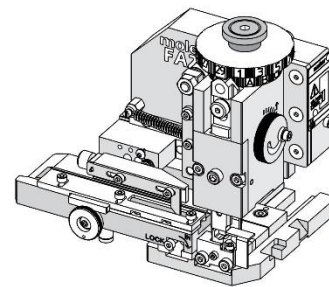**Order Number
213069-1600**

molex®

Application Tooling Specification

FEATURES

- Applicator designed to industry-standard mounting and 135.80mm (5.346") shut height
- Quick setup time; plus, the crimp height, track and feed adjustments can be set without removing the applicator from the press
- Fine adjustment allows users to achieve target with little effort by adjusting in increments of 0.015mm (.0006") for conductor crimp height and 0.025mm (.001") for insulation height
- Fine adjustment of the bend is achieved using the bend adjust dial
- Independent adjustment rings allow users to quickly adjust the conductor or insulation crimp height without affecting each other
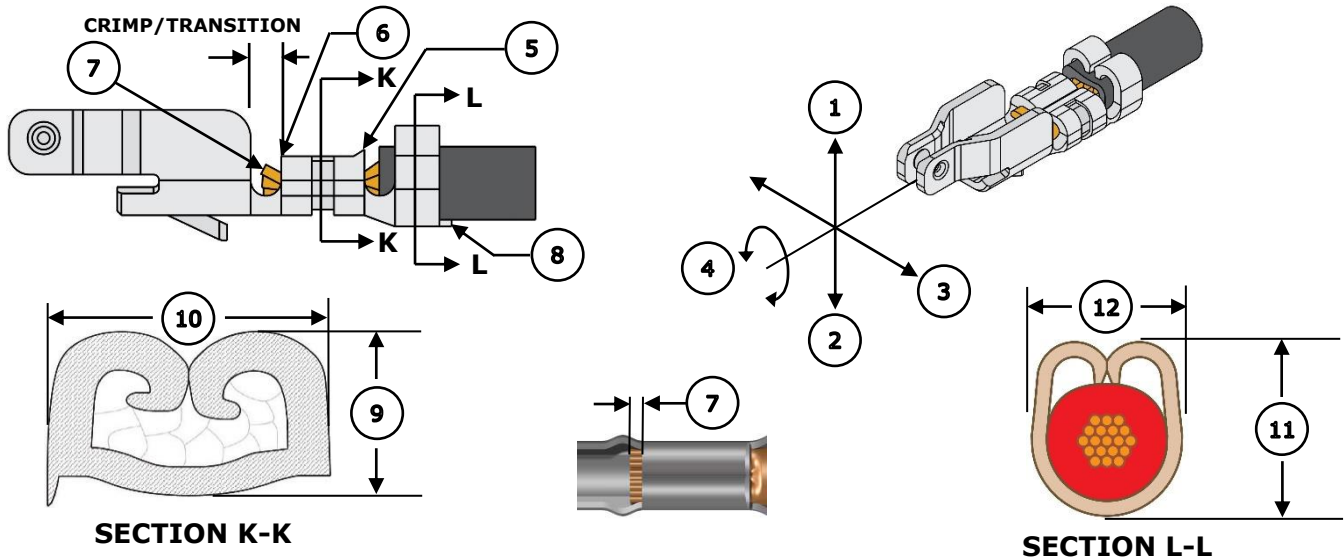- Directly adapts to most automatic wire processing machines

SCOPE

Products: Pico-EZmate 1.20mm Pitch Wire-to-Board Crimp Terminals, 28-30 AWG.

Terminal Series No.	Terminal Order No.	Wire Size		Insulation Diameter				Strip Length	
				IPC/WHMA-A-620 (1)		Terminal (2)			
		AWG	mm²	mm	In.	mm	In.	mm	In.
◇ 78172	78172-0410	28-30	0.05-0.079	0.50-0.70	.020-.028	0.60-.070	.024-.028	0.90-1.30	.035-.051
	78172-0411								
	78172-0420								
◇ Oiler (63801-7240) required for this applicator because of gold plating on terminal.									
(1) To achieve optimum IPC/WHMA-A-620 insulation crimps, use this insulation OD range. **(2)** Overall insulation OD specification for terminal.									

CAUTION: Lubrication must be used to prevent terminals from sticking in the conductor punch. Use 63801-7240 oiler or equivalent.

