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General Information

**Intended use**
The Compact Air Drive II is an air-driven power tool for use in traumatology, endoprosthetics and spinal column surgery. To ensure proper operation of the Compact Air Drive II, use only Synthes original accessories.

**Patient safety**
The Compact Air Drive II may only be used on patients after the medical personnel have read the instructions. Since it is impossible to fully exclude the possibility of technical problems, always ensure that an alternative system is ready when using the unit on patients.

**Starting the system**
New power tools and their accessories must undergo the entire reprocessing process before being used. Completely remove protective caps and films.

Compressed air units may never be operated with oxygen (due to the explosion hazard), only with compressed air or nitrogen.

Recommended operating pressure: 6–7 bar.

Only use Synthes original compressed air hoses.

To prevent injury, the handpiece must be locked with the safety system during each manipulation.

Properly operating cutting tools are essential to the success of an operation. For this reason, used tools must be checked for wear and/or damage after each use and be replaced if necessary. For each operation, we recommend using a new Synthes original cutting tool.

**Maintenance**
The life of the equipment can be substantially extended by following the service instructions.

Careful maintenance of the system will reduce heat development in the handpiece and the attachments.

For the devices to function properly, Synthes recommends that they be serviced annually by Synthes, or by exclusive Synthes sales outlets.

Synthes is not responsible for damage arising from improper use or technical service rendered by unauthorized parties.

Additional information on the use and preparation of the products can be obtained from a Synthes representative.

Particular attention should be given to the section “Care and Maintenance” starting on page 22.

**Liability of the user**
The user of the product is responsible for proper use of the equipment during surgery.

**Explanation of symbols used**

⚠️ This symbol provides notification of important information. When this symbol is on a device, it refers to important information in the accompanying documents.

⚠️ This symbol indicates that the corresponding device may not be immersed in liquids.

**Storage and transport**
Please use the original packaging for dispatch and transport. If this is no longer available, please contact the Synthes office.

**Warranty**
The warranty for the tools and accessories does not cover damage of any kind resulting from improper use, damaged seals or improper storage and transport. The manufacturer does not accept liability for damage resulting from repairs or maintenance carried out by unauthorized sites.

**Precautions:**
Should the machine drop on the floor and have visible defects, do not use it anymore and send it to the Synthes service center.
# System Specifications

## Environmental conditions

<table>
<thead>
<tr>
<th></th>
<th>Operation</th>
<th>Transportation and storage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temperature:</strong></td>
<td>10 – 40°C</td>
<td>–20 – 50°C</td>
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<tr>
<td><strong>Relative humidity:</strong></td>
<td>30–75%</td>
<td>10–75%</td>
</tr>
<tr>
<td><strong>Atmospheric pressure:</strong></td>
<td>500–1060 hPA</td>
<td>500–1060 hPA</td>
</tr>
</tbody>
</table>

## Technical data

<p>| | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td><strong>Continuously adjustable speed:</strong></td>
<td>0–900 rpm</td>
</tr>
<tr>
<td><strong>Weight:</strong></td>
<td>780 g</td>
</tr>
<tr>
<td><strong>Air consumption:</strong></td>
<td>Approx. 250 l/min</td>
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<tr>
<td><strong>Recommended operating pressure:</strong></td>
<td>6–7 bar (max. 10 bar)</td>
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<tr>
<td><strong>Cannulation:</strong></td>
<td>Ø 3.2 mm</td>
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<tr>
<td><strong>Noise level in operating position:</strong></td>
<td>72 dB(A)</td>
</tr>
<tr>
<td><strong>Handpiece vibration:</strong></td>
<td>&lt;2.5 m/s²</td>
</tr>
</tbody>
</table>

May not be stored or operated in explosive atmospheres. Subject to technical modifications.
Using the Compact Air Drive II

Handpiece

Operation
1 Attachment coupling
2 Unlocking button for attachment coupling
3 Speed regulation
4 Reverse running selection
5 Softmode switch with safety function
6 Hose coupling

Forward/reverse running
Use the bottom trigger 1 to gradually adjust the forward speed up to 900 rpm.

Simultaneously pull the top trigger 2 to immediately switch to reverse.

Safety system
The Compact Air Drive II has a safety system that prevents the drive from being accidentally started.

To lock the unit, turn the softmode switch 5 fully clockwise to the “OFF” position. To unlock it, turn the softmode switch 5 counterclockwise to the desired power level.

Adjusting the maximum power
The maximum power can be adjusted gradually by turning the softmode switch 5 to the appropriate marking on the handpiece.
Connecting the compressed air hose to the handpiece
Shove the female hose coupling onto the male hose coupling until it locks into place. The coupling will lock by itself with an audible click.

Removing the compressed air hose
Disconnect the hose by pulling back the hose coupling sleeve.
Attachments

Mounting the attachments
Insert the desired attachment into the attachment coupling of the handpiece until it engages. Do not press the release button for the attachment coupling when mounting the attachments.

Ensure that the attachment is correctly held in the attachment coupling by pulling on it slightly.

Removing the attachments
Pressing the unlocking button releases the attachment from the attachment coupling and shifts it slightly forward. Then remove the attachment.

