



PARTS LIST

VS-1 SP / VS-2 SP XL

Super Precision Turret Milling Machine



Parts List

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1 How to use this parts list

This parts list covers the MACH VS-1 SP and MACH VS-2 SP XL turret milling machines. Use it to identify a part and to order the correct spare from MACH Machine Tools.

1.1 Machines and sections covered

- Sections 2 to 5: MACH VS-1 SP (head, quill housing, table and saddle, and body, knee, turret and ram).
- Sections 6 and 7: MACH VS-2 SP XL (table and saddle, and body, knee, turret and ram).

NOTE Head (upper) and quill housing (lower head) parts are listed for the VS-1 SP only. For a head or quill part for a VS-2 SP XL, give MACH Machine Tools the machine serial number so that the correct part can be confirmed.

1.2 Reading the drawings and tables

- Each assembly has an exploded view followed by its parts table.
- The number in the circle (or octagon) on the drawing is the key number in the first column of the table.
- A row with no key number is an alternative to, or a sub-part of, the numbered row above it. For example, the R8 drawbar row under item 82 in Table 2-1 is the alternative to the NT#30 drawbar.
- Where a row has no part number, quote the table number, key number and description when you order.
- Quantities are per machine. "1 SET" and "2 sets" mean the part is supplied as a set.
- Gaps in the key-number sequence are as in the original factory list.

1.3 Ordering spare parts

- 1 Read the machine model (VS-1 SP or VS-2 SP XL) and the serial number from the machine nameplate.
- 2 Find the part on the exploded view and note its key number.
- 3 Look up the key number in the parts table that follows the drawing.
- 4 Note the part number and description exactly as printed.
- 5 Note the quantity you need.
- 6 Send the model, serial number, table number, key number, part number, description and quantity to MACH Machine Tools.

NOTE Always quote the serial number. Parts can change between production batches, and the serial number lets MACH Machine Tools supply the part that fits your machine.

2 VS-1 SP head (upper) assembly

The upper head contains the variable-speed belt drive and motor, the spindle brake, the spindle pulley and bull gear, the hi-low shift, the drawbar, and the electric box with control panel.

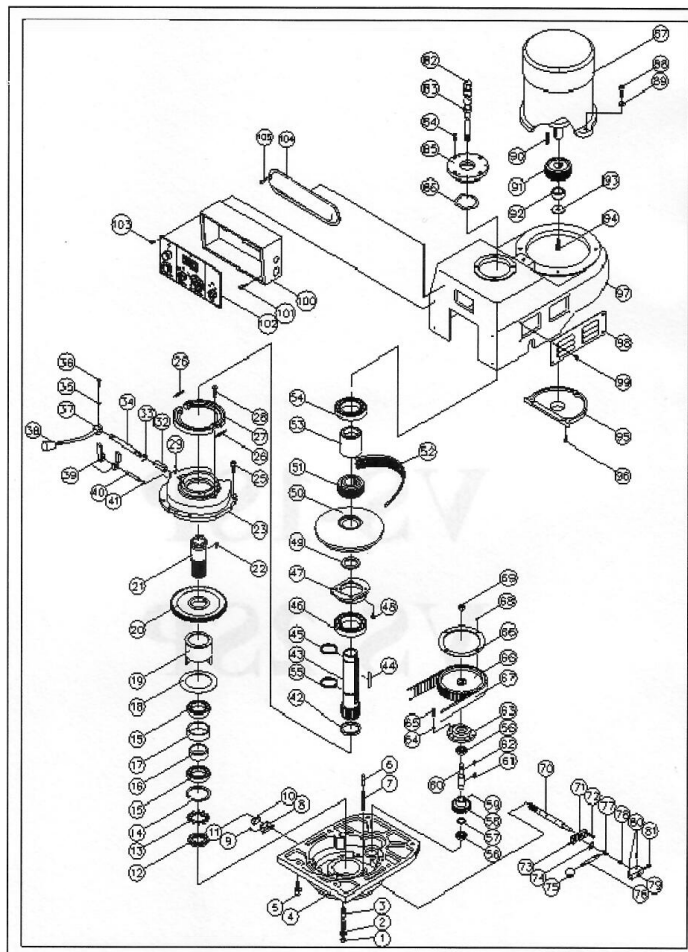


Figure 2-1: VS-1 SP head (upper) assembly, exploded view (VS-1 SP only)

Table 2-1: VS-1 SP head (upper) assembly, parts list (VS-1 SP only)

Key no.	Part no.	Description	Qty	Remarks
1	HBB-W035	NUT	3	
2	1500-A077	WASHER	3	
3	1510-G090	STUDS	3	
4	1710-T049	GEAR HOUSING	1	
5	HCAP-M08025	HEX-SOCKET HEAD CAP SCREW	6	
6	1510-T093	SPRING SUPPORTED PIN	3	
7	1510-T055	SPRING	3	
8	1710-G080	LIMIT SWITCH	1	
9	HCAP-M04010	HEX-SOCKET HEAD CAP SCREW	2	
10	E-OLS-02012	LIMIT SWITCH (D2VW-5L2A-1M)	1	
11	HBBE-W030	NUT	2	
12	1510-T056	BEARING LOCK NUT	1	
13	AW08-40MM	SPACER	1	
14	HRTW-R62	SNAP RING C-TYPE	1	
15	BR-6908	BALL BEARING	2	
16	1510-T044	BULL GEAR BEARING SPACER	1	
17	1510-T043	BULL GEAR BEARING SPACER	1	
18	1510-T048	BULL GEAR BEARING SLEEVE WASHER	1	
19	1510-T057	BULL GEAR BEARING SLEEVE	1	
20	1510-T040	SPINDLE BULL GEAR ASSEMBLY	2	
21	1510-T039	SPINDLE PULLEY HUB	1	
22	HKE-1R-0812	KEY	1	
23	1710-G053	BRAKE BASE	1	
25	HCAP-MM08020	HEX-SOCKET HEAD CAP SCREW	4	
26	1510-G031	BRAKE SPRING	2	
27	1510-G032	BRAKE SHOE	1	
28	1510-G035	BRAKE RING SCREW	1	
29	HSET-M06006	SET SCREW	1	
32	1510-G073	SLEEVE FOR BRAKE	1	
33	HSTW-S12	SNAP RING C-TYPE	1	
34	1710-G074	BRAKE LOCK SHAFT	1	
35	HETW-E4	SNAP RING C-TYPE	1	
36	1500-A035	BRAKE LOCK PIN, S45C	1	
37	1510-G070	BRAKE LOCK & HANDLE	1	
38	1510-G069	BLACK PLASTIC BALL HANDLE	1	
39	1510-G068	BRAKE OPERATION FINGER	2	
40	1710-G067	BRAKE FINGER PIVOT STUD	1	

