Air Pen Drive. Compact system for a wide range of applications.

User's Manual

Synthes Air Pen Drive System

SYNTHES® Instruments and implants approved by the AO Foundation

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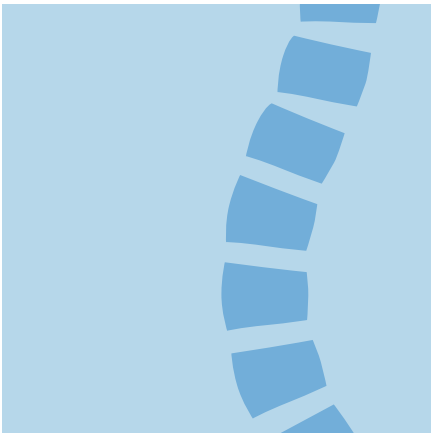
Indications

The Air Pen Drive is indicated for screw insertion, pin and wire placement, cutting of bone and metal, drilling, reaming, decorticating, shaping and smoothing of bones and teeth in a wide variety of surgical procedures, including general orthopaedic trauma, foot, hand, maxillofacial, neurosurgical, oral, otolaryngological, reconstructive, and spine surgery.

General traumatology



Spine surgery

Maxillofacial surgery

Hand surgery

Foot surgery

Neurosurgery and ENT

Specifications—System

Environmental conditions

	Operation	Transportation and storage
Temperature	10°–40°C 50°–104°F	-20°–50°C -4°–122°F
Relative humidity	30–75%	10–75%
Atmospheric pressure	500–1060 hPA 0.5–1.06 bar	500–1060 hPA 0.5–1.06 bar

Duty cycles

Intermittent operation with 6.5 bar	**$X_{min\ on}$**	**$Y_{min\ off}$**	**Cycles**
Drilling Attachment	5	3	unlimited
Burr Attachment	unlimited	–	unlimited
Hudson Coupling Attachment	5	3	unlimited
Reciprocating Saw Attachment	3	2	unlimited
Oscillating Saw Attachment	1	2	unlimited
Sagittal Saw Attachment	1	2	unlimited

Intermittent operation with 12 bar*	**$X_{min\ on}$**	**$Y_{min\ off}$**	**Cycles**
Burr Attachment	10	10	2
Hudson Coupling Attachment	3	5	unlimited

Caution

- The Air Pen Drive must never be operated with oxygen, due to danger of explosion. The Air Pen Drive should also not be stored or operated in an explosive atmosphere.
- Dirt inside adaptors, air hoses, angled coupling, and pen can cause loss of power.
- Heavy side loads and long operating periods may cause an attachment to overheat, making it uncomfortable to hold.
- Never place an overheated Drive Unit on the patient, or on patient draping during surgery.
- Mitigate overheating of an attachment by discontinuing use until it cools completely, or by using the attachment intermittently.
- Never immerse an attachment or the Drive Unit, or wrap with a moist sterile towel, as this will attract excessive moisture to the internal components.

* For 10 minutes maximum.

Specifications—Air Pen Drive (05.001.080)

– Weight: 169 g (5.96 oz)
– Length: 144 mm (5.7 in)
– Recommended pressure: 6–8 bar
– Recommended air flow rate: 200 liters/minute at 6.5 bar
  For maximum 10 minutes (continuous operation) it is possible to run the Air Pen Drive up to 12 bar with the following attachments: 05.001.045–05.001.050, 05.001.055, 05.001.063, 05.001.059, 05.001.123, 05.001.177
– Continuously variable speed: 0–60,000 rpm at 6.5 bar
  0–80,000 rpm at 12 bar (only with 05.001.045–05.001.050, 05.001.055).

Note: Use a regulator to verify that the pressure of the air supply is within the recommended pressure range for the system.

Lock position | Hand switch position | Foot switch position

Mode Switch

To avoid an unintentional change of the operating mode, the mode switch locks automatically. To move the mode switch, the lock has to be pushed backward. Release the lock to secure the mode switch in the desired position.

By turning the mode switch to the HAND position, the Drive Unit can be used with the Hand Switch. In the FOOT position, only the Foot Switch can be used. If the FOOT position is set and no Foot Switch is attached, the Drive Unit will run with full speed.

Either a Hand Switch or a Foot Switch can be used for speed control.

The LOCK position is used for safety when changing attachments and tools. This prevents accidental start-up of the unit.

For instructions on mounting the attachments, see "Operating Instructions" (pages 18 and 19).

Adjusting the Drive Unit

1. Mode switch
2. Release ring for attachment
3. Coupling for hoses
4. LOCK position
5. HAND position
6. FOOT position
7. Locking mechanism for mode switch

Specifications—Angled Coupling (05.001.085) and Hand Switch (05.001.082)

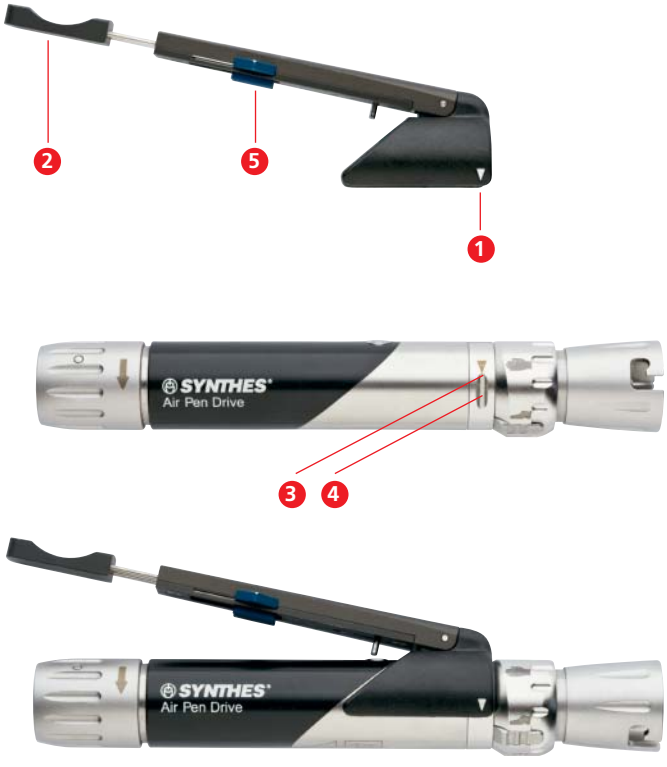
Angled Coupling

The Angled Coupling (05.001.085) connects the Air Hose to the Drive Unit and is used to guide the Air Hose away from the Drive Unit at a 45° angle. It allows 360° rotation.

Hand Switch

– May be removed without disconnecting the Air Hose from the Drive Unit
– Allows variable speed control of the Drive Unit
– Includes a safety switch and pull-out finger rest

1. Positioning arrow
2. Pull-out finger rest
3. Positioning arrow
4. Guide groove
5. Locking switch



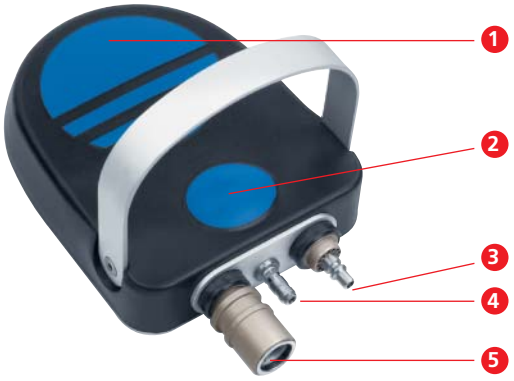
Specifications—Foot Switch (05.001.081)

Foot Switch

– Dimensions: 267 mm x 160 mm x 47 mm
(bar included: 151 mm)
10.5 in x 6.3 in x 1.9 in
(bar included: 5.9 in)

– Allows variable speed control of the Drive Unit

– Includes an irrigation ON/OFF switch



1. Pedal
2. Irrigation ON/OFF button
3. Plug for Double Air Hose
4. Plug for Irrigation Flow Control Unit
5. Plug for Air Hose

Specifications—Attachments for Air Pen Drive

Drilling Attachments

The drilling speed attachments are geared for a maximum speed of 1,800 rpm.