Caution
− To prevent injury, the tool must be locked with the safety system (see page 4) during each manipulation.
− Make sure not to press the triggers (especially the top trigger) when mounting and removing the attachments.
− When mounting and removing attachments, do not simultaneously pull on the attachment while pressing the unlocking button. This can make it difficult to remove the attachment.
AO/ASIF Quick Coupling (511.750)

**Attaching cutting tools:**
Slide forward the ring on the attachment, and fully insert the tool while rotating it slightly.

After the tool has been fully inserted, release the ring. Pull on the tool to make sure that it is correctly locked in the coupling.

**Removing cutting tools:**
First slide the ring on the attachment forward, and then remove the tool.

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Quick Coupling for DHS/DCS Triple Reamers (511.761)

**Attaching cutting tools:**
First slide the coupling sleeve on the attachment to the rear in the direction of the arrow, and then insert the tool.

After the tool has been fully inserted, release the coupling sleeve. Pull on the tool to make sure that it is correctly locked in the coupling.

**Removing cutting tools:**
First slide the coupling sleeve on the attachment to the rear in the direction of the arrow, and then remove the tool.
Drill Chuck with key (511.730)

**Attaching cutting tools:**
Open the jaws of the chuck with the provided key (510.190) or by hand by turning the two moveable parts against each other to the right (clockwise).

Insert the shaft of the tool into the open chuck.

Close the Drill Chuck by rotating the moveable parts against each other to the left. Make sure that the shaft remains in the middle between the three jaws of the chuck. To tighten the chuck, turn the key (510.190) to the right (clockwise). The teeth of the key must be correctly seated in the toothed rim of the chuck.

**Removing cutting tools:**
Open the chuck by turning the key (510.190) to the left, and remove the tool.

Drill Chuck, keyless (511.731)

**Attaching cutting tools:**
Open the jaws by rotating the ring counter-clockwise. Insert the tool shaft into the open chuck, and close the jaws. Make sure that the shaft remains in the middle between the clamps of the chuck.

**Removing cutting tools:**
Open the chuck jaws by turning the ring counter-clockwise, and remove the tool.
Quick Coupling for Kirschner Wires (511.791)

**Inserting the Kirschner Wire:**
Completely open the adjusting sleeve at the end of the attachment, insert the Kirschner Wire, and close the adjusting sleeve until it clamps the wire. Then open the adjusting sleeve three clicks. The Kirschner Wire is automatically lightly held in the selected position. If the wire is clamped, open the adjusting sleeve until it is released.

**Clamping the Kirschner Wire and inserting it in the bone:**
To clamp the Kirschner Wire, pull the tension lever against the handle of the unit. The Kirschner Wire remains clamped as long as the lever is held.

Simultaneously press the forward trigger to drill the wire into the bone. Hold the tension lever until the Kirschner Wire is inserted. To grasp the wire at a different place, release the lever, move the tool with the attachment along the Kirschner Wire to the desired length, and pull the lever against the handle.

**Removing the Kirschner Wire from the bone:**
To remove the Kirschner Wire from the bone, grip it with the tension lever and pull it out of the bone while pressing both triggers for reverse.
Using the Compact Air Drive II

Attachment for Acetabular and Medullary Reaming (511.785)

**Attaching cutting tools:**
Insert the tool into the opening of the Attachment for Acetabular and Medullary Reaming, and press both parts together until they lock.

**Removing cutting tools:**
First pull back the movable ring on the attachment, and then remove the tool.

Reverse is automatically blocked which prevents flexible shafts from being damaged by unintentionally actuating reverse. If reverse is desired (for example when using SynReam), attachment 511.786 can be used.

Attachment for Acetabular and Medullary Reaming, with reverse option (511.786)

This attachment allows you to use reverse running which is blocked with attachment 511.785.

**Mounting the attachment:**
To enable reverse running, the attachment must be coupled onto the drive unit in such a way that the marked arrow on the attachment lies on the top. Reverse running can only function in one position; this prevents unintentional activation of reverse running.

**Attaching and removing cutting tools:**
Use the same procedure as with the Attachment for Acetabular and Medullary Reaming (511.785).
Radiolucent Drive (511.300)
The Radiolucent Drive can be used with the Compact Air Drive II in combination with the AO/ASIF Quick Coupling (511.750).

Mounting the attachment:
Shove the Radiolucent Drive onto the quick coupling (511.750) up to the stop. Rotate the drill on its axis until the best gripping position is reached. Always hold the drill in one hand and the drive in the other.

Removing:
Follow the same procedure in reverse.

Inserting the drill bit:
First push the moveable ring on the attachment forward, and then insert the drill bit until the coupling piece of the drill bit is completely engaged in the attachment coupling. Slight rotation of the drill bit will facilitate this procedure. Then slide back the movable ring on the attachment to secure the drill bit. Check that the drill bit is correctly locked in the coupling by pulling it slightly.

Removing:
Follow the same procedure in reverse.
Using the Radiolucent Drive:
Before positioning the Radiolucent Drive, align the image intensifier until the distal locking hole of the medullary nail is round and easily visible.

After the incision, position the Radiolucent Drive and center the drill bit tip over the locking hole. On the monitor of the image intensifier, you can see both the drill bit and the target rings of the drive.

