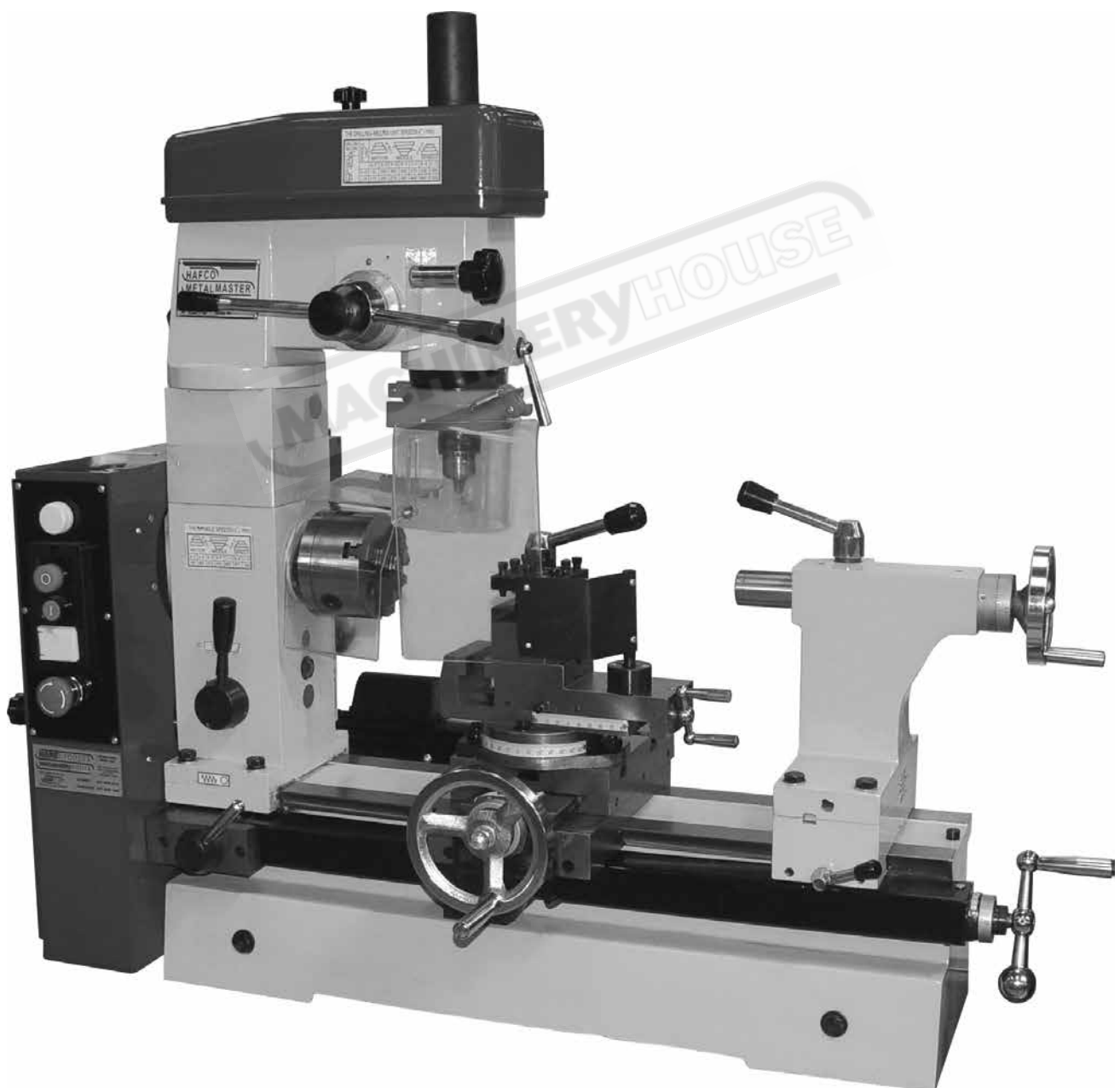


INSTRUCTION MANUAL

AL-280P Lathe & Mill Drill Combination (240V) 400 x 409mm



L159



Established 1930

Distributors of new & used workshop Equipment

L159 A-280P

HQ400/3B

MULTI-PURPOSE MACHINE

OPERATION & PARTS

MANUAL

23-09-2004

L159 A-280P 23/9/04

HQ400/3B

MULTI-PURPOSE MACHINE

WITH NEW PART NUMBERS FROM /9/04

**OPERATING MANUAL
& SPARE PARTS**



ORIGINAL DO NOT TAKE

**CHIZHOU HOUSEHOLD MACHINE-TOOL WORKS
THE PEOPLE'S REPUBLIC OF CHINA**

IMPORTANT TIPS

- Read all instructions—a few minutes now may save hours later.
- Follow safety rules for power tools.
- Check bags and cartons for parts.
- Keep the machine clean, lubrication, and adjusted as instructed.
- Do not leave cleaning rags, tools or other materials on machine bed or around moving parts of the machine.
- Work only with sharpened tools.
- Check oil level regularly.
- After working with coolant, clean wet surfaces thoroughly and oil these surfaces.
- Clamp all workpieces and tools firmly.
- To prevent unnecessary wear of the slides and to assure optimum working results, all movements other than the feed must be clamped.
- Switch spindle speeds only when the machine is off.
- Never clean machine with compressed air.

1. TECHNICAL DATA

TURNING

Swing over bed	420mm
Distance between centers	400mm.500mm
Longitudinal travel	380mm. (HQ400/3L:480mm)
Cross travel	120mm
Spindle bore	20mm
Spindle taper	M.T.3
Tailstock barrel taper	M.T.3
Range of spindle speed	7 speeds 160~1360r.P.m
Thread can be cut	metric:18steps0.2~3mm Imperial:27 steps 8~120T.P.I
Amount of power feed	8 steps 0.050~0.175mm/r 0.002~0.007"/r

DRILLING AND MILLING

Max. Drilling diameter	φ 15mm
Max. End milling cutter diameter	φ 20mm
Max. Face milling cutter diameter	φ 63mm
Spindle taper	M.T.3
Spindle travel	85mm
Range of spindle speed	14 speeds 177~1300r.p.m
Table size(L×W)	200×150mm ²

OTHERS

Motor capacity	0.55kw
Voltage. Frequency	As customer's requirement
Overall dimension(L×W×H)	970×580×965mm ³ , (HQ400/3L: 1070×580×890mm ³)
Net weight	180kg (HQ400/3L:185kg)

2. ACCESSORIES

STANDARD ACCESSORIES

Serial No.	Specification		Quantity	Remark
1	Tree-jaw chuck	100mm	1	
2	Centers	M.T.3	2	
3	Drill chuck	B16(1.5~13mm)	1	
4	Tie rod		1	
5	Tie rod washer		1	
6	Drill stock		1	
7	Toolpost wrench		1	
8	Open end wrench	13mm-16mm	1	
9	Wedge		1	
10	Allen wrench	4mm	1	
		5mm	1	
		6mm	1	
		8mm	1	ForHQ400/3A
11	Change gear	24T	1	For metric and imperial leadscrew
		27T	1	
		30T	1	
		33T	1	
		36T	1	
		42T	1	
		48T	1	
		60T	1	
		120T	1	
		39T	1	
		72T	1	Leadscrew
		25T	1	For metric
		75T	1	leadscrew
12	Duplex gear	60T/120T	1	For metric
		125T/127T	1	Leadscrew
		60T/127T	1	For imperial
		120T/127T	1	Leadscrew

SPECIAL ACCESSORIES

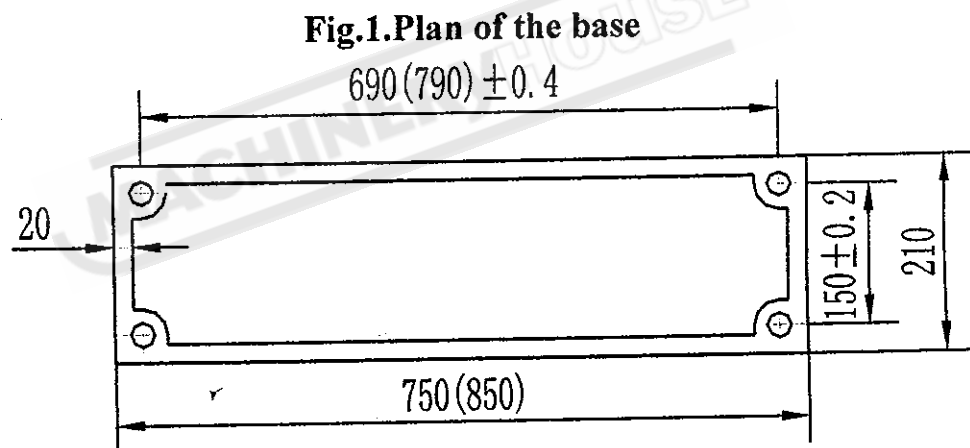
Serial No.	Specification	Quantity
1	Lathe tool	1 set
2	Multi-purpose machine vice	1 set
3	Milling force cutting cutter chuck	1 set
4	Reversible thread tapping tools	1 set

3. INSTALLATION

There are four shafts on the two sides of the bed for lifting. Pulling out the shafts and tying up the ones with rope, the machine be lifted and carried.

CAUTION : protecting the controls and the painted surface.

A rigid base as shown in fig.1 is given by yourself. Place the machine on it and fixed the machine with bolts. Level the surface of the table with admissible error 0.1mm in 1000mmm.



4. CONSTRUCTION AND CONTROLS

The machine consists of the bed, the headstock, the drilling-milling unit, the table, the rotation base, the electrical motor, etc. the milling-drilling unit can be swiveled 360° on the base(headstock). The height of the unit of model HQ400/3A can be adjusted.

Loose the screw(19), rotate the lever(5) (see fig.2), the drilling-milling unit of HQ400/3A can be adjusted up or down. After adjusted the height of the unit at the suitable position, lock the screw(19).

