ATL200 Series
Cylinder-Integrated Collet Chuck
User's Manual

This Manual is for the following models

ATL206-5C **ATL207-16C**

ATL207-B42 **ATL208-B60**

Edition Released Nov.2019

ATL200 Series Cylinder-Integrated Collet Chuck User's Manual

Table of Contents

Chapter 1

Introduction

Welcome to ATL200 Cylinder-Integrated Collet Chuck.
This chapter includes the following topics:

- Overview
- Product Features
- Package Checklist
- How to Read This Manual

1-1 Overview

Atlas ATL200 Cylinder-Integrated Collet Chuck provides you with unheard of convenience to set up your collet chuck system. With Atlas' unique Power Inside technology, ATL200 Collet Chuck integrates a pneumatic cylinder, saving you from installing a cylinder, and having to make draw tubes or air feeders. With its actual front-mounted design, the installation is revolutionary and easier than ever. Atlas also provides a complete through hole for ATL200, enabling you to perform machining parts from bar stock.

ATL200 adapts dead length design, meaning that the workpiece will not change its position when operation. ATL200 works with standard 5C,16C, B42, and B60 collets. Fast change design allows you to change collets within seconds, largely increasing productivity. This chuck is currently installed on various kinds of machine tools, delivering many benefits for its users. We are sure this chuck will bring you the same unrivaled advantages.

1-2 Product Features

ATL200 Cylinder-Integrated Collet Chuck has the following features:

- Pneumatic cylinder is integrated into the chuck. Saving you from installing a cylinder and a draw tube.
- Accurate chuck body. 0.010mm (.0003937”) TIR
- Workholding TIR can be within 0.030mm (.001”) using standard collets.
- Works with standard 5C, 16C, B42, or B60 collets.
- Dead Length design eliminates workpiece pullback.
- Complete through hole is reserved for bar machining. No restriction caused by a draw tube or air feed tubes.
- Self-lock design on closing function insures increased safety.
- Fast collet changing design: within 60 seconds.
- Oil mist lubricated. The chuck generates very little heat over long periods of operation.
- Low maintenance is required.
- High resistance to coolant fluid and chips penetration.

1-3 Package Checklist

ATL200 Cylinder-Integrated Collet Chuck is shipped with the following items:

- 1 ATL200 Collet Chuck
- 2 5um Filter Bars
- 2 6mm Air Hoses
- 2 sets of Air Hose Protecting Sleeves
- 1 Fixing Bracket for Air Hoses
- 1 Collet Wrench (For 5C/16C)
- 1 4mm Hex Key – for collet position screw on rear of 5C/16C
- 1 3mm Hex Key – for lid fixture B42/B60
- 1 User's Manual
- Mounting Bolts

Model	Net Weight KG/(lb)	Gross Weight KG/(lb)	Packing SIZE(LxWxH)
ATL206 - 5C	10 (22)	11(24)	28x23x24cm
ATL207-16C	14 (31)	15 (33)	28x27x24cm
ATL207-B42	17 (37)	18 (40)	28x27x24cm
ATL208-B60	21 (46)	22 (49)	28x27x24cm

Chapter 2

Safety Notifications

This chapter lists the safety notifications you should pay attention to when installing and operating Atlas ATL200 Series Collet Chuck

- Safety Symbols
- Precautions for Safe Operation

2-1 Safety Symbols

	This safety symbol is used to call your attention. Some operations may be dangerous to persons who operate this chuck. Please pay attention when you read the instructions marked with this symbol in this manual.
	Indicates an imminent hazardous condition which, if not avoided, could result in death or serious injury.
	Indicates a potentially hazardous condition which, if not avoided, could result in death or serious injury.
	Indicates a potentially hazardous condition which, if not avoided, could result in minor or moderate injury.

2-2 Precautions for Safe Operation

	Turn off the power before removing, installing, adjusting, inspecting, or lubricating the chuck or the collets
The spindle or sliding parts of the machine may start to rotate or move without any warning, causing serious injury to the operator.	

	Do not operate the control valve during spindle rotation when the workpiece is chucked.
The workpiece may be thrown from the chuck, causing serious injury to the operator.	

	Do not operate the machine under the influence of alcohol or drugs.
Damage to machine, chuck or serious injury to the operator may happen.	

	Do not wear gloves, loose clothing, or ties while operating the machine.
Gloves, loose clothing, ties, and long hair may be caught into the chuck, and may cause serious injury to the operator.	

	Keep the safety shield or safety door in place while machine is running.
Cutting chips, loosened workpieces or other flying debris may injure the operator.	

WARNING	Do not exceed the maximum input air pressure listed in this manual.
Excessive air pressure may cause damage to the actuating mechanism of the chuck. The workpiece may be thrown from the chuck, causing serious injury to the operator.	

WARNING	Do not try to fix the filter bars in any way. We recommend you to fix the air hoses instead with the nut in packing or any other ways.

The chuck might be clogged when cutting debris or water drops get into the clearance of the chuck. The stationary ring and the filter bars may be brought to rotate.

If the filter bars are fixed under this situation, the fixtures may be brought to rotate and some parts of your machine may be damaged.

We recommend you to fix the air hoses with the bracket that comes with the chuck. Should the scenario described above occur, only the air hoses would be ripped off by the rotating force. In this way, any personnel injury is largely decreased.

	Keep your hands or fingers away from the chuck when the chuck is closing /opening.
The operator may be seriously injured when her/his fingers are clamped by the chuck.	