05.001.030 Drill Attachment, mini quick coupling
05.001.031 Drill Attachment, J-latch coupling
05.001.032 Drill Attachment, AO coupling
05.001.110 Drill Attachment, hex coupling

Function:
– Accept drill bits and burrs with mini quick, J-latch, hex and AO couplings

45° Drill Attachments

05.001.042 45° Drill Attachment, mini quick coupling
05.001.043 45° Drill Attachment, J-latch coupling
05.001.044 45° Drill Attachment, AO coupling

Function:
– Accept drill bits and burrs with mini quick, J-latch and AO couplings

90° Drill Attachments

05.001.035 90° Drill Attachment, short, mini quick coupling
05.001.036 90° Drill Attachment, long, mini quick coupling

Functions:
– Improve visibility during operations with narrow access
– Accept drill bits and burrs with mini quick coupling

45° Drill Attachment, cannulated

05.001.120 Drill Attachment, with Jacobs Chuck

Speed:
– 0 to 1,800 rpm
Function:
– 1.6 mm cannulation permits the use of this attachment for drilling and reaming over K-wires (e.g., for cannulated screws and for cup and cone technique)

45° Oscillating Drill Attachment

05.001.033 45° Oscillating Drill Attachment, mini quick coupling

Frequency:
– 3,200 oscillations/minute
Function:
– Accepts drill bits and burrs with mini quick coupling
– Prevents tissue and nerves from wrapping around the drill bit or burr

Screw Insertion Attachments

05.001.028 Screw Insertion Attachment, AO coupling
05.001.029 Screw Insertion Attachment, hex coupling
05.001.034 Screw Insertion Attachment, mini quick coupling

Speed:
– 0 to 400 rpm
Function:
– Accept mini quick, hex, or AO coupling screwdriver shafts

K-Wire Attachment

05.001.037 K-Wire Attachment

Speed:
– 0 to 2,700 rpm
Function:
– To insert/remove Kirschner wires 0.6 mm to 1.6 mm (0.02 to 0.06 in) in diameter, in any length

Sawing Attachments

05.001.038 Oscillating Saw Attachment

Frequency:
– 16,000 oscillations/minute
Function:
– Accepts Synthes crescentic and mandibular saw blades for Pen Drive

05.001.039 Sagittal Saw Attachment

Frequency:
– 22,000 oscillations/minute
Function:
– Accepts Synthes sagittal saw blades for Pen Drive

05.001.040 Reciprocating Saw Attachment

Frequency:
– 18,000 oscillations/minute
Function:
– Accepts Synthes reciprocating saw blades and Synthes rasps for Pen Drive

05.001.121 Guide for K-wires

Function:
– Attaches to oscillating saw attachment
– Accepts wires up to 1.6 mm diameter

Burring Speed Attachments

The burring speed attachments transfer the speed of the Drive Unit, with a maximum speed of 60,000 rpm (at 6.5 bar) and 80,000 rpm (at 12 bar).

Function:

– Accept Synthes short, medium and long burrs for Pen Drive

05.001.045 Burr Attachment, short

05.001.048 Burr Attachment, short, angled

05.001.046 Burr Attachment, medium

05.001.049 Burr Attachment, medium, angled

05.001.047 Burr Attachment, long

05.001.050 Burr Attachment, long, angled

05.001.063	Burr Attachment, extra long (XL), angled	
05.001.055	Burr Attachment, extra extra long (XXL), angled	
05.001.123	Drill/Burr Attachment, for 2.35 mm Shafts	
05.001.059	Craniotome Attachment	
	Dura Guards	
05.001.051	Short	
05.001.052	Medium	
05.001.053	Long	

Additional attachments

05.001.177	Hudson Coupling Attachment Maximum speed: 620 rpm	
05.001.103	Adaptor for Intra-Coupling Maximum speed: 60,000 rpm	

Speed/Torque values for Air Pen Drive Attachments

	Maximum Speed (rpm)				
Operating Pressure	Drill Attachments	Burr Attachments	Hudson Attachment	K-Wire. Attachment	Screw Insertion Attachments
6.5 bar	1800	60000	620	2700	400
8.0 bar	1975	65800	680	2960	440
12.0 bar	n/a	78000	810	n/a	n/a

	Maximum Torque (Nm)				
Operating Pressure	Drill Attachments,	Burr Attachments	Hudson Attachment	K-Wire. Attachment	Screw Insertion Attachments
6.5 bar	0.970	0.035	3.120	0.650	4.180
8.0 bar	1.200	0.042	3.630	0.800	5.100
12.0 bar	n/a	0.050	4.250	n/a	n/a

Drill Attachments
05.001.030
05.001.031
05.001.032
05.001.033
05.001.035
05.001.036
05.001.042
05.001.043
05.001.044
05.001.110
05.001.120

Burr Attachments
05.001.045
05.001.046
05.001.047
05.001.048
05.001.049
05.001.050
05.001.055
05.001.059
05.001.063
05.001.123

Hudson Coupling Attachment 05.001.177

K-Wire Attachment 05.001.037

Screw Attachments
05.001.028
05.001.029
05.001.034

Connecting the Air Hose to the Drive Unit

Double Air Hoses	
05.001.083*	3 meter hose
05.001.084	5 meter hose

Connecting the Air Hose to the Drive Unit

Connect the Air Hose by fitting the pins on the hose coupling into the grooves on the coupling for hoses on the Drive Unit and turning the hose coupling clockwise. To remove the Air Hose, turn the air supply off, then run the Drive Unit to release the pressure in the hose. Turn the hose coupling counter-clockwise and pull it off the Drive Unit.

Angled Coupling (05.001.085)

The Angled Coupling connects the Air Pen Drive and the Air Hose and is used to guide the Air Hose away from the Drive Unit at a 45° angle. It allows 360° rotation.

Connecting the Angled Coupling

Connect the Angled Coupling to the Drive Unit by fitting the pins into the grooves on the coupling for hoses on the Drive Unit and turning the Angled Coupling clockwise. Connect the Air Hose to the Angled Coupling by fitting the pins on the Air Hose coupling into the grooves of the Angled Coupling and turning it clockwise. To disassemble, turn the air supply off, then run the Drive Unit to release the pressure in the hose. Turn the parts counterclockwise and pull the Air Hose off the Angled Coupling, and then the Angled Coupling off the Drive Unit.

* Also available

Attaching the Hand Switch to the Drive Unit

Instrument	
05.001.082	Hand Switch

Position the Hand Switch on the Drive Unit by aligning the positioning arrows on the Hand Switch and the positioning arrows on the Drive Unit above the guide grooves (Figure 1).

Press down on the Hand Switch until it clicks into place on the Drive Unit (Figure 2).

Figure 1

Figure 2

Correct position for the Hand Switch: The Synthes logo is in the upright position with the Hand Switch facing up (Figure 3).

Incorrect position for the Hand Switch (Figure 4).

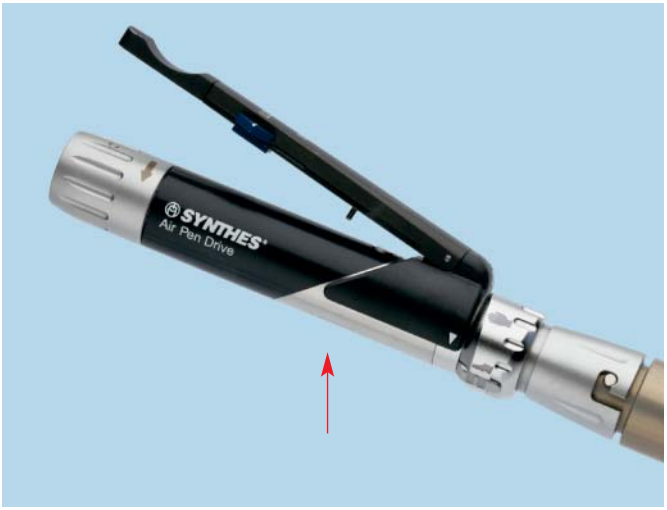


Figure 3

Figure 4

Removing the Hand Switch from the Drive Unit

To remove the Hand Switch, grasp the lever and pull it away from the Drive Unit.

Operating the Hand Switch

For safety, slide the switch to the LOCK position during Drive Unit and/or attachment exchange.

To operate the Drive Unit, slide the switch to the ON position. The speed can be continuously adjusted by depressing the Hand Switch.

Adjusting the Hand Switch

The pull-out finger rest can be adjusted by sliding it in and out of the Hand Switch.

