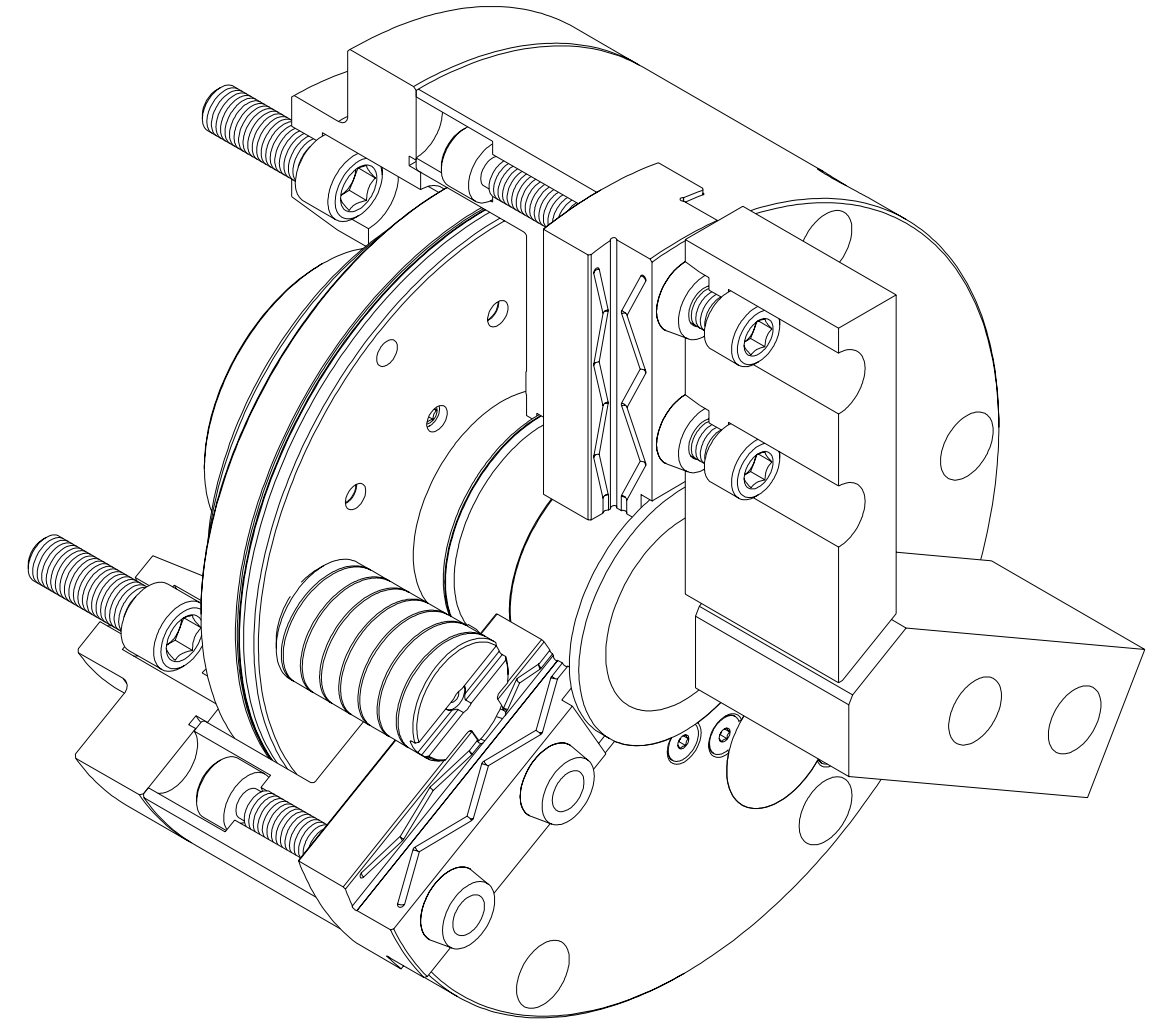
MicroCentric

Technical Documentation for PPC Precision Power Chucks



www.microcentric.com

MicroCentric

TABLE OF CONTENTS

1.0 CONTACT & SERVICE INFORMATION

Manufactured by:
MicroCentric Corp.
Plainview, NY USA

Service in North America:
MicroCentric Corp.
25 Terminal Drive
Plainview, NY 11803 USA
Tel: 1-800-573-1139 (toll free)
1-516-349-7220
Fax: 1-516-349-9354
E-mail: service@microcentric.com

Service in Europe:
MicroCentric GmbH
Berblingerstr, 16
71254 Ditzingen
Germany
Tel: 49-715-6178190
Fax: 49-715-61781921
E-mail: info@microcentric.de

Service in Asia:
Dynamic Tools Corp.
7-4-6 Seikadai, Seika-cho
Sorakugun
Kyoto, Japan 6190238
Tel: 81-774-98-0518
Fax: 81-774-98-0558
E-mail: dynex@earth.email.ne.jp

2.0 INTRODUCTION

The ultimate High Precision Power Chuck, PPC Series chucks offer unmatched accuracy and long term performance. Their advanced design, high quality hardened alloy steels, and MicroCentric's renowned precision manufacturing capability result in a chuck of unmatched quality.

The information contained in this manual, if properly followed, will enable you to obtain the best possible accuracy and long term performance from your PPC chuck. Please keep this manual handy for easy reference to take full advantage of the chuck's capabilities.

Safety Alert Symbol

This is the industry "Safety Alert Symbol". This symbol is used to call your attention to items or operations that could be dangerous to you or persons using this equipment. Please read these messages and follow these instructions carefully.
It is essential that you read the instructions and safety regulations before you attempt to assemble or use this unit.

DANGER

Indicates an imminent hazardous condition which, if not avoided, could result in serious injury or death.

WARNING

Indicates a potentially hazardous condition which, if not avoided, could result in serious injury or death.

