

GC16XD MINI CRIMPER & PUMP

SAFETY AND OPERATING MANUAL



DRIVEN BY POSSIBILITY™

Part Number 70115
Product Number 7480-7006

CRIMPER DETAILS

GC16XD MINI CRIMPER & PUMP SAFETY AND OPERATION MANUAL

YOUR CRIMPER DETAILS

Serial No. _____

Date of Purchase _____

CRIMPER SPECIFICATIONS

DYNAMIC	Nom. Size (Hydraulic Hose Size)	1 Inches
	Die Set Type	16 Series
	Crimping Range (Inch with Std. Die Set)	1/4 to 1 Inch
	Radial Swaging Force	900kN / 90 Tonne
	Approx. Cycle Speed (Full Stroke)	18 Sec (Power Unit Dependant)
PHYSICAL	Dimensions (W x D X H)	0.21 x 0.22 x 0.22m / 8.7 x 8.75 x 8.75 In
	Weight (Without Dies & Oil lbs)	22 kg / 48.5
	Shipping Dimensions	0.30 x 0.40 x 0.39m / 12.2 x 16.14 x 15.74 In
	Shipping Weight	23.5Kg / 54lb
HYDRAULIC	Rated Pressure	690 Bar / 10,000 PSI
	Reservoir Capacity (Min)	0.8 Litres / 0.2 Gallons
	Recommended Filtration	10um
	Oil Specification	See Power Unit Requirements
MAINTENANCE	Grease Specification	Tungsten Disulphide

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**WARNING**

An incorrect hose assembly can rupture or blow apart in use, resulting in serious injury, death, or property damage.

REMEMBER: Others depend on you to make correct assemblies.

Hose Assembly Fabrication.

- **Component inspection:** Before creating an assembly be sure to inspect all components to ensure they are the correct product, cut correctly, and do not have any visually identifiable defects.
- **Couplings (compatibility):** Hose fitting components from one manufacturer are not usually compatible with fitting components supplied by another manufacturer. Never mix and match hose couplings from different manufacturers unless approved by both parties.
- **Hose assembly equipment (crimpers):** Hoses and fittings from one manufacturer should not generally be assembled with the equipment of another manufacturer.

NOTE: Gates recommends only those hose and coupling combinations specified in the Gates Hydraulic Product catalogs. Gates disclaims any liability for any hose assemblies which have not been produced in conformance with Gates assembly recommendations.

**WARNING**

Carefully read and understand the following warnings before operating this crimper.

FOR SAFETY'S SAKE USE THIS MACHINE ONLY IF YOU:

1. Receive hands-on **TRAINING** with this Gates crimper and assemblies.
2. Follow current **GATES OPERATING MANUAL** and **CRIMP DATA** for the GC16XD crimper.
3. Use only **NEW (UNUSED GATES)** hose and fittings.
4. Wear **SAFETY GLASSES**.
5. Keep hands clear of moving parts.



WARNING

This **Safety & Operation Manual** has been provided for yours and other’s safety. **Every operator MUST** have completed training and have an understanding of the crimper and the requirements of hose assemblies before using this machine.

It is the responsibility of the owner of this crimper to ensure that **ONLY** persons who have an understanding of the local regulations for work safety and accident prevention in addition to undertaken training on using this crimper be allowed to operate this machine.

It is the responsibility of the operator of this crimper to observe the rules and guidelines set out in this manual and those provided by the owner of this machine.

This Safety & Operational Manual **MUST** be located near the crimper at all times and be used as a reference when required. Regulations for Work Safety and Prevention of accidents **MUST** also be available to the operator of this crimper.



WARNING

Every crimper has been engineered to the highest possible standard and thoroughly tested prior to release. Regardless of this, dangerous situations can arise if the safety rules and regulations are not respected or be part of the work process when using this crimper.

**WARNING**

This Gates crimper has been engineered and qualified for Gates product ONLY. Crimping any NON-GATES fluid power product, including miscellaneous items (cable/pipe) through the machine will not only VOID Warranty but also breach the intended use and purpose condition and basic regulations of work safety and accident prevention.

Intended use and purpose outlined in this manual also includes regular maintenance. Failure to use the specified grease will also VOID Warranty.

