

**AM-63231**

**11-39-0119**

TOOL KIT, 70156 CONNECTOR

**AM-63232**

**11-20-1317**

MANUAL ASSEMBLY PRESS  
FOR 70156 CONNECTOR

OPERATING AND SERVICE  
INSTRUCTION MANUAL

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MOLEX INCORPORATED, 2222 WELLINGTON COURT, LISLE ILLINOIS (312) 969-4550  
APPLICATION TOOLING DIVISION, 1150 E. DIEHL ROAD, NAPERVILLE IL 60540

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## **I. DESCRIPTION**

THE **11-39-0119 (AM-63231) TOOL KIT, 70156 CONNECTOR** HAS BEEN DESIGNED TO TERMINATE #16-22 AWG WIRE SIZES TO THE **MOLEX FOUR CIRCUIT 70156 FAMILY OF CONECTORS** WHEN MOUNTED IN THE **11-31-6356 (AM-60026) BASIC PRESS**. BOTH MAY BE OBTAINED TOGETHER AS A **11-20-1317 (AM-63232) MANUAL ASSEMBLY PRESS FOR 70156 CONNECTOR** OR THE TOOLING ALONE MAY BE ORDERED IF THE PRESS IS ALREADY AVAILABLE.

TERMINATION IS DONE BY THE INSULATION DISPLACEMENT METHOD AS EITHER A FEED-TO ASSEMBLY WITH THE CONNECTOR AT THE END OF THE HARNESS OR AS A FEED THROUGH ASSEMBLY WHERE THE CONNECTOR IS WITHIN THE HARNESS AND THE WIRES EXTEND BEYOND ON BOTH SIDES. CONNECTORS MAY BE "DAISY-CHAINED" IN THIS MANNER, MAKING HARNESSES CONSISTING OF AS MANY AS DESIRED WITHOUT THE NEED FOR DOUBLE TERMINATIONS.

## II. OPERATION

REFER TO TOOL KIT ASSEMBLY DRAWINGS AND PARTS LISTS.

BOTH THE CONNECTORS AND WIRES ARE LOCATED BY AND HELD FOR TERMINATION IN THE "NEST", WHICH IS THE LARGEST COMPONENT OF THE TOOL KIT. IT MOUNTS ON THE PRESS BASE PLATE AND THE LOCATING PARTS CALLED "STOPS" FASTEN TO IT.

THE FRONT HOUSING STOP IS A SMALL PLATE WHICH CONTAINS TWO PINS PROTRUDING IN OPPOSITE DIRECTIONS FOR POLARIZATION OF THE CONNECTORS. DEPENDING ON THE MOUNTING POSITION OF THE STOP, ONE OF THE PINS WILL ENCROACH IN THE NEST AREA TO ALLOW ONLY THE CHAMFERED CORNER OF THE CONNECTOR HOUSING TO BYPASS IT IN NEST INSERTION.

ASSEMBLY OF A HARNESS SHOULD BE STARTED WITH A POLARIZING PIN IN THE OPERATOR'S LEFT SIDE OF THE NEST WHEN FACING THE FRONT OF THE PRESS. A CONNECTOR IS TO BE FULLY SEATED IN THE NEST WITH THE CHAMFERED CORNERS FACING LEFT. THE WIRES ARE TO BE PLACED IN THE GUIDE SLOTS, POSITIONED FROM THE RIGHT SIDE BY EITHER THE FEED-TO WIRE STOP OR SOME OTHER SUITABLE GAGING METHOD FOR FEED THROUGH WIRES. IF THE FIRST CONNECTOR ON A HARNESS TYPE REQUIRES THE FEED-TO WIRE STOP, ALL OF THOSE HARNESS FIRST CONNECTORS MAY BE TERMINATED BEFORE CHANGING THE SET UP.

TO TERMINATE THE WIRES, CYCLE THE PRESS AS DESCRIBED IN BASIC PRESS OPERATING INSTRUCTIONS. THIS WILL FORCE THE WIRES DOWN INTO THE TERMINAL IDT SLOTS, SLICING THROUGH THE INSULATION TO GIVE METAL TO METAL CONTACT FOR ELECTRICAL CONDUCTIVITY AND PHYSICAL RETENTION. THE TERMINATED CONNECTOR MAY THEN BE LIFTED OUT OF THE NEST AND THE HARNESS MAY BE REMOVED OR REPOSITIONED WITH ANOTHER CONNECTOR AS REQUIRED.

