



## Important Safety Precautions

This chapter summarizes precautions that particularly you should know or follow.

Please read them before starting to use the product.



### Danger

Failure to follow the safety precautions below will result in death or serious injuries.



**Turn off the main power supply of the machine when installing, inspecting, greasing, or replacing the chuck.**

- The chuck may rotate unexpectedly and entangle your body or clothing.



**Do not rotate the spindle with the door open.**

**Provide an interlock to allow spindle rotation only when the door is closed.**

- If the door is not closed, the rotating chuck may entangle your body or clothing or cause the workpiece to fly out.



**Do not turn OFF the hydraulic pump or operate the solenoid valve during spindle rotation. Before performing workpiece transfer during spindle rotation on an opposed 2-spindle lathe, confirm the machine manufacturer that the operation can be performed safely.**

- Operating the solenoid valve during spindle rotation will drop or block the hydraulic pressure, causing the gripping force to drop suddenly and the workpiece to fly out.



**The rotational speed and input force must not exceed the limit in operation.**

- Excessive rotational speed may cause the workpiece to fly out.
- Excessive input force may damage the chuck, causing the workpiece to fly out.



**Only the machine manufacturer or the user is to determine cutting conditions, gripping force, and rotational speed according to test cutting result. Adjust the hydraulic pressure so as to obtain the gripping force necessary for machining, and confirm that the necessary gripping force is obtained before starting machining.**

- Insufficient gripping force may cause the workpiece to fly out.



**If you use a top jaw higher or heavier than the standard top jaw, determine the operating condition according to the instruction manual.**

- Using a top jaw under excessive operating conditions may damage the chuck, causing the workpiece to fly out.



**For internal gripping with the through-hole chuck, use the chuck with 1/2 or less of the max. permissible input force for external gripping.**

- Excessive input force may damage the chuck, causing the workpiece to fly out.



**Reduce the allowable maximum input force of the 2-jaw chuck by 2/3 in comparison with the 3-jaw chuck.**

- Excessive input force may damage the chuck, causing the workpiece to fly out.



**When using fixed jaws instead of one or two top jaws of 3-jaw chuck, the input force must be 2/3 or less or 1/3 or less of the max. permissible input force. Also when using fixed jaw for 2-jaw chuck, the input force must be 1/2 or less of the max. permissible input force.**

- Excessive input force may damage the chuck, causing the workpiece to fly out.



**The gripping diameter must be equal to or less than the body outside diameter.**

- Using the chuck with the gripping diameter exceeding the body outside diameter may damage the chuck, causing the workpiece to fly out.



**When machining a workpiece with a long protrusion, support it with the steady rest or the tailstock.**

- If not, the workpiece may turn at the end, causing the workpiece to fly out.



**Do not grip a workpiece with slope shapes or tapered shapes such as a cast.**

- Otherwise, the workpiece may slip, causing it to fly out.



**If a workpiece or jig causes an unbalance, reduce the rotational speed or correct the state by mounting a balance weight. The recommended balance quality is G6.3 or less in JIS B 0905:1992.**

- An unbalanced workpiece generates centrifugal force, causing the workpiece to fly out.
- Vibration generated by the unbalance may damage the chuck, causing the workpiece to fly out.



**Confirm that the chuck or workpiece does not interfere with the cutter or the turret at a low rotational speed before starting machining.**

- A large impact on the chuck or workpiece by interference may damage the chuck, causing the chuck or workpiece to fly out.



**If an impact is given to the machine by interference between the chuck/workpiece and the cutter/turret due to malfunction or program errors, immediately stop rotation. Then thoroughly check for damage or crack on the parts by disassembling and cleaning them and perform repair or replacement if necessary.**

- The impact may cause damage or crack on the parts. Continuous use of faulty parts may damage the chuck, causing the workpiece to fly out.



**Use the chuck and cylinder that are both manufactured by Kitagawa.**

**If you must use the chuck together with a cylinder manufactured by another company, confirm Kitagawa or sales agents that the combination of the chuck and the cylinder is safe.**

- Depending on the combination with a particular cylinder, the chuck and the cylinder may be damaged, causing the workpiece to fly out.



