CE20 Gun

Customer Product Manual
Document Number 334678-06
– English –
Issued 01/26

For parts and technical support, call the Industrial Coating Solutions Customer Support Center at (800) 433-9319 or contact your local Nordson representative.

This document is subject to change without notice.
Check http://emanuals.nordson.com for the latest version.

NORDSON CORPORATION • 100 NORDSON DRIVE, AMHERST, OHIO 44001• USA

Table of Contents

Contents

Contact Us
Nordson Corporation welcomes requests for information, comments, and inquiries about its products. General information about Nordson can be found on the Internet using the following address:
http://www.nordson.com

http://www.nordson.com/en/global-directory

Change Record

Revision	Date	Change
01	2000	Initial Release
02	02/08	Drawing and service kit update regarding unheated, warm, and temperature conditioning gun.
03	05/14	Added adjustment notes to component applicator tool (gun).
04	04/19	Revisions regarding heater cartridge kits.
05	06/23	Inclusion of gun insulator regarding illustrations and parts tables. Inclusion of UKCA for manual.
06	01/26	Manual revision roll to support updates of DOC16012-03 and DOC16013-03.

Safety

Introduction

Read and follow these safety instructions. Task- and equipment-specific warnings, cautions, and instructions are included in equipment documentation where appropriate.

Make sure all equipment documentation, including these instructions, is accessible to persons operating or servicing equipment.

Qualified Personnel

Equipment owners are responsible for making sure that Nordson equipment is installed, operated, and serviced by qualified personnel. Qualified personnel are those employees or contractors who are trained to safely perform their assigned tasks. They are familiar with all relevant safety rules and regulations and are physically capable of performing their assigned tasks.

Intended Use

Use of Nordson equipment in ways other than those described in the documentation supplied with the equipment may result in injury to persons or damage to property.

Some examples of unintended use of equipment include:

- using incompatible materials
- making unauthorized modifications
- removing or bypassing safety guards or interlocks
- using incompatible or damaged parts
- using unapproved auxiliary equipment
- operating equipment in excess of maximum ratings

Regulations and Approvals

Make sure all equipment is rated and approved for the environment in which it is used. Any approvals obtained for Nordson equipment will be voided if instructions for installation, operation, and service are not followed.

Personal Safety

To prevent injury follow these instructions.

- Do not operate or service equipment unless you are qualified.
- Do not operate equipment unless safety guards, doors, or covers are intact and automatic interlocks are operating properly. Do not bypass or disarm any safety devices.
- Keep clear of moving equipment. Before adjusting or servicing moving equipment, shut off the power supply and wait until the equipment comes to a complete stop. Lock out power and secure the equipment to prevent unexpected movement.
- Relieve (bleed off) hydraulic and pneumatic pressure before adjusting or servicing pressurized systems or components. Disconnect, lock out, and tag switches before servicing electrical equipment.
- While operating manual spray guns, make sure you are grounded. Wear electrically conductive gloves or a grounding strap connected to the gun handle or other true earth ground. Do not wear or carry metallic objects such as jewelry or tools.
- If you receive even a slight electrical shock, shut down all electrical or electrostatic equipment immediately. Do not restart the equipment until the problem has been identified and corrected.
- Obtain and read Safety Data Sheets (SDS) for all materials used. Follow the manufacturer’s instructions for safe handling and use of materials, and use recommended personal protection devices.
- Make sure the spray area is adequately ventilated. To prevent injury, be aware of less-obvious dangers in the workplace that often cannot be completely eliminated, such as hot surfaces, sharp edges, energized electrical circuits, and moving parts that cannot be enclosed or otherwise guarded for practical reasons.

High-Pressure Fluids

High-pressure fluids, unless they are safely contained, are extremely hazardous. Always relieve fluid pressure before adjusting or servicing high pressure equipment. A jet of high-pressure fluid can cut like a knife and cause serious bodily injury, amputation, or death. Fluids penetrating the skin can also cause toxic poisoning.

If you suffer a fluid injection injury, seek medical care immediately. If possible, provide a copy of the SDS for the injected fluid to the health care provider.

The National Spray Equipment Manufacturers Association has created a wallet card that you should carry when you are operating high-pressure spray equipment. These cards are supplied with your equipment. The following is the text of this card:

WARNING: Any injury caused by high pressure liquid can be serious. If you are injured or even suspect an injury:

- Go to an emergency room immediately.
- Tell the doctor that you suspect an injection injury.
- Show them this card
- Tell them what kind of material you were spraying

MEDICAL ALERT — AIRLESS SPRAY WOUNDS: NOTE TO PHYSICIAN

Injection in the skin is a serious traumatic injury. It is important to treat the injury surgically as soon as possible. Do not delay treatment to research toxicity. Toxicity is a concern with some exotic coatings injected directly into the bloodstream.

Consultation with a plastic surgeon or a reconstructive hand surgeon may be advisable.

The seriousness of the wound depends on where the injury is on the body, whether the substance hit something on its way in and deflected causing more damage, and many other variables including skin microflora residing in the paint or gun which are blasted into the wound. If the injected paint contains acrylic latex and titanium dioxide that damage the tissue's resistance to infection, bacterial growth will flourish. The treatment that doctors recommend for an injection injury to the hand includes immediate decompression of the closed vascular compartments of the hand to release the underlying tissue distended by the injected paint, judicious wound debridement, and immediate antibiotic treatment.

Fire Safety

To avoid a fire or explosion, follow these instructions.

- Ground all conductive equipment. Use only grounded air and fluid hoses. Check equipment and workpiece grounding devices regularly. Resistance to ground must not exceed one megohm.
- Shut down all equipment immediately if you notice static sparking or arcing. Do not restart the equipment until the cause has been identified and corrected.
- Do not smoke, weld, grind, or use open flames where flammable materials are being used or stored. Do not heat materials to temperatures above those recommended by the manufacturer. Make sure heat monitoring and limiting devices are working properly.
- Provide adequate ventilation to prevent dangerous concentrations of volatile particles or vapors. Refer to local codes or your material SDS for guidance.
- Do not disconnect live electrical circuits when working with flammable materials. Shut off power at a disconnect switch first to prevent sparking.
- Know where emergency stop buttons, shutoff valves, and fire extinguishers are located. If a fire starts in a spray booth, immediately shut off the spray system and exhaust fans.
- Shut off electrostatic power and ground the charging system before adjusting, cleaning, or repairing electrostatic equipment.
- Clean, maintain, test, and repair equipment according to the instructions in your equipment documentation.
- Use only replacement parts that are designed for use with original equipment. Contact your Nordson representative for parts information and advice.

Halogenated Hydrocarbon Solvent Hazards

Do not use halogenated hydrocarbon solvents in a pressurized system that contains aluminum components. Under pressure, these solvents can react with aluminum and explode, causing injury, death, or property damage. Halogenated hydrocarbon solvents contain one or more of the following elements:

Element	Symbol	Prefix
Fluorine	F	“Fluoro-”
Chlorine	Cl	“Chloro-”
Bromine	Br	“Bromo-”
Iodine	I	“Iodo-”

Check your material SDS or contact your material supplier for more information. If you must use halogenated hydrocarbon solvents, contact your Nordson representative for information about compatible Nordson components.

Action in the Event of a Malfunction

If a system or any equipment in a system malfunctions, shut off the system immediately and perform the following steps:

- Disconnect and lock out system electrical power. Close hydraulic and pneumatic shutoff valves and relieve pressures.
- Identify the reason for the malfunction and correct it before restarting the system.

Disposal

Dispose of equipment and materials used in operation and servicing according to local codes.

Description

See Figure 1. The Nordson CE20 dispense gun is used to dispense adhesives, sealants, and other high viscosity materials. The gun can be used in a variety of applications depending on the material to be dispensed and other variables in a given application system.

The CE20 dispense gun is available in the following models:

- Standard unheated gun
- Temperature conditioned gun
- Heated 120 V and 240 V guns with nickel RTD
- Heated 120 V and 240 V guns with platinum RTD

See Figure 2. Each CE20 gun has the same bonnet (4), yoke (7) and air cylinder (2). The air cylinders on CE-Approved models do not have NPT fittings. The armature cover (1) can be replaced with an optional spring closure assembly (8). Guns are shipped with a guard (3) to protect from moving parts.

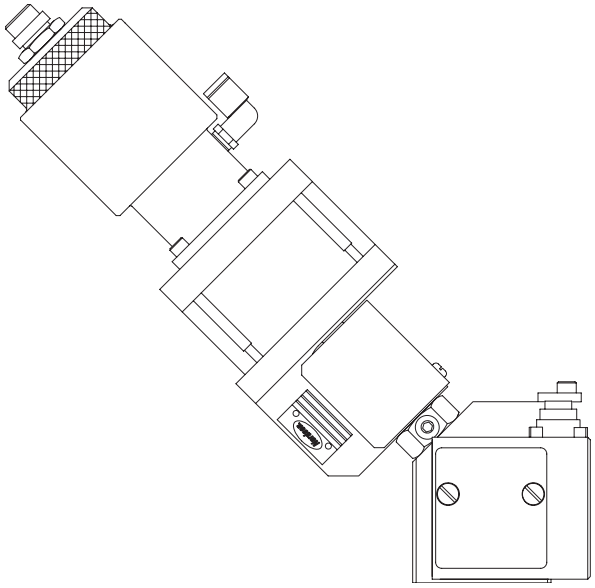


Figure 1 Typical CE20 Gun (CE Approved Gun Shown)

Table 1 Optional Components for CE20 Guns

Option	Function
Spring Closure Assembly	Uses spring force to keep the needle fully seated and prevent material leaks from the gun when air is off
Nozzle Mounting Kit	Used for nozzles designed for specific orientations on the gun
Compliant Fixture Kit	Used in conjunction with urethane systems; the gun is mounted to the fixture, which permits the gun to float, tracking the substrate via nozzle contact
Pressure Transducers	Monitor material pressure upstream of the nozzle

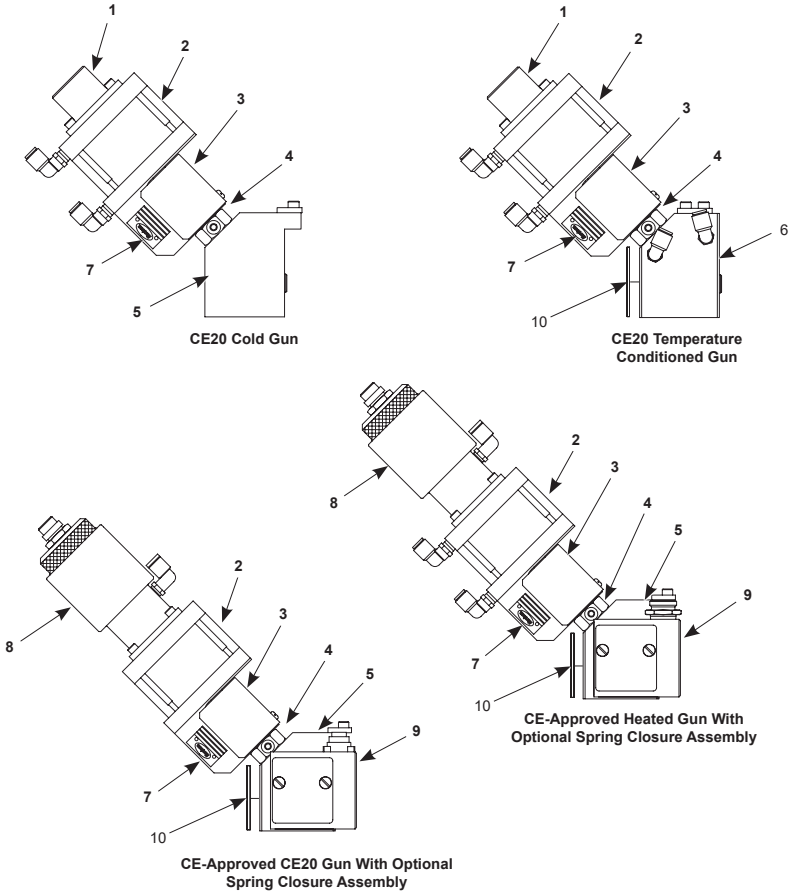


Figure 2 CE 20 Guns

1. Armature Cover
2. Air Cylinder
3. Guard
4. Bonnet
5. Body and Seat (Unheated and Heated Guns)
6. Body and Seat (Temperature Conditioned Guns
7. Yoke
8. Optional Spring Closure Assembly
9. Heter Module
10. Insulator

Installation

Read and understand this entire section before performing any installation procedures. Contact a local Nordson representative if you have questions regarding the installation of this equipment.