Swing the drive up and center it precisely so that the drill bit appears as a round point and the locking hole is visible around it. The target rings also assist centering. The locking hole can now be drilled directly.

Caution
– Only special 3-flute spiral drill bits can be used. Your Synthes representative will be glad to provide you with additional information on which drill bits can be used.
– Handle the Radiolucent Drive with great care. Do not allow contact between the drill bit and the medullary nail.
– Depending on the setting of the image intensifier, a zone may appear in the rear of the Radiolucent Drive that is not radiolucent. However, this does not inhibit aiming and working with the device.
– To protect the gears, the Radiolucent Drive is equipped with a slip clutch that disengages in case of an overload and emits an audible rattling.
– The following procedures can cause an overload:
  – Correcting the drilling angle when the cutting edges of the drill bit are completely in the bone.
  – Running into the nail with the drill bit.
– Drilling can continue after making the following corrections:
  – Correcting the drilling angle: Remove the drill bit until the flutes are visible, and restart drilling.
  – Hitting a nail: Remove the drill bit until the flutes are visible, and re-aim the drill bit or exchange the drill bit if necessary.
**Oscillating Drill Attachment (511.200)**
The Oscillating Drill Attachment (511.200) can be used on the Compact Air Drive II together with the AO/ASIF Quick Coupling (511.750).

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**Mounting the attachment:**
Slide the Oscillating Drill Attachment from the front over the quick coupling (511.750) up to the stop (Fig. 1). Rotate the handpiece and Oscillating Drill Attachment in relation to each other until the attachment locks onto the top trigger (Fig. 2). This simultaneously keeps you from unintentionally activating reverse.

**Removing:**
Follow the same procedure in reverse.

**Inserting the drill bit:**
First shove the sleeve on the front part of the Oscillating Drill Attachment forward, and then completely insert the drill bit under slight rotation.

Let the sleeve slide back, and check that the drill bit is properly locked by pulling on it.

**Removing:**
Follow the same procedure in reverse.

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**Caution:**
It is best to use a three-flute drill bit in the Oscillating Drill Attachment. It is easier to drill into an angled surface with such bits.
Oscillating Saw Attachment (511.800)

Mounting the attachment:
Shove the attachment onto the tool. There is a noticeable resistance. The attachment then clicks into place to show that the coupling was successful. Once the attachment is mounted, reverse is automatically blocked.

The attachment can be locked in eight different positions. When the attachment needs to be rotated after it is coupled, it must first be uncoupled, and the attachment is pulled approx. 1 cm forward. Adjust the desired angle (45° increments), and shove the attachment back toward the tool until it locks into place.

Removing:
Follow the same procedure in reverse.

Caution
– Do not simultaneously pull the saw attachment forward while pressing the release button.
– When removing the saw attachment, keep the vent hole free on the bottom of the coupling shaft.
– When mounting and removing the attachment, do not press the top trigger. This can damage the power tool.

Changing saw blades:
1. Loosen the screw by about four turns with the key (518.090).
2. Remove the saw blade by first pressing the saw blade against the screw head, and then pull it out in a forward direction.
3. Insert the new saw blade by exerting a slight pressure against the screw head and then adjusting it to the position required. The saw blades can be locked in different positions.
4. Retighten the screw with the key (518.090).
**Adjusting the amplitude:**

The deflection of the saw blade can be changed with the Oscillating Saw Attachment (511.800). This is frequently necessary when doing precision work and when very long saw blades are used. Vibration can be minimized, and the sawing performance can be optimized. It does not matter if the deflection is set before you start or while you are working.

The neutral position is between the two extreme positions and corresponds to a value of approximately 4°. If you want a greater deflection, turn the adjusting lever toward “MAX” (5°). When the adjuster lever is set to ”MIN”, there is a deflection of 2.5°. Maximum sawing power is obtained in the centre position.
Oscillating Saw Attachment II (511.801)
Mount and remove the attachment in the same manner as Oscillating Saw Attachment 511.800.

**Changing saw blades:**
1. Open the saw blade quick coupling by rotating the fixation knob counter-clockwise.
2. Remove the saw blade by first pressing the saw blade against the screw head, and then pull it out in a forward direction.
3. Insert the new saw blade by exerting a slight pressure against the screw head and then adjusting it to the position required. The saw blades can be locked in different positions.
4. Lock the saw blade coupling by tightening the fixation knob clockwise. Make sure that the fixation knob is firmly tightened. Otherwise the screw can loosen during use causing the saw blade to vibrate.
Reciprocating Saw Attachment (511.902)

Mounting the attachment:
The attachment can be locked in eight different positions (offset in 45° steps). Shove the Reciprocating Saw Attachment onto the tool in the desired position. There is a noticeable resistance. The attachment then clicks into place and shows that the coupling was successful. Reverse is now blocked.

To change the position, first release the coupling mechanism with the release button, then use your other hand to shove the attachment approx. 1 cm forward, rotate it into the desired position, and shove it back until it locks on the tool.

Removing:
Release the coupling mechanism with the release button, and then use your other hand to remove the attachment from the machine.

Caution
– Do not simultaneously pull the saw attachment forward while pressing the release button.
– When removing the saw attachment, keep the vent hole free on the bottom of the coupling shaft.
– When coupling and releasing the attachment, do not press the top trigger. This can damage the power tool.