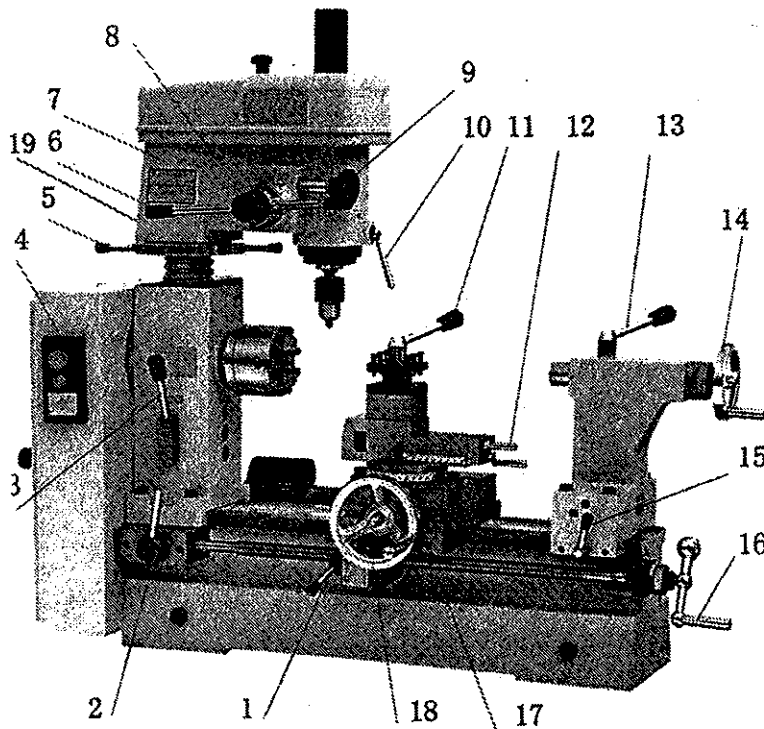


Fig.2 (HQ400/3A)

- 1. Half nut handle
- 2. Lead screw clutch handle
- 3. Speed change handle
- 4. Magnetic switch
- 5. Up and down adjusting lever
- 6. Feed lever
- 7. Drilling And milling unit
- 8. Clutch handle
- 9. Micro feed handle
- 10. Clamp handle
- 11. Tool post lock handle
- 12. Vice handle
- 13. Tailstock barrel clamp handle
- 14. Tailstock barrel handwheel
- 15. Tailstock lock handle
- 16. Longitudinal feed handle
- 17. Carriage lock handle
- 18. Cross feed handwheel
- 19. Drilling and milling unit lock screw

6. ELECTRICAL SYSTEM

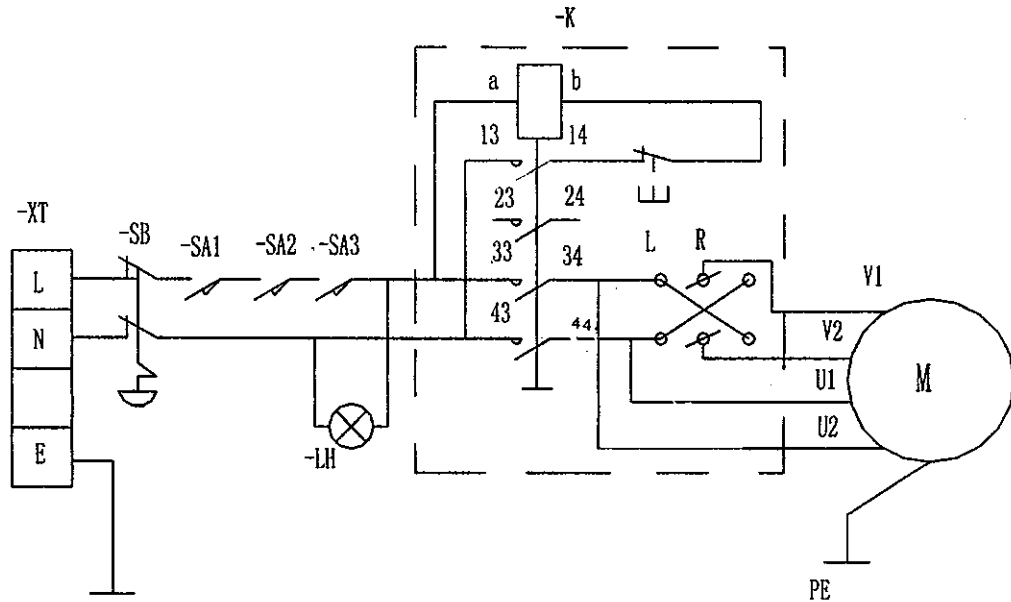
The standard machine is wired for 220V.50Hz.1Ph

On special order, some machines are wired for 110V/380V/440V. 50Hz/60Hz. 1Ph/3Ph, The yellow-green wire spaced on the housing is grounding.

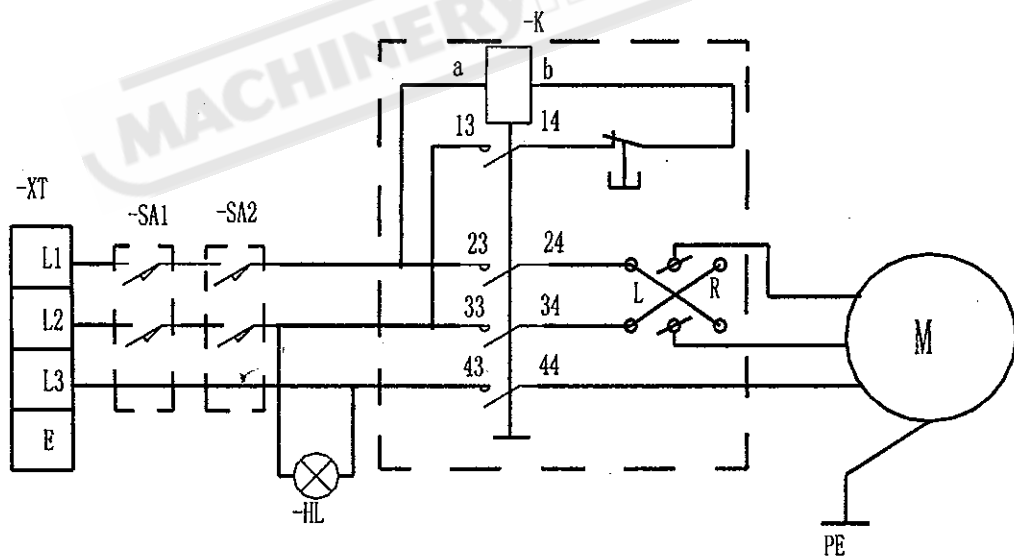
M	Motor	YL7144	HL	Power indicator light AD11
K	Magnetic switch	KJD	SA1,SA2, SA3	Limiting switch LX5-11N
SB	Emergency switch	LAY3	XT	Terminal block

Fig.3 Wiring diagram

Single phase (CE)



Three phase (CE)



ATTENTION: Fig.3 is designed specially as CE standard. For universal products, SA1,SA2, SA3 switch don't assemble. If you have some special requirement, we will design as it.

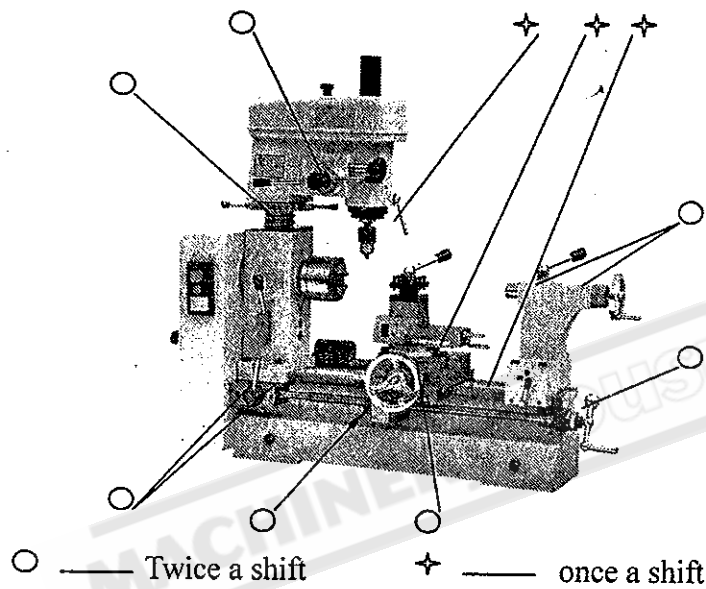
6. LUBRICATION

All oil sites on the machine should be oiled with the regulations mentioned in fig.3.

The leadscrew, the slide, and the drilling-milling quill should be oiled with engine oil to the operating condition of the machine. All bearing should be greased periodically and cleaned once a year.

The oil in the headstock should be changed periodically.

Fig.4.Lubrication chart



7. OPERATION

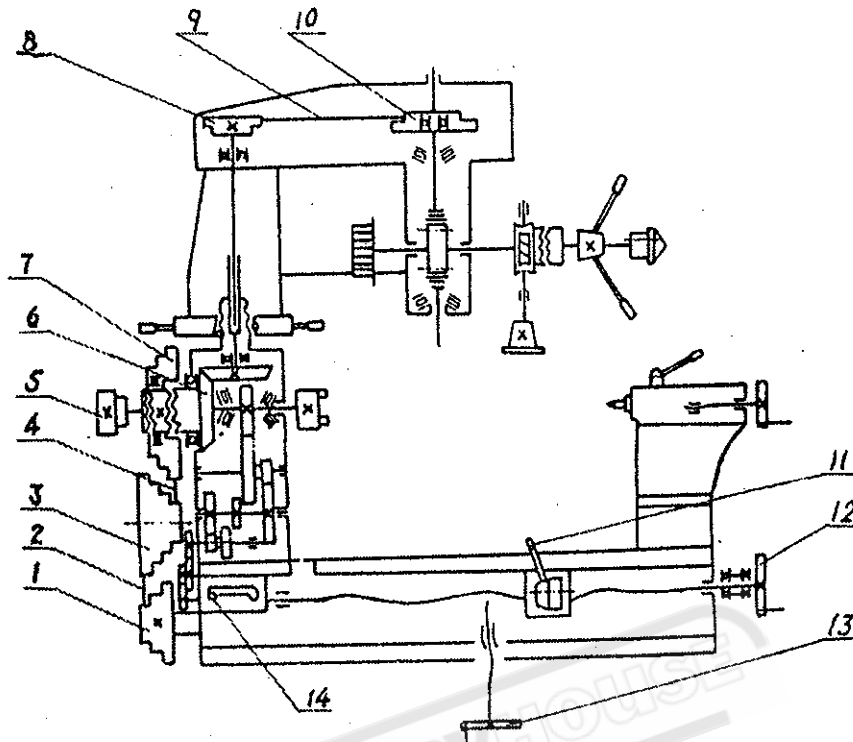
Before operating the machine, you should read the OPERATING MANUAL carefully to acquaint the construction of the machine, the functions of the control system, and the demand of lubrication. And loose the slide lock lever, the drilling-milling quill clamp lever, etc., clean the machine with uncorrosion kerosene, then clean the machine with dry cotton goods, oil the machine slide with lubricating-oil.