Key no.	Part no.	Description	Qty	Remarks
41	HETW-E6	SNAP RING C-TYPE	1	
42	1510-T038	TIMING PULLEY CLUTCH SLEEVE	1	
43	1510-G034	SPINDLE CLUTCH DEVICE	1	
44	HKE-2R-7850	KEY	1	
45	HSTW-S35	SNAP RING C-TYPE		
46	BR-6010	BEARING	1	
47	1510-G029	BRAKE BRG. CAP	1	
48	HCAP-M06020	HEX-SOCKET HEAD CAP SCREW	4	
49	1510-G033	SPINDLE PULLEY SPACER	1	
50	1510-G028	STATIONARY DRIVEN VARI-DISC	1	
51	1510-G110	SPINDLE PULLEY	1	
52	S006-0019	SPINDLE BELT 300J10	1	
53	1510-G106	SPACER	1	
54	BR-6007	BEARING	1	
55	HSTW-S40	SNAP RING C-TYPE		
56	BR-6203	BEARING	2	
57	1510-T095	SPACER	1	
58	1510-T083	BULL GEAR PINION COUNTER GEAR	1	
59	HSET-M08006	SET SCREW	1	
60	1510-T080	BULL GEAR PINION COUNTER SHAFT	1	
61	HKE-2R-0518	KEY	2	
62	HKE-2R-0515	KEY	1	
63	1510-T084	COVER	1	
64	HWD-M5	WASHER	1	
65	HCAP-M05016	HEX-SOCKET HEAD CAP SCREW	3	
66	UH151-B016	PULLEY SET	1 SET	
67	1500-A023	TIMING BELT	1	
68	HCAP-M05008	SCREW	4	
69	HBBE-W050-10	NUT	1	
70	1510-T059	BULL GEAR SHIFTER PINION SHAFT	1	
71	1510-T060	HI-LOW DETENT PLATE	1	
72	HCAP-M05012	HEX-SOCKET HEAD CAP SCREW	2	
73	HCAP-M04016	HEX-SOCKET HEAD CAP SCREW	1	
74	1510-T065	ADJ. PLATE	1	
75	1500-A046	BLACK PLASTIC BALL 1/4" DIA	1	
76	1510-T070	HI-LOW SHIFT CRANK	1	
77	1510-T066	HI-LOW DETENT PLUNGER	1	
78	1510-T067	SPRING	1	

Key no.	Part no.	Description	Qty	Remarks
79	1510-T071	HI-LOW PINION BLOCK	1	
80		HI-LOW DETENT PLUNGER	2	
81	HCAP-M06016	HEX-SOCKET HEAD CAP SCREW	1	
82	1510-G014	DRAW BAR NST#30 1/2" 12UNF	1	
	1510-G087	R8 DRAWBAR 7/16" 20UNF	1	
83	1500-A039	WASHER (NT#30) S45C/CM	1	
84	HCAP-M06020	HEX-SOCKET HEAD CAP SCREW	4	
85	1550-A004	TOP BEARING BRACKET	1	
86	HWW-6007	SPRING	1	
87		MOTOR	1	
88	HCAP-W030100	HEX-SOCKET HEAD CAP SCREW	2	
89	HWA-N3	WASHER	2	
90	HKE-2R-8835	KEY	1	
91	1510-G111	MOTOR PULLEY	1	
92	1550-A106	SPACER	1	
93		WASHER	1	
94	HCAP-M08030	HEX-SOCKET HEAD CAP SCREW	1	
95	1710-G054	WASHER	1	
96	HCAP-M06016	HEX-SOCKET HEAD CAP SCREW	3	
97	1710-T012	UPPER GEAR BOX	1	
98	1710-T097	SIDE BELT HOUSING COVER	2	
99	HCAP-M06008	CROSS-RECESSED HEAD SCREW	8	
100	1550-A154	ELECTRIC BOX	1	
101	HCAP-M05006	HEX-SOCKET HEAD CAP SCREW	4	
102	N1550-A153	CONTROL PANEL	1	
103		CROSS-RECESSED HEAD SCREW	6	
104	N1500-A100	LOGO PLATE	1	
105	HCAP-M06010	HEX-SOCKET HEAD CAP SCREW	2	

3 VS-1 SP quill housing (lower head) assembly

The quill housing (milling head) contains the spindle, quill and bearings, the quill feed and overload clutch, the power-feed gearbox, the feed reverse and trip mechanism, the quill lock and the micrometer quill stop.

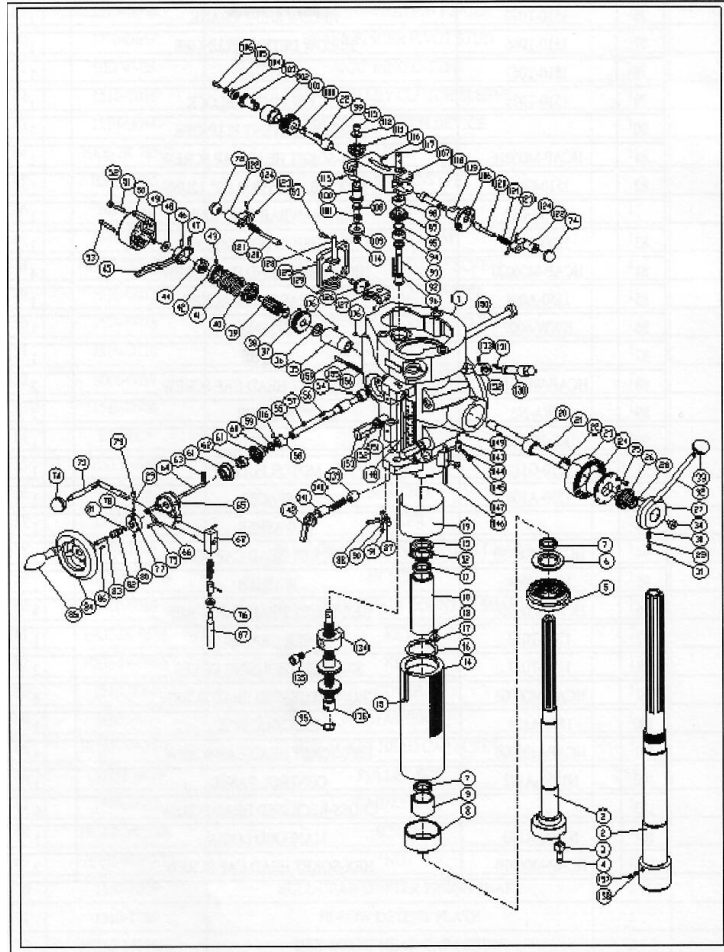


Figure 3-1: VS-1 SP quill housing (lower head) assembly, exploded view (VS-1 SP only)

Table 3-1: VS-1 SP quill housing (lower head) assembly, parts list (VS-1 SP only)

