A1TN

HEATLOCK®

A1TN Assembly Instructions

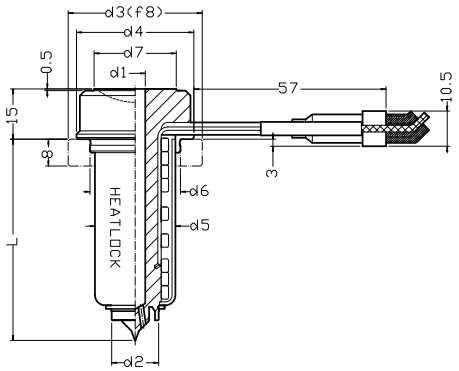
Features:
The maximum permitted contact force from Machine nozzle is 4 Mpa. The A1TN series can be designed for a single nozzle application or a multi-drop application utilizing a hot runner manifold.

The coil heater is designed to provide uniform heat distribution along the length of the nozzle. A concentration of heater windings at both ends of the nozzle compensate for heat losses that occur between the nozzle and mould steel.

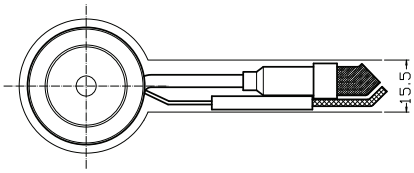
Nozzle bore machining should follow the instructions in drawing 2. Pay attention to length L1. L1 is calculated by adding the nozzle length to the nozzle theoretical heat expansion. Nozzle heat expansion values may be found in table 1.

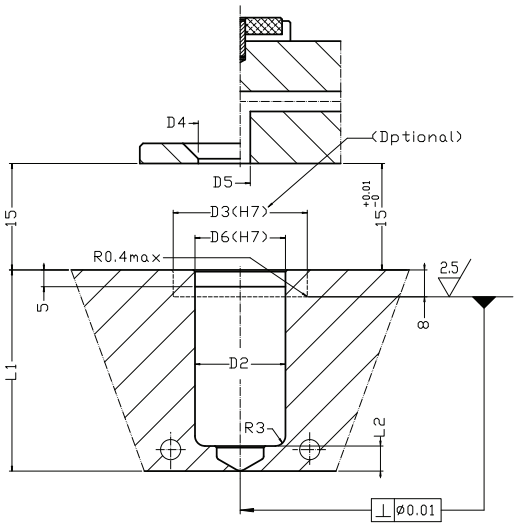
When using the A1TN in a single drop application, make sure that the back of the nozzle does not touch the locating ring. Contact with the locating ring will allow heat from the nozzle to dissipate into the mold.

If the force at which the machine nozzle is pressed against the sprue bushing is greater than that caused by the injection force on the front area of the bushing, no additional force is required to keep the bushing in place axially.

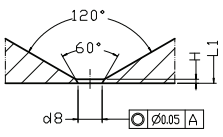


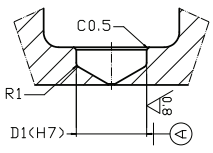
(drawing 1)

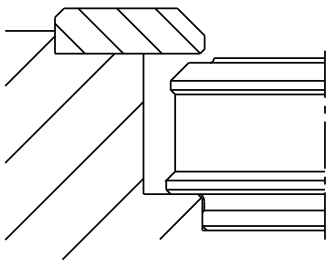




(drawing 2)







(drawing 3)

A1TN Series (mm)

Size	L	L1	d1	d2	d3	d4	d5	d6	d7	d8	L2	D1	D2	D3	D4	D5	D6	H
A1TN1040	40	40.11	4	11	C30 T30	29	20	23	18	≥0.6	6	11	23	C30 T30	20	6	23	0.2
A1TN1050	50	50.13																
A1TN1060	60	60.15																
A1TN1080	80	80.19																
A1TN1100	100	100.23																
A1TN1120	120	120.26																
A1TN2040	40	40.08	6	14	C40 T36	35	24	27	24.5	≥0.8	7.5	14	27	C40 T36	26.5	6	27	0.2
A1TN2060	60	60.16																
A1TN2080	80	80.20																
A1TN2100	100	100.24																
A1TN2120	120	120.28																
A1TN2140	140	140.31																
A1TN2160	160	160.35																
A1TN3060	60	60.17	9	19	C62 T50	48	34	39	32	≥1.2	9.5	19	39	C62 T50	34	9	39	0.3
A1TN3080	80	80.21																
A1TN3100	100	100.25																
A1TN3120	120	120.29																
A1TN3140	140	140.32																
A1TN3160	160	160.36																
A1TN3180	180	180.40																
A1TN4080	80	80.21	14	25	C56 T54	52	38	44	34.5	≥1.8	10.5	25	44	C56 T54	36.5	14	44	0.4
A1TN4100	100	100.25																
A1TN4120	120	120.29																
A1TN4140	140	140.33																
A1TN4160	160	160.37																
A1TN4180	180	180.40																
A1TN4200	200	200.44																

** D3 Dimension: T is Titanium

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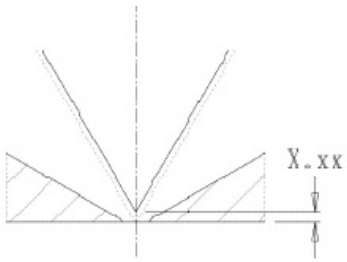
Length of nozzle

