Safety and Technical Manual

Sure-Grip® 3-jaw Power Chucks

Mounting and Operating
Calculating Gripping Force
Maintenance
Parts Lists

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Warranty

The seller warrants to the original Buyer only those products manufactured by the Seller or through an authorized representative and used by the original Buyer within limits of rated and normal usage will be free from defects which are not commercially acceptable in material and workmanship for the following periods, measured from the date of shipment: 6 months for repair parts purchased after the original warranty expires; 12 months for all models of Hardinge® Sure-Grip® 3 Jaw Power Chucks. Hardinge will not sell Hardinge Sure-Grip chuck bodies as a replacement part. If this part requires replacement the complete chuck must be returned to Hardinge for rebuilding.

Chapter 1

Safety Information

Instructions

Maintenance

Parts Lists

NOTES:

General Safety Information

Before placing the Hardinge® Sure-Grip® Power Chuck on your machine tool, thoroughly read this manual and understand the information. If you are uncertain about any of the information, see your immediate supervisor. Also make certain that you understand the information in your machine tool operator's, programmer's and maintenance manuals.

NOTICE

Damage resulting from misuse, negligence or accidents
is not covered by the Hardinge Sure-Grip Power Chuck Warranty.

Information in this document is subject to change without notice.

In no event will Hardinge Inc. be responsible for indirect or consequential damage resulting from the use or application of the product, or any of the information in this document.

This product is only to be used by trained machinists skilled
in the use and operation of power chucks on metal cutting machines.

Machine Tool Setup/Operators Responsibilities:

- Hazards may arise from the characteristics of the workpiece and machine used with a given workholding chuck even if the specific requirements in this manual are met. The user shall therefore consider such characteristics of workpieces (dimensions, mass and shape), and of machines (operating speed, feed and depth of cut) in order to remove or reduce the hazard.
- The maximum permissible speed for the specific machining shall be determined by the user on the basis of the clamping forces required. This speed shall not exceed the maximum rotational speed of the workholding chuck.
- For special top jaws, the user should calculate the dynamic clamping force for a particular workholding chuck according to the one method outlined in this manual. Other methods are available from publications referred to on page 118.
- Static clamping force measuring devices should be used to check maintenance conditions at regular intervals according to the information in this manual.
- Residual risks may arise from a failure to achieve a satisfactory quality of rotational balance.
- To prevent excessive force being applied to a particular workholding chuck, the actuating force available from a machine may need to be reduced.

– WARNINGS –

Warnings must be followed carefully to avoid the possibility of personal injury and or damage to the chuck, machine tool, tooling, or the workpiece. In this publication the term "personal injury" should be understood to include severe personal injury, possibly resulting in death.

– CAUTIONS –

Cautions must be followed carefully to avoid the possibility of damage to the chuck, machine tool, tooling, or workpiece.

– NOTES –

Notes contain supplemental information.

For Safe Operation of Hardinge® Sure-Grip® Thru-Hole Power Chucks

Please carefully read this manual, paying close attention to the safety instructions, warnings and cautions before installation and operation of your chuck. Hardinge will not assume responsibility for damage or accidents caused by the misuse of a Hardinge Sure-Grip Chuck through noncompliance with the safety, operating, and maintenance instructions in this manual and the safety, operations and maintenance instructions in the machine tool's manuals.

– WARNING –

HAZARDS..... It is the user's responsibility to make certain that all machine tool safety, operation, and maintenance instructions and accessory safety, operation, and maintenance instructions are taken into consideration before operating the power chuck. ***(Ignoring this warning may cause damage to the machine and/or personal injury.)***

MAXIMUM PERMISSIBLE RPM..... (Spindle speed) shall be determined by the user on the basis of the gripping force required for the specific machining application. It shall not exceed the maximum recommended spindle speed (RPM) of the power chuck (pages 12-17). The maximum chuck RPM may only be used at the maximum applied draw bar force and with a properly operating chuck. ***(Ignoring this warning may cause damage to the machine and/or personal injury.)***

DYNAMIC GRIPPING FORCE..... for special top jaws, as well as standard height, medium height and hard top jaws, shall be calculated by the user in conjunction with the related chuck according to the method given in this manual. ***(Ignoring this warning may cause damage to the machine and/or personal injury.)***

STATIC GRIPPING FORCE..... measuring devices shall be used to check the gripping force of the power chuck at regular intervals according to the operation and maintenance information in this manual. ***(Ignoring this warning may cause damage to the machine and/or personal injury.)***

TURN OFF POWER ..... before changing, inspecting, lubricating or setting the chuck. ***(If machine is accidently started, there may be damage to the machine and/or personal injury.)***

NEVER OPERATE ..... the Open or Close switches on the control while the spindle is rotating. ***(Jaws may open, allowing the workpiece to come out, causing damage to the machine and/or personal injury.)***

DO NOT EXCEED..... maximum recommended spindle RPM even when using the maximum recommended draw bar force. ***(Chuck may be damaged and/or the workpiece may come out, damaging the machine tool and/or injuring the operator.)***

NEVER START ..... the machine with the machine doors open. ***(The workpiece or the jaws may come out, causing damage to the machine and/or personal injury.)***

"T" NUTS..... should never extend beyond the OD of the chuck body. ***(The jaws will not be held securely to the chuck which may cause the jaws to come off, or the workpiece to come out of the jaws, causing damage to the machine and/or personal injury.)***

NEVER EXCEED..... the maximum draw bar/tube force of the chuck (Pages 12-17). ***(Chuck and mounting bolts may be damaged, causing the chuck, jaws or workpiece to come off, causing damage to the machine and/or personal injury.)***

ALWAYS CHECK THE STROKE..... of the machine tool's draw bar. It should be greater than or equal to the draw bar stroke of the chuck. If the machine's stroke is less than the chuck's, the jaw stroke will be reduced proportionately. ***(The jaw stroke may not be adequate to handle the tolerance variation of the workpiece chucking diameter, causing damage to the machine and/or personal injury.)***

HEAVY DUTY GUARD..... must be installed around the chuck when being used on an unshielded machine tool. ***(If a jaw breaks and/or a workpiece comes loose without a guard installed, there may be damage to the machine and/or personal injury.)***

POWER FAILURE..... can shut your machine down. Always check your chuck to make certain that you have full chucking force before continuing production. Even though your machine tool rotating draw tube has check valves to maintain chucking pressure in this type circumstance, always check your chuck. ***(Noncompliance may cause damage to the machine, the chuck, and/or personal injury.)***

PROPERLY TORQUE..... the bolts for mounting the chuck to the spindle and mounting the jaws to the chuck. Over-torque of the bolts may cause cracks and under-torque may allow the bolts to loosen (Pages 119-122). ***(Not complying with the torque specifications may cause damage to the machine and/or personal injury.)***

BACK OF TOP JAWS MUST NOT.... extend beyond the outside diameter of the chuck. This condition creates extremely high centrifugal forces which may allow the workpiece to come out of the jaw and/or fatigue and fracture the jaws. ***(These conditions may cause damage to the machine and/or personal injury.)***

– WARNING –

JAW HEIGHT ..... should be within the maximum gripping force limits. ***(When jaws are too high and the maximum gripping force limits are exceeded, the workpiece may come out of the chuck, causing damage to the machine and/or personal injury.)***

INTERNAL CHUCKING ..... requires a reduction of the gripping force because centrifugal force adds additional gripping force which could distort the part or cause the part to fracture after material has been removed. The necessary pressure reduction may be as low as 20% and when working with thin wall parts higher than 50%. The user must determine the gripping force required for each specific workpiece. ***(The workpiece may come off of the jaws, causing damage to the machine and/or personal injury.)***

LONG WORKPIECES ..... require the use of a tailstock center or a steady rest. Workpieces are considered long when the length is approximately three (3) times its diameter. For example a 1" diameter part 3 1/2" long would require a tailstock, a piece 2 3/4" long would not. This applies only if the part is gripped by the complete height of the jaw. If the part is gripped in a stepped jaw, the ratio decreases accordingly. For example a 1" diameter part 2 1/2" long gripped 1/4" deep in stepped jaws would require a tailstock. ***(The workpiece may come out of the jaws, causing damage to the machine and/or personal injury.)***

HEAVY CUTS ..... at high RPM's can cause part slippage and/or cause the workpiece to come loose. ***(The workpiece may come out of the jaws, causing damage to the machine and/or personal injury.)***

DO NOT MODIFY ..... the chuck body, top plate, T-nuts or other components. Any modification will cause the chuck to be out of balance. See additional note under THE CHUCK BALANCE on this page. ***(Any modification may cause the chuck to fail, causing damage to the machine and/or personal injury.)***

NEVER OPERATE ..... the machine tool and chuck while under the influence of alcohol, drugs, controlled substances or prescription medication. ***(Ignoring this warning may cause damage to the machine and/or personal injury.)***

DO NOT WEAR ..... gloves, ties, jewelry, watches, loose clothing or long hair when operating a machine tool and/or chuck. ***(Ignoring this warning may cause damage to the machine and/or personal injury.)***

WHEN LIFTING ..... the chuck, use the eyebolt and a hoist. For chucks that do not have an eyebolt, use a lifting strap of sufficient strength capabilities and a hoist. ***(Personal injury, damage to the machine and/or the chuck may result from improper lifting of the chuck.)***

KEEP HANDS OUT ..... of the gripping area of the chuck when gripping a workpiece. ***(Ignoring this warning may cause damage to the machine and/or personal injury.)***

NEVER HAMMER ..... the chuck, jaws or workpiece. ***(Chuck may be damaged resulting in the workpiece and/or jaws coming off, causing damage to the machine and/or personal injury.)***

THE CHUCK BALANCE ..... is critical. The chuck is precision-balanced (ISO - G6.3) during the manufacturing process at Hardinge®. If a chuck has been damaged and repaired, it should not be used until it has been precision balanced by a qualified technician. ***(Unbalanced chucks may allow parts to come loose, causing damage to the machine and/or personal injury.)***

GREASE CHUCK ..... a minimum of once every 24 hours. More frequent lubrication may be required when using non-water based coolants or when workpiece production results in very short cycle times. ***(Insufficient lubrication may result in lower gripping forces at the workpiece, allowing the workpiece to come loose, causing damage to the machine and/or personal injury.)***

ONLY SPINDLE ADAPTERS ..... manufactured or recommended by Hardinge can be used with Sure-Grip® power chucks. ***(Improper materials and machine spindle specifications may cause improper mating of the spindle and/or the chuck as well as failure of the material. The chuck and/or spindle adapter may come loose or break apart, causing damage to the machine and/or personal injury.)***

ONLY TOP JAWS ..... manufactured or recommended by Hardinge should be used on Sure-Grip chucks. ***(Improper mat-erials and machining specifications may cause jaws to fail, causing damage to the machine and/or personal injury.)***

LENGTH OF TOP JAW BOLTS ..... is critical. If bolts are too long they will bottom out in the master jaw before the jaw is securely locked. ***(The unstable jaw may release the workpiece, causing damage to the machine and/or personal injury - see page 33.)***

COLLISIONS ..... After any collision, the jaws and the chuck must be removed and checked for any cracks, out-of-balance, or damage. The chuck must be disassembled and all parts checked for cracks and damage. The chuck must not be used unless certified by a person with proper credentials. ***(Ignoring this warning may cause damage to the machine and/or personal injury.)***

DAMAGED BOLTS ..... Worn or damaged bolts used to hold the jaws to the chuck and/or used to mount the chuck to the spindle must be replaced with new bolts. The bolts must meet DIN912 12.9, ISO 4762, or ANS B 18.3.1M specifications. ***(Ignoring this warning may cause damage to the machine and/or personal injury.)***

GUIDELINES FOR USING POWER OPERATED CHUCKS

When mounting the Hardinge® Sure-Grip® Chuck on a lathe for heavy-duty machining at high spindle speeds, certain criteria must be taken into consideration to ensure safe operation of the chuck as well as the machine tool.

Machine tools other than Hardinge may require an actuating cylinder and draw bar to operate the chuck. The following safety requirements must be met for these configurations as well as those mounted on Hardinge lathes. Make sure the machine tool has the following features before mounting the Hardinge Sure-Grip Chuck, and that each of these features function properly.

- **Spindle Start:** The spindle cannot be allowed to rotate until the clamping pressure has built up in the actuating cylinder and the clamping has taken place.
- **Open Chuck:** The chuck may not be opened until the spindle has come to a complete stop.
- **Hydraulic or Pneumatic Power Failure:** The workpiece must stay firmly gripped in the chuck jaws until the spindle has come to a complete stop.
- **Electrical Power Failure:** After an electrical power failure, the workpiece must stay firmly gripped in the chuck jaws until the spindle has come to a complete stop. When the electricity is resumed, the chuck must still firmly grip the part so as not to release it. The user must make certain after any electrical power failure that all functions of the machine work properly before operating the chuck or the machine tool.
- **Draw Bar Pressure Failure:** If the pressure fails going to the actuating cylinder, a signal must stop the machine spindle.
- **Safety Instructions:** The safety instructions given in the machine tool operations manual and maintenance manual must be strictly followed. When using a second-source actuating cylinder, the safety instructions given in its operation's manual must also be strictly followed.

Chuck Functioning (See ISO TR 13618 Recommendations for the User)

After mounting the chuck, the following must be checked by the operator/setup person before operating the chuck on the machine tool:

- **Clamping Force:** The clamping force found in the chuck operation manual must be obtainable at the maximum recommended draw bar force.
- **Stroke Safety Range:** A safety stroke limit must be provided for both the forward and back positions. The machine spindle can only start after the draw bar has moved enough to safely close the chuck.
- **RPM Limit:** The machine tool must be equipped with a speed limitation device to make certain that the spindle RPM of the machine does not exceed the maximum RPM limitations of the chuck.
- **Adjustable Stroke Limits:** When a different size or manufacturer of chuck is mounted to the machine spindle, the draw bar stroke limit must be adjustable to meet these new specifications.
- **Centrifugal Force:** The centrifugal force of the clamping jaws must be taken into consideration when calculating the required clamping for machining a workpiece.

Chuck Maintenance

The chuck will only operate properly when the maintenance instructions are precisely followed as outlined in the operation's manual for the chuck. The following practices must be followed:

- **Only lubricants specified** in the operation's manual must be used. An unsuitable lubricant can unexpectedly reduce the clamping force dramatically. Use Chevron Ultra-Duty EP NLGI 2, Dow Corning BR-Plus, or Kluber ALTEMP Q NB 50 grease.
- **A pressure gun must be used to make certain that the lubricant reaches all the surfaces requiring lubrication.**
- **The chuck must be actuated several times** through its complete stroke in order for the lubricant to reach all surfaces. After this has been done, repeat the lubrication and then check the clamping force of the chuck.

Clamping Force Check

- **Before starting a machining operation** or when changing jobs, and in between the maintenance intervals, the clamping force should be checked by means of a clamping force gage. Regular checks will ensure the optimum performance of the chuck.

Full Stroke Schedule

- **The chuck jaws should be moved** through their complete stroke range once every twenty-four hours. This practice will return any lubricant that has been pushed away from the pressure surfaces. The clamping force will be maintained for a longer period of time as well as reducing wear to these surfaces.

Special Jaws

When using jaws configured different than the standard jaws, the following instructions must be followed:

- **Jaw Height and Weight:** The special jaws must be designed in such a way that their weight and height is as low as possible. The clamping point should be as close to the face of the chuck as possible. A clamping point which is at a higher distance may cause greater surface pressure on the sliding surfaces, thus considerably reducing the clamping force as well as decreasing the life of the chuck. Many times special jaws are required by the part configuration but do not require the mass of the large top jaw. In these instances, remove as much mass as possible and still safely grip the workpiece.
- **Calculating the rated speed:** If the special jaws are wider and/or higher than the hardened and ground single step jaws, the resulting higher centrifugal forces must be taken into consideration when calculating the required clamping pressure and RPM. For calculating the rated speed for a certain machining operation, the following formula must be applied:

$$n_{max.} = \sqrt{\frac{F_{spo} - F_{spz}}{m \cdot rc \cdot a}} \cdot \frac{30}{\pi}$$

F_{spo} = initial clamping force at 0 RPM (measure in Newtons [N])
F_{spz} = required clamping force with chuck at 0 RPM for a certain machining task (measure in Newtons [N])
n_{max} = maximum admissible speed (RPM)
m = mass of the entire jaw unit (kg)chuck and top jaws
rc = center of gravity radius of the entire jaw unit (m)
a = number of jaws

- **Welded Jaws:** Welded jaws should not be used. If absolutely necessary, the weld seams must be checked as to their centrifugal and clamping force capacity.
- **Mounting Screws:** Mounting screws must be positioned for maximum holding.

4" and 5" Sure-Grip® Power Jaw Chucks for all Horizontal CNC Lathes

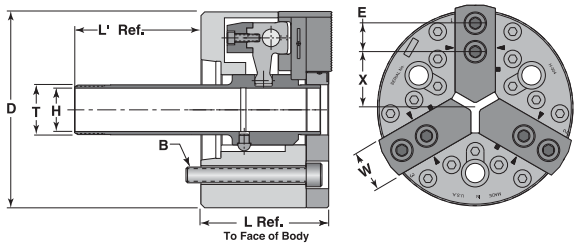
4" CHUCK SPECIFICATIONS	Hardinge® ELITE® 27 MS, QUEST® GT
Spindle Nose	**A2-4**
Item Size (in/mm)	4/100
Model Number	HM-304
Part Number	SCA-2000304-A24H
Serrations	1.5mm x 60°
Thru-Hole (in/mm)	1.078/27.38
Jaw Stroke Diameter (in/mm)	.186/4.72
Plunger Stroke (in/mm)	.375/9.52
Maximum Draw Bar Pull (lb/N)	3,300/14,700
Maximum Gripping Force (lb/N)	8,400/37,360
Maximum RPM	8,000
Approximate Weight (lb/kg)	13.50/6.10
Moment of Inertia (lb-ft-sec²/kg-m²)	.009/.012
Max. Rec. Chucking Diameter (in/mm)	3.800/96.52
Accuracy—TIR (in/mm)	.0005/.0127
Repeatability (in/mm)	.0005/.0127
Dynamic Balance	G - 6.3
Optional Balance	G - 2.5

5" CHUCK SPECIFICATIONS	Other Brands of CNC Lathes	Hardinge® RS 42, ELITE 6/42, QUEST® 6/42, CONQUEST T42, COBRA® 42, CHNC®
Spindle Nose	**A2-5**	**A2-5**
Item Size (in/mm)	5/125	5/125
Model Number	CM2-305B-5	HM-305
Part Number	SCA-2200305-A25C	SCA-2000305-A25H
Blank Link Part Number	SC-0000089	—
Serrations	1.5mm x 60°	1.5mm x 60°
Thru-Hole (in/mm)	1.580/40.13	1.668/42.00
Jaw Stroke Diameter (in/mm)	.194/4.92	.194/4.92
Plunger Stroke (in/mm)	.413/10.50	.413/10.50
Maximum Draw Bar Pull (lb/N)	3,300/14,700	3,300/14,700
Maximum Gripping Force (lb/N)	9,000/40,000	9,000/40,000
Maximum RPM	7,000	7,000
Approximate Weight (lb/kg)	17.00/7.70	17.00/7.70
Moment of Inertia (lb-ft-sec²/kg-m²)	.017/.023	.017/.023
Max. Rec. Chucking Diameter (in/mm)	4.5/114.00	4.5/114.00
Accuracy—TIR (in/mm)	.0005/.0127	.0005/.0127
Repeatability (in/mm)	.0005/.0127	.0005/.0127
Dynamic Balance	G - 6.3	G - 6.3
Optional Balance	G - 2.5	G - 2.5

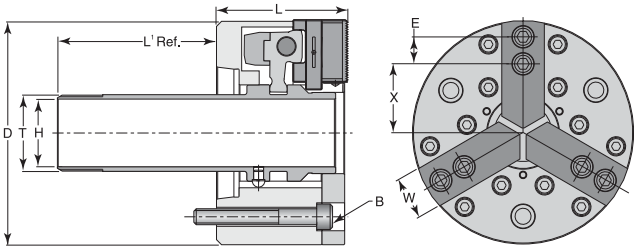
4" CHUCK DIMENSIONS (in/mm) **Spindle Nose**	**A2-4**
B (Bolt Thread)	7/16 x 14/M10 x 1.5
D (Diameter)	4.881/124.00
E	.551/14.00
H (Thru-Hole)	1.078/27.38
L (Length)	3.187/80.94
L¹ Minimum	2.960/75.18
L¹ Maximum	3.340/84.83
T (Thread)	1.238 x 20mm
W	1.000/25.40
X Start (External Gripping)	1.424/36.16

5" CHUCK DIMENSIONS (in/mm) **Spindle Nose**	**A2-5**	**A2-5**
B (Bolt Thread)	7/16 x 14/M10 x 1.5	7/16 x 14/M10 x 1.5
D (Diameter)	5.500/140.00	5.500/140.00
E	.787/20.00	.787/20.00
H (Thru-Hole)	1.580/40.13	1.668/42.00
K	1.000/25.40	—
L (Length)	3.198/81.22	3.198/81.22
L¹ Minimum	.526/13.36	3.765/96.63
L¹ Maximum	.937/23.79	4.178/106.12
T (Thread)	—	1.87" x 1.75mm
W	1.000/25.40	1.000/25.40
X Start (External Gripping)	1.643/41.73	1.643/41.73

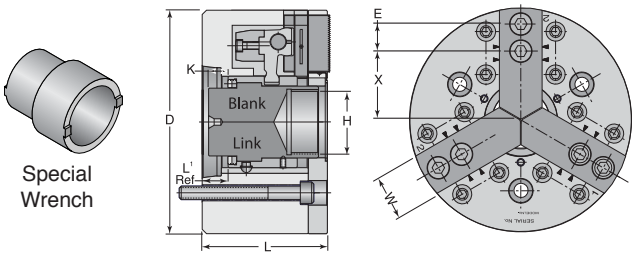
4" Chuck for Hardinge CNC Lathe:



5" Chuck for Hardinge CNC Lathes:



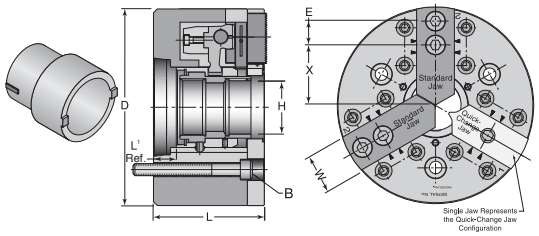
5" Chuck for Other Brands of CNC Lathes:



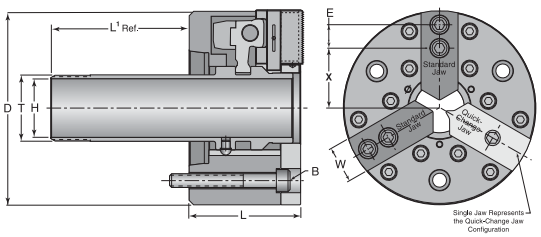
6" Sure-Grip® Power Jaw Chucks for all Horizontal CNC Lathes

6" CHUCK SPECIFICATIONS	Other Brands of CNC Lathes	Hardinge® SV 150, GS 150, Talent® 6/45	Hardinge RS 42, ELITE® & QUEST® 6/42, CONQUEST® T42, COBRA® 42, CHNC,® SUPERSLANT®	Hardinge RS 51, ELITE & QUEST 8/51, COBRA 51, CONQUEST T51, T42 Big Bore	Hardinge SR 150	Hardinge QUEST TwinTurn® 65
Spindle Nose	**A2-5**	**A2-5**	**A2-5**	**A2-6**	**A2-6**	**A2-6**
Item Size (in/mm)	6/150	6/150	6/150	6/150	6/150	6/150
Model Number	CM2-306C-5	HM-306-5T	HM-306	HM-306-6L	HM-306-SR	HM-306-6
Part Number	SCA-2300306-A25C	SC-2300306-A25T	SCA-2000306-A25H	SCA-2000306-A26L	SC-2000306-A6SR	SCA-2000306-A26H
Model Number - Quick-Change	CM2-306C-5Q	HM-306-5TQ	HM-306-Q	HM-306-6LQ	HM-306-SRQ	HM-306-6Q
Part Number - Quick-Change	SC-2370306-A25C	SC-2370306-A25T	SC-2070306-A25H	SC-2070306-A26L	SC-2070306-A6SR	SC-2070306-A26H
Blank Link Part Number	SC-0000339	—	—	—	—	—
Serrations	1.5mm x 60°	1.5mm x 60°	1.5mm x 60°	1.5mm x 60°	1.5mm x 60°	1.5mm x 60°
Thru-Hole (in/mm)	2.050/52.00	1.850/46.99	1.668/42.00	2.046/52.00	2.046/52.00	2.156/54.70
Jaw Stroke Diameter (in/mm)	.220/5.58	.220/5.58	.218/5.50	.220/5.58	.220/5.58	.220/5.58
Plunger Stroke (in/mm)	.498/12.60	.498/12.60	.472/11.98	.498/12.60	.498/12.60	.498/12.60
Maximum Draw Bar Pull (lb/N)	4,500/20,000	4,500/20,000	4,500/20,000	4,500/20,000	4,500/20,000	4,500/20,000
Maximum Gripping Force (lb/N)	13,000/58,000	13,000/58,000	13,000/58,000	13,000/58,000	13,000/58,000	13,000/58,000
Maximum RPM	7,000	7,000	6,700	6,500	6,500	6,500
Approximate Weight (lb/kg)	27.30/12.40	27.30/12.40	28.00/12.70	28.00/12.70	28.00/12.70	28.00/12.70
Moment of Inertia (lb-ft-sec^2/kg-m^2)	.035/.047	.035/.047	.038/.051	.035/.047	.035/.047	.035/.047
Max. Rec. Chucking Dia. (in/mm)	5.500/139.00	5.500/139.00	5.500/139.00	5.650/144.00	5.650/144.00	5.650/144.00
Accuracy—TIR (in/mm)	.0005/.0127	.0005/.0127	.0005/.0127	.0005/.0127	.0005/.0127	.0005/.0127
Repeatability (in/mm)	.0005/.0127	.0005/.0127	.0005/.0127	.0005/.0127	.0005/.0127	.0005/.0127
Dynamic Balance	G - 6.3	G - 6.3	G - 6.3	G - 6.3	G - 6.3	G - 6.3
Optional Balance	G - 2.5	G - 2.5	G - 2.5	G - 2.5	G - 2.5	G - 2.5
6" CHUCK DIMENSIONS (in/mm)	**A2-5**	**A2-5**	**A2-5**	**A2-6**	**A2-6**	**A2-6**
B (Bolt Thread)	7/16 x 14/M10 x 1.5	7/16 x 14/M10 x 1.5	7/16 x 14/M10 x 1.5	M12 x 1.75	M12 x 1.75	M12 x 1.75
D (Diameter)	6.650/169.00	6.650/169.00	6.500/165.00	6.650/169.00	6.650/169.00	6.650/169.00
E	.787/20.00	.787/20.00	.787/20.00	.787/20.00	.787/20.00	.787/20.00
H (Thru-Hole)	2.050/52.00	1.850/46.99	1.668/42.00	2.046/52.00	2.046/52.00	2.156/54.70
K	1.000/25.40	—	—	—	—	—
L (Length)	3.678/93.42	3.678/93.42	3.678/93.42	3.678/93.42	3.678/93.42	3.678/93.42
L^1 Minimum	.520/13.20	.520/13.20	3.581/90.90	5.660/143.80	4.880/124.00	2.540/65.40
L^1 Maximum	1.000/25.40	1.000/25.40	4.063/103.20	6.139/155.90	5.650/143.50	3.040/77.20
T (Thread)	—	M55 X 2.0mm	1.87" x 1.75mm	M60 x 1.5mm	M60 x 1.5mm	M73 x 1.5mm
W	1.250/32.00	1.250/32.00	1.250/32.00	1.250/32.00	1.250/32.00	1.250/32.00
X Start (External Gripping)	2.127/54.00	2.127/54.00	1.866/47.90	2.127/54.00	2.127/54.00	2.127/54.00
X Start (External Gripping) Quick-Change	2.097/53.26	2.097/53.26	1.946/49.42	2.097/53.26	2.097/53.26	2.097/53.26

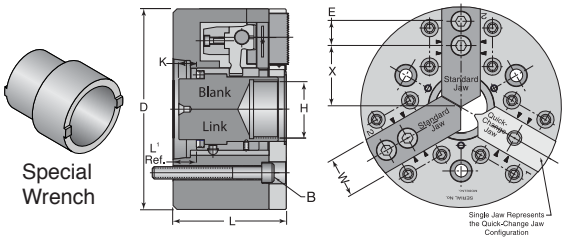
Chuck for Hardinge SV 150, GS 150, Talent 6/45 Lathes:



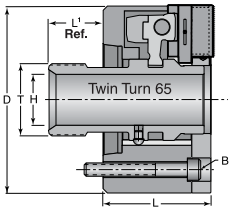
Chuck for other Hardinge CNC Lathes:



Chuck for Other Brands of CNC Lathes:



Chuck for Hardinge QUEST TwinTurn Lathes:

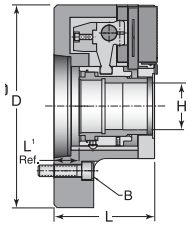


Standard 6" chucks with serial #2038 or higher can be retrofitted for Quick-Change Jaws. Order Kit A2-5 #SC 2000741QC, TwinTurn 65/Cobra 51/T42 Big Bore/T51 A2-6 #SC2000746QC, Other Brands A2-5 #SC2000747QC

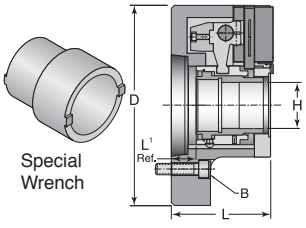
8" Sure-Grip® Power Jaw Chucks for all Horizontal CNC Lathes