	Do not exceed the maximum RPM listed in this manual.
If the RPM exceeds the maximum value listed in this manual, the clamping force of the chuck would decrease and the workpiece may be thrown from the chuck, causing serious injury to the operator.	

	Do not clamp a too short, too long, or too large radius workpiece. When the workpiece is too long, a proper support should be used.
The workpiece may not be clamped properly by the chuck. During the operation the workpiece may loosen from the chuck and injure the operator seriously.	

	Make sure the mounting screws of the spindle adaptor and the chuck are tightened properly.
The spindle adaptor or the chuck may loosen from the spindle during operation and may seriously injure the operator.	

	Make sure the filter bars are securely screwed into the chuck.
The filter bars may loosen from the chuck when air pressure is on. The operator may be injured by the filter bars.	

 WARNING	Do not hit the chuck heavily.
The chuck may not work properly. The workpiece may loosen from the chuck during operation and may injure the operator.	

 WARNING	Do not attempt to modify the chuck or any of its components.
The chuck may not work properly. The workpiece may loosen from the chuck during operation and may injure the operator.	

 CAUTION	Supply oil mist air before starting the spindle.
The chuck needs to be lubricated by the oil mist air. The chuck may be damaged under long period of operation without proper lubrication.	

 CAUTION	Supply air pressure before starting to spray coolant fluid to the chuck.
The air pressure can prevent the coolant fluid penetrating into the clearance of the chuck.	

Chapter 3

Installing Atlas Air Collet Chuck

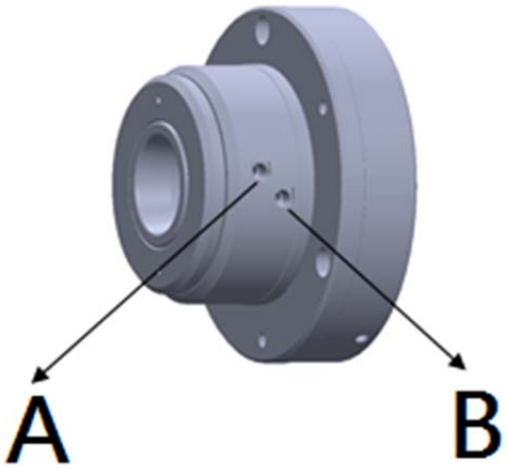
This chapter describes how to install ATL200 Series Cylinder-Integrated Collet Chuck. The topics include:

- How ATL200 Collet Chuck Works
- Chuck Installation

3-1 How ATL200 Collet Chuck Works

An air piston is integrated into ATL200 Collet Chuck. 2 air flow routes are designed to provide pressure to the piston from both sides in any time, making it possible to open/close when chuck is rotating. When the air goes into the connector B, the piston pushes the tapered sleeve to move forward to close the collet, and the workpiece will be clamped without changing its linear position. The process reverses when the air goes into the connector A, sleeve pull back and release the pressure to collet, which allows the collet to open.

Air Way Connect	Piston/Sleeve Movement	Collet Movement
Connector A	Moves Backwards	Open
Connector B	Moves Forwards	Close

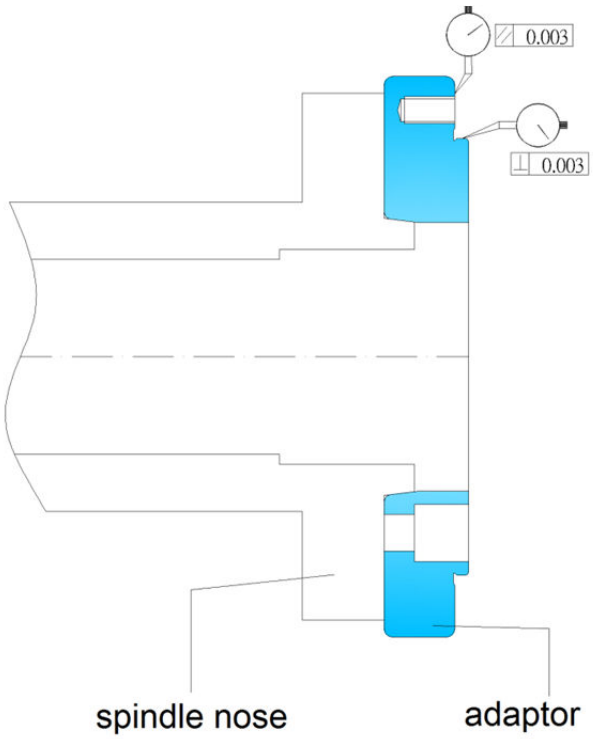


3-2 Chuck Installation

ATL200 Chuck installation consists of 2 steps:

- ✓ Mounting and machining/adjusting the Spindle Adaptor.
- ✓ Mounting the Chuck.

3-2.1 Mounting on the adaptor, Machining or Adjusting the Adaptor Before mounting the spindle adaptor, please inspect the accuracy of your spindle. The runout of the spindle will affect the final chucking TIR. Please make sure all dust, burrs or cutting chips should be removed from the contact surface to avoid any interference. After mounting the spindle adaptor, fine finish it to make it closely fit with the chuck (please refer to the Note below for more information). Since the runout of the spindle adaptor might also influence the final chucking accuracy, we suggest that the radial and face runout should be controlled within 0.003mm **(.00012").**



3-2.2 Mounting The Chuck

To seat the chuck properly and accurately, please clean chips or burrs on the mounting surface of the chuck and the spindle adaptor.