Changing saw blades:
Turn the lock knob in the direction of the arrow until the saw blade jumps forward approx. 1 mm. Remove the saw blade from the coupling (the slot of the lock knob and saw blade coupling are in the same axis). Insert the new saw blade in the guide slot of the saw blade coupling until the lock knob springs back into locked position with a click (the slot of the lock knob and saw blade coupling are axially offset).

Check if the saw blade is seated tightly by pulling in a lengthwise direction.
**Mounting the attachment:**
Use the Top for Sternum together with the Reciprocating Saw Attachment (511.902). The Top for Sternum can be placed on the Reciprocating Saw Attachment and tightened with the provided Allen wrench. Make sure that it is seated well.

**Removing:**
Follow the same procedure in reverse.

**Changing saw blades:**
Follow the same procedure as for Reciprocating Saw Attachment (511.902). Note that only Reciprocating Saw Blade (511.915) may be used since its length is adapted to the length of the Top for Sternum.

**Working with saw attachments**
The tool must be operating when the attachment makes contact with the bone. Do not exert excessive pressure on the saw since it slows down sawing because the saw teeth catch in the bone.

The best sawing performance is achieved by moving the tool slightly back and forth in the plane of the saw blade so that the blade can go a bit beyond the bone on both sides. Very precise cuts can be made when the saw blade is guided steadily. Imprecise cuts arise due to used blades, excess pressure, or jamming the saw blade.

**Instructions for handling saw blades**
Synthes recommends using a new blade for each operation to ensure that the saw blade is optimally sharp and clean. The following risks are associated with used blades:
- Necrosis caused by excessive heat build-up
- Infection caused by residue
- Extended cutting time from poor sawing performance

**Precaution:**
Saw blades labeled “Single Use” should not be used repeatedly because of cleaning problems.
Mounting and removing a screwdriver shaft:
Insert the screwdriver shaft while rotating it slightly until it locks into place. To remove it, pull back the unlocking ring, and pull out the screwdriver shaft.

Using the Torque Limiter:
Pick up a screw from the corresponding locked plating system with the screwdriver shaft, and insert it in the desired plate hole. To insert the screw, start the power tool slowly, increase the speed and then reduce it again before the screw is fully tightened. The torque is automatically limited to 1.5 or 4.0 Nm. When this limit is reached, you will hear a distinct clicking. Stop the tool immediately, and pull the tool away from the screw.

Follow the surgical technique of the respective locked plating system.

Caution:
The Torque Limiter must be annually serviced and recalibrated by Synthes. Note the information on the test certificate in the packaging. The user is responsible for following the calibration schedule.
Angular Drive Unit for Medullary Reaming (510.200)

**Mounting the attachment:**
Use the Angular Drive Unit for Medullary Reaming together with the Attachment for Acetabular and Medullary Reaming (511.785 or 511.786). Before mounting the drive, remove its locking screw by turning it counter-clockwise. Then shove the drive up to the stop over the Attachment for Acetabular and Medullary Reaming that is coupled to the Compact Air Drive II. Rotate the drive unit to achieve the optimum grip, and lock it in place by tightening the locking screw clockwise.

**Removing:**
Follow the same procedure in reverse.

**Attaching and removing cutting tools:**
Use the same procedure as with the Attachment for Acetabular and Medullary Reaming (511.785 or 511.786).
Adapters for using tools by other manufacturers

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<th>Code</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>511.782</td>
<td>Hudson Adapter</td>
</tr>
<tr>
<td>511.783</td>
<td>Trinkle Adapter, modified (Zimmer adapter)</td>
</tr>
<tr>
<td>511.784</td>
<td>Trinkle Adapter</td>
</tr>
<tr>
<td>511.787</td>
<td>Künscher Adapter</td>
</tr>
<tr>
<td>511.788</td>
<td>Harris Adapter</td>
</tr>
</tbody>
</table>

Mounting the adapters:
Use the adapters together with the Attachment for Acetabular and Medullary Reaming (511.785 or 511.786).

Insert the adapter into the opening of the Attachment for Acetabular and Medullary Reaming (511.785 or 511.786), and press both parts together until they lock.

Removing:
First pull back the movable ring on the attachment, and then remove the adapter.

Attaching cutting tools:
First move the coupling sleeve on the adapter toward the rear, and then completely insert the tool.

After the tool has been fully inserted, release the coupling sleeve. Check that the tool is properly locked in the adapter by gently pulling on it.

Removing cutting tools:
First shove the coupling sleeve on the adapter toward the rear, and then remove the tool.
Care and Maintenance

General Information

Power tool units and attachments are frequently exposed to high mechanical loads and shocks during use and should not be expected to last indefinitely. Proper handling and maintenance help extend the useful life of surgical instruments. Gentle care and maintenance with proper lubrication can substantially increase the reliability and life of the system components.

Synthes recommends annual servicing and inspection by the original manufacturer or its exclusive sales outlets. The manufacturer assumes no warranty for damages arising from improper use, neglected or unauthorized servicing. For more information about Care and Maintenance, please refer to the CAD II Care and Maintenance Poster (038.000.017).