DEFINITION OF TERMS

SECTION K-K

SECTION L-L

CRIMP SPECIFICATIONS

| Feature	Requirement						
1. Bend Up	3° Max						
2. Bend Down	3° Max						
3. Twist	2° Max						
4. Roll	3° Max						
5. Bell Mouth Rear	0.05-0.15mm (.002-.012")						
6. Bell Mouth Front	Not Applicable						
7. Conductor Brush	0.15-0.70mm (.000-.020")						
8. Cut-Off Tab	0.10mm (.004") Max						
Conductor Crimp	**Terminal Order No.**	**Wire Size**		**9. Crimp Height**		**10. Crimp Width (Ref)**	
	78172-0410 78172-0411	28 AWG	0.079mm²	0.44-0.48mm	.017-.019 in.	0.85mm	.033 in.
	78172-0420	30 AWG	0.05mm²	0.40-0.44mm	.016-.017 in.	0.85mm	.033 in.
Insulation Crimp **SEE NOTE**	**Terminal Order No.**	**Wire Size**		**11. Crimp Height (Ref)**		**12. Crimp Width (Ref)**	
	78172-0410 78172-0411	28 AWG	0.079mm²	0.77-0.87mm	.030-.034 in.	0.85mm	.033 in.
	78172-0420	30 AWG	0.05mm²	0.72-0.80mm	.028-.031 in	0.85mm	.033 in.
Pull Force	**Terminal Order No.**	**Wire Size**		**Minimum Pull Force**			
	78172-0410 78172-0411	28 AWG	0.079mm²	10 N	2.2 lbs.	To be measured with no influence from the insulation crimp.	
	78172-0420	30 AWG	0.05mm²	5 N	1.1 lbs.		

NOTES

General Notes

1. Molex recommends that an extra perishable tooling kit be maintained at your facility.
2. Verify tooling alignment by hand cycling the press and applicator before crimping under power. Check that all screws are tight.
3. Slugs, terminals, dirt and oil should be kept clear of the work area.
4. Wear safety glasses when operating or maintaining the applicator.
5. For recommended maintenance, refer to the FA2 manual (TM-638080200).
6. Molex recommends crimping standard copper wire only.
7. Lubrication must be used when crimping these terminals to prevent terminal from sticking in the conductor punch. Use 63801-7240 oiler or equivalent.

Insulation Crimp Note

After crimping, the insulation crimp grips may lean slightly forward (toward the conductor crimp), as shown below. This condition does not affect the integrity of the conductor crimp or insulation crimp.