8" CHUCK SPECIFICATIONS Spindle Nose	Other Brands CNC Lathes A2-6	Hardinge® SV 200, GS 200, Talent® 8/52 A2-6	Other Brands of Large Bore CNC Lathes A2-6	Hardinge RS 42, ELITE® 6/42, QUEST® 6/42, CONQUEST® T42 COBRA® 42 A2-5 to A2-6	Hardinge RS 51, ELITE 8/51, COBRA 51, QUEST 8/51 CONQUEST T51 and T42 Big-Bore A2-6	Hardinge RS 65, QUEST 10/65 25C A2-6	Hardinge GS 200/66, Talent® 8/66 A2-6	Hardinge SR 200 A2-6
Item Size (in/mm)	8/200	8/200	8/200	8/200	8/200	8/200	8/200	8/200
Model Number	CM2-308B-6	HM-308-6T	CM2-308C-6	HM-308-5	HM-308	HMQ-308	HM-308C-6T	HM-308C-SR
Part Number	SCA-2200308-A26C	SC-2200308-A26T	SC-2300308-A26C	SCA-2000308-A25H	SCA-2000308-A26H	SC-2000308-A26Q	SC-2300308-A26T	SC-2300308-A6SR
Model Number - Quick-Change	CM2-308B-6Q	HM-308-6TQ	CM2-308C-6Q	HM-308-5Q	HM-308Q	HMQ-308-Q	HMQ-308C-6T	HM-308C-SRQ
Part Number - Quick-Change	SC-2270308-A26C	SC-2270308-A26T	SC-2370308-A26C	SC-2070308-A25H	SC-2070308-A26H	SC-2070308-A26Q	SC-2370308-A26T	SC-2370308-A6SR
Blank Link Part Number	SC-0000389	—	SC-0000522	—	—	—	—	—
Spindle Adapter Part Number	—	—	—	SC-0000133	—	—	—	—
Serrations	1.5mm x 60°	1.5mm x 60°	1.5mm x 60°	1.5mm x 60°	1.5mm x 60°	1.5mm x 60°	1.5mm x 60°	1.5mm x 60°
Thru-Hole (in/mm)	2.188/55.57	2.047/51.99	2.696/68.47	1.668/42.00	2.050/52.00	2.050/52.00	2.696/68.47	2.596/66.00
Jaw Stroke Diameter (in/mm)	.312/7.90	.312/7.90	.312/7.90	.312/7.90	.312/7.90	.312/7.90	.312/7.90	.312/7.90
Plunger Stroke (in/mm)	.565/14.30	.565/14.30	.565/14.30	.565/14.30	.565/14.30	.565/14.30	.565/14.30	.565/14.30
Maximum Draw Bar Pull (lb/N)	7,000/31,000	7,000/31,000	7,000/31,000	6,500/29,000	7,000/31,000	7,000/31,000	7,000/31,000	7,000/31,000
Maximum Gripping Force (lb/N)	19,000/84,500	19,000/84,500	19,000/84,500	17,500/78,000	19,000/84,500	19,000/84,500	19,000/84,500	19,000/84,500
Maximum RPM	5,500	5,500	5,000	5,500	5,500	5,500	5,000	5,000
Approximate Weight (lb/kg)	48.00/21.70	48.00/21.70	54.00/24.40	48.00/21.70	48.00/21.70	48.00/21.70	54.00/24.40	54.00/24.40
Moment of Inertia (lb-ft-sec²/kg-m²)	.101/.137	.101/.137	.120/.150	.101/.137	.101/.137	.101/.137	.120/.150	.120/.150
Max Rec. Chucking Dia (in/mm)	7.250/184.00	7.250/184.00	8.000/203.00	7.250/184.00	7.250/184.00	7.250/184.00	8.000/203.00	8.000/203.00
Accuracy—TIR (in/mm)	.0005/.0127	.0005/.0127	.0005/.0127	.0005/.0127	.0005/.0127	.0005/.0127	.0005/.0127	.0005/.0127
Repeatability (in/mm)	.0005/.0127	.0005/.0127	.0005/.0127	.0005/.0127	.0005/.0127	.0005/.0127	.0005/.0127	.0005/.0127
Dynamic Balance	G - 6.3	G - 6.3	G - 6.3	G - 6.3	G - 6.3	G - 6.3	G - 6.3	G - 6.3
Optional Balance	G - 2.5	G - 2.5	G - 2.5	G - 2.5	G - 2.5	G - 2.5	G - 2.5	G - 2.5
8" CHUCK DIMENSIONS (in/mm)	**A2-6**	**A2-6**	**A2-6**	**A2-5 to A2-6**	**A2-6**	**A2-6**	**A2-6**	**A2-6**
B (Bolt Thread)	½ x 13/M12 x 1.75	½ x 13/M12 x 1.75	½ x 13/M12 x 1.75	M12 x 1.75	M12 x 1.75	M12 x 1.75	½ x 13/M12 x 1.75	½ x 13/M12 x 1.75
D (Diameter)	8.250/210.00	8.250/210.00	8.960/227.50	8.250/210.00	8.250/210.00	8.250/210.00	8.960/227.50	8.960/227.60
E	.984/25.00	.984/25.00	.984/25.00	.984/25.00	.984/25.00	.984/25.00	.984/25.00	.984/125.00
H (Thru-Hole)	2.188/55.57	2.047/51.99	2.696/68.48	1.668/42.00	2.050/52.00	2.050/52.00	2.696/68.48	2.596/66.00
K	1.000/25.40	—	1.194/30.32	—	—	—	.840/21.34	—
L (Length)	4.115/104.50	4.115/104.50	4.120/104.65	4.115/104.50	4.115/104.50	4.115/104.50	4.120/104.65	4.120/104.65
L¹ Minimum	.625/15.87	.625/15.87	.710/18.03	4.591/116.60	5.252/133.40	5.252/133.40	—	5.762/146.00
L¹ Maximum	1.179/30.00	1.179/30.00	1.263/32.08	5.156/130.96	5.817/147.75	5.817/147.75	—	6.339/161.00
T (Thread)	—	M60 X 2.0mm	—	1.87" x 1.75mm	M60 x 1.5mm	M73 x 1.5mm	M74 x 2mm	M73 x 1.5mm
W	1.500/38.00	1.500/38.00	1.500/38.00	1.500/38.00	1.500/38.00	1.500/38.00	1.500/38.00	1.500/38.00
X-Start (External Gripping)	2.720/69.10	2.720/69.10	2.700/68.50	2.325/59.00	2.325/59.00	2.325/59.00	2.700/68.50	2.700/68.50
X-Start (External Gripping) Quick-Change	2.462/63.53	2.462/63.53	2.725/69.21	2.337/59.35	2.337/59.35	2.337/59.35	2.725/69.21	2.725/69.21

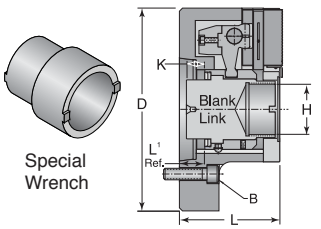
Chuck for Hardinge SV 200, GS 200, Talent 8/52 Lathes:

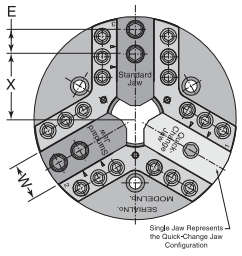


Chuck for Hardinge Talent 8/66, GS200/66 CNC Lathes:

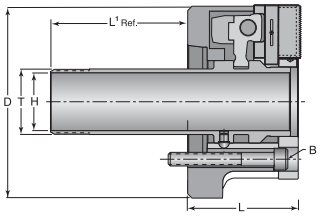


Chuck for Other Brands of CNC Lathes:





Chuck for Hardinge SR 200 Lathes:



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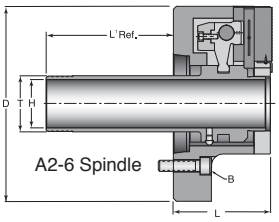
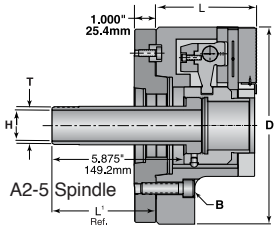


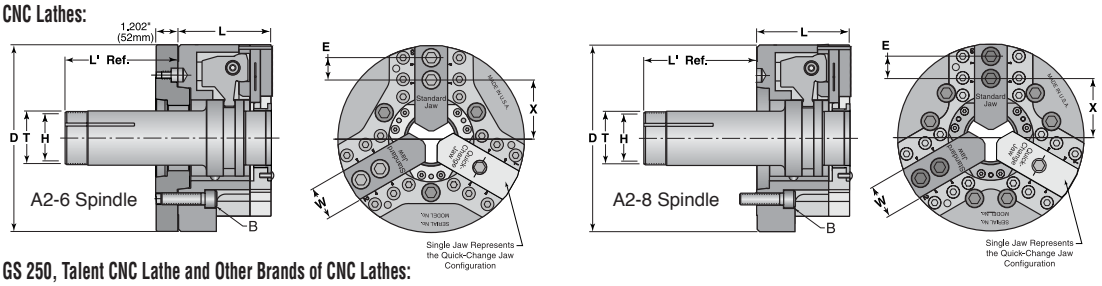


Standard 8" chucks with serial #2108 or higher can be retrofitted for Quick-Change Jaws. Order Kit A2-5 & A2-6 #SC 2000721QC, Other Brands A2-6 B-Version #SC2000721QC, Other Brands A2-6 C-Version #SC2000727QC

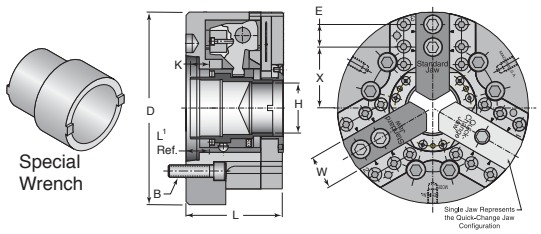
10" Sure-Grip® Power Jaw Chucks for all Horizontal CNC Lathes

10" CHUCK SPECIFICATIONS	Other Brands CNC Lathes	Hardinge® GS 250, Talent® 10/78 CNC Lathes	Other Brands of Large Bore CNC Lathes	Hardinge RS 51, QUEST® and ELITE® 8/51, COBRA® 51, CONQUEST® T51 and T42 Big-Bore	Hardinge COBRA 65 CONQUEST T65 and T51 Big-Bore	Hardinge RS 65 QUEST 10/65 25C	Hardinge SR 250
Spindle Nose	**A2-8**	**A2-8**	**A2-8**	**A2-6 to A2-8**	**A2-8**	**A2-6**	**A2-8**
Item Size (in/mm)	10/250	10/250	10/250	10/250	10/250	10/250	10/250
Model Number	CM2-310B-8	TM2-310B-8	CM2-310C-8	HM-310-6	HM-310-8	HMQ-310-6	HM-310-SR
Part Number	SCC-2200310-A28C	SC-2200310-A28T	SCA-2300310-A28C	SCD-2000310-A26H	SCD-2000310-A28H	SCA-2000310-A26Q	SC-2300310-A8SR
Model Number - Quick-Change	CM2-310B-8Q	TM2-310B-8Q	CM2-310C-8Q	HM-310-6Q	HM-310-8Q	HMQ-310-6Q	HM-310-SRQ
Part Number - Quick-Change	SCA-2270310-A28C	SC-2270310-A28T	SCA-2370310-A28C	SCA-2070310-A26H	SCA-2070310-A28H	SCA-2070310-A26Q	SC-2370310-A8SR
Blank Link Part Number	SC-0000489	—	SC-0000553	—	—	—	—
Spindle Adapter Part Number	—	—	—	SC-0000181	—	—	—
Serrations	1.5mm x 60°	1.5mm x 60°	1.5mm x 60°	1.5mm x 60°	1.5mm x 60°	1.5mm x 60°	1.5mm x 60°
Thru-Hole (in/mm)	3.075/78.10	3.075/78.10	3.616/91.84	2.050/52.07	2.595/65.91	2.595/65.91	3.616/91.84
Jaw Stroke Diameter (in/mm)	.374/9.49	.374/9.49	.374/9.49	.400/10.16	.400/10.16	.400/10.16	.374/9.49
Plunger Stroke (in/mm)	.800/20.32	.800/20.32	.800/20.32	.858/21.79	.858/21.79	.858/21.79	.800/20.32
Maximum Draw Bar Pull (lb/N)	11,000/48,930	11,000/48,930	11,000/48,930	11,000/48,930	11,000/48,930	11,000/48,930	11,000/48,930
Maximum Gripping Force (lb/N)	31,500/140,110	31,500/140,110	31,500/140,110	31,500/140,110	31,500/140,110	31,500/140,110	31,500/140,110
Maximum RPM	4,500	4,500	4,200	4,500	4,500	4,500	4,200
Approximate Weight (lb/kg)	78.00/35.40	78.00/35.40	89.00/40.50	75.00/34.00	78.00/35.40	75.00/34.00	89.00/40.5
Moment of Inertia (lb-ft-sec²/kg-m²)	.223/.303	.223/.303	.250/.330	.225/.304	.225/.304	.225/.304	.250/.330
Max Rec. Chucking Dia (in/mm)	9.00/228.00	9.00/228.00	9.50/241.00	9.00/228.00	9.00/228.00	9.00/228.00	9.50/241.00
Accuracy—TIR (in/mm)	.0008/.0203	.0008/.0203	.0008/.0203	.0008/.0203	.0008/.0203	.0008/.0203	.0008/.0203
Repeatability (in/mm)	.0005/.0127	.0005/.0127	.0005/.0127	.0005/.0127	.0005/.0127	.0005/.0127	.0005/.0127
Dynamic Balance	G - 6.3	G - 6.3	G - 6.3	G - 6.3	G - 6.3	G - 6.3	G - 6.3
Optional Balance	G - 2.5	G - 2.5	G - 2.5	G - 2.5	G - 2.5	G - 2.5	G - 2.5
10" CHUCK DIMENSIONS (in/mm)	**A2-8**	**A2-8**	**A2-8**	**A2-6 to A2-8**	**A2-8**	**A2-6**	**A2-8**
B (Bolt Thread)	⅝ x 11/M16 x 2	⅝ x 11/M16 x 2	⅝ x 11/M16 x 2	⅝ x 11/M16 x 2	⅝ x 11/M16 x 2	⅝ x 11/M16 x 2	⅝ x 11/M16 x 2
D (Diameter)	10/254	10/254	10.5/266	10/254	10/254	10/254	10.5/266
E	1.187/30.14	1.187/30.14	1.187/30.14	1.187/30.14	1.187/30.14	1.187/30.14	1.187/30.14
H (Thru-Hole)	3.075/78.10	3.075/78.10	3.616/91.84	2.050/52.07	2.595/65.91	2.595/65.91	3.616/91.84
K	.960/24.38	.960/24.38	1.00/25.40	—	—	—	1.00/25.40
L (Length)	5.025/127.63	5.025/127.63	5.025/127.63	5.025/127.63	5.025/127.63	5.025/127.63	5.025/127.63
L¹ Minimum	.690/17.52	.690/17.52	.740/18.79	6.810/172.97	6.810/172.97	6.810/172.97	—
L¹ Maximum	1.490/37.84	1.490/37.84	1.520/38.60	7.660/194.56	7.660/194.56	7.660/194.56	—
T (Thread)	—	—	—	M60 x 1.5mm	M73 x 1.5mm	M73 x 1.5mm	M87 x 2mm
W	1.750/44.45	1.750/44.45	1.750/44.45	1.750/44.45	1.750/44.45	1.750/44.45	1.750/44.45
X-Start (External Gripping)	3.185/80.89	3.185/80.89	3.440/87.37	2.825/71.75	2.825/71.75	2.825/71.75	3.440/87.37
X-Start (External Gripping) Quick-Change	2.878/73.10	2.878/73.10	3.440/87.37	2.871/72.92	2.871/72.92	2.871/72.92	3.440/87.37

Chuck for Hardinge CNC Lathes:



Chuck for Hardinge GS 250, Talent CNC Lathe and Other Brands of CNC Lathes:



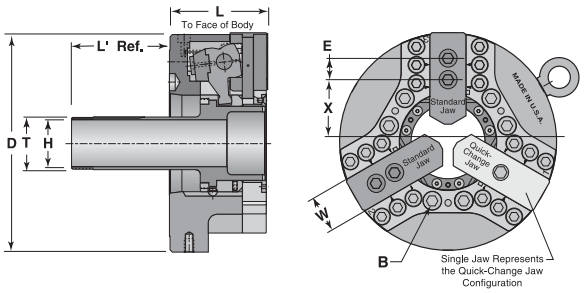
Standard 10" chucks with serial #1943 or higher can be retrofitted for Quick-Change Jaws. Order Kit A2-6 & A2-8 #SC 2000701QC, Other Brands A2-8 B-Version #SC 2000701QC, A2-8 C-Version #SC 2000706QC

12" Sure-Grip® Power Jaw Chucks for all Horizontal CNC Lathes

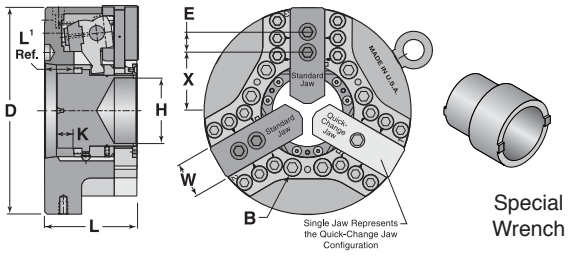
12" CHUCK SPECIFICATIONS	Other Brands of CNC Lathes	Hardinge COBRA® 65 CONQUEST® T65 and T51 Big-Bore
Spindle Nose	**A2-8**	**A2-8**
Item Size (in/mm)	12/300	12/300
Model Number	CM2-312C-8	HM-312C-8
Part Number	SCA-2300312-A28C	SCA-2300312-A28H
Model Number - Quick-Change	CM2-312C-8Q	HM-312C-8Q
Part Number - Quick-Change	SC-2370312-A28C	SC-2370312-A28H
Spindle Adapter Part Number	—	—
Blank Link Part Number	SC-0000419	—
Serrations	1.5mm x 60°	1.5mm x 60°
Thru-Hole (in/mm)	3.800/96.52	2.595/66.00
Jaw Stroke Diameter (in/mm)	.420/10.66	.420/10.66
Plunger Stroke (in/mm)	.895/22.70	.895/22.70
Maximum Draw Bar Pull (lb/N)	12,000/53,000	12,000/53,000
Maximum Gripping Force (lb/N)	32,000/142,000	32,000/142,000
Maximum RPM	3,500	3,500
Approximate Weight (lb/kg)	127.00/57.60	127.00/57.60
Moment of Inertia (lb-ft-sec^2/kg-m^2)	.470/.640	.470/.640
Max. Rec. Chucking Diameter (in/mm)	11.000/279.40	11.000/279.40
Accuracy—TIR (in/mm)	.0010/.0254	.0010/.0254
Repeatability (in/mm)	.0008/.0200	.0008/.0200

12" CHUCK DIMENSIONS (in/mm)		
Spindle Nose	**A2-8**	**A2-8**
Bolt Thread	$^5/_8$ x 11/M16 x 2	M16 x 2
D (Diameter)	12/300	12/300
E	1.181/30.00	1.181.30.00
H (Thru-Hole)	3.800/96.52	2.595/66.00
K	.960/24.40	—
L (Length)	5.440/138.00	5.440/138.00
L¹ Minimum	.780/19.80	5.510/140.00
L¹ Maximum	.1.670/42.40	6.400/162.00
T (Thread)	—	M73 x 1.5mm
W	2.000/50.80	2.000/50.80
X Start (External Gripping)	3.420/86.87	3.420/86.87
X Start (External Gripping) Quick-Change	3.343/86.18	3.343/86.18

Chuck for Hardinge CNC Lathes:



Chuck for Other Brands of CNC Lathes:

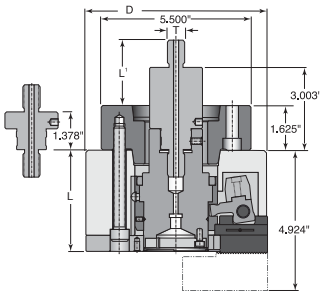


Standard 12" chucks can be retrofitted for Quick-Change Jaws. Order Kit A2-8 #SC 20007761QC, Other Brands A2-8 #SC 2000761QC

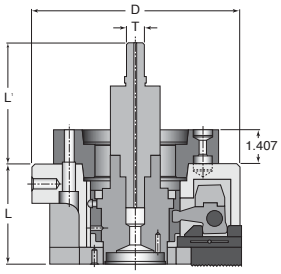
Sure-Grip® Power Jaw Chucks for all Hardinge® Vertical CNC Lathes

VERTICAL CHUCK SPECIFICATIONS	6" Vertical HARDINGE-EMAG VL3	8" Vertical HARDINGE-EMAG VL5	10" Vertical HARDINGE-EMAG VL5	10" for Hardinge CONQUEST® VT100 Vertical Lathe	10" for Hardinge CONQUEST VT200 Vertical Lathe	12" for Hardinge CONQUEST VT100 Vertical Lathe	12" for Hardinge CONQUEST VT200 Vertical Lathe
Spindle Nose	**A2-5/Din5**	**A2-6**	**A2-6**	**A2-8**	**A2-11 to A2-8**	**A2-8**	**A2-11 to A2-8**
Item Size (in/mm)	6.65/169	8/200	10/250	10/250	10/250	12/300	12/300
Model Number	CM2-306-5E	HM-308-6E	HM-310-6E	HVM-310-8	HVM-310-11	HVM-312C-8	HVM-312C-11
Part Number	SCA-2300306-A25E	SC-2200308-A26E	SC-2200310-A26E	SCC-2000310-A28V	SCC-2000310-A11V	SCA-2300312-A28V	SCA-2300312-A11V
Model Number - Quick-Change	CM2-306E-5Q	HM-308-6EQ	—	HVM-310-8Q	HVM-310-11Q	HVM-312C-8Q	HVM-312C-11Q
Part Number - Quick-Change	SCA-2370306-A25E	SC-2270308-A26E	—	SCA-2070310-A28V	SCA-2070310-A11V	SC-2370312-A28V	SC-2370312-A11V
Spindle Adapter Part Number	SC-0000588	—	—	—	SC-0000152	—	SC-0000152
Serrations	1.5mm x 60°	1.5mm x 60°	1.5mm x 60°	1.5mm x 60°	1.5mm x 60°	1.5mm x 60°	1.5mm x 60°
Thru-Hole (in/mm)	—	—	—	1.500/38.00	1.500/38.00	1.500/38.00	1.500/38.00
Jaw Stroke Diameter (in/mm)	.220/5.58	.312/7.90	.400/10.16	.400/10.10	.400/10.10	.420/10.66	.420/10.66
Plunger Stroke (in/mm)	.498/12.60	.565/14.30	.858/21.79	.858/21.80	.858/21.80	.895/22.70	.895/22.70
Maximum Draw Bar Pull (lb/N)	4500/20,000	7,000/31,000	11,000/48,930	11,000/48,930	11,000/48,930	12,000/53,000	12,000/53,000
Maximum Gripping Force (lb/N)	13,000/58,000	19,000/84,500	31,500/140,110	31,500/140,110	31,500/140,110	32,000/142,000	32,000/142,000
Maximum RPM	7,000	5,500	4,500	4,500	4,500	3,500	3,500
Approximate Weight (lb/kg)	27.30/12.40	48.00/21.70	75.00/34.00	78.00/35.40	78.00/35.40	127.00/57.60	127.00/57.60
Moment of Inertia (lb-ft-sec²/kg-m²)	.035/.047	.101/.137	.225/.304	.225/.304	.225/.304	.470/.640	.470/.640
Max. Rec. Chucking Dia (in/mm)	5.500/139.00	7.250/184.00	9.000/228.00	9.000/228.00	9.000/228.00	11.000/279.40	11.000/279.40
Accuracy—TIR (in/mm)	.0005/.0127	.0005/.0127	.0008/.0203	.0008/.0200	.0008/.0200	.0010/.0254	.0010/.0254
Repeatability (in/mm)	.0005/.0127	.0005/.0127	.0005/.0127	.0005/.0127	.0005/.0127	.0008/.0200	.0008/.0200
Dynamic Balance	G-6.3	G-6.3	G-6.3	G - 6.3	G - 6.3	—	—
Optional Balance	G-2.5	G-2.5	G-2.5	G - 2.5	G - 2.5	—	—
CHUCK DIMENSIONS (in/mm)	**A2-5/Din 5**	**A2-6**	**A2-6**	**A2-8**	**A2-11 to A2-8**	**A2-8**	**A2-11 to A2-8**
B (Bolt Thread)	M10 x 1.5	M12 x 1.75	⅝ x 11/M16 x 2	M16 x 2	M16 x 2	M16 x 2	M16 x 2
D (Diameter)	6.650/169.00	8.250/210.00	10/254	10/250	10/250	12/300	12/300
E	.787/20.00	.984/25.00	1.187/30.14	1.187/30.00	1.187/30.00	1.181/30.00	1.181/30.00
H (Thru-Hole)	—	—	—	1.500/38.00	1.500/38.00	1.500/38.00	1.500/38.00
L (Length)	3.678/93.42	4.115/104.50	5.025/127.63	5.025/127.60	5.025/127.60	5.440/138.00	5.440/138.00
L¹ Minimum	2.378/60.40	5.000/127.00	6.810/172.97	2.210/56.10	4.080/103.60	2.394/60.80	4.011/101.80
L¹ Maximum	2.858/72.60	5.565/141.35	7.660/194.56	3.050/77.40	4.920/124.90	3.289/83.54	4.906/124.60
T (Thread)	M16 x 2.0mm	M20 x 2.5mm	M20 x 2.5mm	M50 x 1.5mm	M50 x 1.5mm	M50 x 1.5mm	M50 x 1.5mm
W	1.250/32.00	1.500/38.00	1.750/44.45	1.750/44.40	1.750/44.40	2.000/50.80	2.000/50.80
X Start (External Gripping)	2.127/54.00	2.325/59.00	2.825/71.75	2.825/71.70	2.825/71.70	3.420/86.87	3.420/86.87
X Start (External Gripping) Quick-Change	2.097/53.26	2.337/59.35	???	2.871/72.92	2.871/72.92	3.393/86.18	3.393/86.18

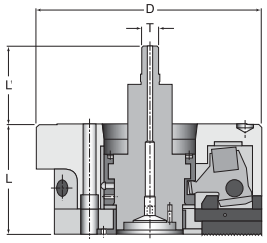
6.65" Chuck for HARDINGE-EMAG VL3 Vertical CNC Lathes:



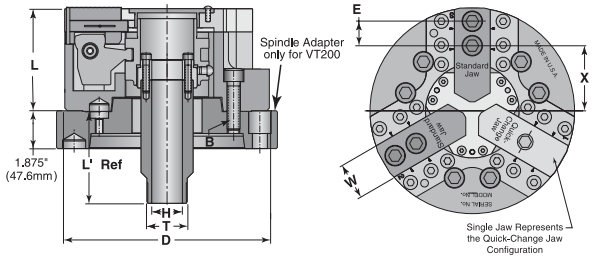
8" Chuck for HARDINGE-EMAG VL5 Vertical CNC Lathes:



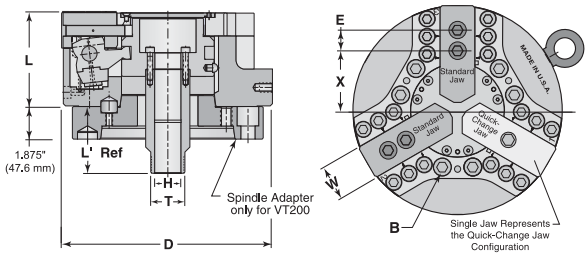
10" Chuck for HARDINGE-EMAG VL5 Vertical CNC Lathes:



10" Chuck for Hardinge Vertical CNC Lathes:



12" Chuck for Hardinge Vertical CNC Lathes:



Vertical 10" and 12" chucks with serial #1948 and higher can be retrofitted for Quick-Change Jaws. Order Kit A2-8 & A2-11 #SC 2000701QC for 10" Chucks, 12" Chucks A2-8 & A2-11 #SC 2000761QC

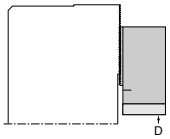
Smallest Gripping Diameter for Pointed Soft Jaws

Standard Top Jaws

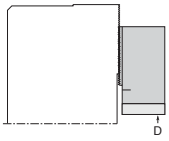
Chuck Size	Jaw Model #	Smallest Recommended Diameter "D"
5"	5MSHP	1/4" (6.35mm)
5"	5MMHP	1/4" (6.35mm)
6"	6MSHP	1/4" (6.35mm)
6"	6MMHP	1/4" (6.35mm)
8"	8MSHP	3/8" (9.52mm)
8"	8MMHP	3/8" (9.52mm)
10"	10MSHP	3/8" (9.52mm)
10"	10MMHP	3/8" (9.52mm)
12"	12MMHP	1" (25.4mm)

With Master Jaw at Mid-position

Standard Chuck Top Jaws
Master Jaw Mid Position, Key & Jaw Full Forward, Soft Standard Height and Soft Medium Height Pointed Top Jaws



Quick-Change Chuck Top Jaws
Master Jaw Mid Position, Soft Standard Height

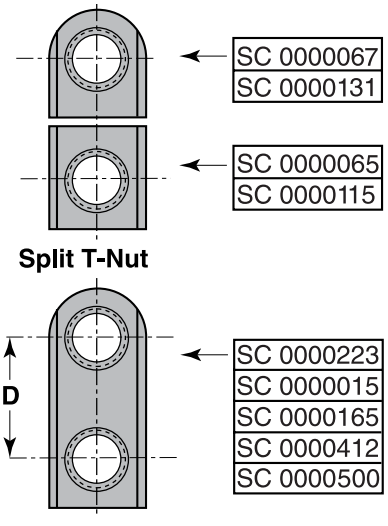


Quick-Change Top Jaws

Chuck Size	Point Style	Jaw Model #	Smallest Recommended Diameter "D"
6.5"	Std. Point	6MQP1	.313" (7.95 mm)
6.65"	Std. Point	6MQP2	.313" (7.95 mm)
6.65"	Std. Point	6MQP3	.359" (9.12 mm)
8.25"	Std. Point	8MQP1	.531" (13.49 mm)
8.95"	Std. Point	8MQP2	.531" (13.49 mm)
10"	Std. Point	10MQP1	.750" (19.05 mm)
10.5"	Std. Point	10MQP2	.750" (19.05 mm)
12"	Std. Point	12MQP1	1.125" (28.57 mm)

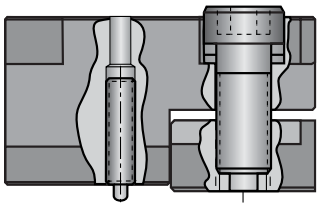
Standard Chuck Master Jaw Slot and T-Nut Specifications

Jaw Chuck Size & T-Nut Part No.	A	B	C	D	F	G	Thread
4" (Metric Serrations)							
SC 0000223	.393"	.486"	.553"	.551"	.139"	.394"	M8 x 1.25
5" (Metric Serrations)							
SC 0000065	.393"	.486"	.553"	—	.139"	.394"	M8 x 1.25
SC 0000067	.393"	.486"	.553"	—	.139"	.394"	M8 x 1.25
6" (Metric Serrations)							
SC 0000015	.470"	.469"	.646"	.787"	.109"	.472"	M10 x 1.5
6" A2-6 (Metric Serrations)							
SC 0000500	.470"	.469"	.646"	.787"	.109"	.472"	M10 x 1.5
8" (Metric Serrations)							
SC 0000115	.548"	.483"	.750"	—	.121"	.549"	M12 x 1.75
SC 0000131	.548"	.483"	.750"	—	.121"	.549"	M12 x 1.75
10" (Metric Serrations)							
SC 0000165	.631"	.586"	.923"	1.187"	.146"	.630"	M12 x 1.75
12" (Metric Serrations)							
SC 0000412	.825"	.604"	1.170"	1.181"	.098"	.827"	M16 x 2.0

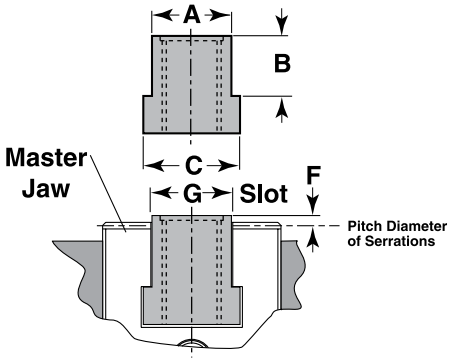


WARNING
Only T-Nuts manufactured by Hardinge should be used on your Sure-Grip® Power Chuck. ***Ignoring this warning may cause damage to the machine and/or personal injury.***

Quick-Change Chuck Top Jaw I-Beam



The I-beam assembly is required for all of the Quick-Change chucks. Each chuck size requires an I-beam made for that particular chuck. The part numbers of the assembly are found in the chuck parts list in this manual.