1. Mount the chuck onto the adaptor and slightly tighten the mounting screws alternately and evenly. Please note not to screw the bolts tight, the chuck will need some adjustment for step 3.
2. Use a dial indicator to inspect the radial runout on ground surface on the OD of the chuck.
3. Lightly tap the OD of the chuck on the side.
4. The runout should not exceed 0.005mm **(0.00019").**See the figure below.

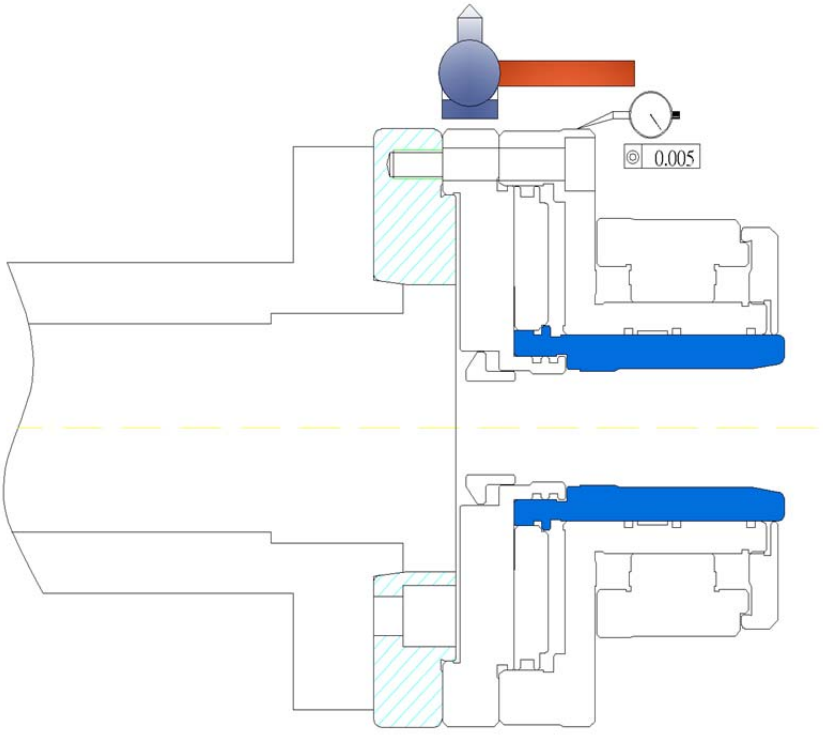


Figure 3-2. Chuck Accuracy Inspection

Note	1. We suggest you leave a 0.5mm **(.0020"** clearance for TIR fine adjustment in the future. 2. Tapping the chuck slightly with a plastic hammer, nylon, or any soft material until the runout is adjusted to the required range. 3. Re-tighten the mounting screws and inspect the runout again.

Chapter 4

Collet Installation

This chapter contains information on how to install the collet into the chuck. The topics include:

- Collet Installation
- Collet Removal

4-1 Collet Install

Atlas ATL200 Cylinder-Integrated Collet Chuck works with standard 5C, 16C, B42, and B60 collets. ATL200 Collet Chuck is designed to allow users to change collets easily and quickly.

4-1.1 ATL206-5C/ ATL207-16C Collet Installation

1. For your own safety, make sure that the machine has come to a complete stop.
2. Switch the control valve to pull down the sleeve, keeps air feeding in connector A.
3. Loosen the collet-locking screws (2 collet-locking screws for ATL206-5C and 1 for ATL207-16C) with the hexagon key enclosed in the package. See point C on Figure 4-1
4. (1) Use the collet wrench enclosed in the package, insert the collet and screw collet in clockwise until contact with the sleeve.
   (2) Measure the opening and adjust to obtain required opening size
   (3) Tighten the bolts in point C to axial stop the collet (5C/16C only)
5. Switch the valve several times to check if collet works properly.
6. We recommend making several trial cuts, checking that the clamping force is sufficient.

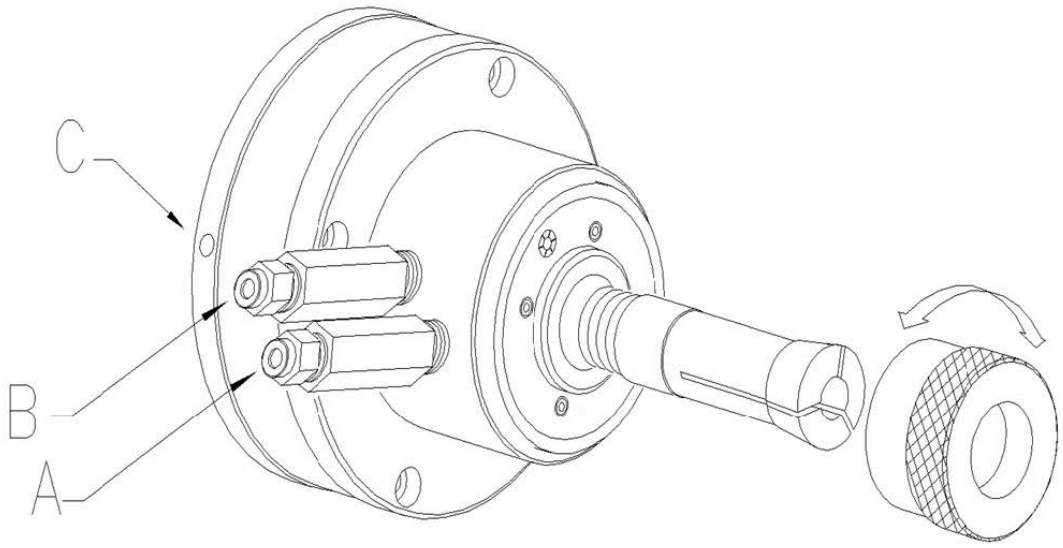


Figure 4-1. Collet Installation (ATL206-5C/ ATL207-16C)