SLIGHT LEAN
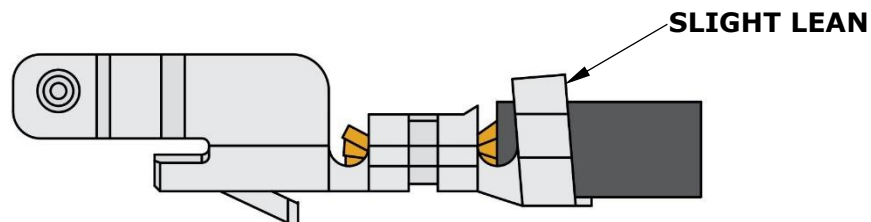
WARNINGS

CAUTION: This applicator must be installed in a press with a standard shut height of 135.80mm (5.346"). Tooling damage could result at a lower setting.
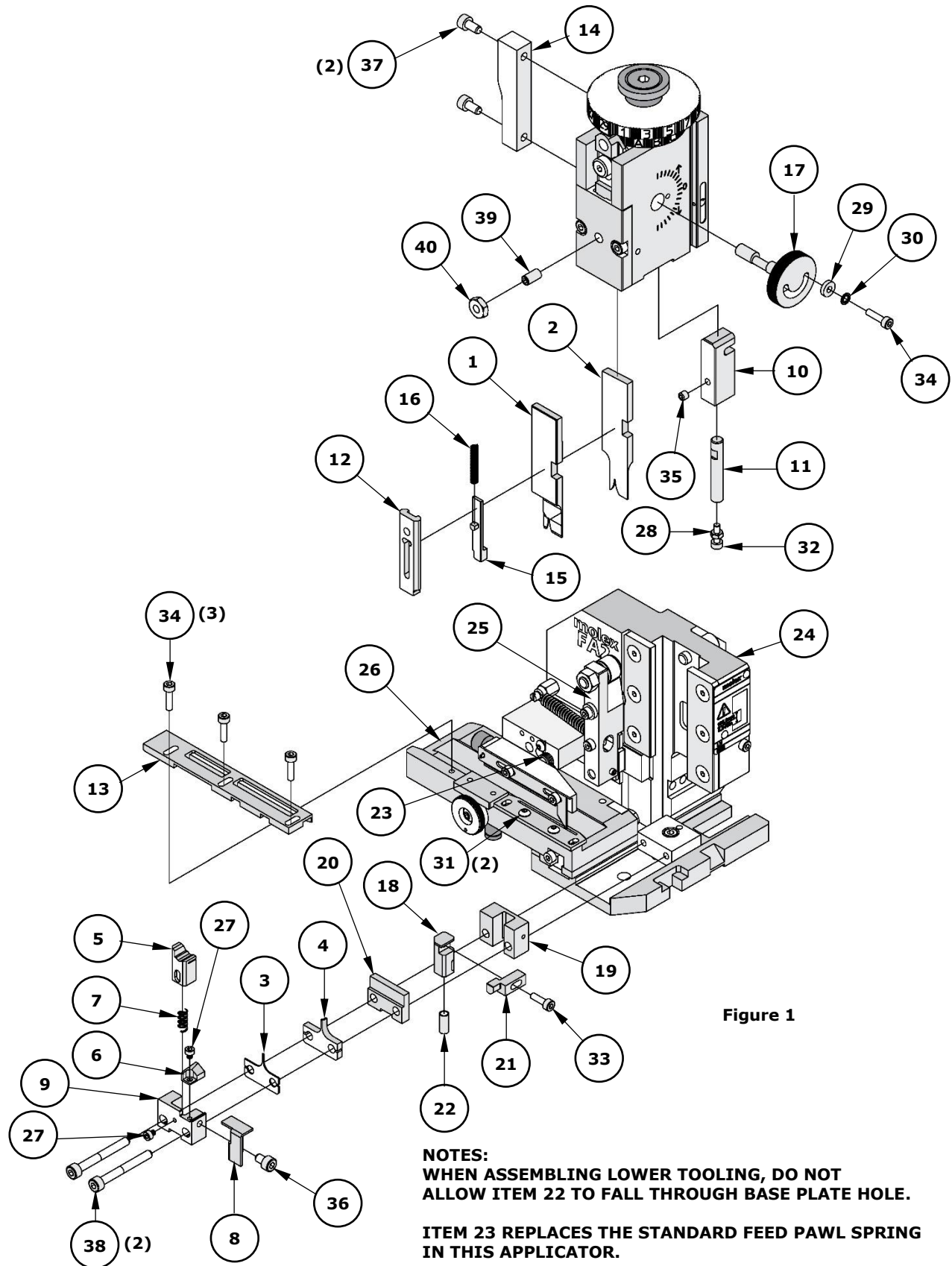
CAUTION: To prevent injury, never operate this applicator without the guards supplied with the press or wire-processing machine in place. Reference the press or wire processing manufacturer's instruction manual.

CAUTION: Molex tooling crimp specifications are valid only when used with Molex terminals and tooling manufactured by Molex and sold by Molex or authorized distributors ("Molex Tooling"). When using tooling other than Molex Tooling with Molex-specific connector systems listed in our ATS documents, the Molex Tooling qualification does not apply, and the responsibility for full qualification of the connector system is that of the customer. Molex accepts no liability for connector performance or tooling support where tooling other than Molex Tooling is used or where Molex Tooling is modified.