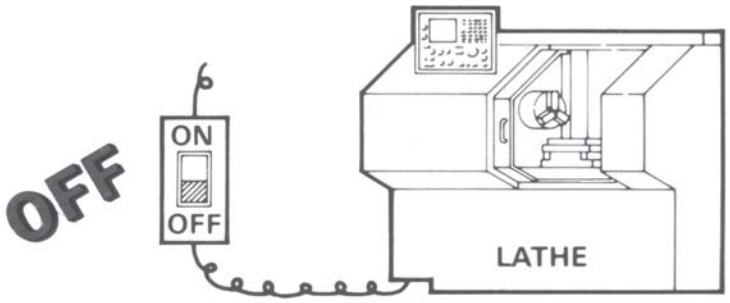
CAUTION

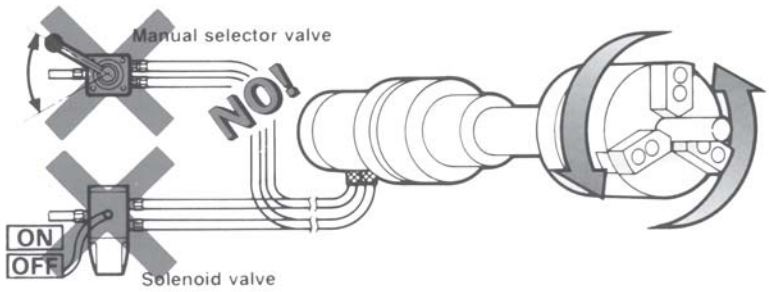
Indicates a potentially hazardous condition which, if not avoided, could result in minor or moderate injury.

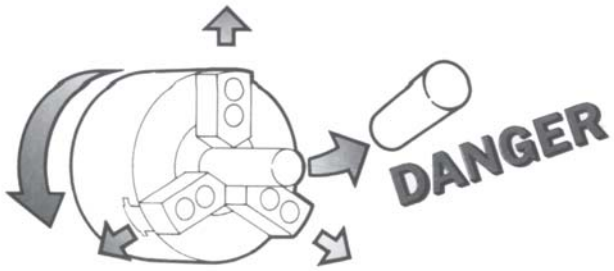
IMPORTANT

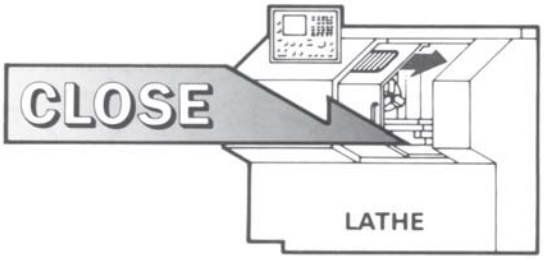
Instructions for optimum chuck performance and avoiding errors or misuse of chuck.

3.0 PRECAUTIONS FOR SAFE OPERATION

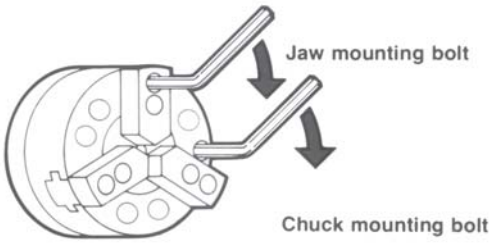
⚠ DANGER	**Switch off power to the machine before installing or changing the chuck.**
The machine spindle may inadvertantly be switched on and the turret indexed or jogged, potentially causing serious injury to the operator.	

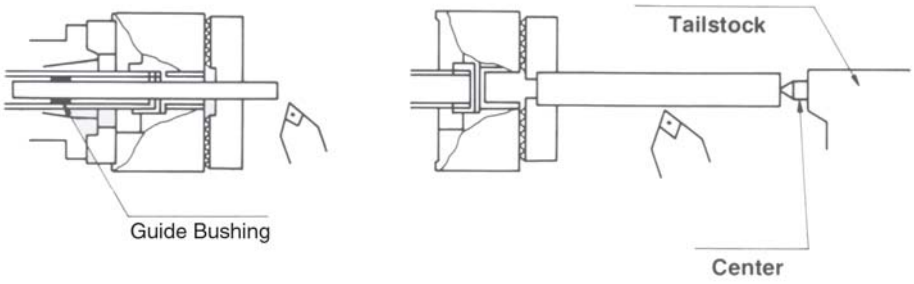
⚠ DANGER	**Do not operate the control valve (foot pedal) or solenoid valve during spindle rotation.**
The workpiece will be thrown from the chuck, potentially causing serious injury to the operator.	

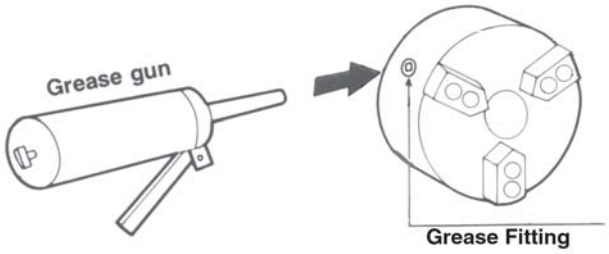
⚠ DANGER	**Do not exceed the maximum recommended speed of the chuck for a given input pressure (draw tube force).**
The workpiece can be thrown from the chuck due to inadequate gripping force as a result of centrifugal force.	

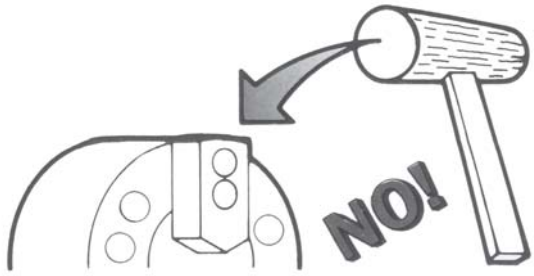
⚠ WARNING	**Do not start the machine with the door open.**
The operator could be injured by cutting chips or other flying debris.	

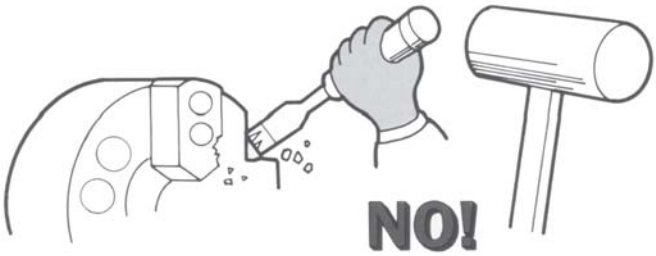
⚠ WARNING	**Do not exceed the maximum recommended input force (draw tube force) for a specific chuck model.**
The workpiece can be thrown from the chuck as a result of damage to the chuck's actuating mechanism.	