WARNING: Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.

CAUTION: Route the cables, air line, and material supply hose to avoid contact with workpieces and damage from robot movement. Most applications for the CE20 gun require a precise mounting of the gun on a robot arm. Consider the clearances necessary for cables, air lines, and material supply hoses and their fittings when calculating the robot and gun path.

NOTE: The orientation of the gun body and seat to the air cylinder is to be determined at installation. The air cylinder section of the gun is shown at a 90-degree difference from its typical installation, for ease of illustration. During installation, you will need to rotate the air cylinder approximately 90 degrees in either direction from the way it is shown.

Install the Gun to a Mounting fixture

See Figure 3 through Figure 5 for the mounting dimensions specific to your model of CE20 gun. Figure 3 shows the mounting dimensions of the unheated gun and the top view typical of a guns. Figure 4 shows the mounting dimensions of a temperature conditioned gun and the surface mounting dimensions typical of all guns. Figure 5 shows the mounting dimensions of the heated gun and of the optional spring closure assembly.

See Figure 4. Mounting the gun to a robot arm requires the use of a customer-supplied end-of-arm tooling that has been specifically designed for the application. The CE20 guns have a mounting surface (5) that allows for several optional mountings: with 1/4-in. dowel pins (3), 1/4-20 mounting bolts (2), or M8 x 1.25 mounting bolts (4).

NOTE: Because the CE20 dispensing gun can be used for a wide variety of applications, mounting configurations vary greatly. Consult your Nordson representative for specific information on your application, if necessary.

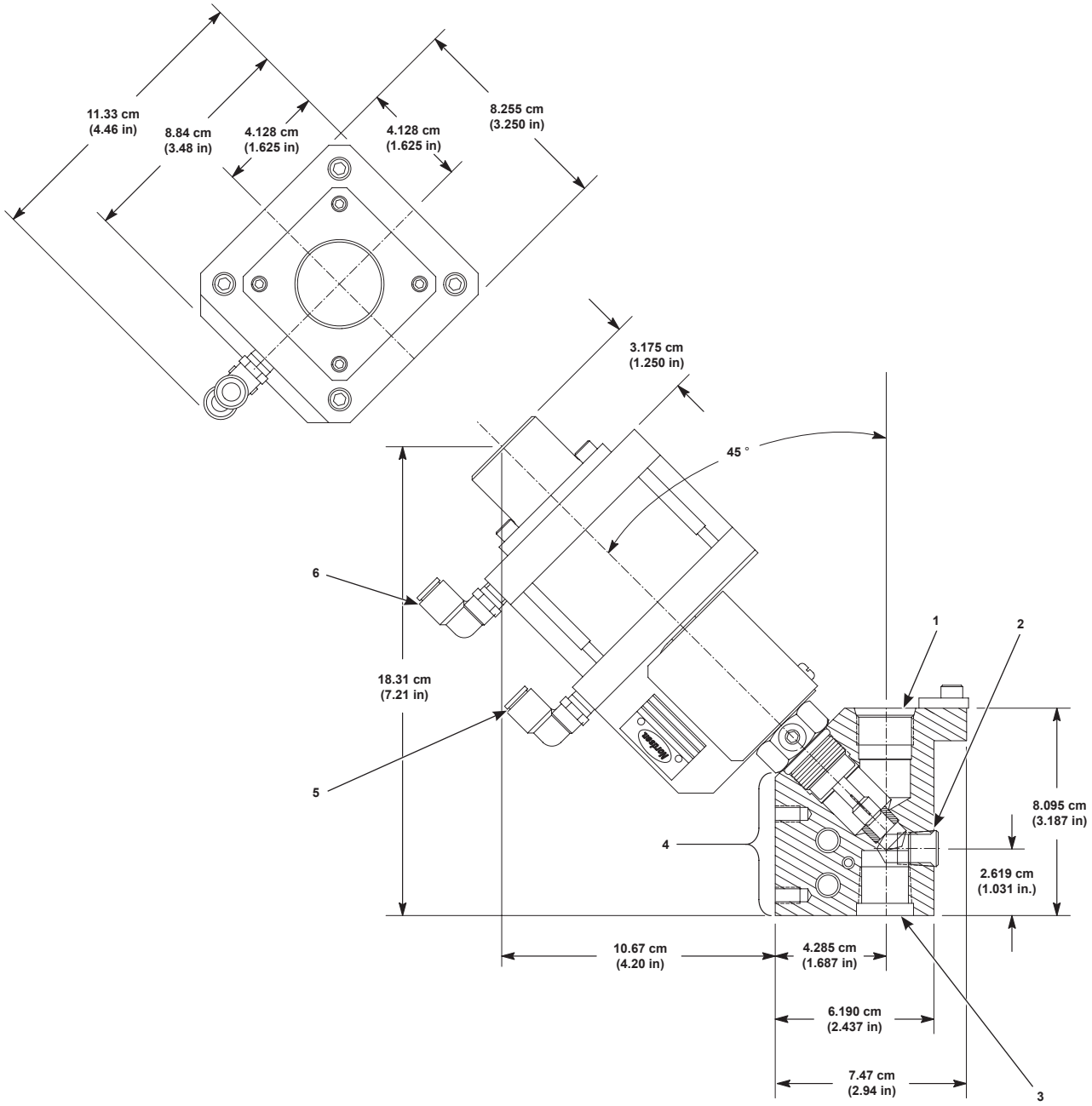


Figure 3 Typical CE20 Gun Dimensions (Unheated Gun and Top View)

1. Material inlet port (7/8-14 UNF-2B)
2. Pressure tranducer port (1/4 NPT)
3. Material outlet port (1/2 NPT)
4. Mounting surface
5. Gun-open air port fitting (1/4-in or 6 mm)
6. Gun-closed air port fitting (1/4-in or 6mm)

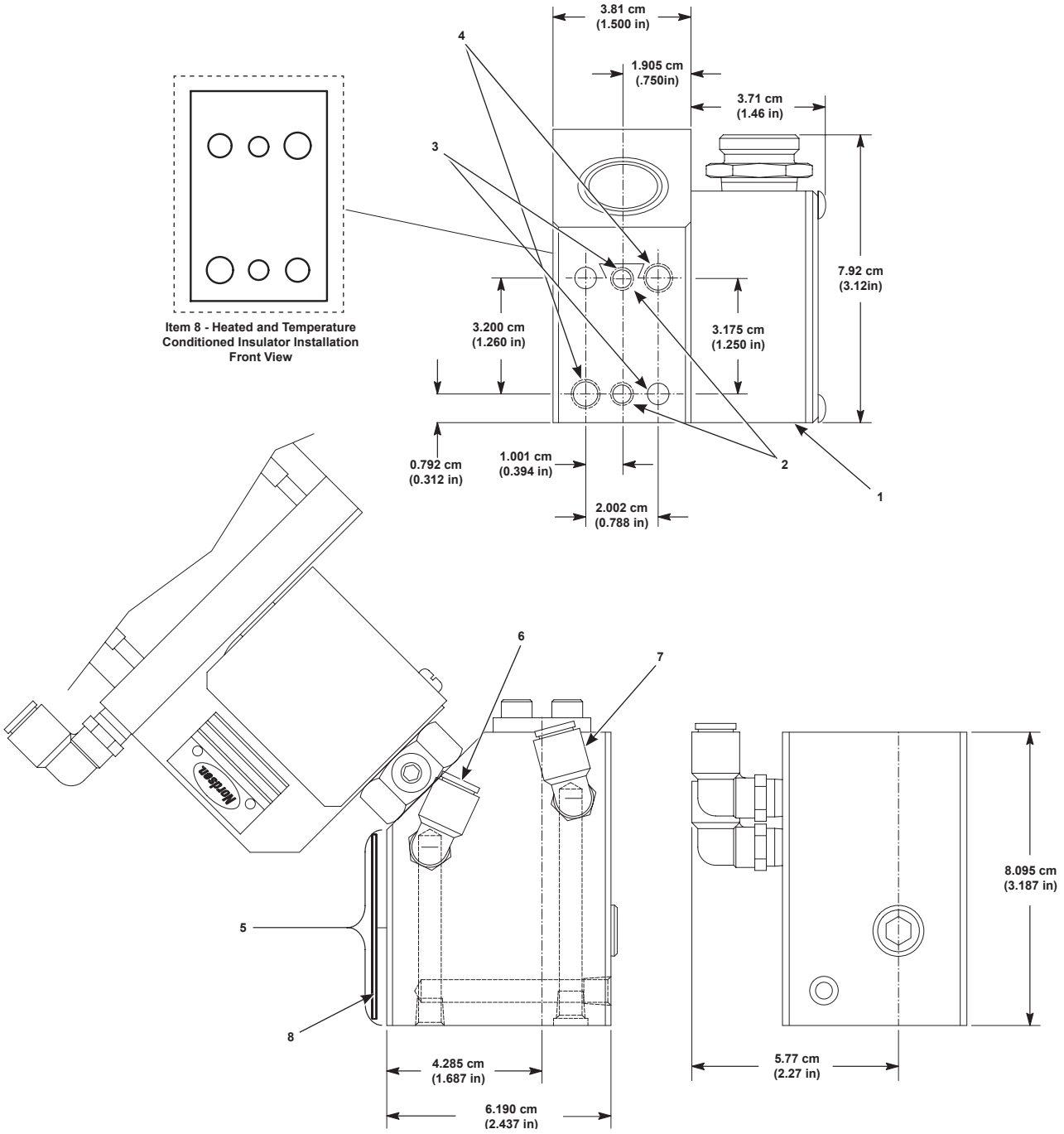


Figure 4 Temperature Conditioned CE20 Gun and Surface Mounting Dimensions

1. Heater module
2. Mounting holes (1/4-20 optional mounting)
3. Dowel pins
4. Mounting holes (M8 x 1.25 optional mounting)
5. Mounting surface (include insulator callout 8)
6. Temperature conditioning inlet port
7. Temperature conditioning outlet port
8. Insulator