Key no.	Part no.	Description	Qty	Remarks
1	1500-B192	MILLING HEAD	1	
2	1500-B127+129	SPINDLE	1	
	1500-B193+129	SPINDLE	1	
3	1500-B026	STOP BLOCK	2	
4	5/16"X5/8"	HEX-SOCKET HEAD CAP SCREW	2	
5	1500-B194	NUT	1	
	1500-B133	NUT	1	
6	1500-B134	SPINDLE DIRT SHIELD	1	
7	BR-7207	SPINDLE BEARING (P4)	2	
8	1500-B137	BEARING SPACER (LARGE)	1	
9	1500-B136	BEARING SPACER (LARGE)	1	
10	1500-B132	SLEEVE	1	
11	BR-6206	BEARING	1	
12	AW06-30MM	LOCK WASHER	1	
13	1500-B129	LOCKNUT WASHER	1	
14	1500-B142	QUILL	1	
15	HSET-M05005	SET SCREW	1	
16			1	
17	HWA-M5	WASHER	2	
18	HCAP-M05010	HEX-SOCKET HEAD CAP SCREW	2	
19	1500-B128	QUILL SKIRT	1	
20	1500-B166	QUILL PINION SHAFT	1	
21	1500-B168	PIN	1	
22	HKE-2R-3318	FLAT KEY	1	
23	1500-B178	CLOCK SPRING	1	
24	1500-B177	SPRING COVER	1	
25	HCAP-M05012	HEX-SOCKET HEAD CAP SCREW	2	
26	1500-B176A	PINION SHAFT HUB SLEEVE	1	
27	1500-B175	BACK FEED HANDLE HUB (QUILL FEED LEVER)	1	
28	HPB-0516	OVERLOAD CLUTCH LEVER SPRING PLUNGER	1	
29	HETC-W015	STEEL BALL	1	
30	1500-B174	COMPRESSION SPRING	1	
31	HSET-W025030	SET SCREW	1	
32	1500-B190	PINION SHAFT HUB HANDLE	1	
33	1500-B191	BLACK PLASTIC BALL	1	
34	1500-B172	PINION SHAFT HUB SCREW	1	
35	1500-B090	QUILL PINION SHAFT BUSHING	1	

Key no.	Part no.	Description	Qty	Remarks
36	1500-B091	QUILL PINION SHAFT WORM GEAR SPACER	1	
37	1500-B092+B093	OVERLOAD CLUTCH WORM GEAR	1	
38	HSTW-S15	SNAP RING C-TYPE	1	
39	1500-B081+8078	OVERLOAD CLUTCH	1	
40		OVERLOAD CLUTCH	1	
41	1800-B079	SAFETY CLUTCH SPRING	1	
42		OVERLOAD CLUTCH LOCKNUT	1	
43	HSET-M05005	SET SCREW	1	
44	1500-B075	CLUTCH RING	1	
45	1500-B096	OVERLOAD CLUTCH TRIP LEVER	1	
46	1500-B074	CLUTCH RING PIN	2	
47	HPB-0518	OVERLOAD CLUTCH LEVER SPRING PLUNGER	1	
48	1500-B097	OVERLOAD CLUTCH WASHER	1	
49	HSTW-S10	SNAP RING C-TYPE	1	
50	1500-B099	CLUTCH ARM COVER	1	
51	HSET-W020060	SET SCREW	1	
52	HBBA-W020	NUT	1	
53	HCAP-M05035	HEX-SOCKET HEAD CAP SCREW	2	
54	1500-B042	BUSHING	1	
55	1500-B057	FEED WORM SHAFT	1	
56	HKE-2R-3315	FLAT KEY	1	
57	HKE-2R-3310	FLAT KEY	1	
58	1500-B044	FEED WORM SHAFT BUSHING	1	
59	1500-B047	FEED WORM SHAFT THRUST WASHER	1	
60	HSTW-S12	SNAP RING C-TYPE	1	
61	1500-B049	FEED REVERSE BEVEL GEAR	2	
62	1500-B050	FEED REVERSE CLUTCH	1	
63	HPB-0312	OVERLOAD CLUTCH LEVER SPRING PLUNGER	1	
64	1500-B055	REVERSE CLUTCH ROD	1	
65	1500-B106	FEED TRIP BRACKET	1	
66	HCAP-M06020	HEX-SOCKET HEAD CAP SCREW	2	
67	1500-B118	CAM ROD SLEEVE ASSEMBLY	1	
		SPRING	1	
		TRIP PLUNGER	1	
	HPB-0312	OVERLOAD CLUTCH LEVER SPRING PLUNGER	1	
	HPB-0314	OVERLOAD CLUTCH LEVER SPRING PLUNGER	1	
		CAM ROD	1	
73	1500-B104	TRIP HANDLE	1	

Key no.	Part no.	Description	Qty	Remarks
74	1500-A046	BLACK PLASTIC BALL 1/4" DIA	3	
75	HPB-0520	OVERLOAD CLUTCH LEVER SPRING PLUNGER	1	
76	1500-B123	TRIP PLUNGER BUSHING	1	
77	1500-B113	HANDWHEEL CLUTCH	1	
78	1500-B115	COMPRESSION SPRING	1	
79	1500-B116	HANDWHEEL CLUTCH SPRING SCREW	1	
80	HSET-W020020	SET SCREW	1	
81	HSTW-E5	SNAP RING E-TYPE	1	
82	1500-B110+111	FEED REVERSE KNOB STUD	1	
83		FEED REVERSE KNOB STUD BOLT	1	
84	1500-B125+126	HANDWHEEL & HANDWHEEL HANDLE	1	
85		HANDLE	1	
86	HPB-0316	OVERLOAD CLUTCH LEVER SPRING PLUNGER	1	
87	1500-B124	FEED TRIP PLUNGER	1	
88	1500-B146	TRIP LEVER PIN	1	
89	1500-B145	FEED TRIP LEVER	1	
90	HSET-M04020	SET SCREW	1	
91	HBBE-M04	NUT	1	
92	1500-B031	CLUSTER GEAR SHAFT	1	
93	1500-B034	BEVEL GEAR THRUST SPACER	1	
94	1500-B033	BEVEL GEAR BUSHING	1	
95	HSTW-S16	SNAP RING C-TYPE	1	
96	HKE-2R-3345	FLAT KEY	1	
97	1500-B028	CLUSTER GEAR	1	
98	1500-B027	CLUSTER GEAR SHAFT UPPER BUSHING	1	
99	1500-B009	FEED DRIVE WORM GEAR SHAFT	1	
100	HKE-2R-3308	FLAT KEY	1	
101	1500-B008	FEED DRIVE WORM GEAR	1	
102	1500-B005	WORM CRADLE BUSHING	1	
103	1500-B004	FEED WORM GEAR SHAFT SLEEVE	1	
104	1500-B003	FEED BEVEL PINION	1	
105	1500-B002	WASHER	1	
106	HCAP-M05012	HEX-SOCKET HEAD CAP SCREW	1	
107	1500-B017	WORM GEAR CRADLE	1	
108	1500-B036+38	FEED DRIVING GEAR	1	
109	1500-B040	FEED DRIVE GEAR	1	
110	HKE-2R-3310	FLAT KEY	1	
111	1500-B015	FEED REVERSE BEVEL GEAR	1	