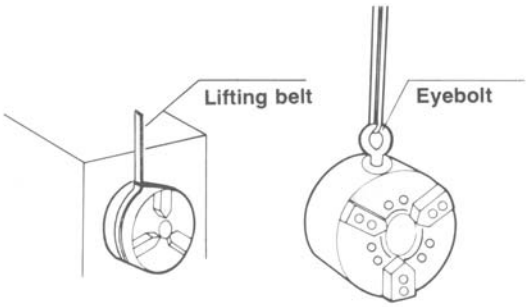
⚠ WARNING	**Make certain the mounting bolts are securely tightened to the recommended torque values.**
The chuck could become loose during operation, causing damage to the chuck and potentially throwing the workpiece from the chuck.	

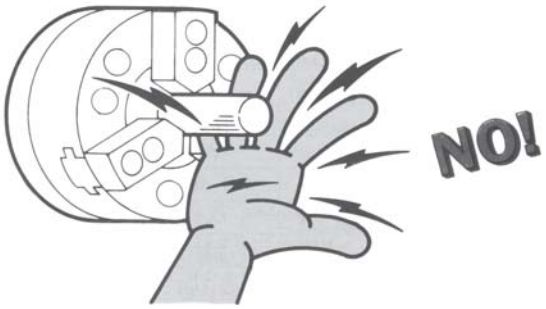
⚠ WARNING	**Long workpieces should be supported by a live center in the tail stock or by a steady rest.**
The workpiece can be thrown from the chuck if it is too long and not properly supported.	

⚠ WARNING	**Remember to lubricate the chuck at regular intervals as specified in this manual (see to page 23).**
The workpiece can be thrown from the chuck due to a loss of gripping force caused by insufficient lubrication.	

⚠ CAUTION	**Never hit the outside of the chuck, the top jaws, or workpiece with a hammer**
The workpiece can be thrown from the chuck if the chuck is damaged.	

⚠ WARNING	**Do not attempt to modify the chuck.**
The workpiece can be thrown from the chuck due to damage which may be caused to the chuck.	

⚠ CAUTION	**Always lift the chuck by using an eyebolt or lifting belt.**
The chuck can be damaged and the operator injured if the chuck is dropped.	

⚠ CAUTION	**Always make sure to keep your hands and fingers clear of the top jaws and workpiece as the chuck is clamped.**
The operator can be seriously injured if a finger or hand is clamped between the top jaw and workpiece.	

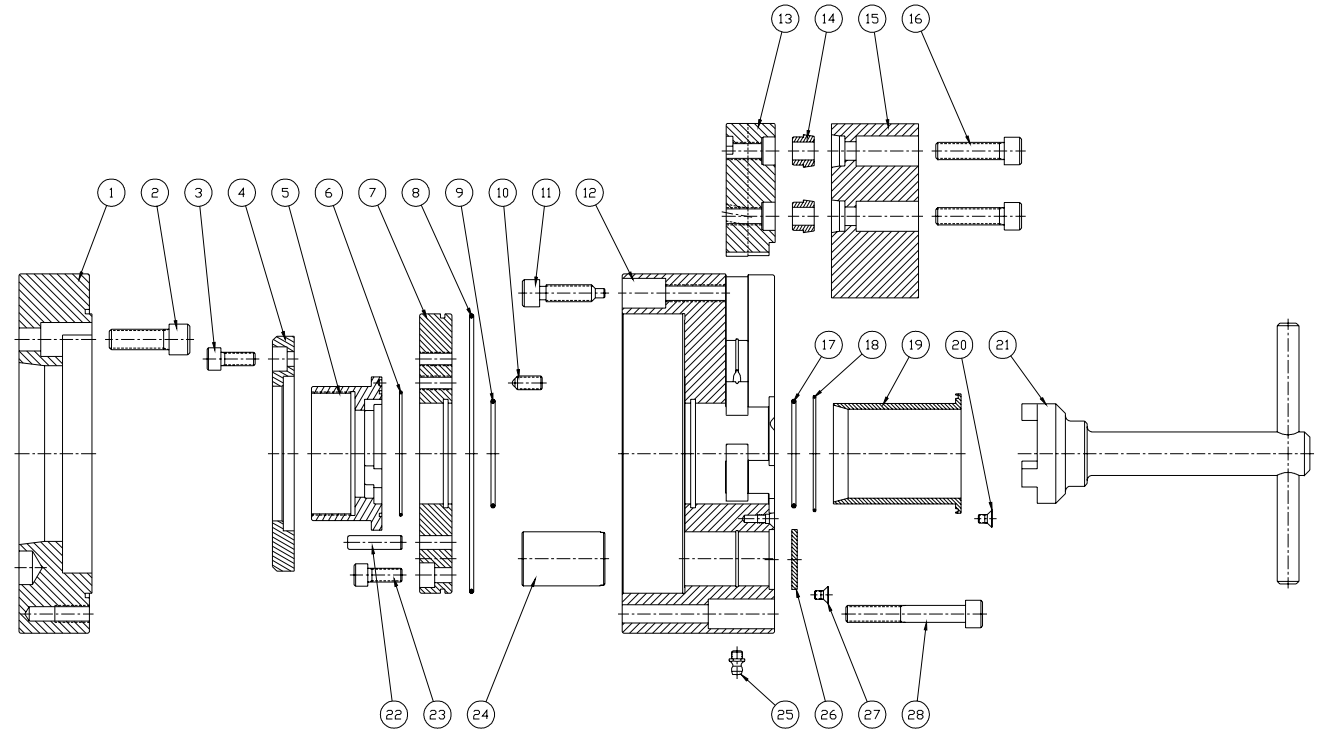
⚠ WARNING	**Never attempt to operate a machine tool while under the influence of drugs or alcohol.**
Damage to the machine, tooling, and chuck, or serious injury to the operator could result.	

⚠ WARNING	**Never wear gloves, loose clothing, or ties while operating a machine tool.**
Gloves, loose clothing and ties can become caught in the chuck, causing serious injury to the operator as the spindle is rotated.	