Inserting attachments on the Drive Unit

Important: To prevent injuries, the mode switch on the Drive Unit, or the ON/LOCK switch on the Hand Switch, should be in the LOCK position when inserting or removing attachments or instruments.

The attachments can be inserted in 8 different positions, in 45° increments.

Turn the release ring clockwise until it locks in the open position. The release ring will protrude slightly from the main body of the Drive Unit.

Insert the attachment into the coupling, aligning the positioning pins of the attachment with the grooves on the release ring.

Press the attachment lightly against the Drive Unit; the release ring will lock automatically. Pull lightly on the attachment to confirm that it is secure.

Note: If the release ring closes before the attachment is fully inserted, align the positioning pins of the attachment with the grooves on the release ring and turn the attachment clockwise while applying slight pressure against the Drive Unit until the attachment engages. Pull lightly on the attachment to confirm that it is secure.

Removing attachments from the Drive Unit

While holding the Drive Unit with the attachment facing up, turn the release ring clockwise until it locks in the open position (Figure 1).

Remove the attachment. The release ring should stay in the open position, ready for the next attachment (Figure 2).

Figure 1

Figure 2

Operating Instructions—Foot Switch (05.001.081)

Using the Foot Switch with irrigation

Instruments	
05.001.081	Foot Switch
05.001.083*	Double Air Hose for Air Pen Drive, 3 meters
519.51*	Double Air Hose, Synthes stem, 3 meters
519.53*	Double Air Hose, Synthes stem, 5 meters

Connecting the Foot Switch

Connect a standard Synthes Double Air Hose to the male plug for the Double Air Hose on the Foot Switch ❸ and connect it to the air outlet socket. Then connect the Double Air Hose for Air Pen Drive to the female plug for Double Air Hoses ❺. To remove the Air Hose, turn the air supply off, then run the Drive Unit to release the pressure in the hoses. Slide the female hose couplings in the direction of the arrows.

For assembling the Irrigation Control Unit ❹ and Irrigation Tube, see page 21.

Operation

The mode switch on the Drive Unit must be set on the FOOT position for working with the Foot Switch.

The speed can be continuously adjusted with the pedal ❶. Briefly pressing the irrigation button ❷ activates or deactivates the irrigation. If the irrigation button ❷ is activated, the irrigation fluid will flow when the pedal ❶ is pressed.

Caution:
Never keep the mode switch in the FOOT position , if no Foot Switch is connected. This will make the Drive Unit run constantly and can be very dangerous for the patient and OR staff.

❶ Pedal
❷ Irrigation ON/OFF button
❸ Plug for Double Air Hose
❹ Plug for Irrigation Flow Control Unit
❺ Plug for Air Hose

* Also available

Setting up irrigation

Instruments	
05.001.069.01S*	Irrigation Tubing Set, 1/pkg., sterile
05.001.069.05S*	Irrigation Tubing Set, 5/pkg., sterile
05.001.090	Irrigation Flow Control Unit

The Synthes Irrigation Tubing Set should be used whenever irrigation is required to prevent necrosis due to excessive heating. The Irrigation Tubing Set requires the use of irrigation nozzles.

Remove the sterile irrigation tubing from the sterile package (Figure 1).

Preparing the Irrigation Flow Control Unit.

1. Connect the Irrigation Flow Control Unit to the Foot Switch, by pushing the end of the Air Tube into the plug for the Irrigation Flow Control Unit (see page 6). Remove the hand pump on the pressure infuser and connect the pressure collar to the Irrigation Flow Control Unit (Figure 2).
2. Charge pressure infuser with an irrigation fluid bag (Figure 2).

Secure the irrigation nozzle on the attachment by pushing the irrigation nozzle over the attachment from the front (Figure 3).

Figure 1

Figure 2

Figure 3

* Also available

Setting up irrigation continued

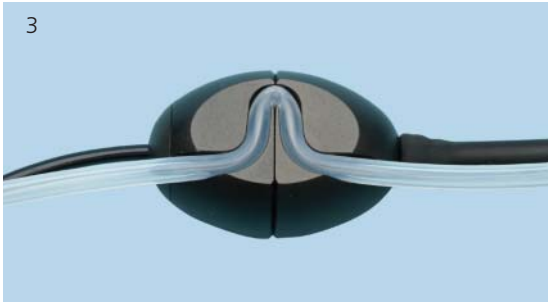
For the Sagittal Saw Attachment, push the irrigation nozzle from the coupling end of the attachment, placing the attachment on the Drive Unit (Figure 4).

Secure the end of the irrigation tubing onto the irrigation nozzle (Figure 5).

Figure 4

Figure 5

Route the Irrigation Tube end into the nonsterile area and press the Irrigation Tube in the grooves of the Irrigation Flow Control Unit in accordance with the marking.



Remove the protective cap from the cannula and connect the cannula to the irrigation bag, taking care not to contact the connection spike.

Note: Premounted clips on the irrigation tubing should not be used. These are intended for use with the Electric Pen Drive.

Inserting an instrument

Instruments	
05.001.030	Drill Attachment, mini quick coupling
05.001.031	Drill Attachment, J-latch coupling
05.001.032	Drill Attachment, AO coupling
05.001.033	45° Oscillating Drill Attachment, mini quick coupling
05.001.042	45° Drill Attachment, mini quick coupling
05.001.043	45° Drill Attachment, J-latch coupling
05.001.044	45° Drill Attachment, AO coupling
05.001.110	Drill Attachment, hex coupling

For operating instructions to insert attachments in the Drive Unit, please refer to the operating instructions for the Drive Unit on page 18.

Important: To prevent injuries, the mode switch on the Drive Unit, or the ON/LOCK switch on the Hand Switch, should be in the LOCK position when inserting or removing attachments or instruments.

Note: The Drive Unit should be in the forward (FWD) position when using the 45° Oscillating Drill Attachment.

Pull back the collar of the attachment and insert the instrument, turning it slightly to align the keyway.

Release the collar of the attachment and pull lightly on the instrument to confirm that it is secure.

Removing an instrument

Pull back the collar of the attachment and remove the instrument.

Inserting an instrument in 90° Drill Attachment

Instruments	
05.001.035	90° Drill Attachment, short, mini quick coupling
05.001.036	90° Drill Attachment, long, mini quick coupling

Move the locking lever of the attachment to the side as indicated by the arrow on the attachment.

Important: To prevent injuries, the mode switch on the Drive Unit, or the ON/LOCK switch on the Hand Switch, should be in the LOCK position when inserting or removing attachments or instruments.

Inserting an instrument in 90° Drill Attachment

Insert the instrument, turning it slightly to align the keyway (Figure 1).

Lock the instrument in place by pushing the locking lever back. Pull lightly on the instrument to confirm that it is secure (Figure 2).

Figure 1

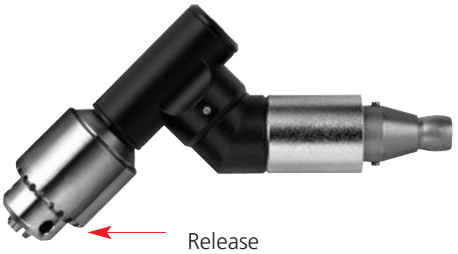
Figure 2

Removing an instrument

Move the locking lever of the attachment to the side as indicated by the arrow on the attachment and remove the instrument.

Inserting an instrument

Instrument	
05.001.120	Drill Attachment 45°, cannulated, with Jacobs Chuck



The 1.6 mm cannulation permits the use of this attachment for drilling and reaming over K-wires (e.g., for cannulated screws and for cup and cone technique).

Open the chuck with the key provided or by hand by turning the two moving parts in opposite directions. Insert the instrument. Close the chuck by turning the moving parts and tighten it by turning the key clockwise.

Important: To prevent injuries, the mode switch on the Drive Unit, or the ON/LOCK switch on the Hand Switch, should be in the LOCK position when inserting or removing attachments or instruments.

Removing an instrument

Open the chuck by turning the key counterclockwise.

Inserting an instrument

Instruments	
05.001.028	Screw Insertion Attachment, AO coupling
05.001.029	Screw Insertion Attachment, hex coupling
05.001.034	Screw Insertion Attachment, mini quick coupling

For operating instructions to insert attachments in the Drive Unit, please refer to the operating instructions for the Drive Unit on page 18.