Key no.	Part no.	Description	Qty	Remarks
112	1500-B013	WASHER	1	
113	HCAP-M08016	HEX-SOCKET HEAD CAP SCREW	1	
114	BR-BA0606	BEARING	1	
115	1500-B054	SET SCREW M6X25	1	
116	HSET-M06006	SET SCREW	1	
117	1500-B016	FEED ENGAGE PIN	1	
118	1500-B018	WORM GEAR CRADLE THROW-OUT	1	
119	1500-B019	SHIFT SLEEVE	1	
120	1500-B020	GEAR SHIFT PLUNGER	1	
121	1500-B021	COMPRESSION SPRING	1	
122	1500-B023	SHIFT CRANK	1	
123	HSET-W020020	SET SCREW	2	
124	HPB-0320	OVERLOAD CLUTCH LEVER SPRING PLUNGER	1	
125	1500-B066	CLUSTER GEAR COVER	1	
126	1500-B064	CLUSTER GEAR SHIFT CRANK	1	
127	1500-B063	FEED GEAR SHIFT FORK	1	
128	1500-B060	FEED SHIFT ROD	1	
129	HPB-0318	OVERLOAD CLUTCH LEVER SPRING PLUNGER	1	
130	1500-B189	ADJ WORM SHAFT	1	
131	HKE-2R-4418	FLAT KEY	1	
132	1500-B186	WORM GEAR	1	
133	1500-B140	SET SCREW	1	
134	1500-B163	QUILL STOP KNOB	1	
135	HCAP-W030050	HEX-SOCKET HEAD CAP SCREW	1	
136	1500-B164	QUILL STOP MICRO-SCREW (METRE)	1	
		QUILL STOP MICRO-SCREW (INCH)	1	
		MICRO METER NUT (METRE)	1	
139	1500-B148	QUILL LOCK SLEEVE	1	
140	1500-B200	SPRINGS	1	
141	1500-B153	QUILL LOCK SLEEVE TAPPED	1	
142	1500-B149	QUILL LOCK BOLT & SPRING	1	
143	1500-B184A	FEED REVERSE TRIP PLUNGER	1	
144	1500-B183	REVERSE TRIP BALL LEVER	1	
145	1500-B185	REVERSE TRIP BALL LEVER SCREW	1	
146	1500-B147	INDICATOR ROD	1	
147	1500-B154	INDICATOR ROD SCREW	1	
148	N1500-B159	MICRO-SCREW GAUGE (METRIC)	1	
	N1500-B195	MICROMETER SCALE(INCH)	1	

Key no.	Part no.	Description	Qty	Remarks
149	HAEC-W100015	CROSS-RECESSED HEAD SCREW	1	
150	1500-B155	1/2"-12 NC TEE BOLT	4	
151	1500-B156	LOWER CLAMPING BOLT SPACER	2	
152	HWA-N4	WASHER	4	
153	1500-B157	1/2"-12NC ADAPTOR NUT	4	
154	HBBE-W040-13	NUT	4	
155	1500-B082	M4X15 HEX-SOCKET HEAD CAP SCREW	1	
156	1500-B088	COMPRESSION SPRING	1	
157	1500-B140	SPECIAL SOCKET SET SCREW	1	
158	HSET-M06005	SET SCREW	1	
159	1500-B089	OVERLOAD CLUTCH LEVER SPRING PLUNGER	1	

4 VS-1 SP table and saddle assembly

The table and saddle assembly contains the table, the X- and Y-axis ball screws with their bearing brackets, dials and handles, the saddle with its gibs, locks and wipers, and the table stops.

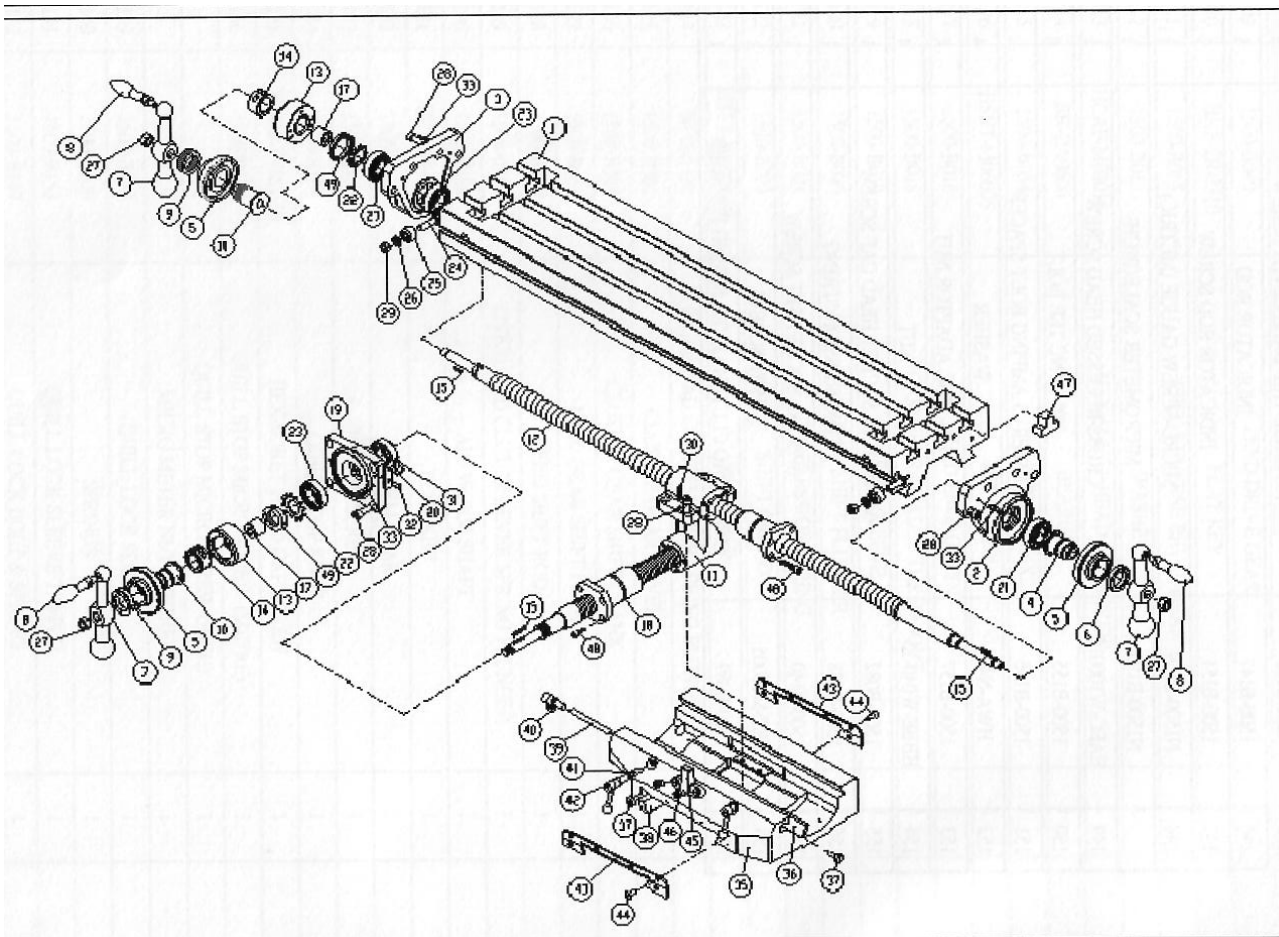


Figure 4-1: VS-1 SP table and saddle assembly, exploded view (VS-1 SP only)

Table 4-1: VS-1 SP table and saddle assembly, parts list (VS-1 SP only)