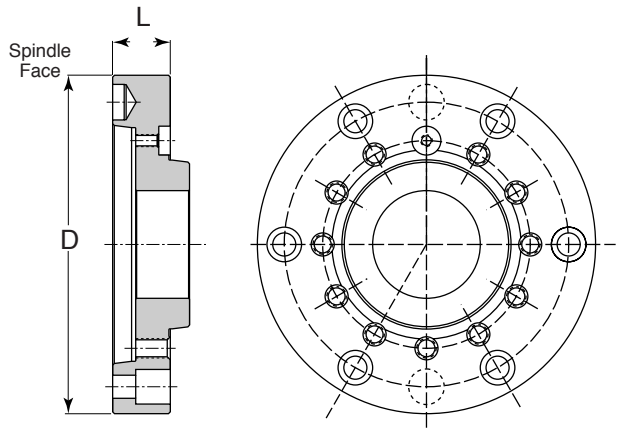
Hardinge® Sure-Grip® Spindle Adapters

Spindle Adapters are available for mounting small chucks to larger machine tool spindles and for mounting larger chucks to small machine tool spindles.

Spindle-to-Chuck	Part No.	"D"	"L"
A2-5-to-A2-6	SC-0000133	6.500" (165.10mm)	1.000" (25.40mm)
A2-6-to-A2-8	SC-0000181	10.00" (254.00mm)	1.202" (30.53mm)
A2-11-to-A2-8	SC-0000152	11.00" (279.40mm)	1.875" (47.62mm)

Large Chucks to Small Spindles – Spindle Ramp Times & Gripping Force

The weight of a large chuck and the adapter must be taken into consideration when mounting them to the machine tool's spindle. This weight will affect the ramp time of the spindle motor. If a chuck is heavier than the machine tool was designed for, the ramp time will increase, affecting the amount of time it takes for the spindle to reach its programmed speed. It also affects spindle reversals when tapping and the time it takes to stop the spindle. The added amperage draw to the spindle motor may overload the circuit breakers and shut the machine down.

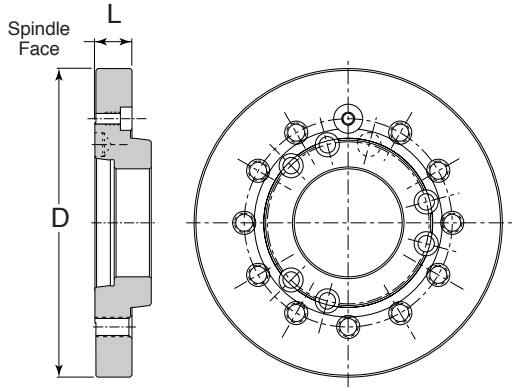


Larger chucks require higher hydraulic or pneumatic pressures which the machine tool may not have. This may significantly reduce the gripping force of the chuck, making it unsafe for gripping certain workpieces.

Small Chucks to Large Spindles – Spindle Ramp Times & Gripping Force

Using a small chuck adapted to a larger spindle can decrease the ramp times for starting, stopping and reversing the spindle. This can greatly improve the cycle time of your machining operations. This is only true if the weight of the smaller chuck and its spindle adapter are less than the standard large spindle chuck.

Small chucks mounted on larger machine tools may be actuated with operating cylinders which have extremely high draw bar forces.



WARNING: If these forces are not reduced to within the draw bar force of the chuck, severe damage may result. This damage may cause the workpiece and/or the jaws to come loose, resulting in machine down time and/or personal injury.

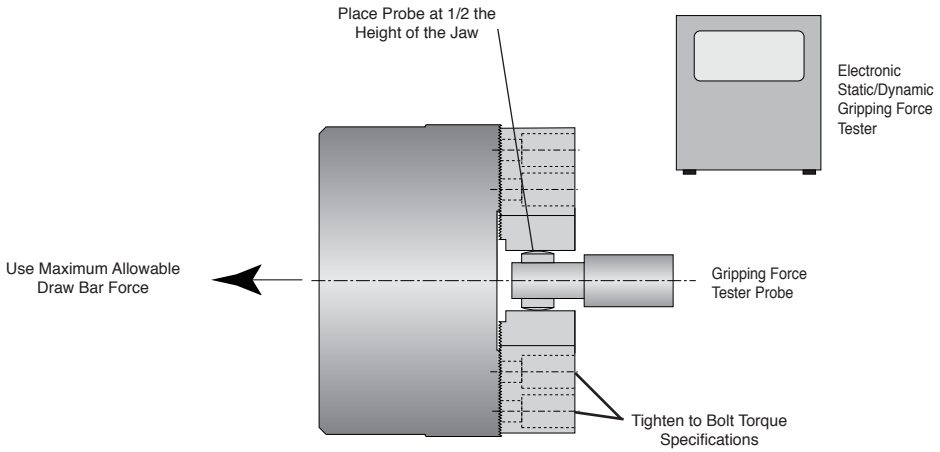
Machine Tools with Pneumatic Actuating Cylinders

If a chuck is rated for a maximum draw bar force of 4,500 lbs (2,045N) and the machine tool can only produce a draw bar force of 3,000 lbs, the chuck will have a greatly reduced gripping force. In this situation it is extremely important when doing the calculations for gripping force, to use the machine tool's draw bar force, not the chuck's rated draw bar force.
If this is not done, the workpiece will not be adequately gripped and may come out of the chuck, causing machine down time and/or personal injury.

Maximum Static Gripping Force

The static gripping force is dependent upon the condition of the lubrication, the brand of grease, the height of the top jaw, and many other variables. The maximum static gripping force is based on the following:

1. Using the Standard Height Pointed Soft Jaw measured with the jaw force tester at mid point of the jaw height (measure from face of chuck to the top of the jaw and then divide by 2).
2. Chevron Ultra-Duty EP NLGI 2, Dow Corning BR-Plus or Kluber ALTEMP Q NB 50 grease is used to lubricate the chuck for maximum chuck efficiency.
3. Mounting bolts for the top jaws are tightened to the specified torque. Refer to pages 119-122.
4. Maximum allowable draw bar force is used.



Maximum Chuck RPM

The maximum RPM for the chuck is measured under the following specifications:

1. Gripping Force—maximum static gripping force
2. Top Jaw—standard pointed soft jaw
3. Master Jaw—at the center of its stroke
4. Placement of Jaw—the end of the jaw is flush with the OD of the chuck body
5. T-nuts—should never extend beyond the OD of the chuck body

NOTE: The maximum chuck RPM is indicated by the RPM when the gripping force during rotation (Dynamic Gripping Force) is equal to one-half (1/2) the Static Gripping Force reading.

CAUTION—GRIPPING FORCE

Refer to pages 12-17 to determine the specifications of the chuck. There are other conditions which affect gripping force causing it to vary such as grease, hydraulic hoses, fittings, hydraulic pump performance, pressure reduction valves, check valves, etc. Problems may occur when the pressure regulators for the pump are not performing to specifications. During these times, excessive surge pressure may be raised, increasing the gripping force. This will result in damage to the part and cause excessive wear on the working surfaces of the chuck. In this case, incorporate a surge suppression system in the hydraulic system for the chuck.

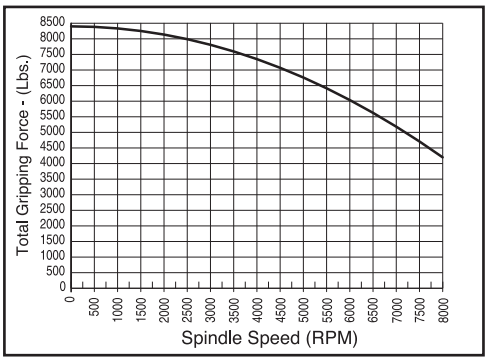
WARNING—HEAVY CUTTING & HIGH RPM

Heavy cuts at high RPM can cause part slippage and/or discharge of the workpiece. The operator must be alert to this possibility and should periodically check that the gripping force is adequate for the cuts being taken. The maximum RPM of the spindle when a chuck is mounted is either the maximum recommended speed for the chuck or the maximum speed of the machine tool, whichever is the lowest RPM.

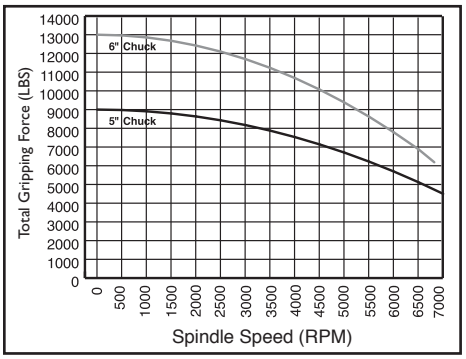
Centrifugal Force

As the spindle RPM increases, centrifugal force begins to affect the gripping force of the chuck. The Hardinge® Sure-Grip® chuck is counterbalanced to help overcome some, but not all, of the force losses due to centrifugal force. Because there are many items which affect centrifugal force (jaw size, shape, height, and position, spindle speed, workpiece shape, etc.), it is necessary to measure the chucking force for each job that is being run. The minimum requirement is a Static Jaw Force Tester. It is strongly recommended that a Dynamic Jaw Force Tester be used. The dynamic tester shows the actual force while the chuck is running at the maximum spindle RPM of the chuck, or the maximum RPM for your job, whichever is smaller.

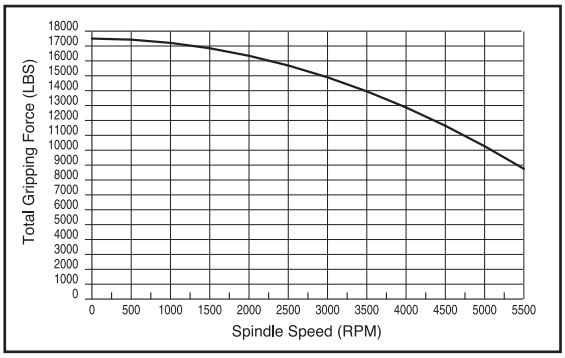
4" Gripping Characteristics (Calculated)



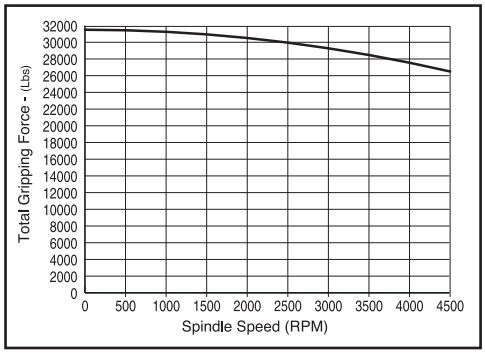
5" & 6" Gripping Characteristics (Calculated)



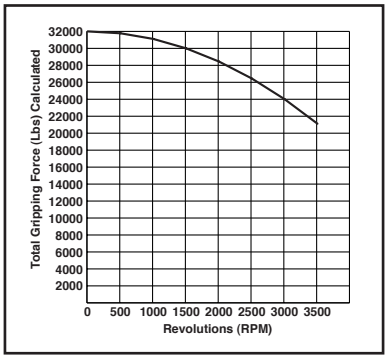
8" Gripping Characteristics (Calculated)



10" Gripping Characteristics (Calculated)



12" Gripping Characteristics (Calculated)

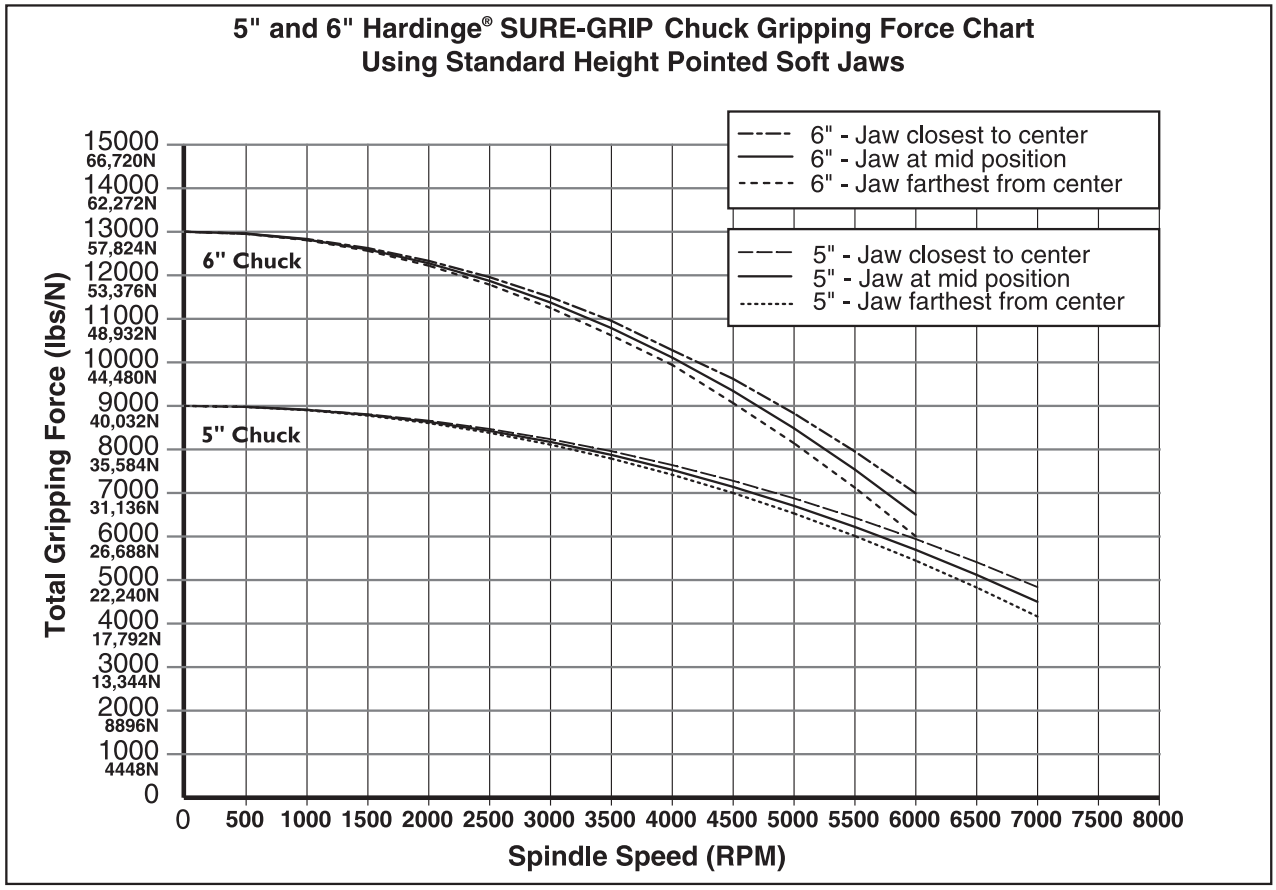


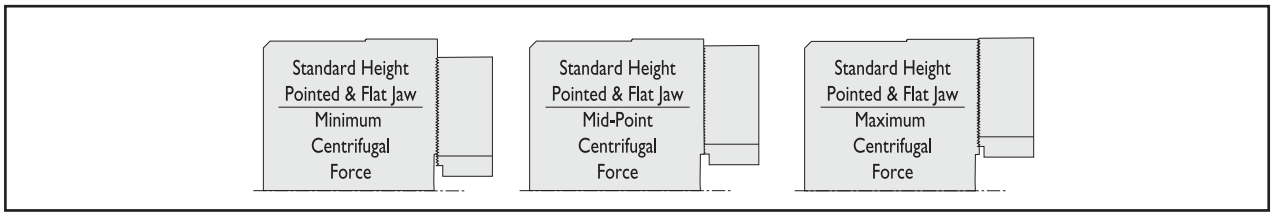
NOTE: All Charts are based on calculated draw forces.

Correlation between jaw gripping force, spindle speed (RPM) and jaw position:

Gripping Force Loss Due to Chuck Jaw Position:

As the top jaw is moved toward the outside of the chuck, the gripping force loss also increases while at the same RPM. To reduce the gripping force loss for a specific jaw position, decrease the spindle RPM.





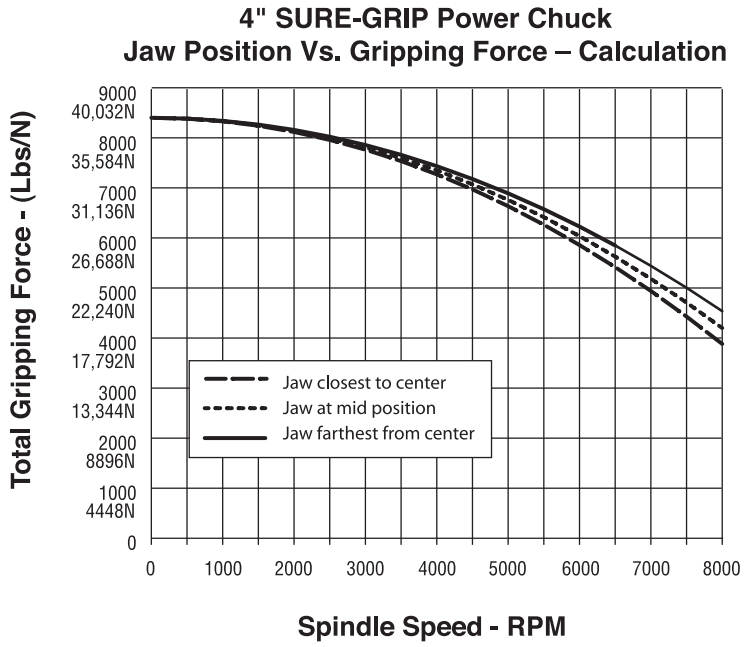
NOTE: All Charts are based on calculated draw forces.

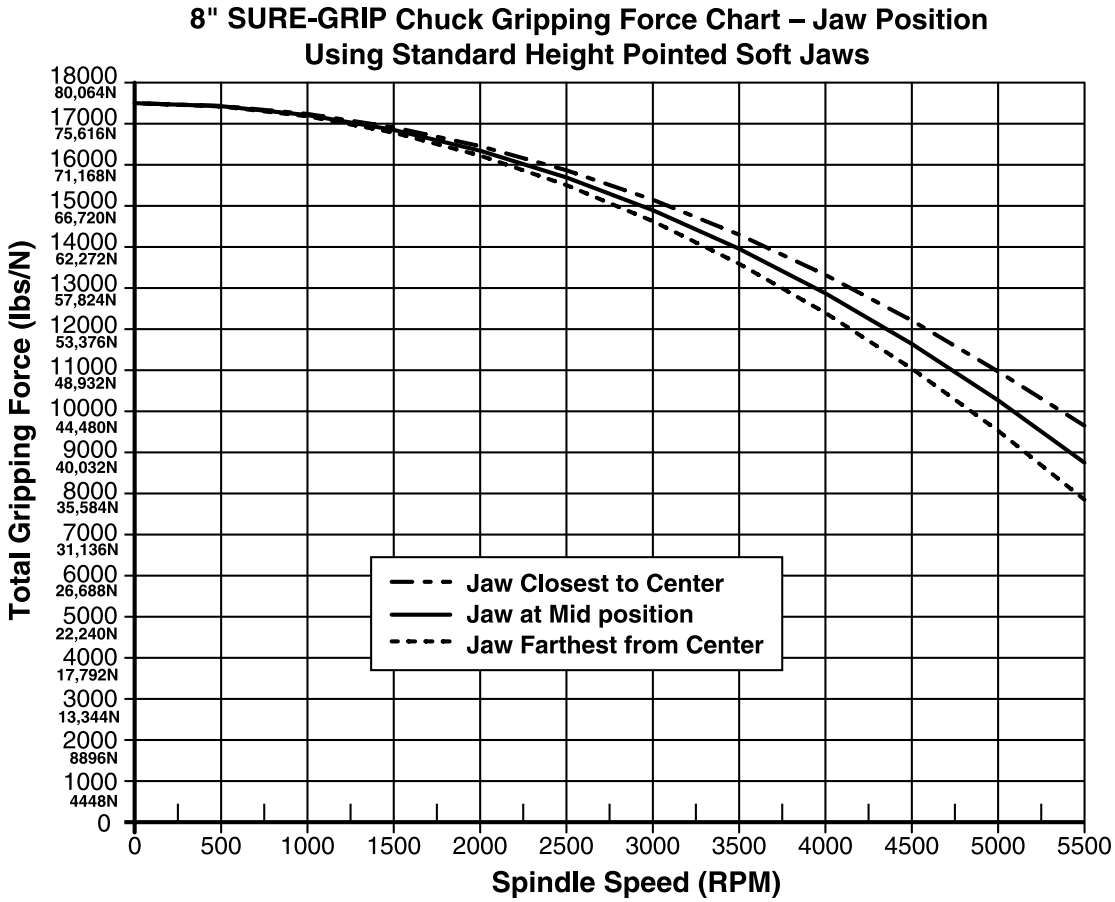
Use the chart to determine what the total gripping force is at a specific spindle RPM. Always make a test run before actually machining the workpiece. The above figures are only approximations. Charts for the 4", 8", 10" and 12" chucks can be found on the following pages.

WARNING—INTERNAL CHUCKING

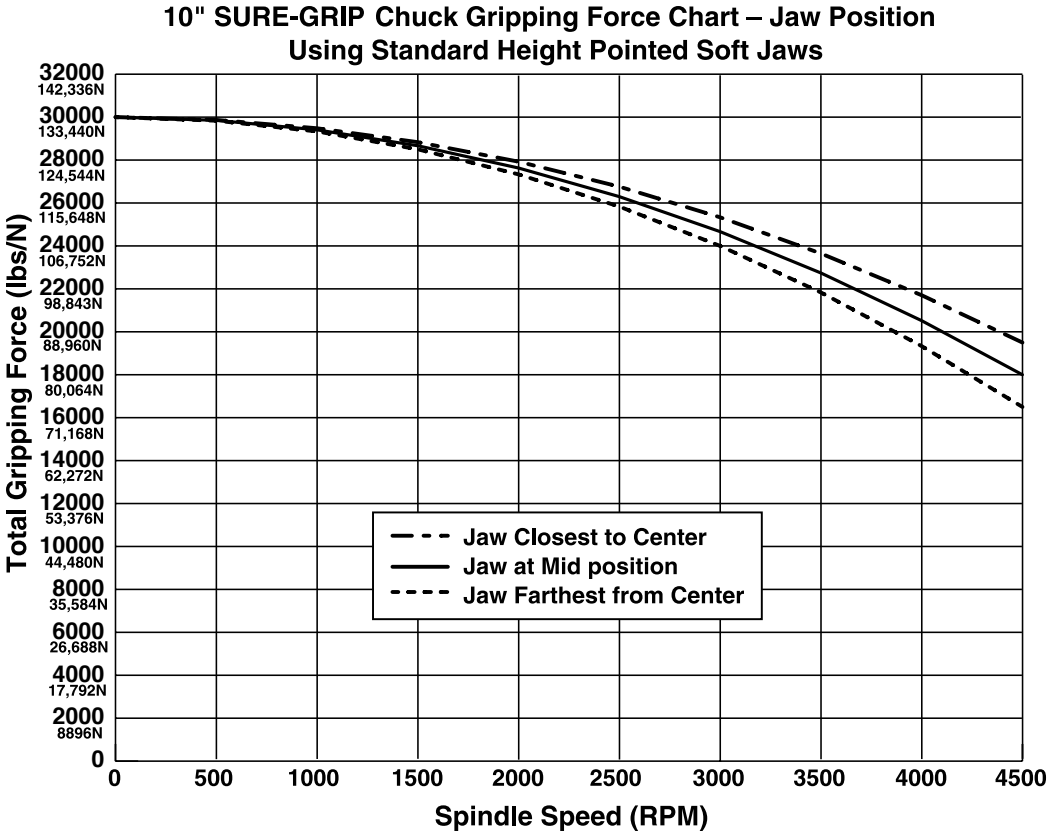
Requires a reduction of the gripping force because centrifugal force adds additional gripping force which could distort the part or cause the part to fracture after material has been removed. The necessary pressure reduction may be as low as 20% and, when working with thin wall parts, higher than 50%. The user must determine the gripping force required for each specific workpiece. ***(The workpiece may come off of the jaws, causing damage to the machine and/or personal injury.)***

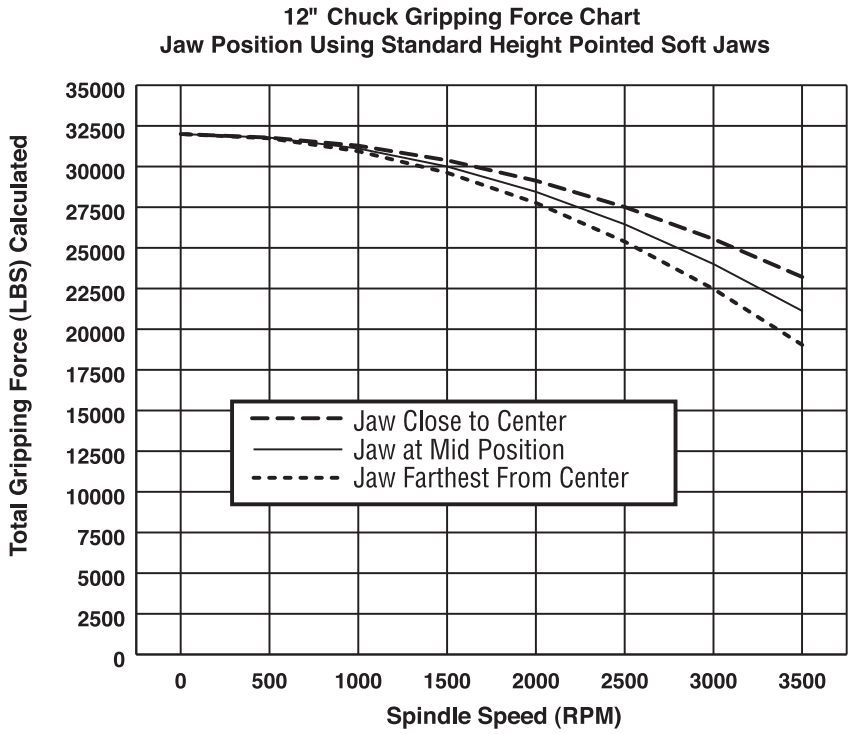
Gripping Force Loss Due to Chuck Jaw Position – 4" and 8" Chuck





Gripping Force Loss Due to Chuck Jaw Position – 10" and 12" Chuck



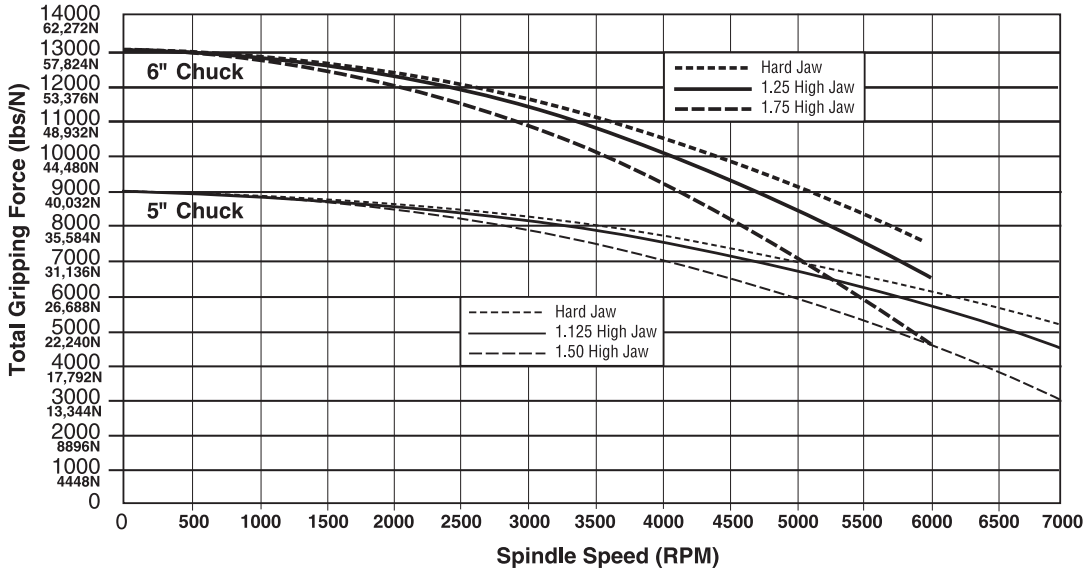


Jaw Height and Mass Gripping Force

The chart below illustrates the gripping force loss due to the height and mass of the jaws. The hard jaw has the least amount of gripping force loss due to the smallest amount of mass. The medium height jaw shows the greatest amount of gripping force loss. Jaws higher than or more massive than the medium height jaws will have dramatic gripping force losses and should be avoided.

Chuck Size	**5"**	**6"**	**8"**	**10"**	**12"**
Maximum permissible mass of one top jaw at its maximum radius	1.10 lbs	1.32 lbs	2.08 lbs	3.45 lbs	4.53 lbs
Maximum Speed (rpm)	7000	7000	5500	4500	3500
Maximum distance between the center of gravity of the clamped workpiece and the end face of the chuck	.75" (19.05mm)	.90" (22.86mm)	1" (25.40mm)	1.125" (28.58mm)	1.37" (34.80mm)

5" & 6" Sure-Grip® Chuck Total Gripping Force



NOTE: All Charts are based on calculated draw forces.

Charts for the 4", 8", 10" and 12" chucks can be found on the following pages.