PARTS LIST

Item	Order No.	Engineering No.	Description	Quantity
			FA2 Applicator 213069-1600	
			Perishable Tooling	
	213069-1670	213069-1670	Tool Kit (All "Y" Items)	Ref
1	200220-0801	200220-0801	Insulation Punch	1 Y
2	200216-0801	200216-0801	Conductor Punch	1 Y
3	200221-0802	200221-0802	Insulation Anvil	1 Y
4	200217-0801	200217-0801	Conductor Anvil	1 Y
5	63443-0136	63443-0136	Cut-Off Plunger	1 Y
6	63443-0119	63443-0119	Cutting Insert	1 Y
			Non-Perishable Components	
7	11-24-1067	4996-4	Cut-Off Plunger Spring	1
8	63443-0117	63443-0117	Front Scrap Chute	1
9	63443-0118	63443-0118	Front Plunger Retainer	1
10	63443-7403	63443-7403	Hold Down Block	1
11	63600-5775	63600-5775	Nose Hold Down Shank	1
12	63443-2807	63443-2807	Front Plunger Striker	1
13	63443-4758	63443-4758	Terminal Guide	1
14	63443-4406	63443-4406	Feed Cam	1
15	63443-2903	63443-2903	Wire Hold Down Plunger	1
16	63600-0021	63600-0021	Compression Spring	1
17	63808-0229	63808-0229	Bend Adjust Dial	1
18	63443-7315	63443-7315	Terminal Hold Down Plunger	1
19	63443-7316	63443-7316	Terminal Hold Down Retainer	1
20	63443-7317	63443-7317	Terminal Hold Down Retainer Plate	1
21	200213-0901	200213-0901	Terminal Hold Down	1
22	63700-0992	63700-0992	Terminal Hold Down Plunger Spring	1
23	203045-0030	203045-0030	Torsion Spring	1
			Frame	
24	63808-0200	63808-0200	Applicator Core	1
25	63808-0197	63808-0197	Mechanical Feed Assembly	1
26	63808-0191	63808-0191	Track Assembly	1
			Hardware	
27	—	—	M2.5 x 3 SHCS	2*
28	—	—	M3 Hex Nut	1*
29	—	—	M3 Flat Washer Hard	1*
30	—	—	M3 Inner Tooth Lock Washer	1*
31	—	—	M3 x 6 BHCS	2*
32	—	—	M3 x 8 SHCS	1*
33	—	—	M3 x 10 SHCS	1*
34	—	—	M3 x 12 SHCS	4*
35	—	—	M4 x 4 SSS	1*
36	—	—	M4 x 6 SHCS	1*
37	—	—	M4 x 8 SHCS	2*
38	—	—	M4 x 35 SHCS	2*
39	—	—	#10-32 by 1/2"Long Flat Point SSS	1*
40	—	—	#10-32 Hex Jam Nut	1*

*Fastener parts can be purchased through most industrial suppliers by using the description in the table above.

Doc. No: 2130691600
Revision: F
Release Date: 03-18-20
Revision Date: 10-13-20
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ASSEMBLY DRAWING

Figure 1

NOTES:
**WHEN ASSEMBLING LOWER TOOLING, DO NOT
ALLOW ITEM 22 TO FALL THROUGH BASE PLATE HOLE.**

**ITEM 23 REPLACES THE STANDARD FEED PAWL SPRING
IN THIS APPLICATOR.**

FACTORY SETTINGS

Feed Pawl Assembly

The FA2 applicator number 213069-1600 ships with the following factory settings. See Figure 2:

- The feed pawl shaft and M3 screw that holds the feed pawl spring are in position 2.
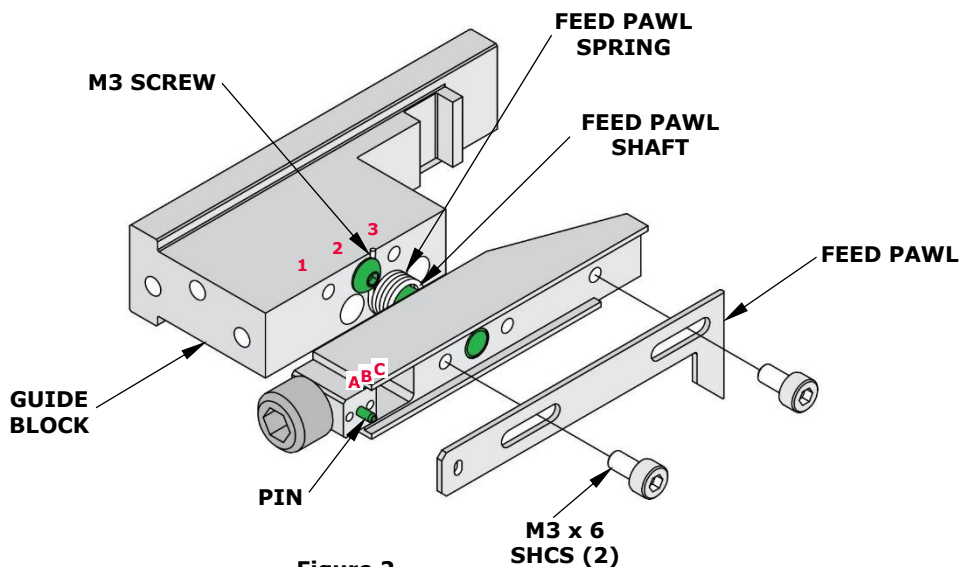- The pin is in position B.

