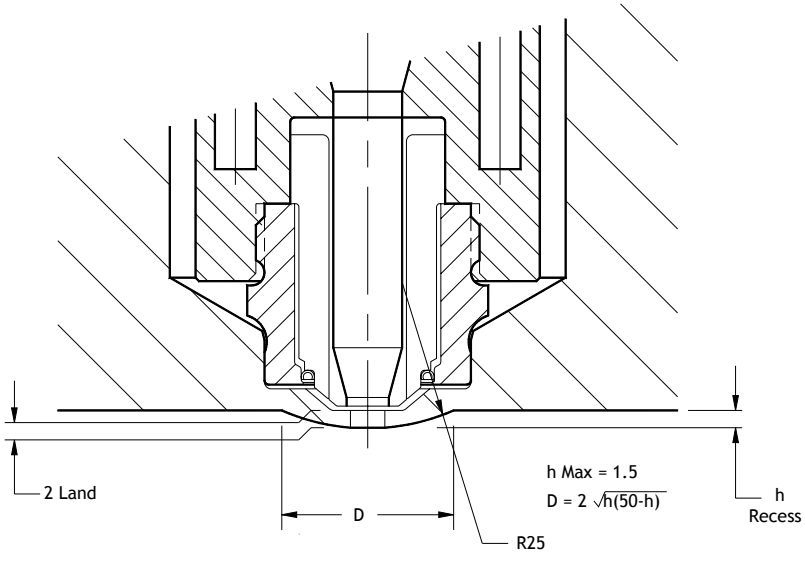
Values in tables are for materials not having glass fibers. Consult Synventive for vestige height when using glass fillers.

Conical Recess	
h	D
1.0	16.5
1.5	18.2



Conical Recess

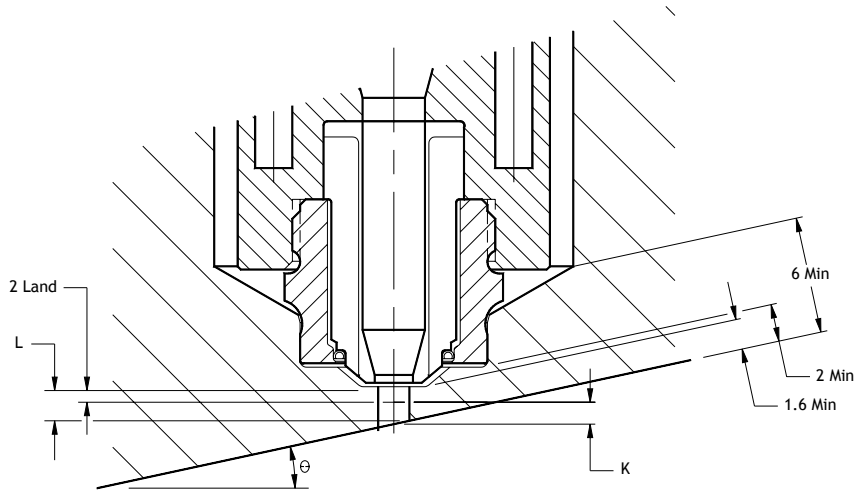
Spherical Recess	
h	D
1.0	14.0
1.5	17.1



Spherical Recess

When gating onto an angled mold contour the vestige height may be increased depending on the angle.

K is the increase in vestige height required to maintain 1.6 wall, 2 wall or 6 wall thickness.



$\Theta \leq 6^\circ$; K= 0

$6^\circ < \Theta \leq 16^\circ$; $K = 4.2\tan\Theta + \frac{1.6}{\cos\Theta} - 2$