Precautions

- Reprocessing must be performed immediately after each use.
- Cannulations, unlocking sleeves and other narrow sites require special attention during cleaning.
- Cleaners with pH 7–9.5 are recommended. The use of cleaners with higher pH values can – depending on the cleaner – cause the dissolution of the surface of aluminum and its alloys, plastics or compound materials and they should only be used considering the data regarding material compatibility according to its data sheet. At pH values higher than 11, the surfaces of stainless steel can also be affected. For detailed information about material compatibility, see “Material Compatibility of Synthes Instruments in Clinical Processing” at www.synthes.com/reprocessing.
- Follow the enzymatic cleaner or detergent manufacturer’s instructions for use for the correct dilution concentration, temperature, exposure time and water quality. If the temperature and time are not specified, follow Synthes’ recommendations. Devices should be cleaned in a fresh, newly-made solution.
- Detergents used on the products will be in contact with the following materials: stainless steel, aluminum, plastic and rubber seals.
- Synthes recommends using new sterile cutting tools for each operation. Refer to “Clinical Processing of Cutting Tools” (038.000.499) for detailed clinical processing instructions.

Unusual Transmissible Pathogens

Surgical patients identified as at risk for Creutzfeldt-Jakob disease (CJD) and related infections should be treated with single-use instruments. Dispose of the instruments used or suspected of use on a patient with CJD after surgery and/or follow the current national recommendations.

Important

- The clinical processing instructions provided have been validated by Synthes for preparing a non-sterile Synthes medical device; these instructions are provided in accordance with ISO 17664:2004 and ANSI/AAMI ST81:2004.
- Consult the national regulations and guidelines for additional information. In addition, compliance with internal hospital policies and the procedures and recommendations of manufacturers of detergents, disinfectants and any clinical processing equipment is additionally required.
- It remains the responsibility of the processor to ensure that the processing performed achieves the desired result using the appropriate properly installed, maintained and validated equipment, materials and personnel in the processing unit. Any deviation by the processor from the instructions provided should be properly evaluated for effectiveness and potential adverse consequences.
Preparation for Cleaning and Disinfection

In the operating room
Remove surface soiling with a disposable cloth or paper towel.

Storage and transport
No special requirements. Reprocess an instrument directly after it is used so that blood does not dry on it.

Preparation for cleaning
– Reprocessing must be carried out immediately after each use.
– Before disinfection and cleaning, all attachments and instruments must be removed from the machine.
– The unit and attachments may not be immersed.
– Make sure that no cleaning solution enters the machine’s air inlet.
– Do not use pointed objects for cleaning.
– When cleaning the unit, do not insert objects into the inlet and outlet holes for the air connector since this would damage the microfilter.
Cleaning and Disinfection

Manual cleaning and disinfection
1. Wipe or spray the outside of the Air Hoses, machine and accessories with disinfectant and let the disinfectant work according to the instructions of the disinfectant’s manufacturer.
2. Remove all residues from the disinfected machine and accessories under running water using a soft brush or cloth.
3. Clean cannulations of the drive unit, attachments and tools with the provided cleaning brush (519.400).
4. Coupling sleeves, sliding sleeves and similar difficult-to-access locations require special attention.
5. Rinse the unit and accessories with clear water and then dry with an absorbent cloth.
Automated cleaning and disinfection

(Validated with Miele G 7735 CD, program: Vario TD; detergent: Neodisher Mediclean)

1. Plug the air inlet of the drive unit with the seal nipple (519.596).
2. Seal the air hoses with the Synthes coupling by joining the inlet and outlet.
3. Use sealing nipples (519.591, 519.596 or 519.592) to close air hoses that have Dräger and BOC/Schrader couplings.
4. Manually preclean critical sites such as cannulations, unlocking sleeves and other difficult-to-access locations.
5. Place all articles in the washing tray in a way that an effective washing/disinfection can be performed. Ensure that the water can flow off any surface.
6. Prewash with cold water.
7. Wash with detergent according to the instructions of the detergent manufacturer.
8. Rinse with tap water and then with cold demineralized water.
9. Thermally disinfect with demineralized water at 92°.
10. Dry with hot air at 90°.
11. Upon removing the instruments, remove the seal nipple and inspect the cannulations, coupling sleeves, etc. for visible soiling. If necessary, repeat the cycle or clean manually.

Caution

– For automated cleaning, also consult the brochure “Synthes Power Tools – Machine Washing Recommendations” (036.000.101).
– Power Tools (especially seals and bearings) are exposed to greater stress in machine washing than when they are cleaned manually. For this reason, power tools must be regularly sent to be serviced (at least once per year) when they are machine washed.
– Other cleaning and disinfecting methods are possible. Have an expert check the effectiveness under local conditions.
– Other detergents and disinfectants are possible. Clarify the material compatibility and effectiveness beforehand with the detergent or disinfectant manufacturer.
Lubrication

**Lubricating the Power Tool**
- After each use, apply around 5 drops of the Synthes special oil (oil dispenser 519.970) into the air inlet of the cleaned power tool.
- Connect the handpiece to a single hose, or to a double hose using the adapter for oiling (519.790).
- Wrap gauze or a cloth around the hose coupling to absorb the exiting oil.
- Run the handpiece for approximately 20 seconds, and change the direction of rotation several times.
- When the exiting oil is visibly dirty, the process has to be repeated.
Lubricating the attachments
After each use, lubricate all moving parts of the attachments with 1–2 drops of Synthes special oil (519.970). Distribute the oil by moving the parts, and remove excess oil with a cloth.

