POWER OPERATED HIGH SPEED CHUCKS

WITH THROUGH BORE

PHNC

POWER OPERATED THREE JAW CHUCK WITH THROUGH BORE

GMT Power Operated Hollow High Speed Chucks are designed to rotate at high speeds on CNC lathes. The compact construction of the PHNC Chucks offer further advantage of less weight and low inertia which have positive influence on the dynamic effect of CNC machine spindle. These chucks have a large through bore and are therefore suitable for bar work. The base jaws and top jaws weight are reduced in these chucks. This not only reduces the mass but also lowers the centre of gravity, which make the centrifugal losses low.

- Chucks on CNC machines need to deliver high initial gripping force. GMT takes care of this in the design by making the chuck operate with a large drawbar pull. Consequently, the wedge is designed to have large contact area with the base jaws.

- The weight of the body, base jaws and hard jaws are less, without the other essential criteria being sacrificed.

- The chuck body is recessed to remove a large extent of material to reduce the weight. (from sizes 250 mm to 500 mm)

  The chuck body is forged steel. The guideways are hardened and ground.

The wedge, made of nickel chrome steel, is case hardened and ground on all the working surfaces.

The base jaws also made of nickel chrome steel, are case hardened and ground to match both the wedge and the body guideways.

The base jaws are guided in the deep, wide, hardened slots in the body, which provide the ample bearing area necessary to withstand the forces resulting from high gripping action.

Provision has been made for manual lubrication of the sliding surfaces through grease nipples.

Serrations are ground on the top face of the base jaws. The reversible hard jaws have ground serrations on the bottom to match the base jaws.

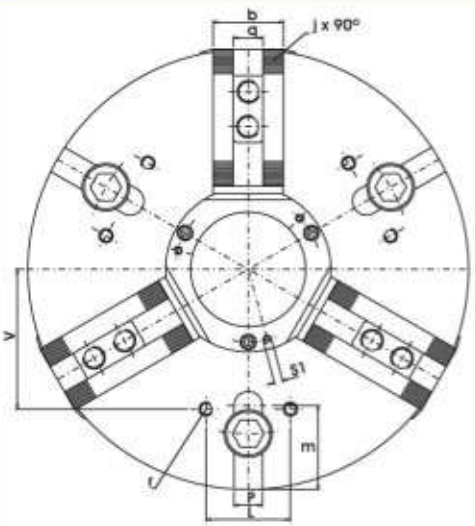
The various radii on the hard jaws in conjunction with the serrations are designed to grip a wide range of diameters.

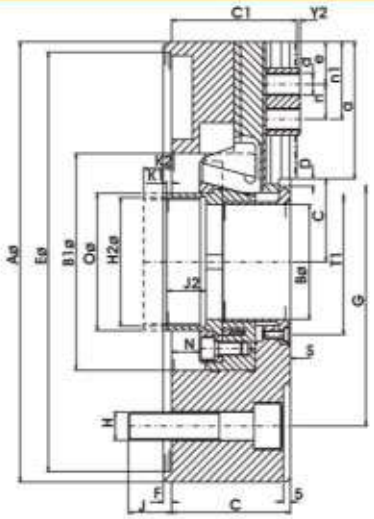
The hardened guideways of the body, nickel chrome case hardened and ground base jaws and the wedge ensure high load carrying capacity over a very long period.

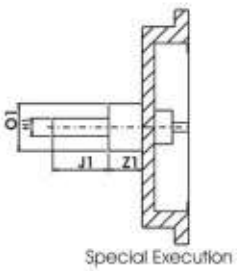
Chuck performance detail

2 Jaw and 4 Jaw chucks with through bore can be offered on request

Chuck Size Ø			135	165	200	250	315	400	500
Clamping Range	External	Max	128	165	200	250	315	400	500
		Min	10	32	25	28	42	45	74
	Internal	Max	-	165	200	250	315	400	500
		Min	-	62	70	76	84	105	138
Max Drawbar pull (Kgf)			1780	2000	4000	6000	6000	9000	9000
Max gripping force (Kgf)			3670	5400	8000	12000	13000	20000	21000
RPM max			7000	5000	5000	4000	3200	2500	2000
Weight (without top jaws) Kgs.			6	12.5	18	27	43	94	132
Flywheel effect GD^2 (Kpm^2)			0.17	0.2	0.38	0.8	2.6	8.4	24.8
Max top jaws weight (per set) Kgs.			0.7	1.5	1.7	3.5	4	7.5	7.5