FOR FEED THROUGH TERMINATION, THE FEED-TO STOP MUST BE REMOVED. (IT MAY BE STORED AT THE LEFT REAR CORNER OF THE NEST, IF DESIRED, FOR LOSS PREVENTION.) ALL SUCH TERMINATIONS MAY BE DONE BEFORE REPLACING THE FEED-TO STOP TO ITS USE POSITION.

IF THE LAST CONNECTORS OF A HARNESS TYPE ARE TO BE FEED-TO TERMINATED, THE STOP MUST BE IN ITS USE POSITION AND THE FRONT HOUSING STOP MUST BE REVERSED TO PROVIDE AN OPPOSITE POLARIZATION OF THE CONNECTOR. THE PREVIOUSLY TERMINATED PORTION OF THE HARNESS IS TO BE REVERSED, WITH THE WIRE ENDS POSITIONED BY THE FEED-TO WIRE STOP.

TO COMPLETE THE ASSEMBLY, EACH CONNECTOR REQUIRES A TERMINATION COVER OF A MATCHING STYLE TO PROTECT THE TERMINATION AND PROVIDE STRAIN RELIEF. THESE MAY BE ASSEMBLED BY HAND.

**III. INSTALLATION AND SET UP OF TOOLING IN BASIC PRESS**  
INSTRUCTIONS USE DESCRIPTIVE PART NAMES ONLY. REFER TO ASSEMBLY DRAWINGS AND PARTS LISTS FOR PICTORIAL ORIENTATION AND PART NO. (ORDERING NO.) INFORMATION. ALSO REFER TO THE BASIC PRESS SECTION.

THE TOOLING IS EXPECTED TO BE PRE-ASSEMBLED IN TWO GROUPS:

- 1) UPPER TOOLING, CONSISTING OF THE WIRE INSERTION BLADE AND ITS ASSOCIATED MOUNTING PARTS ALL OF WHICH ARE TO BE MOUNTED IN THE PRESS RAM AND:
- 2) LOWER TOOLING, CONSISTING OF THE NEST AND LOCATING GUIDES ALL OF WHICH ARE TO BE MOUNTED ON THE PRESS BASE.

STEP 1: FACE RAM SIDE (FRONT) OF PRESS AND WITH WIRE INSERTION BLADE IN FRONT AND LATCH AT REAR, SLIDE UPPER TOOLING UP INTO (RAISED) RAM. PUSH LATCH TO REAR ON CONTACT WITH ADJUSTING SCREW, LIFT TOOLING REMAINDER OF DISTANCE AND RELEASE LATCH TO ENGAGE GROOVE IN SCREW. MAKE SURE TOOLING IS FIRMLY LOCKED BEFORE REMOVING SUPPORT.

STEP 2: BRING RAM TO BOTTOM OF STROKE AND TURN ADJUSTMENT SCREW UNTIL BOTTOM OF BLADE IS 1.200-1.220" ABOVE BASE TO PROVIDE A SAFE STARTING SET UP DIMENSION. (REMEMBER TO LOOSEN SET SCREW FIRST.) RETURN RAM TO TOP.

STEP 3: SET LOWER TOOLING ON PRESS BASE AND SLIDE IN UNTIL HOLD-DOWN SCREWS WITH SPRING SUPPORTED WASHERS ARE ALMOST COMPLETELY SEATED IN SLOTS ON BOTH SIDES OF NEST. UPPER AND LOWER TOOLING SHOULD BE APPROXIMATELY ALIGNED AT THIS POINT.

STEP 4: SLOWLY START LOWERING RAM, SLIDING LOWER TOOLING AS REQUIRED UNTIL GUIDE PINS SMOOTHLY ENGAGE HOLES IN BOTTOM OF RAM. TIGHTEN HOLD DOWN SCREWS. CHECK ALIGNMENT. IF GUIDE PIN ENGAGEMENT IS NO LONGER SMOOTH, REDO THIS STEP UNTIL IT IS.

STEP 5: PLACE A CONNECTOR AND WIRES OF THE GAGE TO BE USED INTO NEST AND CYCLE PRESS. CHECK POSITION OF WIRES IN IDT SLOTS. THE STARTING SET UP SHOULD REQUIRE FURTHER ADJUSTMENT TO PUSH WIRES FULLY TO THE SPECIFIED DEPTH.