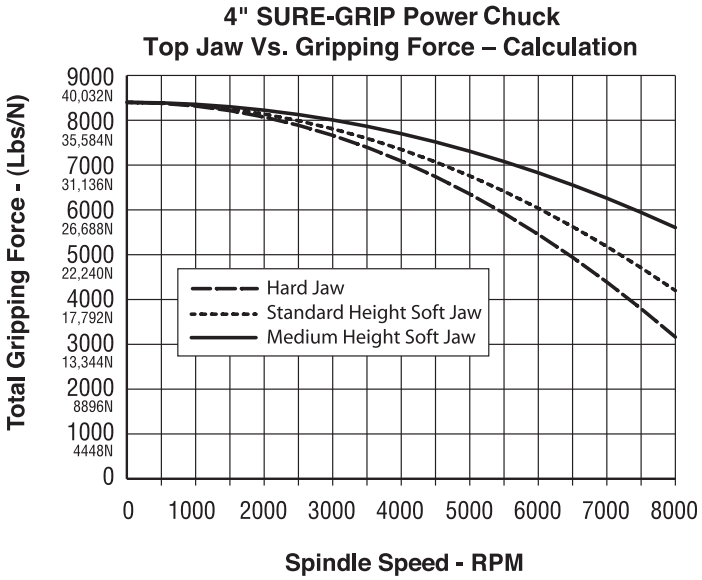
Top Jaws Higher and/or Wider Than Standard Height Top Jaws

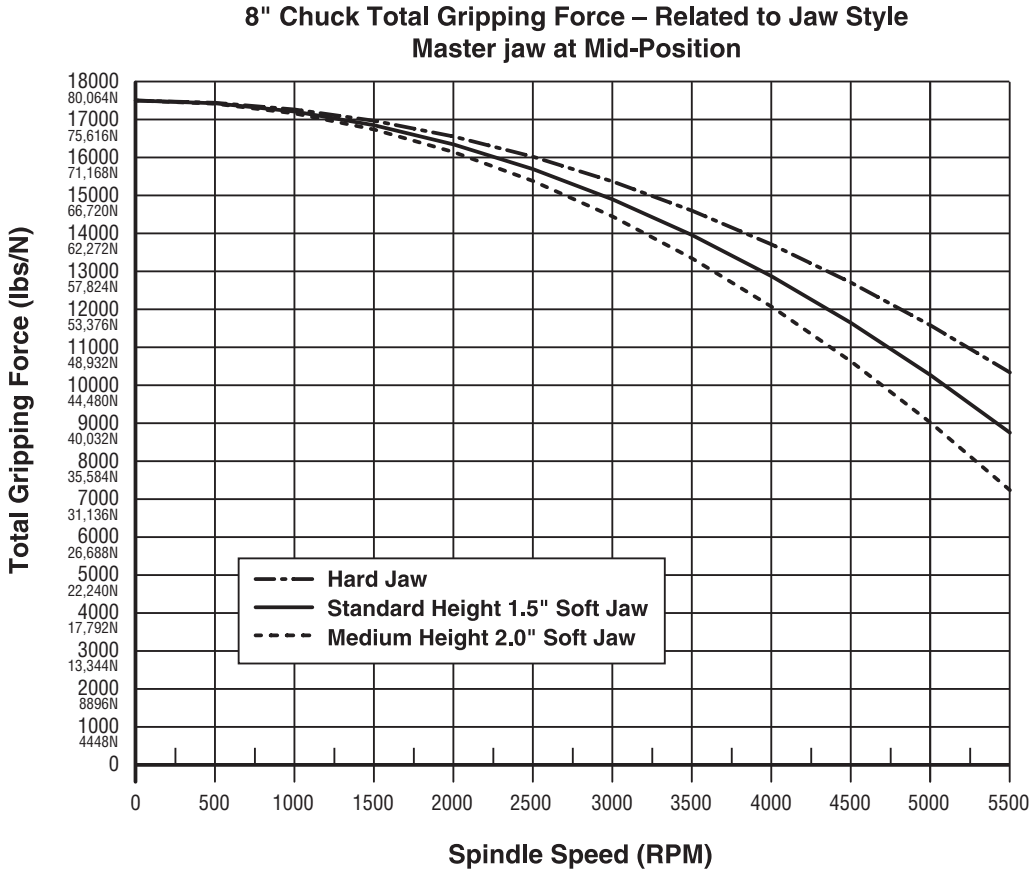
As the size (height and/or width) and mass of a top jaw increase, the gripping force is reduced due to centrifugal force. It is the operator's and immediate supervisor's responsibility to determine the cutting conditions before using any top jaws.

Additional Information — Hysteresis:

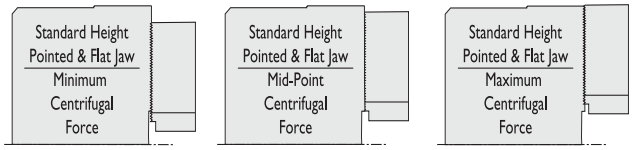
Another critical factor in chuck design is hysteresis. This condition occurs when a chuck is being decelerated to a stop, or the spindle direction is rapidly reversed, a common practice in CNC lathe machining. In this situation, jaw forces actually increase due to the inertia shift that occurs when direction is changed (similar to a person flying over the handle bars of a bicycle when it is brought to a sudden stop). There are many factors, such as rotational mass of the chuck, weight of the top jaws, etc., that influence the amount of hysteresis generated. The lower the moment of inertia of a chuck, the lower the problems due to hysteresis. The best top jaws are the standard height style. Jaws with more mass than the standard height will increase hysteresis problems and should be avoided.

Jaw Height and Mass Gripping Force – 4" and 8" Chucks



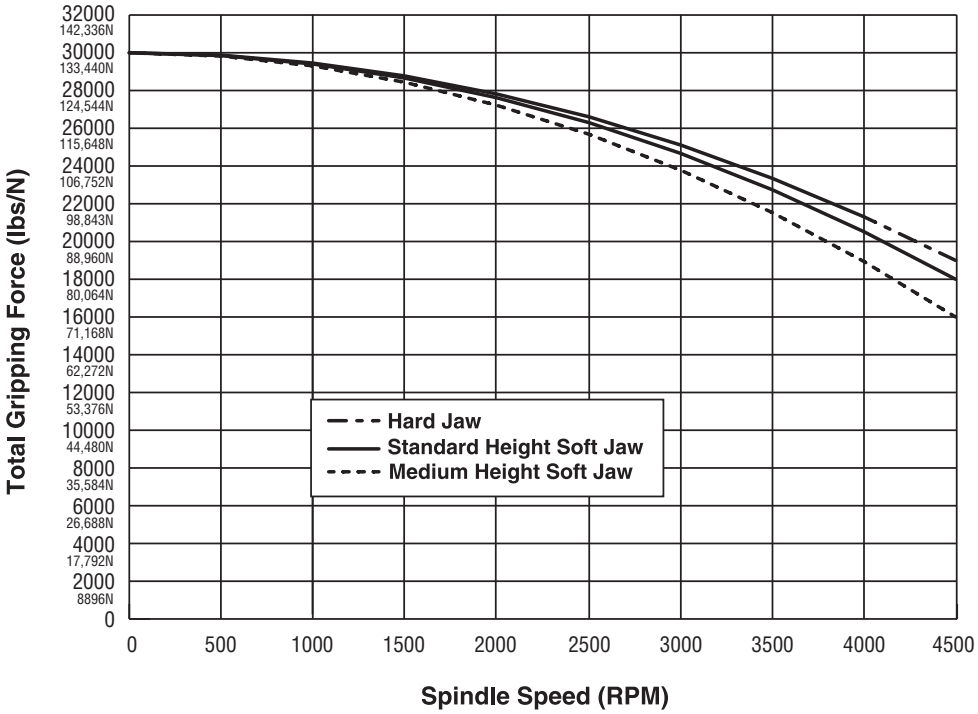


NOTE: All Charts are based on calculated draw forces.

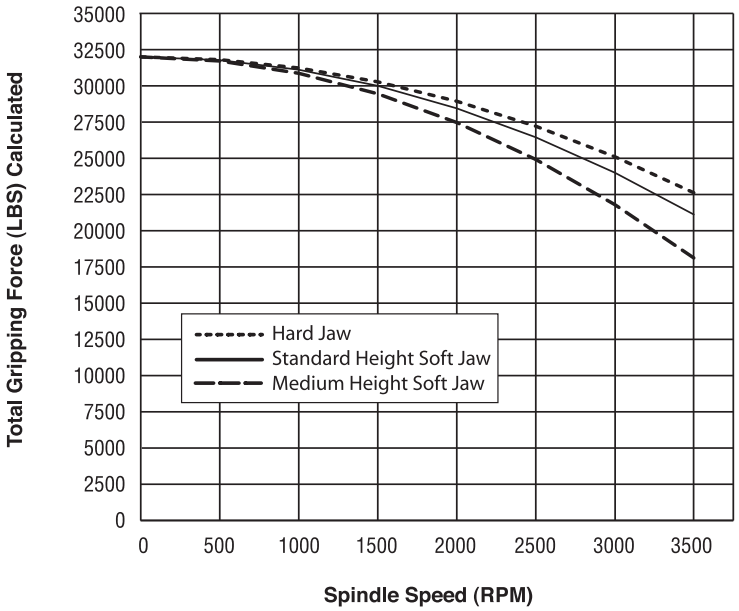


Jaw Height and Mass Gripping Force – 10" and 12" Chuck

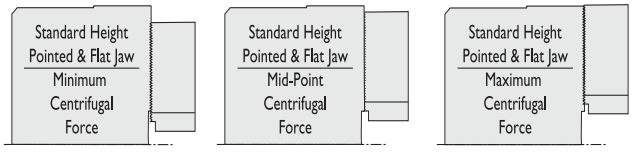
10" SURE-GRIP Chuck Total Gripping Force – Related to Jaw Style
Master Jaw At Mid Position



12" Chuck Gripping Force Chart – Related to Jaw Style
Master Jaw at Mid-Position

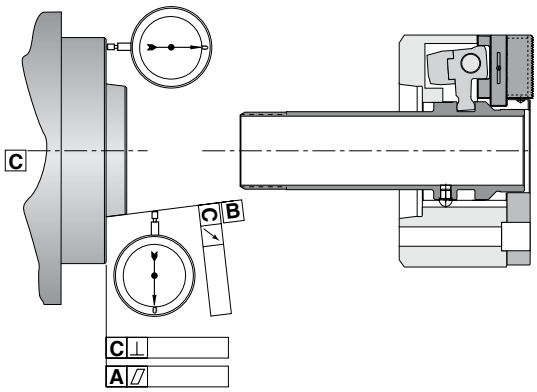


NOTE: All Charts are based on calculated draw forces.



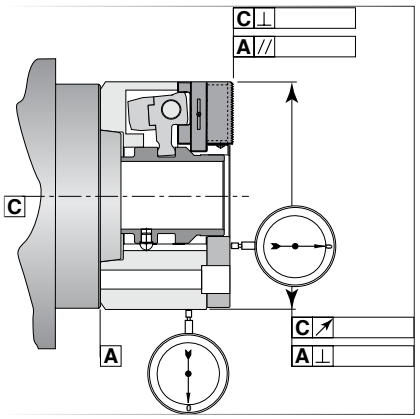
Mounting the Chuck to the Machine Tool Spindle

It is important that the chuck be mounted properly to your machine tool spindle. The operator/setup person must check the Total Indicator Reading (TIR) of the machine tool's spindle and the complete assembly before putting the machine tool into production.



Procedures to follow when mounting a chuck:

1. Clean and thoroughly inspect the spindle and the chuck.
2. Check the TIR of the spindle angle of the machine tool spindle and record the dimension.
3. Check the runout of the face of the mounting surface and record the dimension.
4. Check the specifications of the chuck for TIR and mounting surface runout.
5. Calculate the TIR of the spindle and the chuck and record the dimension.
6. Calculate the runout of the spindle and chuck mounting surface and record the dimension.
7. Mount the chuck according to the instructions in the following section. Do NOT set the open position of the master jaws until completing the following steps. The chuck may have to be removed to correct any unacceptable TIR or runout conditions.
8. Check the TIR of the OD of the chuck, the runout of the face of the chuck, and compare them to the dimension from step 5 and 6.
   – If the TIR is greater than the calculation, the chuck should be removed
   – Check both the spindle and the chuck surfaces for dirt, nicks and scratches
   – Correct the conditions and remount the chuck
   – Repeat the TIR and runout checks
9. When the chuck specifications are acceptable, continue with the mounting instructions on the following pages.

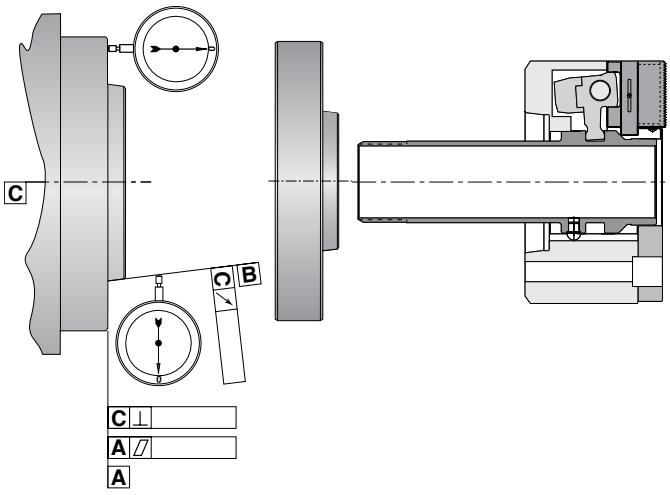


NOTE: The TIR of the assembled chuck can never be better than the spindle of the machine plus the TIR specification of the chuck. If the resulting TIR is not adequate for the job you are running, a different machine must be selected which has a spindle with an acceptable TIR.

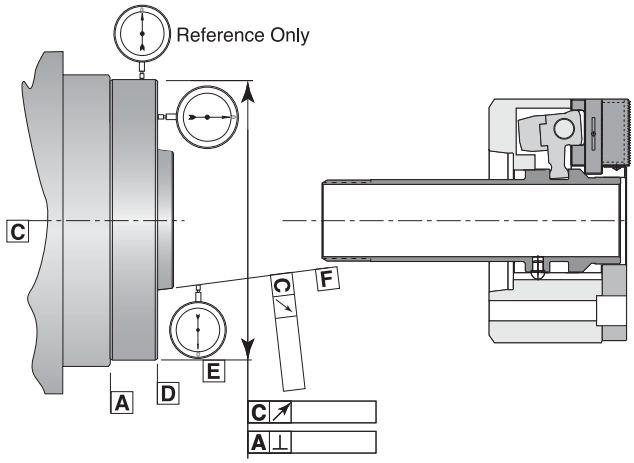
NOTE: After mounting the chuck, always check the gripping force using a dynamic or static gripping force tester.

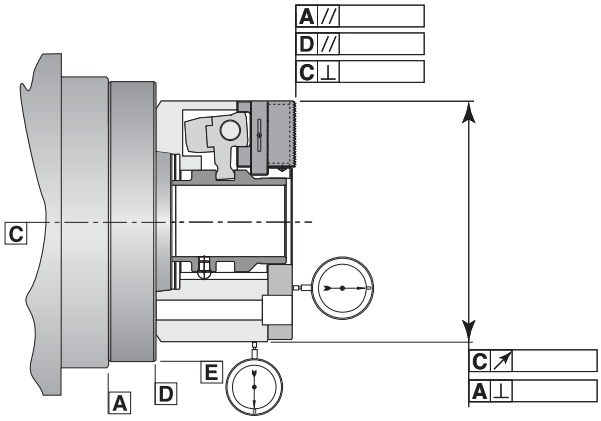
Procedures to follow when mounting a Spindle Adapter and a Chuck:

1. Clean and thoroughly inspect the spindle, spindle adapter and the chuck.
2. Check the TIR of the spindle angle of the machine tool spindle and record the dimension.
3. Check the runout of the face of the mounting surface and record the dimension.
4. Check the specifications of the spindle adapter for TIR and mounting surface runout and record the dimension.
5. Calculate the TIR of the spindle and the spindle adapter and record the dimension.



6. Calculate the runout of the spindle and spindle adapter mounting surface and record the dimension.
7. Check the specifications of the chuck for TIR and mounting surface runout.
8. Calculate the TIR of the spindle, spindle adapter and the chuck and record the dimension.
9. Calculate the runout of the spindle, spindle adapter and chuck mounting surface and record the dimension.
10. Mount the spindle adapter according to the instructions in the following sections.
    – Do NOT mount the chuck yet
11. Check the TIR of the OD of the spindle adapter and the runout of the mounting surface of the spindle adapter and compare them to the dimension from step 5 and 6.
    – If the TIR is greater than the calculation, the spindle adapter should be removed
    – Check both the spindle and the spindle adapter surfaces for dirt, nicks and scratches
    – Correct the conditions and remount the spindle adapter
    – Repeat the TIR and runout checks
12. When the spindle adapter specifications are acceptable, continue with the mounting instructions for mounting the chuck.
13. Mount the chuck according to the following instructions.
    – Do not set the open position of the master jaws until completing the following steps. The chuck may have to be removed to correct any unacceptable TIR or runout conditions.
14. Check the TIR of the OD of the chuck and the runout of the face of the chuck and compare them to the dimension from step 8 and 9.
    – If the TIR is greater than the calculation, the chuck should be removed
    – Check both the spindle adapter and the chuck surfaces for dirt, nicks and scratches
    – Correct the conditions and remount the chuck
    – Repeat the TIR and runout checks
15. When the chuck specifications are acceptable, continue with the mounting instructions on the following pages.



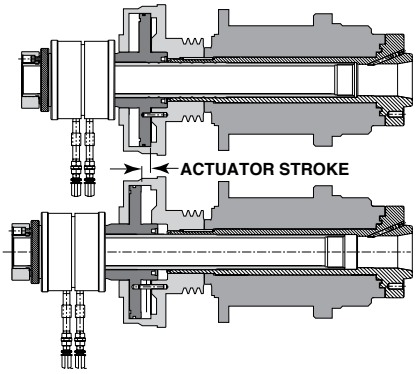


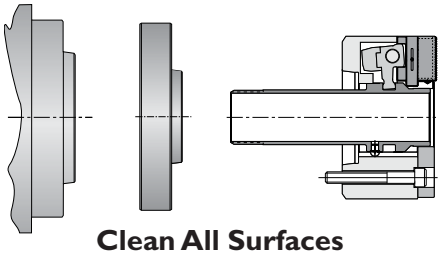
NOTE: The TIR of the assembled chuck can never be better than the spindle of the machine plus the TIR specification of the chuck. If the resulting TIR is not adequate for the job you are running, a different machine tool must be selected which has a spindle with an acceptable TIR.

NOTE: After mounting the chuck always check the gripping force using a dynamic or static gripping force tester.

Mounting a Hardinge® Sure-Grip® Chuck to a Hardinge Horizontal Lathe

- Check the stroke of the actuating cylinder of the machine tool. It must be equal to or greater than the draw bar stroke of the chuck. If it is less than the chuck, the top jaw travel will be reduced. This condition may reduce the top jaw travel enough that a workpiece with a large tolerance on its chucking diameter cannot be gripped.
- Visually check the chuck and jaws for any signs of wear, hairline cracks or fractures. If any problems exist bring them to the attention of your immediate supervisor before using the chuck.

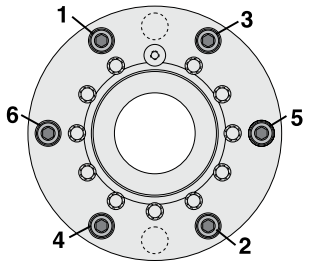




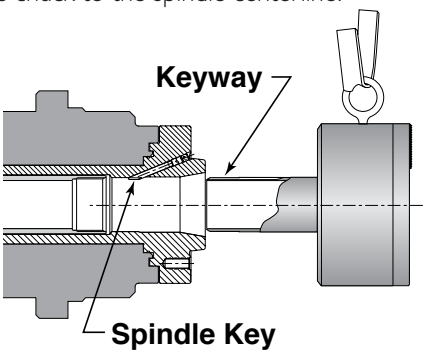
Clean All Surfaces

- Thoroughly clean the machine tool spindle, spindle adapter (if used) and the chuck.
- Check the TIR and runout of the spindle and record them as outlined on pages 28-29.

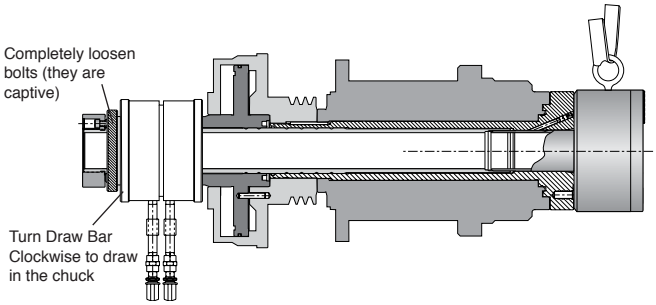
- Check the mounting bolts of the spindle adapter and the jaw chuck for fatigue and/or fractures and replace if necessary.
- Mount the spindle adapter (if required). Tighten the bolts in a crisscross fashion to the proper torque. Refer to pages 119-122.
- Check the TIR and runout of the spindle adapter as outlined on pages 28-29. Continue the setup if the TIR and the runout are correct.
- Make certain the actuator and machine draw tube are in their OPEN positions.
- Use an eyebolt and/or a lifting strap, rated for the weight of the chuck, and a hoist to lift the chuck to the spindle centerline.

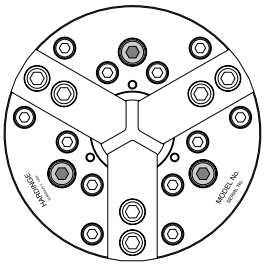


Bolt Torque Requirements
See pages 119-122 for proper torque when tightening bolts for Chuck and Jaws.



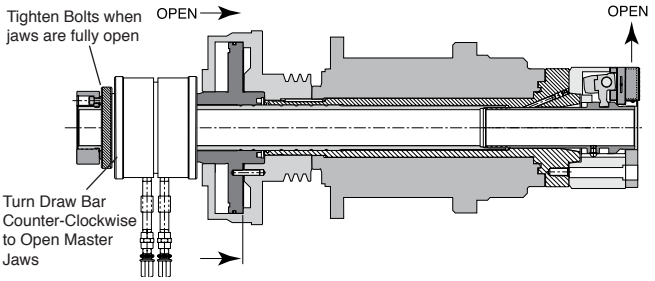
- Completely loosen the draw tube locking bolts.
- Align the chuck draw tube keyway with the spindle collet key and slide the chuck onto the spindle. Do not bolt the chuck to the spindle at this time.
- Begin threading the machine closer's draw bar/tube onto the chuck's draw bar until the chuck is drawn against the spindle's face. For the 8" chuck with the A2-5 to A2-6 adapter, rotate the chuck to align the drive button and mating hole on the chuck.

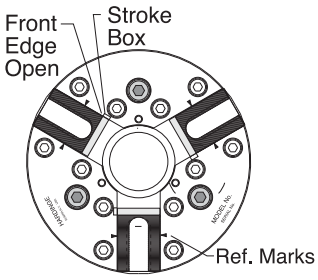


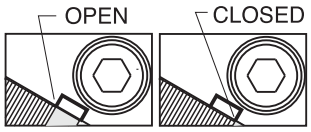


- Check the mounting bolts for fatigue and/or fractures and replace if necessary.
- Tighten the chuck mounting bolts to the proper torque shown on pages 119-122.
- Remove the eyebolt, or lifting strap, and the hoist from the machining area.
- Check the TIR and runout of the chuck as outlined on pages 28-29. Continue the setup if the TIR and the runout are correct.
- Loosen draw bar until chuck is at its full OPEN position.

- Check the front of the master jaw. It should be very close to the outside edge of the stroke box (see illustration).
- Lock the closer draw bar/tube at this position while the chuck is fully open.
- Close the chuck using the control button on the console. The front of the master jaw should be very close to the inside edge of the stroke box (shown at the right).
- When mounting the jaws, the scribe mark on the jaw is positioned near the reference arrow on the chuck.







Front of Master Jaw in the Stroke Box for the Open and Closed Position

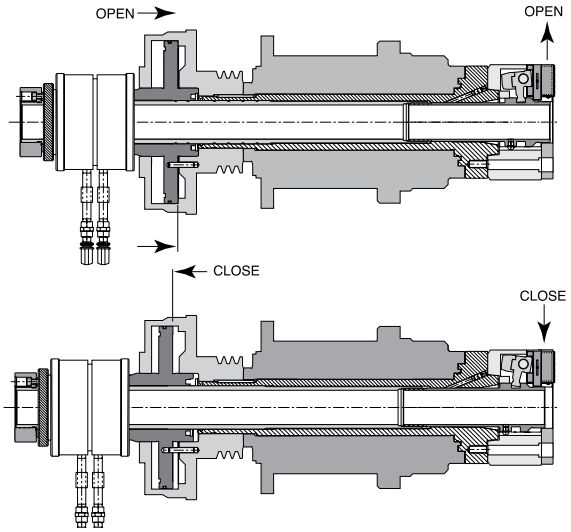
NOTE: If these two checks are not visually correct then the jaw has not traveled its full stroke. The jaws were not in their fully OPEN position when the draw tube was locked. This operation should be repeated.

NOTE: The actual plunger (draw bar) stroke can be checked by measuring the distance from the face of the draw bar when in the open position and then in the closed position. Compare the difference. It should be very close to the plunger stroke specifications on pages 12-17.

CAUTION: After mounting the chuck, always check the gripping force using a dynamic or static gripping force tester.

Lubrication:

Lubricate the chuck on a regular basis to maintain maximum gripping force. Inadequate lubrication will result in loss of gripping force and accuracy and cause excessive wear. Use a pressure grease gun to lubricate all grease points daily under normal use. Use Chevron Ultra-Duty EP NLGI 2, Dow Corning BR-Plus, or Kluber ALTEMP Q NB 50 grease. Periodically monitor the grip force of your power chuck using a jaw force gage to determine required maintenance periods.



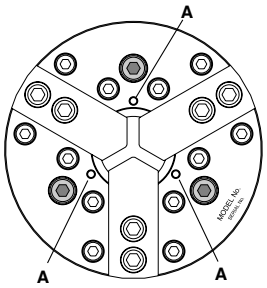
Open and Closed Position Complete Assembly

Work Location Stop Plate

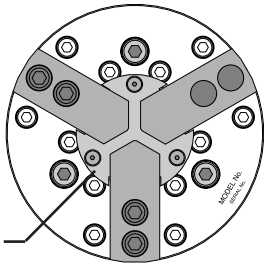
- Because each Work Location Stop Plate relates to a specific workpiece, they are fabricated by the user.
- The work location stop plate is usually mounted before the jaws are mounted.
- When performing second operation or slug work, a stop plate can be mounted to the face of the chuck. The stop plate eliminates the need for stepping out the soft jaws, resulting in an extremely stable gripping configuration.
- The stop plate can be constructed with a pilot extending back inside the chuck. The pilot can be counterbored to accept long workpieces.
- The chuck has three tapped holes "A" in the face of the chuck for fastening the stop plate.

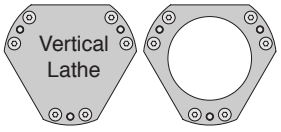
Dimensions Used to Make Stop Plates - Basic Chuck

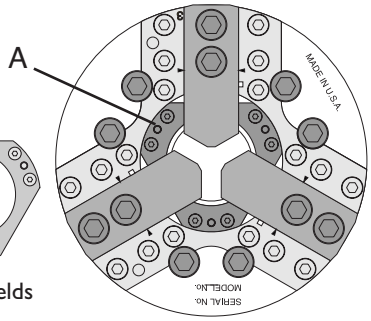
Chuck Size	4" A2-4	5" A2-5	6" A2-5	6" A2-6	8" A2-6 Style B	8" A2-6	8" A2-8	10" A2-8 and A2-6	10"A2-8	12" A2-8
Bolt Circle	None	2.375" 60mm	2.468" 62.7mm	2.856" 72.5mm	3.159" 72.5mm	3.046" 77.4mm	3.750" 95.25mm	4.000" 101.6mm	4.500" 114.3mm	4.776" 121.3mm
Tapped Holes "A"	None	M5 x 0.8	M5 x 0.8	M5 x 0.8	M6 x 1.0	M6 x 1.0	M6 x 1.0	M6 x 1.0	M6 x 1.0	M6 x 1.0
Chuck Dia.	4.881" 123.97mm	5.500" 139.70mm	6.500" 165.10mm	6.650" 168.91mm	8.250" 209.55mm	8.250" 209.55mm	8.960" 227.58mm	10.000" 254.00mm	10.500" 266.70mm	12.000" 304.80mm



Tapped Holes


Stop Plate 5", 6", 8" Chucks

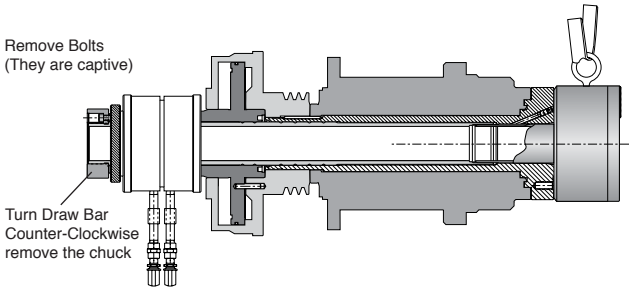


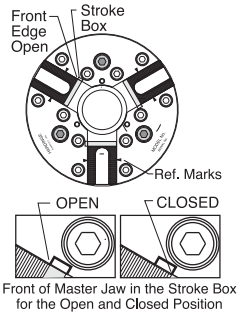


10" & 12" Chuck & Shields

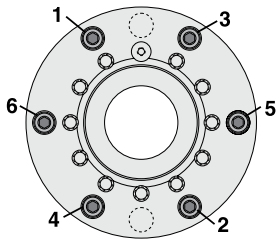
Removing the Sure-Grip® Chuck from Hardinge® Horizontal Lathes

- Use an eyebolt and/or a lifting strap rated for the weight of the chuck and a hoist to hold the chuck in place while it is being removed.
- Open the chuck and make certain the machine draw bar is in the OPEN position.
- Completely loosen the draw tube locking bolts.
- Unthread (counterclockwise) the draw tube until it stops.
- Make certain that the slack is removed from the lifting strap so that the chuck is adequately supported.
- Remove the chuck's mounting bolts.
- Finish unthreading the draw tube.
- Remove the chuck from the work area of the machine.
- Remove the spindle adapter, if used.
- Coat the chuck and spindle adapter with a non-rust solution.
- Check bolts for fatigue and/or fractures and replace if necessary.
- Visually check the chuck and jaws for any signs of wear, hairline cracks or fractures. If any problems exist, bring them to the attention of your immediate supervisor.





Jaw Chuck



Spindle Adapter

Mounting Top Jaws to Master Jaws

Top Jaws must be mounted using Hardinge® T-nuts and bolts for each specific style master jaw and chuck model. Master jaws and top jaws come in Metric 1.5mm x 60° serrations. Using jaws, bolts and T-nuts which are not manufactured by Hardinge for your specific chuck model can create extremely unsafe conditions as illustrated below. Bolts are easily damaged or lost. It is important that they be replaced with bolts of the proper length and material specifications. See your parts list for the proper bolt length and specifications.

Each top jaw in the set of three should be positioned in the same location on the master jaw. For example, if the third serration of the top jaw is aligned to the first serration on the master jaw then all three jaws should be aligned the same way. Quick-Change jaws automatically align to the mid-position when mounted.

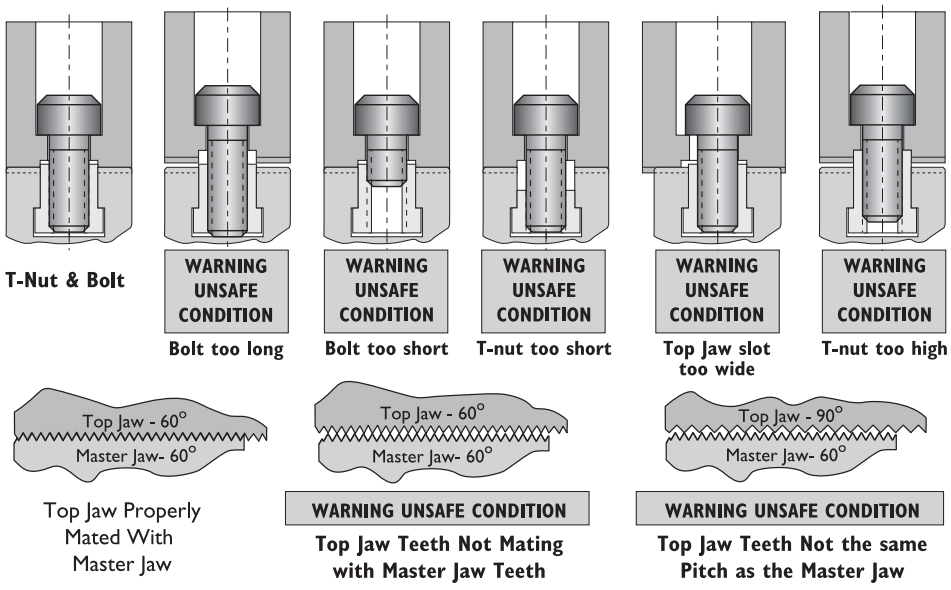
All bolts should be tightened with a torque wrench to the specifications shown on pages 119-122. A minimum of two bolts are required to hold the top jaw to the master jaw. Quick-Change jaws require one bolt. The back of the top jaw must not extend beyond the OD of the chuck body. Pointed top jaws are only to be used with the pointed end towards the centerline of the chuck. Flat top jaws are only to be used with the flat end towards the centerline of the chuck.