Loose the screw (19), rotate the lever (5), the drilling-milling unit of HQ400/3A can be adjusted up or down. After adjusted the height of the unit at the suitable position, tie the screw (19). (see fig.2)

Draw out the handle (8), turn the lever (6) to feed spindle directly. Push on the handle (8), Turn the handle (9) to micro feed spindle. (see fig.2)

8. DRIVE SYSTEM

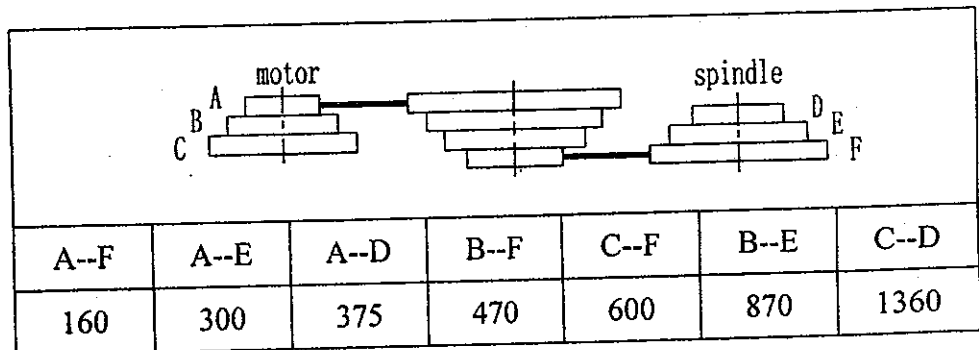
Fig.5 Transmission system



SPINDLE DRIVE

Change the position of belts on the pulleys, 7 different speeds as shown in fig.6 may be obtained for the spindle.

Fig.6 Turning Spindle speeds(r.p.m)



DRILLING- MILLING DRIVE

Change the position of the belts on the pulleys, 14 different speeds as shown in fig.7 may be obtained for the drilling-milling spindle.

Fig.7 Drilling-milling spindle speeds (r.p.m)

		Spindle Unit							
Drilling-Milling Unit	G	A--F	A--E	A--D	B--F	C--F	B--E	C--D	
	H	K-G	150	290	360	450	575	836	1300
	K	L-H	117	220	276	345	440	640	1000
	L								

FEED MOTION (see fig.5)

Place the handle (14) on the right to take off the leadscrew from the driven system, move the handle (11) to engage the half-nut, move the handwheel (12), the toolpost movement by hand is provided by leadscrew- nut mechanism.

Place the lever(14) on the left, move lever(11) to engage the half-nuts, the spindle movement drives the gear mechanism, the toolpost obtains power feed movement.

If the machine with longitudinal leadscrew guard, it has not the half-nut.

Change the gear A, 8 different amounts of power feed may be obtained.

AT	A	24	30	36	42
120T	I	0.1	0.125	0.15	0.175
60T	II	0.05	0.063	0.075	0.088
120T	I	0.0039	0.0049	0.0059	0.0069
	II	0.002	0.0025	0.003	0.0035

For metric leadscrew (4mm)

AT	A	24	30	36	42
127T	I	0.1	0.125	0.15	0.175
60T	II	0.05	0.063	0.075	0.088
120T	I	0.004	0.005	0.006	0.007
	II	0.002	0.0025	0.003	0.0035


For imperial leadscrew (6T. P. I)

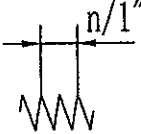
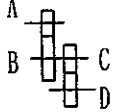
THREAD CUTTING

The spindle is at the lowest speed, place the handle (14) on the left move the lever (11) to engage the half-nuts, The spindle rotation drive gear mechanism and the leadscrew-nut mechanism, the threading is provided by the toolpost movement.


Place the handle (3 see fig.2) on the position, change the gears A and D, different metric threads and imperial threads as shown may be obtained.


CAUTION: The lever (14) must remain on the left until the thread cutting process is complete. The tool is withdrawn from the work at the end of the cut by the handwheel (13) and the motor is reversed bringing the tool back to the start for successive cuts. When the motor is turned from forward to reverse, you must turn the switch from forward to stop at first, wait the motor stop, then turn the switch from stop to reverse. See fig.(5)

									
D	I				II				
	24	25	30	60	24	30	60	B=120	
A			0.8	0.4		0.4	0.2		
24						0.45			
27							0.25		
30				0.5					
36	1.5			0.6	0.75		0.3		
42	1.75			0.7			0.35		
60	2.5		2		1.25	1			
75		3							

										B=125 C=127	
A	D	24	27	30	33	36	42	48	60		
		75	I	8	9	10	11	12	14	16	20
	II	16	18	20	22	24	28	32	40		
25	I	24	27	30	33	36	42	48	60		
	II	48	54	60	66	72	84	96	120		

For metric leadscrew(4mm)

AT	D					
		A	36	42	48	60
127T	I	1.5	1.75	2	2.5	3
120T	II	0.75		1	1.25	1.5
24T						

AT	D										
		A	24	27	30	33	36	39	42	48	60
127T	72	I	8	9	10	11	12	13	14	16	20
120T		II	16	18	20	22	24	26	28	32	40
DT	24	I	24	27	30	33	36	39	42	48	60
		II	48	54	60	66	72	78	84	96	120

For imperial leadscrew(6T.P.I)

