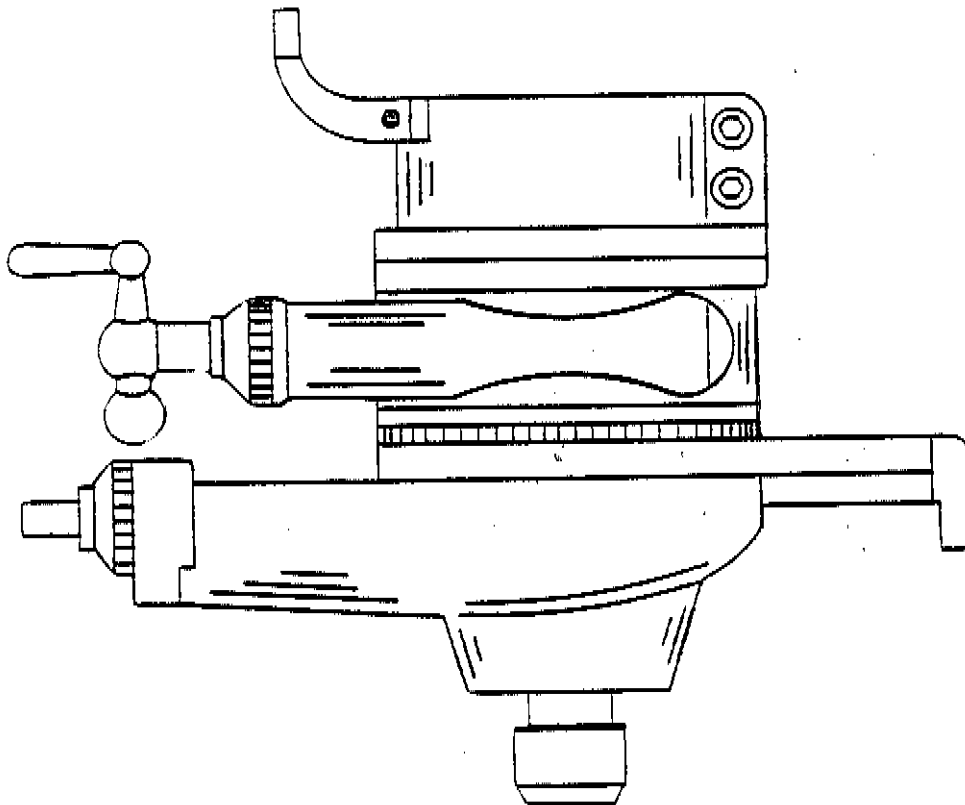




3100 Tremont Ave. Treveose, PA 19053-6694 (215) 322-5507 (800) 321-4163
fax (215) 396-1096

ROTARY MILLING HEAD #1203



PARTS LIST & INSTRUCTION MANUAL



Thank you for purchasing a Volstro product. We are pleased to enclose this instruction manual with your product. Please keep this manual in a secure place as it may be used in the future to purchase repair parts for your Volstro product should you ever need them. Volstro has been in business for over 30 years making products for manual and CNC machine tools. Our products are built by trained craftsmen with quality components. All of our products come with a full 90 day warranty on parts and labor. We also provide a complete repair and refurbishing service on all Volstro products. Volstro maintains a complete inventory of replacement parts which can be shipped overnight to your plant in the case of an emergency breakdown.

Volstro products are of modular design, this enables our products to be used in a great number of ways. Our customers are encouraged to combine our products in the configuration they require for their particular application. The modular design of Volstro products allows our customers to "build" upon their purchases of Volstro products, thereby saving money by only purchasing the components they need for their application. Volstro can also adapt our units to a wide range of uses. If you have a special application, contact Volstro for a price quote.

We at Volstro like to hear from our customers, if you have a question or comment please don't hesitate to contact us. Also we are interested in your thoughts and ideas on what new products you would like to see from Volstro.

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VOLSTRO MILLING HEAD INSTRUCTIONS

INSTRUCTIONS FOR MOUNTING THE VOLSTRO MILLING HEAD ON BRIDGEPORT "J" AND 2J MILLING MACHINES.