Key no.	Part no.	Description	Qty	Remarks
1	1500-C173	TABLE	1	
2	1500-D040	LEFT BEARING BRACKET	1	
3	1500-D012	RIGHT BEARING BRACKET	1	
4	1500-D005	DIAL HOLDER (RIGHT)	1	
5	1500-D004	DIAL	3	
6	1500-C086	DIAL NUT	1	
7	1500-D026	BALL CRANK HANDLE	3	
8	1500-C083	BALL CRANK HANDLE LEVER	3	
9	1500-D006	BEARING LOCK NUT	2	
10	1500-D021	DIAL HOLDER	2	
11	1500-D037	BALL SCREW BRACKET	1	
12	1500-D038	X AXIS BALL SCREW	1	
13	1500-D051	BRACKET	2	
14	2200-2109	SCREW FORCE RING	2	
15	HK-2R-3320	FLAT KEY	3	
16	1500-D029	CROSS FEED SCREW NUT (METRIC)	2	
17	1500-D050	LOCK COVER	2	
18	1500-D041	Y AXIS BALLSCREW	1	
19	1500-D043	CROSS FEED BEARING BRACKET	1	
20	1500-C155	FRONT RUBBER CHIP COVER SHAFT BRACKET	2	
21	BR-6204	BEARING	1	
22	HWAT708-25X4	BEARING SPACER	2	
23	BR-51105	ANTI-THRUST BEARING	4	
24	1500-C031	T-BOLT	2	
25	1500-C032	TABLE STOP PIECE	2	
26	1500-C073	WASHER	2	
27	HBBE-W040-2	NUT	3	
28	HADA-W10141	BOLT	16	
29	HBBE-W030-16	NUT	2	
30	HPB-0530	OVERLOAD CLUTCH LEVER SPRING PLUNGER	2	
31	HAEC-W150050	CROSS-RECESSED HEAD SCREW	2	
32	HCAP-M05010	BOLT	2	
33	HPB-0625	OVERLOAD CLUTCH LEVER SPRING PLUNGER	6	
34	1500-D046	STOP PIECE T-RUBBER	6	
35	1500-C182	SADDLE	1	
36	1500-C186	MIDDLE SADDLE TABLE GIB	1	
37	1500-C041	ADJUSTING SCREW	3	

Key no.	Part no.	Description	Qty	Remarks
38	1500-C185	UPPER SADDLE TABLE GIB	1	
39	1500-C039	SADDLE LOCK PLUNGER	2	
40	1810-D042	LOCK HANDLE	2	
41	1500-C059	TABLE LOCK PLUNGER	2	
42	1500-C037	TABLE LOCK BOLT HANDLE	2	
43	1500-C044	FELT WIPERS	2	
44		CROSS-RECESSED HEAD SCREW	8	
45	1500-C042	TABLE STOP BRACKET	1	
46		HEX-SOCKET HEAD CAP SCREW	2	
47	1500-D046	STOP PIECE T-RUBBER	6	
48	HCAP-M05010	HEX-SOCKET HEAD CAP SCREW	8	
49	HAN04	BEARING LOCK NUT	2	

5 VS-1 SP body, knee, turret and ram assembly

This assembly covers the body (column), the knee and elevating screw, the elevating crank, the turret, ram and ram adaptor, the covers, the levelling screws and the coolant system.

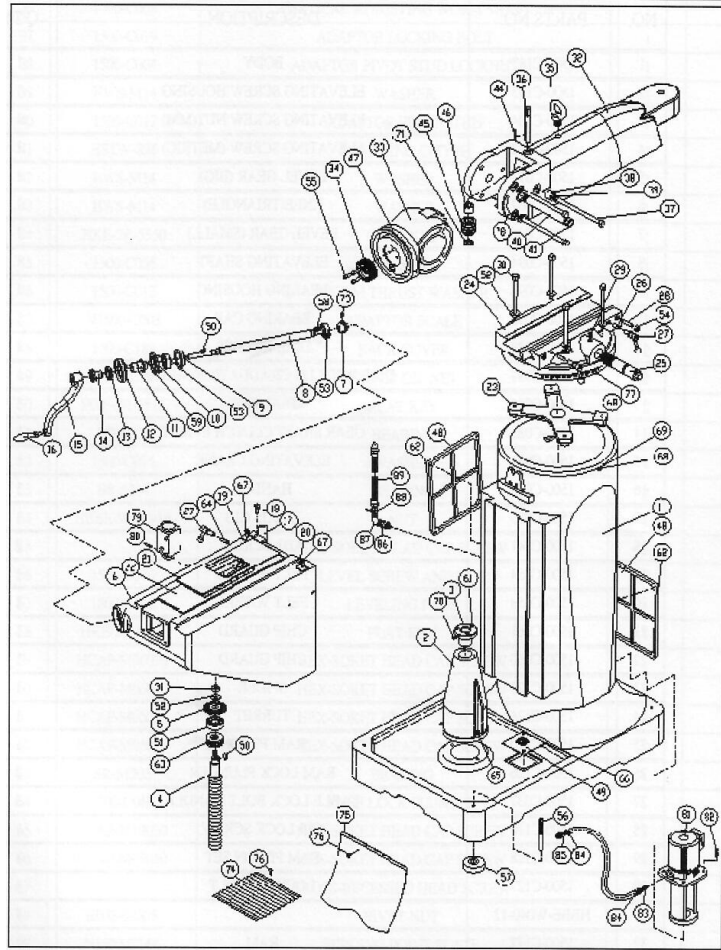


Figure 5-1: VS-1 SP body, knee, turret and ram assembly, exploded view (VS-1 SP only)

Table 5-1: VS-1 SP body, knee, turret and ram assembly, parts list (VS-1 SP only)

Key no.	Part no.	Description	Qty	Remarks
1	1500-C187	BODY	1	
2	1500-C103	ELEVATING SCREW HOUSING	1	
3	1500-C104	ELEVATING SCREW NUT(MM)	1	
4	1500-C082	ELEVATING SCREW (METRIC)	1	
5	1500-C077	BEVEL GEAR (BIG)	1	
6	1500-C062	KNEE(TRIANGLE)	1	
7	1500-C096	BEVEL GEAR (SMALL)	1	
8	1500-C094	ELEVATING SHAFT	1	
9	1500-C092	BEARING HOUSING	1	
10	1500-C090	BEARING CAP	1	
11	1500-C088	DIAL HOLDER	1	
12	1500-C087	DIAL WITH 124 GRADUATION(METRIC)	1	
13	1500-C086	DIAL NUT	1	
14	1500-C085	GEAR SHAFT CLUTCH INSERT	1	
15	1500-C084	ELEVATING CRANK	1	
16	1500-C083	HANDLE	1	
17	1500-C055	Z AXIS GIB	1	
18	1500-C041	ADJ. SCREW	2	
19	1500-C054	FELT WIPERS	1	
20	1500-C058	FELT WIPERS	1	
21	1500-C061	CHIP GUARD	1	
22	1500-C060	CHIP GUARD	1	
23	1500-C118	SPIDER	1	
24	1500-C124	TURRET	1	
25	1500-C120	RAM PINION	1	
26	1500-C126	RAM LOCK PLUNGER	2	
27	1500-C037	TABLE LOCK BOLT HANDLE	3	
28	1500-C110	GIB LOCK SCREW	1	
29	1500-C128	RAM PINION SET	1	
30	1500-C127	LOCKING BOLT	4	
31	HBBE-W040-12	NUT	1	
32	1500-C172	RAM	1	
33	1500-C002	RAM ADAPTOR	1	
34	1500-C001	QUILL HOUSING ADJUSTING GEAR	1	
35	1500-C011	HOOK	1	
36	1500-C008	VERTICAL ADJUSTING WORM SHAFT	1	
37	1500-C019	ADAPTOR LOCKING BOLT	1	