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DIMENSIONAL SPECIFICATION

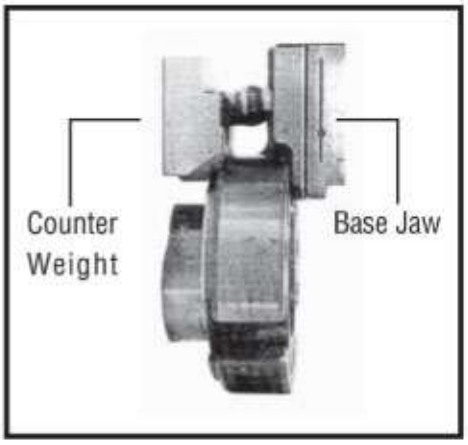
All Dimensions in mm

Model	04-69	04-70	04-82	04-83	04-84	04-85	04-86
Size Ø	**135**	**165**	**200**	**250**	**315**	**400**	**500**
A Ø	135	165	200	250	315	400	500
BØ h7	33	35	48	65	82	120	160
B1	80	90	110	135	155	210	250
C	56	77	85	88	85	120	120
C1	58	82	89	92	92	125	125.5
D Jaw Stroke	2.7	3.15	5.3	5.3	5.3	8	8
EØ H6	110	140	170	220	300	380	380
F	4	5	6	6	6	6	6
G PCD	82.6	104.8	133.4	171.4	235	330.2	330.2
H	3 x M10	6 x M10	3 x M12	3 x M16	3 x M20	3 x M24	6 x M24
H1	M12	M16	M20	M20	M20	M24	M24
H2	M40 x 1.5	M42 x 1.5	M55 x 2	M72 x 2	M92 x 2	M133 x 2	M172 x 3
J	15	14	18	24	31	31	36
J1	43	55	55	55	55	54	54
J2	20	27	28	28	28	28	28
K1 max	-1.8	5	0.5	0.5	3.5	-8.5	-8.5
K2 max	8.2	20	20.5	20.5	23.5	21.5	21.5
N	8.2	15	20	20	20	30	30
O	48	48	62	78	102	142	182
O1	27	30	35	35	35	46	46
S	6	8	8	8	8	12	12
S1	M4	M5	M6	M6	M6	M8	M8
T1 PCD	44	54	68	86	104	145	185
Z1	25	25	30	30	30	30	30
a	41	50.7	59	76	98	118	150
b	23	35	40	45	50	60	60
c min	23.5	28.65	35.7	43.7	54.2	74	92
c max	26.5	31.8	41	49	59.5	82	100
d	M8	M10	M12	M16	M16	M20	M20
e min	6.5	9	9	10	10	15	15
j x 90°	1/16"	1/16"	1/16"	1/16"	1/16"	3/32"	3/32"
n	14	19	19	25	25	34	34
n1 max	31	38.5	50	60	85	103	130
q H7	10	12	17	21	21	25.5	25.5
y2	2	3	3.5	3.5	3.5	3.5	3.5
P H12	-	16	16	16	20	20	20
r	M6	M8	M8	M10	M10	M12	M12
m	-	18	23.5	26.5	60	60	115
L	30	36	45	60	60	80	100
V	52	65	80	105	125	155	170