Warranty and Liability

The terms and conditions of sale and delivery shall apply. A copy of these terms and condition can be provided on request, but generally include conditions for intended use and purpose, improper observation concerning transport, storage & maintenance, unauthorized use, constructional changes or repairs and failure to detect wear.

Only authorized/qualified electricians are to work on the electrical system of Gates crimpers.

It is the responsibility of the operator to ensure that no oil from this crimper is allowed to seep into the ground, in accordance to pollution rules of the Water Resource Management Laws.

1. Avoid contact with oil for prolonged periods.
2. Keep work place clear of objects and trip hazards.
3. Wear safety equipment at all times when operating the machine.
4. Keep body parts away from the machine when in use, do not put hands in crimper when operational.



WARNING

Intended Design Use

This machine must not be used for high volume daily production. It is designed for periodic use only. Using this machine other than for its intended purpose will void manufacturers warranty and could result in failure which may cause injury or loss of life.

Personal Safety

Regardless of local accident prevention regulations, the following should be observed to maintain the health and safety of operators.

1. Always wear protective clothing and apparatus as outlined in the local accident prevention regulations.
2. Ensure that safety and danger notifications have been observed.
3. Make sure the work area is clear of obstructions and is a suitable work environment.
4. Never start the machine unless intending to make a hose assembly and the head is free of objects and persons.
5. ONLY operate this machine if the ambient temperature is between 50°F ~ 95°F (10°C and 35°C)
6. Never reach into the crimper while head is moving.
7. Never change die sets unless the head is completely open.
8. The power MUST be disconnected for crimper maintenance.
9. Observe machine balance point when moving the crimper.
10. Never try and lift this crimper when there is a possibility of oil on the handle.



WARNING

LIFTING AND MOVEMENT

The handle is designed for manual lifting only. Do not use as a lifting point for slings, doing so may result in crimper falling and injuring personnel.



**Do Not Sling handle
Hand Carry Only**



BOX CONTENTS



Included in the carton with GC16XD will be TDS start up kit, calibration tools and a set of calipers.

GC16XD (PART# 7480-7006)

- Tungsten Disulphide Start-Up Kit
- Calipers
- Calibration/Maintenance Tools

Optional Extra:

Quick Change Tool (7482-7304)



TUNGSTEN
DISULPHIDE
GREASE



CALIPERS



CALIBRATION/
MAINTENANCE
TOOLS



QUICK CHANGE
TOOL



**INDICATOR PIN
POSITION 3MM:**



**INDICATOR PIN
POSITION 1.5MM:**



**INDICATOR PIN
POSITION 0MM:**



ELECTRONIC DIAL INDICATOR

The Electronic Dial Indicator (EDI) is the device which will notify the operator when a crimp is completed. It is located on the top right of the machine with a red LED on the front. The EDI is adjustable to suit different crimp diameters with different die sets.

The user will be notified that a crimp is nearing completion when the silver indicator pin is almost flush with the front of the EDI knob. At this position, jog (activate in short intervals) the external power unit until crimped (if power unit function allows). The hose assembly is crimped when the red LED illuminates on the EDI.

WARNING: Do not hold the machine under pressure for extended amounts of time on the power unit. As soon as crimp is complete, release pressure to allow the machine to retract.

If the EDI's batteries are flat the unit can still be used to identify a completed crimp. When the silver indicator is flush with the front face of the knob, the crimp is completed. You may wish to use your finger to feel when the indicator pin is flush with the front of the knob. If the hose assembly is over-crimped, the silver indicator pin will protrude past the knob face.

The operator MUST stop hydraulic flow to the machine before the indicator reaches the set point position (light on).

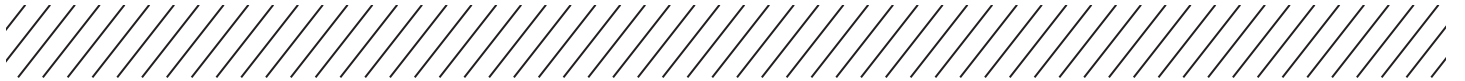
The crimp accuracy is dependant on operator reaction and as such every completed hose assembly MUST be measured.

Battery replacement work instructions included with start-up kit.

POWER UNITS

The optional hydraulic power device MUST be capable of 10,000 PSI, these can range from a hand pump, through to pneumatic assisted, or battery operated.