**Be sure to tighten the bolts with the specified torque listed in Table 1 and Table 2.**

**Use a proper tool that can control torque such as a torque wrench.**

**Use only the bolts attached to the chuck. Do not use other bolts.**

- Rotating the chuck with the jaw mounting bolts loosened may cause the jaws and workpiece to fly out.
- If insufficient bolts are mounted, bolt length is wrong, or tightening torque is improper, the bolts may be damaged, causing the chuck and workpiece to fly out.

Table 1 Specified torque for hex. socket head cap screw

Thread size	M5	M6	M8	M10	M12	M14	M16	M20	M22	M24
Tightening torque [N·m]	7.5	13	33	73	107	171	250	402	539	666

\* Strength classification: M20 or smaller = 12.9, M22 or larger = 10.9

Table 2 Specified torque for hex. socket button head screw

Thread size	M3	M4	M5	M6	M8	M10	M12	M16
Tightening torque [N·m]	1.4	3.2	6.4	10.8	26.3	52.1	90.9	224



**Prevent your hands and fingers from being caught when gripping a workpiece with the chuck.**

- Otherwise, your hands and fingers may be crushed or cut off.

If any of the abnormalities shown below suddenly occurs during operation, it may be a sign of damage of the chuck.



- ✓ The workpiece slips.
- ✓ Machining accuracy has become worse.
- ✓ Chuck gripping force is reduced.
- ✓ Chattering occurs.
- ✓ Machine vibration has been increased.

(Gripping force is not increased even by increasing hydraulic pressure.)

If the status is not improved even after taking the measures described on the instruction manual, immediately stop using the chuck.

- Continuous use of faulty parts may damage the chuck, causing the workpiece to fly out.

If the cylinder combined is to be changed due to such as model change of a rotary hydraulic cylinder, change the hydraulic pressure accordingly so as to obtain proper gripping force.



- Use of the chuck under low hydraulic pressure leads to insufficient gripping force, causing the workpiece to fly out.
- Use of the chuck under high hydraulic pressure leads to damage of the chuck, causing the workpiece to fly out.

For machine manufacturers

The draw pipe must have sufficient strength with respect to the operating conditions, not causing run-out and unbalance. The thread accuracy must be 6H / 6g. Tighten the thread securely with a sufficient penetration length.



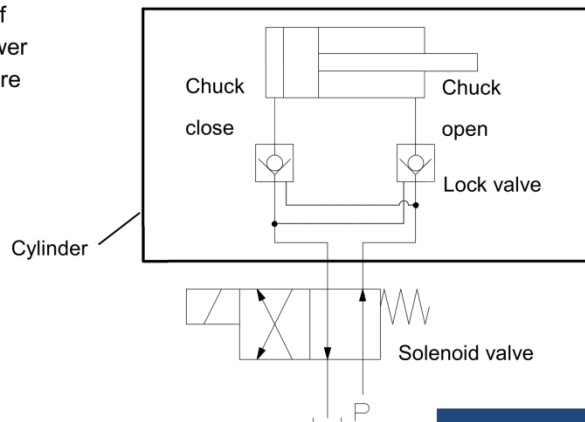
- Insufficient strength of the draw pipe, vibration due to unbalance, and looseness of the thread may damage the draw pipe. If the draw pipe is broken, the gripping force is lost instantaneously, causing the workpiece to fly out.

For machine manufacturers

Use a lock valve (check valve) built-in type cylinder. (According to JIS B 6150 : 2015, the cylinder must be provided with equipment such as a check valve so as to maintain the pressure for a certain period of time when the hydraulic pressure to the cylinder is blocked.) Design the hydraulic circuit so that the solenoid valve holds the gripping port position when the current is not applied.



- Sudden drop or interruption of hydraulic pressure due to power failure or hydraulic pump failure will lose the gripping force instantaneously, causing the workpiece to fly out.



For machine manufacturers

Use a stroke control sensor built-in type cylinder. (According to JIS B 6150 : 2015, the cylinder must be provided with equipment such as a stroke control sensor so that the power chuck or the cylinder ensures effective generation of the gripping force.)