4-1.2 ATL207-B42/ATL208-B60 Collet Installation

1. With safety in mind, make sure that the machine has come to a complete stop before removing the collet.
2. Switch the control valve to pull down the sleeve, which keeps air feeding into connector A.
3. Loosen 4 locking screws on the front panel with the hexagon key. And then remove the front cap.
4. Put in the collet
5. Cover and screw the cap until tightened.
   Measure the opening size of the collet and screw in the cap to control the opening size as needed.
6. Tighten 4 locking screws on the cap
7. Switch the valve several times to check if collet works properly.
8. We recommend making several trial cuts, checking that the clamping force is sufficient.

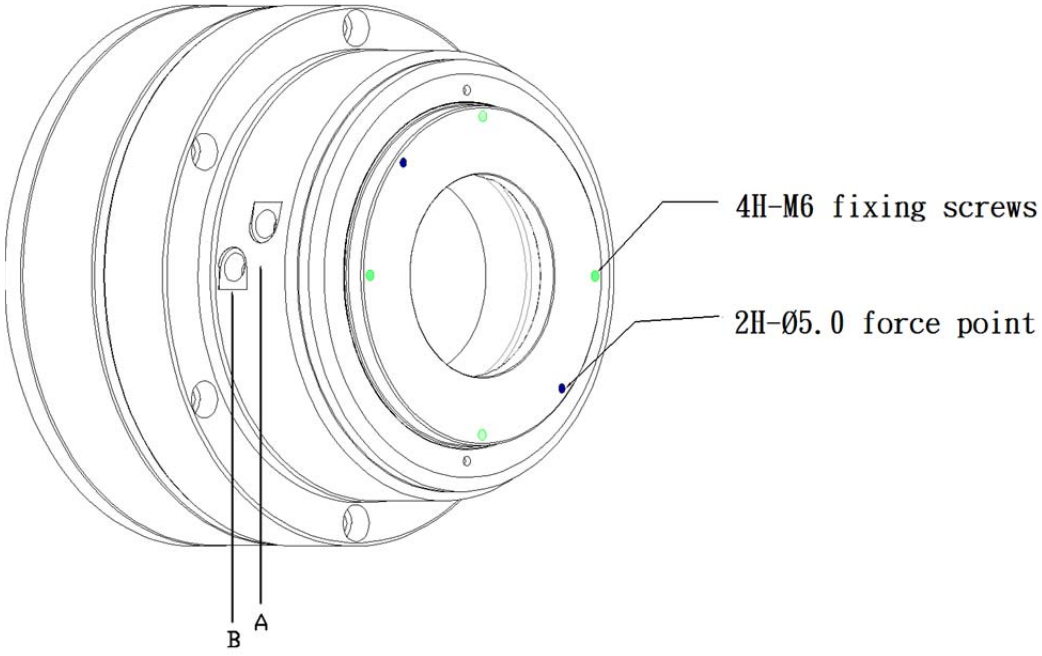


Figure 4-2. Collet Install (ATL207-B42/ATL208-B60)

4-2 Collet Removal

4-2.1 ATL206-5C/ ATL207-16C

1. Clean cutting chips and fluid on chuck
2. Switch the control valve to open the chuck (sleeve is being pulled back).
3. Loosen the locking screw on the bottom point C(5C/16C only)
4. Screw the collet out the chuck body with the collet wrench.
5. Clean all surfaces that will make contact with the collet.

4-2.2 ATL207-B42/ATL208-B60

1. Clean cutting chips and fluid on chuck
2. Switch the control valve to open the chuck (sleeve is being pulled back).
3. Loosen 4 locking screws on the panel
4. Screw out the cap, 2 force holes can be used as a pivot
5. Remove the collet.
6. Clean all surfaces that will make contact with the collet.

Chapter 5

Air Supply System

High quality and stable air supply is one of the basic requirements for precise work holding. Clean air helps prolong the product life of your collet chucks.
Please refer to the following instructions to set up your air supply system.

5-1 Air Supply System Requirements

5-1.1 Air Dehydration

The clearance between the rotary and stationary parts of ATL200 is within 0.02~0.03mm. These surfaces are precisely manufactured and assembled. The viscosity increase with water brought in with air may cause damage to these sophisticated components. We suggest using a freeze air dryer in the air supply system. If this isn't available, keep the distance between the compressor and the air filter longer than 20 meters (65'). The moisture in the air may be condensed over long distances, and be filtered out by the air filters.

5-1.2 Air Clearness

Any foreign objects may cause serious damage to your collet chuck. Before connecting the air hoses to the chuck, make sure the entire air hoses are fragment-free. A 5um air filter is strongly recommended to use.

And then install the 2 filter bars that come with your ATL200 Collet Chuck, further protecting the chuck from any foreign objects.