1. IT IS NECESSARY TO SUBSTITUTE AN EXTENSION DRAWBAR FOR THE ORIGINAL DRAWBAR.
2. EXTEND THE QUILL APPROXIMATELY 2" AND LOCK.
3. SLIDE MILLING HEAD ONTO QUILL ENGAGING KEY INSIDE SPINDLE WITH KEYWAY OF VOLSTRO R-8 ADAPTER.
4. SCREW DRAWBAR INTO R-8 ADAPTER.
5. TIGHTEN DRAWBAR AS USUAL.
6. RAISE QUILL SEATING UNIT AGAINST MACHINE HOUSING.
7. TURN VOLSTRO HEAD UNTIL LOCATING FINGER CONTACTS STOP.
8. TIGHTEN MILLING HEAD CLAMP SCREWS.
9. AGAIN LOCK QUILL.
10. LUBRICATION: ONE SHOT EMB POLYMER GREASE (VOLSTRO CAT. # 8030) OR EQUIVALENT EVERY 100 HOURS OF OPERATION.

TO USE POWER FEED

1. PLACE ALUMINUM TIMING BELT PULLEY ON DRIVE SHAFT FEED OF MACHINE.
2. PLACE SMALL TIMING BELT PULLEY ON MILLING HEAD WORM SHAFT.
3. SLIP BELT OVER PULLEYS.
4. ADJUST BELT TENSION RAISING OR LOWERING QUILL.
5. RELOCK QUILL AFTER ADJUSTING.

CAUTION

COLLET NUT TO BE TIGHTENED OR LOOSENED ONLY WITH WRENCH SUPPLIED.

DO NOT OVER TIGHTEN LOCK SCREWS.

WHEN MILLING WITH ROTARY MOVEMENT, LOCK CROSS SLIDE.

WHEN MILLING WITH CROSS SLIDE, LOCK ROTARY.

RECOMMENDED MAXIMUM ENDMILL DIAMETER 3/8".

RECOMMENDED MAXIMUM SPEED 2400 RPM.

DISASSEMBLY OR ALTERATION OF UNIT VOIDS WARRANTY.



INSTRUCTIONS FOR MOUNTING VOLSTRO III

1. WITH R-8 DRIVE.

AFTER MOUNTING UNIT AS DESCRIBED, LOOSEN THE FOUR (4) 1/4 -20 SCREWS HOLDING THE CLAMP FLANGE TO THE ROTARY HOUSING AND THEN RETIGHTEN ALLOWING THE UNIT TO CENTER ITSELF.

2. WITH SPLINE DRIVE.

PLACE SPLINE BUSHING IN COLLET OR TOOL HOLDER AND TIGHTEN.

EXTEND MACHINE QUILL APPROXIMATELY 2 1/2" AND LOCK.

SIMULTANEOUSLY SLIDE CLAMP FLANGE ONTO QUILL WHILE ENTERING SPLINE SHAFT INTO SPLINE BUSHING.

AFTER SLIDING UNIT UPWARD AS FAR AS POSSIBLE, TIGHTEN THE TWO (2) 3/8-16 CLAMPING SCREWS

LOOSEN THE FOUR (4) 1/4-20 SCREWS HOLDING THE CLAMP FLANGE TO THE ROTARY HOUSING AND THEN RETIGHTEN ALLOWING THE UNIT TO CENTER ITSELF.