WARNING: If only one bolt is used to hold a top jaw (quick-change jaws are designed for one bolt), the cutting and gripping forces may cause the bolt to break, or side movement of the jaw releasing the workpiece and/or jaw resulting in damage to the machine and/or personal injury. The second T-nut that was not used may come out causing damage and personal injury.

WARNING: If jaw bolts are under- or over-torqued, the jaws may come loose, or the bolts may break, causing the workpiece to come loose. This may result in damage to the machine tool and/or personal injury.

WARNING: The back of the top jaw must not extend beyond the outside diameter of the chuck. This condition creates extremely high centrifugal forces which may allow the workpiece to come out of the jaws and/or fatigue and fracture the jaws. ***(These conditions may cause damage to the machine and/or personal injury.)***

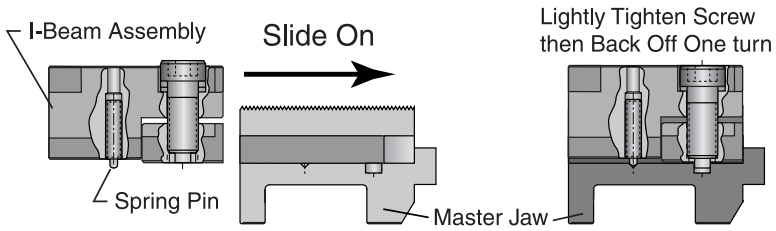
Potential Problems when Not Using Hardinge Bolts and T-Nuts



WARNING: Ignoring any of the information on this page may result in damage to the chuck, damage to the machine tool and/or personal injury.

WARNING: It is not safe to use a 3-jaw chuck to hold non-round parts, or round parts eccentric, by staggering the position of the top jaws. This practice creates an extreme out-of-balance condition which can damage the chuck and/or the machine's spindle. It may also cause the chuck to malfunction, resulting in damage to the machine and/or personal injury.

Mounting I-Beam to Master Jaw of Chuck



Warning: If cap screw is backed out more than one turn and the spindle is turned on, the I-beams may come out, resulting in damage to the machine tool and/or personal injury.

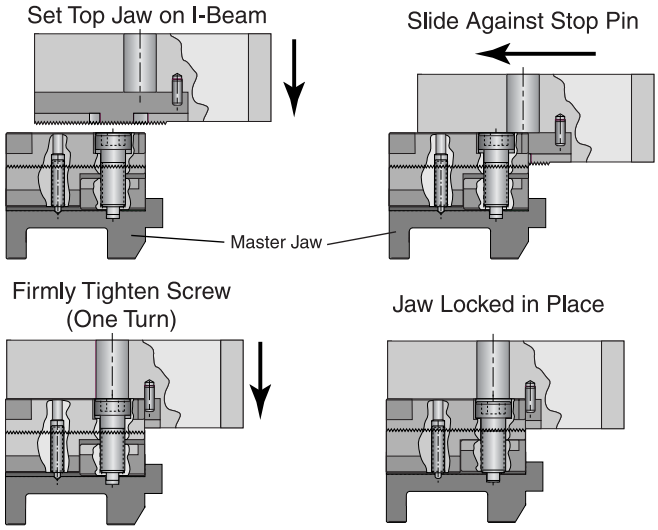
- Slide the three I-beams into the slots of the master jaws until their spring pins locate in the detents. Depress spring pin while sliding I-Beam in T-Slot.
- Tighten the piloted cap screw until it bottoms out, then back out one full turn.
- The I-beams stay on the chuck and are not taken off when the quick-change top jaws are removed. The I-beams are only removed if standard top jaws are to be used on the chuck.

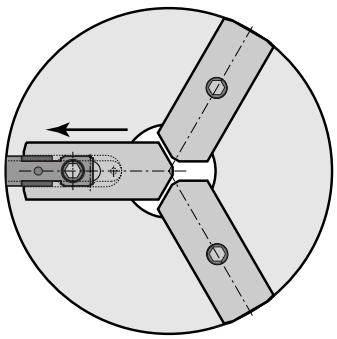
Mounting the Quick-Change Top Jaw to the I-Beam

- Align the cutout in the bottom of the top jaw with the flange of the I-beam. Place the top jaw onto the I-beam.
- Slide the top jaw towards the OD of the chuck until it locates against the front of the I-beam.

Note: If the top jaw will not slide because the teeth are partially meshed with the master jaw, either don't push down so hard on the top jaw or back out the cap screw in the I-beam another 1/4 turn.

- Hold the top jaw against the front of the I-beam and tighten down the cap screw (approximately one full turn) with 30 Ft-lbs / 40.67 NM of torque.

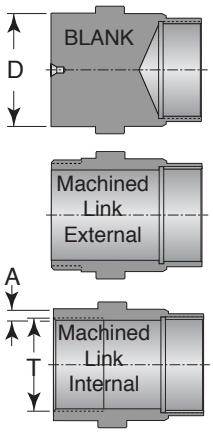


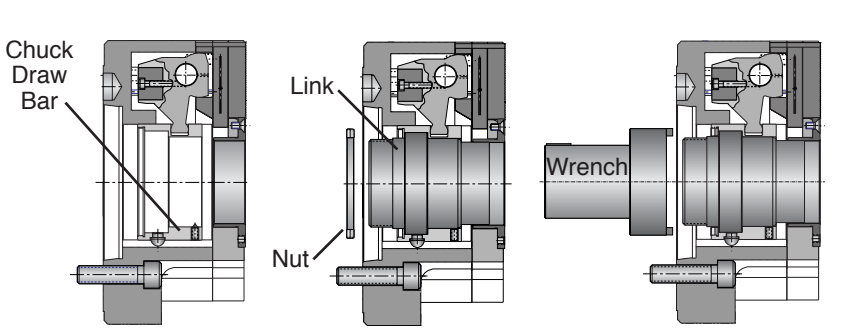


Last Jaw Being Mounted
(I-Beam Shown for Clarity)

Preparing the "Link" for Mounting to a Non-Hardinge® Horizontal Lathe

A blank link is included with the chuck to be machined to the specifications of the machine's drawbar by the customer. It may be turned and threaded, or drilled, bored and threaded. Use the information gathered from the "Draw Bar Link" information sheet on page 39 to determine the proper dimensions. Premachined links are available with supplied customer machine specifications.



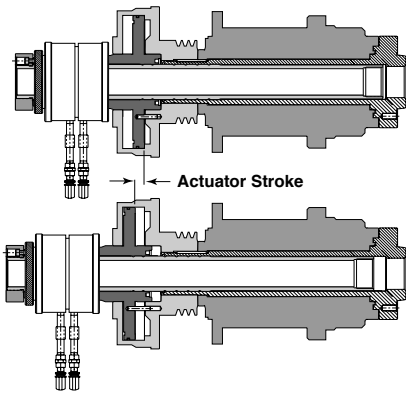


Chuck Size:	5"	6"	8"	10"	12"
Link Diameter "D"	1.835" (46.6mm)	2.43" (61.7mm)	2.56" (65.0mm)	3.70" (94.0mm)	4.335" (110.1mm)
Minimum Wall Thickness "A"	.09" (2.29mm)	.1" (2.54mm)	.1" (2.54mm)	.175" (4.44mm)	1.75" (4.44mm)
Maximum Internal Thread "T"	M42	M55	M60	M85	M100

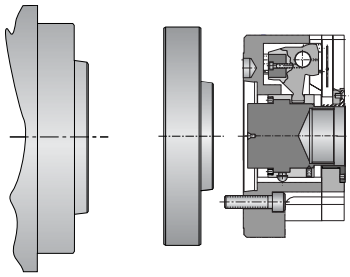
After the link has been machined, slide it into the bore of the chuck draw bar. Using the special wrench, tighten the nut into the chuck draw bar to 45 ft-lbs.

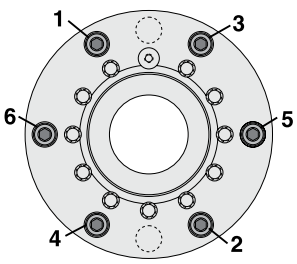
NOTE: The link floats in the assembly. It will have some longitudinal clearance and can be rotated.

Mounting a Hardinge Sure-Grip® Chuck to a Non-Hardinge Horizontal Lathe Using a Link—2 Piece Draw Bar Style Chuck



- Check the stroke of the actuating cylinder of the machine tool. It must be equal to or greater than the draw bar stroke of the chuck. If it is less than the chuck, the top jaw travel will be reduced. This condition may reduce the top jaw travel enough that a workpiece with a large tolerance on its chucking diameter cannot be gripped.
- Visually check the chuck and jaws for any signs of wear, hairline cracks or fractures. If any problems exist, bring them to the attention of your immediate supervisor before using the chuck.
- Thoroughly clean the machine draw bar/draw tube, spindle, spindle adapter if used, and the chuck.
- Check the TIR and runout of the spindle, record the information as outlined on pages 28-29.
- Check the mounting bolts for fatigue and/or fractures and replace if necessary.
- Mount the spindle adapter if required. Tighten the bolts in a crisscross fashion (shown right) to the proper torque shown on pages 119-122.
- Check the TIR and runout of the spindle adapter as outlined on pages 28-29. Continue the setup if the TIR and the runout are correct.

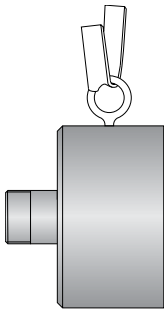




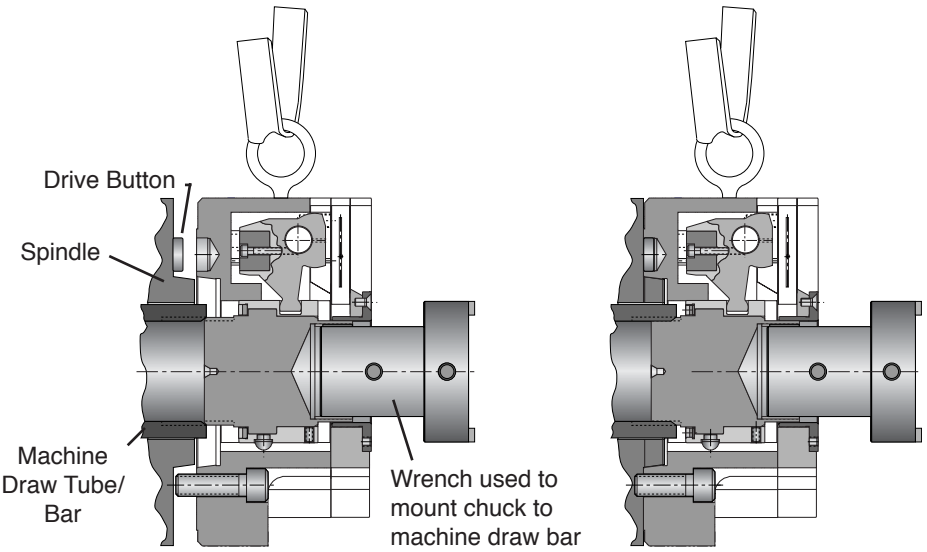
(continued next page)

- Make certain the machine's draw bar/draw tube is in the OPEN (forward) position and push the chuck draw bar to the rear of the chuck, closing the master jaws.
- Shut the power off to the machine.

Warning: Shut the machine off to make certain that the spindle cannot be turned on or draw bar actuated. ***(Ignoring this warning may cause damage to the machine and/or personal injury.)***



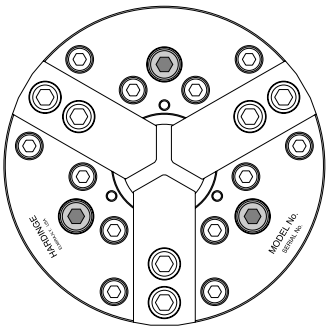
- Use an eyebolt and/or a lifting strap rated for the weight of the chuck and a hoist to lift the 8", 10" and 12" chucks to the spindle centerline.
- Align the chuck with the spindle bore and slide the chuck onto or into the machine's draw tube/bar. Do not bolt the chuck to the spindle at this time.



- Align the keys on the special wrench with the keyways in the link. Push the wrench into the link until it bottoms out. Insert the T-handle hex wrench into the special wrench.
- Rotate the wrenches to engage the link with the machine's draw tube/bar.

NOTE: The chuck draw bar has spring-loaded balls which fall into detents in the link. They are 90 degrees apart and can be felt when rotating the link.

- After a few threads are engaged enough so the chuck is firmly held, turn the chuck until the drive button is aligned with the hole in the chuck.
- Check all of the mounting bolts for fatigue and/or fractures and replace if necessary.
- Push the chuck toward the face of the spindle. Put one mounting bolt through the chuck into the spindle and turn to engage a few threads.
- Using the T-handle hex wrench and special wrench, again rotate the link to further engage the machine draw tube until the back face of the chuck body touches the front mounting face of the spindle.
- Put the remainder of the mounting bolts into the chuck and make them finger tight.
- Tighten the bolts to the specified torque given on pages 119-122.



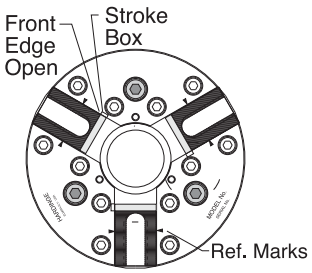
NOTE: Check the TIR and runout of the chuck as outlined on pages 28-29. Continue the setup if the TIR and the runout are correct.

Setting the Master Jaws to their Full Open Position for Maximum Jaw Stroke

- Rotate the link using the wrenches until the master jaws are open as far as possible, then turn in the opposite direction until the pins drop in a detent. Check the front of the master jaw. It should be very close to the outside edge of the stroke box (see illustration).
- Turn the machine tool on and activate the draw tube/bar and check the action of the chuck.
- Close chuck using the control button on the console. The front of the master jaw should be very close to the inside edge of the stroke box.
- When mounting the jaws, the scribe mark on the jaw is positioned near the reference arrow on the chuck.

NOTE: If these two checks are not visually correct, then the draw bar was not set properly. Repeat the above steps.

NOTE: The actual plunger (draw bar) stroke can be checked by measuring the distance from the face of the draw bar when in the OPEN position and then in the CLOSED position. Compare the difference. It should be very close to the plunger stroke specifications shown on pages 12-17.



Front of Master Jaw in the Stroke Box for the Open and Closed Position

CAUTION: After mounting the chuck, always check the gripping force using a dynamic or static gripping force tester.

Lubrication

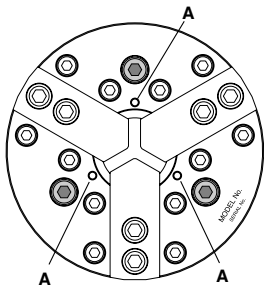
Lubricate the chuck on a regular basis to maintain maximum gripping force. Inadequate lubrication will result in loss of gripping force and accuracy, and create excessive wear. Use a pressure grease gun to lubricate all grease points daily under normal use. Use only Chevron Ultra-Duty EP NLGI 2, Dow Corning BR-Plus, or Kluber ALTEMP Q NB 50 grease. Periodically monitor the grip force of your power chuck using a jaw force gage to determine required maintenance periods.

Work Location Stop Plate

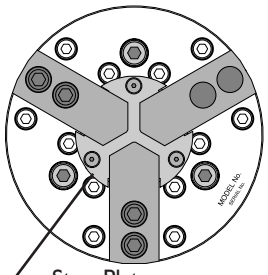
- Because each Work Location Stop Plate relates to a specific workpiece, they are fabricated by the user.
- The work location stop plate is usually mounted before the jaws are mounted.
- When doing second operation or slug work, a stop plate can be mounted to the face of the chuck. The stop plate eliminates the need for stepping out the soft jaws, resulting in an extremely stable gripping configuration.
- The stop plate can be constructed with a pilot extending back inside the chuck. The pilot can be counterbored to accept long workpieces. 10" and 12" Chucks can use the Vertical Chuck Shield and alter it for a stop.
- The Sure-Grip® chuck has three tapped holes "A" in the face of the chuck for fastening the stop plate.

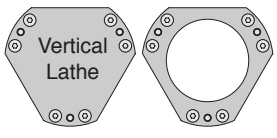
Dimensions Used to Make Stop Plates

Chuck Size	Bolt Circle	Tapped Holes "A"	Chuck Dia.
5" A2-5	2.375" 60mm	M5 x 0.8	5.500" 123.97mm
6" A2-5	2.856" 72.5mm	M5 x 0.8	6.650" 168.91mm
8" Style B	3.159" 80.2mm	M6 x 1.0	8.250" 209.55mm
8" A2-6	3.046" 77.4mm	M6 x 1.0	8.250" 209.55mm
8" A2-6	3.750" 95.25mm	M6 x 1.0	8.960" 227.58mm
10" A2-6, 2-8	4.0" 101.6mm	M6 x 1.0	10.000" 254.0mm
10" A2-8	4.5" 114.3mm	M6 x 1.0	10.500" 266.7mm
12"	4.776" 121.3mm	M6 x 1.0	3.800" 96.5mm

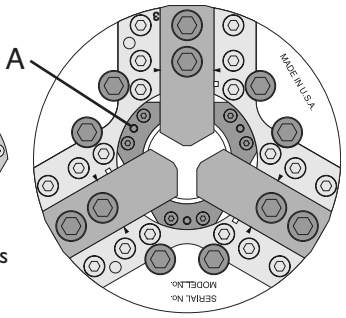


Tapped Holes



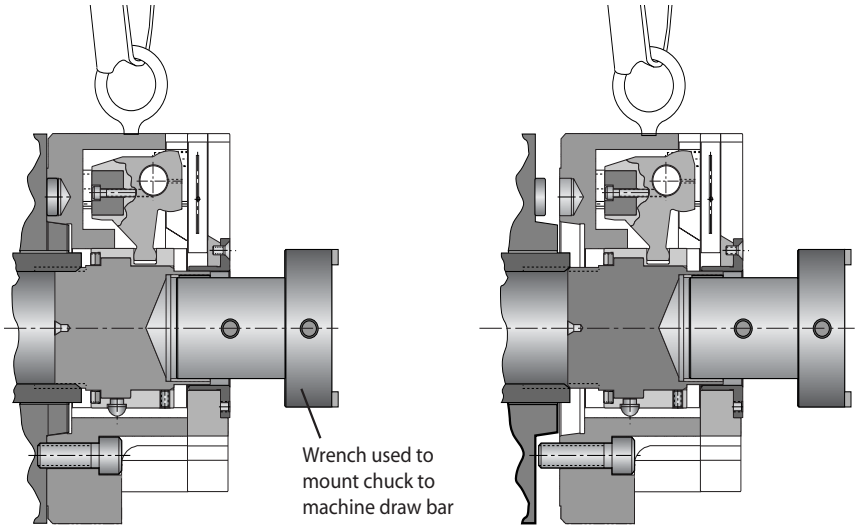


10" & 12" Chuck & Shields



Removing Chucks from Non-Hardinge® Horizontal Lathes—Link Style

- Use an eyebolt and/or a lifting strap rated for the weight of the chuck, and a hoist to hold the chuck in place while it is being removed.
- Open the chuck and make certain the draw bar/tube is in its OPEN (forward) position.
- Turn the machine tool off.



Warning: Shut the machine off to make certain that the spindle cannot be turned on or draw bar actuated.
(Ignoring this warning may cause damage to the machine and/or personal injury.)

- Make certain that the slack is removed from the lifting strap so that the chuck is adequately supported.
- Remove all of the chuck's mounting bolts.
- Rotate the link with the special wrench and ⅜" T-handle to unthread the link from the draw bar. This action should force the chuck away from the face of the spindle.

NOTE: The chuck draw bar has spring-loaded balls which fall into detents in the link. They are 90 degrees apart and can be felt when rotating the link.

- Remove the chuck from the work area of the machine.
- Remove the spindle adapter if used.
- Coat the chuck and spindle adapter with a non-rust solution.
- Check bolts for fatigue and/or fractures and replace if necessary.
- Visually check the chuck and jaws for any signs of wear, hairline cracks or fractures. If any problems exist, bring to the attention of your supervisor or plant manager.

Hardinge® Sure-Grip® Power Chuck Draw Bar Link Information

Links are required for non-Hardinge Lathes. If you would like Hardinge to design a link for you, please fill in the information below and **fax to Hardinge at 607-734-3886**. First check your machine tool builders manual for this information. Draw bar information may have to be measured at the machine.

Company Name:_____

Contact Name: _____

Address:_____

City, State, Zip:_____

Phone: _____ Fax: _____

Chuck Model Number: _____

Chuck Part Number: _____

Machine Mfr.: _____

Machine Model No.: _____

Actuator Mfr.: _____

(C) Spindle Configuration:

❑ **A2-4** ❑ **A2-5** ❑ **A2-6** ❑ **A2-8** ❑ **A2-11**

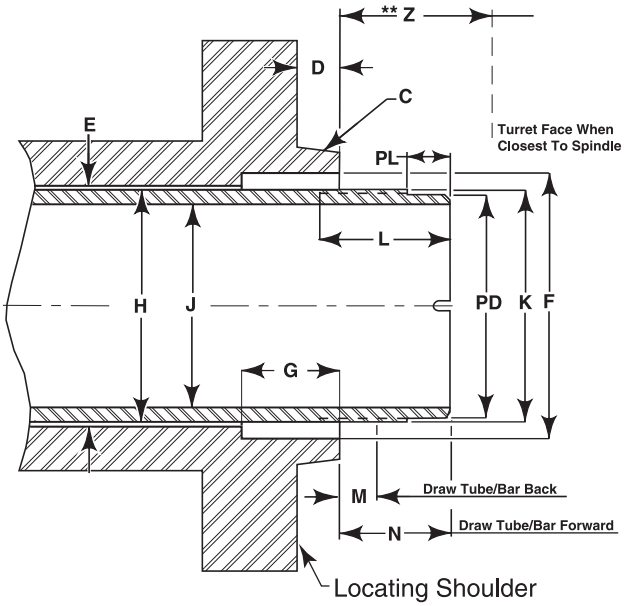
Or, other (check below)

❑ Hardinge Threaded-Nose 5C Spindle ($2^{3}/_{16}$" - 10TPI)

❑ Hardinge Taper-Nose 5C Spindle

Cam-Lock: ❑ D-1-3" ❑ D-1-4" ❑ D-1-5" ❑ D-1-6" ❑ D-1-8"

Taper Key Drive: ❑ #00 ❑ #0 ❑ #1 ❑ #2



Letters correspond to dimensions in illustration:

D **Length of Spindle Nose:** _____

E **Spindle Through Hole:** _____

F **Spindle I.D. Step Diameter or Tapers** (if any):_____

G **Depth of Steps:** _____

H **O.D. of Draw Tube / Bar:**_____

J **I.D. of Draw Tube /Bar:**_____

K **Draw Tube / Bar Thread:** _____

❑ **Left- or** ❑ **Right-hand** ❑ **Internal or** ❑ **External Thread**

L **Length of Thread:** _____

PL **Pilot Length** (if any)**:** _____

PD **Pilot Depth** (if any)**:**_____

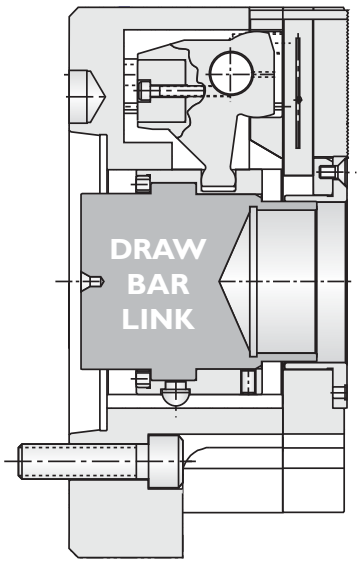
M/N **Distance from Front of Spindle to Front of Draw Tube / Bar when Forward and Retracted:**
(indicate Positive {+} if the draw tube / bar is in Front of the Spindle Face, or Negative {-} if Behind the Spindle Face)

M **Retracted (back):** _____

N **Forward:** _____

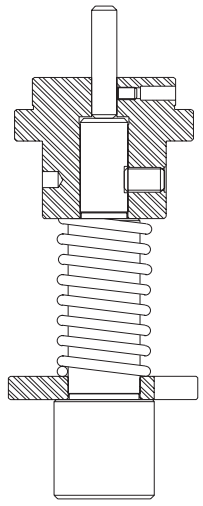
Z **Distance from Spindle Face to the Turret Face when the Turret is Closest to the Spindle:**

_____



Mounting a Hardinge Sure-Grip® Chuck to a HARDINGE-EMAG VL3 or VL5 Vertical Lathe

Check the TIR and runout of the spindle as outlined on pages 28-29. Continue the setup if the TIR and runout are correct. After mounting the chuck, check the TIR and runout of the chuck body.



CHUCK MOUNTING FIXTURE

Follow these machine procedures to mount the spring-loaded mounting fixture included with your chuck: (Part #SC-0000592)

- Set the clamping pressure to 5–10 bar
- Set the SETTING/MEMORY key switch to the O position setting
- Select the JOG mode
- Push the turret button
- Use the + or - push button to index to an open or available station
- Open the front door

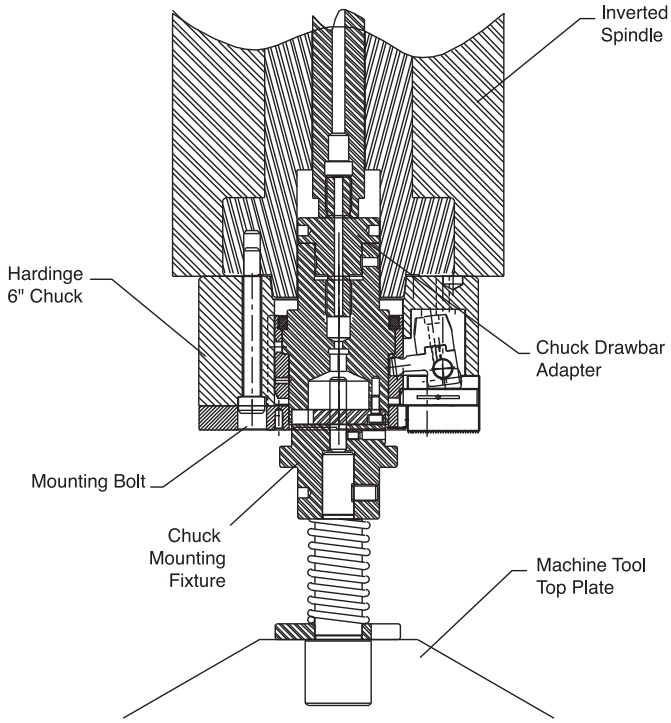
NOTE: Press the ENABLE key first when moving the axes and indexing the turret when the front door is open.

- Press the CHUCK key on the machine tool control panel
- Lower the draw bar by pressing the PLUS key (maximum stroke)
- Remove the turret plug or tool holder in the tool station

- Insert the chuck mounting fixture that is supplied with the chuck into the top vertical tool position. Do NOT lock.
- Turn the fixture until it locks into place over the pin on the face of the turret.

CAUTION: During assembly/disassembly the chuck may drop. This involves the danger of crushing or material damage. Always use the Hardinge-EMAG chuck mounting fixture when assembling/disassembling the chuck.

- Remove chuck top jaws if they are assembled on the chuck.
- Clean the supporting surface of chuck and spindle and apply anti-seize on threads of chuck drawbar adapter.
- Set the chuck on the mounting fixture with hex rod of fixture aligned in the hex hole of the chuck drawbar adapter.
- In JOG mode, move the Z axis in the positive direction just short of the software limit position.
- Move the X axis to X0 in the JOG mode.
- Lower the Z axis step-by-step (incremental feed) until the chuck drawbar adapter thread and the thread of the drawbar touch. Note that the spring mounting of the mounting fixture slightly yields.



- Carefully turn the chuck and chuck mounting fixture by hand until the draw bar adapter and draw bar thread are tight.
- Turn the chuck to align the chuck mounting screws with spindle mounting holes.
- Install mounting bolts. Do not tighten.
- Press the CHUCK key on the machine control panel.
- Press the – menu push button to retract draw bar. This will pull the chuck and spindle face together.
- Move up the Z axis in positive direction just short of the software limit position in the JOG mode.
- Remove the chuck mounting fixture from the turret.
- Replace the turret plug or tool holder in the turret position.
- Torque the chuck mounting bolts into the spindle. Refer to bolt torque requirements on pages 119-122.
- Check that the chuck drawbar adapter is fully tightened to the machine drawbar using hex wrench.
- Assemble the chuck jaws.
- Adjust the clamping pressure and set open/close pressure switch if required.

CAUTION: Improperly clamped parts may cause material damage. After mounting the chuck, adjust the clamping pressure and correctly set the clamp/unclamp pressure switches. Check the gripping force using a dynamic or static gripping force tester.

Lubrication

Lubricate the chuck on a regular basis to maintain maximum gripping force. Inadequate lubrication will result in loss of gripping force and accuracy and cause excessive wear. Use a pressure grease gun to lubricate all grease points daily under normal use. Use Chevron Ultra-Duty EP NLGI 2, Dow Corning BR-Plus, or Kluber ALTEMP Q NB 50 grease. Periodically monitor the grip force of your power chuck using a jaw force gage to determine required maintenance periods.

Removing Chucks from Hardinge HARDINGE-EMAG VL3 or VL5 Vertical Lathes

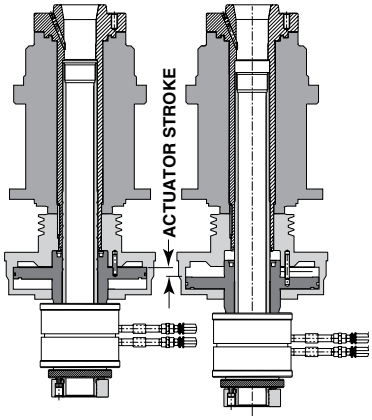
Disassembly principles are the same as mounting. The chuck mounting fixture must support the chuck weight:

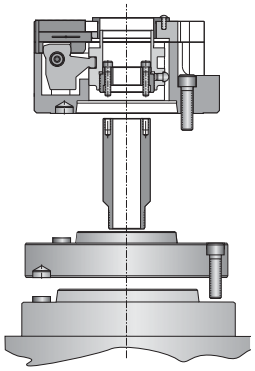
- Open the door.
- Remove the jaws.
- Jog the X axis to 0 (zero).
- Close the chuck, loosen all mounting bolts 2-3 turns and loosen the chuck drawbar adapter $^1/_2$ turn with the hex wrench.
- Open the chuck. The chuck body should separate from the spindle.
- Move Z axis minus to engage with chuck mounting fixture.
- Remove all mounting bolts.
- Turn chuck with chuck mounting fixture until threads are disengaged with drawbar. (Jog Z axis plus if too much spring tension)
- When threads are disengaged, jog Z axis plus to clear the chuck.
- Remove chuck from chuck mounting fixture.