4.0 RECOMMENDED TIGHTENING TORQUE FOR MOUNTING SCREWS

Bolt Size	Tightening Torque		Bolt Size	Tightening Torque	
M5	10 N-m	7.4 lb-ft	M12	145 N-m	107.3 lb-ft
M6	18 N-m	13.3 lb-ft	M14	235 N-m	174.0 lb-ft
M8	43 N-m	31.8 lb-ft	M16	365 N-m	270.0 lb-ft
M10	84 N-m	62.0 lb-ft	M20	710 N-m	525.0 lb-ft

5.0 ASSEMBLY DRAWING AND PARTS LIST



Item No.	Qty	Description
1	1	Mounting Plate
2	6	Socket Head Cap Screw
3	6	Socket Head Cap Screw
4	1	Retaining Plate*
5	1	Draw Tube Connector
6	1	O-Ring
7	1	Actuating Plate
8	1	O-Ring
9	1	O-Ring
10	4	Plunger Screw
11	3	Safety Screw
12	1	Chuck Body
13	3	Base Jaw
14	6	Locating Button / Dowel Pin

Item No.	Qty	Description
15	3	Top Jaw
16	6	Socket Head Cap Screw
17	1	O-Ring
18	1	O-Ring
19	1	Center Sleeve
20	3	Flat Head Cap Screw
21	1	Draw Tube Connector Wrench*
22	6	Dowel Pin
23	6	Socket Head Cap Screw
24	3	Actuator
25	6	Grease Fittings
26	3	Cover Disks
27	6	Flat head Cap Screw
28	6	Socket head Cap Screws

* Used with PPC210, PPC250, and PPC300 models only.

6.0 MAXIMUM CLAMPING FORCE AND SPINDLE SPEED

6.1 MAX. STATIC CLAMPING FORCE

The static clamping force developed by PPC chucks will vary depending on several variables, including the state of lubrication of the chuck, the type of grease used, the height of the top jaws, among other factors. MicroCentric's standard specifications for PPC chucks are based on the following conditions:

1. A standard height top jaw is used.
2. Jaw force is measured at the mid point (in height) of a standard jaw blank, at mid stroke with a jaw force gage.
3. MicroCentric's recommended grease is used to obtain maximum efficiency of the chuck (see page 20).
4. The mounting bolts on the top jaws are tightened to the specified torque.
5. The maximum recommended draw tube force is applied to the chuck.

6.2 MAX. RECOMMENDED SPEED

The maximum recommended speed for PPC chucks is defined as the speed at which the measured clamping force during rotation is reduced by 1/2 of the static value. Dynamic clamping force is measured under the following conditions:

1. A standard height top jaw is used.
2. Jaw force is measured at the mid point (in height) of a standard jaw blank, at mid stroke with a dynamic jaw force gage.
3. The chuck is sufficiently lubricated with MicroCentric's recommended grease to obtain maximum efficiency of the chuck (see page 20).
4. The mounting bolts on the top jaws are tightened to the specified torque.
5. The maximum recommended draw tube force is applied to the chuck.

⚠ CAUTION

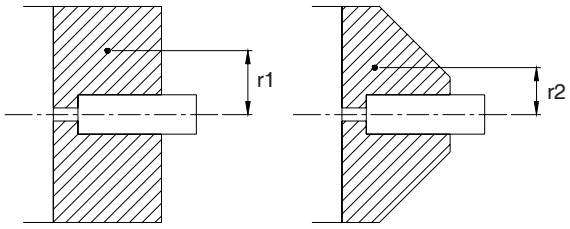
When using top jaws which are taller and more massive than the standard jaw, a greater amount of clamping force will be lost due to centrifugal force which acts on the top jaw. The maximum recommended speed under these conditions will be less than the value for the standard top jaws.

6.3 EFFECTS OF CENTRIFUGAL FORCE

Centrifugal force acts on the chuck jaws during rotation. It is important to always reduce the weight of the top jaw as much as possible for each application to minimize the effects of centrifugal force, and consequently, the loss of clamping force during rotation. It is especially important to reduce the weight of the jaw at the outermost radius.

IMPORTANT

Always reduce the weight of the top jaw as much as possible to minimize the clamping force loss as the chuck rotates.



Standard Top Jaws

Top Jaws With Excess Weight Removed

7.0 MOUNTING OF CHUCK

PPC chucks are supplied with a mounting plate and threaded draw tube connector to suit the machine configuration specified when the chuck was ordered. Refer to the chuck assembly drawing (on page 3) to familiarize yourself with the chuck's components before mounting the chuck.

7.1 MOUNTING ADAPTER PLATE

1. Make certain that the spindle and mounting plate are clean and free of nicks, burrs, or foreign materials which would prevent the proper seating of the adapter plate.
2. Mount the adapter plate to the machine spindle. On machines with tapered spindle noses, tighten the mounting bolts alternately and equally to the recommended torque value at this point. Do not fully tighten the mounting bolts on flat spindle noses at this time, but proceed to Step 3.
3. Use a dial indicator to measure the radial and lateral runout of the mounting surfaces of the adapter plate. Radial runout should not exceed .0002" (0.010mm). Lateral (face) runout should not exceed .0001" (0.005mm). On flat spindle noses, the radial runout can be adjusted to within this value before fully tightening the mounting bolts. On tapered spindle noses no adjustment is possible. If the runout exceeds these values, remove the adapter from the spindle nose and verify that the adapter plate is seating properly and is clean and free of nicks and burrs. A skim cut can be taken on the pilot diameter and mounting face of the adapter once it is mounted to the spindle to assure that both surfaces are running absolutely true.
4. Tighten the mounting bolts alternately to the torque specifications given in Section 4.0.

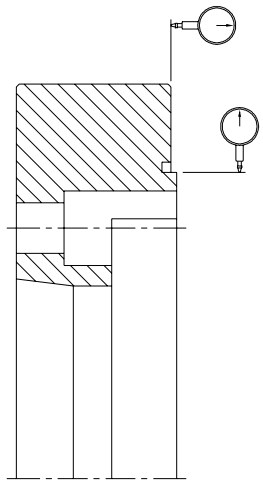


Figure 7.1

IMPORTANT

The runout of the mounting plate should not exceed .0002" (0.010mm) radially, and .0001" (0.005mm) laterally.

7.2 MOUNTING CHUCK ASSEMBLY

1. Verify that the draw tube pressure is set to a value within the chuck's limit, adjust draw tube pressure, if necessary, and actuate the draw tube to bring it into the forward position.
2. Thread the draw tube connector onto the draw tube. On PPC110 and PPC165 models, thread the connector until the thread bottoms out. On PPC210 and larger chuck models, first remove the center housing from the chuck body, and using the wrench supplied with the chuck, thread the draw tube connector onto the draw tube. Thread the connector fully onto the draw tube then back off the thread until the detents are fully engaged.
3. Actuate the draw tube to seat the chuck onto the adapter plate, aligning the mounting bolts in the body with the mounting holes on the adapter plate.
4. Tighten the mounting bolts alternately, but do not fully tighten them at this point.
5. Indicate the OD of the chuck body and adjust the runout to within .0002" (0.005mm) TIR.
6. After the runout of the chuck's OD has been adjusted, tighten the mounting bolts to the torque specifications given in Section 4.0.
7. Actuate the draw tube to verify that the chuck is functioning properly by measuring the stroke of each jaw. If the jaws do not make their full stroke, check that the draw tube is not being restricted, the draw tube data that was specified when the chuck was ordered is correct, or that the draw tube connector was correctly manufactured.