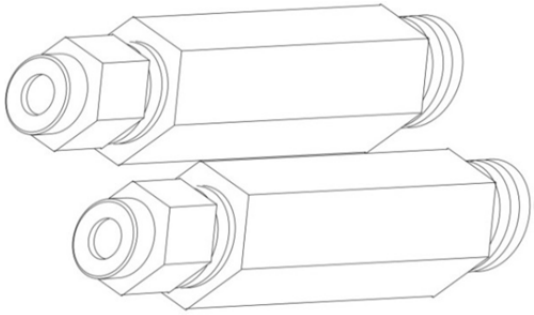


Figure 5-1.2

5-1.3 Lubrication

Lubrication plays an important part in prolonging the life of the bearings in the chuck. Please use an oil-mist air lubricator for the air supply system. 1 oil drop per minute is the minimum requirement for lubricating.
Oil tank for the mist needs to be checked regularly and be refilled as needed. The types of oil recommended are listed below. Other oils with the same specifications with ISO-VG-32 are also acceptable.

SHELL TELLUS32
MOBIL DTE24
ESSO K32
WD-40
LPS-2

5-1.4 Stable Air Pressure

The clamping force of ATL200 is proportional to the air pressure. To keep air pressure stable throughout the entire clamping operation,
we recommend you set up air regulators to your air supply system when working with higher air pressures for long-term. Please consider an extra air boosting device and an individual air tank.

5-2 Air System Installation

1. Clean the filter bars that come with the chuck with an air nozzle and then screw them into the chuck.
2. Insert the air hoses into the protecting hoses.
3. Connect the air hoses to the filter bars.
4. Set the air pressure to 3kgf/cm^2 (43 psi)
5. Small quantity of air may leak from the clearance between the stationary ring and the chuck body. This air leak is used to protect the chuck from coolant fluid penetration.
6. Try operating the chuck by switching on/off air pressure. The chuck should work properly now.
7. After supplying air to ATL200, we recommend starting the spindle in low speed first. Then switch the control valve to let the chuck open and close for at least 10 minutes.

Note	There are two long protecting hoses and two short ones shipped with your ATL200 Collet Chuck. These protecting hoses are used to protect the air hoses from hot flying chips during cutting. We strongly recommend encasing the air hoses with these protecting hoses.

Note★	Do not spray coolant fluid onto the chuck before the air is supplied to the chuck. Chuck is only fluid and dust resistant when air is feeding in.

Note	Do not start the spindle before the air is supplied to the chuck. This might cause damage to the bearings because of lacking oil-air lubrication.

Note	Do not try to fix the filter bars in any way. We recommend fixing the air hoses instead with a bracket. The chuck may be clogged when foreign objects or water drops get into the clearance of the chuck. The stationary ring and the filter bars may be brought to rotate. If the filter bars are fixed under this situation, the fixtures may be brought to rotate and some parts of your machine may be damaged. We recommend fixing the air hoses with a bracket. Should the scenario described above occur, only the air hoses would be ripped off by the rotating force. In this way, any personnel injury is largely decreased.

The following figure is an example to use in designing an air supply system. The length of the air hoses between the air compressor and the air filter should be longer than 20 meters (65') to increase the performance of your air filter. The moisture in the air will be condensed during the traveling and be filtered out by the air filter.