$\Theta > 16^\circ$; $K = 12\tan\Theta + \frac{2}{\cos\Theta} - 4.5$

$L = 2 - \frac{\text{Orifice Dia.}}{2}\tan\Theta$

$L = 2 + K - \frac{\text{Orifice Dia.}}{2}\tan\Theta$

$L = 2 + K - \frac{\text{Orifice Dia.}}{2}\tan\Theta$

Angled Mold Contour

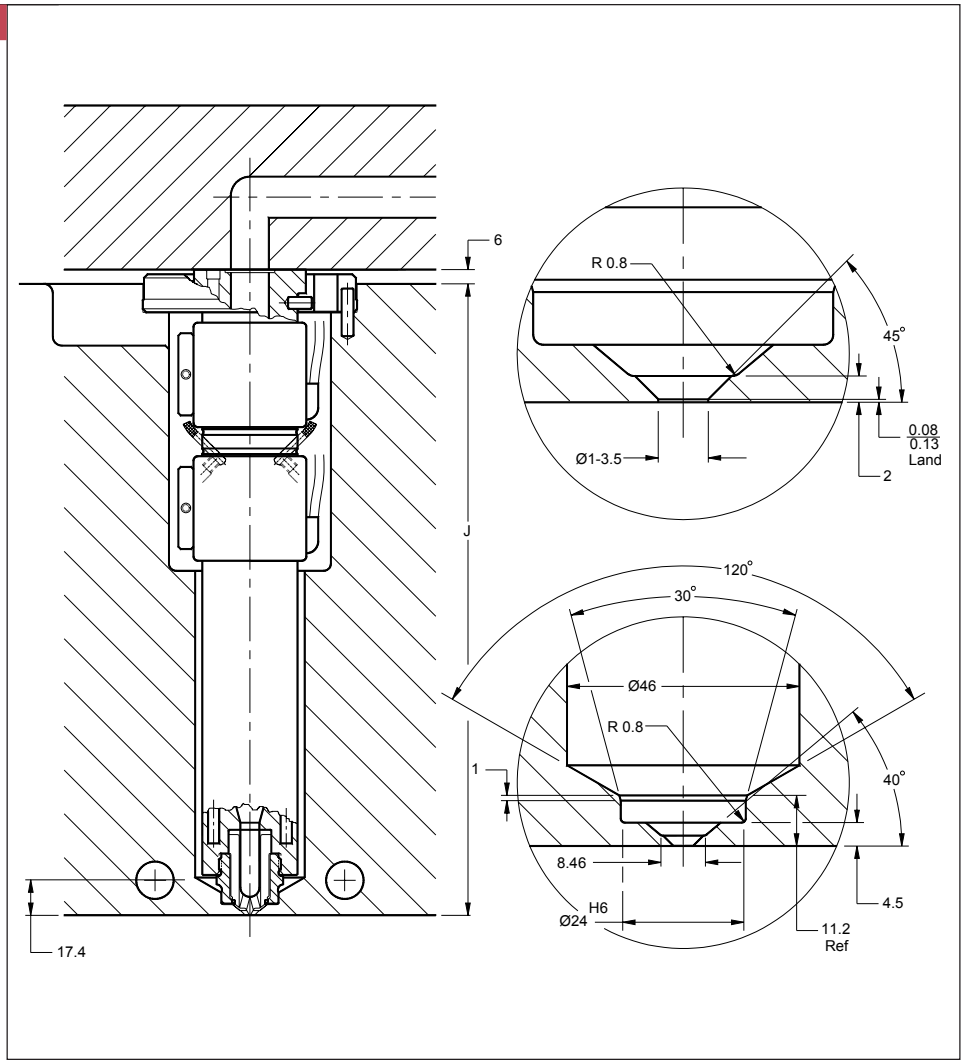
SR16 CV21

Filled and unfilled materials.

No tip witness mark on part.

More heat in gate area for semi-crystalline materials.

Heat pipes for isothermal operation.



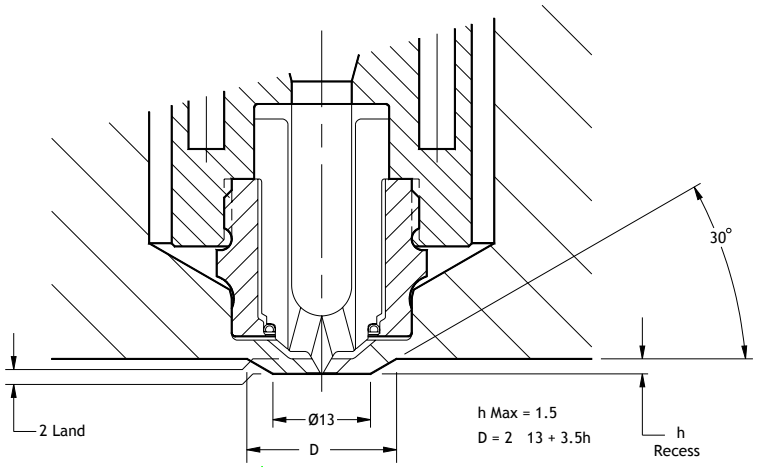
Cooling is required in the gate area.

Heater Style	J Min	J Max	Heater Qty	Watts/ Volts
Band (38 long)	75	149.9	1	500W/240V
Band (51 long)	150	375	2	600W/240V (each)

Recessed gates are used to reduce vestige height above the part surface or keep the vestige below the part surface.

Maintain 0.13 land when machining gate recess.