IMPORTANT

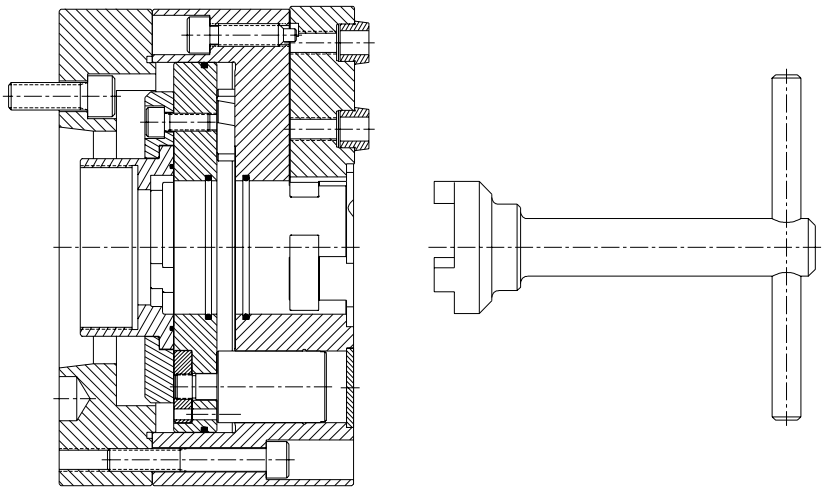
Make sure that the draw tube pressure is set within the specified limits of the chuck model being installed.

IMPORTANT

The runout of the OD of the chuck body should not exceed .0002" (0.010mm).

IMPORTANT

Verify that the chuck is functioning properly by measuring the stroke of each master jaw.



8.0 DESIGN AND MACHINING OF TOP JAWS

8.1 TOP JAW DESIGN

Top jaw design is one of the most important elements in the overall performance, accuracy, and efficiency of a workholding system. To achieve the maximum possible accuracy, as well as optimize the chuck's clamping capability, the following points should be considered in the design and machining of top jaws.

1. A workpiece must have an accurately machined holding diameter, in terms of size tolerance, roundness, and squareness to the locating surface, for precise chucking.
2. When chucking thin walled workpieces, the size and roundness tolerances of the holding diameter will determine the degree to which the workpiece is distorted during chucking and how accurately the workpiece can be machined.
3. The workpiece should be clamped as close to the face of the chuck as possible.
4. The clamping surfaces of the workpiece and top jaws must have smooth surface finishes and must be absolutely clean and free of burrs.
5. For external clamping applications, the mass of the top jaws should be reduced as much as possible to minimize the effects of centrifugal force. It is especially important to reduce weight at the largest radius. Refer to Figure 8.1.

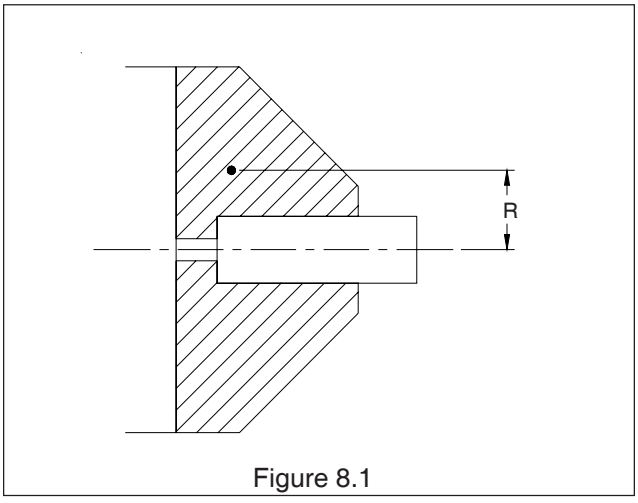


Figure 8.1

6. Short workpieces must have a square locating face on which they are banked, in order to ensure the part is clamped accurately. Refer to Figure 8.2.

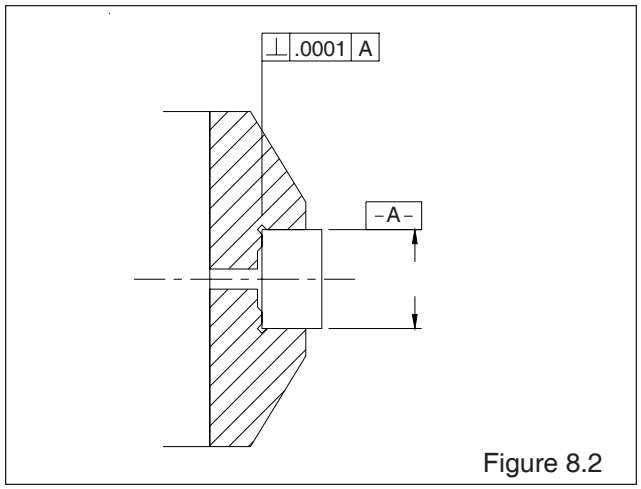


Figure 8.2

7. Workpieces with no shoulder support must be clamped on a length twice their diameter. Refer to Figure 8.3.

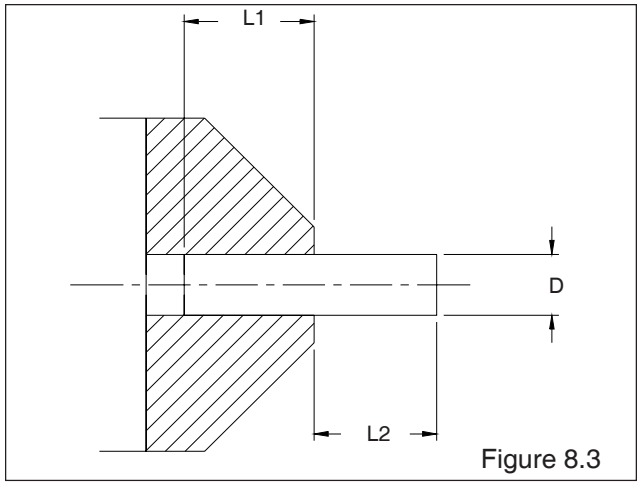


Figure 8.3

8. Long workpieces should not extend beyond the face of the top jaws more than one and one half times the length being clamped, unless an end support is used. Refer to Figure 8.3.