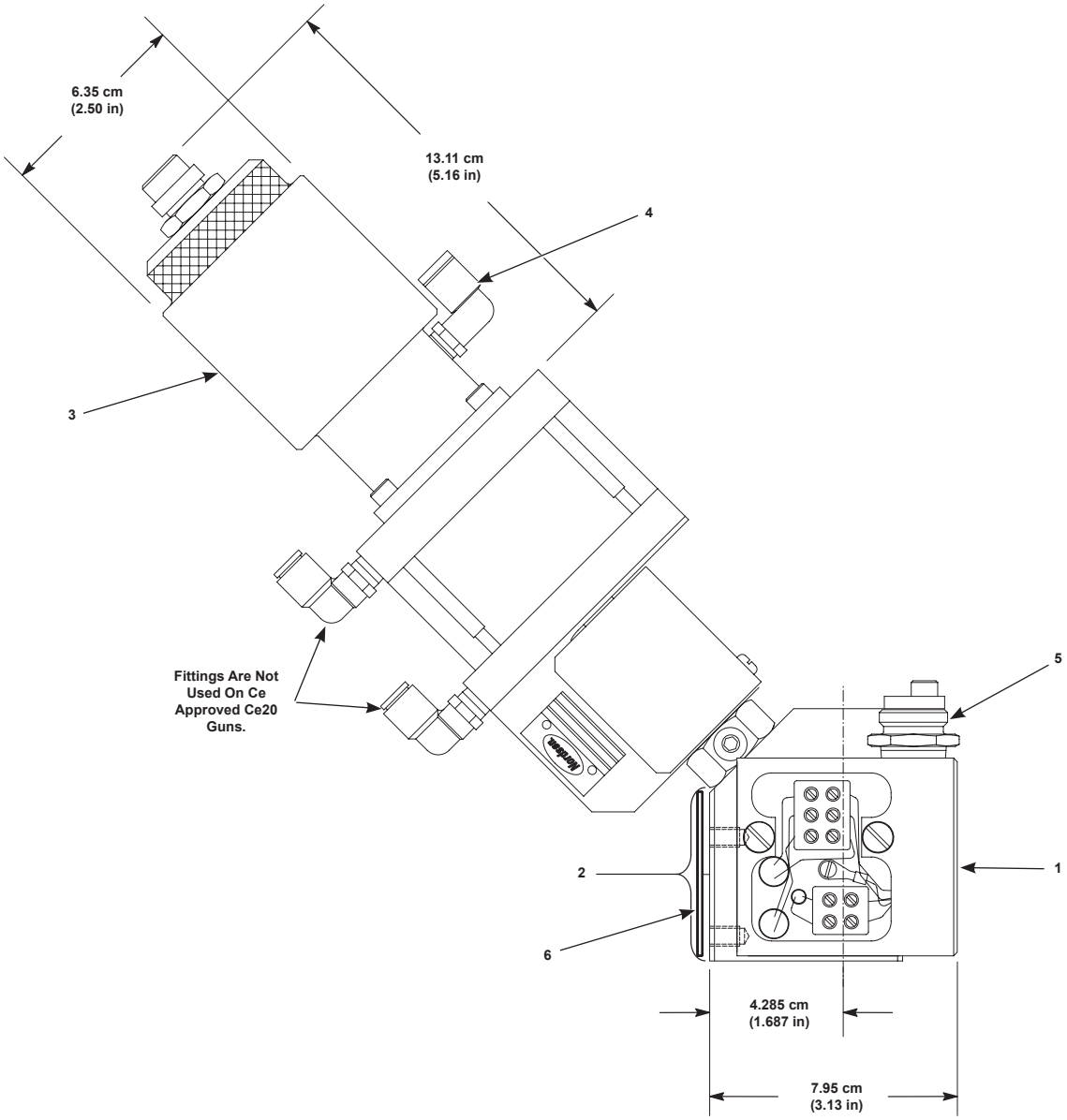


Figure 5 Typical Heated CE20 Gun Dimensions with Spring Closure Assembly Option

1. Heater module
2. Mounting surface (includes insulator 6)
3. Spring closure assembly
4. Spring closure assembly air inlet port (1/4-in)
5. Heater connection
6. Insulator

Connect the Air Supply

Route the gun supply air lines so that they are free and clear of any movement around the wrist and arm of the robot, as well as of any workpiece tooling.

Supply air to the gun solenoid from an oil-free, shop air outlet that will maintain a minimum pressure of at least

4.1 bar (60 psi). The maximum air pressure to the gun is

8.6 bar (125 psi).

NOTE: The gun will not operate properly at a pressure less than 4.1 bar (60 psi).

Follow these steps to install 1/4-in. or 6-mm gun supply air tubing:

1. See Figure 3. Connect an air line from the gun-closed solenoid to the elbow at the gun-closed air port (6).
2. Connect an air line from the gun-open solenoid to the elbow at the gun-open air port (5).
3. See Figure 5. If your gun is equipped with an optional spring closure assembly, connect an air line to the spring closure assembly air inlet port (4).

Connect the Material Supply Hose

To install the material supply hose from the pump/header system to the gun, use the adapters and reducers specified by Nordson Corporation for the application.

Contact a local Nordson representative for a listing of available adapters, reducers, and fitting kits.

NOTE: The maximum fluid pressure for the gun is 344.8 bar (5000 psi).

Follow these steps to connect the material supply hose:

1. Apply pipe sealant or PTFE tape to the threads of the material inlet fitting.
2. See Figure 6. Install the material inlet fitting in the material inlet port (7) of the gun body.
3. Connect the material supply hose from the pump/header system to the material inlet fitting.

Connect the Temperature Conditioning Supply

See Figure 4. To install the temperature conditioning supply lines, connect a coolant hose to the temperature conditioning inlet port (6) and another hose to the temperature conditioning outlet port (7).

Install a Pressure Transducer

See Figure 6. Each CE20 gun has a pressure transducer port (6). Various pressure transducers are available for use with these guns. If necessary, contact a Nordson representative for assistance in selecting and installing the appropriate pressure transducer.

Install a Dispense Nozzle

If necessary, contact a Nordson representative for assistance in selecting and installing the appropriate nozzle for the application.

Follow these steps to install the optional nozzle adapter kit:

1. See Figure 6. Lubricate the O-ring (1) with O-ring lubricant. Make sure it is properly seated in the nozzle adapter body (2).
2. Insert the nozzle adapter body into the body and seat at the material outlet port (5).
3. Install the screws (3) into the body and seat. Tighten the screws to 7.8 N•m (69 in.-lb).
4. Thread the nozzle nut (4) over the nozzle and onto the end of the nozzle adapter body. Tighten the nut to 40.7 N•m (30 ft-lb).

Purge the Gun

Purge the gun to remove air trapped in the system material hoses and nozzle which may cause inaccurate transducer readings.

To purge the gun,

1. Place a material waste container under the gun.

Initiate gun dispensing and purge until material flows freely from the nozzle.

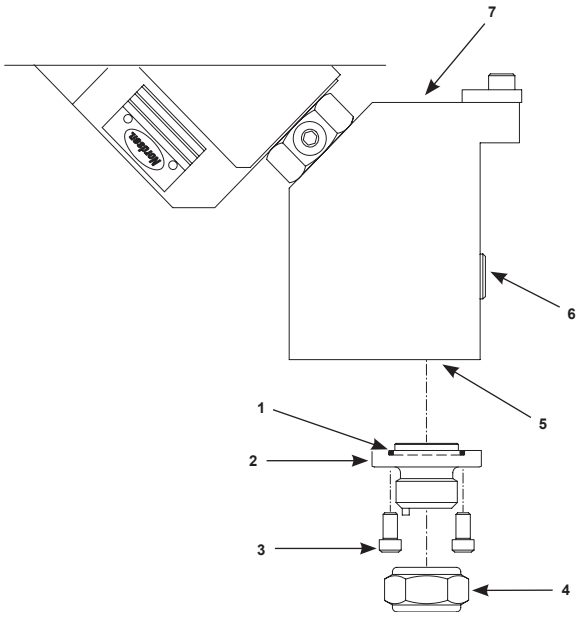


Figure 6 Installing Optional Adapter Kit

1. O-ring
2. Nozzle adapter body
3. Screws
4. Air inlet port
5. Material outlet port
6. Pressure transducer port

Operation

WARNING: Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.

The CE20 gun is robot-mounted and operated through a system controller. Initiate CE20 gun functions as follows:

1. See Figure 7. Initiate material dispensing by activating the gun-open air port (1).
2. Stop dispensing by turning off the air through the gun-open air port.
3. For air-assisted closure, activate the gun-closed air port (2).
4. For guns that use the optional spring closure assembly (3), supply a minimum of 4.8 bar (70 psi) to the air inlet port (4) to deactivate the spring closure assembly.

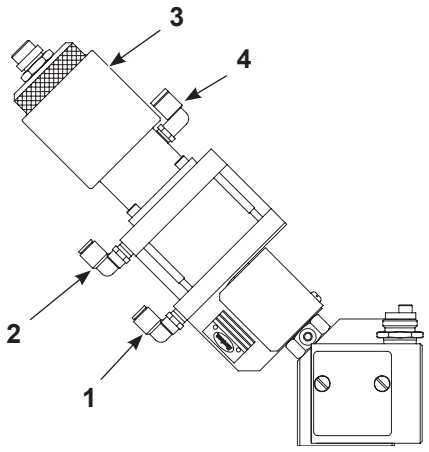


Figure 7 Typical CE20 Gun Operation

Clear a Blocked Nozzle

Follow this procedure to clear a blocked nozzle:

1. Shut off the air pressure to the material supply pump.
2. Carefully bleed off the residual pressure in the material supply line. Use the inline pressure relief valve in the material supply line. This valve should be located near the material pump.
3. Shut off and lock out all power to the system.
4. Remove the nozzle. If you are using the optional nozzle holder kit, unscrew the nut to remove the nozzle. Otherwise, just unscrew the nozzle from the material outlet port.
5. Clean the nozzle thoroughly with an appropriate solvent.
6. Install the nozzle.

This page has been intentionally left blank.

Maintenance

WARNING: To prevent injury to personnel or damage to equipment, review the follwing:

- Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.
- Do not loosen any hydraulic/pneumatic fitting or connection without first relieving system hydraulic/pneumatic pressure.
- System or material pressurized. Relieve pressure. Failure to observe may result in equipment damage, serious personal injury, or death.

Follow the recommended preventive maintenance schedule to prevent inefficient operation of the CE20 dispensing gun and unnecessary downtime.

Component	Frequency		
	Weekly	Monthly	Quarterly
Body and Seat Mounting: Check for loose body and seat connection to air cylinder and tighten, if necessary.	X		
Material Shelf Life: Check material expiration date.	X		
Bonnet Condition: Check for leaking bonnet.	X		
Filter/Regulator: Check regulator setting and adjust, if necessary.	X		
Air Supply: Check tubing and connectors.	X		
Pneumatic Regulator: Clean and drain filter. Change filter as needed.		X	
Heater Cable Condition: Check for loose and damaged connectors.		X	
Pressure Transducer, if used: Remove and clean the transducer.			X

This page has been intentionally left blank.

Troubleshooting

WARNING: To prevent injury to personnel or damage to equipment, review the follwing:

- Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.
- Ensure all power, air pressure, and fluid pressure is removed from the CE20 gun before performing any troubleshooting procedures.
- Remove input air supply to the material pump. Refer to pump manual for procedures. To avoid injury, do not troubleshoot with the pump turned on, unless directed otherwise.

This section contains troubleshooting procedures. These procedures cover only the most common problems that you may encounter. If you cannot solve the problem with the information given here, contact your local Nordson representative for help.