Heat expansion of the nozzle must be considered in order to ensure minimum vestige on the part. Expansion values (X.xx) for various temperatures and nozzle lengths are illustrated in the table below:

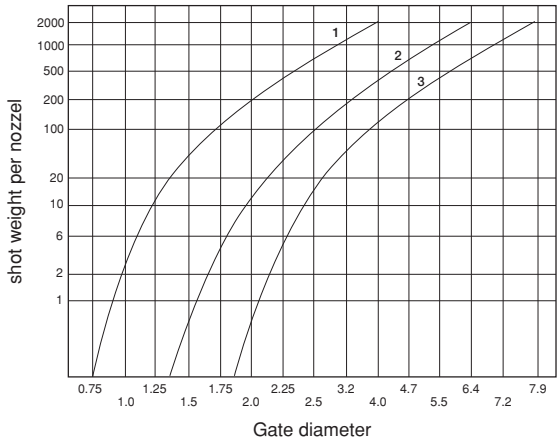
Length Expansion (L1 = L + X.XX) (mm)

T \ L	40	60	80	100	120	140	160	180	200
200	0.08	0.12	0.17	0.21	0.25	0.29	0.33	0.37	0.41
250	0.11	0.16	0.21	0.26	0.32	0.37	0.42	0.48	0.53
300	0.13	0.19	0.26	0.32	0.39	0.45	0.52	0.58	0.64
350	0.15	0.23	0.30	0.38	0.46	0.53	0.61	0.68	0.76

(table 1)



Gate diameter



1. low viscosity :PS PE PP
2. medium viscosity :ABS SAN PA POM
3. high viscosity: PC PMMA

Note: for filled materials ,gate diameter should increase 20%

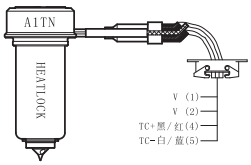
The typical gate diameter is 2mm and can be increased to 5mm. The taper angle is 1.5°.
The diagram above is a guideline for gate diameters need ed for various plastics and shot weights.

Note: If the gate diameter is too small, an unnecessarily high bushing temperature will have to be set for the gate not to freeze between shots. The suggested figures are approximate. Gate dimensions may be influenced by the shape of the part and the design of the mould, etc.

The balance between shot weight, injection speed, mould temperature, temperature opposite the gate, cooling around the gate, and injection pressure are all factors that affect gate size. A small gate freezes quicker than a large gate. When injection moulding with very short cycle times and short injection times, it may be necessary to design gate cooling so that the gate area does not overheat.

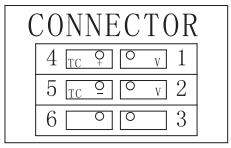
If the sprue bushing is feeding a runner which has a gate into a cavity, it may be suitable to make the bushing gate larger than actually necessary in order to reduce pressure drop and shear. If an electric sprue bushing is used, this will reduce the length of flow in cold steel therefore allowing the reduction of the cross section of the cold runner. This is important in order to get the shortest possible cycle time. Start with a smaller gate than indicated in the table.

Wiring instructions



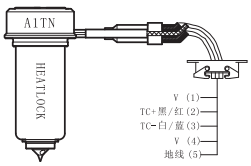
Attention: Only connectors designed to match the temperature Controller are to be used.
Heater and T/C wiring must not be connected in parallel.

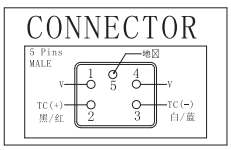
6 Pin Connector



HEATLOCK connections as per illustration at right:
1. connect (1)(2) with heater.
2. connect T/C wire (black/red) with (4).
3. connect T/C wire (white/blue) with (5).
4. connect mould with ground wire & insert.

5 Pin Connector





HEATLOCK connections as per illustration at right:
1. connect (1)(4) with heater.
2. connect T/C wire (black/red) with (2).
3. connect T/C wire (white/blue) with (3).
4. connect mould with ground wire & insert.

Instructions for replacement of heater or T/C

Attention: For best performance use HEATLOCK original components.

Disassembly:
1. open lock ring.
2. slide reflector off of nozzle.
3. remove adhesive tape from heater & T/C .
4. carefully slide heater off of nozzle.

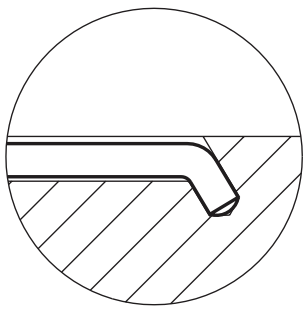
Assembly

If necessary, replace T/C by inserting new T/C into small hole at the end of slot. Ensure that the tip is in full contact with the bottom of the bore before bending the T/C along the slot. Install heater onto nozzle ensuring that the T/C is not displaced. Bundle the heater and T/C together using high temperature adhesive tape.

When reassembling the tip to the nozzle body or installing a replacement tip, please use the torque settings provided in Table 2.

Nozzle assembly torque	
Size No.	Torque (N-m)
size1	15
size2	20
size3	25
size4	30

(table 2)



If there are any problems encountered during assembly, please call: (86) 769 8383 5600.

Please note: Max temperature for HBM-CDC tips is 430C