9. For external chucking applications, the clamping diameter of the top jaws should be equal to or slightly larger than the upper tolerance limit of the workpiece's clamping diameter.

   When the workpiece's clamping diameter is smaller than the top jaws' clamping diameter, line contact occurs during clamping as illustrated in Figure 8.4. This condition is acceptable and will produce accurate and concentric workholding.

   If the workpiece's clamping diameter is larger than the top jaws' clamping diameter, a two-line contact occurs during clamping as shown in Figure 8.5. This condition is beneficial for high clamping force applications, but usually results in a loss of chucking accuracy.

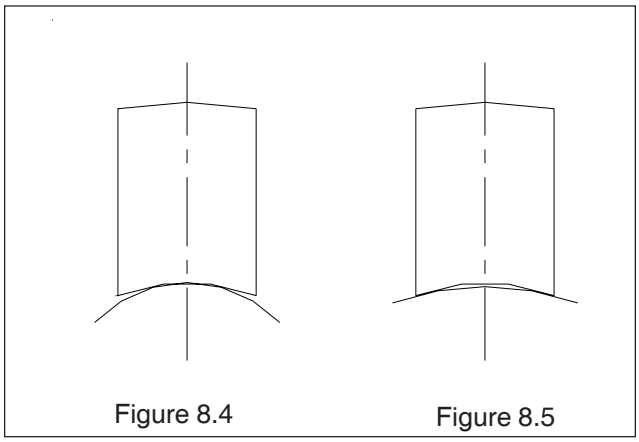


Figure 8.4 Figure 8.5

10. For internal clamping applications, the clamping diameter of the top jaws should be equal to or smaller than the lower tolerance limit of the workpiece's clamping diameter.

    When the workpiece's clamping diameter is larger than the top jaws' clamping diameter, a line contact occurs during clamping as shown in Figure 8.6. This condition is acceptable and will produce accurate and concentric workholding.

    If the workpiece's clamping diameter is smaller than the top jaws' clamping diameter, two line contact occurs during clamping as shown in Figure 8.7. This condition is beneficial for high clamping force applications, but results in a loss of chuckiing accuracy.

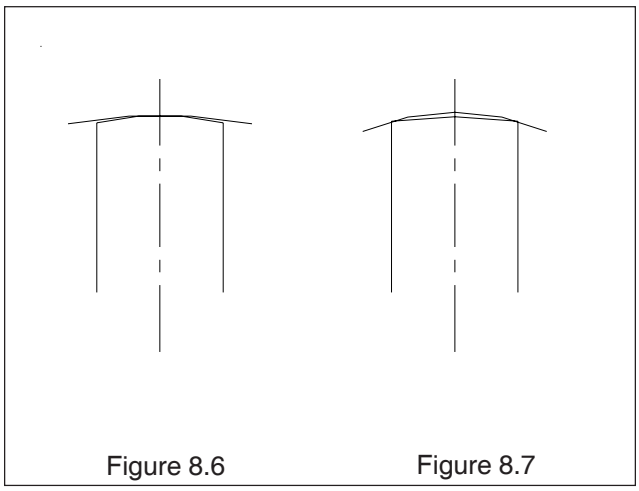


Figure 8.6 Figure 8.7

11. In situations where the top jaws' counterbored mounting bolt holes interfere with the clamping diameter, it is very important that the top jaw's clamping diameter is machined to the exact diameter of the workpiece diameter. Otherwise, two-line contact occurs during clamping as shown in Figure 8.8, which will result in a loss of chuck ing accuracy.

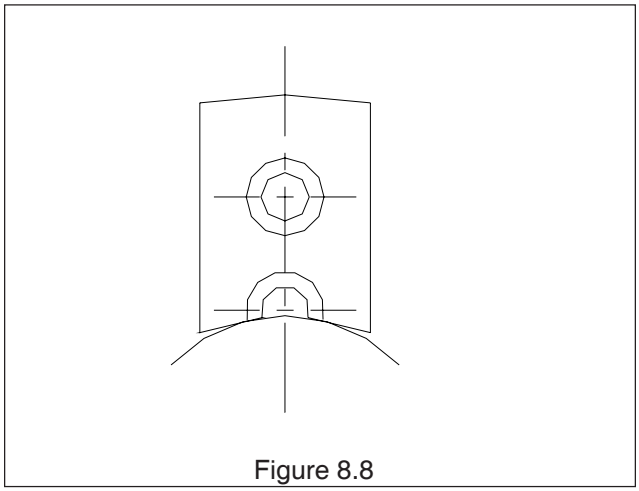


Figure 8.8

8.2 MACHINING OF TOP JAWS

To achieve the best possible chucking accuracy, it is necessary to finish machining the clamping diameter and locating face of the top jaws on the chuck, under load. The method by which the jaws are loaded, together with the surface finish of the clamping and locating surfaces, as well as the size of the clamping diameter, will determine the overall accuracy and clamping capability of the chuck.

Consider the following when machining top jaws:

1. Always load the chuck in the same direction the chuck is clamping. For OD holding applications the chuck must be closed on a loading pin or ring. For ID applications the chuck must open on a loading ring.

2. The position at which the chuck is loaded during machining of the top jaws determines the position within the total stroke of the chuck that the workpiece will be clamped.

   Top jaws should be machined at the upper end of the chuck's stroke (closer to full open) to permit reboring of the jaws. Reboring of the jaws can be accomplished by loading the chuck further down in the stroke with a smaller diameter pin or ring.

3. Loading the top jaws further down in the chuck's stroke (near fully closed) allows greater clearance for applications where the workpiece is automatically loaded. An opening of .040" (1mm) on diameter is recommended for automatic loading.

4. Top jaws should be machined at the same draw tube force which will be used to clamp the workpiece during production. In instances where either the loading ring or the top jaws are subject to deflection during loading, it is recommended that the top jaws be machined at a draw tube force lower than that to be used during production.