PHCNC

POWER OPERATED THREE JAW CENTRIFUGALLY COMPENSATED CHUCK

WITH THROUGH BORE



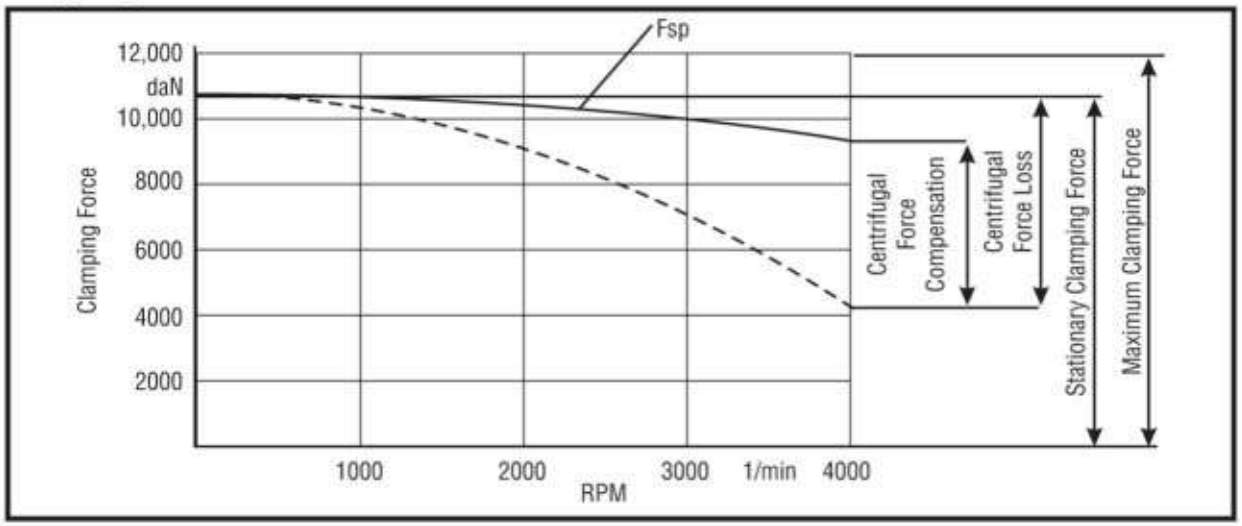
Many CNC machines work at very high speeds. An ordinary, standard power chuck will not work at these speeds because the tremendous centrifugal force generated at these speeds will tend to loosen the job. More importantly, there will be an abrupt and huge loss in the gripping force of the chuck. When there is a loss in gripping power, it will adversely affect the cutting parameters of the lathe.

GMT has come up with a chuck designed to take care of the problems arising out of such heavy centrifugal losses. The design is such that the clamping force is very near to that of static clamping force, even at very high speeds. These centrifugally compensated chucks' share many of the advantageous features of GMT's hollow power chucks.

Besides having the above features, the centrifugally compensated chucks have a mechanism whereby the centrifugal losses arising due to very high speeds is compensated.

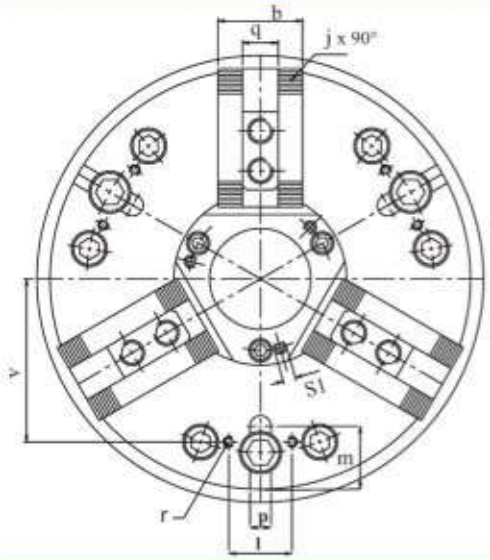
The base jaws are connected to counter weight by means of levers. In result, the centrifugal forces coming on the (a) counter weights, (b) base jaws and hard jaws are compensated or 'nullified' by each other.