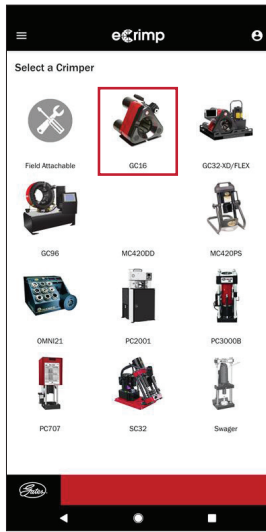
E-CRIMP SETTINGS

The machine setting can easily be entered from the product selection process associated with eCrimp. Turning the indicator knob clockwise will increase the numbers, whilst turning the knob counter-clockwise will decrease the numbers.

E-Crimp Setting Example:

E-Crimp setting of 200 will translate to an indicator number of 0200.

E-Crimp setting of 20 will translate to an indicator number of 0020.



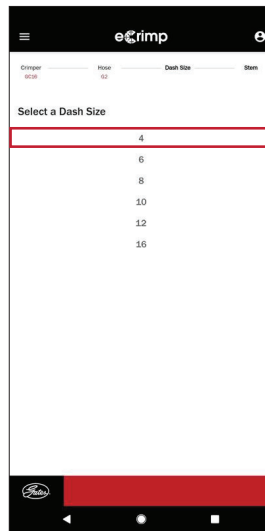
1. Select Crimper

E-CRIMP MOBILE

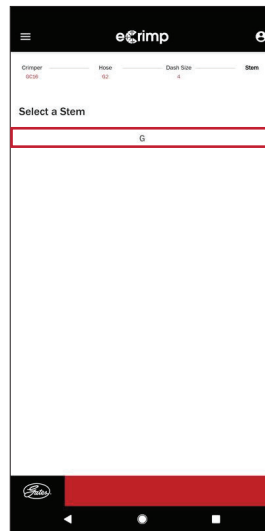
Gates Electronic Crimp Data (ECRIMP) is available as a mobile application. See example steps below to obtain the information required to crimp a 4G2 using a GC16XD.



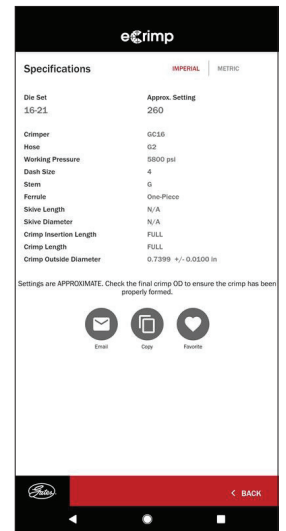
2. Select Hose



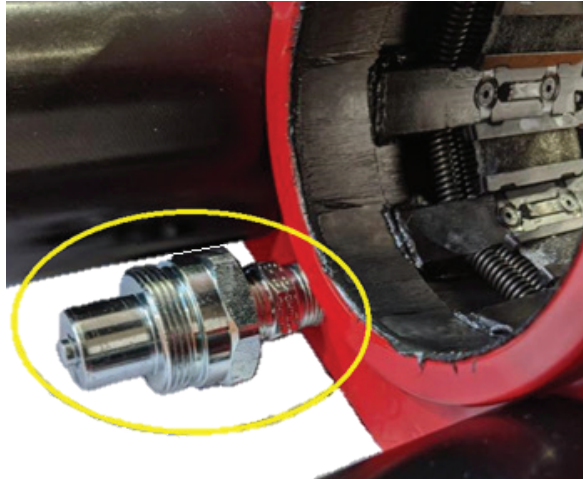
3. Select Dash Size



4. Select Stem



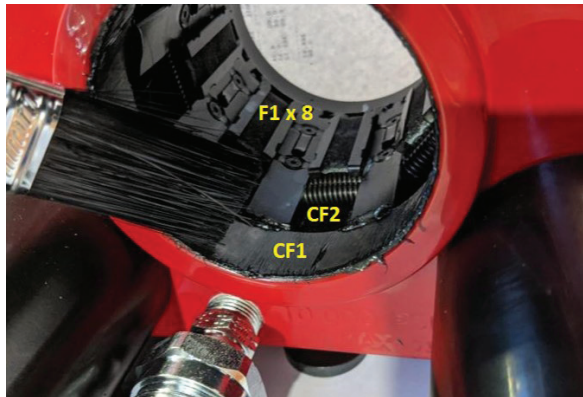
5. Review Specifications



QUICK CONNECT FITTING

The GC16 is fitted with a quick disconnect coupling. There is always a small amount of oil purged from the assembly on disconnect.