3. WHEN CONVERTING UNIT TO A DIFFERENT SIZE CLAMPING FLANGE MAKE CERTAIN TO RECENTER UNIT AS DESCRIBED IN 1 OR 2 ABOVE



HOW TO SET UP YOUR VOLSTRO ROTARY MILLING HEAD

1. PLACE A DIAL INDICATOR IN YOUR VOLSTRO COLLET. INDICATOR POINT SHOULD BE AS CLOSE AS POSSIBLE TO END OF SPINDLE. INDICATE TABLE VISE OR FIXTURE BY MOVING CROSS SLIDE. ADJUST THE ROTARY MOVEMENT UNTIL PARALLEL. SET THE 360 DEGREE RING AND TIGHTEN BUTTON HEAD LOCK SCREW. SET ROTARY DIAL TO ZERO. THE UNIT IS NOW READY TO USE.
NOTE: IT IS NOT NECESSARY TO REALIGN YOUR VOLSTRO HEAD AGAIN IF IT IS USED ON THE SAME MILL, BUT IF USED ON ANOTHER MACHINE THE ALIGNMENT MUST BE CHECKED. NOT ALL MILLING MACHINE STOP LUGS ARE LOCATED IN EXACTLY THE SAME PLACE.
2. TURN CROSS SLIDE LEAD SCREW COUNTER-CLOCKWISE PAST "0" TO STOP, RETURN TO "0". LOCATE YOUR PICKUP OR STARTING POINT FROM THIS POSITION.
3. THE DESIRED RADIUS CAN NOW BE SET BY ADVANCING THE CROSS SLIDE. AN EXTERNAL FORM MUST BE RADIUS PLUS 1/2 OF CUTTER DIAMETER. AN INTERNAL FORM MUST BE RADIUS MINUS 1/2 OF CUTTER DIAMETER.
4. FOR ADDITIONAL INFORMATION ON JOB SETUP PLEASE REFER TO THE LAYOUT SHEETS ATTACHED.



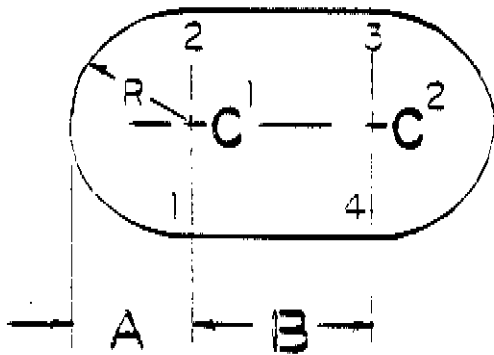


FIGURE 1

- A. PICK UP ϕ OF "R" AT POINT C WITH MILLING HEAD AT "0".
- B. SET RADIUS WITH CROSS SLIDE "R"
- C. WITH MILLING HEAD AT POINT "1" ROTATE 180° DEGREES TO POINT "2"
- D. MOVE MILLING MACHINE TABLE TO NEXT ϕ POINT "3"(B DIM.).
- E. WITH MILLING HEAD AT POINT "3" ROTATE 180° DEGREES TO POINT "4"
- F. MOVE MILLING MACHINE TABLE TO ORIGINAL ϕ POINT "1"

These forms can be completed without the cutter leaving the work piece. This applies to figure 1&2. The cut can be made on an OD, ID or groove configuration. This applies to figure 1,2 & 4.

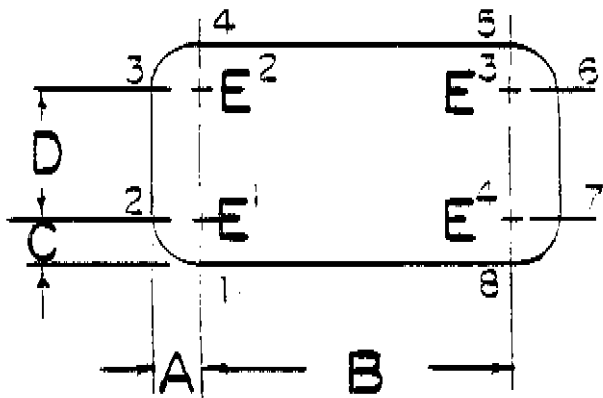


FIGURE 2

- A. PICK UP ϕ OF "R" AT POINT E WITH MILLING HEAD AT "0".
- B. SET RADIUS WITH CROSS SLIDE "R".
- C. WITH MILLING HEAD AT POINT "1" ROTATE 90 DEGREES TO POINT "2",
- D. MOVE MILLING MACHINE CROSS SLIDE TO POINT "3"(D DIM.).
- E. ROTATE MILLING HEAD 90 DEGREES TO POINT "4"
- F. MOVE MILLING MACHINE TABLE TO POINT "5" (B DIM).
- G. ROTATE MILLING HEAD 90° DEGREES TO POINT "6".
- H. MOVE MILLING MACHINE CROSS SLIDE TO POINT "7"(D DIM.).
- I. ROTATE MILLING HEAD 90° DEGREES TO POINT "8".
- J. MOVE MILLING MACHINE TABLE TO POINT "1"(B DIM.).