Problem	Possible Cause	Corrective Action
1. No material dispensed	No material supply pressure to gun	Ensure pump air motor is on. Increase air motor pneumatic pressure as required. If system uses a booster pump, ensure motor is on. Increase motor torque as required.
	Blockage at nozzle: Controller may indicate FULL CLOSED and/or OVERPRESSURE	Perform the steps listed in *Clear a Blocked Nozzle*.
	Blockage upstream from gun	Start at the pump and work toward the gun. Shut down system and relieve hydraulic pressure. Disconnect the material supply hoses at each junction. Power up the system and carefully check for flow. Make sure to shut off power/pressure after each check before the next disconnection. Material pressure must be available at the gun.
2. Material leaks from packing around stem	Lipseal failed	Replace the bonnet assembly.
3. Insufficient material pressure at gun for application requirements - Controller indicates gun FULL OPEN	Not enough pressure at pump or pump output insufficient	Increase system hydraulic pressure until it reaches the maximum rating of the component with the lowest pressure rating.
		If this does not correct the problem, contact a Nordson representative for additional guidance and recommendations.

This page has been intentionally left blank.

Repair

Read and understand this entire section before performing any repair procedures. Contact a local Nordson representative if you have questions regarding the repairs to this equipment. The following repairs procedures are covered in this section:

- Removing the Gun from Its Mounting
- Replacing the Bonnet
- Replacing the Air Cylinder Piston

WARNING: To prevent injury to personnel or damage to equipment, review the following:

- Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.
- System or material pressurized. Relieve pressure. Failure to observe may result in equipment damage, serious personal injury, or death.

Remove the Gun from the Mounting Fixture

WARNING: To prevent injury to personnel or damage to equipment, review the follwing:

- Make sure that all power to the controller and gun has been shut off and locked out and that all pneumatic and material pressures have been relieved or bled off.
- If a heated gun is being used, allow the system to cool down before disconnecting or removing any components from the gun. Failure to observe this warning may result in serious injury to personnel and/or damage to equipment.

Follow this procedure to remove the gun from the mounting fixture:

1. Shut off the material supply pump and relieve the pressure from the gun and hose.
2. See Figure 8. Disconnect the material supply hose from the material inlet port (5).
3. Disconnect the air lines from the gun-open air port fitting (9) and gun-closed air port fitting (10) on the air cylinder (2).
4. If used, disconnect the air line from the spring closure fitting (1).
5. For guns with a heater module (7), disconnect the heater cable from the heater connection (6).
6. For temperature conditioning applications, disconnect the coolant hoses from the temperature conditioning inlet (11) and outlet (12) ports.
7. Remove the dowel pins or mounting bolts from the mounting holes securing the gun to the robot arm or other mounting.
8. Remove the gun from the mounting fixture and move it to a clean workbench.

CAUTION: For heated CE20 guns, avoid misplacing the insulator (13) when removing the gun from the mounting surface.

NOTE: CE20 guns have a C-shaped protective guard that isolates pinch point areas. Always reinstall the guard onto the gun when repair and service activities are finished.

9. Remove the screw (4) from the yoke (8).
10. Remove the guard (3).

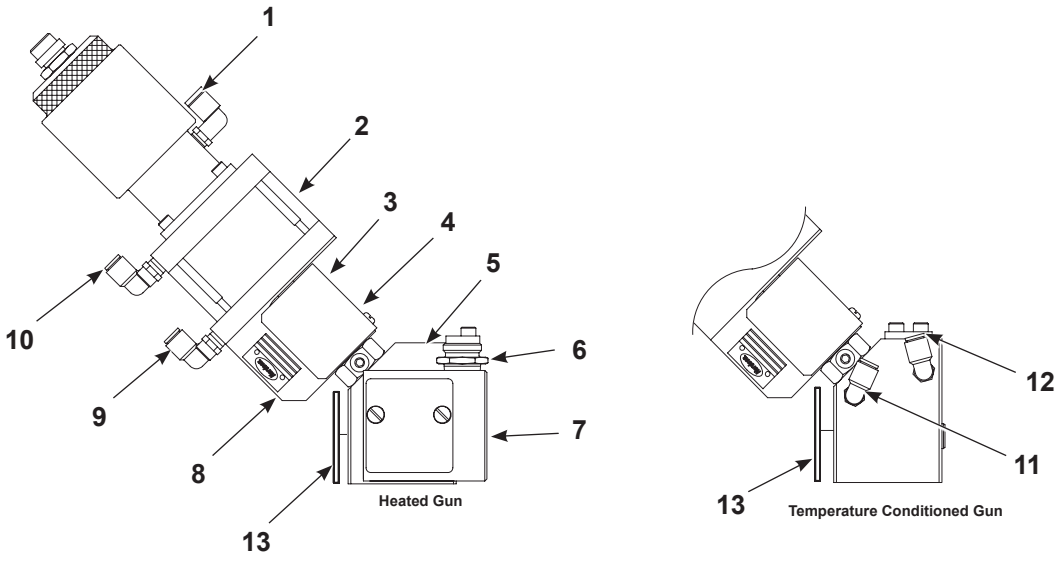


Figure 8 Removing the CE20 Gun from the Mounting Fixture (Typical)

Replace the Bonnet Assembly

The bonnet assembly is not serviceable, only replaceable. This section contains procedures for replacing the bonnet assembly.

Remove the Bonnet Assembly

Follow this procedure to remove the bonnet assembly from the gun body and seat:

1. Remove the gun from the robot according to the Removing the Gun from the Mounting Fixture procedure.
2. See Figure 8. Remove the screw (4) from the yoke (8). Remove the guard (3).
3. See Figure 9. Hold the air shaft hex (2) with a 10-mm wrench and loosen the jam nut (3) with a second 10-mm wrench.
4. Using a 1-in. open-end wrench, unscrew the retaining nut (4) that holds the yoke (8) onto the bonnet and body and seat (5) assembly.
5. Hold the air shaft hex with a 10-mm wrench and apply a second 10-mm wrench to the coupler nut (7). Unscrew the coupler nut until the air cylinder assembly frees itself from the body and seat.
6. Remove the air cylinder from the rest of the gun assembly. Be careful not to lose the retaining nut.
7. Holding the bonnet hex (6) with a 1-in. open-end wrench, unscrew the bonnet from the body and seat.
8. Discard the old bonnet.

Install the Bonnet Assembly

Follow this procedure to install the bonnet assembly into the gun body and seat.

1. See Figure 9. Coat the new bonnet O-ring and threads with PTFE grease and thread it into the body and seat (5).
2. Tighten the bonnet to 54.2 N•m (40 ft-lb).
3. Lower the air cylinder (1) with the retaining nut (4) held in place toward the body and seat, inserting the yoke (8) over the bonnet hex (6) and stem.
4. Holding the coupler nut (7) in place, finger-tighten the retaining nut onto the bonnet.
5. Using the coupler nut, screw the bonnet stem up into the air cylinder shaft at the air shaft hex (2) until the bonnet stem bottoms out. Do not overtighten using the coupler nut.
6. Using a 10-mm wrench to hold the air shaft hex, tighten the jam nut (3) into the air shaft hex using a second 10-mm wrench. Tighten the jam nut to 9 N•m (80 in.-lb).
7. Orient the air cylinder portion of the gun to the proper position for your application.
8. Tighten the retaining nut to 40.7 N•m (30 ft-lb).
9. See Figure 8. Once you have completed any service or repair activities, replace the guard (3). Coat the screw (4) with Loctite 242 and fasten the guard to the yoke (8).

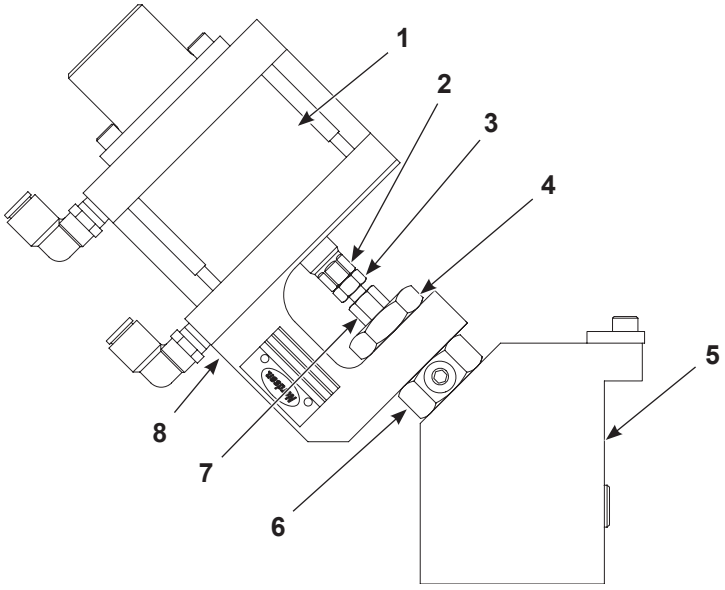


Figure 9 Bonnet Replacement (Typical)

Replace the Air

Cylinder Piston Assembly

The air cylinder piston assembly is not serviceable, only replaceable. The air cylinder seal kit includes new lip seals, O-rings, and a new piston assembly. In order to install the kit, you must remove the air cylinder assembly from the gun and then remove the piston assembly from the air cylinder. This section contains procedures for disassembling the air cylinder assembly, removing the piston assembly, installing a new piston assembly, and reassembling the air cylinder assembly.

Remove the Piston Assembly

Follow this procedure to remove the piston assembly from the air cylinder:

1. Remove the gun from the application system. Refer to the Remove the Gun from the Mounting Fixture procedure.
2. See Figure 8. Remove the screw (4) from the yoke (8). Remove the guard (3).
3. Remove the air cylinder from the gun assembly according to steps 3−6 of the Remove the Bonnet Assembly procedure.
4. See Figure 10. Using a 4-mm hex key, remove the four socket head screws (1) from the upper cylinder head (3).
5. Separate the upper cylinder head from the yoke/lower cylinder head (8).
6. Remove the cylinder sleeve (7) and the piston/shaft assembly (6).
7. Discard the old piston assembly.
8. Remove the lipseals (4) from the grooves inside the upper and lower cylinder heads.
9. Remove the cylinder head O-rings (5).

Install the Piston Assembly

Follow this procedure to install the piston assembly:

NOTE: Always use new O-rings and lip seals when reassembling the gun.

1. See Figure 10. Lubricate new lipseals (4) with Magnalube-G and install them as shown.
2. Lubricate and install two new cylinder head O-rings (5).
3. Lubricate the inside diameter of the cylinder sleeve (7) and the outer blue seal of the piston/shaft assembly (6).
4. Insert the piston assembly squarely, with uniform pressure, into the cylinder sleeve, taking care not to pinch the seal.
5. Install the female-threaded end of the piston shaft into the yoke/lower cylinder head (8). Snap the cylinder sleeve onto the yoke.
6. Snap the upper cylinder head (3), O-ring side down, onto the cylinder sleeve.
7. Line up the upper cylinder head and lower cylinder heads squarely, so that the air fittings (2) are lined up.
8. Lubricate the threads of the four socket head screws (1) and install them to secure the upper cylinder head onto the lower cylinder head. Tighten the screws 5.2 N•m (46 in.-lb).
9. Install the air cylinder onto the gun assembly according to steps 3−8 of the Install the Bonnet Assembly procedures.
10. See Figure 8. Once you have completed any service or repair activities, replace the guard (3). Coat the screw (4) with Loctite 242 and install the guard to the yoke (8). Tighten the screw securely.

CAUTION: Install insulator plate (13) if installing heated and temperature conditioned CE20 guns.

Restore the Gun to Operation

To restore gun operation, follow this procedure to reinstall the gun on the robot or other mounting:

1. Follow the Install the Gun to a Mounting Fixture procedure to attach the gun to the robot or other mounting.
2. See Figure 8. Connect the material supply hose to the material inlet port (5).
3. See Figure 10. If you are using high pressure fluid swivels, remove the locking swivel key (10) and screw (11). Tighten the fluid swivel. Reinstall and tighten the locking swivel key.
4. See Figure 8. Connect the air supply lines to both the gun-open air port (9) and the gun-closed air port (10) on the gun body.
5. For guns with a heater module (7), install the heater cable to the heater connection (6).
6. For temperature conditioning applications, install the inlet (11) and outlet (12) coolant hoses to the temperature conditioned gun body and seat.
7. Turn on the material supply pump and check the hoses and fittings for leaks.
8. Purge the gun to remove trapped air from the hoses and gun.

