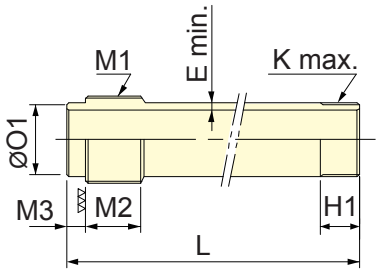
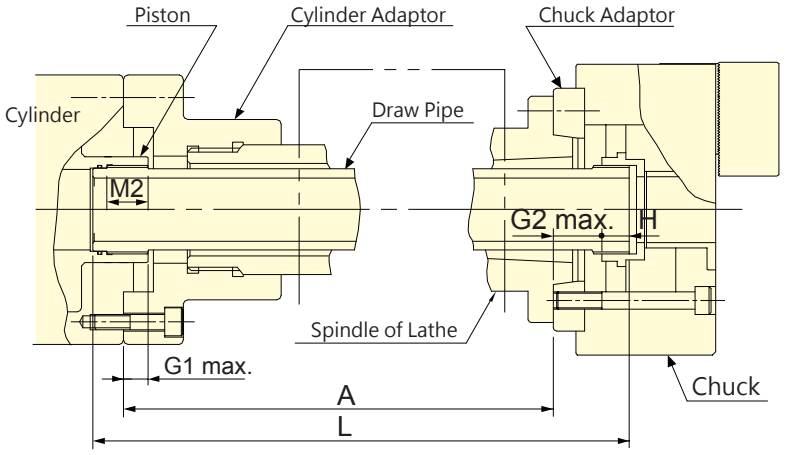
THE CALCULATION OF DRAW TUBE LENGTH



Detail of Draw Tube

L=A+G2max.+H-G1max.+M2+M3



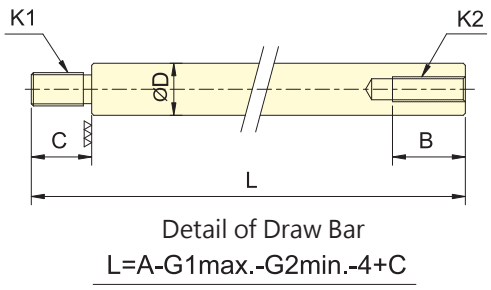
Subject to technical changes

SPECIFICATIONS

Chuck type		Cylinder type	G1 max.	H	M3	M2	G2 max.	M1	H1	O1 (f7)		K max.	E min.	L
3H-12	**A8**	TK-A1291	30	23	12	35	28	M100x2	35	95	-0.036 -0.071	M100x2	5	A+56+12
3H-15	**A11**	TK-A1512	30	33	12	45	33	M130x2	45	125	-0.043 -0.083	M130x2	5	A+81+12
3H-18	**A11**	TK-A1512	30	33	12	45	33	M130x2	45	125	-0.043 -0.083	M130x2	5	A+81+12