Important: To prevent injuries, the mode switch on the Drive Unit, or the ON/LOCK switch on the Hand Switch, should be in the LOCK position when inserting or removing attachments or instruments.

Pull back the collar of the attachment and insert the instrument, turning it slightly to align the keyway.

Release the collar of the attachment and pull lightly on the instrument to confirm that it is secure.

Removing an instrument

Pull back the collar of the attachment and remove the instrument.

Operating Instructions—K-Wire Attachment

Inserting a K-wire

Instrument

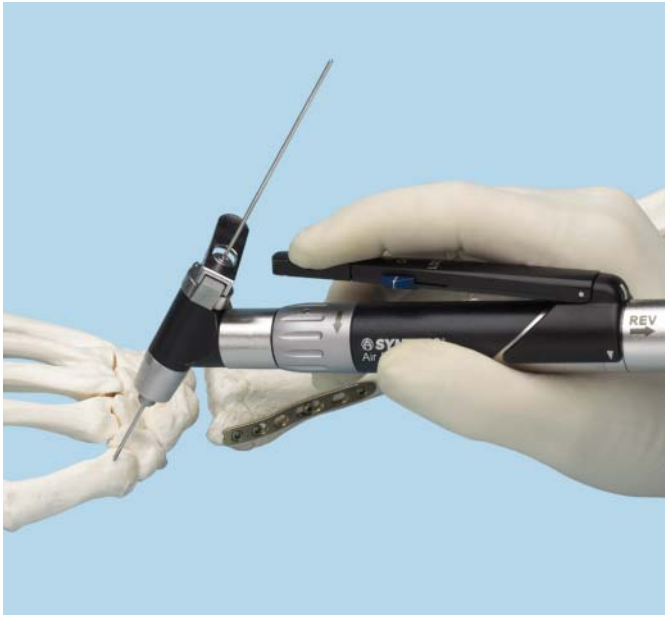
05.001.037 K-Wire Attachment

For operating instructions to insert attachments in the Drive Unit, please refer to the operating instructions for the Drive Unit on page 18.

Important: To prevent injuries, the mode switch on the Drive Unit, or the ON/LOCK switch on the Hand Switch, should be in the LOCK position when inserting or removing attachments or instruments.

Press the tensioning lever and insert a Kirschner wire into the attachment. The tensioning lever can be rotated 300° for surgeon preference.

Release the tensioning lever to grip the wire. The wire can now be inserted into the bone.



Repositioning or removing a K-wire

To reposition the wire in the attachment, press the tensioning lever and pull back the unit along the Kirschner wire. Release the tensioning lever once the wire is repositioned.

Inserting a saw blade

Instruments	
05.001.039	Sagittal Saw Attachment
05.001.074	Handhold for Tool Change

For operating instructions to insert attachments in the Drive Unit, please refer to the operating instructions for the Drive Unit on page 18.

Important: To prevent injuries, the mode switch on the Drive Unit, or the ON/LOCK switch on the Hand Switch, should be in the LOCK position when inserting or removing attachments or instruments.

Sagittal saw blades are shown on page 59.

The variable speed of the Air Pen Drive allows control of the cutting frequency from 0 to 22,000 osc/min. Ensure the Drive Unit is running prior to contacting the bone. Optimal cutting performance is achieved by gently moving back and forth in the plane of the saw blade. Imprecise cuts indicate a worn-out saw blade, excessive pressure or jamming of the saw blade.

Synthes recommends using a new saw blade for each surgery, as used saw blades may increase the risk of necrosis and increase the cutting time. All sagittal saw blades are sold sterile-packed.

Press the clamping button on the attachment.

Insert a sagittal saw blade into the saw blade coupling and move it into the desired position (variable in 45° increments).

Release the clamping button. Pull lightly on the saw blade to confirm that it is secure.

Removing a saw blade

Press the clamping button on the attachment, lift the saw blade and remove it.

Attention: Saw blades cannot be resharpened. Use only Synthes saw blades. The use of other saw blades voids the device warranty. For easier exchange of cutting tools, the attachment should be attached to the Drive Unit or the Handhold for Tool Change should be used.

Inserting a saw blade

Instruments	
05.001.038	Oscillating Saw Attachment
05.001.074	Handhold for Tool Change

Oscillating and intraoral saw blades are shown on page 60.

The variable speed of the Air Pen Drive allows control of the cutting frequency from 0 to 16,000 osc/min. The oscillating saw attachment is designed for crescentic and mandibular saw blades. Ensure the Drive Unit is running prior to contacting the bone.

Synthes recommends using a new saw blade for each surgery, as used saw blades may increase the risk of necrosis and increase the cutting time. All oscillating and intraoral saw blades are sold sterile-packed.

Important: To prevent injuries, the mode switch on the Drive Unit, or the ON/LOCK switch on the Hand Switch, should be in the LOCK position when inserting or removing attachments or instruments.

Pull back the collar of the attachment.

Insert a saw blade into the saw blade coupling and move it into the desired position.

Release the collar. Pull lightly on the saw blade to confirm that it is secure.

Removing a saw blade

Pull back on the collar of the attachment, and remove the saw blade.

Attention: Saw blades cannot be resharpened. Use only Synthes saw blades. The use of other saw blades voids the device warranty. For easier exchange of cutting tools, the attachment should be attached to the Drive Unit, or the Handhold for Tool Change should be used.

Attaching and removing the Guide for Kirschner Wires

Instrument

05.001.121	Guide for K-Wires

Secure the optional Guide for Kirschner Wires on the Oscillating Saw Attachment by pushing the guide as far as possible over the attachment from the front. Mount the attachment on the Drive Unit.

Inserting a saw blade or rasp

Instruments	
05.001.040	Reciprocating Saw Attachment
05.001.074	Handhold for Tool Change

Reciprocating saw blades are shown on pages 61 and 62.

The variable speed of the Air Pen Drive allows control of the cutting frequency from 0 to 18,000 osc/minute. The Reciprocating Saw Attachment is designed for Synthes reciprocating saw blades and rasps. Ensure the Drive Unit is running prior to contacting the bone.

Synthes recommends using a new saw blade for each surgery, as used saw blades may increase the risk of necrosis and increase the cutting time. All reciprocating saw blades are sold sterile-packed.

Important: To prevent injuries, the mode switch on the Drive Unit, or the ON/LOCK switch on the Hand Switch, should be in the LOCK position when inserting or removing attachments or instruments.

Turn the release ring on the attachment clockwise until it locks in place.

Insert a saw blade or rasp into the coupling, turning it slightly to align the keyway. The instrument will automatically lock in place. Pull lightly on the instrument to confirm that it is secure.

Removing a saw blade or rasp

Turn the release ring of the attachment clockwise until it locks in place. Remove the instrument.

Attention: Saw blades cannot be resharpened. Use only Synthes saw blades. The use of other saw blades voids the device warranty. For easier exchange of cutting tools, the attachment should be attached to the Drive Unit, or the Handhold for Tool Change should be used.

Operating Instructions—Burring Speed Attachments

For operating instructions to insert attachments in the Drive Unit, refer to the operating instructions for the Drive Unit on page 18.

Synthes recommends using a new burr for each surgery, as used burrs may increase the risk of necrosis and increase the cutting time. All burrs are sold sterile-packed.

Important: To prevent injuries, the mode switch on the Drive Unit, or the ON/LOCK switch on the Hand Switch, should be in the LOCK position when inserting or removing attachments or instruments.

Burrs should only be used with the attachment for which they were intended. The S, M and L markings on the burr and attachments should be matched. Long burrs (L) should be used with the extra long (XL) and extra extra long (XXL) burring attachment. Use only Synthes burrs. The use of other cutting tools voids the device warranty.

Attention: Burrs must be cooled with irrigation liquid to prevent necrosis. The integrated irrigation pump and tubing or manual irrigation should be used. For easier exchange of cutting tools, the attachment should be attached to the Drive Unit or the Handhold for Tool Change should be used. Synthes recommends wearing protective goggles when working with burrs.

Inserting a burr

Instruments	
05.001.045	Burr Attachment, short
05.001.046	Burr Attachment, medium
05.001.047	Burr Attachment, long
05.001.048	Burr Attachment, short, angled
05.001.049	Burr Attachment, medium, angled
05.001.050	Burr Attachment, long, angled
05.001.055	Burr Attachment, extra extra long (XXL), angled
05.001.063	Burr Attachment, extra long (XL), angled
05.001.074	Handhold for Tool Change

Burrs are shown on pages 53–58.