CAUTION: If the spindle speed of the machine exceeds the maximum permissible speed of the clamping device, this may cause material damage. The maximum speed must be entered in the workpiece variable program 01xxx in variable #812. Refer to pages 12-17.

Mounting a Hardinge® Sure-Grip® Chuck to Hardinge® VT100 and VT200 Vertical Lathes

- Check the stroke of the actuating cylinder of the machine tool. It must be equal to, or greater than, the draw bar stroke of the chuck. If it is less than the chuck, the top jaw travel will be reduced. This condition may reduce the top jaw travel enough that a workpiece with a large tolerance on its chucking diameter cannot be gripped.
- Visually check the chuck and jaws for any signs of wear, hairline cracks or fractures. If any problems exist, bring them to the attention of your immediate supervisor before using the chuck.

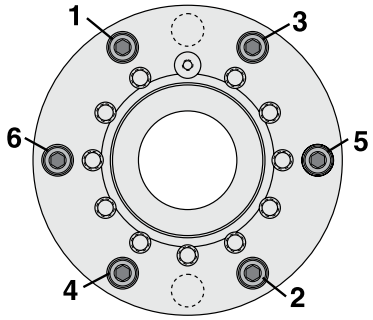


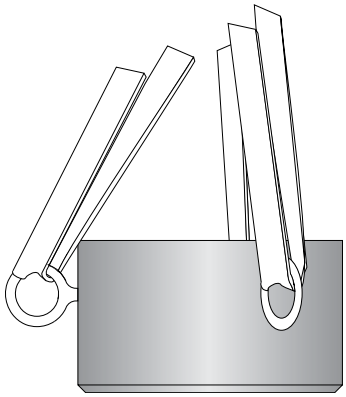


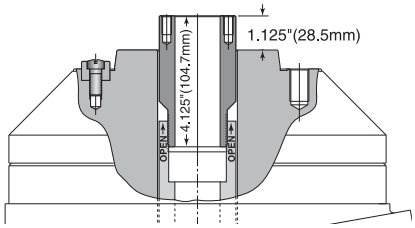
Clean All Surfaces

- Thoroughly clean the machine tool spindle, spindle adapter if used, and the Sure-Grip chuck.
- Check the TIR and runout of the spindle and record them as outlined on pages 28-29.

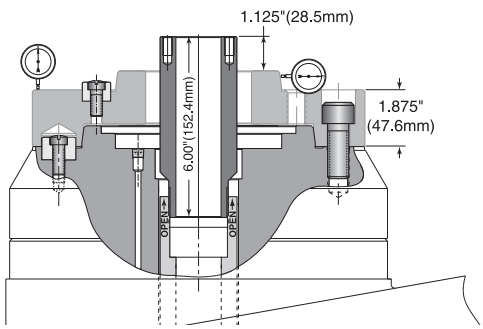
- Check the mounting bolts of the spindle adapter (Part # SC-0000152) and the jaw chuck for fatigue and/or fractures and replace if necessary.
- Mount the spindle adapter if required. Tighten the bolts in a crisscross fashion (shown right) to the proper torque shown on pages 119-122.
- Check the TIR and runout of the spindle adapter as outlined on pages 28-29. Continue the setup if the TIR and the runout are correct.
- Make certain the draw bar/draw tube and the chuck are in their OPEN positions.
- Use an eyebolt and/or a lifting strap rated for the weight of the chuck, and a hoist to lift the chuck to the spindle centerline.





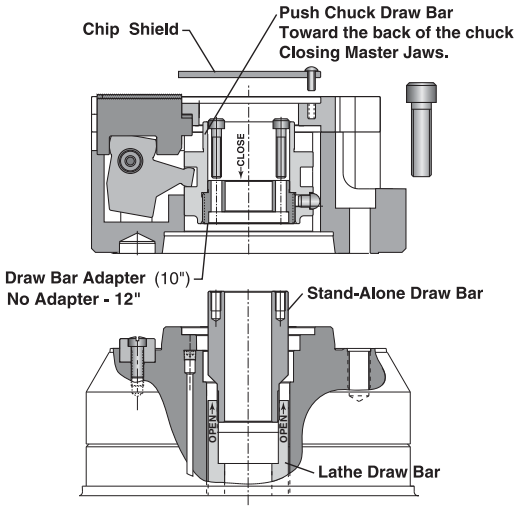


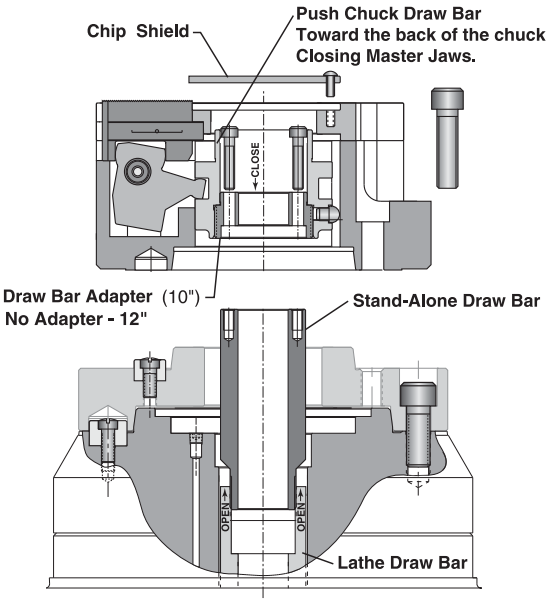
CONQUEST® VT-100



CONQUEST® VT-200

Before lowering the chuck on the spindle, place the stand-alone draw bar for the chuck into the vertical lathe draw bar.
NOTE: The lathe draw bar must be in its OPEN position (full forward). Adjust the stand-alone draw bar until its face is 1.125" (28.5mm) from the face of the spindle (VT 100) or the face of the spindle adapter (VT 200).

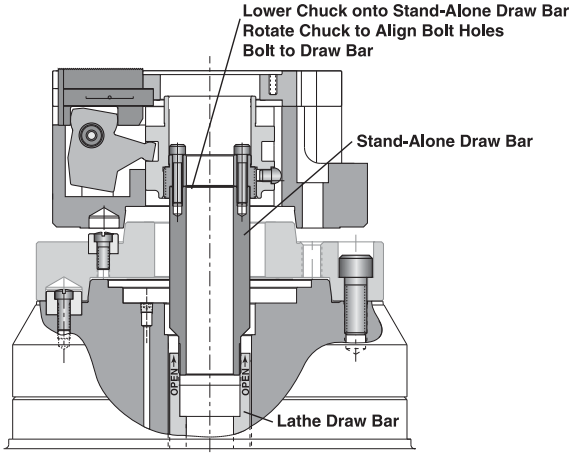




- Remove the chip shield.
- Push the chuck draw bar toward the back of the chuck.
  This action will close the master jaws and move the draw bar and the draw bar adapter.

NOTE: The draw bar adapter (10" chuck) has been factory installed into the chuck draw bar. Make certain that it is bottomed out. There is no draw bar adapter for the 12" chuck.

- Slowly lower the chuck, aligning the counterbore in the draw bar adapter with the stand-alone draw bar mounted in the draw bar of the vertical lathe.
- Rotate the chuck to align the bolt holes in the face of the stand-alone draw bar.
- Insert the six socket-head cap screws and tighten them securely.



Mounting a Hardinge® Sure-Grip® Chuck to Hardinge® VT100 and VT200 Vertical Lathes (cont'd)

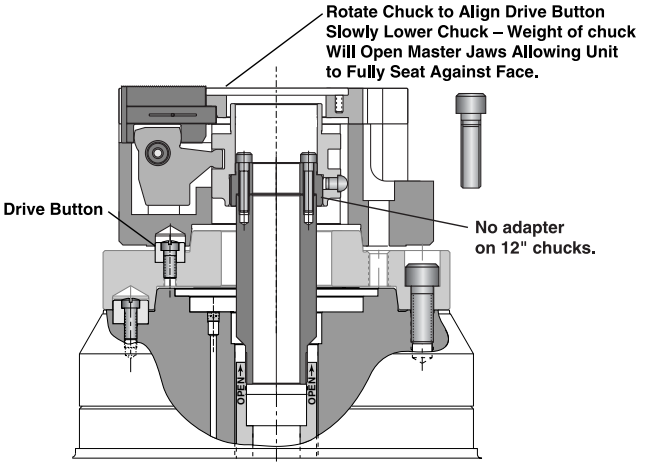
- Rotate the chuck assembly until the drive button and its mating hole are aligned.
- Slowly lower the chuck until the back face of the chuck and the shoulder of the spindle are mated. There may be a very slight gap—a few thousandths.
- Remove the straps and the eyebolts from the chuck.
- Check the mounting bolts for excessive wear, fatigue and/or fractures and replace if damaged.
- Insert the mounting bolts into the chuck and make them finger tight.

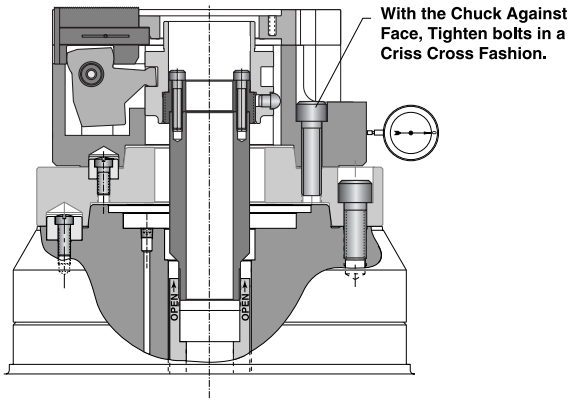
  CAUTION: Do not tighten with a wrench at this time. The chuck may be severely damaged.

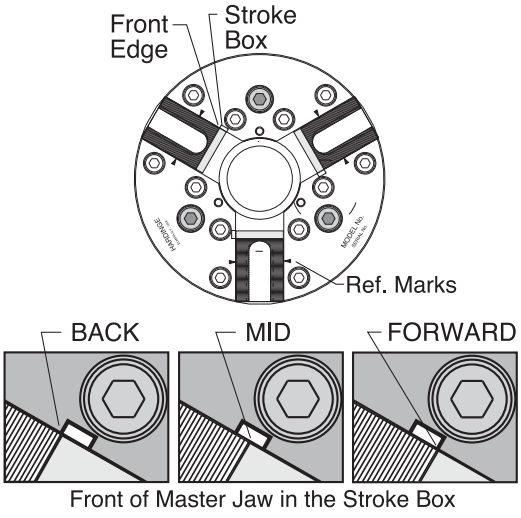
- Close the chuck using the control button on the lathe console.
- Tighten the chuck mounting bolts, tightening in a criss-cross fashion to the proper torque shown on pages 119-122.
- Check the TIR and runout of the chuck as outlined on pages 28-29**.** Continue the setup if the TIR and the runout are correct.
- Check the front of the master jaw. It should be very close to the outside edge of the stroke box (see illustration).
- Open the chuck using the control button on the console. The front of the master jaw should be very close to the inside edge of the stroke box.
- When mounting the jaws, the scribe mark on the jaw is positioned near the reference arrow on the chuck.

  NOTE: If these two checks are not visually correct, then the stand-alone draw bar was not set to the proper dimension indicated on the previous page.
  The actual plunger (draw bar) stroke can be checked by measuring the distance from the face of the draw bar when in the open position and then in the closed position. Compare the difference. It should be very close to the plunger stroke specifications on pages 12-17.

CAUTION: After mounting the chuck, always check the gripping force using a dynamic or static gripping force tester.







Lubrication

Lubricate the chuck on a regular basis to maintain maximum gripping force. Inadequate lubrication will result in loss of gripping force and accuracy and create excessive wear.

Use a pressure grease gun to lubricate all grease points daily under normal use. Use Chevron Ultra-Duty EP NLGI 2, Dow Corning BR-Plus, or Kluber ALTEMP Q NB 50 grease.

Periodically monitor the grip force of your power chuck using a jaw force gage to determine required maintenance periods.

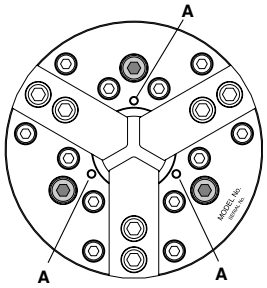
Work Location Stop Plate

- Because each stop relates to a specific workpiece, they are fabricated by the user.
- The work location stop plate is usually mounted before the jaws are mounted.
- When performing second operation or slug work, a stop plate can be mounted to the face of the chuck. The stop plate eliminates the need for stepping out the soft jaws resulting in an extremely stable gripping configuration.

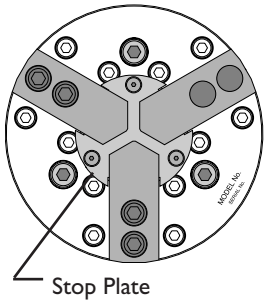
Dimensions Used to Make Stop Plates

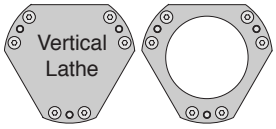
Chuck Size	Bolt Circle	Tapped Holes "A"	Chuck Thru-Hole
10" Vertical	4.0" 101.6mm	M6 x 1.0	No Thru-hole
12" Vertical	4.776" 121.3mm	M6 x 1.0	No Thru-hole

- The stop plate can be constructed with a pilot extending back inside the chuck. The pilot can be counterbored to accept long workpieces.
- The Sure-Grip chuck has three tapped holes "A" in the face of the chuck for fastening the stop plate.

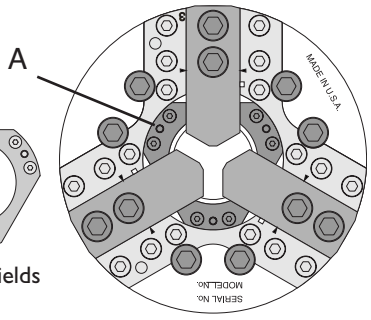


Tapped Holes


Stop Plate
5", 6", 8" Chucks

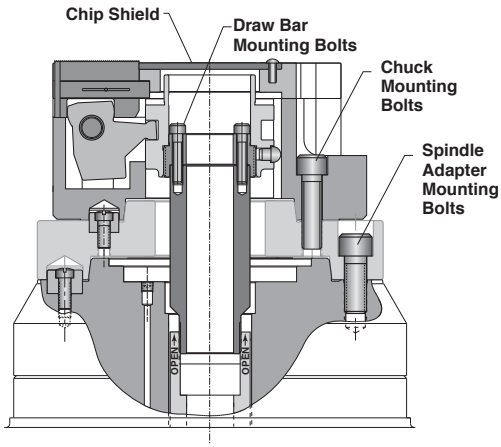


10" & 12" Chuck & Shields



Removing the Hardinge® Sure-Grip® Chuck from Hardinge VT100 and VT200 Vertical Lathes

- Use three eyebolts and three lifting straps rated for the weight of the chuck, and a hoist to lift the chuck while it is being removed.
- Remove the top jaws before removing the chuck.
- Remove the chip shield.
- Open the chuck. Make certain the machine draw bar is in the OPEN position.
- Turn the Electrical power OFF to the machine tool.
- Remove the draw bar mounting bolts.
- Remove the chuck mounting bolts.
- Install the eye bolts and lifting straps to the hoist.
- Remove the chuck. Lift assembly high enough to clear the stand-alone draw bar still in the spindle of the lathe.
- Remove the stand-alone draw bar.
- Replace the chip shield for storage.
- Remove the spindle adapter when necessary.



Machining Top Jaws

The accuracy and repeatability of a chuck will often be affected by the method used to machine the top jaws. The problem most often encountered when machining jaws is called bellmouth. This is a condition in which the front of the ID Bore will be larger than the back—Figure #1.

Bellmouth is the result of excessive draw bar force being exerted when machining the jaws. The top jaws will lift at the face affecting accuracy and repeatability. The most common solution would be to machine the jaws under intended machining conditions or at a reduced draw bar pull force to ensure no deformation occurs in the chuck parts.

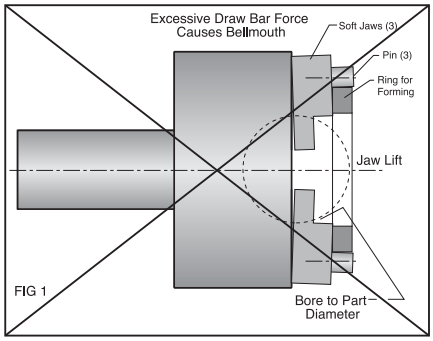


FIG 1

Requirements

- Always check the jaw gripping force using a dynamic or static gripping force tester before machining top jaws. Compare to specifications for the model chuck you are using.
- Always refer to the chuck specifications for maximum recommended draw bar force. Refer to pages 12 – 27.
- Always use top jaws with the least height. The higher the top jaw, the more it will affect jaw lift and centrifugal force.
- Only machine the top jaws when they are at the midpoint of the jaw chuck stroke. See the section on boring jaws and how to machine the jaws for the midpoint of the stroke.
- Always lubricate the chuck with Chevron Ultra-Duty EP NLGI 2, Dow Corning BR-Plus, or Kluber ALTEMP Q NB 50 grease. Grease once every 24 hours. This will prolong the chuck life and maintain gripping power and accuracy.

WARNING: Bolts which are longer than the original top jaw bolts will bottom out before the top jaw is firmly secured to the master jaw. This unstable situation will cause the workpiece to come loose, resulting in possible damage to the machine and/or personal injury.

Machining Jaws for External Chucking

Figures #2 and #3 are methods of boring soft top jaws for chucking on the OD of the workpiece that will ensure high accuracy and best simulate actual machining practices.

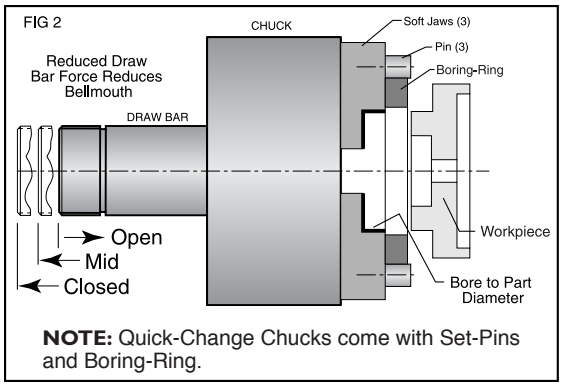


FIG 2

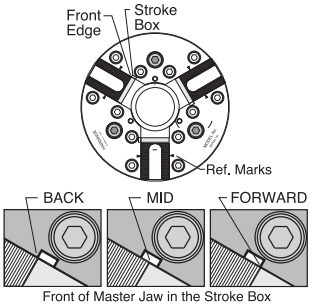
Pin/Ring Method for Boring Jaws—External Grip

1) Mount the jaws on the chuck in relationship to the chucking diameter of the workpiece. After mounting the jaws, scribe a mark on the jaw as a reference when remounting the jaw. The outside of the jaws should not extend beyond the OD of the chuck.
2) Make 3 pins for top jaw-bolt counterbores—one for each jaw.
3) Hardinge Quick-Change Jaw System comes with pins and boring ring.
4) Making the boring ring:
   - Close the chuck
   - Insert pins
   - Determine the diameter between the pins
     – Use a comptor style gage
     – Use a selection of various size gauging rings
   - Check the jaw stroke specification for the chuck
     – usually given in diameter, if per jaw, multiply by two for diameter
   - Divide the jaw stroke diameter by two
     – Add this dimension to the determined diameter between the pins
     – The result will be the outside diameter for the boring ring

NOTE: The boring ring made to this diameter will insure that the chuck jaws are at their mid-position when the chuck is closed on the ring or workpiece.

   - This ring should have a wall thickness of at least ¾" and a length of ⅝"
   - After making the boring ring:
     – Open the chuck
     – Make sure the pins are still in position
     – Insert ring
     – Close the chuck at a reduced force

NOTE: Look at the jaw stroke box on the face of the chuck. The front of the master jaw should be in the middle of the box for maximum efficiency of the chuck.



Front of Master Jaw in the Stroke Box

Machining Quick-Change Top Jaws:

With the top jaws mounted and the chuck in the open position, insert the pins in the bolt holes and place the boring-ring between the pins. Close the chuck. The jaws will automatically be at mid-position.

5) Machining Quick-Change Top Jaws to part specifications:
   - Machine the bore or counterbore to the exact size of the chucked diameter of the workpiece.
   - Open the chuck and remove the set-ring and set-pins. Save these for future use.
   - Debur the jaws to remove any burrs and sharp edges.
   - Mount the workpiece and close the chuck. Use the draw bar force which you have determined is adequate for this workpiece. Do not exceed the maximum draw bar force for the chuck.
   - Test the chuck with the part at the production RPM before taking any cuts.
   - Machine the part and determine if any adjustments have to be made in the spindle RPM or the draw bar force.

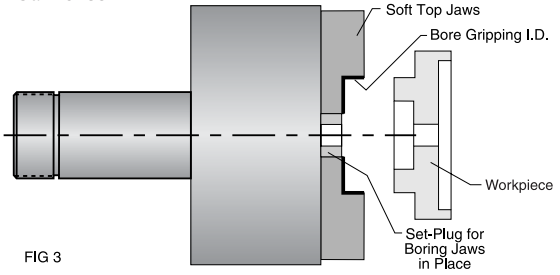


FIG 3

Boring Jaws - External Gripping - Plug Method

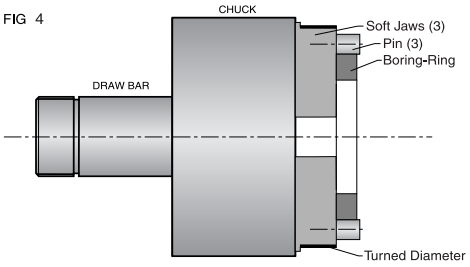
This method is used to bore/counterbore jaw which cannot be accomplished with the ring method because the boring ring and pins are in the way.

- Make the pins and boring ring as described in steps 1-4
- After making the boring ring:
  - Open the chuck
  - Make sure the pins are still in position
  - Insert the boring ring
  - Close the chuck
- Bore to a given plug size
- Remove pins and boring ring
- Close on the given plug
  - Check stroke box on face of chuck to confirm jaws are at mid-position
  - Machine counterbore to workpiece specifications
- You are now ready to machine the part
  Refer to step 5 for additional suggestions

Machining Jaws for Internal Chucking

Figures 4 and 5 show a method for turning soft top jaws for internal gripping of the workpiece.

FIG 4



Turning Jaws - Internal Gripping - Ring Method

This method is used to turn the chucking diameter on the top jaw for internal gripping of the workpiece.

- Make the pins and boring ring as described in steps 1-4
- Check the stroke box on the face of chuck to confirm that the jaw is at mid-position
- Turn a diameter near the OD of the top jaws
  - Record the diameter for future use
- Open the chuck and remove the boring ring and pins
- On another machine, make a set-ring with an ID that is the same dimension as the turned diameter
- The wall thickness of the set-ring should be at least ¾" and should be ⅝" long

NOTE: At this point your CNC machine tool must be changed for ID chucking. The close button must now open the chuck to grip the ID of the part. See your machine tool's operator's manual on how to accomplish this.

- Set the chucking pressure for the ID workpiece
  - Heavy walled parts may only require a 20% reduction in chucking pressure
  - Thin wall parts may require as much as 50% or more increase in chucking pressure
  - Use the draw bar force which you have determined is adequate for this workpiece
- Mount the set-ring and close the chuck
  The jaws will move outward
- Turn the chucking diameter on the jaws to the largest inside locating diameter of the workpiece
- Activate the chuck to release the set-ring
- Debur the jaws to remove any burrs and sharp edges
- Mount the part
- Test the chuck with the part at the production RPM before taking any cuts
- Machine the part and determine if any adjustments have to be made to the spindle RPM or the draw bar force

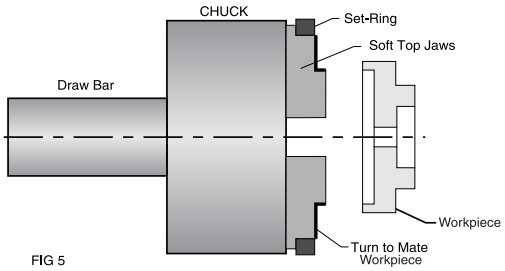


FIG 5

WARNING: Internal chucking requires a reduction of the draw bar force because centrifugal force adds additional gripping force which could distort the part or cause the part to fracture after material has been removed. The necessary pressure reduction may be as low as 20% and when working with thin wall parts higher than 50%. The user must determine the gripping force required for each specific workpiece. ***(The workpiece may come off of the jaws, causing damage to the machine and/or personal injury.)***

Parts List: 4" Chuck Assembly for Hardinge® Lathes—A2-4 Spindle

Assembly for Hardinge ELITE® 27 MS and QUEST® GT:

Model No.	Part Number	Description
HM304	SCA 2000304A24H	Standard Chuck – 1.5mm x 60° Master Jaw Serrations

Parts List:

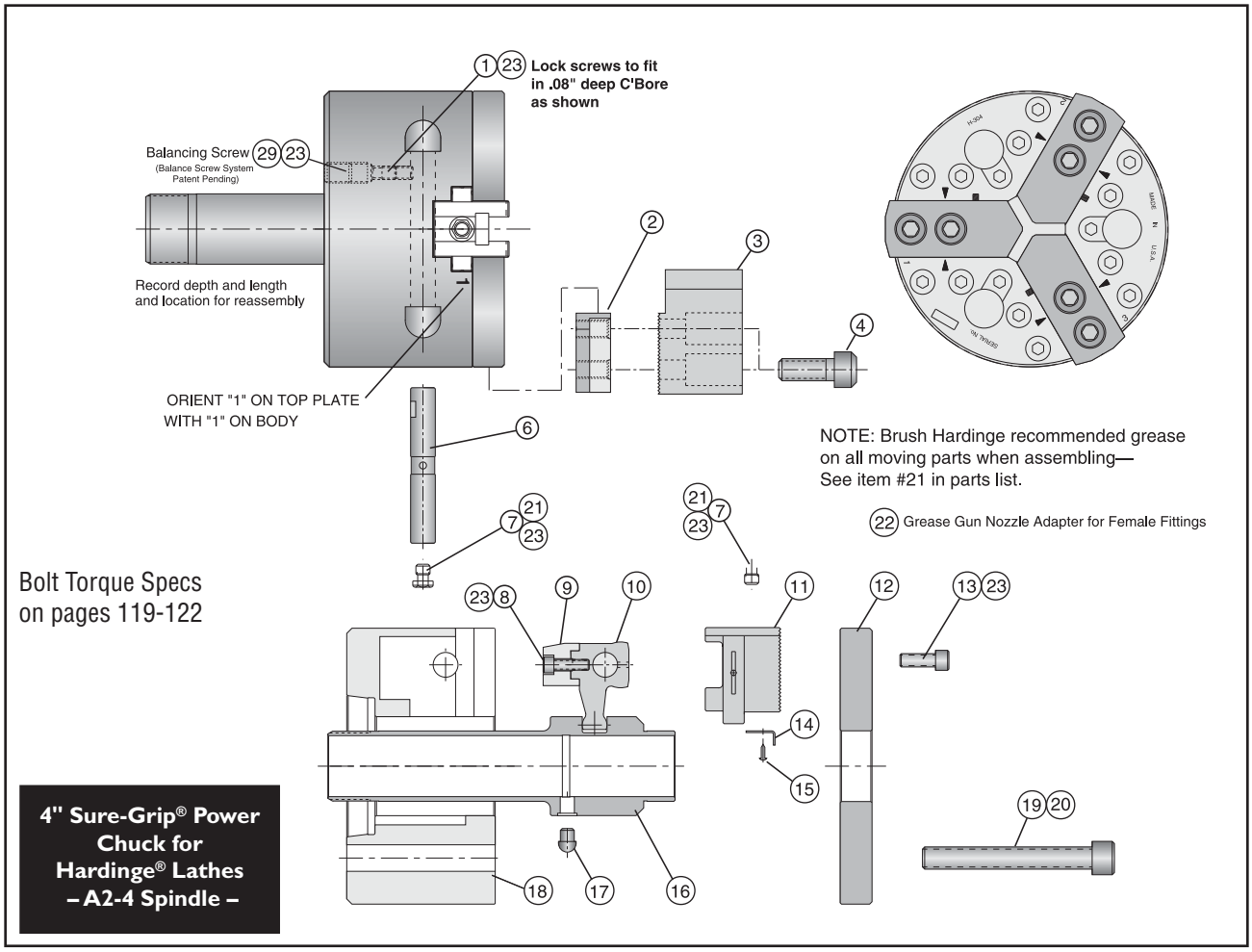
Item	Qty	Part Number	Description
1	6	MS 0573614	Socket Set Screw -Flat [M6 x 1 x 8mm] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
2	3	SC 0000223	"T" Nut for Metric Serrations -Soft Jaws (.551" bolt spacing) Must use Hardinge T-Nuts
3	3	SC 2000222	Soft Top Jaw
4	6	MS 0103818	Socket Head Cap Screw [M8 x 1.25 x 20] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
6	3	SC 0000060	Pin
7	6	CE 0001851	Fitting, Alemite No. 1851
8	3	0100310	Socket Head Cap Screw [#10-32 x 5/8"] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
9	3	SC 0000202	Counter Weight
10	3	SC 0000208	Lever
11	3	SC 0000221	Master Jaw Metric Serrations (1.5mm x 60° serrations)
Kit	1	SC 2000221 S	3 Master Jaws (item 11), Shields (item 14), Escutcheon Pins (item 15)
12	1	SC 0000206	Top Plate
13	15	MS 0103617	Socket Head Cap Screw [M6 x 1 x 16] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
14	3	SC 0000055	Chip Shield
15	6	R 0008044	Escutcheon Pin
16	1	SC 0000213	Chuck Draw Bar (QUEST® GT and ELITE® 27 MS)
17	1	SCA 0000003	Key
18	1	replacement N/A	Chuck Body (Send entire chuck assembly to Hardinge if chuck body is damaged)
19	3	0101249	Socket Head Cap Screw [7/16"-14 x 3-1/4"] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
20	3	MS 0104030	Socket Head Cap Screw [M10 x 1.5 x 80] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
21	0	CE 0000002	Grease—Chevron Ultra-Duty EP NLGI 2 (Dow Corning BR-2 Plus or Kluber ALTEMP Q NB 50 avail)
22	1	CE 0000737	Nozzle, Alemite No. Z-737 (Adapter for Grease Gun)
23	0	NC 0010884	Loctite #242
24	1	B 0009500-0087	Safety and Technical Manual
29	3	MS-0554017-SS	Balancing Set Screw (M10x1.5x16mm) Length of screws may vary

WARNING: You must use Hardinge T-nuts. (Ignoring this warning may result in machine and/or personal injury)

Top Jaws for Hardinge Sure-Grip® Chucks — 1.5mm x 60° Metric Serrations

Model No.	Part Number	Description
4MSHF	SC 2000225	Standard Height Soft Flat Top Jaw
4MMHF	SC 2000226	Medium Height Soft Flat Top Jaw
4MSHP	SC 2000222	Standard Height Soft Pointed Top Jaw
4MMHP	SC 2000227	Medium Height Soft Pointed Top Jaw
4MH1	SC 2000224	Hard Single Step Top Jaw

NOTE: Only jaws manufactured by Hardinge Inc. or jaws approved by Hardinge are to be used on Sure-Grip Power Chucks.