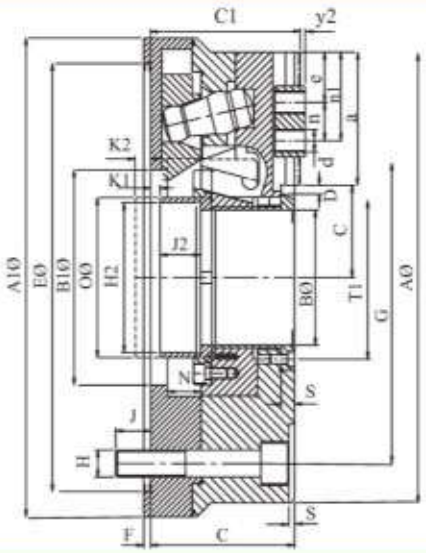
Gripping Force Chart

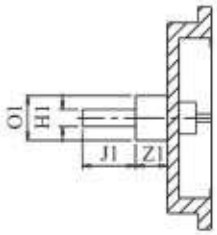


Chuck performance detail

Chuck Size			200	250	315	400	500
Clamping Range	External	Max	200	250	315	400	500
		Min	25	28	42	45	74
	Internal	Max	200	250	315	400	500
		Min	70	76	84	105	138
Max Drawnbar Pull (Kgf)			4000	6000	6000	9000	9000
Max gripping force (Kgf)			8000	12000	13000	20000	21000
RPMmax.			6300	4500	4000	3000	2500
Weight (without top jaws) Kgs.			21	32	51	105	158
Fly wheel effect GD^2 (Kpm^2)			0.38	0.8	2.6	8.4	22.9
Max top jaws weight (per set) Kgs.			1.7	3.5	4	7.5	7.5







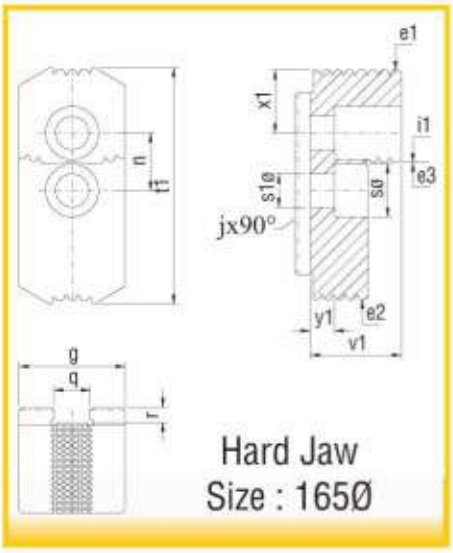
Special Execution

PHCNC

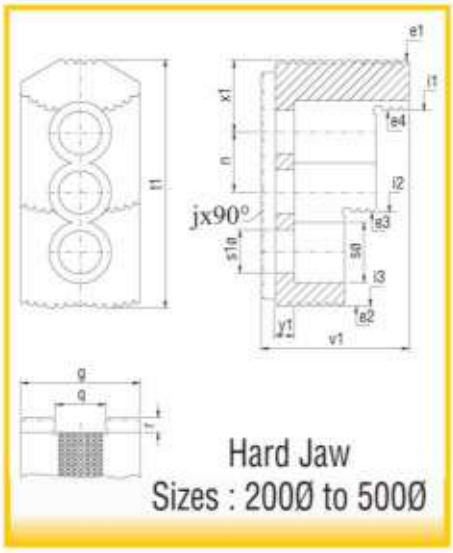
DIMENSIONAL SPECIFICATION

All Dimensions in mm

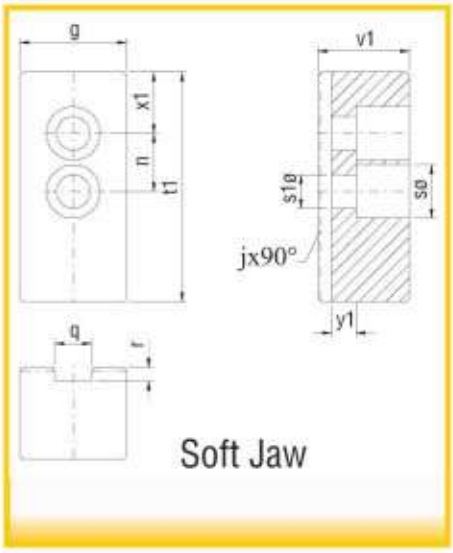
Model	04-72	04-73	04-74	04-75	04-76
Size Ø	**200**	**250**	**315**	**400**	**500**
A Ø	200	250	315	400	500
A1 Ø	215	265	330	425	525
B Ø H7	48	65	82	120	160
B1 Ø	102	127	145	191	231
C	90	98	108	128	128
C1	94	102	112.5	133	133.5
D Jaw Stroke	5.3	5.3	5.3	8	8
EØ H6	170	220	300	380	380
F	6	6	6	6	6
G PCD	133.4	171.4	235	330.2	330.2
H	3 x M12	3 x M16	3 x M20	3 x M24	6 x M24
H1	M20	M20	M20	M24	M24
H2	M55 x 2	M72 x 2	M92 x 2	M133 x 2	M172 x 3
O Ø g6	62	78	98	142	182
O1 Ø	35	35	35	46	46
J	15	24	28	31	36
J1	55	55	55	55	55
J2	28	28	28	28	28
K1 Max	4.5	9.5	19.5	16.5	13
K2 Max	15.5	10.5	0.5	13.5	17
N	20	20	20	30	30
S	8	8	8	12	12
S1	M6	M6	M6	M8	M8
T1 PCD	68	86	104	145	185
Z1	30	30	30	30	30
a	59	76	98	118	150
b	40	45	50	60	60
c min	35.7	43.7	54.2	74	92
c max	41	49	59.5	82	100
d	M12	M16	M16	M20	M20
e min	8	10	10	15	15
j x 90°	1/16"	1/16"	1/16"	3/32"	3/32"
n	19	25	25	34	34
n1 max	50	60	85	103	130
q H7	17	21	21	25.5	25.5
y2	3.5	3.5	3.5	3.5	3.5
p H12	16	16	20	20	20
r	M8	M10	M10	M12	M12
m	23.5	26.5	56	60	115
l	45	60	60	80	100
v	80	105	125	155	170