Attach the burring attachment to the Drive Unit or insert it in the Handhold for Tool Change (Figure 1).

Turn the release ring of the burring attachment to the UNLOCK position (Figure 2).

Figure 1

Figure 2

Inserting a burr continued

Insert the burr as far as possible, turning it slightly to align the keyway. The burr is fully inserted when the S, M or L mark on the burr shank is no longer visible (Figure 3).

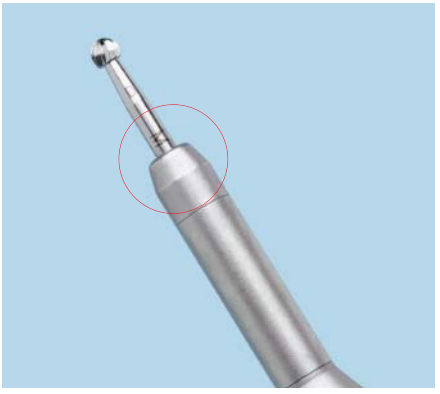
Turn the release ring of the attachment to the LOCK position and pull lightly on the instrument to confirm that it is secure (Figure 4).

Figure 3

Figure 4

Correct and incorrect insertion of the burr.

Correct



Incorrect

Removing a burr

Turn the release ring of the Burr Attachment to the UNLOCK position. Remove the burr.

Operating Instructions—Hudson Coupling Attachment

Inserting an instrument

Instruments

05.001.177	Hudson Coupling Attachment
05.001.180	Irrigation nozzle for 05.001.177

For operating instructions to insert attachments in the Drive Unit, please refer to the operating instructions for the Drive Unit on page 18.

Important: To prevent injuries, the mode switch on the Drive Unit, or the ON/LOCK switch on the Hand Switch, should be in the LOCK position when inserting or removing attachments or instruments.

The Hudson Coupling Attachment is used with perforator burrs produced by various manufacturers. The use of irrigation is recommended to cool the trepan burr during trepanations.

Pull back the collar of the attachment and insert the instrument.

Release the collar of the attachment and pull lightly on the instrument to confirm that it is secure.

Removing an instrument

Pull back on the collar of the attachment and remove the instrument.

Inserting a cranial burr

Instruments	
03.000.124S	Cranial Burr, S
03.000.125S	Cranial Burr, M
03.000.126S	Cranial Burr, L
05.001.051	Dura Guard, short
05.001.052	Dura Guard, medium
05.001.053	Dura Guard, long
05.001.059	Craniotome Attachment
05.001.074	Handhold for Tool Change

For operating instructions to insert attachments in the Drive Unit, refer to the operating instructions for the Drive Unit on page 18.

Synthes recommends using a new burr for each surgery, as used burrs may increase the risk of necrosis and increase the cutting time.

Important: To prevent injuries, the mode switch on the Drive Unit or the ON/LOCK switch on the Hand Switch should be in the LOCK position when inserting or removing attachments or instruments.

Attention: Use the Craniotome Attachment with the corresponding cranial burrs. Use only Synthes burrs. The use of other cutting tools voids the warranty.

Attach the Craniotome Attachment to the Drive Unit or insert it into the Handhold for Tool Change.

Turn the release ring of the Craniotome Attachment to the UNLOCK position.

Inserting a cranial burr

Insert a cranial burr as far as possible, turning it slightly to align the keyway.

Insert the Dura Guard into the Craniotome Attachment.

Turn the release ring of the attachment to the LOCK position to clamp the burr and protective sleeve. Pull lightly on the Dura Guard to confirm that it is secure.

Removing a burr

Turn the release ring of the Craniotome Attachment to the UNLOCK position. Remove the Dura Guard and burr.

Operating Instructions — Drill / Burr Attachment, for 2.35 mm Shafts

Inserting a cutting tool

Instrument	
05.001.123	Drill/Burr Attachment, for 2.35 mm Shafts

For operating instructions to insert attachments in the Drive Unit, refer to the operating instructions for the Drive Unit on page 18.

Important: To prevent injuries, the mode switch on the Drive Unit or the ON/LOCK switch on the Hand Switch should be in the LOCK position when inserting or removing attachments or instruments.

Lock the Drive Unit. Turn the release sleeve until it engages in the UNLOCK position. Insert the cutting tool and turn the release sleeve into the LOCK position until it engages.

Pull lightly on the tool to confirm that it is secure.

Caution:
Cutting tools must be cooled with irrigation liquid to prevent heat necrosis. Use either the integrated irrigation function or irrigate manually.

Synthes recommends wearing protective goggles when working with cutting tools.

The user is liable for the safety and correct application of the Synthes power tool and the attachment and the cutting tool, including the following items in particular:
– Maximum speed of the Drill/Burr Attachment is 60,000 rpm
– The use of appropriate cutting tools (specifically length and speed)
– The secure fixation of the cutting tool, i.e., the tool must be inserted at least 20 mm deep
– The cutting tool must be rotating before contact is made with the bone
– Avoid jamming and using the instrument as a lever as this leads to an increased risk of breakage
– If applicable, notes, advice and/or warnings in the Instructions for Use, manuals and/or accompanying documents of the cutting tools or implants must be observed
– Please contact the supplier or manufacturer of the cutting tool if in doubt

Note: The Drill/Burr Attachment cannot be used with the 90,000 rpm Drive Unit (05.001.011).

Information on handling cutting tools
Synthes recommends using a new cutting tool for each surgery, to ensure that the cutting tool is always sharp and clean. Used tools present the following risks:
– Necrosis due to excess heat
– Infections due to residues
– Longer cutting time due to reduced tool performance

Operating Instructions—Adaptor for Intra-Coupling

Inserting an instrument

Instrument

05.001.103 Adaptor for Intra-Coupling

For operating instructions to insert attachments in the Drive Unit, refer to the operating instructions for the Drive Unit on page 18.

Important: To prevent injuries, the mode switch on the Drive Unit or the ON/LOCK switch on the Hand Switch should be in the LOCK position when inserting or removing attachments or instruments.

The Adaptor for Intra-Coupling allows the use of dental handpieces, mucotomes and dermatomes with the Synthes Pen Drive.

Note: The Adaptor for Intra-Coupling is for use with pen drives with a maximum speed of no more than 60,000 rpm.

Gear ratio: 1:1

	Maximum Speed (rpm)	Maximum Torque (Nm)
Pen Drive	60,000	0.0015

Coupling dimensions per ISO 3964 (EN 23 964)

Caution: The user is responsible for ensuring compatibility of products used in combination with the pen drive system and the Adaptor for Intra-Coupling. Synthes does not assume any liability for misuse of any of the above mentioned products, or consequences that may result from it.

Sterilization

Product	
60.550.050	Graphic Case for Air Pen Drive

Caution:
Do not sterilize the Foot Switch! Foot Switch will no longer function!

Disassemble the Seal Nipple for Hoses from the ends of the hose before sterilization!

The Air Pen Drive Set should be steam sterilized in the Graphic Case in accordance with the following guidelines:

- Ensure all accessories, attachments and hoses are disassembled from the Drive Unit.
- All items must be cleaned before sterilization.
- Position the components in the correct orientation in the Graphic Case.
- Ensure the Graphic Case is used to sterilize the set by the following parameters.

Sterilization should not be performed if the device is damaged upon receipt.

Wrapped	Minimum Temperature	Minimum Exposure Time	Minimum Dry Time*
Prevacuum	132°C (270°F)	4 minutes	20 minutes
Unwrapped			
Prevacuum	132°C (270°F)	4 minutes	—

Important: Times represent exposure times only, and not total cycle times.

These parameters are validated to sterilize only these devices. The autoclave manufacturer's operating instructions and recommended guidelines for maximum sterilization load should be followed. The autoclave must be properly installed, maintained, and calibrated. Only legally marketed, FDA cleared sterilization wrap/pouches should be used by the end-user for packaging terminally sterilized devices.

* Synthes recommends a minimum dry time of 20 minutes for this device when sterilized using the parameters recommended above. However, because dry time can be influenced by various factors such as autoclave performance, sterilization load, sterilization wrap/package materials, steam quality, varying cool-down time, and environmental conditions, adequate drying of this device should be verified by visual inspection.