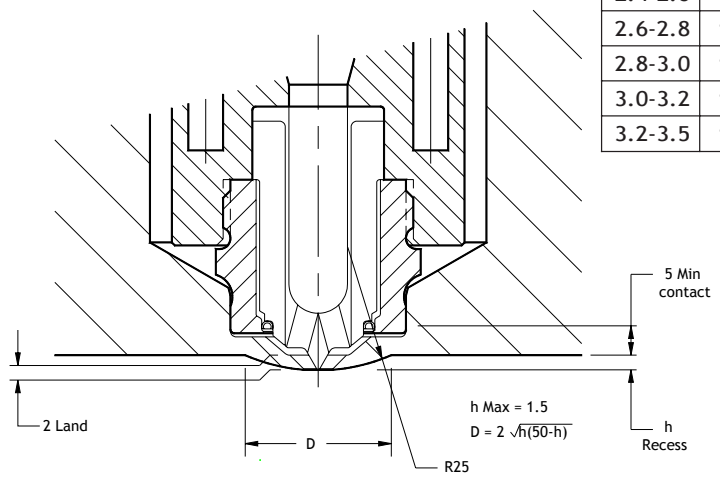
Conical Recess		
Orifice	h	D
1.0	0.59	15.1
1.5	0.76	15.7
2.0	0.93	16.3
2.5	1.09	16.8
3.0	1.26	17.4
3.5	1.43	18.0



Conical Recess

Values in tables are for materials not having glass fibers. Consult Synventive for vestige height when using glass fillers.

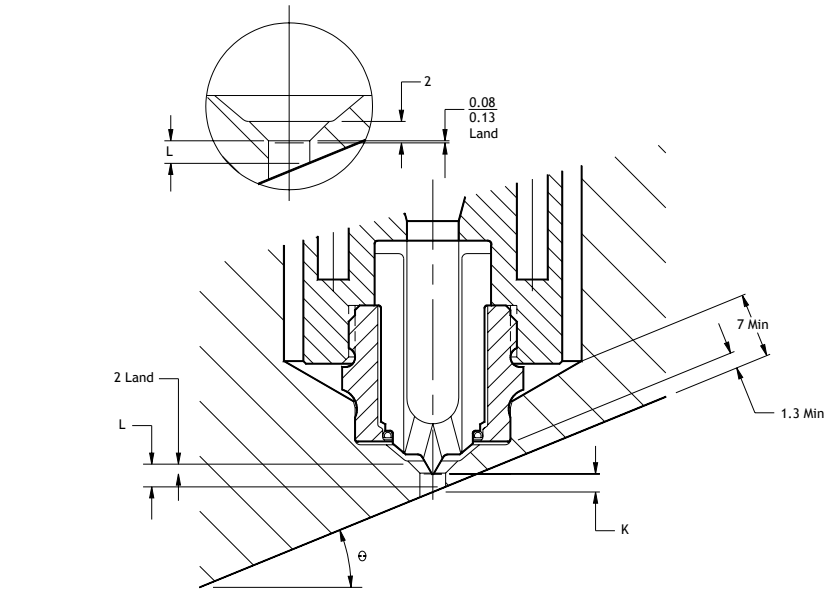
Spherical Recess			
Orifice	h	d	D
1.0-1.2	0.65	1.45	11.33
1.2-1.4	0.72	1.65	11.91
1.4-1.6	0.79	1.85	12.47
1.6-1.8	0.86	2.05	13.00
1.8-2.0	0.93	2.25	13.51
2.0-2.2	1.00	2.45	14.00
2.2-2.4	1.06	2.65	14.41
2.4-2.6	1.12	2.85	14.80
2.6-2.8	1.18	3.05	15.18
2.8-3.0	1.26	3.25	15.67
3.0-3.2	1.32	3.45	16.03
3.2-3.5	1.40	3.65	16.50



Spherical Recess

When gating onto an angled mold contour the vestige height may be increased depending on the angle.

K is the increase in vestige height required to maintain 0.13 land, 2 and/or 7 minimum wall.



$\Theta \leq 6^{\circ}$; $K = \frac{\text{Orifice Dia.}}{2} \text{TAN}\,\Theta$ $\quad L = 0.13$

$6^{\circ} < \Theta \leq 16^{\circ}$; $K = 4.2\text{TAN}\Theta + \frac{1.6}{\text{COS}\,\Theta}\left(\frac{\text{Orifice Dia.} - 1}{2}\right)\text{TAN}\Theta - 2$ $\quad L = 0.13 + K - \frac{\text{Orifice Dia.}}{2}\text{TAN}\,\Theta$

$\Theta > 16^{\circ}$; $K = 12\text{TAN}\Theta + \frac{2}{\text{COS}\,\Theta} - 4.5$ $\quad L = 0.13 + K - \frac{\text{Orifice Dia.}}{2}\text{TAN}\,\Theta$

