

**Annexure-B**

4. MACHINE KINEMATICS

Specification of tooth and worm gears, worms, screws and nuts  
(to Figs. 58—64)

Assembly	Ref. No.	No. of teeth or threads	Module or pitch, mm	Helix angle and direction	Rim width, mm	Material	Heat treatment	Hardness HRC	Part No.	
Spindle drive	1	37	4	—	108	St. 18XГТ	Case-hardening, quenching	59	2225	
	2	50	4	—	25	St. 18XГТ	Ditto	59	2876	
	3	31	4	—	22	St. 18XГТ	"	59	2221	
	4	23	4	—	131	St. 18XГТ	"	59	2877	
Cluster gear shift	5	130	2	—	18	St. 45	—	—	2828	
	6	30	2	—	40	St. 40X	Quenching	48	2827	
	7	1	Trap. 32 × 6	Right-hand	70	Bronze АЖ 9-4	—	—	2632	
Spindle drive	8	1	Trap. 32 × 6	Right-hand	Screw	St. 45	Quenching	42	2344	
	9	60	4	—	26	St. 18XГТ	Case-hardening, quenching	59	2216	
	10	20	3.5	—	30.3	St. 18XГТ	Ditto	59	2295	
	11	33	3.5	—	24	St. 18XГТ	"	59	2296	
	12	71	3.5	—	21.5	St. 18XГТ	"	59	21420	
	13	58	3.5	—	21.5	St. 18XГТ	"	59	21420	
	14	58	4	—	39	St. 18XГТ	"	59	2221	
	15	22	5	—	42	St. 18XГТ	"	59	2221	
	16	52	4	—	25	St. 18XГТ	"	59	2215	
	17	56	4	—	23	St. 18XГТ	"	59	2214	
	18	21	4	—	22	St. 18XГТ	"	59	2210	
	19	29	4	—	25	St. 18XГТ	"	59	2210	
	20	18	6	—	75	St. 18XГТ	"	59	2230	
	21	25	4	—	22	St. 18XГТ	"	59	2210	
	22	54	5	—	46	St. 18XГТ	"	59	21561	
	23	32	6	—	60	St. 18XГТ	"	59	2234	
	24	72	6	—	75	St. 18XГТ	"	59	2988	
	25	48	4	—	30	St. 18XГТ	"	59	2304	
	26	24	4	—	30	St. 18XГТ	"	59	21562	
	27	64	6	—	55	St. 18XГТ	"	59	2993 or 21011	
	Spindle feed drive and hand-wheel drive	28	2	Trap. 70 × 10	Right-hand	Screw	St. 45	—	—	21425
		29	20	3	—	21	St. 40X	Quenching	48	21431
		30	50	3	—	20	St. 40X	"	48	21234
		31	44	4	—	25	St. 40X	"	48	21231
		32	22	4	—	25	St. 40X	"	48	21230
		33	80	2	—	16	St. 40X	"	48	21161
		34	18	2	—	28	St. 18XГТ	Case-hardening, quenching	59	21232
		35	18	3	—	9	St. 40X	Quenching	42	21166

## Annexure-B

Assembly	Ref. No.	No. of teeth or threads	Module or pitch, mm	Helix angle and direction	Rim width, mm	Material	Heat treatment	Hardness HRC	Part No.
Spindle feed drive and hand-wheel drive	36	32	3	—	9	St. 40X	Quenching	42	21165
	37	14	4	—	15	St. 40X	"	48	21158
	38	14	4	—	15	St. 40X	"	48	21157
	39	35	4	—	16	St. 40X	Case-hardening, quenching	48	21229
Spindle feed dial	40	2	Trap. 70 × 10	Right-hand	128	Alloy LIAM 10-5, St. 45	Ditto	—	21437
	41	42	2	—	10	St. 40X	"	42	21235
	42	42	2	—	8	St. 40X	"	48	21236
	43	24	2	—	8	St. 45	—	—	21149
	44	24	2	—	8	St. 45	—	—	21148
	45	24	2	—	10	St. 45	—	—	21147
	46	24	2	—	10	St. 45	—	—	21147
	47	14	2	—	31	St. 40X	Quenching	48	21129
	48	49	2	—	12	Grey iron C421-40	—	—	21128
	Headstock traverse drive	49	50	2	—	12	St. 45	—	—
50		2	Trap. 80 × 10	Right-hand	210	Alloy LIAM 10-5, St. Cr. 5	—	—	21170
51		2	Trap. 80 × 10	Right-hand	Screw	St. 45	—	—	1901
52		48	4	—	22	St. 40X	Quenching	48	1629
Headstock column feed drive	53	20	4	—	25	St. 40X	Quenching	48	1128
	54	17	2	—	35	St. 20X	Case-hardening, quenching	59	1766
	55	158	2	—	20	St. 40X	Quenching	48	1546
	56	17	2	—	35	St. 45	"	59	1934
	57	20	3	—	30	St. 40X	"	48	1545
	58	15	2	19°32' Right-hand	35	St. 45	—	—	1665
	59	Rack	2	19°32' Left-hand	25	St. 45	—	—	1771
	60	Rack	Trap. 215 × 36	Right-hand	—	Grey iron AC4-1	—	—	1453
	61	1	Trap. 215 × 36	Right-hand	Screw	Bronze AЖ 9-4, St. 45	—	—	1569
	62	31	5	—	45	St. 20X	Case-hardening, quenching	59	1558
Hand-wheel drive	63	19	5	—	44	St. 20X	Ditto	59	1547
	64	102	3	—	30	St. 40X	Quenching	48	1544
	65	18	3	—	12	St. 40X	"	42	21205
	66	18	3	—	8	St. 40X	"	48	21115
	67	18	3	—	8	St. 40X	"	48	21115
	68	18	3	—	12	St. 40X	"	42	21205
	69	18	3	—	12	St. 40X	"	48	21077
	70	40	3	—	12	St. 45	—	—	21106
Headstock traverse drive	71	15	3	—	26	St. 45	Quenching	42	1406
	72	73	3	—	20	St. 40X	"	48	1119
	73	112	2	—	15	St. 40X	"	48	1118
	74	26	3	—	22	St. 40X	Quenching	48	1118
	75	17	2	—	35	St. 20X	Case-hardening, quenching	59	1766