Troubleshooting

Problem	Possible causes	Remedy
Drive Unit does not start up.	Mode switch on pen is set to LOCK position.	Set mode switch to HAND or FOOT position.
	Release sleeve for burr on burr attachment set to UNLOCK position.	Set release sleeve on burr attachment to LOCK position.
	Hand Switch turned 180°.	Turn Hand Switch 180° and fit as described on page 15.
	Hand Switch cannot work because Foot Switch is shutting off air supply.	Remove Foot Switch and connect the Drive Unit directly to the air supply or use the Foot Switch.
	Mode switch is in the HAND or LOCK position while trying to work with the Foot Switch.	Set mode switch to FOOT position.
	Safety switch on Hand Switch is in LOCK position.	Set safety switch to ON position.
Drive Unit does not have enough power.	Operating pressure too low.	Set pressure regulator to 6–8 bar.
	Microfilter blocked.	Replace microfilter in the central air supply.
	Air inlet is blocked.	Remove solid objects from the air inlet with tweezers. **Important:** Do not use sharp objects to do this. Lock the Drive Unit when removing objects.
	Hose is too long.	Check that the total hose length does not exceed 8 m.
	Hose couplings defective.	Check wall and drive hose couplings for tightness.
	Central air supply tubes are obstructed.	Check central air supply.

Problem	Possible causes	Remedy
Drive Unit runs at full speed all the time.	Mode switch is in the FOOT position without having a Foot Switch attached.	Set mode switch to HAND or LOCK position .
Attachments cannot be coupled to unit.	Attachment coupling is blocked by deposits.	Remove solid objects with a pair of tweezers. **Attention:** When removing objects, set Drive Unit to OFF.
Attachment or cutting tool (saw blade, drill bit, burr, etc.) cannot be coupled or can only be coupled with difficulty.	Movable parts have not been maintained.	Oil the movable parts.
Cutting tool (saw blade, drill bit, burr, etc.) cannot be coupled or can only be coupled with difficulty.	Shaft geometry of cutting tool is damaged.	Replace tool or send to the Synthes Service Department.
Bones and tool heat up due to working process.	Cutting edges of tool are dull.	Replace tool.
	No irrigation has been used.	Use irrigation.

If the recommended remedies are unsuccessful, please contact the Synthes Service Department.

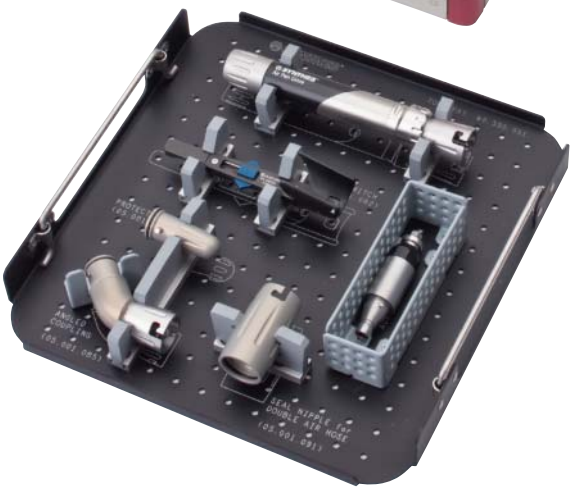
Air Pen Drive Set (01.001.594)

Graphic Case

60.550.050	Three Level Graphic Case for Air Pen Drive

Instruments

05.001.080	Air Pen Drive, 60,000 rpm
05.001.081	Foot Switch, for Air Pen Drive
05.001.082	Hand Switch, for Air Pen Drive
05.001.084	Double Air Hose, for Air Pen Drive, 5 meters
05.001.085	Angled Coupling, for Air Pen Drive
05.001.086	Protective Cap, for Air Pen Drive
05.001.089	Adaptor for Maintenance Station, for Air Pen Drive
05.001.090	Irrigation Flow Control Unit, for Air Pen Drive
05.001.091	Seal Nipple for Double Air Hose, for Air Pen Drive
	Screw Insertion Attachments
05.001.028	AO coupling
05.001.034	Mini quick coupling
	Drill Attachments
05.001.030	Mini quick coupling
05.001.031	J-latch coupling
05.001.032	AO coupling
05.001.120	With Jacobs chuck
05.001.037	K-Wire Attachment
	Saw Attachments
05.001.038	Oscillating
05.001.039	Sagittal
05.001.040	Reciprocating
	Burr Attachments
05.001.045	Short
05.001.046	Medium
05.001.050	Long, angled
	Irrigation Nozzles
05.001.066	Short
05.001.067	Medium
05.001.068	Long
05.001.070	For Sagittal Saw Attachment
05.001.071	For Reciprocating Saw Attachment
05.001.074	Handhold for Tool Change for Attachments
05.001.099	Maintenance Station, for Pen Drive
05.001.121	Guide for K-wires for Oscillating Saw Attachment



Notes: Please refer to package insert for additional information.
All parts are also available to Synthes Craniomaxillofacial customers.
Add .98 to part number when ordering

Air Pen Drive Hand and Foot Set (01.001.595)

Graphic Case

60.550.050	Three Level Graphic Case for Air Pen Drive

Instruments

05.001.080	Air Pen Drive, 60,000 rpm
05.001.081	Foot Switch, for Air Pen Drive
05.001.082	Hand Switch, for Air Pen Drive
05.001.084	Double Air Hose, for Air Pen Drive, 5 meters
05.001.085	Angled Coupling, for Pen Drive
05.001.086	Protective Cap, for Air Pen Drive
05.001.089	Adaptor for Maintenance Station, for Air Pen Drive
05.001.091	Seal Nipple for Double Air Hose, for Air Pen Drive
	Screw Insertion Attachments
05.001.028	AO coupling
05.001.034	Mini quick coupling
	Drill Attachments
05.001.030	Mini quick coupling
05.001.031	J-latch coupling
05.001.032	AO coupling
05.001.037	K-Wire Attachment
	Saw Attachments
05.001.038	Oscillating
05.001.039	Sagittal
05.001.040	Reciprocating
	Burr Attachments
05.001.045	Short
05.001.046	Medium
05.001.074	Handhold for Tool Change for Attachments
05.001.099	Maintenance Station, for Pen Drive

Note: All parts are also available to Synthes Craniomaxillofacial customers.
Add .98 to part number when ordering

Air Pen Drive Craniomaxillofacial Set (01.001.596)

Graphic Case

60.550.050.98 Three Level Graphic Case for Air Pen Drive

Instruments

05.001.080.98 Air Pen Drive, 60,000 rpm
05.001.081.98 Foot Switch, for Air Pen Drive
05.001.082.98 Hand Switch, for Air Pen Drive
05.001.084.98 Double Air Hose, for Air Pen Drive, 5 meters
05.001.085.98 Angled Coupling, for Pen Drive
05.001.086.98 Protective Cap, for Air Pen Drive
05.001.089.98 Adaptor for Maintenance Station, for Air Pen Drive
05.001.091.98 Seal Nipple, for Double Air Hose

Screw Insertion Attachments
05.001.028.98 AO coupling
05.001.029.98 Hex coupling
05.001.034.98 Mini quick coupling

Drill Attachments
05.001.030.98 Mini quick coupling
05.001.031.98 J-latch coupling
05.001.032.98 AO coupling
05.001.033.98 45° Oscillating, mini quick coupling
05.001.035.98 90°, short, mini quick coupling
05.001.036.98 90°, long, mini quick coupling
05.001.110.98 Hex coupling

05.001.037.98 K-Wire Attachment

Saw Attachments
05.001.038.98 Oscillating
05.001.039.98 Sagittal

Burr Attachments
05.001.046.98 Medium
05.001.047.98 Long
05.001.049.98 Medium, angled
05.001.050.98 Long, angled