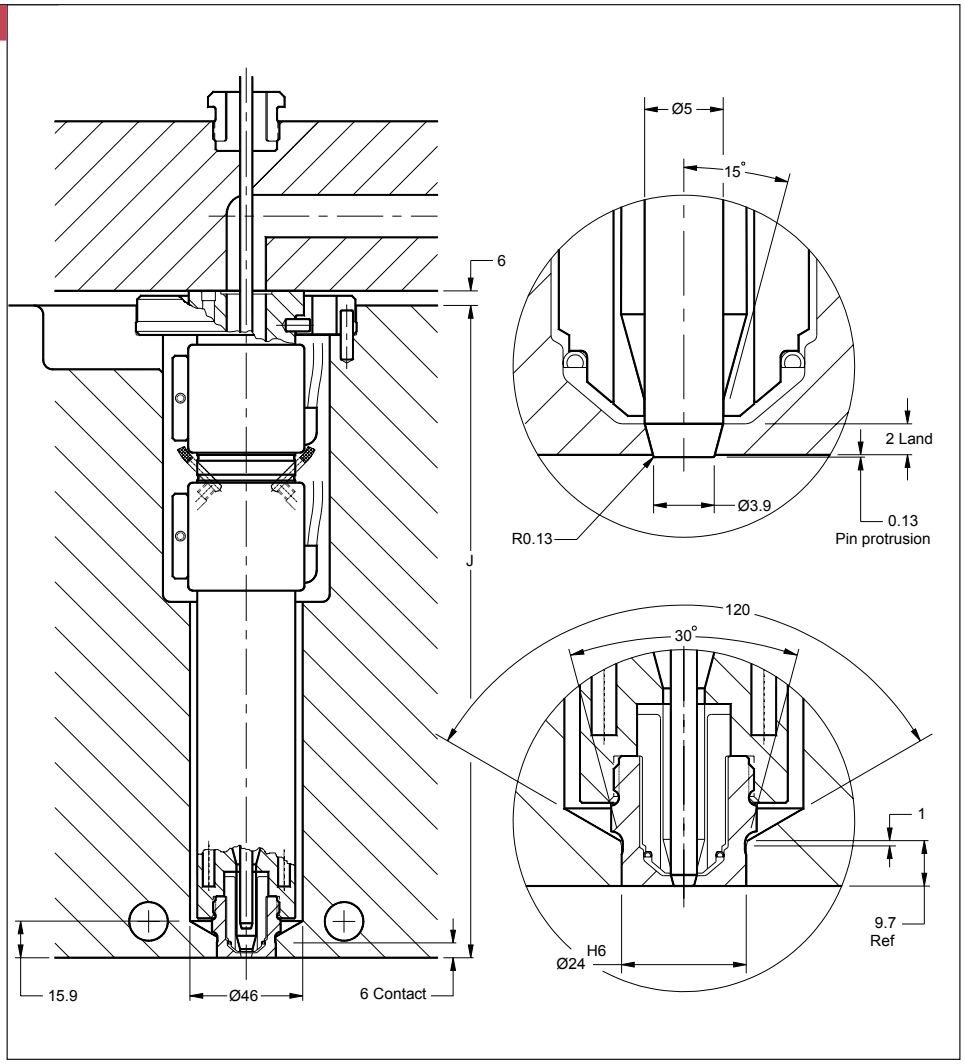
Angled Mold Contour

SR16 VG12 Tapered

Filled and unfilled materials.

Heat pipes for isothermal operation.

Tapered valve pin to eliminate gate flash.



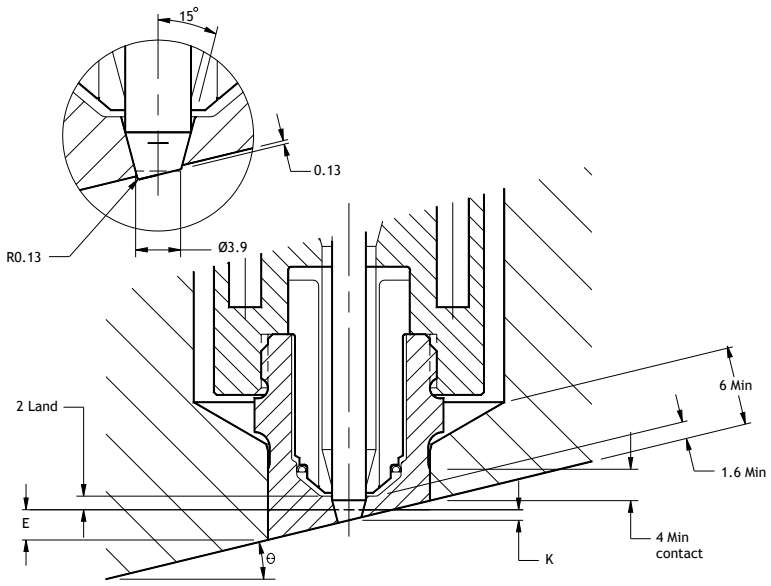
The front face of the tip must be in contact with plastic.

