

Job Planning

Drawing # PMM-B-0001 Revision A

Sheet 1 of 3

1. Study the print carefully.
2. List, in sequence, the operations required to machine each part.
3. List the cutting tools required and related speeds/feeds.
4. List the work holding devices required.
5. List the measuring tools required for inspection.

Machine Codes	
H=Kalamzoo Horizontal Bandsaw	L=Nardini 1440 Lathe
V=Wilton Vertical Bandsaw	A=Dake Arbor Press
D=Clausing 20" Drill Press	S=Fayscott Surface Grinder
M=Clausing FV-1 Vertical Mill	

Operation No.	Operation Description	Machine Code	Cutting Tools	Speed	Feed/Time	Work Holding	Measuring Tools
1	Obtain raw materials from customer						6" Steel Rule
2	Degrease & Deburr		File Card 6" Mill File Smooth Degreaser				
3	Semi-Precision Layout - Layout Pattern of holes						Layout Dye, Combination Square, Protractor Head, Spring Dividers, 6" Steel Rule, Scriber, Prick Punch, Center Punch, Layout Hammer
4	Drill & Tap Hole #1 (#8-32) CS = 70SFM Spot Drill Feed = .004 IPR : Countersink Ø(.184 - .209) Jobber Drill Feed = .002 IPR : Drill Depth .591 #8-32 Hand Tap - Style = Plug	D	5/16 x 90 Spot Drill #29 Jobber Drill #8-32 Plug Tap	896 2059 2000 Max.	3.58/1.54s 4/8.87s	Drill Press Vise, Parallels, Dead Blow Hammer, 3MT Shank Drill Chuck, Chuck Key, Drill Drift, Clamping Kit, Water Soluble Coolant, Shim, T-Handle Tap Wrench, Straight Cutting Oil, Chip Brush,	0-6" Dial Caliper #8-32 Fastener
5	Drill & Tap Hole #2 (1/4-20) CS = 70SFM Spot Drill Feed = .004 IPR : Countersink Ø(.270 - .295) Jobber Drill Feed = .002 IPR : Drill Depth .610 1/4-20 Hand Tap - Style = Plug	D	3/8 x 90 Spot Drill #7 Jobber Drill 1/4-20 Plug Tap	746 1393	2.99/2.71s 2.78/13.17s	Same	0-6" Dial Caliper 1/4-20 Fastener
6	Drill & Tap Hole #3 (1/4-28) CS = 70SFM Spot Drill Feed = .004 IPR : Countersink Ø(.270 - .295) Jobber Drill Feed = .002 IPR : Drill Depth .614 1/4-28 Hand Tap - Style = Plug	D	3/8 x 90 Spot Drill #3 Jobber Drill 1/4-28 Plug Tap	746 1314	2.99/2.71s 2.63/14s	Same	0-6" Dial Caliper 1/4-28 Fastener
7	Drill & Tap Hole #4 (5/16-18) CS = 70SFM Spot Drill Feed = .004 IPR : Countersink Ø(.333 - .357) Jobber Drill Feed = .004 IPR : Drill Depth .627 5/16-18 Hand Tap - Style = Plug	D	3/8 x 90 Spot Drill F Jobber Drill 5/16-18 Plug Tap	746 1089	2.99/3.34s 4.36/8.63s	Same	0-6" Dial Caliper 5/16-18 Fastener
8	Drill & Tap Hole #5 (3/8-16) CS = 70SFM Spot Drill Feed = .004 IPR : Countersink Ø(.395 - .420)	D	1/2 x 90 Spot Drill 5/16 Jobber Drill 3/8-16 Plug Tap	560 896	2.24/5.29s 3.58/10.79s	Same	0-6" Dial Caliper 3/8-16 Fastener

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Operation No.	Operation Description	Machine Code	Cutting Tools	Speed	Feed/Time	Work Holding	Measuring Tools
8 Cont.	Jobber Drill Feed = .004 IPR : Drill Depth .644 3/8-16 Hand Tap - Style = Plug						
9	Drill # Tap Hole #6 (7/16-14) CS = 705FM Spot Drill Feed = .004 IPR : Countersink Ø(.246) Jobber Drill Feed = .004 IPR : Drill Depth .660 Countersink Feed = .0035 IPR : Ø(.458 - .482) 7/16-14 Hand Tap - Style = Plug	D	1/2 x 90 Spot Drill U Jobber Drill 3/4 x 90 Single Flute Countersink 7/16-14 Plug Tap	560 760 509	2.24/3.29s 3.04/13.03s 1.78/7.72s	Same	0-6" Dial Caliper 7/16-14 Fastener
10	Drill # Tap Hole #7 (1/2-13) CS = 705FM Spot Drill Feed = .004 IPR : Countersink Ø(.282) Jobber Drill Feed = .004 IPR : Drill Depth .677 Countersink Feed = .0035 IPR : Ø(.520 - .545) 1/2-13 Hand Tap - Style = Plug	D	1/2 x 90 Spot Drill 27/64 Jobber Drill 3/4 x 90 Single Flute Countersink 1/2-13 Plug Tap	560 663 444	2.24/3.78s 2.65/15.33s 1.55/10.06s	Same	0-6" Dial Caliper 1/2-13 Fastener
11	Drill # Tap Hole #8 (1/2-20) CS = 705FM Spot Drill Feed = .004 IPR : Countersink Ø(.282) Jobber Drill Feed = .004 IPR : Drill Depth .686 Countersink Feed = .0035 IPR : Ø(.520 - .545) 1/2-20 Hand Tap - Style = Plug	D	1/2 x 90 Spot Drill 29/64 Jobber Drill 3/4 x 90 Single Flute Countersink 1/2-20 Plug Tap	560 617 413	2.24/3.78s 2.47/16.66s 1.45/10.76s	Same	0-6" Dial Caliper 1/2-20 Fastener
12	Drill # Tap Hole #9 (#10-24) CS = 705FM Spot Drill Feed = .002 IPR : Countersink Ø(.210 - .235) Jobber Drill Feed = .002 IPR : Drill Depth .594 #10-24 Hand Tap - Style = Plug	D	1/4 x 90 Spot Drill #25 Jobber Drill #10-24 Plug Tap	1120 1872	2.24/2.81s 3.74/9.53s	Same	0-6" Dial Caliper #10-24 Fastener
13	Drill # Ream Hole #10 (.249 Ream) CS = 705FM Spot Drill Feed = .004 IPR : Countersink Ø(.269 - .294) Jobber Drill Feed = .002 IPR : Drill Depth .620 Straight Flute Chucking Reamer Feed = .004 IPR Straight Flute Chucking Reamer Depth = .620 Straight Flute Chucking Reamer - Feed In/Feed Out	D	5/16 x 90 Spot Drill 15/64 Jobber Drill .249 Straight Flute Chucking Reamer	896 1194 298	3.58/2.25s 2.39/15.56s 1.19/62.5s	Same	0-6" Dial Caliper .239 GO Gage Pin .259 NO-GO Gage Pin