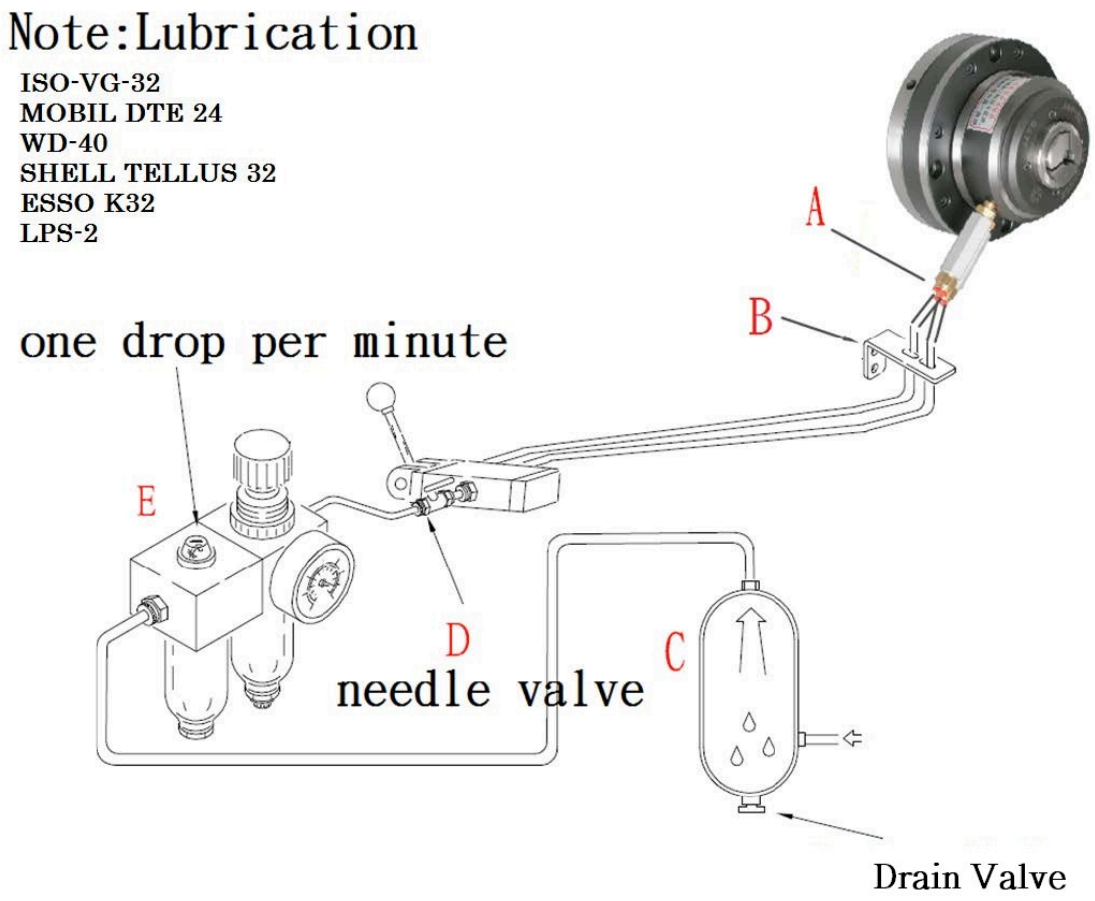


Figure 5-1. Air Supply System Example

Chapter 6

Maintenance

This chapter contains information on how to maintain Atlas ATL200 Series Cylinder-Integrated Collet Chuck. The topics include:

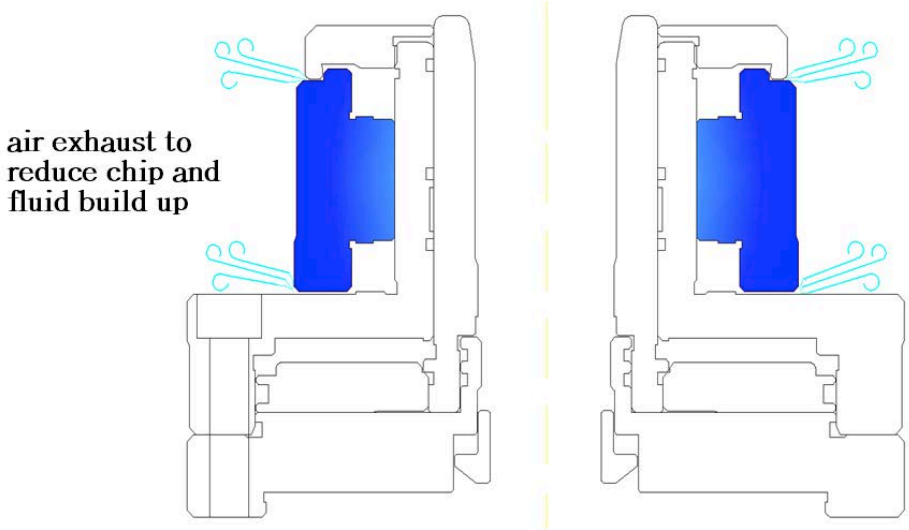
- Daily Maintenance Tasks

6-1 Daily Maintenance Tasks

6-1.1 Before Starting the Daily Use - Remove Water Drops in the Clearance

The clearance between the stationary ring and the chuck body is within 0.02mm~0.03mm, and the surfaces of both provide a fine fit. Since the viscosity of the liquid is much higher than that of the air, the resistant force caused by condensed water drops may damage the contact surfaces if the drops are left in the clearance while the chuck starts to operate. Please follow the steps below before you start any operations.

1. The spindle should never be started before the following steps are completely finished.
2. Connect the air hoses to the chuck and turn on the air to the normal operating pressure.
3. Switch the control valve for several times to eject the drops in the clearance. See Figure below.



6-1.2 After everyday use

When the daily work comes to an end, whether it is the next day or the idle time of the shift, the following actions can protect the chuck in a waiting time and maintain a good state.

1. Do not cut off the air feeding until the following steps are completed.
2. Please use air gun to spray the cutting fluid and chips off the chuck.
3. Wipe the chuck to clean the ground surface of the nose of the collet chuck.
4. Spray anti-rust oil on chuck
5. If allowed, keep air feeding in to keep chuck water and dust resistant.

6-1.3 Protection when chuck is not using for a long time

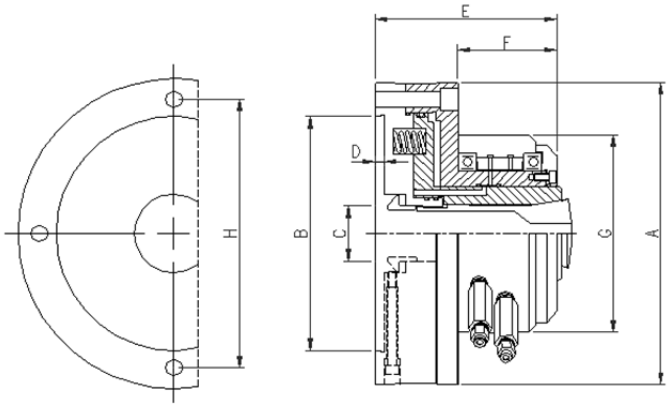
The rotating bearing structure is the most important part of the entire chuck that requires special care. The moisture in the circulating air can rust the bearing structure, especially if left in an open environment after days of not working. To prevent bearing corrosion, please follow the steps below.

1. Note that before the end of the entire process, please keep the air supply feeding in and do not cut off the air pressure.
2. Use an air gun to spray the cutting fluid and chip outside the chuck.
3. If possible, remove the collet. Remove the collet Refer to Chapter 4. The inner hole after removing the collet should be cleaned.
4. ★ If the collet is not allowed to be removed, place a rod in the collet, the rod should be the same as clamping size. This is to avoid losing the original elastic life of the collet during the idle time.
5. Temporarily turn off the air supply feeding the chuck. Remove the air tube, drop in about 5 cc of anti-rust oil (such as WD-40) in the two air ports.
6. Reduce the pressure input value to below 1kgs/cm^2
7. Reconnect the air tube and actuate the chuck a few times. This action can feed the lubricant of step 5 into the bearing to form a protection.
8. Put anti-rust oil all over the chuck.
9. If expected to leave the chuck for a very long time, please cover the chuck with a plastic bag to avoid exposure.