Periodic Safety Inspection—Every 6 Months or After an Accident or Collision

(This inspection should be done after the chuck has been removed from the lathe spindle)

NOTE: The parts for each jaw location (pin, lever, master jaw, t-nuts and top jaw) should be kept together for reassembly. If assembled into a different location the chuck will not be balanced and the strokes may not be within specifications.

- Loosen the bolts (4) and raise and slide the jaws with the T-nuts (2) (5) from the slot in the master jaw.
- Remove the twelve socket-head cap screws (13) from the top plate.
- Remove the top plate (12).
- Remove the three master jaws (11). It is not necessary to disassemble items (7) (14) (15).
- Remove three set screws (29) and record the depth and location. Balance screws may be different lengths / depths and must be replaced in the same holes and to the same depth.
- Remove six set screws (1) which lock in pivot pin (6). Do not remove item (7).
- Remove Pivot Pin (6).
- Remove Lever/counterweight assembly (8) (9) (10). Do not disassemble.
- Remove Chuck Draw Bar (16). Do not disassemble item (17).
  Check all parts, including mounting bolts (4)(13)(19) for hairline cracks, fissures, and excessive wear. Replace all damaged parts. NOTE: If the chuck body is damaged, the entire chuck assembly must be sent back to Hardinge Inc. for rebuilding.
- Clean all parts.
- Lubricate all moving parts with Chevron Ultra-Duty EP NLGI 2, Dow Corning BR-2-Plus, or Kluber ALTEMP Q NB 50 grease.
- Reassemble parts in the reverse order they were disassembled. Use Loctite as indicated on drawing by #23.
- Use pressure gun with adapter (22) to grease pivot pin (7) with Chevron Ultra-Duty EP NLGI 2, Dow Corning BR-2-Plus, or Kluber ALTEMP Q NB 50 grease.
- Use pressure gun with adapter (22) to lightly grease master jaws (11) with Chevron Ultra-Duty EP NLGI 2, Dow Corning BR-2-Plus, or Kluber ALTEMP Q NB 50 grease. Move jaws through their full stroke several times.
- After mounting chuck to machine tool, again grease the master jaws, then move the jaws through their full stroke under power. Grease the jaws again and cycle under power. This process makes certain all surfaces are lubricated properly.

Parts List: 5" Chuck Assembly for Hardinge® Lathes—A2-5 Spindle

Assembly for Hardinge CHNC®, CONQUEST® T42, COBRA® 42, QUEST® & ELITE® 6/42 and RS 42:

Model No.	Part Number	Description
HM305	SCA 2000305A25H	Standard Chuck – 1.5mm x 60° Master Jaws

Parts List:

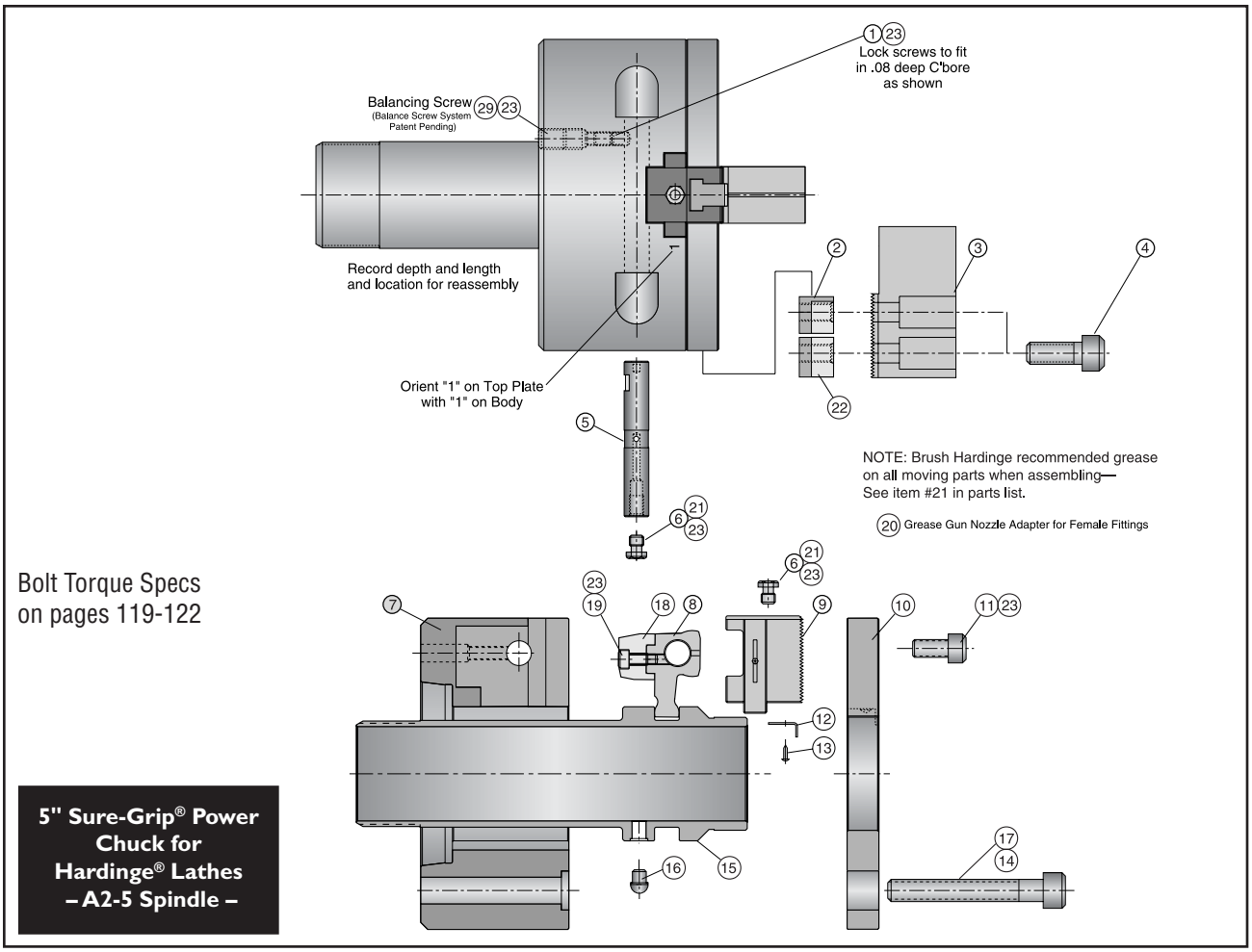
Item	Qty	Part Number	Description
1	6	MS 0573614	Socket Set Screw [M6 x 1x 8mm] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
2	3	SC 0000067	"T" Nut Round - for Metric Serrations - Hard & Soft Jaws - (Item 22 also required) - Must use Hardinge "T" Nuts
3	3	SC 2000066	Soft Top Jaw
4	6	MS 0103819	Socket Head Cap Screw [M8x1.25x25mm] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
5	3	SC 0000060	Pin
6	6	CE 0001851	Fitting, Alemite No. 1851
7	1	replacement N/A	Chuck Body (Send entire chuck assembly to Hardinge if chuck body is damaged)
8	3	SC 0000058	Lever
9	3	SCA 0000064	Master Jaw with Metric Serrations
Kit	1	SCA 2000064 S	Three Master Jaws (9), Shields (12) Escutcheon Pins (13)
10	1	SC 0000056	Top Plate
11	12	MS 0103817	Socket Head Cap Screw [M8x1.2x16mm] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
12	3	SC 0000055	Chip Shield
13	6	R 0008044	Escutcheon Pin
14	3	MS 0104030	Socket Head Cap Screw [M10x1.5x80mm] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
15	1	SC 0000063	Chuck Draw Bar (CHNC, CONQUEST T42, COBRA 42, QUEST & ELITE 6/42, RS 42)
16	1	SCA 0000003	Key
17	3	0101248	Socket Head Cap Screw [7/16"-14 x 3"] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
18	3	SC 0000052	Counter Weight
19	3	0100308	Socket Head Cap Screw [#10-32 x 1/2"] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
20	1	CE 0000737	Nozzle, Alemite No. Z-737
21	0	CE 0000002	Grease—Chevron Ultra-Duty EP NLGI 2 (Dow Corning BR-2 Plus, or Kluber ALTEMP Q NB 50 avail.)
22	3	SC 0000065	"T" Nut for Metric Serrations - (Item 2 also required) Must use Hardinge "T" Nuts
23	0	NC 0010884	Loctite #242
24	1	B 0009500-0087	Safety and Technical Manual
29	3	MS-0554017-SS	Balancing Set Screw [M10x1.5x16mm] Length of screws may vary

WARNING: You must use Hardinge T-nuts. (Ignoring this warning may result in machine and/or personal injury)

Top Jaws for Hardinge Sure-Grip Chucks — 1.5mm x 60° Metric Serrations

Model No.	Part Number	Description
5MSHF	SC 2000070	Standard Height Soft Flat Top Jaw
5MMHF	SC 2000071	Medium Height Soft Flat Top Jaw
5MSHP	SC 2000066	Standard Height Soft Pointed Top Jaw
5MMHP	SC 2000073	Medium Height Soft Pointed Top Jaw
5MH1	SC 2000072	Hard Single Step Top Jaw

NOTE: Only jaws manufactured by Hardinge Inc. or jaws approved by Hardinge are to be used on Sure-Grip Power Chucks.



Periodic Safety Inspection—Every 6 Months or After an Accident or Collision

(This inspection should be done after the chuck has been removed from the lathe spindle)

NOTE: The parts for each jaw location (pin, lever, master jaw, t-nuts and top jaw) should be kept together for reassembly. If assembled into a different location the chuck will not be balanced and the strokes may not be within specifications.

- Loosen the bolts (4) and raise and slide the jaws with the T-nuts (2) from the slot in the master jaw.
- Remove the twelve socket-head cap screws (11) from the top plate.
- Remove the top plate (10).
- Remove the three master jaws (9). It is not necessary to disassemble Items (6) (12) (13).
- Remove three set screws (29) and record depth and location. Balance screws may be different lengths / depths and must be replaced in the same holes and to the same depth.
- Remove six set screws (1) which lock in pivot pin (5). Do not remove item (6).
- Remove Pivot Pin (5).
- Remove Lever/counterweight assembly (8) (18) (19). Do not disassemble.
- Remove Chuck Draw Bar (15). Do not disassemble item (16).
  Check all parts including mounting bolts (4)(14)(17) for hairline cracks, fissures, and excessive wear. Replace all damaged parts.
  WARNING: If the chuck body is damaged, the entire chuck assembly must be sent back to Hardinge® for rebuilding.
- Clean all parts.
- Lubricate all moving parts with Chevron Ultra-Duty EP NLGI 2, Dow Corning BR-2-Plus, or Kluber ALTEMP Q NB 50 grease.
- Reassemble parts in the reverse order they were disassembled. Use Loctite #242 (23) on bolts (1)(11)(29).
- Use a pressure gun to grease pivot pin (5) with Chevron Ultra-Duty EP NLGI 2, Dow Corning BR-2-Plus, or Kluber ALTEMP Q NB 50 grease.
- Use a pressure gun to lightly grease master jaws (9) with Chevron Ultra-Duty EP NLGI 2, Dow Corning BR-2-Plus, or Kluber ALTEMP Q NB 50 grease. Move jaws through their full stroke several times.
- After mounting chuck to machine tool, again grease the master jaws, then move the jaws through their full stroke under power. Grease the jaws again and cycle under power. This process makes certain all surfaces are lubricated properly.

Parts List: 5" Chuck Assembly for Other CNC Lathes—A2-5 Spindle

Assembly for Other CNC Lathes:

Model No.	Part Number	Description
CM2-305B-5	SCA 2200305 A25C	Standard Chuck – 1.5mm x 60° Master Jaws

Parts List:

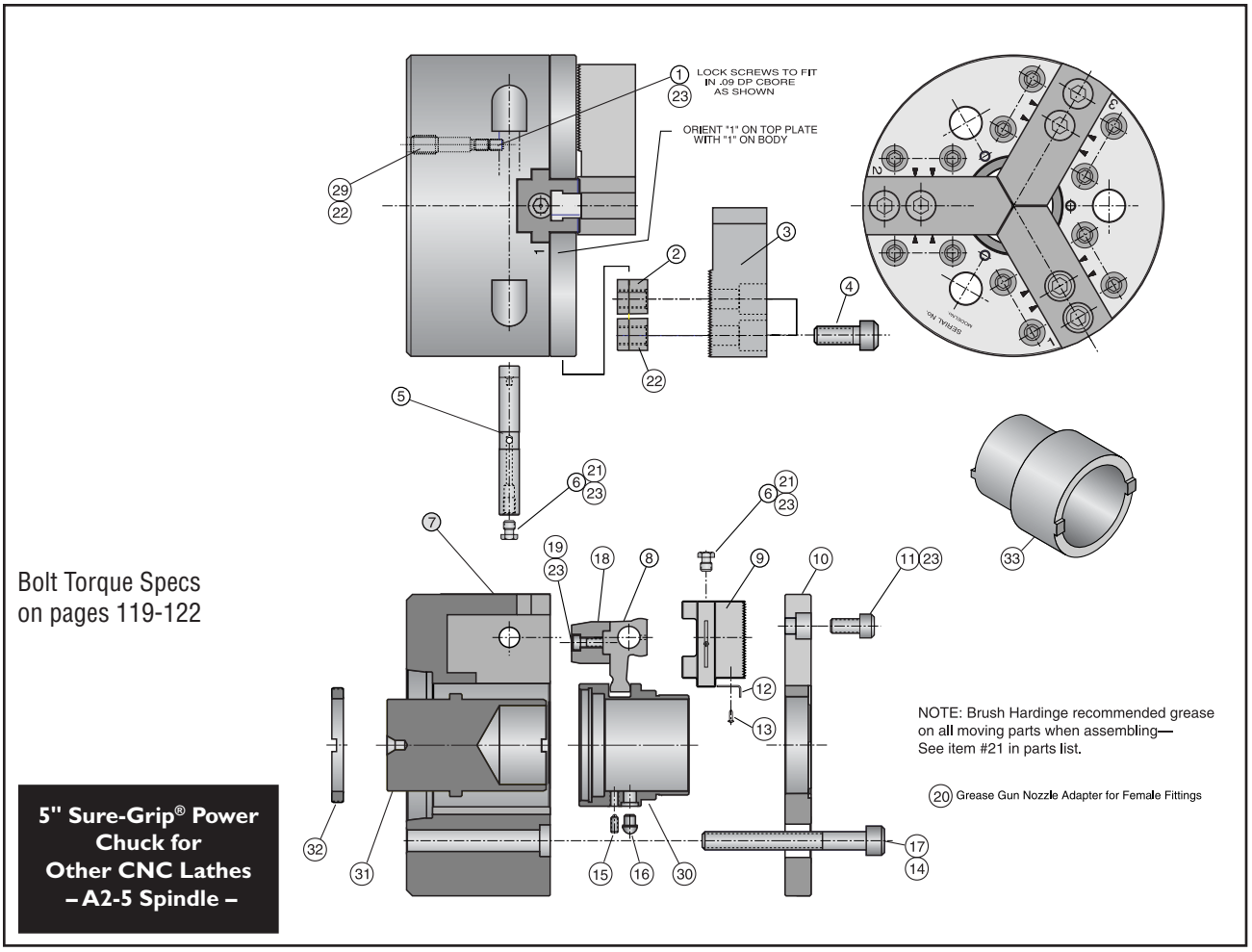
Item	Qty	Part Number	Description
1	6	MS 0573614	Socket Set Screw [M6 x 1x 8mm] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
2	3	SC 0000067	"T" Nut - Round - for Metric Serrations - Hard & Soft Jaws - (Item 22 also required) - Must use Hardinge "T" Nuts
3	3	SC 2000066	Soft Top Jaw
4	6	MS 0103819	Socket Head Cap Screw [M8x1.25x25mm] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
5	3	SC 0000060	Pin
6	6	CE 0001851	Fitting, Alemite No. 1851
7	1	replacement N/A	Chuck Body (Send entire chuck assembly to Hardinge if chuck body is damaged)
8	3	SC 0000058	Lever
9	3	SCA 0000064	Master Jaw with Metric Serrations
Kit	1	SCA 2000064 S	Three Master Jaws (9), Shields (12) Escutcheon Pins (13)
10	1	SC 0000056	Top Plate
11	12	MS 0103817	Socket Head Cap Screw [M8x1.2x16mm] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
12	3	SC 0000055	Chip Shield
13	6	R 0008044	Escutcheon Pin
14	3	MS 0104030	Socket Head Cap Screw [M10x1.5x80mm] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
15	1	CE 8323437	Plunger, Stubby 8-32 x 7/16
16	1	SCA 0000003	Key
17	3	0101248	Socket Head Cap Screw [7/16"-14 x 3"] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
18	3	SC 0000052	Counter Weight
19	3	0100308	Socket Head Cap Screw [#10-32 x 1/2"] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
20	1	CE 0000737	Nozzle, Alemite No. Z-737
21	0	CE 0000002	Grease—Chevron Ultra-Duty EP NLGI 2 (Dow Corning BR-2 Plus or Kluber ALTEMP Q NB 50 avail.)
22	3	SC 0000065	"T" Nut for Metric Serrations - (Item 2 also required) Must use Hardinge "T" Nuts
23	0	NC 0010884	Loctite #242
24	1	B 0009500 0087	Safety and Technical Manual
29	3	MS 0554017 SS	Balancing Set Screw [M10x1.5x16mm] Length of screws may vary
30	1	SC 0000088	Chuck Draw Bar (Draw Head)
31	1	SC 0000089	Chuck Draw Bar Link
32	1	SC 0000090	Nut
33	1	SC 0000091	Tool

WARNING: You must use Hardinge T-nuts. (Ignoring this warning may result in machine and/or personal injury)

Top Jaws for Hardinge Sure-Grip Chucks—1.5mm x 60° Metric Serrations

Model No.	Part Number	Description
5MSHF	SC 2000070	Standard Height Soft Flat Top Jaw
5MMHF	SC 2000071	Medium Height Soft Flat Top Jaw
5MSHP	SC 2000066	Standard Height Soft Pointed Top Jaw
5MMHP	SC 2000073	Medium Height Soft Pointed Top Jaw
5MH1	SC 2000072	Hard Single Step Top Jaw

NOTE: Only jaws manufactured by Hardinge Inc. or jaws approved by Hardinge are to be used on Sure-Grip Power Chucks.



Periodic Safety Inspection—Every 6 Months or After an Accident or Collision

(This inspection should be done after the chuck has been removed from the lathe spindle)

NOTE: The parts for each jaw location (pin, lever, master jaw, t-nuts and top jaw) should be kept together for reassembly. If assembled into a different location the chuck will not be balanced and the strokes may not be within specifications.

- Loosen the bolts (4) and raise and slide the jaws with the T-nuts (2) (22) from the slot in the master jaw.
- Remove the twelve socket-head cap screws (11) from the top plate.
- Remove the top plate (10).
- Remove the three master jaws (9). It is not necessary to disassemble Items (6) (12) (13).
- Remove three set screws (29) and record depth and location. Balance screws may be different lengths and depths and must be replaced in the same holes and to the same depth.
- Remove six set screws (1) which lock in pivot pin (5). Do not remove items (6).
- Remove Pivot Pin (5).
- Remove Lever/counterweight assembly (8) (18) (19). Do not disassemble.
- Remove Chuck Draw Bar (31). Do not disassemble item (16).
  Check all parts including mounting bolts (4)(14)(17) for hairline cracks, fissures, and excessive wear. Replace all damaged parts. WARNING: If the chuck body is damaged, the entire chuck assembly must be sent back to Hardinge for rebuilding.
- Clean all parts.
- Lubricate all moving parts with Chevron Ultra-Duty EP NLGI 2, Dow Corning BR-2-Plus, or Kluber ALTEMP Q NB 50 grease.
- Reassemble parts in the reverse order they were disassembled. Use Loctite #242 (23) on bolts (1) (11) (29).
- Use a pressure gun to grease pivot pin (5) with Chevron Ultra-Duty EP NLGI 2, Dow Corning BR-2-Plus, or Kluber ALTEMP Q NB 50 grease.
- Use a pressure gun to lightly grease master jaws (9) with with Chevron Ultra-Duty EP NLGI 2, Dow Corning BR-2-Plus, or Kluber ALTEMP Q NB 50 grease. Move jaws through their full stroke several times.
- After mounting chuck to machine tool, again grease the master jaws, then move the jaws through their full stroke under power. Grease the jaws again and cycle under power. This process makes certain all surfaces are lubricated properly.

Parts List: 6" Chuck Assembly for Hardinge® Lathes—A2-5 Spindle

Assemblies for Hardinge CHNC®, CONQUEST® T42, COBRA® 42, QUEST® & ELITE® 6/42 and RS 42:

Model No.	Part Number	Description
HM 306	SCA 2000306 A25H	Standard Chuck – 1.5mm x 60° Master Jaw Serrations
HM 306 Q	SC 2070306A 25H	Quick-Change Chuck – 1.5mm x 60° Master Jaw Serrations

Parts List:

Item	Qty	Part Number	Description
1	6	MS 0573614	Socket Set Screw-Flat [M6 x 1x 8mm] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
2	3	SC 0000015	"T" Nut - for Metric Serrations - .787" spacing for Hard & Soft Jaws - Must Use Hardinge "T" Nuts
3	3	SC 2000016	Soft Top Jaw
4	6	MS 0104019	Socket Head Cap Screw [M10x1.5x25mm] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
5	3	SC 0000010	Pin
6	6	CE 0001851	Fitting, Alemite No. 1851
7	1	replacement N/A	Chuck Body (Send entire chuck assembly to Hardinge if chuck body is damaged)
8	3	SC 0000008	Lever
9	3	SCB 0000014	Master Jaws with Metric Serrations
Kit	1	SCB 2000014 S	Three Master Jaws (9), Shields (12), Escutcheon Pins (13)
10	1	SC 0000006	Top Plate
11	12	MS 0103817	Socket Head Cap Screw [M8-1.2x16mm](DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
12	3	SC 0000005	Chip Shield
13	6	R 0008044	Escutcheon Pin
14	3	MS 0104031	Socket Head Cap Screw [M10-1.5x90mm](DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
15	1	SC 0000004	Chuck Draw Bar (CHNC®, CONQUEST® T42, COBRA® 42, QUEST® & ELITE® 6/42, RS 42)
16	1	SCA 0000003	Key
17	3	0101250	Socket Head Cap Screw [7/16"-14 x 3-1/2"] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
18	3	SC 0000002	Counter Weight
19	3	0100312	Socket Head Cap Screw [#10-32 x 3/4"] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
20	1	CE 0000737	Nozzle, Alemite No. Z-737
21	0	CE 0000002	Grease—Chevron Ultra-Duty EP NLGI 2 (Dow Corning BR-2 Plus or Kluber ALTEMP Q NB 50 avail.)
22	0	NC 0010884	Loctite #242
23	1	B 0009500 0087	Safety and Technical Manual
29	3	MS 0554017 SS	Balancing Set Screw [M10x1.5x16mm] Length of screws may vary
Kit	**1**	**SC 2000741QC**	**Quick-Change Kit** includes all parts listed below:
30	3	SC 0000742	T-Nut
31	3	SC 0000740	I-Beam
32	3	SC 0000743	Screw
33	3	SC 2000741	Top Jaw
34	3	SC 0000725	Boring Pin
35	1	SC 0000748	Boring Ring
36	3	CE 0000004AN	Spring Plunger
38	3	TL 0006615	Dowel Pin

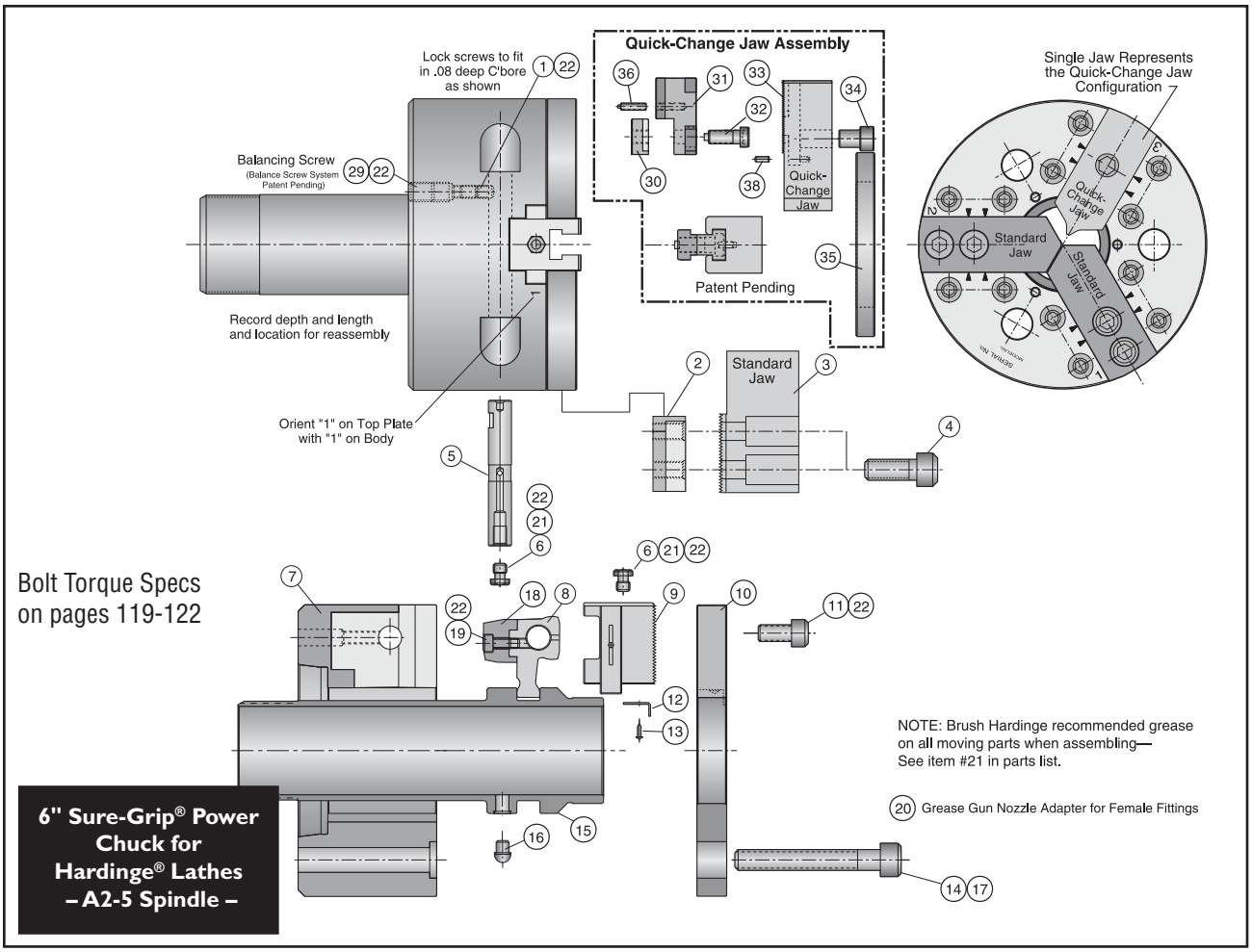
Quick-Change Parts

WARNING: You must use Hardinge T-nuts. (Ignoring this warning may result in machine and/or personal injury)

Top Jaws for Hardinge Sure-Grip Chucks—1.5mm x 60° Metric Serrations

Model No.	Part Number	Description (for Standard Chuck)
6MSHF	SC 2000019	Standard Height Soft Flat Top Jaw
6MMHF	SC 2000020	Medium Height Soft Flat Top Jaw
6MSHP	SC 2000016	Standard Height Soft Pointed Top Jaw
6MMHP	SC 2000023	Medium Height Soft Pointed Top Jaw
6MH1	SC 2000021	Hard Single Step Top Jaw
Model No.	**Part Number**	**Description (for Quick-Change Chuck)**
6MQP1	SC 2000741	Standard Height Soft Pointed Top Jaw

NOTE: Only jaws manufactured by Hardinge Inc. or jaws approved by Hardinge are to be used on Sure-Grip Power Chucks.



Periodic Safety Inspection—Every 6 Months or After an Accident or Collision

(This inspection should be done after the chuck has been removed from the lathe spindle)

NOTE: The parts for each jaw location (pin, lever, master jaw, t-nuts and top jaw) should be kept together for reassembly. If assembled into a different location the chuck will not be balanced and the strokes may not be within specifications.

- Loosen the bolts (4) and raise and slide the standard jaws with the T-nuts (2) from the slot in the master jaw.
  For Quick-Change Jaw - Loosen bolts (32) one full turn; Remove Quick-Change Top Jaw (33); Again loosen bolt (32) 1/2 turn; Slide I-beam assembly off (30) (31) (36) master jaw.
- Remove twelve socket-head cap screws (11) from the top plate.
- Remove the top plate (10). The chip shield (12) does not have to be removed.
- Remove the three master jaws (9).
- Remove three set screws (29) after recording the depth and location. Balance screws may be different lengths and depths and must be replaced in the same holes and to the same depth.
- Remove six set screws (1) which lock in pivot pin (5). Do not remove items (6).
- Remove Pivot Pin (5).
- Remove Lever/counterweight assembly (8) (18) (19).
- Remove Chuck Draw Bar (15). Do not disassemble item (16) Key.
  Check the draw bar, draw bar adapter and all chuck parts, including mounting bolts (4) (11) (14) (17) for hairline cracks, fissures, and excessive wear. Replace all damaged parts.
  WARNING: If the chuck body is damaged, the entire chuck assembly must be sent back to Hardinge for rebuilding.
- Clean all parts.
- Lubricate all moving parts with Chevron Ultra-Duty EP NLGI 2, Dow Corning BR-2-Plus, or Kluber ALTEMP Q NB 50 grease.
- Reassemble parts in the reverse order they were disassembled. Use Loctite #242 (22) on bolts (1)(11)(29).
- Use pressure gun with adapter (20) to grease pivot pin (5) with Chevron Ultra-Duty EP NLGI 2, Dow Corning BR-2-Plus, or Kluber ALTEMP Q NB 50 grease.
- Use pressure gun with adapter (20) to lightly grease master jaws (9) with Chevron Ultra-Duty EP NLGI 2, Dow Corning BR-2-Plus, or Kluber ALTEMP Q NB 50 grease. Move jaws through their full stroke several times.
- After mounting chuck to machine tool, again grease the master jaws, then move the jaws through their full stroke under power. Grease the jaws again and cycle under power. This process makes certain all surfaces are lubricated properly.