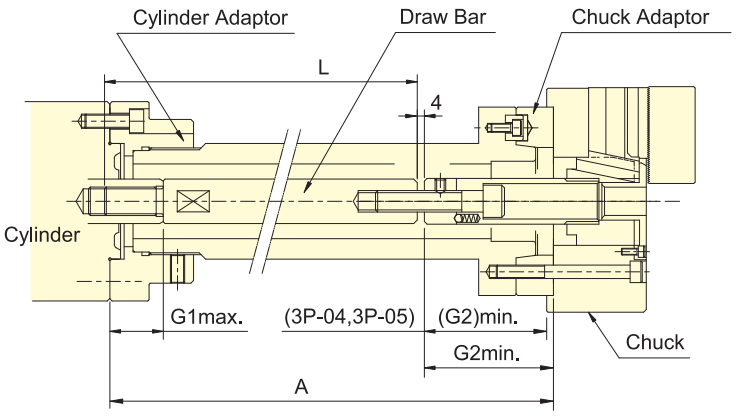
Chuck type		Cylinder type	G1 max.	H	M3	M2	G2 max.	M1	H1	O1 (f7)		K max.	E min.	L
3H-204	**A4**	TK-A528	12	14.5	10	25	31.5	M38x1.5	20	35	-0.025 -0.05	M38x1.5	5	A+59+10
3H-205	**A4**	TK-A533	12	17	10	25	16	M38x1.5	25	35	-0.025 -0.05	M45x1.5	5	A+46+10
3H-206	**A5**	TK-A646	15	14	10	25	28	M55x2	20	50	-0.025 -0.05	M60x2	5	A+52+10
3H-208	**A6**	TK-A853	20	16.5	12	30	33.5	M60x2	20	55	-0.03 -0.06	M75x2	5	A+60+12
3H-210	**A8**	TK-A1075	25	21	12	35	28.5	M85x2	25	80	-0.03 -0.06	M95x2	5	A+59.5+12
3H-212	**A11**	TK-A1512	30	23	12	45	32	M130x2	30	125	-0.043 -0.083	M115x2	5	A+70+12
3H-215	**A8**	TK-2114	35	33	17	45	44	M155x2	40	145	-0.043 -0.083	M115x2	5	A+87+17
3H-215	**A11**	TK-2114	35	33	17	45	51	M155x2	40	145	-0.043 -0.083	M155x3	5	A+93+17
3H-215	**A15**	TK-2114	35	33	17	45	38	M155x2	40	145	-0.043 -0.083	M155x3	5	A+81+17
3H-18B	**A15**	TK-2416	35	35	17	45	45	M180x3	40	170	-0.043 -0.083	M175x3	5	A+90+17
3H-221	**A15**	TK-2416	35	34	17	45	42	M180x3	40	170	-0.043 -0.083	M190x3	5	A+86+17
3H-224	**A20**	TK-2820	51	35	17	45	42	M220x3	40	210	-0.050 -0.096	M225x3	5	A+71+17
3H-232	**A20**	TK-2820	51	37	17	45	51	M220x3	45	230	-0.050 -0.096	M295x3	5	A+82+17

Note:To calculate the draw-tube length of 2H,4H as 3H,3H-2.



Detail of Draw Bar

L=A-G1max.-G2min.-4+C



Subject to technical changes

SPECIFICATIONS

Chuck type	Cylinder type	B	C	D	G1 max.	G2 min.	K1	K2	L
3P-04	RK-75(N)/RA-130	30	30/20	30/25	45	3	M20x2.5/M16x2	M10x1.5	A-22/A-32
3P-05	RK-75(N)/RA-130	40	30/20	30/25	45	-6	M20x2.5/M16x2	M12x1.75	A-13/A-23
3P-06	RK-100(N)/RA-170	40	30/25	30/25	45	81.5	M20x2.5/M16x2	M16x2	A-101/A-106
3P-08	RK-125(N)/RA-220	40	40/30	35/30	50	106	M24x3/M20x2.5	M20x2.5	A-120/A-130
3P-10	RK-125(N)/RA-220	40	40/30	35/30	50	133	M24x3/M20x2.5	M20x2.5	A-147/A-157
3P-12	RK-150(N)/RA-270	40	40/35	45/35	55	133	M30x3.5/M24x3	M20x2.5	A-152/A-157
3P-215	RK-200(N)/RH-200	60	55	55	70	69	M36x4	M30x3.5	A-88
3P-218	RK-200(N)/RH-200	60	55	55	70	57	M36x4	M30x3.5	A-76
3P-221	RK-200(N)/RH-200	60	55	55	70	62	M36x4	M30x3.5	A-81
3P-224	RK-200(N)/RH-200	60	55	55	70	62	M36x4	M30x3.5	A-81

Note:To calculate the draw-bar length of 2P as 3P.

Chuck type	Cylinder type	B	C	D	G1 max.	G2 min.	K1	K2	L
3M-05	RK-75(N)	40	30	30	45	-2	M20x2.5	M12x1.75	A-17
3M-06	RK-100(N)	40	30	30	45	81.5	M20x2.5	M16x2	A-101
3M-08	RK-125(N)	40	40	35	50	106	M24x3.0	M20x2.5	A-120
3M-10	RK-150(N)	40	40	35	50	135	M24x3.0	M20x2.5	A-148
3M-12	RK-150(N)	50	40	45	55	40	M30x3.5	M24x3	A-59

Note:To calculate the draw-bar length of 2M as 3M.