THE SPECIFICATION IS:

- 1) WIRES W/ INSULATION O.D. .050-.075" TO BE .050"+/-.010" FROM CENTER OF WIRE TO BOTTOM OF HOUSING SLOT
- 2) WIRES W/ INSULATION O.D. .076-.095" TO TOUCH BOTTOM OF HOUSING SLOT

ADJUST TOOLING SHUT HEIGHT INCREMENTALLY AND CONTINUE TO MAKE AND CHECK TERMINATIONS UNTIL SPECIFICATIONS CAN BE MET APPROXIMATELY TEN CONSECUTIVE TIMES.

STEP 6: AFTER TIGHTENING SETSCREW IN RAM TO HOLD ADJUSTMENT, PRODUCTION OF HARNESES MAY BE STARTED.

#### **IV. BASIC PRESS**

**PHYSICAL DIMENSIONS:**   LENGTH   10-1/2"  
                                  WIDTH     6"  
                                  HEIGHT  21"  
                                  WEIGHT  41 lbs

**MAXIMUM RAM FORCE:**     3000 lbs  
      **RAM STROKE:**     1.690"

**INSTALLATION:** FASTEN THE PRESS TO A STABLE BENCH OR WORK SURFACE. TWO HOLES, SIZED FOR 5/16" DIA. SCREWS ARE PROVIDED IN THE BASE.

**PRESS OPERATION:** TO CYCLE, PULL THE RAM OPERATING HANDLE, ROTATING IT FORWARD AND DOWN TO THE BOTTOM OF ITS STROKE, THEN RETURN IT TO THE STARTING POSITION BY REVERSING THE MOTION.

TO INSURE COMPLETE TERMINATIONS, THE PRESS IS EQUIPPED WITH AN ANTI-BACKUP MECHANISM WHICH FORCES THE RAM TO BE STROKED COMPLETELY TO THE BOTTOM BEFORE IT CAN BE BROUGHT BACK TO THE TOP. IF NEEDED, THE ANTI-BACKUP MAY BE TEMPORARILY DISENGAGED BY LIFTING UP AND HOLDING THE RELEASE LEVER 11-31-7117 (AM-60026-18) LOCATED AT THE TOP, INNER SIDE OF THE L.H. FRAME. THIS WILL ALLOW FREE MOVEMENT OF THE RAM IN EITHER DIRECTION.

THE RAM, 11-31-7105 (AM-60026-6) HAS A FIXED VERTICAL STROKE. TOOLING MOUNTED IN THE RAM IS LOCATED BY IT IN THE HORIZONTAL PLANE BUT IS CONNECTED TO THE RAM ADJUST SCREW 11-31-7106 (AM-60026-7) FOR VERTICAL POSITIONING. THE TOOLING SHUT HEIGHT IS DETERMINED BY ADJUSTING THIS SCREW. AN INDICATOR IS ENGRAVED ON THE FRONT OF THE RAM JUST ABOVE THE SCREW. TURN THE SCREW TOWARD THE "+" SIGN TO INCREASE DEPTH (LOWER SHUT HEIGHT) AND TOWARD THE "-" SIGN TO DECREASE DEPTH (HIGHER SHUT HEIGHT). AN #8-32 SETSCREW ON THE RIGHT SIDE OF THE RAM MUST BE LOOSENED BEFORE ATTEMPTING TO MOVE THE ADJUSTING SCREW AND SHOULD BE RETIGHTENED AFTER ADJUSTMENT TO INSURE POSITION.

THE RAM OPERATING ARM AND HANDLE ASSEMBLY CAN BE REVERSED AS DESIRED FOR LEFT OR RIGHT HAND OPERATION BY REMOUNTING ON THE OPPOSITE SIDE OF THE RAM CAM BY USE OF THE SINGLE 1/4-20 S.H.C.S. FASTENER.

**IV. BASIC PRESS CONT'D.**

**GENERAL MAINTENANCE**

THE FOLLOWING COMPONENTS SHOULD BE KEPT CLEAN AND LUBRICATED SPARINGLY, WITH S.A.E. 10W MOTOR OIL OR EQUIVALENT.