Cooling is required in the gate area.

Heater Style	J Min	J Max	Heater Qty	Watts/ Volts
Band (38 long)	75	149.9	1	500W /240V
Band (51 long)	150	375	2	600W /240V (each)

When gating on an angled mold contour the vestige height may be increased depending on the angle.

K is the increase in land required to maintain 1.6 wall, 6 wall and/or 4 minimum contact.



$\theta \leq 6^\circ$; K= 0 E = 12TAN θ

$6^\circ < \theta \leq 27^\circ$; $K = 4.2\text{TAN}\theta + \frac{1.6}{\cos\theta} - 2$ E = K + 12TANθ

$\theta > 27^\circ$; K= 23TANθ - 9.9 E = K + 12TANθ

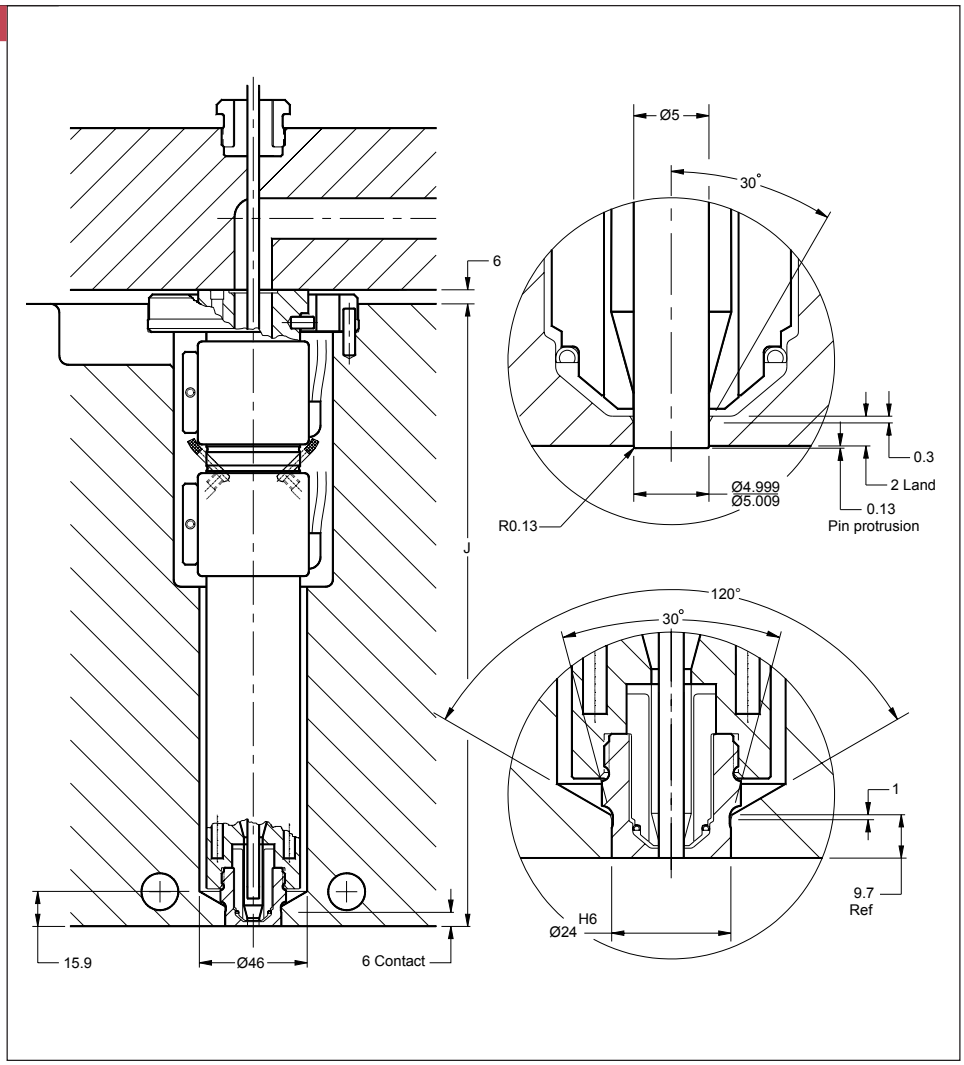
Angled Mold Contour

SR16 VG12S Straight

Filled and unfilled materials.

Heat pipes for isothermal operation.

Straight valve pin in gate for non-adjustable actuators and glass filled materials.