Key no.	Part no.	Description	Qty	Remarks
38	1500-C004	ADAPTOR PIVOT STUD LOCKNUT	1	
39	HWS-M14	WASHER	1	
40	1500-C017	ADAPTOR PIVOT STUD	1	
41	HSTW-S26	SNAP RING C-TYPE	2	
42	HWS-M14	WASHER	1	
43	HWS-M14	WASHER	1	
44	HKE-2R-5550	FLAT KEY	1	
45	1500-C006	WORM	1	
46	1500-C012	WORM THRUST WASHER	1	
47	N1500-C003	ADAPTOR SCALE	1	
48	1500-C188	BACK COVER	2	
49	1500-C130	FILTER OIL NET	2	
50	HKE-2R-5515	FLAT KEY	2	
51	BR-6205	BEARING	1	
52	1500-C076	WASHER	4	
53	BR-6204	BEARING	2	
54	HBBE-W030-16	NUT	1	
55		HEX-SOCKET HEAD CAP SCREW	3	
56	1500-C170	LEVEL SCREW AND NUT	4	
57	1800-C146	LEVELLING PADS	4	
58	HKE-2R-5515	FLAT KEY	1	
59	HCAP-M06020	HEX-SOCKET HEAD CAP SCREW	3	
60	HCAP-M06020	HEX-SOCKET HEAD CAP SCREW	1	
61	HCAP-M06020	HEX-SOCKET HEAD CAP SCREW	2	
62	HCAP-M06015	HEX-SOCKET HEAD CAP SCREW	8	
63	BR-51305	BEARING	1	
64	1500-C069	KNEE LOCK PLUNGER	1	
65	HCAP-M10020	HEX-SOCKET HEAD CAP SCREW	2	
66	HCAP-M05010	HEX-SOCKET HEAD CAP SCREW	4	
67		CROSS-RECESSED HEAD SCREW	2	
68	H002-02005	RIVET NUT	4	
69	N1500-C144	ZEROING POINT PLATE	1	
70	HCO-114	NOZZLE	1	
71	1500-C007	WASHER	1	
72	1500-C111	RAM GIB	1	
73	HCAP-M06010	SET SCREW	1	
74	1500-C142	RUBBER CHIP COVER (FRONT, WAVE)	1	
75	1500-C135	RUBBER CHIP COVER (BACK, WAVE)	1	

Key no.	Part no.	Description	Qty	Remarks
76	HAEC-M05010	CROSS-RECESSED HEAD SCREW	8	
77	N1500-C048	TURRET SCALE	1	
78	N1500-C015	ANGLE PLATE	1	
79	LU150-1001	LUBRICATOR (MANUAL)	1	
80	HAEC-M05010	CROSS-RECESSED HEAD SCREW	4	
81	MP-1701	COOLANT PUMP	1	
82	HCAP-M06020	HEX-SOCKET HEAD CAP SCREW	4	
83	AA0003T03L	WATER PIPE ADAPTER	1	
84	S007-0400	RESTRAIN	2	
85	AA0004T04L	WATER PIPE ADAPTER	1	
86	S007-0550	INSERT CONNECT	1	
87	S007-0600	HIGH PRESSURE CONNECT L-TYPE	1	
88	S007-0100	BALL VALVE	1	
89	S007-0200	FLEXIBLE STEEL COOLANT HOSE	1	

6 VS-2 SP XL table and saddle assembly

The table and saddle assembly contains the table, the longitudinal and cross feed screws with their bearing brackets, dials and handles, the saddle with its gibs, locks and wipers, and the table stops.

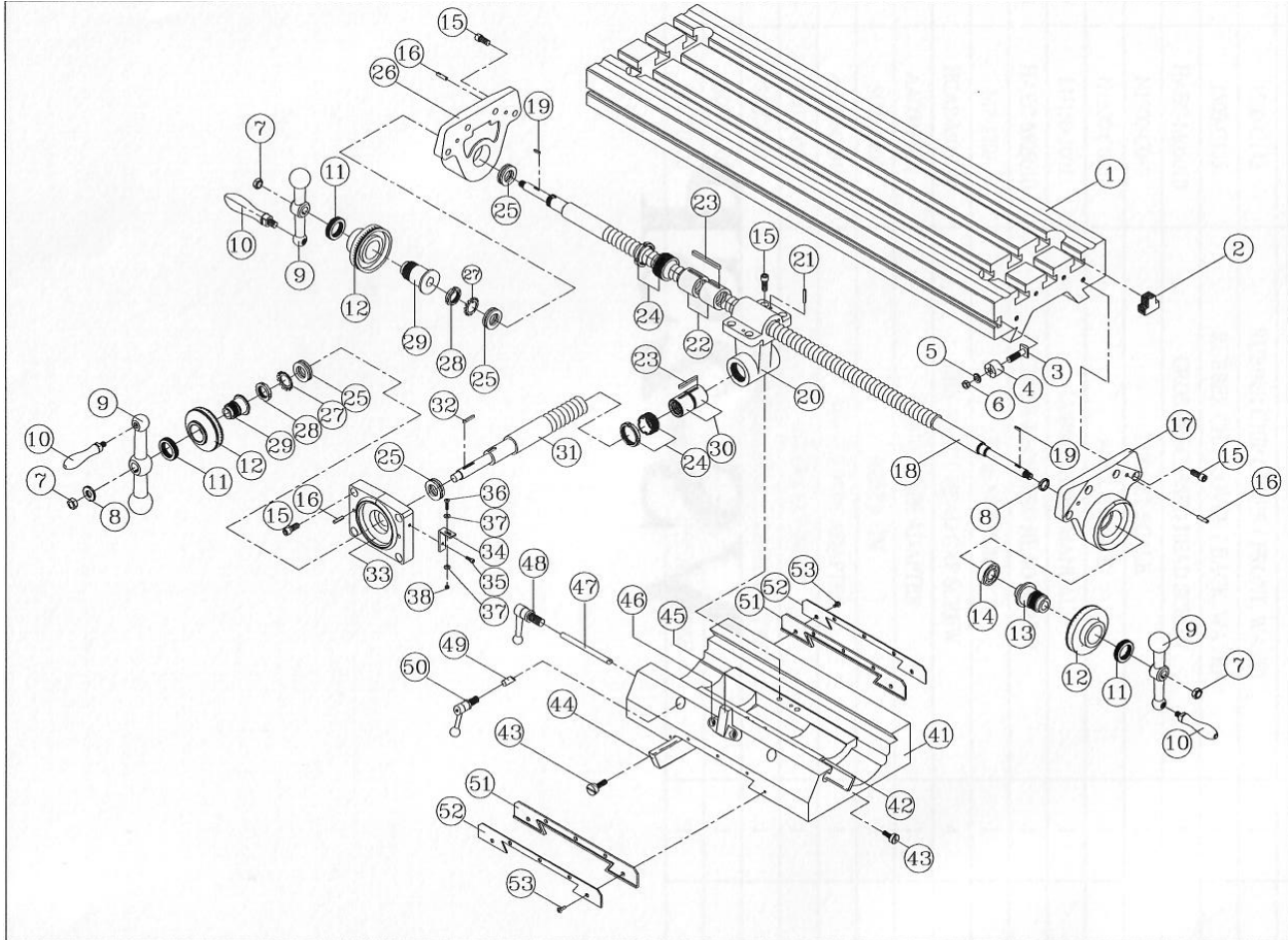


Figure 6-1: VS-2 SP XL table and saddle assembly, exploded view (VS-2 SP XL only)