The size of the work piece is limited only by the travel of the milling machine table In fig. 1&2.

A. Pickup ϕ of R^1 with milling head at "0". This will be your "0" reading for both table & cross feed dials on the milling machine.

B. Set radius with the milling head cross slide.

C. Rotate the milling head 120° degrees.

D. Move machine table to "A" dim. & machine cross slide to "B" dim.

E. Set R^2 with milling head cross slide.
Note: *Full circle can be rotated.*

F. Blend 20° & 30° angles with the milling head cross slide.

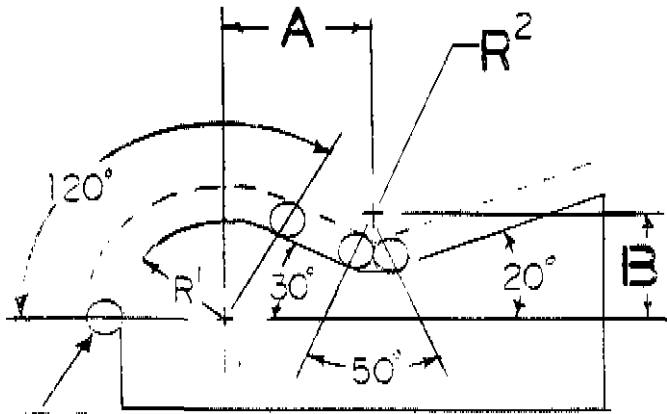
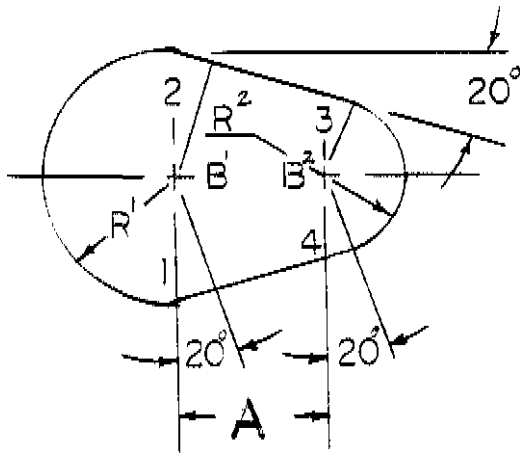