Figure 2

Note: Each applicator is configured and tested by Molex prior to shipping, and the above settings were used to produce the included sample crimps.

Bend Adjust Dial/Ram Assembly

Indicates item number on the Parts List and Assembly Drawing
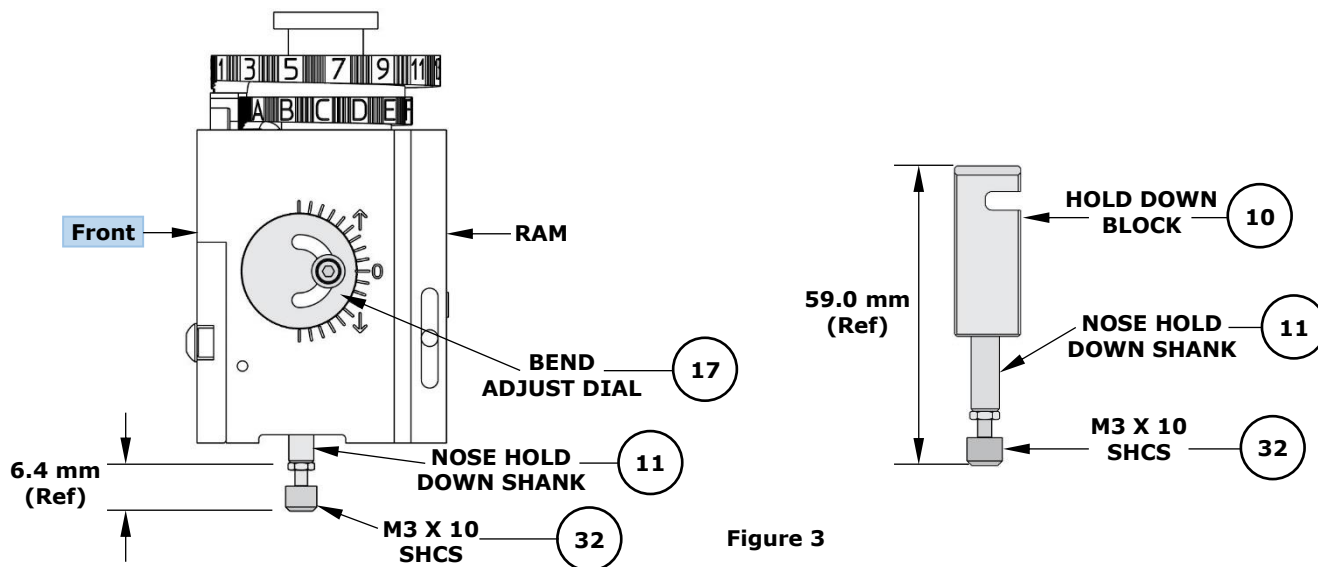
Figure 3

Note: The above dimensions were measured during setup and are included as a reference only. Additional adjustments may be required before crimping for production.

Mounting Datum Location

This applicator was assembled and tested by Molex with the mounting datum in the location shown in Figure 4. Do not remove the mounting datum.
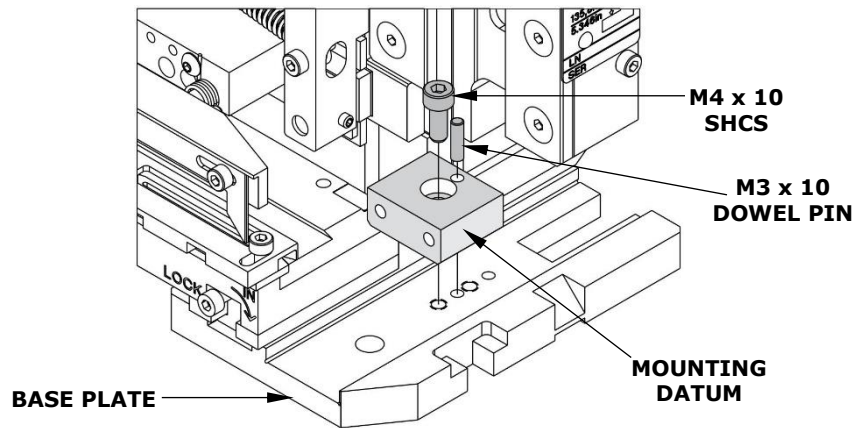

Figure 4

Application Tooling Support

Phone: (402) 458-TOOL (8665)
E-Mail: applicationtooling@molex.com
Website: www.molex.com/applicationtooling