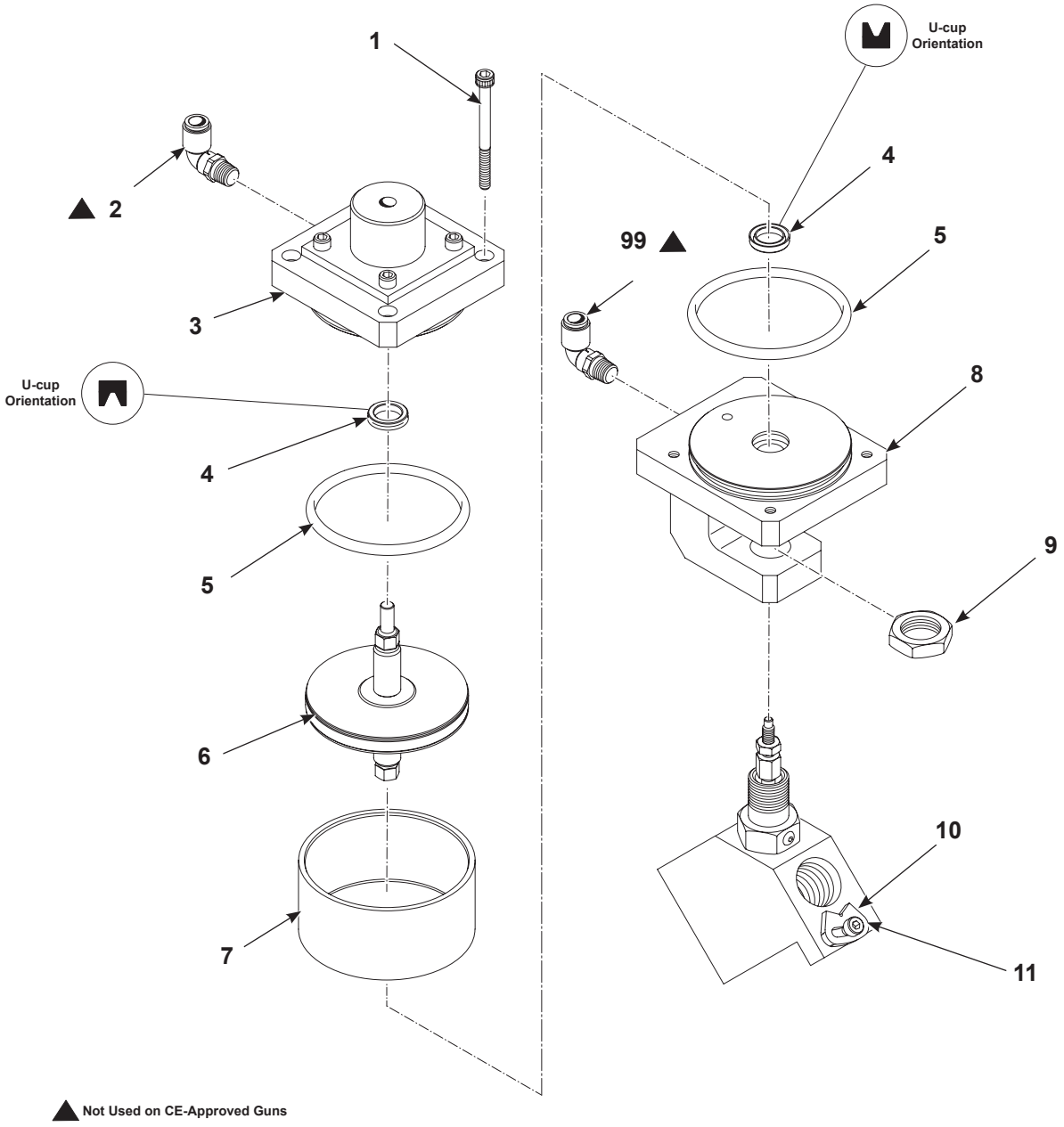


Figure 10 Replacing the Air Cylinder Piston

Parts

Standard Unheated CE20 Gun

See Figure 11 and the following parts list.

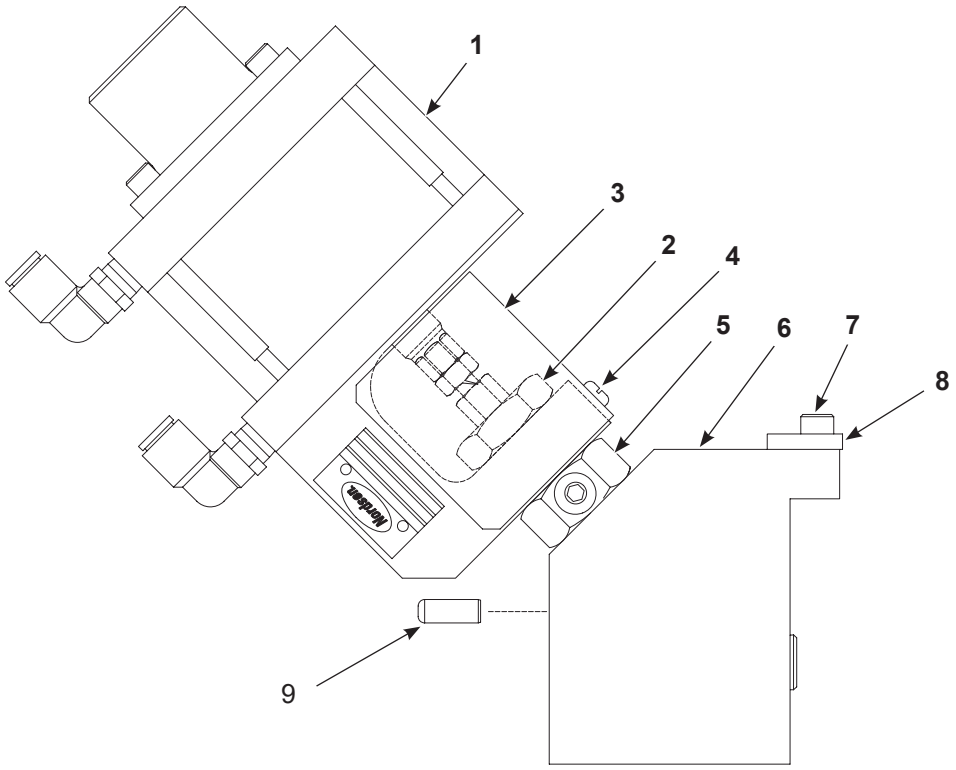


Figure 11 Standard Unheated CE20 Gun

Item	Part	Description	Qty	Note
—	346223	Valve,CE20,1k,Carbon steel,Polymyte	1	
—	341454	• Service kit,cylinder,CE20,3-in. diameter COLLAR, coupling	1	A
1	------	• • Cylinder,CE20,3 in.	1	
2	117287	• • Nut,lock,bulkhead,3/4-16,steel	1	
3	346167	• Cover,pinch point	1	
4	982096	• Screw,pan,slotted,M4 x 8, zinc	1	
5	346021	• Service kit,bonnet,CE20, filled	1	
6	1001754	• Service kit, body, CE20,with seat, standard	1	
7	982372	• • Screw,socket,M5 x12,black	1	
8	156208	• • Key,locking swivel (for 1 1/4 hex)	1	
	1062081	• • Key,swivel,locking,h/f,1.250 In hex	1	
	1623131	• • Key,lock,swivel,a/f,1”hex	1	
9	985030	• Pin,dowel,m6x16mm,h&g	1	

NOTE: A. This kit includes the entire air cylinder. Order Air Cylinder Seal kit 1002375 for replacement piston and seals only.

NS: Not Shown

Temperature Conditioned CE20 Gun

See Figure 12 and the following parts list

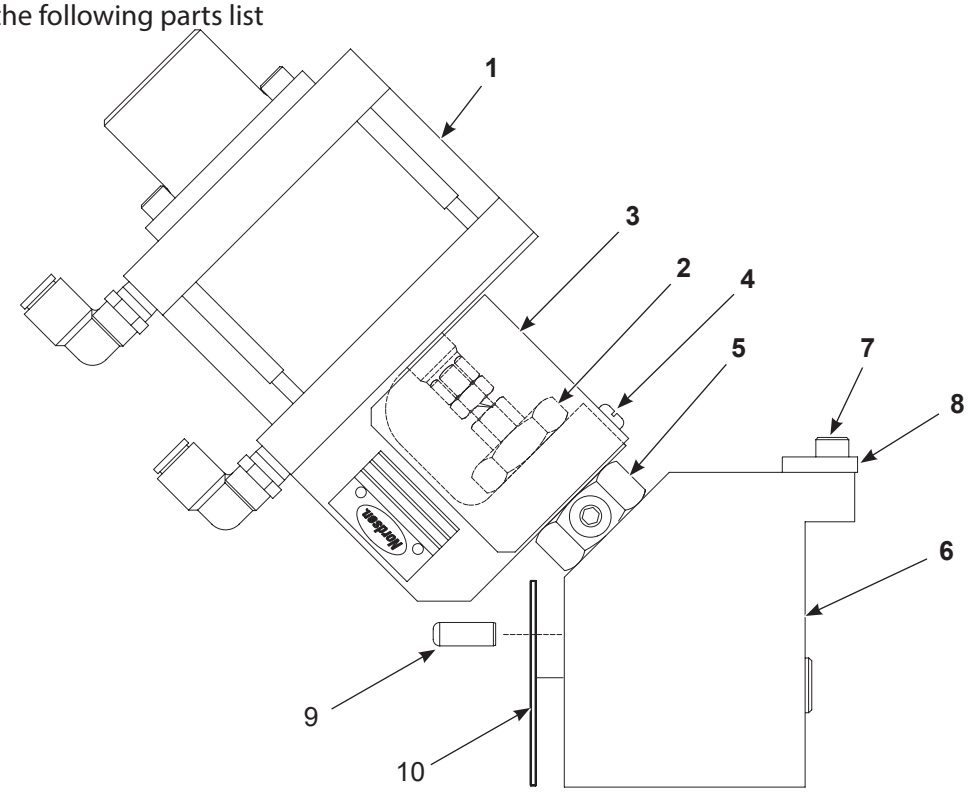


Figure 12 Temperature Conditioned CE20 Gun

Item	Part	Description	Qty	Note
—	346223	Valve,CE20,1k,Carbon steels,Polymyte	1	
—	341454	• Service kit,cylinder,CE20, 3-in. dia	1	A
1	------	• • Cylinder,CE20, 3 in.	1	
2	117287	• • Nut,lock,bulkhead,3/4-16,steel	1	
3	346167	• Cover,pinch point	1	
4	982096	• Screw,pan,slotted,M4 x 8,zinc	1	
5	346021	• Service kit,bonnet,CE20,filled	1	
6	1001755	• Service kit,body w/seat,temperature condtioned	1	
7	982372	• • Screw,socket,M5 x12,black	1	
8	156208	• • Key,locking swivel (for 1 1/4 hex)	1	
	1062081	• • Key,swivel,locking,h/f,1.250 In hex	1	
	1623131	• • Key,lock,swivel,a/f,1”hex	1	
9	985030	• Pin,dowel,m6x16mm,h&g	1	
10	1623183	• Insulator,plate,CE20 dispenser,heated 588459	1	

NOTE: A. This kit includes the entire air cylinder. Order Air Cylinder Seal kit 1002375 for replacement piston and seals only.