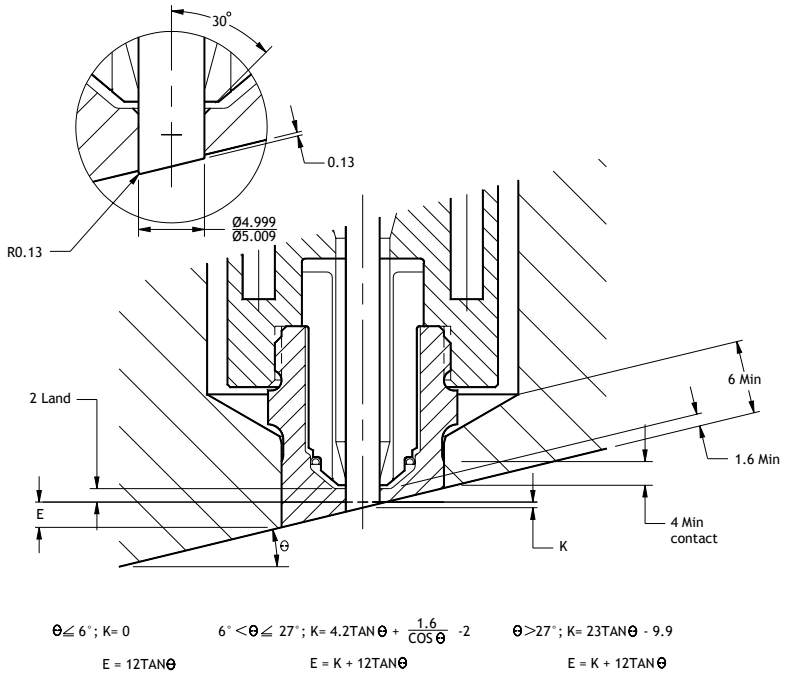
The front face of the tip must be in contact with plastic.

Cooling is required in the gate area.

Heater Style	J Min	J Max	Heater Qty	Watts/ Volts
Band (38 long)	75	149.9	1	500W/240V
Band (51 long)	150	375	2	600W/240V (each)

When gating on an angled mold contour the vestige height may be increased depending on the angle.

K is the increase in land required to maintain 1.6 wall, 6 wall and/or 4 minimum contact.



$\Theta \leq 6^\circ$; K= 0 E = 12TANΘ

$6^\circ < \Theta \leq 27^\circ$; $K = 4.2\text{TAN}\Theta + \frac{1.6}{\text{COS}\Theta} - 2$ E = K + 12TANΘ