Parts List: 6" Chuck Assembly for Hardinge® Lathes—A2-6 Spindle 1.5mm x 60°

Model No.	Part Number	Description
HM-306-6	SCA 2000306A26H	Standard Chuck for Hardinge QUEST® TwinTurn® 65
HM-306-6Q	SC 2070306A26H	Quick-Change Chuck for Hardinge Hardinge QUEST® TwinTurn® 65
HM-306-6L	SCA 2000306A26L	Standard Chuck for Hardinge T42BB & T51, COBRA® 51, QUEST® & ELITE® 8/51 and RS 51
HM-306-6LQ	SC 2070306A26L	Quick-Change Chuck for Hardinge T42BB & T51, COBRA® 51, QUEST® & ELITE® 8/51 and RS 51
HM-306-6	SCA 2000306 A6SR	Standard Chuck for Hardinge SR 150
HM-306-SRQ	SC 2700306 A6SR	Quick-Change Chuck for Hardinge SR 150

Item	Qty	Part Number	Description
1	6	MS 0573614	Socket Set Screw-Flat [M6 x 1x 8mm] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
2	3	SCA 0000500	"T" Nut - for Metric Serrations - .787" spacing for Hard & Soft Jaws - Must Use Hardinge "T" Nuts
3	3	SC 2000016	Soft Top Jaw
4	6	MS 0104019	Socket Head Cap Screw [M10x1.5x25mm] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
5	3	SC 0000010	Pin
6	6	CE 0001851	Fitting, Alemite No. 1851
7	1	replacement N/A	Chuck Body (Send entire chuck assembly to Hardinge if chuck body is damaged)
8	3	SC 0000008	Lever
9	3	SCA 0000502	Master Jaws with Metric Serrations
10	1	SCA 0000503	Top Plate
11	12	MS 0103817	Socket Head Cap Screw [M8-1.2x16mm](DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
12	3	SC 0000005	Chip Shield
12A	1	SC 2000031 S	6" Master Jaw / Chip Shield Kit (A2-6)
13	6	R 0008044	Escutcheon Pin
14	3	MS 0104231	Socket Head Cap Screw [M12-1.75x90mm] SHCS
16	1	SCA 0000003	Key
18	3	SC 0000302	Counter Weight
19	3	0100312	Socket Head Cap Screw [#10-32 x 3/4"] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
20	1	CE 0000737	Nozzle, Alemite No. Z-737
21	0	CE 0000002	Grease—Chevron Ultra-Duty EP NLGI 2 (Dow Corning BR-2 Plus, or Kluber ALTEMP Q NB 50 avail.)
22	0	NC 0010884	Loctite #242
23	1	B 0009500 0087	Safety and Technical Manual
29	3	MS 0554017 SS	Balancing Set Screw [M10x1.5x16mm] Length of screws may vary
31	1	SCA 0000510	Chuck Draw Bar (CONQUEST® T42BB & T51, Cobra® 51, QUEST® & Elite® 8/51, RS 51)
31A	1	SCA 0000504	Chuck Draw Bar (QUEST® TwinTurn 65)
31B	1	SCA 0000510-SR	Chuck Draw Bar (SR 150)
Kit	**1**	**SC 2000746QC**	**Quick-Change Kit** includes all parts listed below:
33	3	SC 0000742	T-Nut
34	3	SC 0000745	I-Beam
35	3	SC 0000743	Screw
36	3	SC 2000746	Top Jaw
37	3	SC 0000725	Boring Pin
38	1	SC 0000744	Boring Ring
39	3	CE 0000004AN	Spring Plunger
41	3	TL 0006615	Dowel Pin

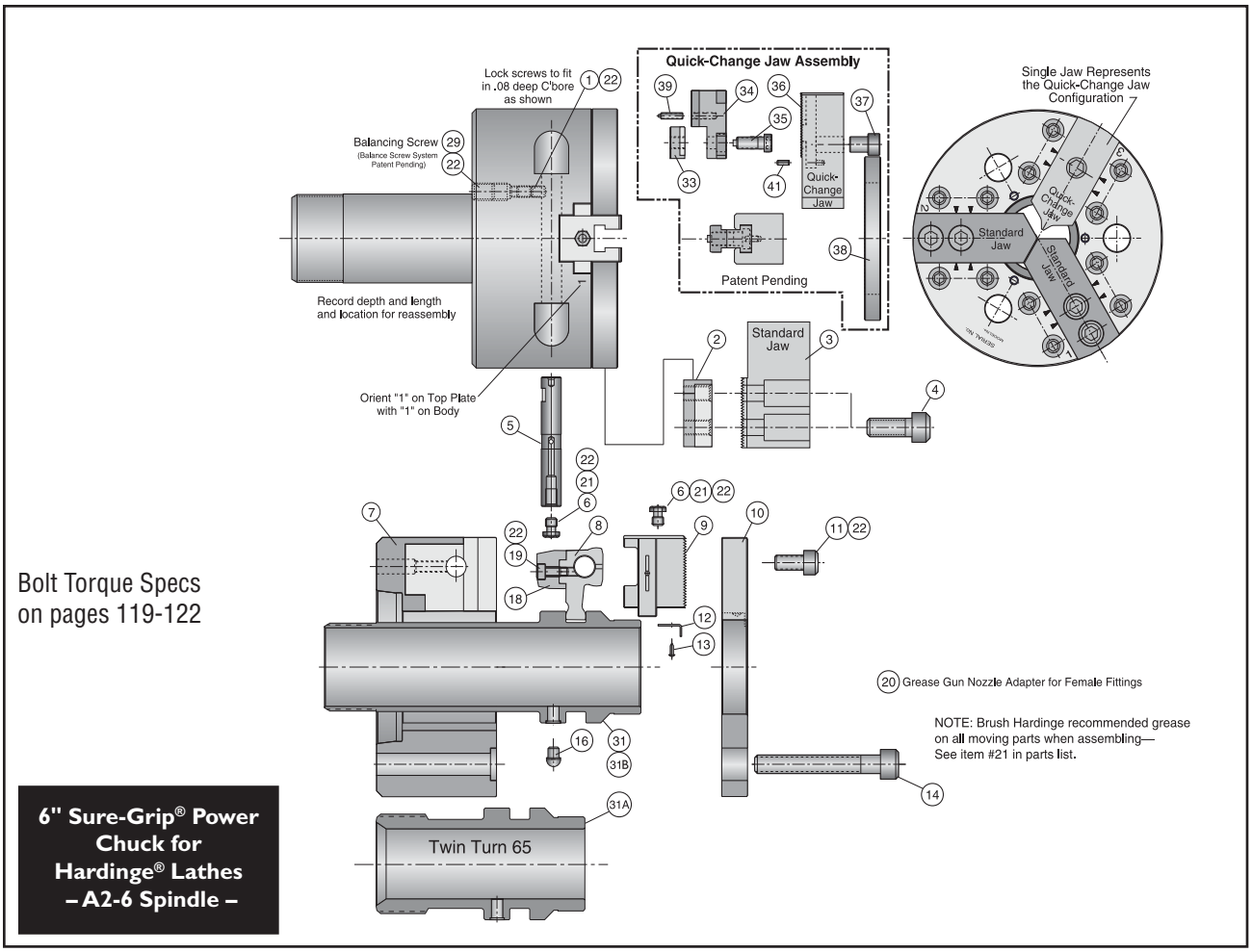
Quick-Change Parts

WARNING: You must use Hardinge T-nuts. (Ignoring this warning may result in machine and/or personal injury)

Top Jaws for Hardinge Sure-Grip Chucks—1.5mm x 60° Metric Serrations

Model No.	Part Number	Description (for Standard Chuck)
6MSHF	SC 2000019	Standard Height Soft Flat Top Jaw
6MMHF	SC 2000020	Medium Height Soft Flat Top Jaw
6MSHP	SC 2000016	Standard Height Soft Pointed Top Jaw
6MMHP	SC 2000023	Medium Height Soft Pointed Top Jaw
6MH1	SC 2000021	Hard Single Step Top Jaw
Model No.	**Part Number**	**Description (for Quick-Change Chuck)**
6MQP3	SC 2000746	Standard Height Soft Pointed Top Jaw

NOTE: Only jaws manufactured by Hardinge Inc. or jaws approved by Hardinge are to be used on Sure-Grip Power Chucks.



Periodic Safety Inspection—Every 6 Months or After an Accident or Collision
(This inspection should be done after the chuck has been removed from the lathe spindle)

NOTE: The parts for each jaw location (pin, lever, master jaw, t-nuts and top jaw) should be kept together for reassembly. If assembled into a different location the chuck will not be balanced and the strokes may not be within specifications.

- Loosen the bolts (4) and raise and slide the standard jaws with the T-nuts (2) from the slot in the master jaw.
  Quick-Change Jaw - Loosen bolts (35) one full turn; Remove Quick-Change Top Jaw (36); Again loosen bolt (35) 1/2 turn; Slide I-beam assembly off (33) (34) (39) master jaw.
- Remove twelve socket-head cap screws (11) from the top plate.
- Remove the top plate (10). The chip shield (12) does not have to be removed.
- Remove the three master jaws (9).
- Remove three set screws (29) after recording the depth and location. Balance screws may be different lengths and depths and must be replaced in the same holes and to the same depth.
- Remove six set screws (1) which lock in pivot pin (5). Do not remove items (6).
- Remove Pivot Pin (5).
- Remove Lever/counterweight assembly (8) (18) (19).
- Remove Chuck Draw Bar assembly (31) (31-A). Do not disassemble item (16) Key.
  Check the draw bar, draw bar adapter and all chuck parts, including mounting bolts (4) (11) (14) (17) for hairline cracks, fissures, and excessive wear. Replace all damaged parts.
  WARNING: If the chuck body is damaged, the entire chuck assembly must be sent back to Hardinge for rebuilding.
- Clean all parts.
- Lubricate all moving parts with Chevron Ultra-Duty EP NLGI 2, Dow Corning BR-2-Plus, or Kluber ALTEMP Q NB 50 grease.
- Reassemble parts in the reverse order they were disassembled. Use Loctite #242 (22) on bolts (1)(11)(29).
- Use pressure gun with adapter (20) to grease pivot pin (5) with Chevron Ultra-Duty EP NLGI 2, Dow Corning BR-2-Plus, or Kluber ALTEMP Q NB 50 grease.
- Use pressure gun with adapter (20) to lightly grease master jaws (9) with Chevron Ultra-Duty EP NLGI 2, Dow Corning BR-2-Plus, or Kluber ALTEMP Q NB 50 grease. Move jaws through their full stroke several times.
- After mounting chuck to machine tool, again grease the master jaws, then move the jaws through their full stroke under power. Grease the jaws again and cycle under power. This process makes certain all surfaces are lubricated properly.

Parts List: 6" Chuck Assembly for Hardinge®-EMAG VL3 Lathes–A2-5 Spindle

Assemblies for Hardinge EMAG VL3:

Model No.	Part Number	Description
CM2-306-5E	SCA 2300306 A25E	Standard Chuck – 1.5mm x 60° Master Jaw Serrations
CM2-306E-5Q	SCA 2370306 A25E	Quick-Change Chuck – 1.5mm x 60° Master Jaw Serrations

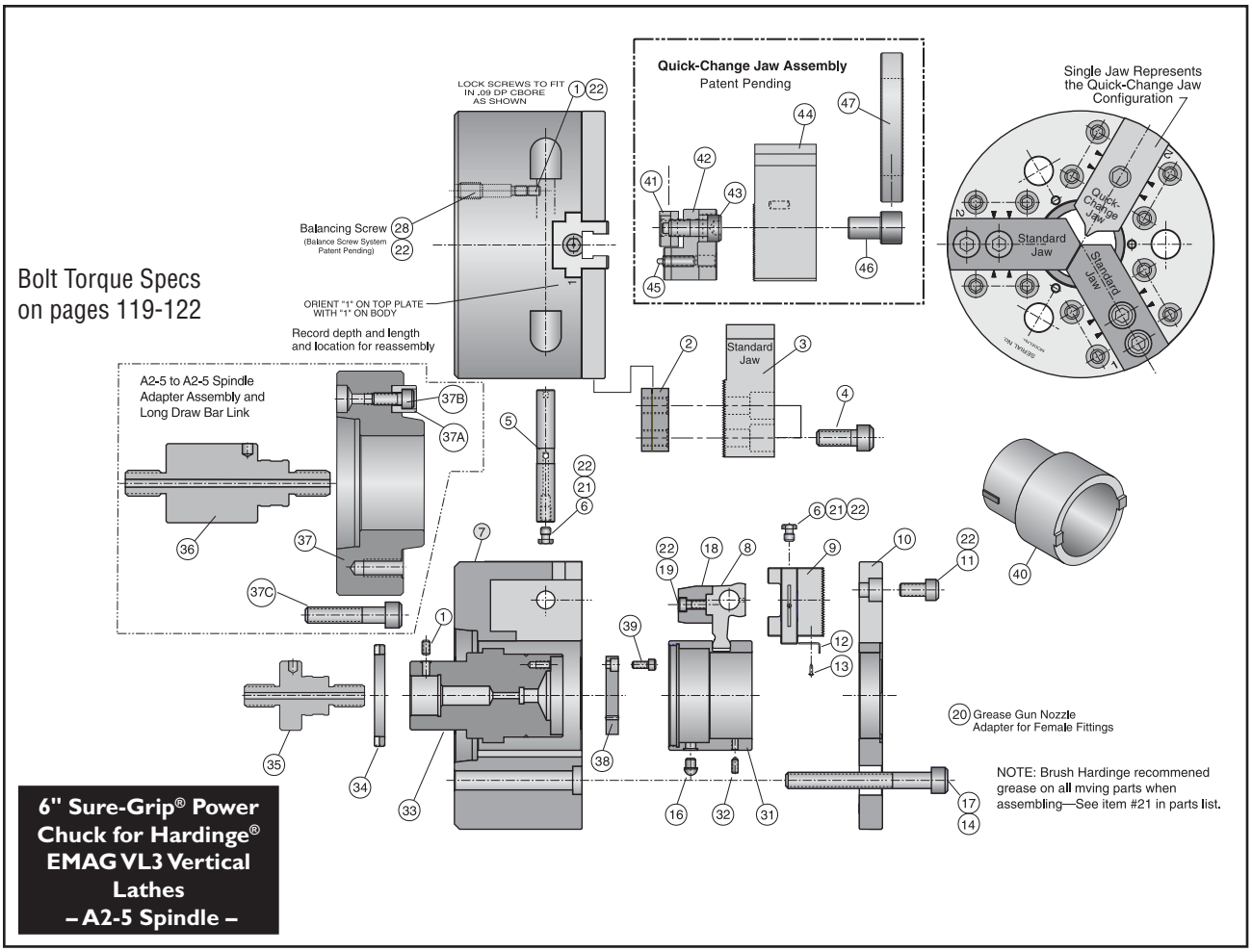
Parts List:

Item	Qty	Part Number	Description	
1	7	MS 0573614	Socket Set Screw-Flat [M6 x 1x 8mm] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)	
2	3	SC 0000015	"T" Nut - for Metric Serrations - .787" spacing for Hard & Soft Jaws - Must Use Hardinge "T" Nuts	
3	3	SC 2000016	Soft Top Jaw	
4	6	MS 0104019	Socket Head Cap Screw [M10x1.5x25mm] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)	
5	3	SC 0000010	Pin	
6	6	CE 0001851	Fitting, Alemite No. 1851	
7	1	replacement N/A	Chuck Body (Send entire chuck assembly to Hardinge if chuck body is damaged)	
8	3	SC 0000008	Lever	
9	3	SCB 0000014	Master Jaw with Metric Serrations	
Kit	1	SCB 2000014 S	Three Master Jaws (9), Shields (12), Escutcheon Pins (13)	
10	1	SC 0000306	Top Plate	
11	12	MS 0103817	Socket Head Cap Screw [M8-1.2x16mm] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)	
12	3	SC 0000005	Chip Shield	
13	6	R 0008044	Escutcheon Pin	
14	3	MS 0104031	Socket Head Cap Screw [M10-1.5x90mm] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)	
16	1	SCA 0000003	Key	
17	3	0101250	Socket Head Cap Screw [7/16"-14 x 3-1/2"] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)	
18	3	SC 0000302	Counter Weight	
19	3	0100312	Socket Head Cap Screw [#10-32 x 3/4"] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)	
20	1	CE 0000737	Nozzle, Alemite No. Z-737	
21	0	CE 0000002	Grease—Chevron Ultra-Duty EP NLGI 2 (Dow Corning BR-2 Plus or Kluber ALTEMP Q NB 50 avail.)	
22	0	NC 0010884	Loctite #242	
23	1	B 0009500 0087	Safety and Technical Manual	
28	3	MS 0554017 SS	Balancing Set Screw [M10x1.5x16mm] Length of screws may vary	
29	1	4550 00 91 890000	Erickson Style Wrench for Installing Link	
31	1	SC 0000338	Chuck Draw Bar (Draw Head)	
32	1	CE 0833437	Stubby Plunger	
33	1	SC 0000590	Draw Bar Link	
34	1	SC 0000340	Nut	
35	1	SC 0000586	Short Draw Bar Link Adapter	
36	1	SC 0000589	Long Draw Bar Adapter	
37	1	SC 0000588	A2-5 to A2-5 Spindle Adapter	
37A	1	A2 0011920	Drive Button	
37B	1	A2 0011920 S	Drive Button Screw	
37C	3	MS 0104024	Mounting bolt M10-1.5 x45mm	
38	1	SC 0000587	Cover Plate	
39	3	MS 0103516	Cap Screw - M5x.8x12mm long	
40	1	MC 0000591	Tool for VL3 EMAG	
Kit	**1**	**SC 2000747QC**	**Quick-Change Kit** includes all parts listed below	Quick-Change Parts
41	3	SC 0000742	T-Nut	
42	3	SC 0000740	I-Beam	
43	3	SC 0000743	Screw	
44	3	SC 2000747	Top Jaw	
45	3	SC 0000725	Boring Pin	
46	1	SC 0000744	Boring Ring	
47	3	CE 0000004AN	Spring Plunger	

Top Jaws for Hardinge Sure-Grip Chucks—1.5mm x 60° Metric Serrations

Model No.	Part Number	Description (for Standard Chucks)
6MSHF	SC 2000019	Standard Height Soft Flat Top Jaw
6MMHF	SC 2000020	Medium Height Soft Flat Top Jaw
6MSHP	SC 2000016	Standard Height Soft Pointed Top Jaw
6MMHP	SC 2000023	Medium Height Soft Pointed Top Jaw
6MH1	SC 2000021	Hard Single Step Top Jaw
Model No.	**Part Number**	**Description (for Quick-Change Chucks)**
6MQP2	SC 2000747	Standard Height Soft Pointed Top Jaw

WARNING: You must use Hardinge T-nuts. (Ignoring this warning may result in machine and/or personal injury)



Periodic Safety Inspection—Every 6 Months or After an Accident or Collision

(This inspection should be done after the chuck has been removed from the lathe spindle)

NOTE: The parts for each jaw location (pin, lever, master jaw, t-nuts and top jaw) should be kept together for reassembly. If assembled into a different location the chuck will not be balanced and the strokes may not be within specifications.

- Loosen the bolts (4) and raise and slide the standard jaws with the T-nuts (2) from the slot in the master jaw.
  Quick-Change Jaw - Loosen bolts (43) one full turn; Remove Quick-Change Top Jaw (44); Again loosen bolt (43) 1/2 turn. Slide I-beam assembly off (41) (42) (43) (45) master jaw.
- Remove twelve socket-head cap screws (11) from the top plate.
- Remove the top plate (10). The chip shield (12) does not have to be removed.
- Remove the three master jaws (9).
- Remove three set screws (28) after recording the depth and location. Balance screws may be different lengths and depths and must be replaced in the same holes and to the same depth.
- Remove six set screws (1) which lock in pivot pin (5). Do not remove items (6).
- Remove Pivot Pin (5).
- Remove Lever/counterweight assembly (8) (18) (19).
- Remove Chuck Draw Bar assembly (31) (33) (34) (35) (38). Disassembly not required.
  Check the draw bar, draw bar adapter and all chuck parts, including mounting bolts (4) (11) (14) (17) (37C) for hairline cracks, fissures, and excessive wear. Replace all damaged parts.
  WARNING: If the chuck body is damaged, the entire chuck assembly must be sent back to Hardinge for rebuilding.
- Clean all parts.
- Lubricate all moving parts with Chevron Ultra-Duty EP NLGI 2, Dow Corning BR-2-Plus, or Kluber ALTEMP Q NB 50 grease.
- Reassemble parts in the reverse order they were disassembled. Use Loctite #242 (22) on bolts (1)(11)(28).
- Use pressure gun with adapter (20) to grease pivot pin (5) with Chevron Ultra-Duty EP NLGI 2, Dow Corning BR-2-Plus, or Kluber ALTEMP Q NB 50 grease.
- Use pressure gun with adapter (20) to lightly grease master jaws (9) with Chevron Ultra-Duty EP NLGI 2, Dow Corning BR-2-Plus, or Kluber ALTEMP Q NB 50 grease. Move jaws through their full stroke several times.
- After mounting chuck to machine tool, again grease the master jaws, then move the jaws through their full stroke under power. Grease the jaws again and cycle under power. This process makes certain all surfaces are lubricated properly.

Parts List: 6" Chuck Assembly for Hardinge and Other Brand CNC Lathes—A2-5 Spindle

Assemblies for Hardinge Talent 6/45, SV 150 and GS 150 and Other Brands of CNC Lathes:

Model No.	Part Number	Description
CM2-306C-5	SCA 2300306 A25C	Standard Chuck – 1.5mm x 60° Master Jaw Serrations (Other brands)
CM2-306C-5Q	SC 2370306 A25C	Quick-Change Chuck – 1.5mm x 60° Master Jaw Serrations (Other brands)
HM-306-5T	SC 2300306 A25T	Standard Chuck for Hardinge Talent 6/45, SV 150 and GS 150 CNC Lathes
HM2-306-5TQ	SC 2370306 A25T	Quick-Change Chuck for Hardinge Talent 6/45, SV 150 and GS 150 CNC Lathes

Parts List:

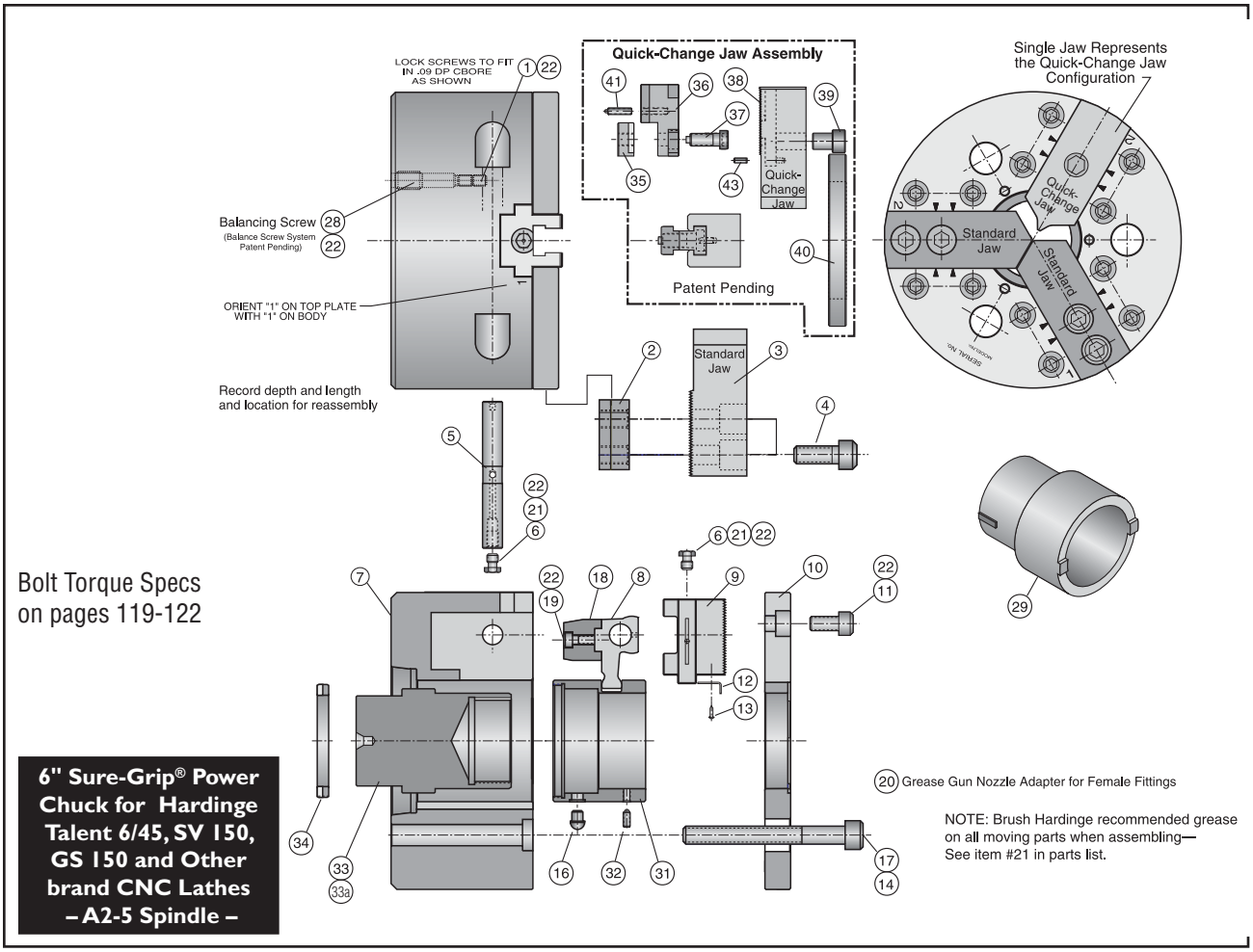
Item	Qty	Part Number	Description
1	6	MS 0573614	Socket Set Screw-Flat [M6 x 1x 8mm] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
2	3	SC 0000015	"T" Nut - for Metric Serrations - .787" spacing for Hard & Soft Jaws - Must Use Hardinge "T" Nuts
3	3	SC 2000016	Soft Top Jaw
4	6	MS 0104019	Socket Head Cap Screw [M10x1.5x25mm] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
5	3	SC 0000010	Pin
6	6	CE 0001851	Fitting, Alemite No. 1851
7	1	replacement N/A	Chuck Body (Send entire chuck assembly to Hardinge if chuck body is damaged)
8	3	SC 0000008	Lever
9	3	SCB 0000014	Master Jaw with Metric Serrations
Kit	1	SCB 2000014 S	Three Master Jaws (9), Shields (12), Escutcheon Pins (13)
10	1	SC 0000306	Top Plate
11	12	MS 0103817	Socket Head Cap Screw [M8-1.2x16mm] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
12	3	SC 0000005	Chip Shield
13	6	R 0008044	Escutcheon Pin
14	3	MS 0104031	Socket Head Cap Screw [M10-1.5x90mm] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
16	1	SCA 0000003	Key
17	3	0101250	Socket Head Cap Screw [7/16"-14 x 3-1/2"] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
18	3	SC 0000302	Counter Weight
19	3	0100312	Socket Head Cap Screw [#10-32 x 3/4"] (DIN912 12.9, ISO 4762, or ANS B 18.3.1M specs)
20	1	CE 0000737	Nozzle, Alemite No. Z-737
21	0	CE 0000002	Grease—Chevron Ultra-Duty EP NLGI 2 (Dow Corning BR-2 Plus or Kluber ALTEMP Q NB 50 avail.)
22	0	NC 0010884	Loctite #242
23	1	B 0009500 0087	Safety and Technical Manual
28	3	MS 0554017 SS	Balancing Set Screw [M10x1.5x16mm] Length of screws may vary
29	1	SC 0000341	Special Wrench for Installing Link
31	1	SC 0000338	Chuck Draw Bar (Draw Head)
32	1	CE 0833437	Stubby Plunger
33	1	SC 0000339	Draw Bar Link for other brand lathes
33a	1	SC 0000606	Draw Bar Link for Hardinge (Talent 6/45, SV 150, GS 150)
34	1	SC 0000340	Nut
Kit	**1**	**SC 2000747QC**	**Quick-Change Kit** includes all parts listed below:
35	3	SC 0000742	T-Nut
36	3	SC 0000740	I-Beam
37	3	SC 0000743	Screw
38	3	SC 2000747	Top Jaw
39	3	SC 0000725	Boring Pin
40	1	SC 0000744	Boring Ring
41	3	CE 0000004AN	Spring Plunger
43	3	TL 0006615	Dowel Pin

Quick-Change Parts

Top Jaws for Hardinge Sure-Grip Chucks—1.5mm x 60° Metric Serrations

Model No.	Part Number	Description (for Standard Chucks)
6MSHF	SC 2000019	Standard Height Soft Flat Top Jaw
6MMHF	SC 2000020	Medium Height Soft Flat Top Jaw
6MSHP	SC 2000016	Standard Height Soft Pointed Top Jaw
6MMHP	SC 2000023	Medium Height Soft Pointed Top Jaw
6MH1	SC 2000021	Hard Single Step Top Jaw
Model No.	**Part Number**	**Description (for Quick-Change Chucks)**
6MQP3	SC 2000747	Standard Height Soft Pointed Top Jaw

WARNING: You must use Hardinge T-nuts. (Ignoring this warning may result in machine and/or personal injury)



Periodic Safety Inspection—Every 6 Months or After an Accident or Collision
(This inspection should be done after the chuck has been removed from the lathe spindle)

NOTE: The parts for each jaw location (pin, lever, master jaw, t-nuts and top jaw) should be kept together for reassembly. If assembled into a different location the chuck will not be balanced and the strokes may not be within specifications.

- Loosen the bolts (4) and raise and slide the standard jaws with the T-nuts (2) from the slot in the master jaw.
  Quick-Change Jaw - Loosen bolts (37) one full turn; Remove Quick-Change Top Jaw (38); Again loosen bolt (37) ½ turn; Slide I-beam assembly off (35) (36) (41) master jaw.
- Remove twelve socket-head cap screws (11) from the top plate.
- Remove the top plate (10). The chip shield (12) does not have to be removed.
- Remove the three master jaws (9).
- Remove three set screws (28) after recording the depth and location. Balance screws may be different lengths and depths and must be replaced in the same holes and to the same depth.
- Remove six set screws (1) which lock in pivot pin (5). Do not remove items (6).
- Remove Pivot Pin (5).
- Remove Lever/counterweight assembly (8) (18) (19).
- Remove Chuck Draw Bar (31). Do not disassemble item (32) (33) (34) (16) Key.
  Check the draw bar, draw bar adapter and all chuck parts, including mounting bolts (4) (11) (14) (17) for hairline cracks, fissures, and excessive wear. Replace all damaged parts.
  WARNING: If the chuck body is damaged, the entire chuck assembly must be sent back to Hardinge for rebuilding.
- Clean all parts.
- Lubricate all moving parts with Chevron Ultra-Duty EP NLGI 2, Dow Corning BR-2-Plus, or Kluber ALTEMP Q NB 50 grease.
- Reassemble parts in the reverse order they were disassembled. Use Loctite #242 (22) on bolts (1)(11)(28).
- Use pressure gun with adapter (20) to grease pivot pin (5) with Chevron Ultra-Duty EP NLGI 2, Dow Corning BR-2-Plus, or Kluber ALTEMP Q NB 50 grease.
- Use pressure gun with adapter (20) to lightly grease master jaws (9) with Chevron Ultra-Duty EP NLGI 2, Dow Corning BR-2-Plus, or Kluber ALTEMP Q NB 50 grease. Move jaws through their full stroke several times.
- After mounting chuck to machine tool, again grease the master jaws, then move the jaws through their full stroke under power. Grease the jaws again and cycle under power. This process makes certain all surfaces are lubricated properly.

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