NS: Not Shown

Heated CE20 Guns

See Figure 13 and the following parts lists.

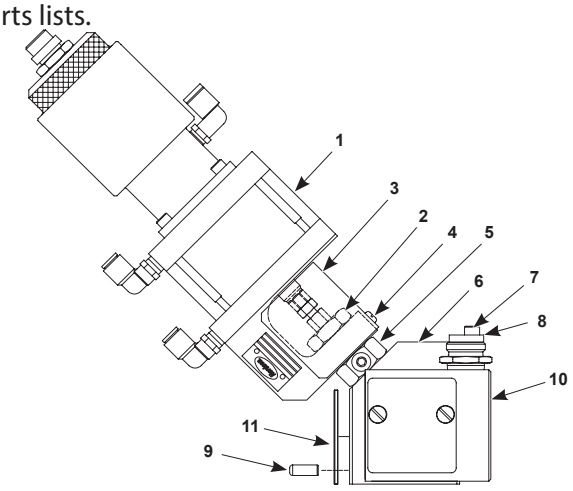


Figure 13 Heated CE20 Guns

Heated CE20 Standard Watt Guns

Item	Part	Part	Part	Description	Qty	Note
—	346225	—	—	CE20 gun, warm, 120V, with nickel, large cylinder	1	
—	—	346226	—	CE20 gun, warm, 240 V, with nickel, large cylinder	1	
—	—	—	346227	CE20 gun, warm, 240 V, with platinum, large cylinder	1	
—	341454	341454	341454	• Service kit, cylinder, CE20, 3-in. diameter	1	A
1	------	------	------	• • Cylinder, CE20, 3 in.	1	
2	1072893	1072893	1072893	• • Nut, lock, Nylon, 3/4-16	1	
3	346167	346167	346167	• Cover, pinch point	1	
4	982096	982096	982096	• Screw, pan, slotted, M4 x 8, zinc	1	
5	346021	346021	346021	• Service kit, bonnet, CE20, filled	1	
6	1001754	1001754	1001754	• Service kit, body, CE20, with seat, standard	1	
7	982372	982372	982372	• • Screw, socket, M5 x12, black	1	
8	156208	156208	156208	• • Key, locking swivel (for 1 1/4 hex)	1	
	1063081	1063081	1063081	• • Key, locking swivel (for 1 3/8 hex)	1	
	1623131	1623131	1623131	• • Key,lock,swivel,a/f,1”hex	1	
9	------	------	------	• Pin, dowel, M6 x 16, H & G	2	
10	346228	------	------	• Module, heater, 120 V, nickel RTD	1	B
	------	346229	------	• Module, heater, 240 V, nickel RTD	1	B
	------	------	346230	• Module, heater, 240 V, platinum RTD	1	B
11	1623183	1623183	1623183	• Insulator,plate,ce-20 dispenser,heated 588459	1	

NOTE: A. This kit includes the entire air cylinder. Order Air Cylinder Seal kit 1002375 for replacement piston and seals only.

B. Refer to the *Heater Kits* parts lists in this section for a full listing of heater module parts.

Heated CE20 Low Watt Guns

Item	Part	Part	Part	Description	Qty	Note
—	1615119	—	—	CE20 gun, warm,120 V, with nickel, large cylinder, low wattage	1	
—	—	1615121	—	CE20 gun, warm, 240 V with nickel, large cylinder, low wattage	1	
—	—	—	1615122	CE20 gun, warm, 240 V with platinum, large cylinder, low wattage	1	
—	341454	341454	341454	• Service kit, cylinder, CE20, 3-in. diameter	1	A
1	------	------	------	• • Cylinder, CE20, 3 in.	1	
2	1072893	1072893	1072893	• • Nut, lock, Nylon, 3/4-16	1	
3	346167	346167	346167	• Cover, pinch point	1	
4	982096	982096	982096	• Screw, pan, slotted, M4 x 8, zinc	1	
5	346021	346021	346021	• Service kit, bonnet, CE20, filled	1	
6	1001754	1001754	1001754	• Service kit, body, CE20, with seat, standard	1	
7	982372	982372	982372	• • Screw, socket, M5 x12, black	1	
8	156208	156208	156208	• • Key, locking swivel (for 1 1/4 hex)	1	
	1063081	1063081	1063081	• • Key, locking swivel (for 1 3/8 hex)	1	
	1623131	1623131	1623131	• • Key,lock,swivel,a/f,1”hex	1	
9	------	------	------	• Pin, dowel, M6 x 16, H & G	2	
10	1615124	------	------	• Module, heater, 120 V, with nickel, low wattage	1	B
	------	1615126	------	• Module, heater, 240 V, with nickel, low wattage	1	B
	------	------	1615127	• Module, heater, 240 V, with platinum, low wattage	1	B
11	1623183	1623183	1623183	• Insulator,plate,ce-20 dispenser,heated 588459	1	

NOTE: A. This kit includes the entire air cylinder. Order Air Cylinder Seal kit 1002375 for replacement piston and seals only.

B. Refer to the *Heater Kits* parts lists in this section for a full listing of heater module parts.

NS: Not Shown

CE Approved Heated CE20 Guns

See Figure 14 and the following parts lists.

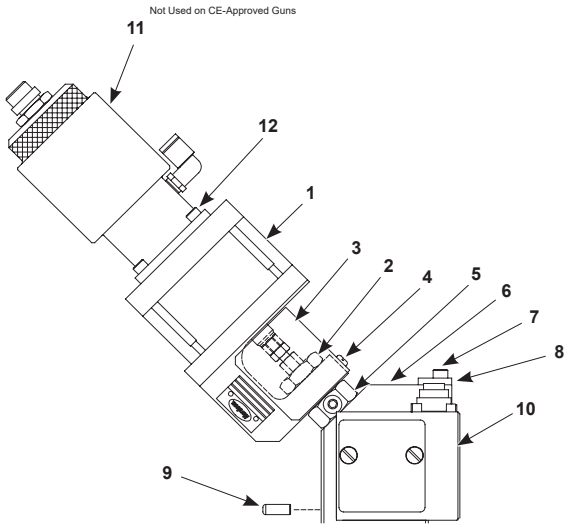


Figure 14 Heated CE20 Guns, CE

Item	Part	Part	Part	Description	Qty	Note
—	1082250	—	—	CE20 gun, warm, 240 V, with nickel RTD, CE, G port	1	
	—	1615120	—	CE20 gun, warm, 240 V, with nickel, <90C, CE, G port, low wattage	1	
	—	—	1616141	CE20 gun,warm, 240V, with nickel, <90C, CE, NPT, low wattage	1	
—	1084647	341454	341454	• Service kit, cylinder, CE20, 3-in. dia	1	A
1	------	------	------	• • Cylinder, CE20, 3 in.	1	
2	1072893	1072893	1072893	• • Nut, lock, Nylon, 3/4-16	1	
3	346167	346167	346167	• Cover, pinch point	1	
4	982096	982096	982096	• Screw, pan, slotted, M4 x 8, zinc, class 4.8 per ISO 1483	1	
5	346021	346021	346021	• Service kit, bonnet, CE20, filled	1	
6	1001754	1001754	1001754	• Service kit, body, CE20, with seat, standard	1	
7	982372	982372	982372	• • Screw, socket, M5 x12, black, class 12.9 per ISO 4762	1	
8	156208	156208	156208	• • Key, locking swivel (for 1 1/4 hex)	1	
	1063081	1063081	1063081	• • Key, locking swivel (for 1 3/8 hex)	1	
9	------	------	------	• Pin, dowel, M6 x 16, H & G	2	
10	1082256	------	------	• Module, heater, 240 V, with nickel RTD, CE	1	B
	—	1615125	1615125	• Module, heater, 240 V, with nickel, low wattage	1	

NOTE: A. This kit includes the entire air cylinder. Order air cylinder seal kit 1002375 for replacement piston and seals only.

B. Refer to the *Heater Kits* parts lists in this section for a full listing of heater module parts.

NS: Not Shown

Kits

The following kits are available for the CE20 Guns.

Nozzle Holders

See Figure 15 and the following parts list.

Item	Part	Description	Qty
—	341449	Adapter, tip, lock	1
—	341450	Adapter, tip, non-lock	1
3	------	• Screw, socket, M5 x 12	1
4	------	• Nut, nozzle, 1/2 NPSM	1
5	------	• Adapter, lock Included in kit 34149.	1
5	------	• Adapter, non-lock Included in kit 34150	1
6	------	• O- ring, Viton 0.989 ID x 0.070	1

Spring Closure

See Figure 15 and the following parts list.

Item	Part	Description	Qty	Note
1	332872	Kit, Spring closure	1	
2	982028	Screw, socket M5 x 20	------	A

NOTE: A. The socket screws are not included with the spring closure kit.

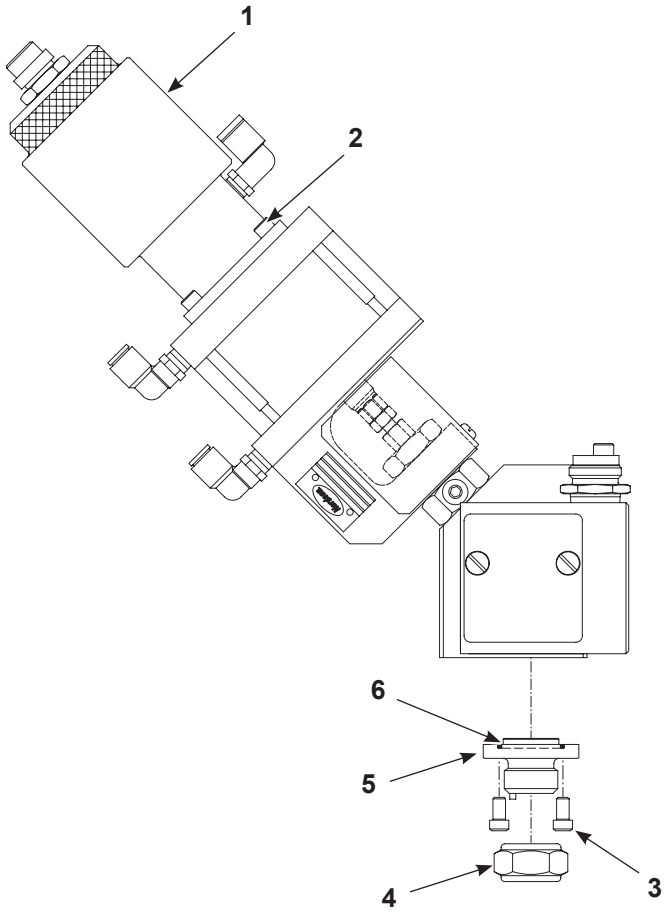


Figure 15 Spring Closure and Nozzle Holder Kits

Standard and Low Wattage Heater

See Figure 16 and the following parts list.