05.001.074.98 Handhold for Tool Change for Attachments
05.001.099.98 Maintenance Station, for Pen Drive

Also Available

01.001.594.98 Air Pen Drive Set, with the same contents as set 01.001.594

Dura Guards
05.001.051.98 Short
05.001.052.98 Medium
05.001.053.98 Long

05.001.059.98 Craniotome Attachment
05.001.103.98 Adaptor for Intra-Coupling
05.001.177.98 Hudson Coupling Attachment

Also Available

Instruments

05.001.029	Screw Insertion Attachment, hex coupling
	Drilling Attachments
05.001.033	45° Oscillating, mini quick coupling
05.001.035	90°, short, mini quick coupling
05.001.036	90°, long, mini quick coupling
05.001.042	45°, Mini quick coupling
05.001.043	45°, J-latch coupling
05.001.044	45°, AO coupling
	Burr Attachments
05.001.047	Long
05.001.048	Short, angled
05.001.049	Medium, angled
05.001.055	Extra extra long (XXL), angled
05.001.063	Extra long (XL), angled
05.001.075	Cleaning Brush for Wire Driver
05.001.094	Maintenance Kit for Maintenance Station
05.001.095	Oil Dispenser with Synthes Oil, 50 ml
05.001.098	Maintenance Spray
05.001.102	Adaptor for Maintenance Spray, for Attachments
05.001.104	Pneumatic Connection, DISS coupling, for Maintenance Station
05.001.105	Pneumatic Connection, Schrader coupling, for Maintenance Station
05.001.110	Drill Attachment, hex coupling
05.001.120	Drill Attachment with Jacobs Chuck
05.001.177	Hudson Coupling Attachment

Hoses and Accessories

05.001.083	Double Air Hose, for Air Pen Drive, 3 meters
05.001.087	Adaptor Schrader/Synthes
05.001.088	Adaptor Draeger/Synthes
05.001.092	Adaptor for Maintenance Spray, for Air Pen Drive
05.001.111	Irrigation Nozzle, for Hex Drilling Attachment
05.001.122	Irrigation Nozzle, extra extra long (XXL)
05.001.180	Irrigation Nozzle, for 05.001.177
519.51	Double Air Hose, Synthes Stem, 3 meters
519.53	Double Air Hose, Synthes stem, 5 meters

Irrigation Tubing

05.001.069.01S	Irrigation Tubing Set, 1/pkg., sterile
05.001.069.05S	Irrigation Tubing Set, 5/pkg., sterile

Graphic Case Replacement Accessories

60.550.051	Insert Tray for Air Pen Drive Graphic Case
60.550.052	Lid for Graphic Case for Air Pen Drive
68.000.007	Support for Cutting Tools
690.578	Module Insert, 4 Compartments
690.578.04	Divider Kit for Module Inserts
690.579	Module Insert, 2 Compartments
690.588	Attachment Tray Assembly for Graphic Case for Pen Drive

Extended Warranty and Service Programs

W1.01.001.594	Air Pen Drive Set One-Year Extended Warranty Service Program (for Trauma 01.001.594 and 01.001.595)
W3.01.001.594	Air Pen Drive Set Three-Year Extended Warranty Service Program (for Trauma 01.001.594 and 01.001.595)
W1.01.001.596	Air Pen Drive Set One-Year Extended Warranty Service Program (for Craniomaxillofacial 01.001.594.98 and 01.001.596)
W3.01.001.596	Air Pen Drive Set Three-Year Extended Warranty Service Program (for Craniomaxillofacial 01.001.594.98 and 01.001.596)

Note: All parts are also available to Synthes Craniomaxillofacial customers.
Add .98 to part number when ordering.

Burrs for burring speed attachments

For use with the following burr attachments:

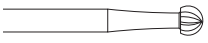
05.001.045	Short
05.001.046	Medium
05.001.047	Long
05.001.048	Short, angled
05.001.049	Medium, angled
05.001.050	Long, angled
05.001.055	Extra extra long, XXL, angled*
05.001.063	Extra long, XL, angled*
05.001.074	Handhold for Tool Change for Attachments

The burrs with a pen drive coupling are available short, medium and long. Refer to the table for the last three digits of the product number. All burrs are provided sterile-packed.

Notes:
Short (S) = 45 mm burr length
Medium (M) = 70 mm burr length
Long (L) = 95 mm burr length

Exposed distance:
The exposed distance between the beginning of the burr head and the end of the attachment of the same type (S, M, or L) is always 10 mm. When using a longer burr than attachment (i.e. a medium burr and short attachment or a long burr and medium attachment), the distance is 35 mm.

Round burrs
03.000.XXXS

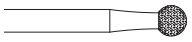


Diameter (mm)	Attachment Type S	Attachment Type M	Attachment Type L
1.0	000	001	002
1.5	003	004	005
2.0	230	231	232
2.5	006	007	008
3.0	009	010	011
4.0	012	013	014
5.0	015	016	017
6.5	018	019	020
8.0	021	022	023

* XL and XXL, angled attachments use the same burrs as the Long and Long, angled attachments (type L).

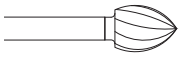
Burrs for burring speed attachments continued

Round burrs, diamond-coated
03.000.XXXS



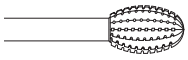
Diameter (mm)	Attachment Type S	Attachment Type M	Attachment Type L
1.0	030	031	032
1.5	033	034	035
2.0	036	037	038
2.5	039	040	041
3.0	042	043	044
3.5	045	046	047
4.0	048	049	050
5.0	051	052	053
6.0	054	055	056

Acorn-shaped burrs
03.000.XXXS



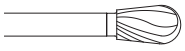
Diameter (mm)	Head Length (mm)	Attachment Type S	Attachment Type M	Attachment Type L
5.0	6.7	233	234	235
6.0	8.0	060	061	062
7.5	9.5	063	064	065
9.0	11.4	066	067	068

Egg-shaped burrs
03.000.XXXS



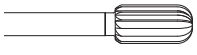
Diameter (mm)	Head Length (mm)	Attachment Type S	Attachment Type M	Attachment Type L
4.0	8.0	070	071	072
5.5	10.0	073	074	075

Pear-shaped burrs
03.000.XXXS



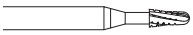
Diameter (mm)	Head Length (mm)	Attachment Type S	Attachment Type M	Attachment Type L
4.0	6.9	236	237	238
5.0	8.3	076	077	078
6.0	9.7	079	080	081

Barrel-shaped burrs
03.000.XXXS



Diameter (mm)	Head Length (mm)	Attachment Type S	Attachment Type M	Attachment Type L
4.0	9.0	239	240	241
5.0	10.0	082	083	084
6.0	11.0	242	243	244

Fissure burrs, tapered carbide
03.000.XXXS



Diameter (mm)	Head Length (mm)	Attachment Type S	Attachment Type M	Attachment Type L
1.0–1.6	4.5	085	086	087
1.6–2.3	5.2	088	089	090
2.1–2.6	6.8	091	092	093

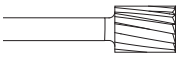
Fissure burrs, cylindrical carbide
03.000.XXXS

Diameter (mm)	Head Length (mm)	Attachment Type S	Attachment Type M	Attachment Type L
1.6	4.3	094	095	096
3.0	16.0	097	098	099

Inverted cone burrs
03.000.XXXS

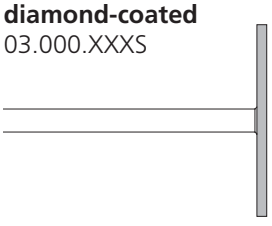
Diameter (mm)	Head Length (mm)	Attachment Type S	Attachment Type M	Attachment Type L
6.5	6.1	100	101	102

Drum burrs
03.000.XXXS



Diameter (mm)	Head Length (mm)	Attachment Type S	Attachment Type M	Attachment Type L
4.7	7.9	245	246	247
6.0	7.9	103	104	105
9.1	7.9	106	107	108

Circular burrs diamond-coated
03.000.XXXS



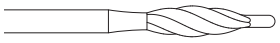
Diameter (mm)	Head Length (mm)	Attachment Type S	Attachment Type M	Attachment Type L
25.0	0.7	109	110	111

Lindemann burrs
03.000.XXXS

Diameter (mm)	Head Length (mm)	Attachment Type S	Attachment Type M	Attachment Type L
1.8–2.3	20.2	112	113	114

Burrs for burring speed attachments continued

Swanson burrs
03.000.XXXS

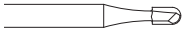


Diameter (mm)	Head Length (mm)	Attachment Type S	Attachment Type M	Attachment Type L
2.0	6.3	115	116	117
3.0	9.7	118	119	120
4.0	12.7	121	122	123
5.0	15.8	160	161	162

Pin-shaped burrs
03.000.XXXS

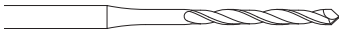
Diameter (mm)	Head Length (mm)	Attachment Type S	Attachment Type M	Attachment Type L
1.1–1.4	6.0	127	128	129
1.5–2.1	12.0	130	131	132
3.0	19.5	248	249	250

Neuro burrs
03.000.XXXS



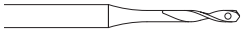
Maximum Diameter (mm)	Head Length (mm)	Attachment Type S	Attachment Type M	Attachment Type L
1.7	2.3	133	134	135
2.2	3.7	136	137	138
2.9	3.8	139	140	141

Drill bits
03.000.XXXS



Maximum Diameter (mm)	Attachment Type S	Attachment Type M
1.0	142	143
1.1	144	145
1.3	146	147
1.5	148	149
2.0	150	151
2.5	152	153

Wire pass drills
03.000.XXXS



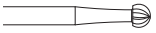
Maximum Diameter (mm)	Head Length (mm)	Attachment Type S	Attachment Type M
1.1	5.0	154	155
1.5	7.0	156	157
2.0	7.0	158	159

Burrs with mini quick and J-latch couplings

All burrs are provided sterile-packed.