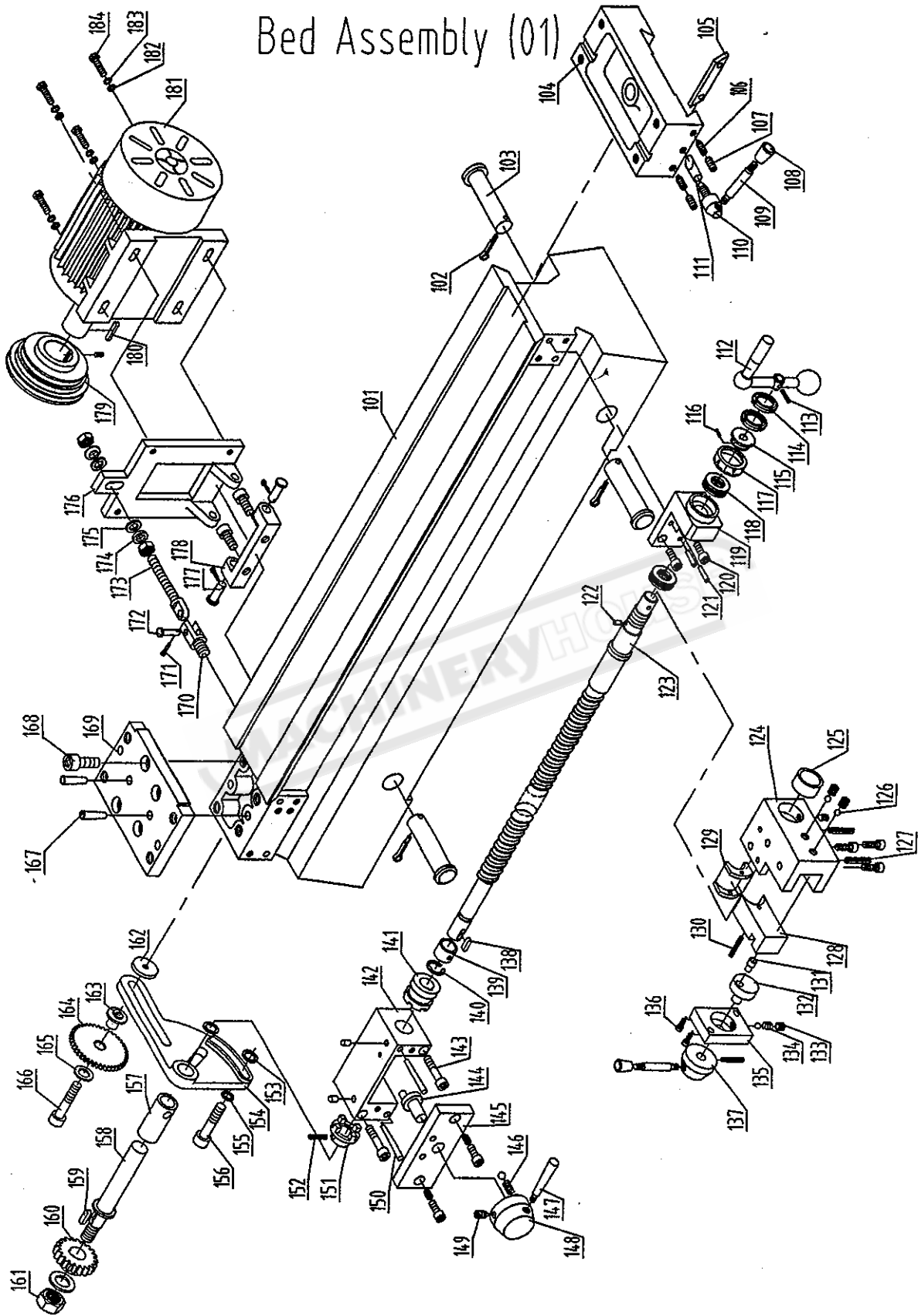
HQ400/3B

MULTI-PURPOSE MACHINE

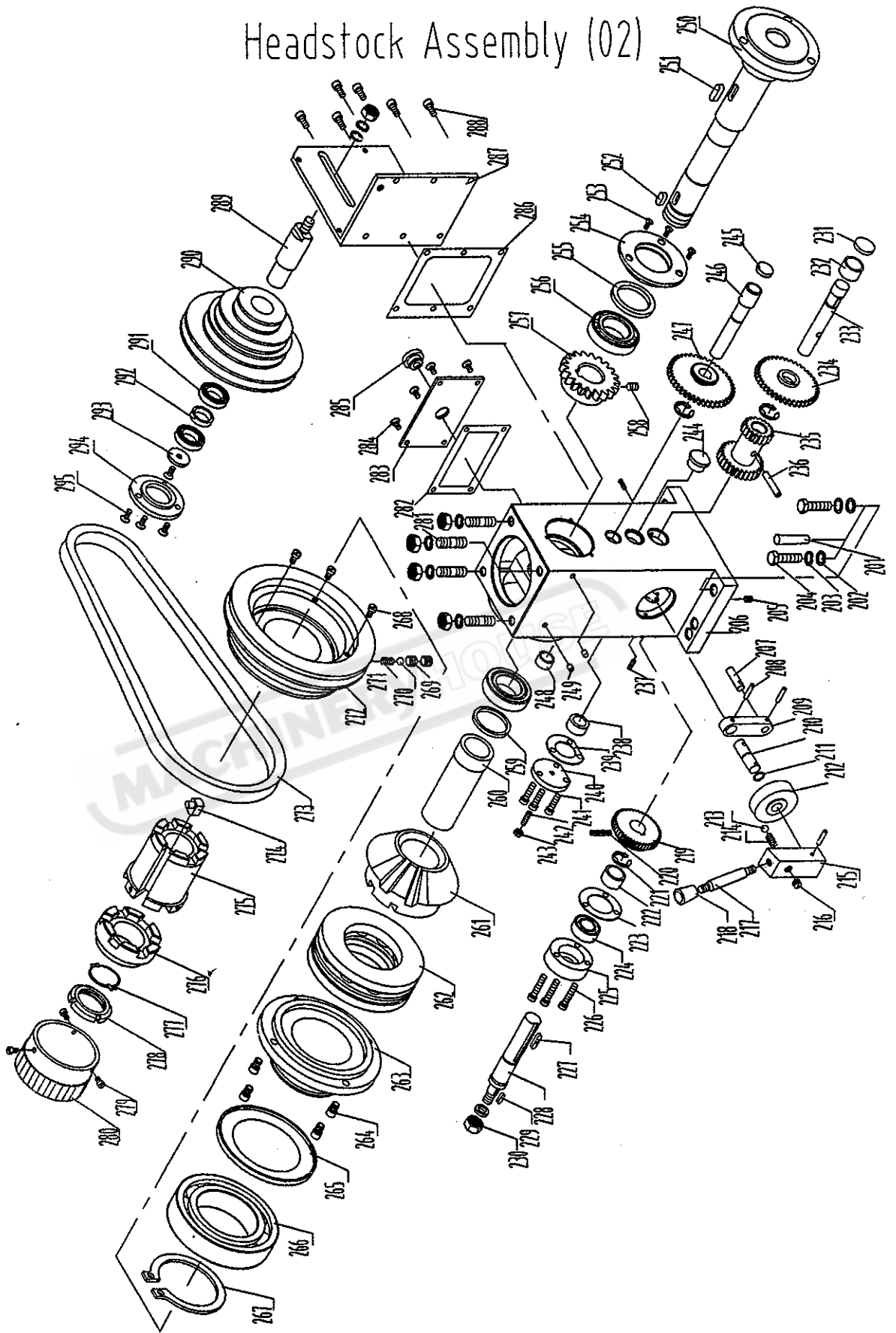
PARTS LIST



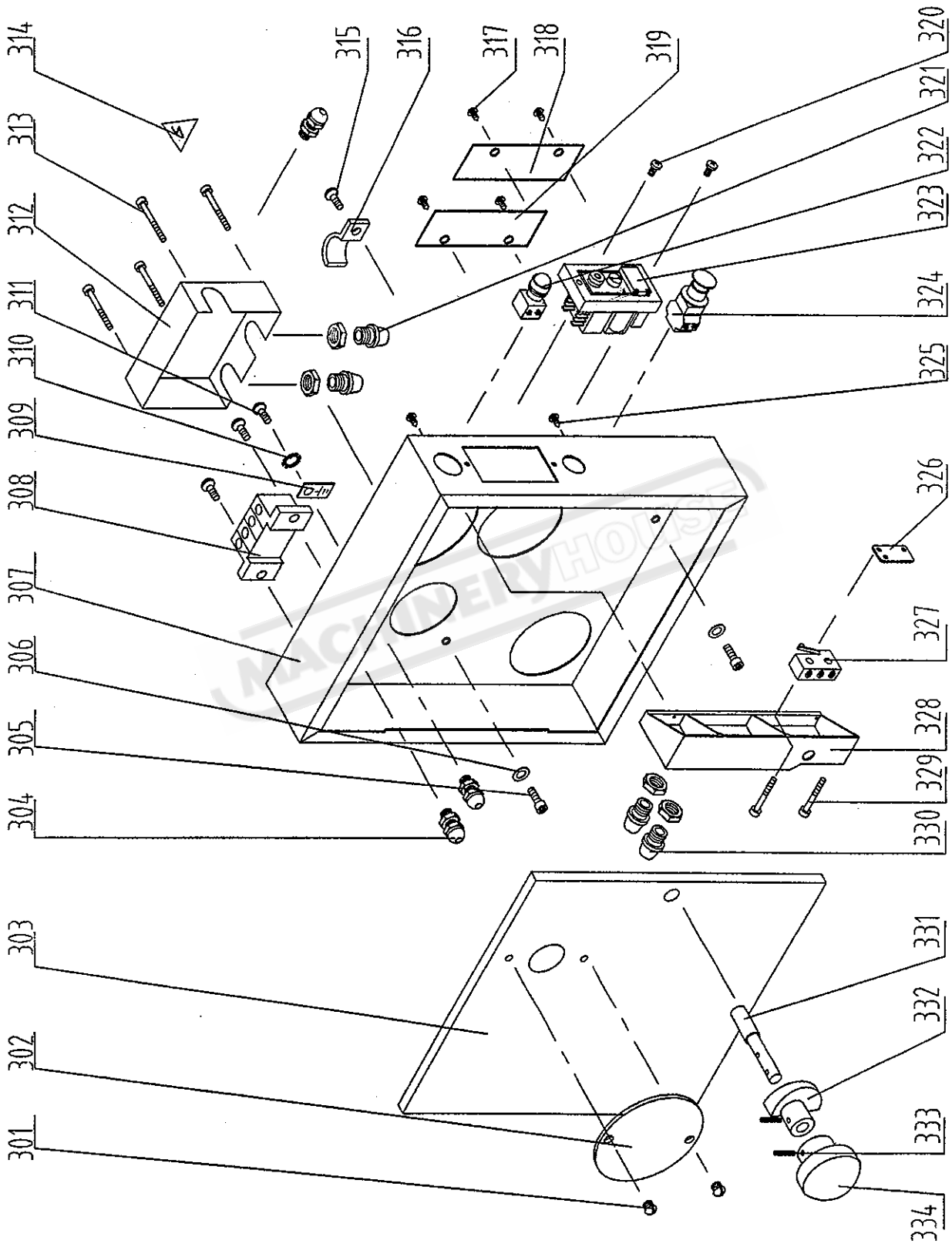
Bed Assembly (01)



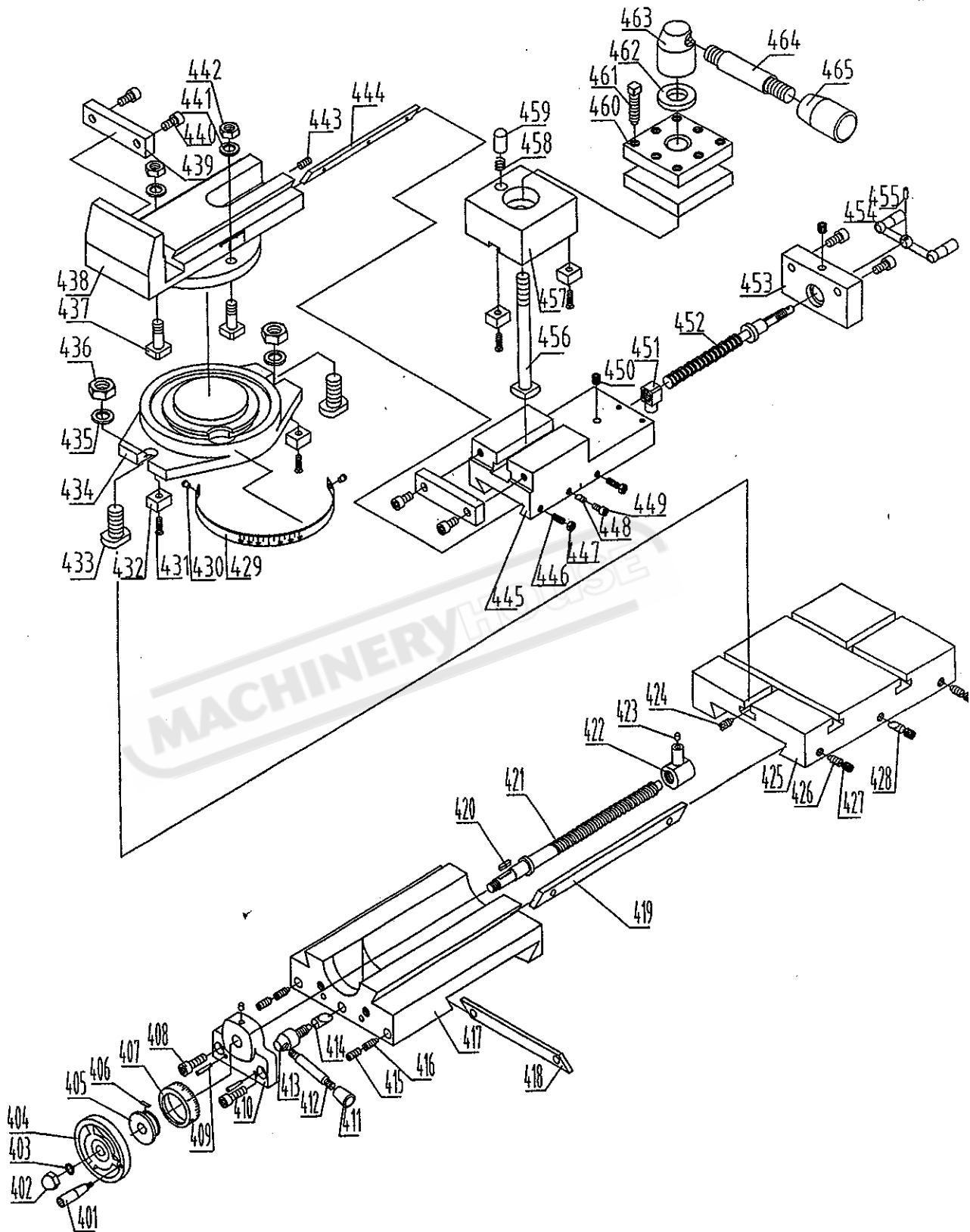
Headstock Assembly (02)