5. Several recommended loading configurations are illustrated in Figures 8.9, 8.10, and 8.11 for OD clamping applications and 8.12 for ID clamping. The loading configuration shown in Figure 8.10 should not be used with top jaws

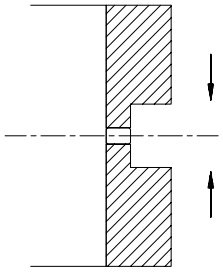


Figure 8.9

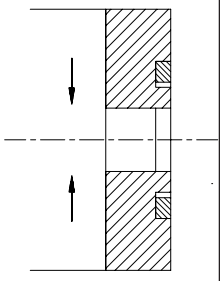


Figure 8.10

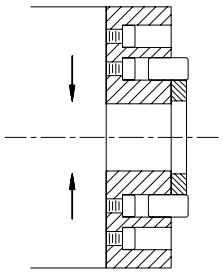


Figure 8.11

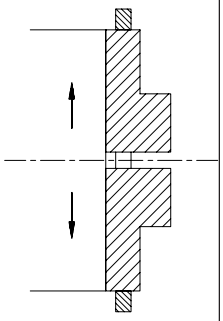


Figure 8.12

6. Carefully clean the mounting surfaces of the master jaws and top jaws before mounting the top jaws to the chuck. The top jaws should fit snugly on the locating pins or QC buttons. On dowel pin located jaws, first tighten the jaw mounting screws lightly, then clamp the loading pin or ring several times with light draw tube force to assure that the top jaws are properly seated. With the chuck clamped on the loading pin, tighten the mounting bolts to the torque specifications given in Section 5.3. On QC located jaws just tighten the mounting bolts after they are installed on the chuck.

7. Top jaws can be rough machined on a turning fixture, but should be finish machined under load on the chuck to achieve best chucking accuracy.

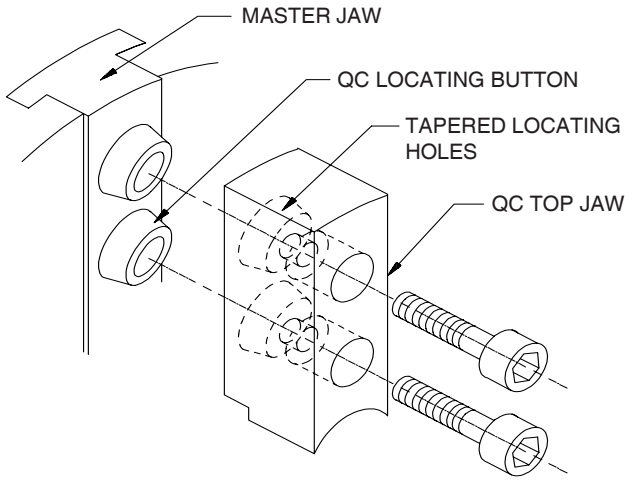
8. Dowel pin located top jaws must be remachined when they are reinstalled on the chuck to achieve best chucking accuracy.

9. When top jaws are finished on a machine other than the one used in production, it is necessary to establish a true reference diameter and face which is to be indicated when mounting the chuck.

9.0 QC JAW LOCATING SYSTEM

9.1 QC SYSTEM OVERVIEW

The QC system locates each top jaw on two tapered buttons mounted in each master jaw. The top jaw is located on both the taper and face of the master jaw to effectively eliminate any clearances between the master jaw and top jaw. This feature assures accurate relocation of the top jaw when repositioned on the chuck.



9.2 QC JAW INSTALLATION

1. First make sure that the locating surfaces of the top jaws, master jaws, and QC buttons are completely clean and free from nicks, burrs, or any foreign matter which would prevent proper seating of the top jaws.
2. It is advised that each top jaw be stamped or marked 1, 2 and 3 so that they can be mounted to the correspondingly marked master jaw for later reference.
3. Mount the Top Jaw No. 1 onto Master Jaw No. 1.
4. Insert the mounting screws into the top jaw and tighten each screw to the torque specifications given in Section 4.0.
5. Repeat this procedure for the other top jaws.

IMPORTANT

The mounting surfaces of the top jaws, master jaws, and QC buttons must be clean and be free of nicks or any foreign matter, otherwise the top jaws will not seat properly which will result in excessive runout.

9.3 QC JAW REMOVAL

1. First loosen the mounting screws from Jaw No. 1 and then remove the screws completely from the top jaw.
2. The top jaw may remain locked onto the tapered buttons on the master jaw. To break the top jaw free, tap the end of the top jaw lightly with a soft hammer. Tap the jaw toward the center of the chuck while holding the sides of the top jaw.
3. Repeat this procedure for the other top jaws.

! CAUTION

In order to minimize jaw runout, it is critical that the mounting screws of the top jaws are tightened to the torque specifications given in Section 4.0.

10.0 PPC CHUCK MAINTENANCE

10.1 LUBRICATING PPC CHUCKS

1. Before applying lubrication to the chuck, the chuck should be actuated and set in the unclamped jaws fully open) position.
2. Apply lubricant with a grease gun (3 to 5 cc) to each grease fitting on the OD of the chuck body.
3. After applying lubricant to all fittings, cycle the chuck (open and close the chuck) several times to distribute the lubricant to all sliding surfaces.
4. Wipe away any excess grease which has seeped out of the master jaw slots.

10.2 FREQUENCY OF LUBRICATION

1. PPC chucks should be lubricated at least once each day.
2. Chucks which are operated at high speed or are exposed to a high volume of water soluble cutting oil should be lubricated several times each day.
3. Chucks which are installed on machines running around the clock should be lubricated at the start of each shift.

10.3 RECOMMENDED LUBRICANT

Model	Lubricant
PPC110	Kluber Altemp QN B 50
PPC165 PPC210 PPC250 PPC300	Kluber Altemp QN B 50

10.4 DISASSEMBLY OF PPC CHUCKS

1. After removing the chuck from the machine, set the chuck (without the adapter plate) on its rear face.
2. Remove the top jaws from the chuck.
3. Remove the center housing by unfastening the (3) flat head screws holding down the housing.
4. Remove the (3) cover disks by unscrewing the (6) flat head screws (2 per disk) securing the disks.
5. Using (2) blocks of equal height (or parallels), support the rear face of the chuck body. Make sure the blocks are clear of the piston bore.
6. With a brass (or other soft) plug approximately 3/4" (19mm) diameter, alternately tap the top face of each actuator to slide the piston assembly out of the chuck body. Use a mallet to tap the plug.
7. Once the piston assembly has been removed fromthe chuck body, remove each master jaw.
8. If the master jaws are tight, use a brass plug to tap each jaw out of the chuck body.