Hard Jaw
Size : 165Ø



Hard Jaw
Sizes : 200Ø to 500Ø



Soft Jaw

HARD JAW SPECIFICATIONS

Size ø	*135	*165	200	250	315	400	500
g	23	35	35	45	50	60	60
j x 90°	1/16"x90°	1/16"x90°	1/16"x90°	1/16"x90°	1/16"x90°	3/32"x90°	3/32"x90°
n	14	19	19	25	25	34	34
qH7	10	12	17	21	21	25.5	25.5
r	4	4.5	5	6	6	6	6
sø	14.5	17.5	20	26	26	34	34
s1ø	9	11	14	18	18	22	22
t1	53.4	78	75	106	104	142	140
v1	27.5	41	50	58	62	75	75
x1	12.5	20	17	29.5	30	45	45
y1	4.5	8	8	8	8	9	9

SOFT JAW SPECIFICATIONS

Size ø	*135	*165	200	250	315	400	500
g	23	35	35	45	50	60	60
j x 90°	1/16"x90°	1/16"x90°	1/16"x90°	1/16"x90°	1/16"x90°	3/32"x90°	3/32"x90°
n	14	19	19	25	25	34	34
$q^{+0.05}$	10	12	17	21	21	25.5	25.5
r	4	4.5	5	6	6	6	6
sø	14.5	17.5	20	26	26	34	34
s1ø	9	11	14	18	18	22	22
t1	54	75	70	120	120	155	155
v1	25	30	40	50	50	60	60
x1	12	20	15	35	35	41	41
y1	5	8	8	8	8	12	12

HARD JAW CLAMPING RANGE

Size ø	*135	*165	200	250	315	400	500
e1	10-47	62-72	25-99	28-104	42-170	45-265	74-290
e2	-	32-40	25-102	41-124	56-195	80-240	112-336
e3	76-128	119-129	74-152	123-206	135-275	129-354	226-450
e4	-	-	124-200	205-250	220-315	298-400	330-500
i1	-	62-136	70-150	76-160	84-218	105-265	138-368
i2	-	-	116-190	156-242	148-303	217-377	240-472
i3	-	-	166-200	236-250	228-315	331-400	348-500

CYLINDER SELECTION CHART FOR PHNC AND PHCNC

Size	*135	*165	200	250	315	400	500
Hydraulic Cylinder CH	105	120	120	160	200	250	250
Hydraulic Cylinder OCHNC / OCHNC-S	100	100	130	170	170	200	200

Notes: ● Hard Jaws are common for PHNC & PHCNC ● Soft Jaws are supplied as blanks and are common for PHNC & PHCNC *Offered in PHNC only.
● Only Soft Jaws are supplied with 2 Jaw Chucks ● Serration 1.5 x 60°, 2.5 x 60°, 3 x 60° on Base jaws, Hard jaws and Soft jaws can be offered on request.

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