Table 6-1: VS-2 SP XL table and saddle assembly, parts list (VS-2 SP XL only)

Key no.	Part no.	Description	Qty	Remarks
1	1800-C219	TABLE	1	
2	1500-D046	STOP PIECE T-RUBBER	6	
3	1500-C031	STOP PIECE T-BOLT	2	
4	1500-C032	TABLE STOP PIECE	2	
5	1500-C073	WASHER	2	
6	HBBE-W030	NUT	2	
7	HBBE-W040-1	NUT	3	
8	1500-D014	KEY	1	
9	1500-D026	BALL CRANK HANDLE	3	
10	1500-C083	BALL CRANK HANDLE LEVER	3	
11	1500-C086	DIAL NUT	3	
12	1500-D004	DIAL (METRIC GRADUATION 250mm)	3	
13	1500-D005	DIAL HOLDER	3	
14	BR-6204	BEARING	1	
15	HCAP-W030100	HEX-SOCKET HEAD CAP SCREW	1	
16	HPB-0625	PIN	6	
17	1500-D012	RIGHT BEARING BRACKET	1	
18	1700-D015	LONGITUDINAL FEED SCREW (METRIC TABLE)	1	
19	HKE-2R-0320	KEY	1	
20	1500-D022	FEED NUT BRACKET	1	
21	HPB-0530	PIN	2	
22	1500-D019	LONGITUDINAL FEED NUT (METRIC)	1	
23	HKE-2R-0550	KEY	1	
24	1500-D017	BACKLASH ADJUSTMENT NUT	2 sets	
25	BR51105	BEARING	4	
26	1500-D011	LEFT BEARING BRACKET	1	
27	AW05-25MM	LOCK WASHER	2	
28	1500-D006	LOCKNUT	2	
29	1500-D021	DIAL HOLDER	2	
30	1500-D029	CROSS FEED SCREW NUT (METRIC)	2	
31	1700-D027	CROSS FEED SCREW (METRIC)	1	
	1700-D078	CROSS FEED SCREW (METRIC)		
32	HKE-2R-0325	KEY	1	
33	1500-D028	CROSS FEED BEARING BRACKET	1	
	1500-D043	CROSS FEED BEARING BRACKET		
34	1500-C155	FRONT RUBBER CHIP COVER SHAFT BRACKET	2	
35	HACP-M05010	HEX-SOCKET HEAD CAP SCREW	2	

Key no.	Part no.	Description	Qty	Remarks
36	HAEC-H05010	CROSS-RECESSED HEAD SCREW	2	
37	HWA-M5	OVERLOAD CLUTCH WASHER	4	
38	HBBD-M05	NUT	2	
41	1800-C237	SADDLE	1	
42	220B-0095	SADDLE KNEE GIB (Y AXIS)	1	
43	1500-C041	ADJUSTING SCREW	6	
44	1810-C005	GIB FOR TABLE & SADDLE (X AXIS)	1	
45	1500-C042	TABLE STOP BRACKET	1	
46	HADA-W10141	HEX-SOCKET HEAD CAP SCREW	1	
47	1800-C220	TABLE STOP BRACKET	1	
48	1800-A018	MOTOR LOCK BOLT HANDLE	1	
49	1700-C046	TABLE LOCK PLUNGER	2	
50	1800-A018	MOTOR LOCK BOLT HANDLE	2	
51	1700-C044	FELT WIPERS	1	
52	1700-C050	UPPER KNEE-SADDLE WIPER	1	
53	HAEC-H05010	CROSS-RECESSED HEAD SCREW	9	
54	1800-C216	LEFT GUIDE	1	
55	1800-C217	RIGHT GUIDE	1	
56	HADA-W04012	HEX-SOCKET HEAD CAP SCREW	8	
57	1700-D046	BLACK SPACER FOR Y AXIS POWER FEED	1	

7 VS-2 SP XL body, knee, turret and ram assembly

This assembly covers the body and column, the turret, ram and ram adaptor, the knee and elevating screw, the elevating crank and elevating motor, the covers, the levelling screws, the lubricator and the coolant system.

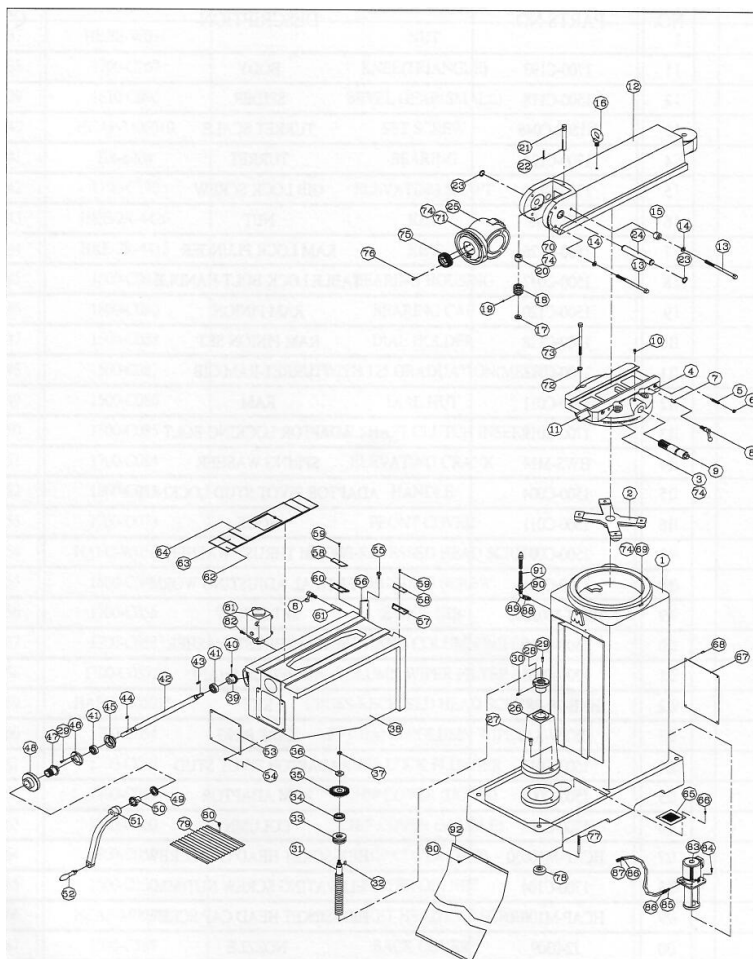


Figure 7-1: VS-2 SP XL body, knee, turret and ram assembly, exploded view (VS-2 SP XL only)

■ CAUTION

On Figure 7-1, key numbers from 77 upwards do not match Table 7-1. On the drawing, 77 and 78 are the levelling screw and pad, 81 and 82 the manual lubricator, 83 and 84 the coolant pump, 85 to 87 the coolant hose fittings, 88 to 91 a small fitting on the column front, and 92 a rubber chip cover. The elevating motor parts (Table 7-1, items 85 to 97) are not drawn. Identify these parts by description, not by drawing number, and confirm with MACH Machine Tools before you order.