DESCRIPTIVE NAME (FEATURE)	PART (EDP) NO.	ENGINEERING NO.
RAM (ALL FOUR SIDES)	11-31-7105	AM-60026-6
ROLLER	11-31-7108	AM-60026-9
RAM ROLLER BEARINGS	11-31-7109	AM-60026-10
RAM CAM (CAM PATH)	11-31-7110	AM-60026-11
RAM CAM SHAFT	11-31-7111	AM-60026-12
CAM FOLLOWER	11-31-7112	AM-60026-13
ANTI-BACKUP SPROCKET	11-31-7114	AM-60026-15
ANTI-BACKUP PAWL (CATCH & PIVOT)	11-31-7115	AM-60026-16
ANTI-BACKUP RELEASE (PIVOT)	11-31-7117	AM-60026-18
CAM SHAFT BEARINGS	11-31-7127	AM-60026-28
RAM CAM DETENT (BALL)	11-31-7131	AM-60026-32

FOR ILLUSTRATION OF LUBRICATION POINTS, SEE FIGURE 1.  
(FOLLOWING PAGE)

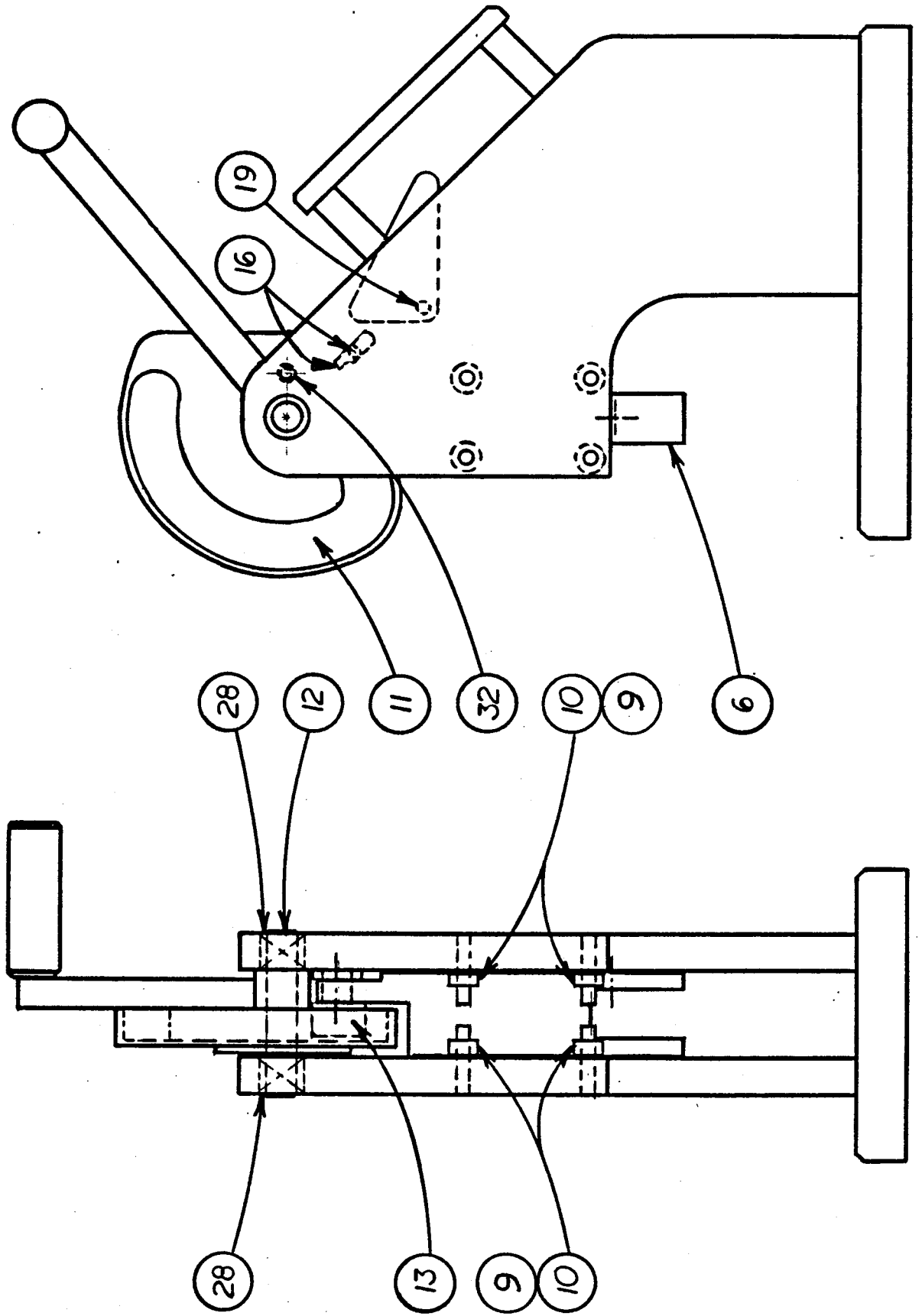
**V. PARTS LISTS AND ASSEMBLY DRAWINGS**  
INCLUDED ARE THE FOLLOWING ASSEMBLIES:

1. TOOL KIT, 70156 CONNECTOR, 11-39-0119 (AM-63231)
2. MANUAL ASSEMBLY PRESS FOR 70156 CONNECTOR, 11-20-1317 (AM-63232)
3. BASIC PRESS, 11-31-6356 (AM-60026)

**NOTE:** IT IS RECOMMENDED THAT THE USER OF THIS TOOLING PURCHASE A SPARE WIRE INSERTION BLADE, PART NO. 11-32-5293 (ENGINEERING NO. AM-63174-9) AS CIRCUMSTANCES MAY CAUSE ITS SUDDEN, CATASTROPHIC FAILURE, HALTING PRODUCTION.



NOTE: USE S.A.E. 10W MOTOR OIL OR EQUIVALENT



LUBRICATION POINTS

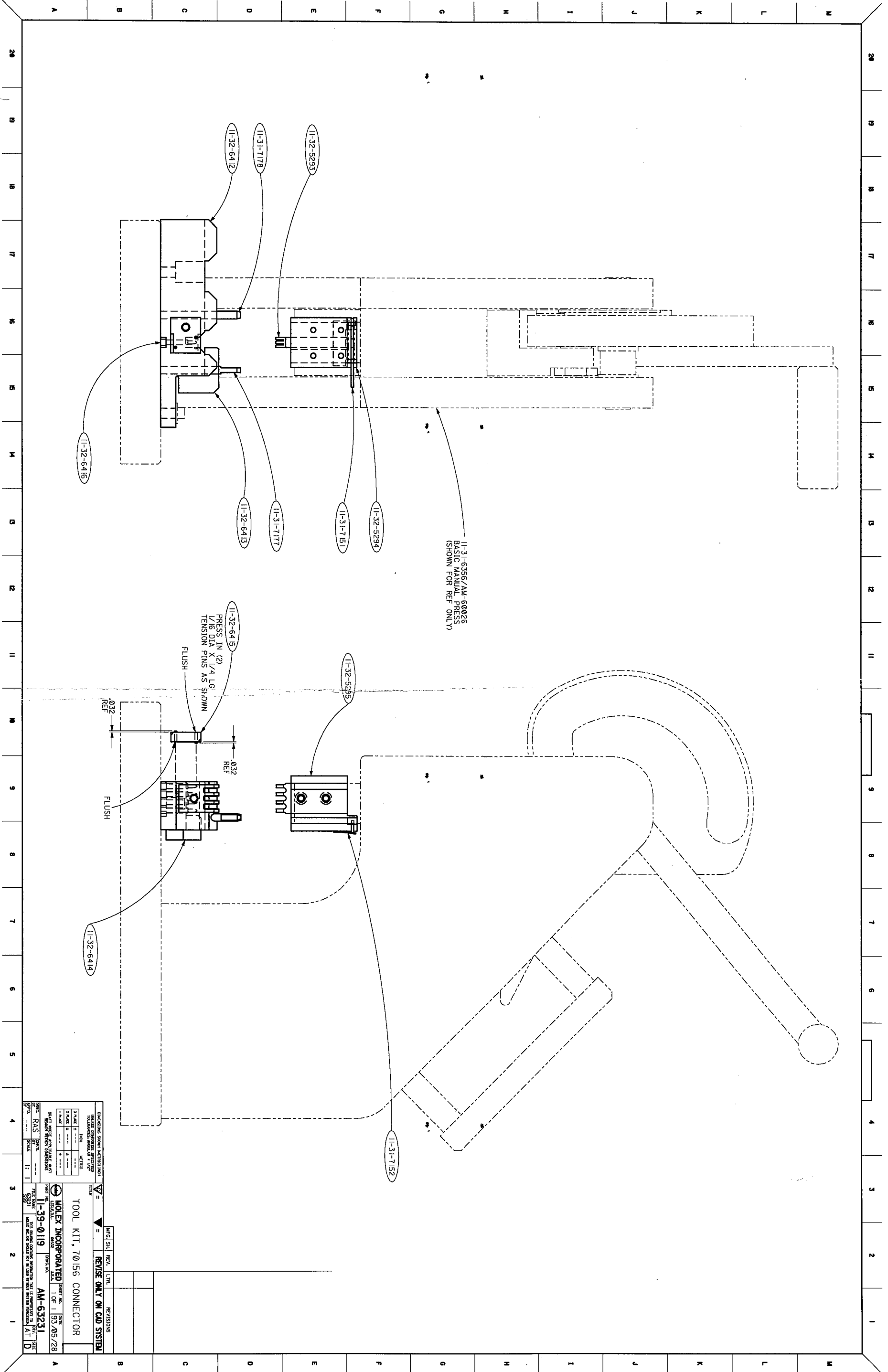
FIGURE 1



# MOLEX ATD. PARTS LIST

10/89 ENGR. R.A. SUTHARD DATE 93/05/20 SHEET 1 OF 1

TITLE: TOOL KIT, 70156 CONNECTOR												
LV	SHT	EDP #	ENC #	AM- REV SIZ	DWG	QTY	NOUN	SPECIFICATION/DESCRIPTION	MFRG.NAME	MFRG.PART NO.	C	REV.
1	S01	11-32-6412	63231-1	C		1	NEST	CONNECTOR NEST				
2	S02	11-32-6413	63231-2	B		1	STOP	FEED - TO WIRE STOP				
3	S03	11-32-6414	63231-3	B		1	STOP	REAR HOUSING STOP				
4	S04	11-32-6415	63231-4	B		1	STOP	FRONT HOUSING STOP				
5	S05	11-32-6416	63231-5	B		4	PIN	SUPPORT PIN				
6												
7	---	11-31-7177	60029-4-5	A		1	PIN	ALIGN PIN (RH) FOR PLUG TERM.				
8	---	11-31-7178	60029-4-6	A		1	PIN	ALIGN PIN (LH) FOR PLUG TERM.				