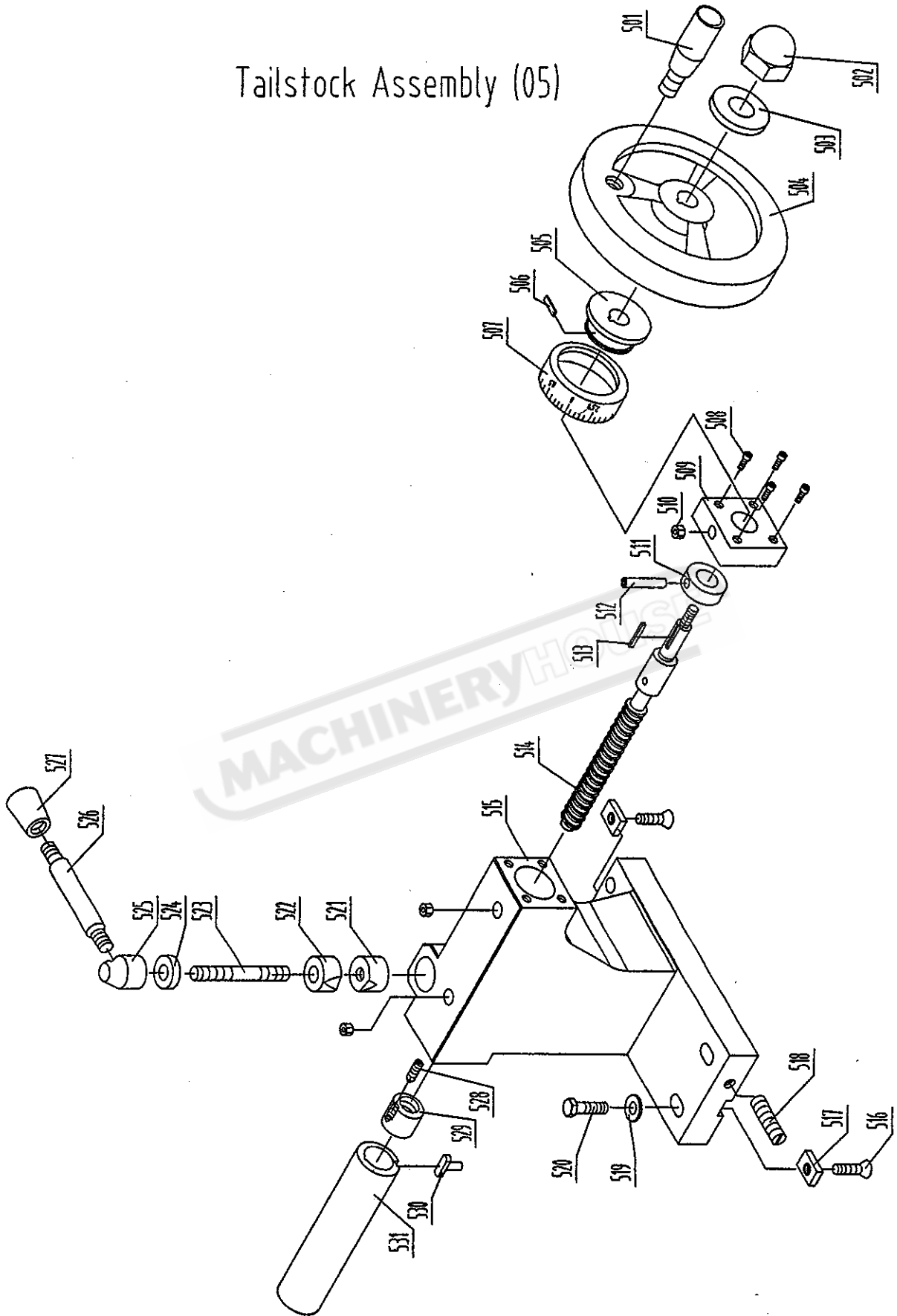
Protector assembly (03)



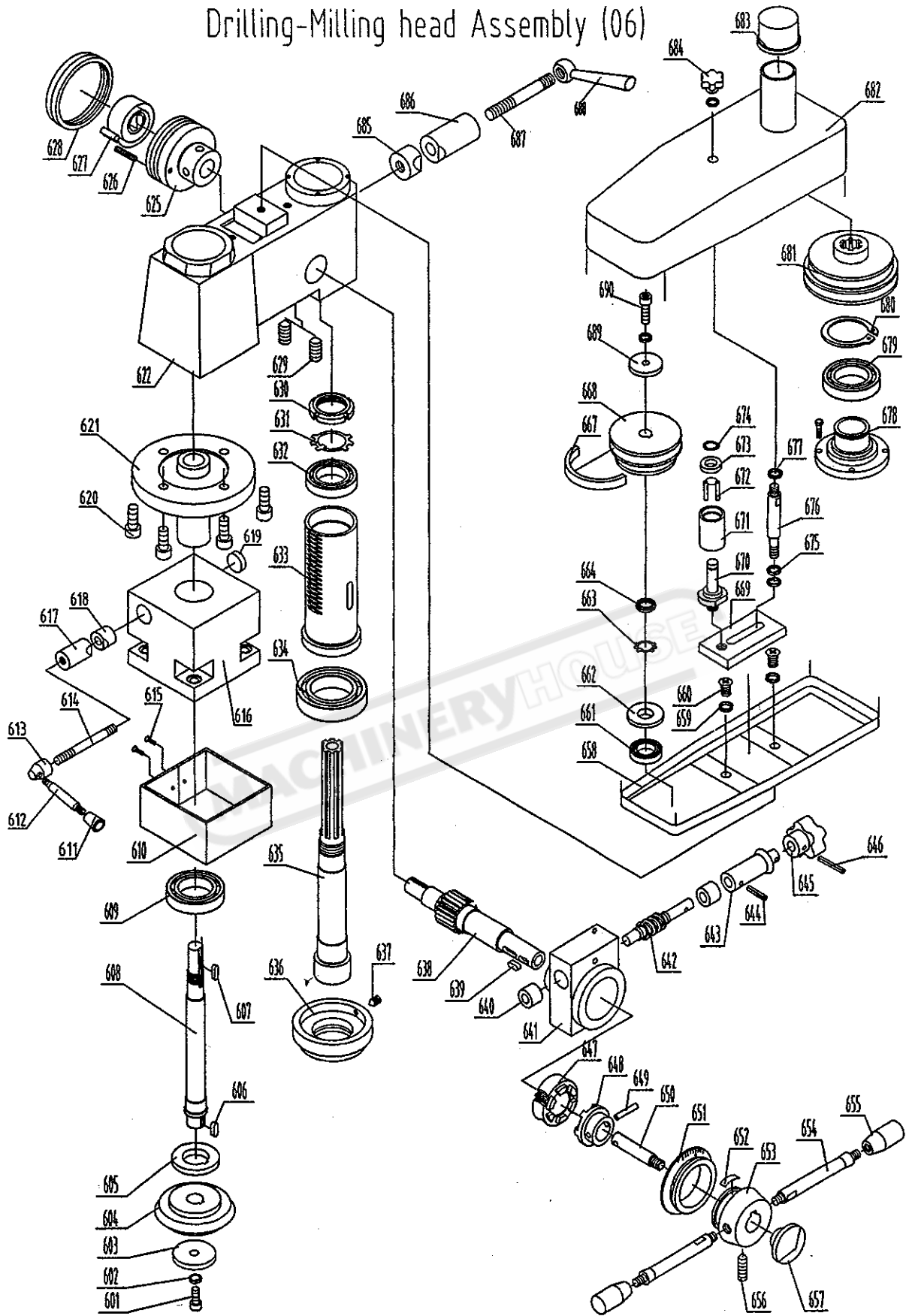
Tool post & Carriage Assembly (04)



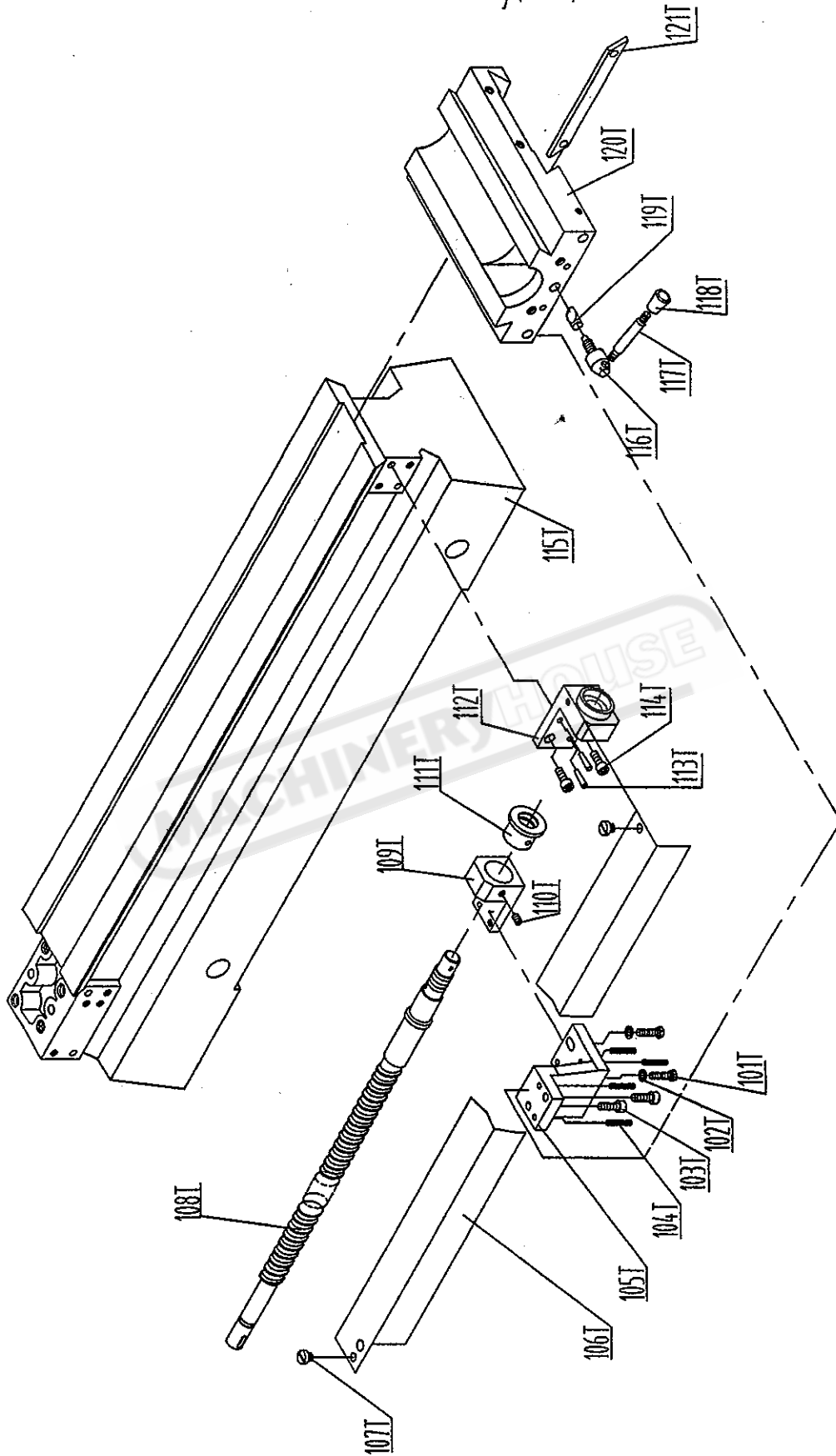
Tailstock Assembly (05)