Figure 3

CUTTER
START
POINT



A. Pickup ϕ of R^1 at B^1 with milling head at "0".

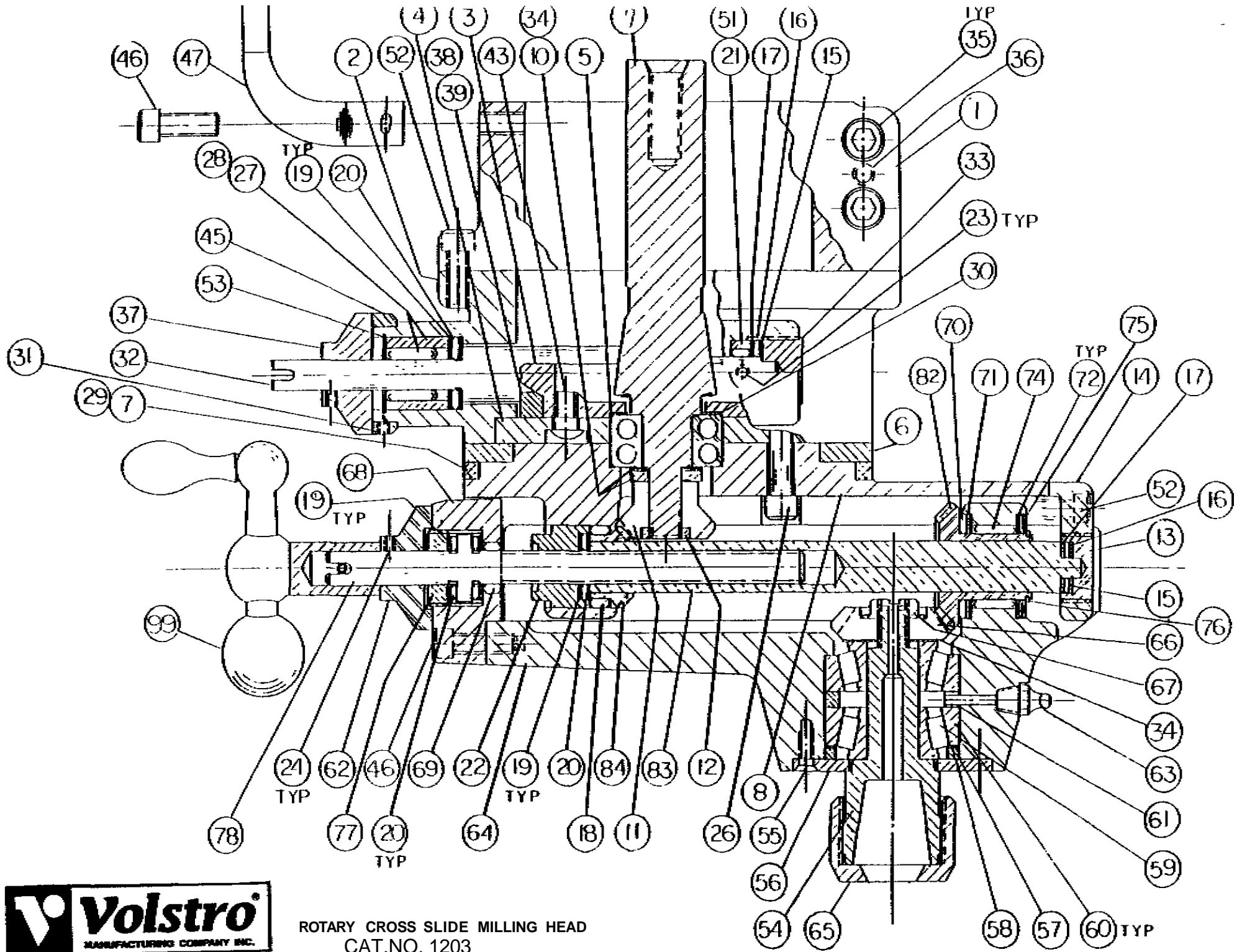
B. Set R^1 with milling head cross slide & rotate from point "1" to point "2".

C. Move machine table to point B^2 (A dim).

D. Set R^2 with milling head cross slide & rotate from point "3" to point "4".

E. Blend 20° degree angles with the milling head cross slide.

Figure 4



ROTARY CROSS SLIDE MILLING HEAD
 CAT.NO. 1203

VOLSTRO MANUFACTURING COMPANY INC.
PARTS LIST FOR VOLSTRO III
CROSS SLIDE MILLING HEAD # 1203 (pg, 1 of 3)

ITEM#	DESCRIPTION	PART#	QTY. PER
01	CLAMPING FLANGE	1148CG-P	1
02	ROTARY HOUSING	1149-P	1
03	WORM GEAR	1152	1
04	ROTARY DISK	1034	1
05	BALLBEARING	1047	1
06	INDEX RING	1169	1
07	DIAL 360 DEGREE	1023	1
08	CENTER HOUSING	1005-P	1
09	R-8 SHAFT	1009	1
10	GEARSPACER	1016	1
11	SMALL DOUBLE "D" GEAR	1008	1
12	R-8 SHAFT NUT	1033	1
13	SPLINE SHAFT PLUG	1035	1
14	ALUM. END PLATE	1003-P	1
15	THRUST WASHER	1057	2
16	THRUST BEARING	1056	2
17	THRUST WASHER	1058	2
18	NEEDLE BEARING	1055	1
19	THRUST WASHER	1054	5
20	THRUST BEARING	1053	4
21	NEEDLE BEARING	1059	1
22	LEAD SCREW NUT	1017	1
23	SHSS 10-32 X 1/4 HD	1073	3
24	SHSS 4-40 X 3/16 FL PT	1074	2
25	THRUST WASHER	1078	1
26	SHCS 1/4-20 X 1 1/4	1066	4
27	BEARING SLEEVE	1032	1
28	NEEDLE BEARING	1060	1
29	BHCS 10-32X3/8	1069	6
30	STEEL SHIM	1039	1
31	SHSS 6/40X1/4	1027	1
32	WORM SHAFT	1153	1
33	WORM SHAFT PLUG	1025	1
34	STEEL SHIM	1018	3
35	SHCS 3/8-16 X 1 1/2	1068	2
36	SHSS 1/4-20X3/4	1163	1
37	WORMSHAFT DIAL	1154	1
38	BRAKESHOE	1031	1
39	DOWEL PIN 1/8X3/8	1080	1
43	BHCS 1/4-20 X 1/2	1067	4
44	BHCS 6-32X3/8	1072	1
45	POSITIONING RING	1181	1