Caution
– To ensure a long service life and reduce repairs, the power tool and all attachments must be lubricated after each use. **Exception:** The Radiolucent Drive (511.300) may not be lubricated.
– The power tool and accessories may only be lubricated with Synthes special oil (519.970). The composition of the vapor-permeable and biocompatible oil is optimized for the specific requirements of the power tool. Lubricants with other compositions can cause the power tool to jam and be toxic.
– Only lubricate the power tool and attachments when clean.
– Compressed air hoses should never contact oil. When lubricating, never use a double hose without the adapter for oiling (519.790) since leaking oil could otherwise damage the hose.
Inspection and Sterilization

**Inspection and function test**
- Visually inspect for damage and wear.
- Check the handpiece controls for smooth operation and function.
- Check the coupling and unlocking sleeves of the handpiece and attachments for smooth operation, and check for function together with instruments such as cutting tools.

**Packaging**
- We recommend the Synthes Vario Case (689.200) or sterilizing trays in combination with double-layer sterile paper.
- Sterile containers can also be used. Please follow the manufacturer’s instructions.
- Pack the hoses separately since contact with hot metal can damage the plastic. Do not join the hose ends for sterilization and remove any sealing nipples.

**Sterilization**
(Validated with AD Linden 3/3/6 DECE)

For sterilization, we recommend a fractionated prevacuum method with the following parameters:
- Temperature: 134 °C
- Plateau time: 5 minutes
- Programs with a longer plateau time are also possible.
- After sterilization, the handpiece may only be used when it has cooled to room temperature. Cooling may not be accelerated. Only in emergencies may a largely cooled power tool be connected to the compressed air and fully cooled by being purged with air.

**Caution**
- The following maximum values may not be exceeded: 143 °C over a maximum of 22 minutes. Higher values can damage the sterilized products.
- Hot air sterilization, ethylene oxide and formaldehyde sterilization are not suitable for reasons of material incompatibility.
- Other sterilization methods are possible. Have an expert check the effectiveness of all sterilization methods under local conditions.

**Storage**
No special requirements (environmental conditions: see page 3). Follow the instructions of the sterile paper and sterile container manufacturers.

**Contact Manufacturer**
Please consult a local Synthes representative if you need any additional information.
Repairs and Technical Service

The tool should be sent to the Synthes office for repair if it is faulty or malfunctions. Contaminated products have to run through the complete reprocessing procedure before being sent to the Synthes office for repair or technical service.

Faulty devices may not be used. If it is no longer possible or feasible to repair the tool it should be disposed of (refer to the following section "Disposal").

Other than the above-mentioned care and maintenance, no further maintenance work may be carried out independently or by third parties.

Synthes recommends the device and accessories such as attachments to be regularly (once a year) serviced by the original manufacturer or an authorized site.

**Precaution:**
The manufacturer assumes no responsibility for damage resulting from neglected or unauthorized maintenance.
Disposal

In most cases, faulty tools can be repaired (refer to the previous section “Repairs and Technical Service”). Please send tools that are no longer used to your local Synthes representative. This ensures that they are disposed of in accordance with the national application of the respective directive.

Precautions:
Contaminated products have to run through the complete reprocessing procedure, so that there is no danger of infection in case of disposal.
### Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible causes</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tool does not start.</td>
<td>Compressed air motor is blocked from not operating for a long time.</td>
<td>Lock the power tool. Mount quick coupling (511.750) or drill chuck (511.730) and manually turn without pulling the trigger.</td>
</tr>
<tr>
<td>Tool does not have enough power.</td>
<td>Operating pressure is too low.</td>
<td>Set operating pressure on pressure regulator to 6–7 bar.</td>
</tr>
<tr>
<td></td>
<td>Microfilter is blocked.</td>
<td>Exchange microfilter in the central air supply.</td>
</tr>
<tr>
<td></td>
<td>Air inlet is blocked.</td>
<td>Remove particles from the air inlet with tweezers. Do not use sharp objects for this.</td>
</tr>
<tr>
<td></td>
<td>Hose is too long.</td>
<td>Check that the entire length of the hose does not exceed 8 m.</td>
</tr>
<tr>
<td></td>
<td>Hose couplings are defective.</td>
<td>Check wall and power tool hose couplings for leaks.</td>
</tr>
<tr>
<td></td>
<td>Central air system is blocked.</td>
<td>Have someone check the central air system.</td>
</tr>
<tr>
<td></td>
<td>Softmode switch is blocked.</td>
<td>Let the tool run at maximum speed and turn the softmode switch on and off several times.</td>
</tr>
<tr>
<td>Power tool continues to operate after releasing the trigger.</td>
<td>The trigger is blocked by deposits of blood, etc.</td>
<td>Press trigger several times; clean and oil according to instructions. Use only Synthes Special Oil (Oil Dispenser 519.970).</td>
</tr>
<tr>
<td>Attachments cannot be coupled to the tool.</td>
<td>The locking pin on the attachment coupling is blocked.</td>
<td>Lock the power tool. Remove particles with tweezers. Do not use sharp objects for this.</td>
</tr>
<tr>
<td></td>
<td>The connection geometry at the attachments is faulty.</td>
<td>Send attachments for repair to your Synthes representative.</td>
</tr>
</tbody>
</table>
## Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible causes</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Despite pressing the release button, the attachments cannot be removed from the tool.</td>
<td>The attachment became jammed by simultaneously pressing the release button and pulling on the attachment.</td>
<td>Press the release button again without pulling on the attachment.</td>
</tr>
<tr>
<td>Tool is difficult to couple or cannot be coupled.</td>
<td>Coupling geometry of the tool has changed due to wear.</td>
<td>Exchange the tool, or send it to your local Synthes service center.</td>
</tr>
<tr>
<td>The Kirschner wire is completely inside the drill and cannot be moved forward.</td>
<td>The Kirschner wire was inserted from the rear.</td>
<td>Lock the power tool. Remove the quick coupling for the Kirschner wires (511.791), hold the drive shaft opening facing downward, and shake the Kirschner wire out.</td>
</tr>
<tr>
<td>Bone and tool heat up during surgery.</td>
<td>The cutting tool is blunt.</td>
<td>Replace the tool.</td>
</tr>
<tr>
<td>Oscillating saw attachment vibrates too much.</td>
<td>The saw blade has come loose.</td>
<td>Tighten the fixation knob for the saw blade quick coupling more firmly (for saw attachment 511.801), or tighten the connection with the key (for saw attachment 511.800).</td>
</tr>
</tbody>
</table>