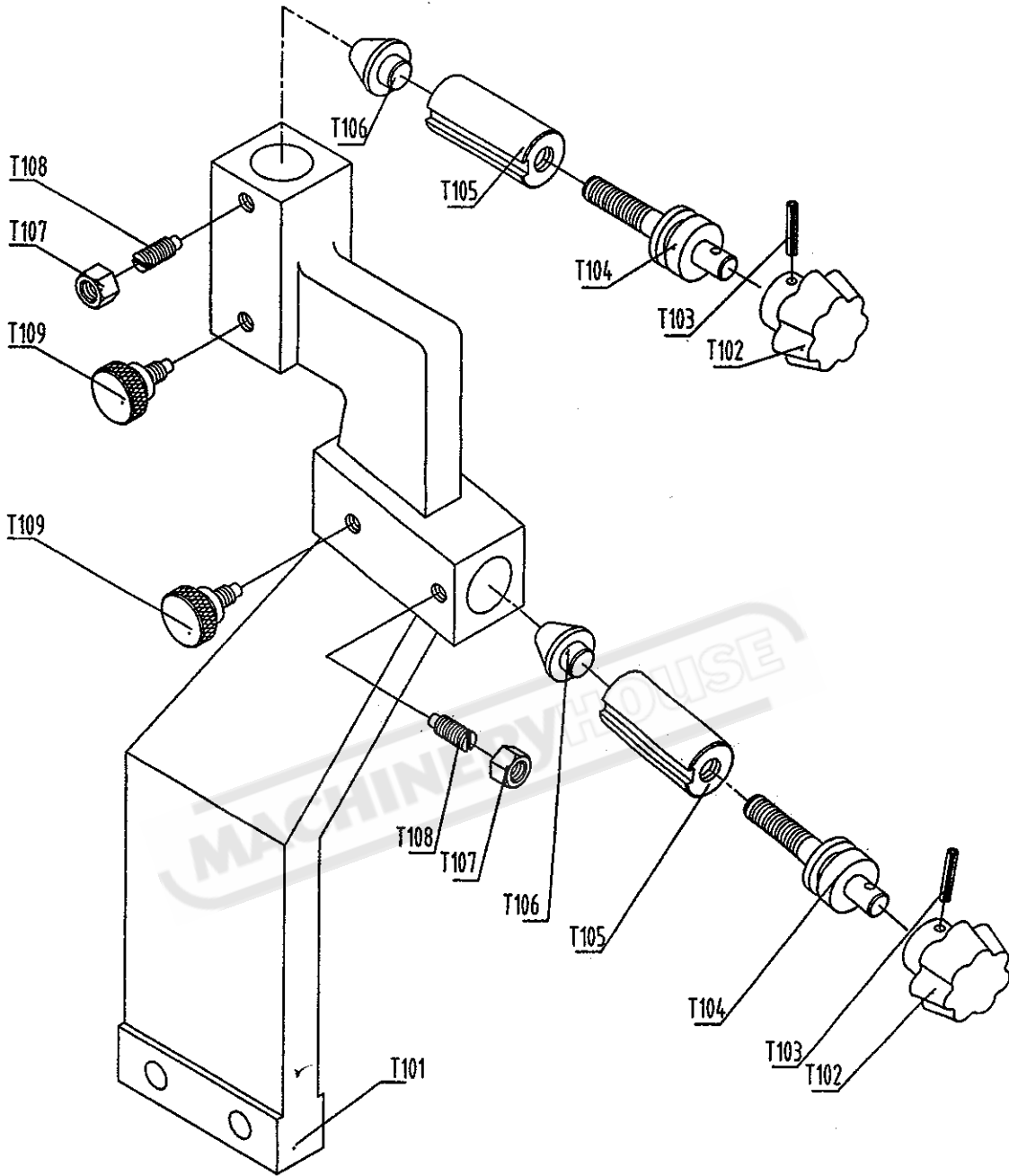
Drilling-Milling head Assembly (06)



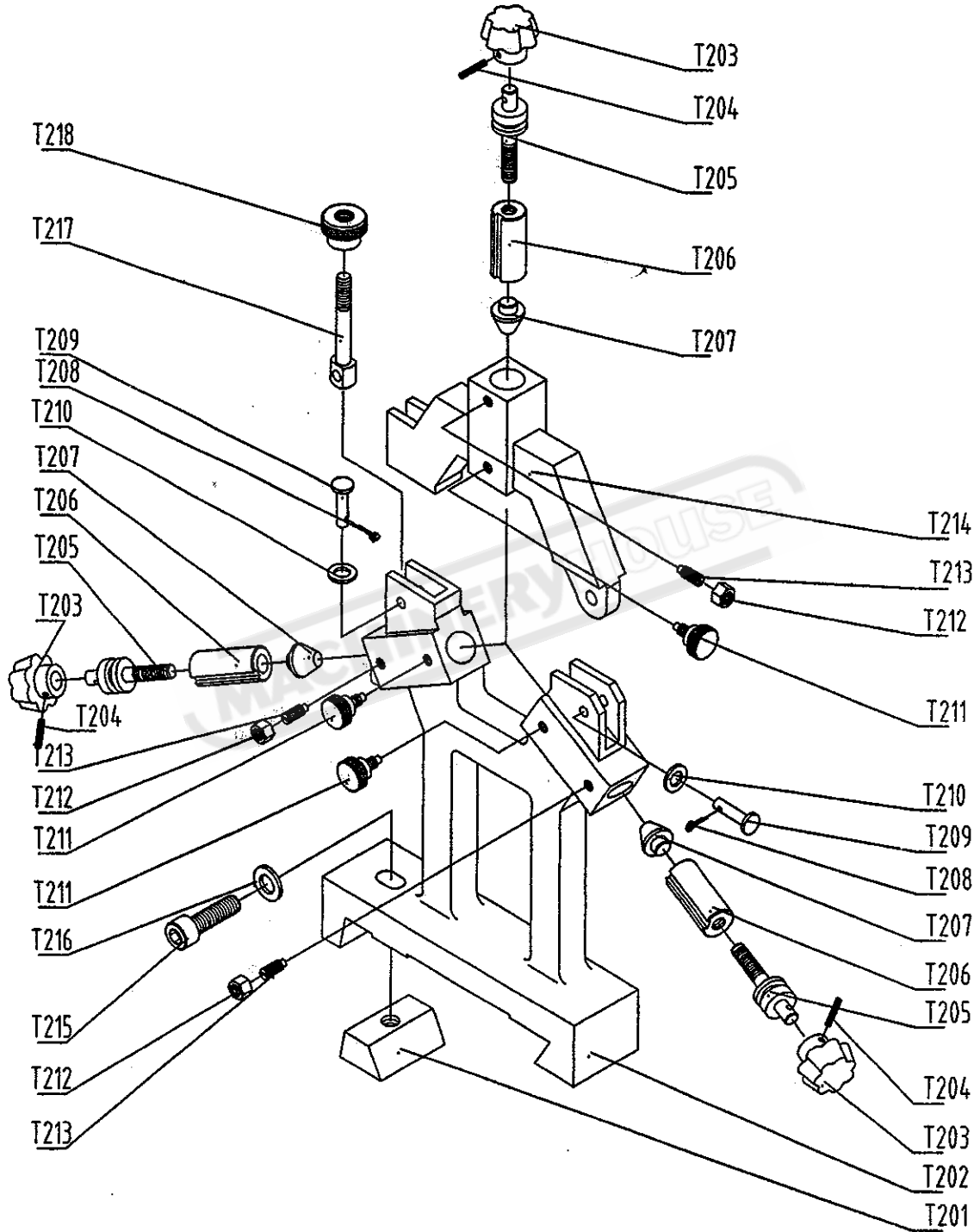
Bed Assembly(01T)



Follow Rest Assembly (T)



Steady Rest Assembly (T)



BED ASSEMBLY (01)

Index No.	Part No.	Description	Size	Qty.
101	HQ400-11-001(1)	Bed		1
102	GB/T91-1986	Split pin	5×25	
103	HQ400-11-013	Lifting pin		4
104	HQ400-11-004	Tail stock base		1
105	HQ400-11-016	Gib		1
106	GB/T75-1985	Screw	M8×15	2
107	GB/T77-1985	Screw	M8×25	2
108	JB/T7271.3-1994	Knob	M6×20	2
109	JB/T7271.6-1994	Lever	M6×50	2
110	HQ400-11-022	Locking screw		1
111	HQ400-11-015	Locking pin		1
112	JB/T7270.9-1994	Ball-crank handle	12×50	1
113	GB/T879-1986	Spring pin	4×24	1
114	GB/T810-1988	Round nut	M14×1.5	2
115	HQ400-11-006B	Scale ring base		1
116	HQ400-11-006C	Spring piece		1
117	HQ400-11-006	Scale ring		1
118	GB/T301-1995	Bearing51103		2
119	HQ400/3-11-010	Lead screw bracket		1
120	GB/T70-1985	Screw	M6×12	7
121	GB/T117-1986	Tap pin	B4×25	2
122	GB/T119-1986	Pin	B4×6	1
123	HQ400/3-01-006	Longitudinal lead screw		1
124	HQ400/3-06-007	Half-nut base		1
125	HQ400/3-06-001	Lead screw sleeve		1
126	GB/T308-1977	Steel ball	Ø6.5	4
127	GB/T879-1986	Spring pin	5×20	2
128	HQ400/3-06-008	Half-nut bracket		1
129	HQ400/3-06-002	Half-nut		1
130	GB/T879-1986	Spring pin	4×30	2
131	HQ400/3-06-003	Pin		1
132	HQ400/3-06-004	Eccentric arm		1
133	GB/T77-1985	Screw	M8×16	1
134	CM1224C-06-007	Spring	Ø6	1
135	HQ400/3-06-005	Cover		1
136	GB/T70-1985	Screw	M5*12	2
137	HQ400/3-06-006	Lever base		1
138	GB/T1096-1979	Key	A5×12	2
139	HQ400/3-04-007	Sleeve right)		1
140	GB/T896-1986	"E"ring		1
141	HQ400/3-04-004	Clutch B		1
142	HQ400/3-04-006	Link base		1