Appendix A

Dimensions and Specifications

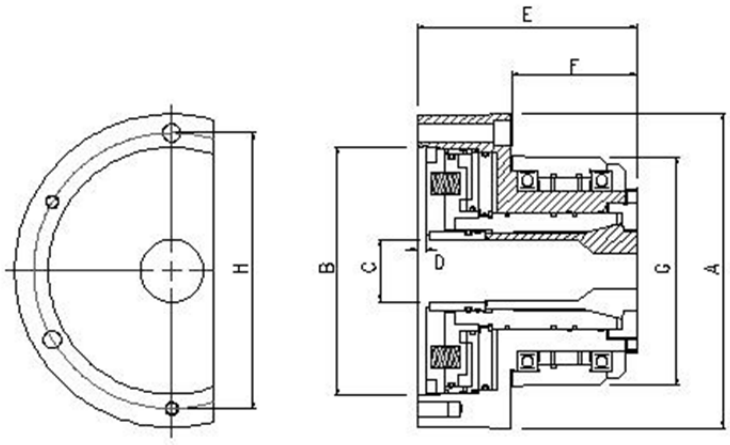
ATL200 Chuck Dimensions (ATL206-5C/ ATL207-16C)



ATL200 Chuck Specifications

Model	ATL206-5C	ATL207-16C
Figure	fig. 1	fig. 1
A	168 (6.61”)	203(7.99”)
B	130 (5.12”)	160 (6.30”)
C	26 (1.02”)	40 (1.57”)
D	4.5 (0.18”)	4.5(0.18”)
E	101 (3.98”)	113 (4.44”)
F	55 (2.17”)	65 (2.56”)
G	116 (4.57”)	136 (5.35”)
H(PCD)	147 (5.79”)	176 (6.93”)
Mounting Screws	4H-M8(Front)	3H-M10(Front)+ 3H-M10(Rear)
Working Collet	5C	16C
MAX RPM	3600	2800
Working Pressure	3-8kgs/cm^2 (43-114psi)	3-8kgs/cm^2 (43-114psi)
Max Clamping OD	26mm(1.02”)	40mm (1.57”)
Piston Area	130CM^2(20.2in^2)	155CM^2(24in^2)
Clamping force	3465kgf@7kg/cm^2 (7623lbf@100psi)	4078kgf@7kg/cm^2 (8971lbf@100psi)
Net Weight	10kg (22lbs)	14kg (31lbs)

ATL200 Chuck Dimensions (ATL207-B42 /ATL208-B60)



ATL200 Chuck Specifications

Model	ATL207-B42	ATL208-B60
Figure	fig. 2	fig. 2
A	197 (7.76")	214 (8.15")
B	155 (6.10")	170 (6.69")
C	42 (1.65")	60 (2.36")
D	4.5 (0.18”)	4.5(0.18”)
E	138 (5.43")	148 (5.83")
F	77 (3.03")	85 (3.35")
G	146 (5.76")	164 (6.46")
H(PCD)	172 (6.77")	186 (7.32")
Mounting Screws	3H-M10(Front)+ 3H-M10(Rear)	3H-M10(Front)+ 3H-M10(Rear)
Working Collet	B42 (173E	B60 (185E)
MAX RPM	2500	2800
Working Pressure	3-8kgs/cm^2 (43-114psi)	3-8kgs/cm^2 (43-114psi)
Max Clamping OD	42mm (1.65")	60mm (2.36”)
Piston Area	280CM^2(43.4in^2)	304CM^2(47.6in^2)
Clamping force	4740kgf@7kg/cm^2 (10,428lbf@100psi)	5150kgf@7kg/cm^2 (11330lbf@100psi)
Net Weight	17kg (37lbs)	21kg (46lbs)

Appendix B

Troubleshooting

Air leak from the clearance

Cause	Recommended Check Procedure
Small quantity of air leak from the clearance is normal.	Low air pressure from the clearance is designed to protect the chuck from penetration of foreign chips, coolant fluid, or any other small objects. Please contact us if the leak is unstable or increasing suddenly

Chuck does not fully clamp

Cause	Recommended Checking Procedure
Air system failure	Check the air supply system.
O-Ring failure (air leak)	Under normal usage and maintenance, the life of the O-Rings in this chuck is 3 years (or more), depending on the operating environment conditions (humidity, temperature, etc.). Please contact Atlas Workholding for O-Ring replacements.

Noise from chuck when rotating

Cause	Recommended Checking Procedure
Damaged bearings due to foreign substances entering from the air system.	Please contact Atlas Workholding for bearing replacements.
Damaged bearings due to water drops in the clearance.	
Damaged bearings due to rust or corrosion.	