If the recommended solutions do not work, send the power tool to your Synthes service center.

For further technical questions or information on our services, please contact your Synthes representative.
Drive units
S11.701 Compact® Air Drive II

Attachments
310.900 Chuck with mini quick coupling
510.200 Right angled drive for medullary reaming
511.200 Oscillating drill attachment
511.300 Radiolucent drive
511.730 Chuck with key
511.731 Drill chuck, keyless
511.750 AO/ASIF quick coupling
511.761 Quick coupling for DHS/DCS® triple reamers
511.770 Torque limiter, 1.5 Nm
511.771 Torque limiter, 4.0 Nm
511.782 Hudson adapter
511.783 Trinkle adapter, modified (Zimmer adapter)
511.784 Trinkle adapter
511.785 Attachment for acetabular and medullary reaming
511.786 Attachment for acetabular and medullary reaming, with optional reverse
511.787 Kuntscher adapter
511.788 Harris adapter
511.791 Quick Coupling for Kirschner Wires Ø 0.6–3.2 mm
511.800 Oscillating saw attachment, with variable deflection, with key No. 518.090
511.801 Oscillating saw attachment, with quick coupling
511.902 Reciprocating saw attachment
511.904 Top for sternum for reciprocating saw attachment

Accessories
510.190 Spare key, for No. 511.730
518.090 Key, for fixing of saw blades
519.400 Cleaning brush
519.591 Seal nipple for BOC/Schrader double air hoses with st. steel coupling, silver
519.592 Seal nipple for BOC/Schrader double air hoses with aluminium coupling, beige
519.596 Seal nipple for Dräger double air hoses*
519.790 Lubrication adapter
519.970 Oil dispenser with Synthes special oil
689.200 Vario Case™ for Compact Air Drive, without lid, without contents
689.507 Lid (stainless steel), size 1/1, for Vario Case