**VOLSTRO MANUFACTURING COMPANY INC.
PARTS LIST FOR VOLSTRO III
CROSS SLIDE MILLING HEAD #1203 (con't 2 of 3)**

ITEM#	DESCRIPTION	PART#	QTY.PER
46	SHCS 1/4-20X3/4	1065	5
47	LOCATING FINGER	1136-P	1
48	BHCS 4-40X1/4	1071	4
49	3" SCALE RIGHT HAND(not shown)	1144	1
50	3" SCALE LEFT HAND (not shown)	1146	1
51	ADJUSTING BUSHING	1187	1
52	SHCS 1/4-20X5/8	1070	6
53	RETAINING RING	1062	1
54	COLLET SHAFT	1012-ER	1
55	FHSC 8-32 X 1/2 LG	1064	4
56	PRESSURE PLATE	1013	1
57	PRESSURE RING	1014	1
58	SHIM	1028	1
59	ROLLER BEARING CONE	1048	2
60	ROLLER BEARING CUP	1049	2
61	ROLLER BEARING SPACER	1026	2
62	LEAD SCREW DIAL	1020	1
63	GREASE FITTING	1160	1
64	LOWER HOUSING	1001-P	1
65	COLLET NUT	1030-ER	1
66	LARGE D GEAR	1007	1
67	SHOULDER NUT	1043	1
68	LS MTG BLOCK	1004-P	1
69	NEEDLE BEARING	1059	1
70	THRUST BEARING	1051	1
71	THRUST WASHER	1052	1
72	STEEL SHIM	1077	1
73	SPRING PIN 1/8X5/8	1086	4
74	NEEDLE BEARING	1050	1
75	THRUST WASHER	1042	1
76	RETAINING RING	1061	1
77	LEAD SCREW PLUG	1015	1
78	LEAD SCREW	1019	1
79	STATIONARY GIB (not shown)	1076	1
80	ADJUSTABLE GIB (not shown)	1029	1
81	SHSS 1/4-20X1/2	1075	3
82	LARGE SPLINE GEAR	1195	1
83	SPLINE SHAFT	1196	1
84	SMALL SPLINE GEAR	1194	1
85	SHCS 1/4-20X7/8	1046	1
86	SPRING PIN 3/16X3/4	7018	1
87	LABEL(Volstro3ser.#) (not shown)	1191	1
88	LABEL(caution) (not shown)	1198	1



**VOLSTRO MANUFACTURING COMPANY INC.
PARTS LIST FOR VOLSTRO III
CROSS SLIDE MILLING HEAD # 1203 (CON'T 3 of 3)**

ITEM#	DESCRIPTION	PART#	QTY. PER
89	LABEL(Volstro) (not shown)	1199	1
90	LOCK SCREW HANDLE(not shown)	1093	1
91	FOAMPACK LINER SET (not shown)	1088	1
92	CARRYING CASE (wooci)(not shown)	1083	1
93	WRENCH 1" (not shown)	1091-1	1
94	WRENCH 1 3/8 " (not shown)	1091 -2	1
95	TIMING BELT (not shown)	1096	1
96	SHSS 10-32 X 3/8 CP (not Shown)	1186	3
97	TIMING PULLEY (Small) (not shown)	1201	1
98	TIMING PULLEY (not shown)	1041	1
99	ROTATING CRANK HANDLE (not shown)	1217	1