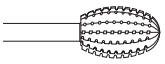
Note: Refer to the table for the last three digits of the product number.

Round burrs
03.000.XXXS



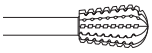
Maximum Diameter (mm)	Overall Length 28 mm	Overall Length 45 mm	
3.0	170	171	Mini quick
	200	201	J-latch
5.0		172	Mini quick
		202	J-latch

Egg-shaped burrs
03.000.XXXS



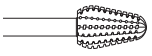
Maximum Diameter (mm)	Head Length (mm)	Overall Length 28 mm	Overall Length 45 mm	
7.0	11.0	173	174	Mini quick
		203	204	J-latch
8.0	4.8	175	176	Mini quick
		205	206	J-latch

Pear-shaped burrs
03.000.XXXS



Maximum Diameter (mm)	Head Length (mm)	Overall Length 23 mm	Overall Length 28 mm	Overall Length 45 mm	
5.0	8.3	183	184	185	Mini quick
		213	214	215	J-latch
6.0	9.7	186	187	188	Mini quick
		216	217	218	J-latch

Conical burrs
03.000.XXXS



Maximum Diameter (mm)	Head Length (mm)	Overall Length 23 mm	Overall Length 28 mm	Overall Length 45 mm	
5.0	8.3	177	178	179	Mini quick
		207	208	209	J-latch

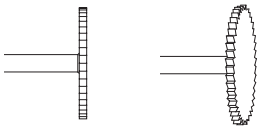
Maximum Diameter (mm)	Head Length (mm)	Overall Length 24 mm	Overall Length 28 mm	Overall Length 45 mm	
6.0	9.7	180	181	182	Mini quick
		210	211	212	J-latch

Burrs with mini quick and J-latch couplings continued

Fissure burrs, tapered
03.000.XXXS

Maximum Diameter (mm)	Head Length (mm)	Overall Length 31 mm	Overall Length 45 mm	
1.0–2.1	11.3	189	190	Mini quick
		219	220	J-latch
1.6–3.2	12.0	191	192	Mini quick
		221	222	J-latch

Circular burrs
03.000.XXXS

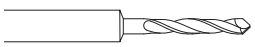


Maximum Diameter (mm)	Overall Length 28 mm	
8.0	193	Mini quick
	223	J-latch
10.0	194	Mini quick
	224	J-latch
12.0	195	Mini quick
	225	J-latch
15.0	196	Mini quick
	226	J-latch

Lindemann burrs
03.000.XXXS

Diameter (mm)	Head Length (mm)	Overall Length 45 mm	
2.0–2.3	35	197	Mini quick
		227	J-latch

Drill bits with stop, with mini quick coupling
03.000.XXXS



Diameter (mm)	Usable Length 4 mm	Usable Length 6 mm	Usable Length 8 mm	Usable Length 12 mm	Usable Length 18 mm
1.0	370		371	372	384
1.1	373		374	375	376
1.5		377		378	379
1.8		380		381	382
2.0					383

Saw Blades for Sagittal Saw Attachment (05.001.039)

All saw blades are provided sterile-packed.

		Usable Length (mm)	Blade Width (mm)	Cut Thickness (mm)
	03.000.314S	18.0	2.5	0.38
	03.000.300S	18.0	4.0	0.38
	03.000.301S	15.0	6.0	0.38
	03.000.302S	31.0	6.0	0.38
	03.000.303S	22.0	8.0	0.38
	03.000.304S	15.0	10.0	0.38
	03.000.305S	31.0	10.0	0.38
	03.000.306S	22.0	12.0	0.38
	03.000.307S	15.0	16.0	0.38
	03.000.308S	27.0	6.0	0.60
	03.000.309S	27.0	10.0	0.60
	03.000.310S	27.0	14.0	0.60
	03.000.315S	43.0	20.0	0.60

Saw Blades for Oscillating Saw Attachment (05.001.038)

All saw blades are provided sterile-packed.

Crescent Blades for halux valgus		Usable Length (mm)	Blade Width (mm)	Cut Thickness (mm)	Diameter (mm)
	03.000.311S	26.5	13.3	0.6	18.0
	03.000.312S	25.0	16.3	0.6	18.0
	03.000.313S	30.0	17.9	0.6	22.0
	03.000.316S	30.0	21.9	0.6	22.0

Saw Blades, 105° angled for intraoral		Usable Length (mm)	Blade Width (mm)	Cut Thickness (mm)	Shank Length (mm)
	03.000.343S	12.0	4.5	0.4	70.0
	03.000.342S	12.0	9.5	0.4	70.0
	03.000.341S	12.0	11.5	0.4	70.0
	03.000.340S	7.0	12.0	0.4	70.0

Saw Blades for Reciprocating Saw Attachment (05.001.040)

All saw blades are provided sterile-packed.

		Cutting Edge Length (mm)	Blade Height (mm)	Cut Thickness (mm)	Design, Special Application
	03.000.320S	13.0	6.4/2.9	0.6	
	03.000.321S	20.0	6.4/2.9	0.6	
	03.000.322S	7.0	4.0	0.6	
	03.000.323S	14.0	6.4	0.6	
	03.000.324S	14.5	4.0	0.6	
	03.000.325S	25.0	5.5	0.6	For rhinoplasty
	03.000.326S	27.0	6.4	0.6	
	03.000.327S	27.0	6.4/2.9	0.6	
	03.000.328S	33.5	6.4	0.6	
	03.000.329S	35.0	5.0/2.5	0.6	Crescent-shaped for vertical osteotomy
	03.000.330S	33.5	6.4	0.6	Downward offset
	03.000.331S	33.5	6.4	0.6	Right offset
	03.000.332S	33.5	6.4	0.6	Left offset
	03.000.334S	20.0	6.4/2.9	0.6	Elongated, LeFort I osteotomy, rhinoplasty
	03.000.335S	27.0	6.4/2.9	0.6	Elongated, LeFort I osteotomy, rhinoplasty

Saw Blades for **Reciprocating** Saw Attachment continued		Cutting Edge Length (mm)	Blade Height (mm)	Cut Thickness (mm)	Design, Special Application
	03.000.336S	13.0	3.20	0.4	Thin, intra-dental
	03.000.337S	20.0	3.16	0.4	Thin, intra-dental

I.B.O. Saw Blades for Reciprocating Saw Attachment		Cutting Edge Length (mm)	Blade Height (mm)	Cut Thickness (mm)	Design, Special Application
	03.000.338S	9.20	7.40	0.50	Left–BSSO
	03.000.339S	9.20	7.40	0.50	Right–BSSO

Rasps for Reciprocating Saw Attachment (05.001.040)

All rasps are provided sterile-packed.

		Usable Length (mm)	Blade Height (mm)	Cut Thickness (mm)	Design, Special Application
	03.000.360S	11.0	5.0		Cross-grinding for Rhinoplasty
	03.000.361S	14.0	7.0		Cross-grinding for Rhinoplasty
	03.000.362S	11.0	5.0		Straight-grinding for Rhinoplasty
	03.000.363S	14.0	7.0		Straight-grinding for Rhinoplasty
	03.000.364S	19.0	4.5	4.5	Interphalangeal joint replacement, proximal
	03.000.365S	19.0	6.0	6.0	Interphalangeal joint replacement, distal

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