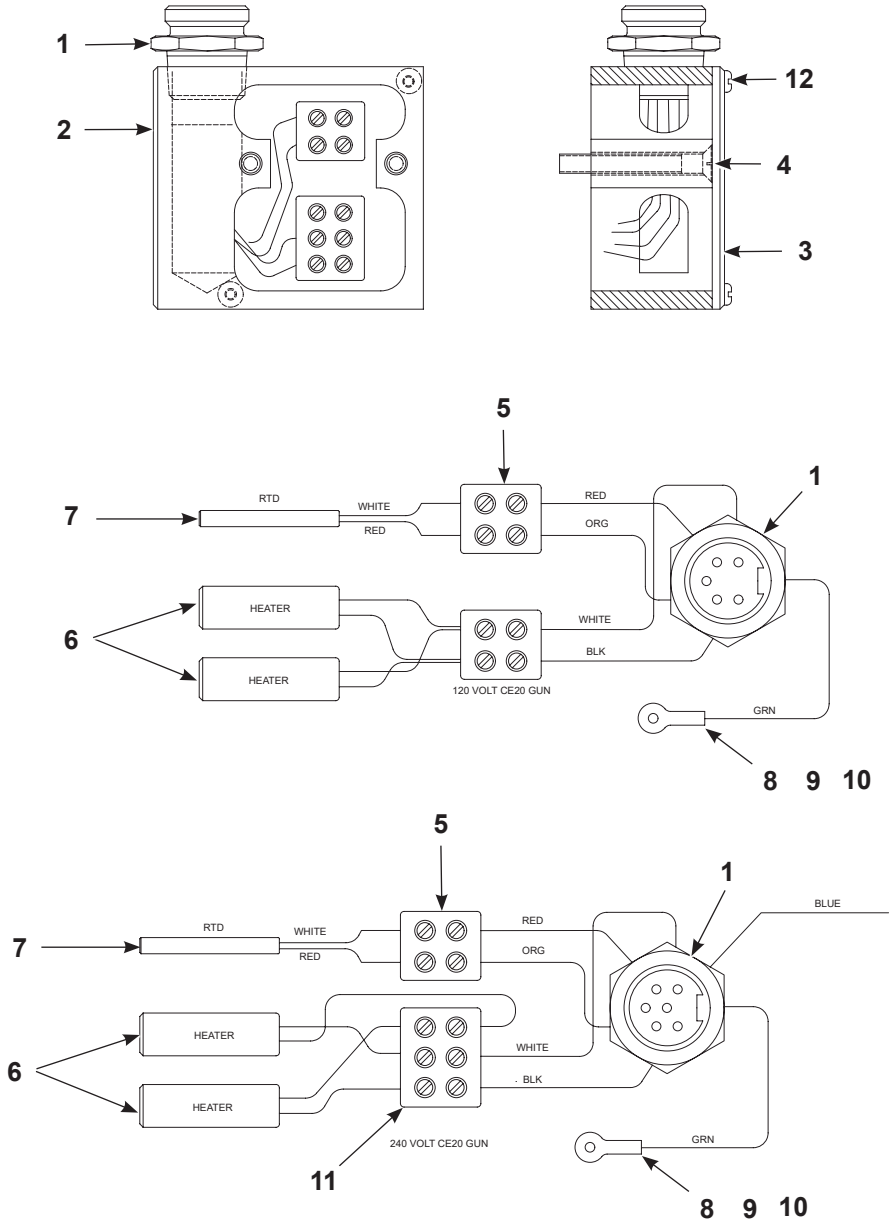


Figure 16 CE20 Heater Kits

Standard Heater

Item	Part	Part	Part	Description	Qty	Note
—	346228	—	—	Heater, CE20,120 V, with nickel RTD	1	
—	—	346229	—	Heater, CE20, 240 V, with nickel RTD	1	
—	—	—	346230	Heater, CE20, 240 V, with platinum RTD	1	
1	------	------	------	• Receptacle, input, high temperature, 5-wire	1	
	------	------	------	• Cable, input, 6-socket, high temperature, 12-in.	1	
2	346065	346065	346065	• Body, heater, add-on, CE20	1	
3	346066	346066	346066	• Cover, heater, add-on, CE20	2	
4	860539	860539	860539	• Screw, flat, slotted, M5 x 40, zinc, class 4.8 per ISO 1483	2	
5	939586	939586	939586	• Connector, plastic, 2-station	AR	A
6	938161	938161	938161	• Heater cartridge, 150 watts 120 volts	1	
7	939523	939523	------	• Sensor, temperature, gun	1	
	------	------	140305	• Sensor, RTD, 100 ohm, platinum	1	
8	------	------	------	• Terminal, ringtong, non, 22-18, 4	1	
9	------	------	------	• Lock washer, male, external, M3, steel, zinc	1	
10	983426	983426	983426	• Screw, cheese head, slotted, M3 x 5, zinc, class 4.8 per ISO 1207	1	
11	------	------	------	• Connector assembly, plastic, 3-station	1	
12	982221	982221	982221	• Screw, pan, M3 x 10, black, class 4.8 per ISO 1483	2	
NS	------	------	------	• Conductive paste	AR	B

NOTE: A. Heater 346228 uses 2 connectors. Heaters 346229 and 346230 use 1 connector.

B. Apply to the inside of the heater body, as needed, to improve conductivity.

AR: As Required

NS: Not Shown

Low Wattage Heater

Item	Part	Part	Part	Description	Qty	Note
—	1615124	—	—	Heater, 120 V, with nickel, low wattage	1	
—	—	1615126	—	Heater, 240 V, with nickel, low wattage	1	
—	—	—	1615127	Heater, 240 V, with platinum, low wattage	1	
1	------	------	------	• Receptacle, input, high temp, 5-wire	1	
	------	------	------	• Cable, input, 6-socket, high temp, 12-in.	1	
2	346065	346065	346065	• Body, heater, add-on, CE20	1	
3	346066	346066	346066	• Cover, heater, add-on, CE20	2	
4	860539	860539	860539	• Screw, flat, slotted, M5 x 40, zinc, class 4.8 per ISO 1483	2	
5	------	------	------	• Connector, plastic, 2-station	AR	A
6	1615137	------	------	• Heater cartridge, 0.375 diameter, 1.28 LG, 120 volts, 70 watts	1	
	------	1615138	1615138	• Heater Cartridge, 0.375 diameter, 1.28 LG, 240 volts, 70 watts	1	
7	939523	939523	939523	• Sensor, temp, gun	1	
	------	------	140305	• Sensor, RTD, 100 ohm, platinum	1	
8	------	------	------	• Terminal, ringtong, non, 22-18, 4	1	
9	------	------	------	• Lock washer, male, external, M3, steel, zinc	1	
10	983426	983426	983426	• Screw, cheese head, slotted, M3 x 5, zinc	1	
11	------	939320	939320	• Connector assembly, plastic, 3-station	1	
12	982221	982221	982221	• Screw, pan, M3 x 10, black, class 4.8 per ISO 1483	2	
NS	------	------	------	• Conductive paste	AR	B

NOTE: A. Heater 1615124 uses 2 connectors. Heaters 1615126 and 1615127 use 1 connector.

B. Apply to the inside of the heater body, as needed, to improve conductivity.

AR: As Required

NS: Not Shown

Heaters for CE-Approved Guns

See Figure 17 and the following parts list.

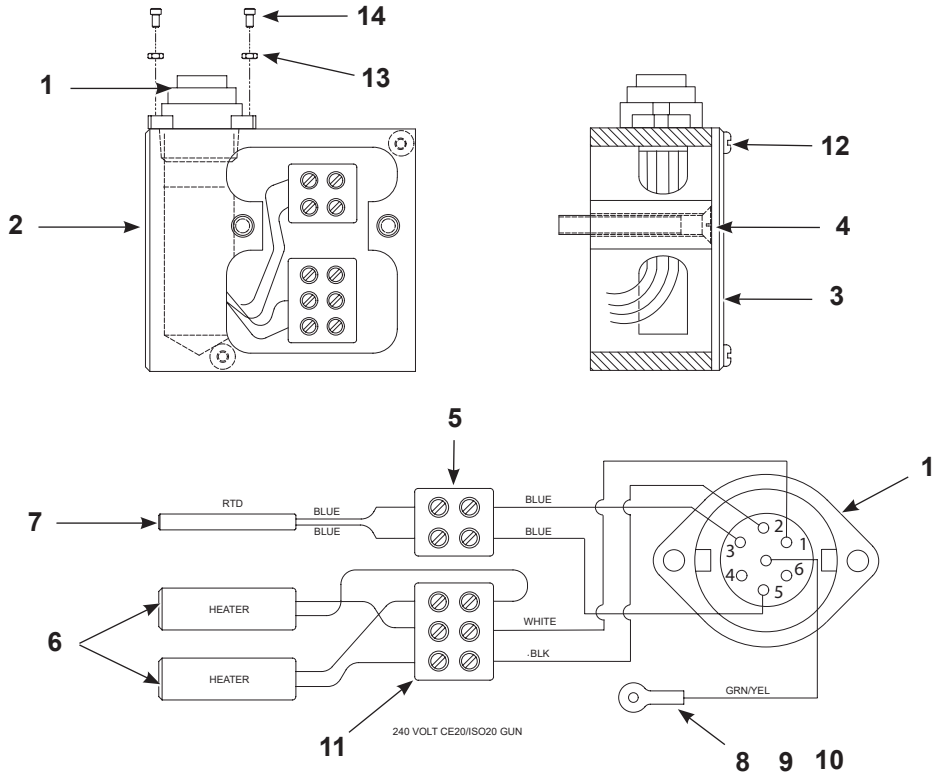


Figure 17 Heater Kits for CE-Approved Guns

Item	Part	Part	Description	Qty	Note
—	1082256	—	Heater, CE20, 240V, with nickel RTD, CE	1	
	—	1615125	Heater, 240V, with nickel, CE, LW	1	
1	------	------	• Receptacle, input, high temp, 5-wire	1	
2	1082257	1082257	• Body, heater, add-on, CE20, CE	1	
3	346066	346066	• Cover, heater, add-on, CE20	2	
4	860539	860539	• Screw, flat, slotted, M5 x 40, zinc	2	
5	939586	939586	• Connector, plastic, 2-station	2	
6	938161	------	• Heater cartridge, 150 w, 120 V	1	
	------	1615138	• Heater Cartridge, 0.375 D, 1.28 LG, 240 V, 70 W	1	
7	939523	939523	• Sensor, temp, gun	1	
8	------	------	• Terminal, ring tong, ins, 22-18, 4	1	
9	983426	983426	• Lock washer, m, external, M3, steel, zinc	1	
10	983426	983426	• Screw, cheese head, slotted, M3 x 5, zinc	1	
11	939320	939320	• Connector assembly, plastic, 3-station	1	
12	982221	982221	• Screw, pan, M3 x 10, black	2	
NS	------	------	• Conductive paste	AR	A

NOTE: A. Apply to the inside of the heater body, as needed, to improve conductivity.

AR: As Required

NS: Not Shown

Air Cylinder

See Figure 18 and the following parts list.