$\Theta > 27^\circ$; K= 23TANΘ - 9.9 E = K + 12TANΘ

Angled Mold Contour

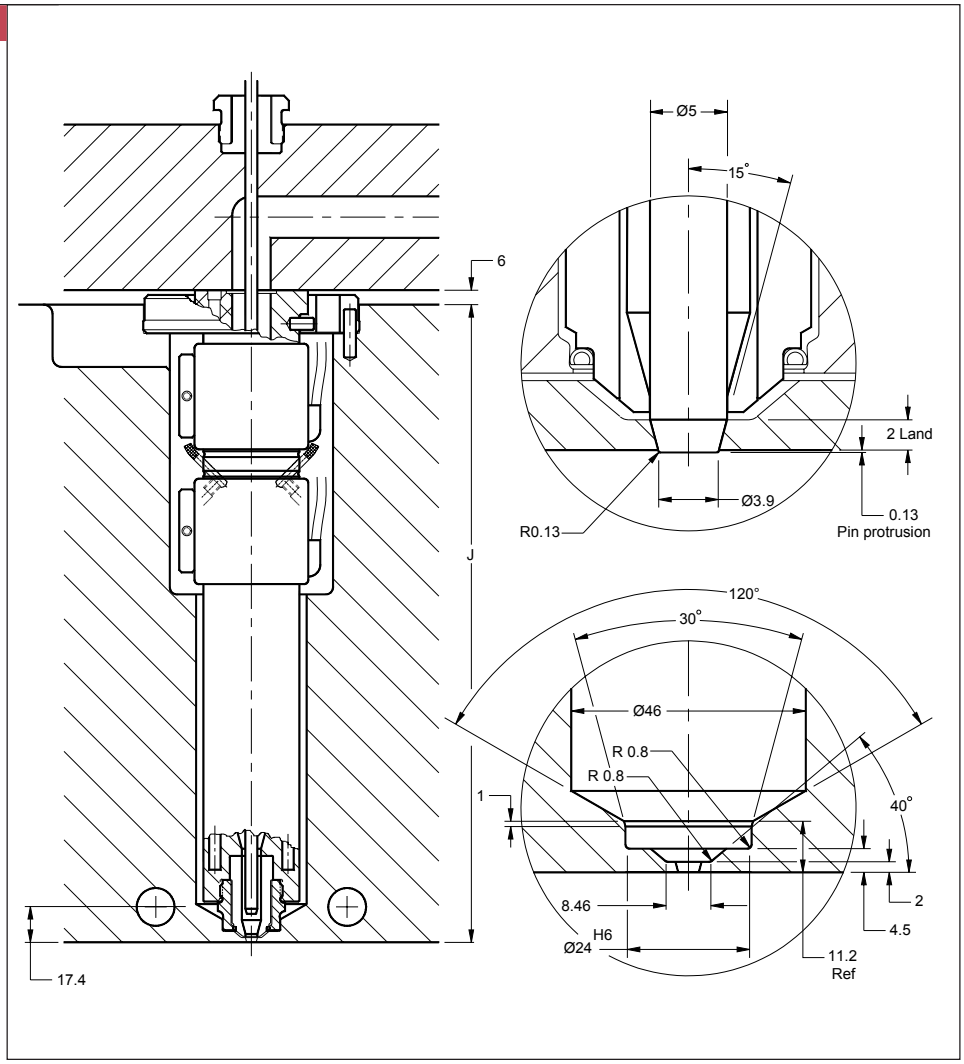
SR16 VG23 Tapered

Filled and unfilled materials.

No tip witness mark on part.

Heat pipes for isothermal operation.

Tapered valve pin to eliminate gate flash.



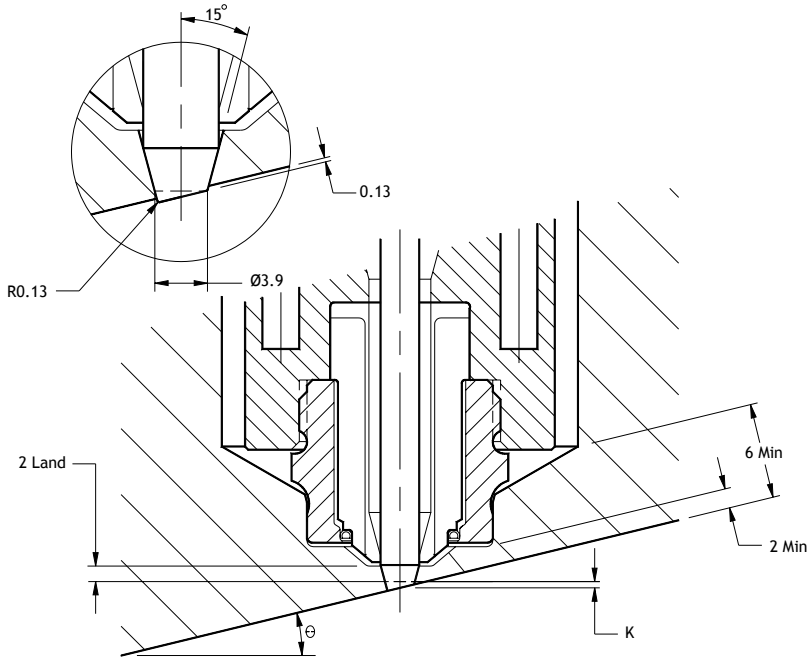
Cooling is required in the gate area.

Heater Style	J Min	J Max	Heater Qty	Watts/ Volts
Band (38 long)	75	149.9	1	500W/240V
Band (51 long)	150	375	2	600W/240V (each)

VG23 Angled Mold Contour

When gating on an angled mold contour the vestige height may be increased depending on the angle.

K is the increase in land required to maintain 1.6 wall, 2 wall and/or 6 wall.



$\Theta \leq 6^\circ$; K= 0 $6^\circ < \Theta \leq 16^\circ$; $K = 4.2\tan\Theta + \frac{1.6}{\cos\Theta} - 2$ $\Theta > 16^\circ$; $K = 12\tan\Theta + \frac{2.0}{\cos\Theta} - 4.5$