9	---	11-32-5293	63174-9	C		1	BLADE	WIRE INSERTION BLADE				
10	---	11-32-5294	63174-10	C		1	HOLDER	INSERTION BLADE HOLDER				
11	---	11-31-7151	60037-5	B		1	LATCH	LATCH FOR PLUG TERMINATOR				
12	---	11-31-7152	60037-6	A		1	SPRING	SPRING-LATCH FOR PLUG TERM.				
13	---	11-32-5295	63174-13	B		1	RETAINER	FRONT BLADE RETAINER				
14	---	---	---	-		2	---	TENSION PIN		1/16 DIA x 1/4	C	
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												
32	REF		REF					LV2 IN STORAGE POSITION				
33	REF		REF				HOUSING	70156 CONNECTOR / FEMALE				
34	REF		REF				TERMINAL	70156 TERMINAL				



INDUSTRIAL DESIGN CENTER, INC.		TITLE		MFG. SHT.		REV. LTR.		REVISIONS	
UNLESS OTHERWISE SPECIFIED TOLERANCES ARE AS FOLLOWS		1/16" ± 0.0015		1/32" ± 0.0005		1/64" ± 0.0002			
3 MADE IN INCH		METERS		3 MADE IN INCH		METERS			
DATE		DATE		DATE		DATE			
11-39-0119		AM-63231		1 OF 1		193/05/28			
KOLEX INCORPORATED		SHEET NO.		DATE					
11-39-0119		AM-63231		1 OF 1		193/05/28			
R.A.S.		SCALE		1:1					
11-39-0119		AM-63231		1 OF 1		193/05/28			
TOOL KIT, 70156 CONNECTOR		MFG. SHT.		REV. LTR.		REVISIONS			
11-39-0119		AM-63231		1 OF 1		193/05/28			