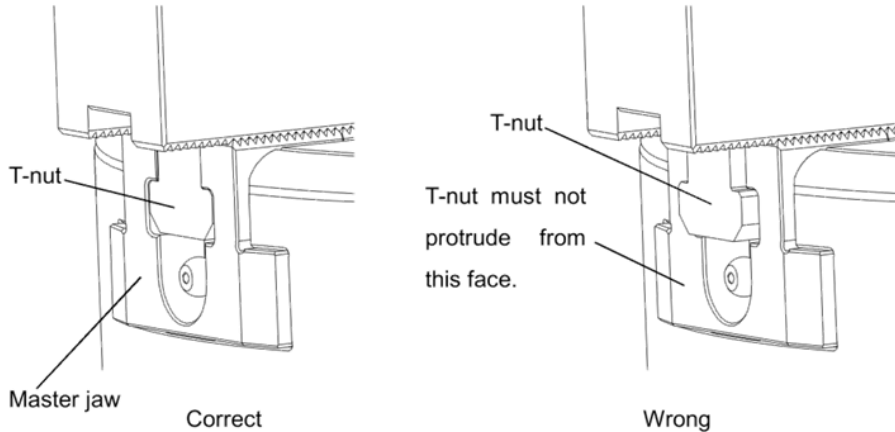


- If the jaw stroke becomes insufficient due to chips accumulating inside the chuck or loosened draw nut, the chuck may not grip the workpiece, causing the workpiece to fly out.

For machine manufacturers

**Use the T-nut in a state where it does not protrude from the master jaw circumference side end face.**

- If not, the master jaws and T-nut may be damaged, causing the jaws and workpiece to fly out.



[Click here to watch the video.](#)

**Do not use soft jaws as follows.**

- ✓ **Soft jaws manufactured by other companies**
- ✓ **With serration pitch different from that of master jaw**
- ✓ **Soft jaws joined by welding**



- If serration engagement is faulty, the master jaws may be deformed and the gripping force is reduced, or the soft jaws may be damaged due to insufficient strength, causing the workpiece to fly out.

**When gripping a workpiece, the master jaw base line must be within the appropriate stroke range.**



- Gripping a workpiece near the stroke end may fail due to unevenness of the tolerance at the workpiece gripping part, causing the workpiece to fly out.
- Frequently gripping a workpiece near the stroke end will apply excessive force to the master jaws and lead to damage of the chuck, causing the workpiece to fly out.

[Click here to watch the video.](#)

**Before starting work, open and close the jaws without gripping a workpiece and confirm that the master jaw base line moves within the full stroke range.**



- If the jaw stroke becomes insufficient due to chips accumulating inside the chuck or loosened draw nut, the chuck may not grip the workpiece, causing the workpiece to fly out.

**Provide measures to prevent fly-out by centrifugal force (such as dowel pins) for the locator or jig. In addition, mount the locator or jig with enough bolts with sufficient strength.**



- Otherwise, the locator or jig may fly out due to centrifugal force.

**Clean the disassembled parts with kerosene, carefully check them for damage, wear, crack, or seizure, and repair or replace them if necessary.**



- Continuous use of faulty parts may damage the chuck, causing the workpiece to fly out.



**In case that the chuck failed to operate due to a seizure or breakage, remove the chuck from the machine following the disassembly procedure on page 28. When the top jaws and covers cannot be removed due to a blockage of workpiece, do not disassemble forcibly but please contact us or our agent.**

- Forcible disassembly could cause serious human accidents.



**The chuck must be repaired only by skilled persons who have received the training course.**

- Repair by unskilled persons or persons other than us or our agents could cause serious human accidents.



**Confirm that the cylinder does not cause pressure drop during machining beforehand when operating other actuators together with the cylinder using the same hydraulic source.**

- Reduction of hydraulic pressure will reduce the gripping force, causing the workpiece to fly out.



**Provide the drain hose so that drain flows smoothly without stagnation.**

**The drain must be returned over the oil surface in the hydraulic unit to prevent back pressure.**

- If drain does not flow smoothly, the cylinder may cause oil leakage, resulting in fire.



**For the cylinder and other peripheral devices, follow their respective instruction manuals.**

- If not, serious human accidents may occur.



**Do not cut threads exceeding the dimension F in Table 14 in the draw nut.**

**The thread accuracy must be 6H / 6g.**

- If not, the draw nut is damaged due to its insufficient strength and the gripping force is lost instantaneously, causing the workpiece to fly out.