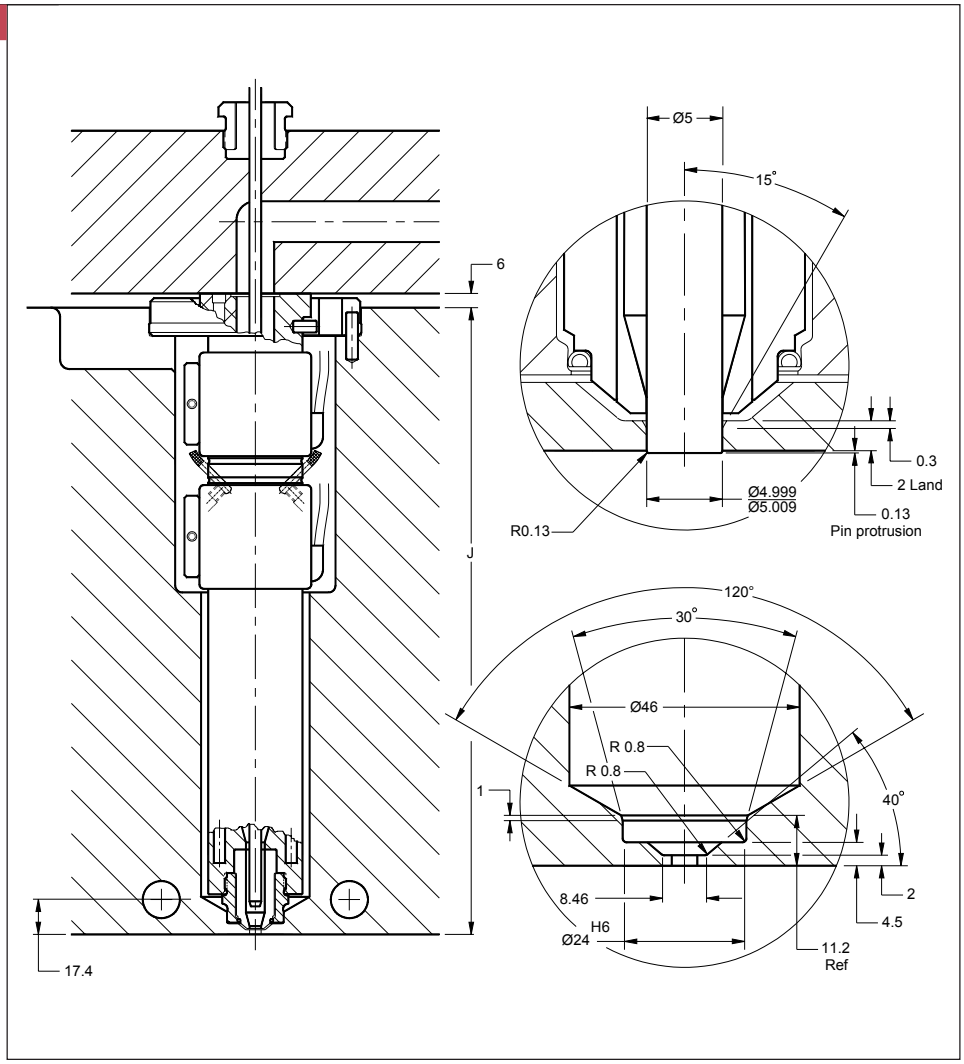
SR16 VG23S Straight

Filled and unfilled materials.

No tip witness mark on part.

Heat pipes for isothermal operation.

Straight valve pin in gate for non-adjustable actuators and glass filled materials.

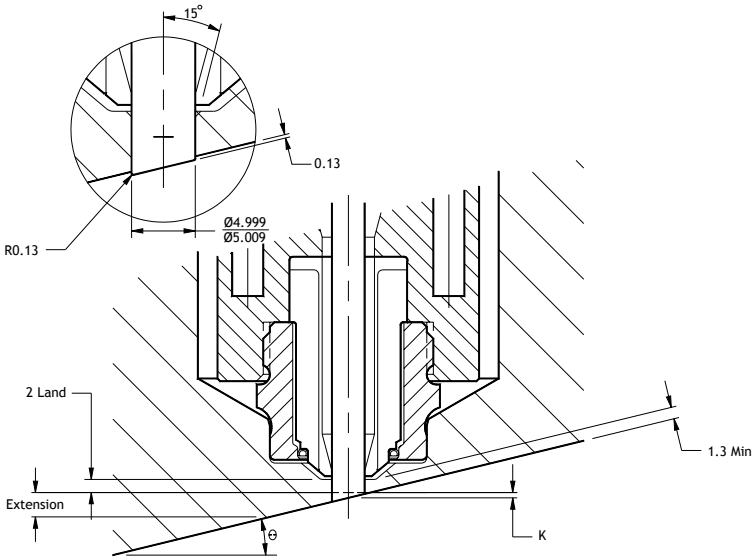


Cooling is required in the gate area.

Heater Style	J Min	J Max	Heater Qty	Watts/ Volts
Band (38 long)	75	149.9	1	500W /240V
Band (51 long)	150	375	2	600W /240V (each)

When gating onto an angled mold contour the vestige height may be increased depending on the angle.

K is the increase in land required to maintain 1.6 wall, 2 wall and/or 4.0 minimum wall.



$\Theta \leq 8^\circ$; K= 0

E = 13TAN Θ

$L = 2 - \frac{\text{Orifice Dia.}}{2}$ TANΘ

$\Theta > 8^\circ$; $K = 4.75\text{TAN}\,\Theta + \frac{1.3}{\text{COS}\,\Theta} - 2$

E = K + 13TAN Θ

$L = 2 + K - \frac{\text{Orifice Dia.}}{2}$ TANΘ

Angled Mold Contour