143	GB/T70-1985	Screw	M6×50	1
144	HQ400/3-04-005	Eccentric pin		1
145	HQ400/3-04-008	Cover		1
146	GB/T2089-1980	Spring	0.8×5×14	1
147	JB/T7270.3-1994	Handle	BM8×80	1
148	HQ400/3-04-009	Lever base		1
149	GB/T78-1985	Screw	M6×16	1
150	GB/T117-1986	Tap pin	B5×60	2
151	HQ400-04-003	Clutch A		1
152	GB/T879-1986	Spring pin	5×22	1
153	HQ400/3-01-013	Adjusting washer		1
154	HQ400/3-01-008	Gear bracket		1
155	GB/T97.1-1985	Washer	6	1
156	GB/T70-1985	Screw	M6×30	1
157	HQ400/3-04-002	Sleeve (left)		1
158	HQ400/3-04-001	Shaft		1
159	GB/T1096-1979	Key	4×12	1
160	HQ400/3-附-009	Change gear		1
161	GB/T6170-1986	Nut	M10	3
162	HQ400/3-01-009	"T" key		1
163	HQ400/3-01-010	"T" collar		1
164	HQ400/3-附-01	Change gear	M=1.5	
165	HQ400/3-01-011	Washer		2
166	GB/T70-1985	Screw	M6×35	2
167	GB/T117-1986	Pin	8×40	2
168	GB/T70-1985	Screw	M10×25	4
169	HQ400-11-001(2)	Fixing block		1
170	HQ400-11-029	Movable joint		1
171	GB/T91-1986	Split pin	3×20	1
172	HQ400-11-029	Pin		1
173	HQ400-11-030	Bolt		1
174	GB/T850-1988	Cone face washer	10	2
175	GB/T849-1988	Ball face washer	10	2
176	HQ400-11-024	Motor base		1
177	HQ400-11-027	Shaft		1
178	HQ400-11-025	Motor pedestal		1
179	HQ400-11-031	Motor pulley		1
180	GB/T1096-1979	Key	6×25	
181	YL7144	Motor	0.55KW	1
182	GB/T97-1976	Washer	Ø8	4
183	GB/T93-1976	Washer	Ø8	4
184	GB/T5780-1986	Bolt	M8×25	4

HEADSTOCK ASSEMBLY (02)

Index No.	Part No.	Description	Size	Qty.
201	GB117-86	Pin	8×40	2
202	GB/T848-85	Washer	10	6
203	GB/T93-87	Spring washer	10	6
204	GB/T5780-86	Hexagon Head Screw	M10×40	4
205	GB/T71-85	Screw	M5×8	1
206	HQ400/3-02-007	Headstock		1
207	GB/T119-86	Pin	B8×28	1
208	GB/T879-86	Spring Pin	4×18	2
209	HQ400/3-02-018	Link Board		1
210	HQ400/3-02-041	Shaft		1
211	GB/T3452.1-82	O- Ring	8.5×1.5	1
212	HQ400/3-02-020	Spacer		1
213	GB/T308-77	Steel Ball	Ø6.5	1
214	GB/T2089-86	Spring	0.8×5×17	1
215	HQ400/3-02-022	Lever Base		1
216	GB/T73-85	Screw	M8×5	1
217	HQ400-13-005	Lever		1
218	GB/T7271.3-94	Knob	M10×32	1
219	HQ400/3-02-006	Gear		1
220	GB/T879-86	Spring Pin	3×10	1
221	GB/T896-86	"E"-ring	12	3
222	HQ400/3-02-008	Sleeve		1
223	HQ400/3-02-005	Paper Washer		1
224	HG4-692-67	Oil Seal	PD14×30×10	1
225	HQ400/3-02-002	Oil Seal Board		1
226	GB/T65-85	Screw	M5×20	3
227	HQ400/3-02-040	Key	5×30	1
228	HQ400/3-02-009	Shaft D		1
229	GB/T1096-79	Key	4×10	1
230	GB/T6170-86	Nut	M10	2
231	HQ500-02-010	Cover		1
232	HQ400/3-02-024	Sleeve		1
233	HQ400/3-02-010	Shaft C		1
234	HQ400/3-02-012	Gear		1
235	HQ400/3-02-011	Gear		1
236	GB/T879-86	Spring Pin	5×20	1
237	GB/T78-85	Screw	M5×12	2
238	HQ400/3-02-038	Sleeve		1
239	HQ400/3-02-026	Paper Washer		1
240	HQ500-02-022	Cover		1
241	GB/T65-85	Screw	M5×12	3
244	JB/T7941.1-95	Oil indicator	Ø12	1
245	HQ500-01-019	Cover		1
246	HQ400/3-02-015	Shaft B		1
247	HQ400/3-02-013	Gear		1
248	HQ400/3-02-030	Sleeve		1

249	HQ400/3-02-028	Washer		1
250	HQ400/3-02-027	Spindle		1
251	GB/T1096-79	Key	8×22	1
252	GB/T1096-79	Key	8×12	1
253	GB/T68-85	Screw	M4×10	3
254	HQ400-12-003	Spindle Gland		1
255	HQ400-12-019	Oil Seal Of Spindle		1
256	GB/T297-94	Roller Bearing	32007/P5	2
257	HQ400/3-02-016	Gear A		1
258	GB/T78-85	Screw	M8×10	1
259	HQ400-12-013	Compensating Collar		1
260	HQ400-12-005	Bush		1
261	HQ400-12-004	Bevel Gear		1
262	GB/T301-95	Bearing	51113	1
263	HQ400-12-009	Bearing Seat		1
264	GB/T70-85	Socket Cap Screw	M5×10	4
265	HQ400-12-014	Bearing Cover		1
266	GB/T276-94	Single-Row Ball Bearing	6013	1
267	GB/T894.1-86	Retain ring For Shaft	65	1
268	GB/T67-85	Button Head Screw	M6×8	3
269	GB/T73-85	Screw	M6×6	6
270	GB/T308-89	Steel Ball	Φ5	3
271	GB/T2089-86	Compression Spring	5×0.5×20	3
272	HQ400/3-02-025	Cone Pulley		1
273	GB/T1171-74	V-Belt	O-630	1
274	HQ400-12-008	T-Key		1
275	HQ400-12-006	Clutch (A)		1
276	HQ400-12-007	Clutch (B)		1
277	GB/T858-88	Stop Washer	30	1
278	GB/T812-88	Bearing Locking Nut	M30×1.5	1
279	GB/T65-85	Screw	M5×8	3
280	HQ400-12-012	Hand wheel		1
281	GB/T898-88	Double Bolt	M10×35	4
282	HQ400/3-02-017	Seal		1
283	HQ400-12-011	Cover Plate		1
284	GB/T68-85	Sunk Screw	M5×8	4
285	CM1224C-03-034	Oil Cover		1
286	HQ400/3-02-032	Paper Washer		1
287	HQ400/3-02-023	Pulley Bracket		1
288	GB/T70-85	Socket Cap Screw	M6×14	8
289	HQ400/3-02-033	Shaft		1
290	HQ400/3-02-034	Pulley		1
291	GB/T276-94	Single-Row Ball Bearing	6004	2
292	HQ400/3-02-035	Collar		1
293	HQ400/3-02-036	Washer		1
294	HQ400/3-02-037	Cover		1
295	GB/T68-85	Screw	M5×10	4

PROTECTOR ASSEMBLY (03)

Index No.	Part No.	Description	Size	Qty.
301	GB/T818-85	Screw	M5×6	2
302	HQ400/3-03-001	Protector Cover		1
303	HQ400/3-03-016	Protector Door		1
304		Pipe Fitting	Ø8	2
305	GB/T65-85	Screw	M6×10	4
306	GB/T97.1-85	Washer	6	4
307	HQ400/3-03-015(3)	Protector		1
308		Junction base		1
309	CM1224C-09-005	Ground Attribute		1
310	GB/T862.1-87	Washer	5	1
311	GB/T818-85	Screw	M5×12	3
312	HQ400/3A-03-035	Shield		1
313	GB/T818-85	Screw	M4×40	4
314	HQ400-00-008(3)	Warning Attribute		1
315	GB/T818-85	Screw	M4×10	1
316	CZ1237G-08-009	Cable Clamp		1
317	GB/T818-85	Screw	M4×6	4
318	HQ400/3A-03-030	Cover (Left)		1
319	HQ400/3A-03-030A	Cover (Right)		1
320	GB/T818-85	Screw	M5×12	2
321		Pipe Connector	Ø10	2
322		Indicator Lamp	AD11	1
323		Magnetic Switch	KJD12	1
324		Push Button	LAY3	1
325	GB/T5282-85	Screw	ST4.2×15	2
326	HQ400/3A-03-021	Fixed Block		1
327		Switch	LX5-11N	1
328	HQ400/3A-03-025	Protective Cover		1
329	GB/T818-85	Screw	M4×35	2
330		Pipe Connector	D97-4-20	2
331	HQ400/3-03-022	Shaft		1
332	CZ1237G-08-014	Locking Block		1
333	GB/T879-86	Spring Pin	3×14	2
334	GB/T4141.29-84	Handle	A8×32	1

TOOL POST& CARRIAGE ASSEMBLY (04)

Index No.	Part No.	Description	Size	Qty.
401	JB/T7270.1-1994	Handle	M8×65	1
402	GB/T923-1988	Acorn nut	M10	1
403	GB/T9701-1985	Washer	10	2
404	JB/T7273.3-1994	Handwheel	B12×125	1
405	HQ500-10-015	Scale ring base		1
406	HQ500-10-016	Spring piece		1
407	HQ400-13-010	Scale ring		1
408	GB/T70-1985	Screw	M8×16	2
409	GB/T117-1986	Pin	B5×25	2
410	HQ400-11-021	Leadscrew bracket		1
411	JB/T7273.3-1994	Knob	M6×12	1
412	JB/T7273.3-1994	Lever		1
413	HQ400-11-022	Lock screw		1
414	HQ400-11-014	Lock block		1
415	GB/T77-1985	Screw	M8×12	5
416	GB/T75-1985	Screw	M8×10	2
417	HQ400/3-01-002	Longitudinal slide		1
418	HQ400-11-017	Gib		1
419	Hq400-11-018	Gib		1
420	GB/T1096-1979	Key	4×20	1
421	HQ400-11-020	Cross lead screw		1
422	HQ400-11-019	Cross lead screw		1
423	JB/T7940.4-1995	Oiler	6	2
424	GB/T71-1985	Screw	M6×8	1
425	HQ400-11-003	Cross slide		1
426	GB/T75-1985	Screw	M8×15	2
427	GB/T77-1985	Screw	M8×12	3
428	HQ400-11-014	Lock block		1
429	HQ400-14T02-002(1	Angle ruler		1
430	GB/T827-1985	Rivet	2.5×5	2
431	GB/T68-1985	Screw	M4×12	2
432	HQ400-14T02-010	Key		2
433	HQ400-14T02-001	"T"-Bolt		
434	HQ400-14T02-002	Base		1
435	GB/T97.1-1985	Washer	10	2
436	GB/T6170-2000	Nut	M10	2
437	HQ400-14T02-003	Bolt		2
438	HQ400-14T02-005	Vice base		1
439	HQ400-14T02-006	Vice block		1
440	GB/T70.1-2000	Screw	M5×14	2
441	GB/T97.1-1985	Washer	8	2
442	GB/T6170-2000	Nut	M8	2