Workpiece slips or being pulled back when chuck is clamping

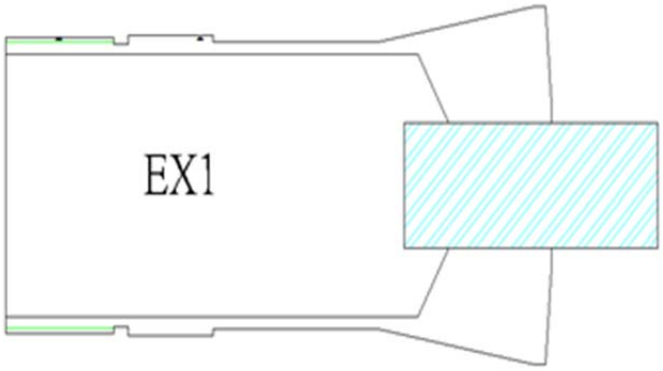
Cause	Recommended Checking Procedure
Insufficient clamping force.	Increase air pressure in “Close Side”.
The machining force is too high.	1. Reduce cutting feed. 2. Reduce cutting width.
The clamping size does not fit the workpiece	When purchasing a collet, be sure to order one for the precise size of the workpiece to be machined. The collet itself will have a minimum opening of +0.2 mm for the workpiece to be fed. If the size of the collet is too large or too small, the clamping will be unstable. The elasticity of the collet can generally adapt to the tolerance within +/-0.05mm. Improper collet size can cause instability while machining and cause the workpiece to fly out of the collet. The relation of workpiece size and collet size can be seen in Figure B-1

Poorly- finished roundness (workpiece)

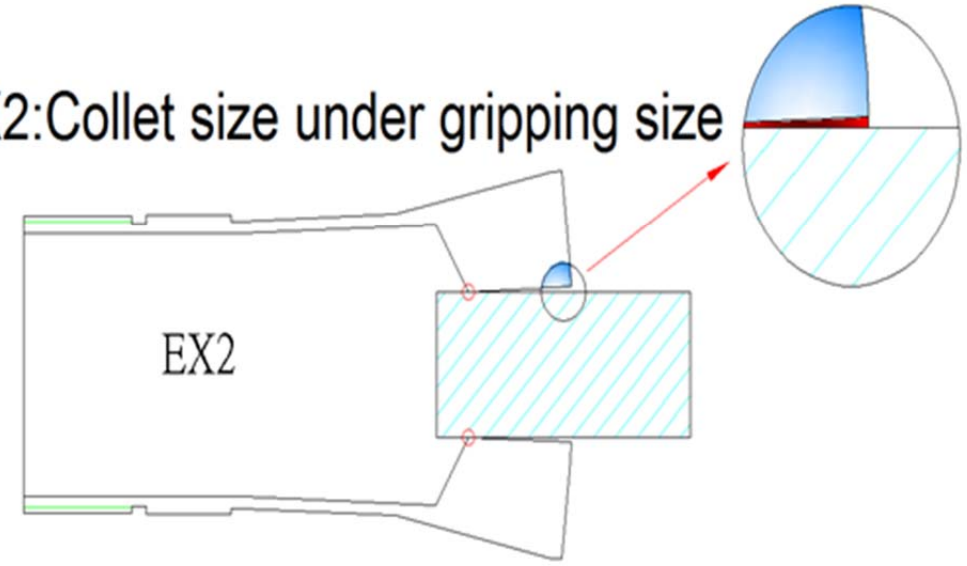
Cause	Recommended Checking Procedure
	Refer to the **Precise Chucking – Check List**.

Figure B-1

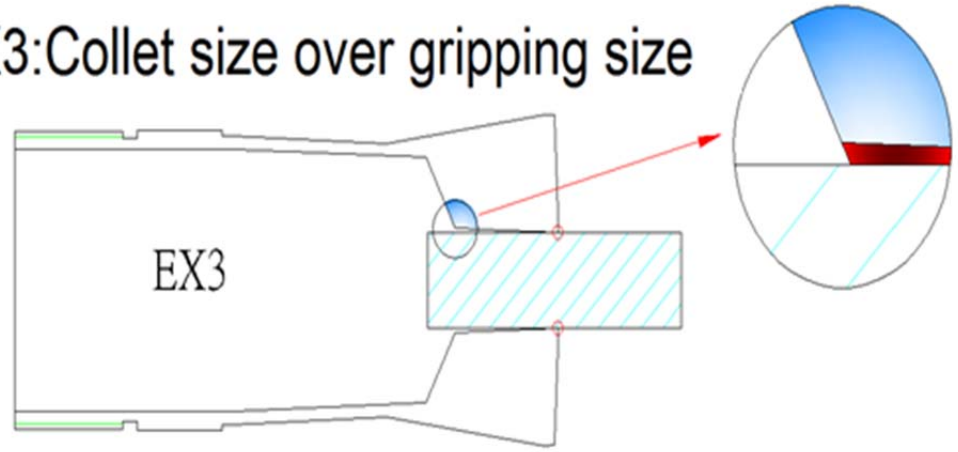
EX1:Collet size exact gripping size



EX2:Collet size under gripping size



EX3:Collet size over gripping size



Appendix C

Precise Chucking – Check List

1. Check the runout of the spindle.	
2. Check the runout of the spindle adaptor.	
3. Check the runout of the chuck body.	
4. The contact surface of the spindle, the spindle adaptor, and the chuck should be cleaned.	
5. Filter bars should be mounted.	
6. Is the air pressure stable? If not, please add one more regulator.	
7. Is the contact surface of the collet and the tapered collet seat cleaned?	
8. Is the collet's internal diameter correct?	
9. Is the collet worn out? Replace Collet	
10. Is the collet set properly?	
11. Is there any burr left on the workpiece?	
12. Is the tolerance of the workpiece too large?	
13. Is the gripping surface of the collet and the workpiece cleaned?	
14. Is the workpiece too long to have an unreasonable leverage	