Table 7-1: VS-2 SP XL body, knee, turret and ram assembly, parts list (VS-2 SP XL only)

Key no.	Part no.	Description	Qty	Remarks
1	1700-C193	BODY	1	
2	1500-C118	SPIDER	1	
3	N1500-C048	TURRET SCALE	1	
4	1700-C124	TURRET	1	
5	1700-C110	GIB LOCK SCREW	2	
6	HWS-3/8	NUT	2	
7	1500-C126	RAM LOCK PLUNGER	2	
8	1500-C037	TABLE LOCK BOLT HANDLE	5	
9	1500-C120	RAM PINION	1	
10	1500-C128	RAM PINION SET	1	
11	1700-C111	TURRET-RAM GIB	1	
12	1700-C011	RAM	1	
13	1700-C019	ADAPTOR LOCKING BOLT	3	
14	HWS-M14	SPRING WASHER	3	
15	1500-C004	ADAPTOR PIVOT STUD LOCKNUT	1	
16	1500-C011	HOOK	1	
17	1500-C007	WORM THRUST WASHER	1	
18	1500-C006	VERTICAL ADJUSTING WORM	1	
19	HSET-M05008	SET SCREW	1	
20	1500-C012	WORM THRUST WASHER	1	
21	1700-C008	ADJ WORM SHAFT	1	
22	HKE-2R-8812	KEY	1	
23	HSTW-S26	SNAP RING	2	
24	1500-C017	ADAPTOR PIVOT STUD	1	
25	1500-C002	RAM ADAPTOR	1	
26	1700-C103	COLUMN	1	
27	HCAP-M10030	HEX-SOCKET HEAD CAP SCREW	3	
28	1700-C104	ELEVATING SCREW NUT(MM)	1	
29	HCAP-M10030	HEX-SOCKET HEAD CAP SCREW	6	
30	J2-0309	NOZZLE	1	
31	1800-C082	ELEVATING SCREW (METRIC)	1	
32	HKE-2R-5515	KEY	1	
33	BR-51305	BEARING	1	
34	BR-6205	BEARING	1	
35	1810-C077	BEVEL GEAR (BIG)	1	
36	1500-C076	CLUTCH WASHER	1	
37	HBBE-W031	NUT	1	

Key no.	Part no.	Description	Qty	Remarks
38	1700-C167	KNEE(TRIANGLE)	1	
39	1810-C096	BEVEL GEAR(SMALL)	1	
40	HCAP-M06010	SET SCREW	1	
41	BR-6204	BEARING	2	
42	1700-C170	ELEVATING SHAFT	1	
43	HKE-2R-4420	KEY	1	
44	HKE-2R-4415	KEY	1	
45	1800-C092	BEARING HOUSING	1	
46	1800-C090	BEARING CAP	1	
47	1500-C088	DIAL HOLDER	1	
48	1500-C087	DIAL WITH 125 GRADUATION(METRIC)	1	
49	1500-C086	DIAL NUT	1	
50	1500-C085	GEAR SHAFT CLUTCH INSERT	1	
51	1700-C084	ELEVATING CRANK	1	
52	1800-C083	HANDLE	1	
53	1700-D073	FRONT COVER	1	
54	HAEC-W05015	CROSS-RECESSED HEAD SCREW	4	
55	1500-C041	ADJUSTING SCREW	6	
56	1700-C055	Z AXIS GIB	1	
57	1700-C058	RIGHT HAND COLUMN WIPER	1	
58	1700-C057A	COLUMN WIPER FILTER	2	
59	HAEC-M05015	CROSS-RECESSED HEAD SCREW	9	
60	1700-C054	LEFT HAND COLUMN WIPER	1	
61	1700-C069	KNEE LOCK PLUNGER	2	
62	1700-C061	CHIP COVER (DOWN)	1	
63	1700-C060	CHIP COVER (MIDDLE)	1	
64	1700-C059	CHIP COVER (TOP)	1	
65	1500-C130	FILTER OIL NET	2	
66	HCAP-M05010	HEX-SOCKET HEAD CAP SCREW	4	
67	1500-C188	BACK COVER	1	
68	HCAP-M03100	HEX-SOCKET HEAD CAP SCREW	4	
69	N1500-C144	ZEROING POINT PLATE	1	
70	N1500-C015	ANGLE PLATE	1	
71	N1500-C003	ADAPTOR SCALE	1	
72	HWA-N4	WASHER	4	
73	1700-C127	LOCKING BOLT	4	
74		SMALL RIVET NUT	8	
75	1500-C001	QUILL HOUSING ADJUSTING GEAR	1	

Key no.	Part no.	Description	Qty	Remarks
76	HAEC-W025112	HEX-SOCKET HEAD CAP SCREW	3	
77	1800-C142	RUBBER CHIP COVER	1	
78	HAEC-M05010	CROSS-RECESSED HEAD SCREW	4	
79	1800-C135	RUBBER CHIP COVER (BACK, WAVE)	1	
80	HAEC-M05010	CROSS-RECESSED HEAD SCREW	4	
81	1800-C167	SPRING	1	
82	1500-C170	ADJ. SCREW	4	
83	HBBE-W060	SET NUT	4	
84	1800-C146	LEVELLING PADS	4	
85	1800-C157	LIMIT LOCK PLUNGER	1	
86	HCAP-M06020	HEX-SOCKET HEAD CAP SCREW	2	
87	1810-C096	BEVEL GEAR (SMALL)	1	
88	HSET-M05006	SET SCREW	1	
89	BR-6204	BEARING	1	
90	1700-C169	LIFTING MOTOR SHAFT	1	
91	HKE-2R-4420	KEY	1	
92	1700-C168	LIFTING BRACKET	1	
93	HSET-M06012	SET SCREW	1	
94		ELEVATING MOTOR	1	
95	HCAP-M08020	HEX-SOCKET HEAD CAP SCREW	4	
96	1800-C158	ELEVATING COVER	1	
97	HCAP-M08020	HEX-SOCKET HEAD CAP SCREW	4	
98	LU150-1001	LUBRICATOR (MANUAL)	1	
99	HCAP-M05010	CROSS-RECESSED HEAD SCREW	4	
100	MP-1701	COOLANT PUMP	1	
101	HCAP-M06020	HEX-SOCKET HEAD CAP SCREW	4	
102	AA0003T03L	WATER PIPE ADAPTER	1	
103	S007-0400	RESTRAIN	2	
104	AA0004T04L	WATER PIPE ADAPTER	1	
105	S007-0550	INSERT CONNECT	1	
106	S007-0600	HIGH PRESSURE CONNECT L-TYPE	1	
107	S007-0100	BALL VALVE	1	
108	S007-0200	FLEXIBLE STEEL COOLANT HOSE	1	



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