Air Hoses

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Description</th>
<th>Usable length (mm)</th>
<th>Thickness of cut (mm)</th>
<th>Width (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>519.230</td>
<td>Double Air Hoses, for Wall Coupling (Synthes)</td>
<td>25</td>
<td>0.60</td>
<td>6</td>
</tr>
<tr>
<td>519.235</td>
<td>Double Air Hoses, for Wall Coupling (Dräger)</td>
<td>25</td>
<td>0.60</td>
<td>10</td>
</tr>
<tr>
<td>519.250</td>
<td>Double Air Hoses, for Wall Coupling (BOC/Schrader)</td>
<td>25</td>
<td>0.60</td>
<td>14</td>
</tr>
<tr>
<td>519.204</td>
<td>Double Air Hoses, for Wall Coupling (Synthes)</td>
<td>49</td>
<td>0.60</td>
<td>10</td>
</tr>
<tr>
<td>519.205</td>
<td>Double Air Hoses, for Wall Coupling (Dräger)</td>
<td>49</td>
<td>0.60</td>
<td>14</td>
</tr>
<tr>
<td>519.206</td>
<td>Double Air Hoses, for Wall Coupling (BOC/Schrader)</td>
<td>49</td>
<td>0.60</td>
<td>20</td>
</tr>
<tr>
<td>519.209</td>
<td>Double Air Hoses, for Wall Coupling (Synthes)</td>
<td>49</td>
<td>0.60</td>
<td>27</td>
</tr>
<tr>
<td>519.210</td>
<td>Double Air Hoses, for Wall Coupling (Dräger)</td>
<td>69</td>
<td>0.90</td>
<td>25</td>
</tr>
<tr>
<td>519.211</td>
<td>Double Air Hoses, for Wall Coupling (BOC/Schrader)</td>
<td>69</td>
<td>0.90</td>
<td>27</td>
</tr>
<tr>
<td>519.203</td>
<td>Double Air Hoses, for Wall Coupling (Synthes)</td>
<td>69</td>
<td>1.00</td>
<td>18</td>
</tr>
<tr>
<td>519.207</td>
<td>Double Air Hoses, for Wall Coupling (Dräger)</td>
<td>69</td>
<td>1.00</td>
<td>27</td>
</tr>
<tr>
<td>519.212</td>
<td>Double Air Hoses, for Wall Coupling (BOC/Schrader)</td>
<td>69</td>
<td>1.20</td>
<td>27</td>
</tr>
<tr>
<td>519.213</td>
<td>Double Air Hoses, for Wall Coupling (Synthes)</td>
<td>91</td>
<td>0.90</td>
<td>12.5</td>
</tr>
<tr>
<td>519.214</td>
<td>Double Air Hoses, for Wall Coupling (Dräger)</td>
<td>95</td>
<td>0.90</td>
<td>19</td>
</tr>
<tr>
<td>519.215</td>
<td>Double Air Hoses, for Wall Coupling (BOC/Schrader)</td>
<td>95</td>
<td>0.90</td>
<td>25</td>
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<tr>
<td>519.216</td>
<td>Double Air Hoses, for Wall Coupling (Synthes)</td>
<td>95</td>
<td>1.25</td>
<td>19</td>
</tr>
<tr>
<td>519.217</td>
<td>Double Air Hoses, for Wall Coupling (Dräger)</td>
<td>95</td>
<td>1.25</td>
<td>25</td>
</tr>
<tr>
<td>519.218</td>
<td>Double Air Hoses, for Wall Coupling (BOC/Schrader)</td>
<td>95</td>
<td>1.40</td>
<td>19</td>
</tr>
<tr>
<td>519.219</td>
<td>Double Air Hoses, for Wall Coupling (Synthes)</td>
<td>95</td>
<td>1.40</td>
<td>25</td>
</tr>
<tr>
<td>519.220</td>
<td>Double Air Hoses, for Wall Coupling (Dräger)</td>
<td>95</td>
<td>1.40</td>
<td>25</td>
</tr>
<tr>
<td>519.221</td>
<td>Double Air Hoses, for Wall Coupling (BOC/Schrader)</td>
<td>95</td>
<td>1.40</td>
<td>25</td>
</tr>
</tbody>
</table>

Reciprocating Saw Blades

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Description</th>
<th>Usable length (mm)</th>
<th>Thickness of cut (mm)</th>
<th>Width (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>511.905</td>
<td>Double Spiral Air Hoses, for Wall Coupling (Synthes)</td>
<td>80</td>
<td>1.05</td>
<td>1.05</td>
</tr>
<tr>
<td>511.907</td>
<td>Double Spiral Air Hoses, for Wall Coupling (Dräger)</td>
<td>55</td>
<td>1.05</td>
<td>1.05</td>
</tr>
<tr>
<td>511.909</td>
<td>Double Spiral Air Hoses, for Wall Coupling (BOC/Schrader)</td>
<td>55</td>
<td>0.85</td>
<td>0.85</td>
</tr>
<tr>
<td>511.912</td>
<td>Double Spiral Air Hoses, for Wall Coupling (Synthes)</td>
<td>68</td>
<td>1.10</td>
<td>1.10</td>
</tr>
<tr>
<td>511.915</td>
<td>Double Spiral Air Hoses, for Wall Coupling (Dräger)</td>
<td>40</td>
<td>1.10</td>
<td>1.10</td>
</tr>
</tbody>
</table>

* Can also be used to close the air intake of compressed air-operated drive units during washing.
## Drill bits, 3-flute, for Radiolucent Drive

<table>
<thead>
<tr>
<th>Art. No. non-sterile</th>
<th>Art. No. sterile</th>
<th>Diameter in mm</th>
<th>Usable length in mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>511.411</td>
<td>511.411S</td>
<td>2.0 with centering tip</td>
<td>122</td>
</tr>
<tr>
<td>511.412</td>
<td>511.412S</td>
<td>2.5 with centering tip</td>
<td>122</td>
</tr>
<tr>
<td>511.413</td>
<td>511.413S</td>
<td>2.7 with centering tip</td>
<td>122</td>
</tr>
<tr>
<td>511.414</td>
<td>511.414S</td>
<td>3.2 with centering tip</td>
<td>122</td>
</tr>
<tr>
<td>511.415</td>
<td>511.415S</td>
<td>3.5 with centering tip</td>
<td>122</td>
</tr>
<tr>
<td>511.416</td>
<td>511.416S</td>
<td>3.6 with centering tip</td>
<td>122</td>
</tr>
<tr>
<td>511.417</td>
<td>511.417S</td>
<td>4.0 with centering tip</td>
<td>122</td>
</tr>
<tr>
<td>511.418</td>
<td>511.418S</td>
<td>4.5 with centering tip</td>
<td>122</td>
</tr>
<tr>
<td>511.431</td>
<td>511.431S</td>
<td>3.2 with centering tip</td>
<td>80</td>
</tr>
<tr>
<td>511.432</td>
<td>511.432S</td>
<td>4.0 with centering tip</td>
<td>80</td>
</tr>
</tbody>
</table>