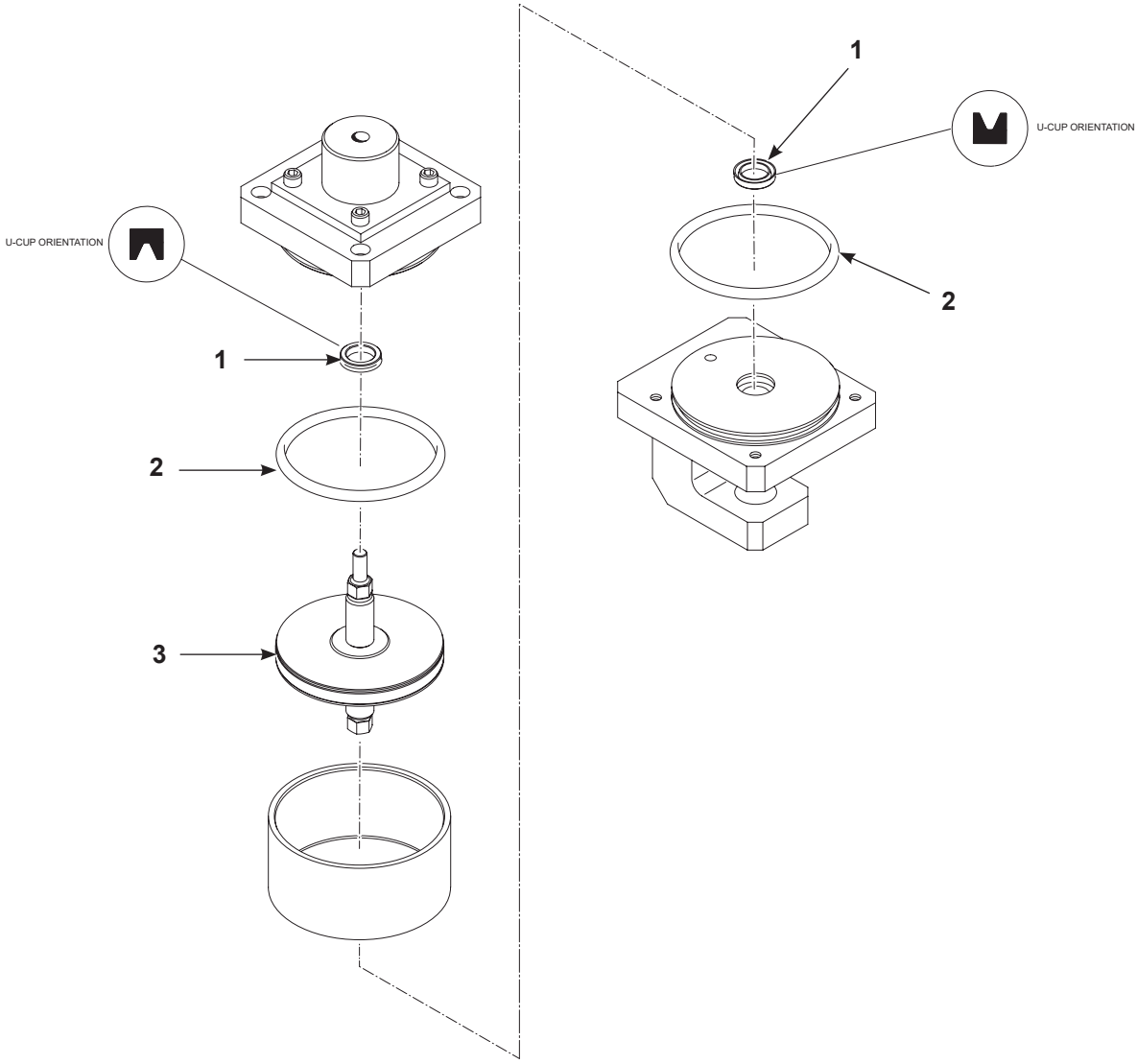
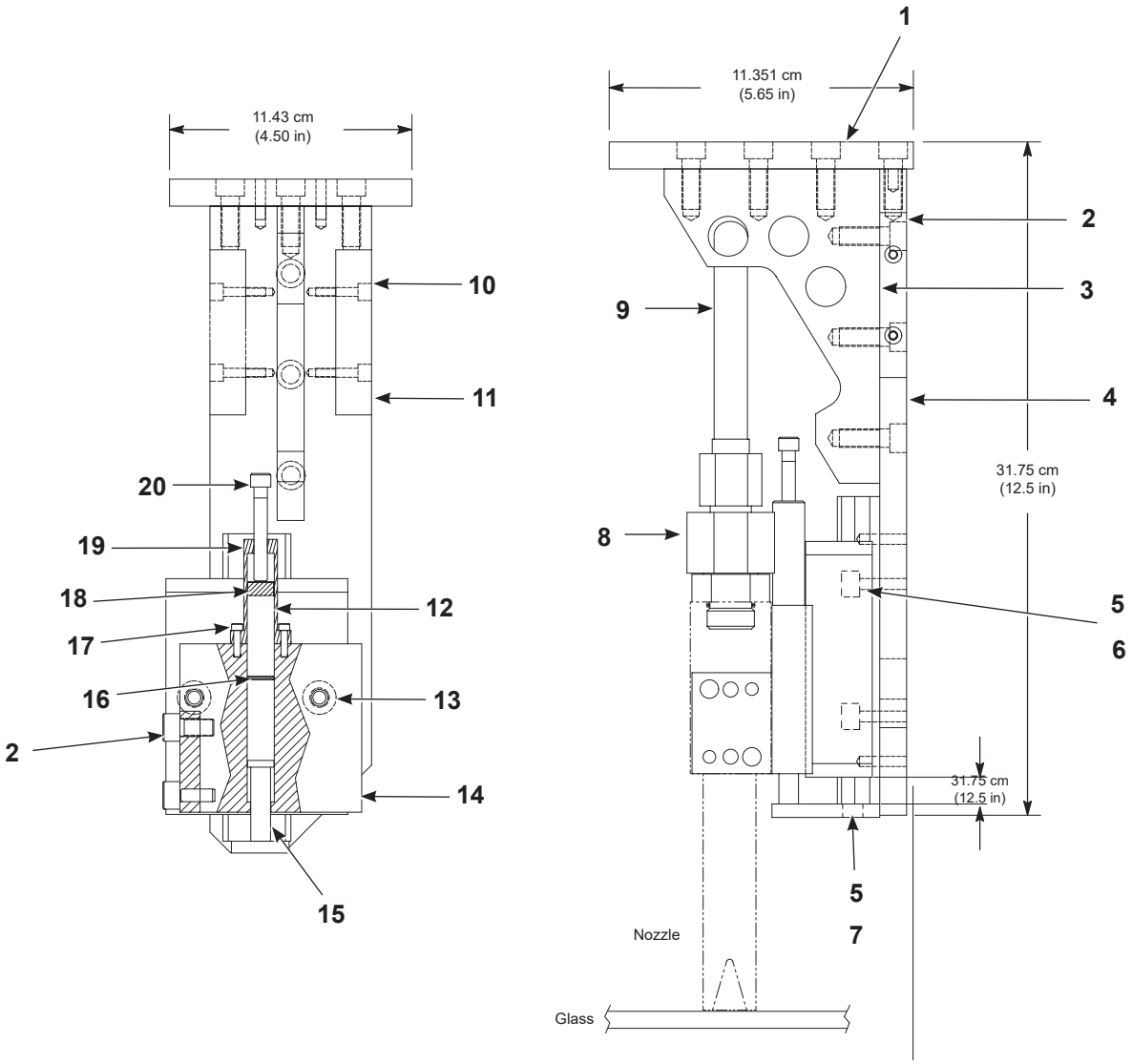


Figure 18 Air Cylinder Kit

Item	Part	Description	Qty	Note
—	1002375	Kit, air cylinder seals, CE20, 3-in. diameter	1	
1	------	• U-cup, packing, 0.125 x 0.500 (lipseal	2	
2	------	• O-ring, hot paint, 2.81 x 3 x 0.094	2	
3	------	• Piston, pre-assembled	1	
NS	------	• Adhesive, thread locking	AR	
NS	------	• Lubricant, TFE grease, 0.75-oz tube	AR	

AR: As Required

NS: Not Shown



Adjustment Notes:

1. The gun and hose must be installed onto the applicator tool.
2. Position the nozzle on glass with 1.27 cm (0.5 in.) of travel remaining.
3. Turn the adjusting screw (20):
   - clockwise to decrease nozzle pressure on the glass.
   - counterclockwise to increase nozzle pressure on the glass.
4. Adjust the nozzle pressure to the glass. The nozzle should travel around the glass with a small amount of pressure on the glass.

Figure 19 Complaint Fixture Kit

Item	Part	Description	Qty	Note
—	341451	Kit, compliant fixture kit	1	
1	281417	• Bracket, mounting, compliant tool	1	
2	982035	• Screw, socket, M8 x 16, black	11	A, B
3	241418	• Bracket, gusset, compliant tool	1	
4	281419	• Bracket, track, compliant tool	1	
5	982030	• Screw, socket, M6 x 20, black	3	A, C
6	306582	• Guide, carriage, compliant tool	1	
7	281420	• Stop, plunger, compliant tool	1	
8	175589	• Swivel, SAE-10/JIC10	1	B
9	281421	• Tube,5/8 OD, compliant tool	1	
10	981056	• Screw, socket, 8-32 x 0.750, zinc	4	
11	281416	• Guide, wearstrip, compliant tool	2	
12	281407	• Spring, OD, 0.480 x 3.00 long, 5.5 lb/in.	2	
13	982395	• Screw, socket, M8 x 25, black	2	A
14	236897	• Bracket, gun mounting, compliant tool	1	
15	281406	• Plunger, co-extrude, compliant tool	1	
16	281408	• Spacer, 0.06 thick, compliant tool	1	
17	981558	• Screw, socket, 5-40 x 0.500, zinc	2	
18	281409	• Spacer, 0.25 thick, compliant tool	1	
19	281410	• Cap, compliant tool	1	
20	981219	• Screw, socket,1/4-28 x 1.250, zinc	1	
NS	900464	• Adhesive, threadlocking	AR	

NOTE: A. Apply threadlocking adhesive, part 900464, to this part during assembly.

B. These screws are installed on the CE20 gun after the gun is installed on the compliant fixture. The screws are shown already in the compliant fixture for location reference.

C. Do not apply threadlocking adhesive to the screws, part 982030, used to affix the plunger stop, part 281420.

AR: As Required

NS: Not Shown

UK DECLARATION of CONFORMITY

This Declaration is issued under the sole responsibility of the manufacturer.

Product: Fluid Control Valve

Models: Auto-Flo II, Auto-Flo II with Vision, Auto-Flo II with Zero Cavity, and CE20

Description: Dispense valves for accurate dispensing of adhesives, sealants, and other materials in various industry applications.

Applicable UK Regulations:
Supply of Machinery (Safety) Regulations 2008
Electrical Equipment (Safety) Regulations 2016

Harmonised/Designated Standards:
EN12100 (2010)
EN60204 (2018)
EN12266-1:2012
EN12266-2:2012

Principles:

This product has been manufactured according to good engineering practice.
The product specified conforms to the directive and standards described above.

Quality System DNV – ISO9001 Certified

Date: 17 Oct 2023

Jeremy Krone
Supervisor Product Development Engineering
Industrial Coating Systems
Amherst, Ohio, USA

Nordson Authorized Representative in the UK
Contact: Technical Support Engineer
Nordson UK Ltd.; Unit 10 Longstone Road
Heald Green; Manchester, M22 5LB.
England

EU DECLARATION of Conformity

This Declaration is issued under the sole responsibility of the manufacturer.

Product: Fluid Control Valve

Models: Auto-Flo II, Auto-Flo II with Vision, Auto-Flo II with Zero Cavity, and CE20

Description: Dispense valves for accurate dispensing of adhesives, sealants, and other materials in various industry applications.

Applicable Directives:

2006/42/EC (Machinery Directive)
2014/35/EU (Low Voltage Directive)

Harmonised Standards:

EN12100 (2010)
EN60204 (2018)
EN12266-1:2012
EN12266-2:2012

Principles:

This product has been manufactured according to good engineering practice.
The product specified conforms to the directive and standards described above.

Quality System DNV – ISO9001 Certified

Date: 17 Oct 2023

_____

Jeremy Krone
Engineering Manager
Industrial Coating Systems
Amherst, Ohio, USA

Nordson Authorized Representative in the EU

Contact: Operations Manager
Industrial Coating Systems
Nordson Deutschland GmbH
Heinrich-Hertz-Straße 42-44
D-40699 Erkrath