443	GB/T77-2000	Screw	M5×6	1
444	HQ400-14T02-014	Gib		1
445	HQ400-14T02-004	Moving vice		1
446	GB/T71-1985	Screw	M5×14	2
447	GB/T6170-2000	Nut	M5	2
448	HQ400-14T02-007	Locking block		1
449	GB/T70.1-2000	Screw	M5×8	1
450	JB/T7940.4-1995	Oiler	Ø6	1
451	HQ400-14T02-011	Nut	Tr12	1
452	HQ400-14T02-012	Lead screw	Tr12	1
453	HQ400-14T02-013	Lead screw bracket		1
454	JB/T7270.10-1994	Handle	BM8×25	1
455	GB/T117-2000	Pin	3×16	1
456	HQ400-14T02-009	Bolt	M10×100	1
457	HQ400-14T02-008	Tool post base		1
458	GB/T1358-1993	Spring	5×0. ×6*30	1
459	HQ400-14-007	Set pin		1
460	HQ400-14-003	Tool post		
461	GB/T85-1988	screw	M8×25	8
462	HQ400-14-005	Compensating washer		1
463	HQ400-13-010	Nut	M10	1
464	HQ400-14-006	Handle		1
465	JB/T7271.3-1994	Knob	M10×32	1

TAILSTOCK ASSEMBLY (05)

Index No.	Part No.	Description	Size	Qty.
501	JB/T7270.5-94	Handle	M6×50	1
502	GB/T923-88	Acorn Nut	M10	1
503	GB/T97-85	Flat Washer	10	1
504	JB/T7273.3-94	Hand Wheel	B12×100	1
505	HQ400/4-10-015	Scale ring base		1
506	HQ500-10-016	Spring piece		1
507	HQ400-13-010	Scale ring		1
508	GB/T70-85	Screw	M5×20	4
509	HQ400-13-009	Feed Screw Socket		1
510	JB/T7940.4-95	Oiler	6	3
511	HQ400-13-008	Bracket		1
512	GB/T119-86	Pin	D5×24	1
513	GB/T1096-79	Key	C4×18	1
514	HQ400-13-006	Feed Screw		1
515	HQ400-13-001	Tail Stock Body		1
516	GB/T819-85	Screw	M5×14	2
517	HQ400-13-004	Key		2
518	GB/T73-85	Screw	M10×50	2
519	GB/T97.2-85	Washer	10	4
520	GB/T5780-86	Screw	M10×40	4
521	HQ400-13-011	Locking block (Bottom)		1
522	HQ400-13-012	Locking block (Top)		1
523	GB/T899-85	Double-Screw Bolt	AM10×40	1
524	HQ400-13-013	Washer		1
525	HQ400-13-004	Locking Nut		1
526	HQ400-13-005	Locking Lever		1
527	JB/T7271.3-94	Knob	M10×32	1
528	GB/T71-85	Set Screw	M4×8	1
529	HQ400-13-007	Feed Nut		1
530	HQ400-13-003	T-Key		1
531	HQ400-13-002	Tail Stock Barrel		1

DRILLING-MILLING HEAD ASSEMBLY (06)

Index No.	Part No.	Description	Size	Qty.
601	GB/T70-85	Screw	M5×16	1
602	GB/T93-87	Spring washer	5	1
603	GB/T892-86	Washer	B28	1
604	HQ400-24-001	Bevel gear (B)		1
605	HQ400-24-002	Compensating collar		1
606	GB/T1096-79	Key	6×14	1
607	GB/T1096-79	Key	5×25	1
608	HQ400-24-003	Driving shaft		1
609	GB/T294-94	Bearing	30205	1
610	HQ400-00-015	Rotative base ring		1
611	GB/T7271.3-1994	Knob	M10×32	1
612	HQ400-13-005	Clock handle		1
613	HQ400-13-004	Clock nut		1
614	GB/T899-1988	Double end screw	A10×85	1
615	GB/T68-76	Screw	M5×10	2
616	HQ400-24-004	Rotative base		1
617	HQ400/1-24-023	Lock block A		1
618	HQ400/1-24-023	Lock block B		
619	HQ500-02-020	Plug		1
620	GB/T70-1985	Screw	M10×25	4
621	HQ400-24-008	Rotative flange		1
622	HQ400-24-009	Drilling-milling head		1
625	HQ500-05-007	Spring box		
626	GB/T71-1985	Screw	M5×25	1
627	HQ500-05-006	Spring		1
628	HQ400-24-019	Spring box cover		1
629	GB/T71-1985	Screw	M8×16	2
630	GB/T812-88	Bearing locking nut	M30×1.5	1
631	GB/T858-88	Stop washer	30	1
632	GB/T297-94	Bearing	2007106	1
633	HQ400-22-003	Rack sleeve		1
634	GB/T297-94	Bearing	2007107	1
635	HQ400-22-004	Drilling-Milling spindle		1
636	HQ400-22-002	Gland		1
637	GB/T71-85	Set screw	M5×6	1
638	HQ500-07-001	Gear shaft		1
639	GB/T1096-86	Key	6×14	1
640	HQ400-23-010	Bush		2
641	HQ500-07-002	Feed box		1
642	HQ400-23-004	Worm shaft		1
643	HQ400-23-011	Handle		1
644	GB/T879	Pin	4×20	1

645	JB/T1360	Knob	M12×50	1
646	GB/T879	Pin	4×28	1
647	HQ400-23-005	Worm		1
648	HQ400-23-006	Clutch		1
649	GB/T119-1976	Pin	4×28	1
650	HQ400-23-009	Shaft		1
651	HQ400-23-007	Dial		1
652	HQ400-23-008	Spring piece		1
653	HQ400-23-013	Collar		1
654	HQ400-23-001	Handle		2
655	JB/T7274.2-94	Knob		2
656	GB/T71-85	Set Screw	M6×18	1
657	JB/T7271.5-94	Knob	BM8×40	1
658	HQ400-24-011	Pulley shell (bottom)		1
659	GB/T96-1985	Washer	8	2
660	GB/T67-1985	Screw	M8×14	2
661	GB/T297-94	Bearing	30204	1
662	HQ400-24-010	Collar		1
663	GB/T858-1988	Stop washer	20	1
664	GB/T812-1988	Nut	M20×1.5	1
667	GB1171	V-belt	O-710	1
668	HQ400-24-013	Pulley (E)		1
669	HQ400-21-001	Tightened board		1
670	HQ400-21-006	Tightened shaft		1
671	HQ400-21-002	Belt tightener		1
672	GB/T609-1977	Roller	2.5×24	15
673	HQ400-21-004	Collar		1
674	GB/T894-1976	Circlet	10	1
675	GB/T96-1987	Spring washer	8	6
676	HQ400-24-020	Shell bolt		1
677	GB/T96-1985	Washer	8	5
678	HQ400-24-011	Pulley bracket		1
679	GB/T276-1994	Bearing	6008	1
680	GB/T894-1986	Retain ring	40	1
681	HQ400-24-014	Pulley (F)		1
682	HQ400-24-012	Cover (top)		1
683	HQ400-24-021	Cover		1
684	JB/T7274.4-1994	Knob	BM8×62	1
685	HQ400-24-022	Lock block A		1
686	HQ400-24-022	Lock block B		1
687	GB/T899-1988	Double end bolt	A8×60	1
688	JB/T7270.7-1994	Handle	BM8×66	1
689	GB/T892-1986	Stop washer	B28	1
690	GB/T70-1985	Screw	M5×16	1

BED ASSEMBLY (01T)

(With Leadscrew graud)

Index No.	Part No.	Description	Size	Qty.
101T	GB/T5781-2000	Screw	M6×20	2
102T	GB/T97.1-1985	Washer	6	2
103T	GB/T70.1-2000	Screw	M6×20	2
104T	GB/T879.1-2000	Pin	5×20	4
105T	HQ400/3-01T01-02	Bracket		1
106T	HQ400/3-01T01-01	Leadscrew guard		1
107T	GB/T65-2000	Screw	M5×5	2
108T	HQ400-11-005	Longitudinal leadscrew		1
109T	HQ400/3-01T01-03	Longitudinal nut base		1
110T	GB/T71-1985	Screw	M6×8	1
111T	HQ400-11-009	Longitudinal nut		1
112T	HQ400-11-010	Lead screw bracket		1
113T	GB/T117-2000	Tap pin	B4×25	2
114T	GB/T70.1-2000	Screw	M6×12	2
115T	HQ400-11-001	Bed		1
116T	HQ400-11-022	Lock screw		1
117T	JB/T7271.6-1994	Handle	M6×50	1
118T	JB/T7271.3-1994	Knob	M6×20	1
119T	HQ400-11-014	Lock block		1
120T	HQ400-01T01-04	Longitudinal slide		1
121T	HQ400-11-018	Gib		1

FOLLOW REST ASSEMBLY (T)

Index No.	Part No.	Description	QTY.
T101	HQ500-10T04-005	Follow rest frame	1
T102	JB/T72714.40	Handle 8×32	2
T103	GB/T879	Spring pin 3×16	2
T104	HQ500-10T04-001	Adjusting bolt	2
T105	HQ500-10T04-003	Sleeve	1
T106	HQ500-10T04-004	Brass head	2
T107	GB/T41	Hex nut M6	2
T108	GB/T75	Set screw M6×16	2
T109	HQ500-10T04-002	Knurled screw	2

MACHINERYHOUSE

STEADY REST ASSEMBLY (T)

Index No.	Part No.	Description	QTY.
T201	HQ500-10T05-005	Locking block	1
T202	HQ500-10T05-001	Steady rest base	1
T203	JB/T7274.4	Handle 8×32	1
T204	GB/T879	Spring pin3×16	3
T205	HQ500-10T04-001	Adjusting bolt	3
T206	HQ500-10T04-003	Sleeve	3
T207	HQ500-10T04-004	Brass head	3
T208	GB/T91	Cotter pin1.6×20	2
T209	GB/T882	Pin A6×26	2
T210	GB/T848	Washer 8	2
T211	HQ500-10T04-002	Knurled screw	3
T212	GB/T41	Hex nut M6	3
T213	GB/T75	Set screw M6×16	3
T214	HQ500-10T05-004	Steady rest head	1
T215	GB/T70	Screw M10×35	1
T216	GB/T848	Washer 10	1
T217	HQ500-10T05-002	Locking bolt	1
T218	HQ500-10T05-003	Knob	1

MACHINERYHOUSE