WARNING

PPC chucks must be lubricated on a regular basis to maintain long term accuracy and performance. Inadequate lubrication reduces gripping force and affects the chuck's repeating accuracy. Inadequate lubrication will also cause excessive wear and seizure.

IMPORTANT

Before applying lubrication to the chuck, the chuck should be actuated and set in the unclamped (jaws fully open) position.

CAUTION

PPC chucks should be disassembled, cleaned, lubricated, and reassembled at least once every 6 months or every 100,000 cycles. Chucks that are used to machine cast iron or sintered parts should be disassembled more frequently (at least every 2 to 3 months).

10.5 CLEANING OF PPC CHUCKS

1. After the chuck has been disassembled, remove all sludge and buildup on the sliding surfaces of the chuck body, actuators, and master jaws.
2. Clean off any buildup with fine emery paper.
3. Degrease all components in mineral spirits or other solvent.
4. Remove all residue of the solvent and keep each component clean until reassembly.

10.6 REASSEMBLY OF PPC CHUCKS

1. After all the chuck's components have been thoroughly cleaned, set the chuck face up on a bench.
2. Inspect all O-Rings and replace any which exhibit signs of wear.
3. Apply a liberal amount of grease to all surfaces of Master Jaw No.1. Slide Master Jaw No. 1 into the jaw slot which is marked Slot No.1. The jaw should slide freely into the jaw slot with only hand pressure. If the jaw is tight going into the jaw slot, remove the jaw and make sure any buildup has been removed from both the jaw slot and master jaw. After cleaning, degrease the chuck body and master jaw again with a solvent. Apply lubricant to the master jaw and insert the jaw into the chuck body as outlined above.
4. Repeat this procedure for the other master jaws.
5. Turn the chuck face down with Jaw Slot No. 1 at 12 o'clock.
6. Apply an even coat of grease to the ID of the piston bore.
7. Liberally coat each actuator with grease. Coat the OD and both sides of the key which engages into the master jaw.
8. Turn the piston so that the rear side is facing up. Rotate the piston to align the letter stamped on its rear face with Jaw Slot No. 1.
9. Insert the piston assembly into the chuck by first inserting the 3 actuators into the bores in the chuck body. Then slide the piston assembly toward the face of the chuck until the actuators contact the master jaws.
10. Turn the chuck body over and support it on the blocks (or parallels) used to disassemble the chuck.
11. Looking into the 3 actuator bores on the face of the chuck, engage the slot of each master jaw into the actuator key.

IMPORTANT

All components must be thoroughly cleaned and degreased before reassembly. Perform all assembly work on a clean bench in clean surroundings to prevent dirt and other contaminants from getting into the chuck.

CAUTION

When reassembling PPC chucks, make sure that each master jaw is mounted into the jaw slot with a corresponding number. Also make sure to align the piston assembly correctly so that the letter stamped on the back face of the piston is in line with Jaw Slot No. 1.

12. Take the chuck off the blocks and push the piston assembly fully into the chuck body. The piston should slide into the chuck body freely, however, it may be necessary to tap the rear face of the piston assembly with a soft hammer to bring the assembly fully into the chuck body. Tap the rear face of the piston in a circular motion to prevent the piston from cocking.
13. Replace the 3 actuator disks on the face of the chuck. Secure each disk with a flat head cap screw. Make sure the top face of the screws are below the face of the chuck.

11.0 TROUBLE SHOOTING GUIDE

If your PPC chuck malfunctions, immediately stop the machine and refer to this trouble shooting guide for possible causes and ways to remedy the problem.

PROBLEM	POSSIBLE CAUSE	SUGGESTED REMEDY
The chuck does not operate	A component inside the chuck (master jaw or actuator) is broken.	Dissasemble the chuck and contact MicroCentric for advice on replacement of the component and repair of the chuck.
	The master jaw slides or actuators are seized.	Dissasemble the chuck to free the seized components by cleaning the chuck and removing buildup that has embedded itself onto the chuck's components and lubricate the chuck.
The master jaws do not stroke fully	Swarf or dirt has built up inside the chuck.	Dissasemble the chuck and clean and lubricate the chuck.
	The draw tube connector or draw tube is loose.	First check that the draw tube connector is fully threaded onto the draw tube. If the problem persists, remove the chuck and tighten the draw tube onto the hydraulic actuator.
Workpiece slips	Insufficient master jaw stroke.	Rebore the top jaws so that the workpiece is being clamped in the middle of the chuck's total jaw stroke.
	Insufficient clamping force.	Increase the hydraulic pressure to the cylinder to increase the draw tube force to the chuck.
	Machined clamping diameter in top jaw does not match workpiece dia.	Rebore top jaws accordingly.
	Cutting force is too high.	Reduce cutting force.
	Insufficient lubrication to the chuck.	Lubricate the chuck according to the schedule and procedure outlined in Sections 10.1 & 10.2.
	Spindle speed is too high.	Reduce spindle speed.
Excessive workpiece runout (concentricity) after machining	OD of chuck is running out, (mounting screws not tight).	Indicate OD of chuck and true chuck to within specifications given in Section 7.2. Also make sure mounting screws are tightened properly.
	Chips, dirt, or other foreign material is embedded in clamping surface of top jaw.	Remove foreign material and/or rebore top jaws.
	Mounting screws of top jaws have not been adequately tightened.	Tighten mounting screws to torque specifications given in Section 5.3.
	Top jaws have not been properly machined (loaded).	Check that the loading ring or plug is not being deformed due to high clamping force. Review procedures outlined in Section 8.2.
	Top jaw is deformed during clamping due to excessive height and/or excessive clamping force.	Review the design of the top jaw, reducing the height of the jaw and lowering draw tube force.
	Workpiece is deformed during clamping by excessive clamping force.	Reduce draw tube force. Also evaluate the design of the top jaws to reduce jaw height and jaw mass to reduce effects of centrifugal force.

MicroCentric Corp • 25 So. Terminal Drive, Plainview, NY 11803 • USA
Tel: 516-349-7220 • Fax: 516-349-9354 • e-mail: sales@microcentric.com

1-800-573-1139

www.microcentric.com

PPC MNL-01/12