Ensure these components are completely free of any contamination prior to connecting.



GREASE APPLICATION

Before operating the GC16XD crimping machine there must be ample grease distributed throughout the machines wearing parts (Faces CF1 and CF2). Foam inserts (F1 x 8) are installed between the shoes. Only tungsten disulphide grease is to be used on machine faces.

Warranty is VOID if alternative grease used.

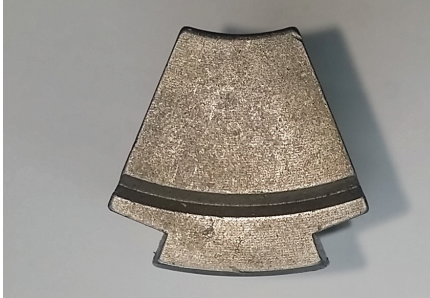


**Do Not Sling handle
Hand Carry Only**



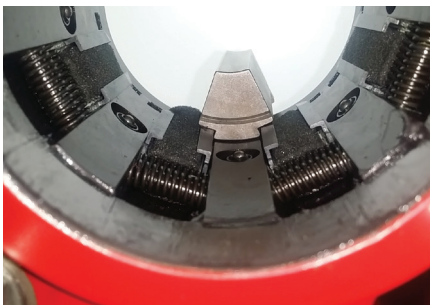
CARRYING & MOVEMENT

The machine is fitted with a dual rotating carry handle to ensure easy movement. Please note that this carry handle is designed for manual handling only and must not be used as an attachment location for a sling. The machine must not be allowed to free fall and be repeatedly caught on the handle as this may cause a shock loading which the handle is not designed for.

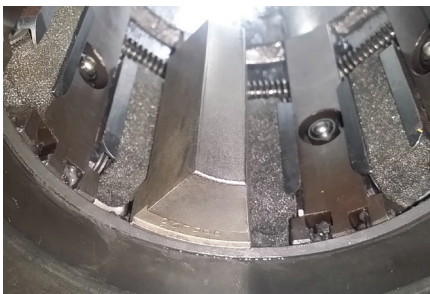


DIE LOADING/INSERTION

Carefully study the images, the dies have a dove tail shape that is designed to mate with the die retainer plates.



Once the dies are located between the die retainer plates, firmly push until the notch locates with the roller ball.



The front face of the die should look like this image.



Die Retainer Groove



Die Retainer Plate.

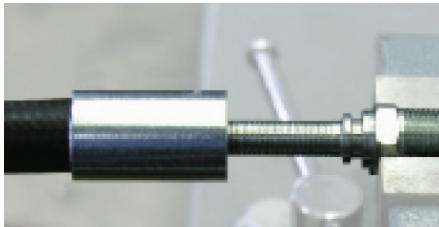


CAUTION:

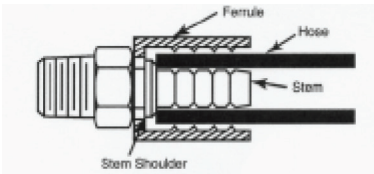
A new hose and end fittings (stem/ferrule) must be used when building a hose assembly. Re-using any component will seriously affect performance and could result in serious injury or property damage.

TWO-PIECE COUPLINGS

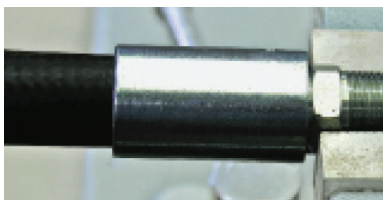
1. Cut Hose to desired length.
2. Using Gates Crimp Data Manual # 35019 (Ind), 428-7365 (Auto) select the correct stem and ferrule. Or, log onto www.gates.com/ecrimp for the latest crimp information on line.
3. Place the ferrule over end of hose. If skiving is required, see instructions in Gates Hand Skiver manual # 35019-W.



4. Lubricate the first two or three serrations on the stem with lightweight oil (SAE 10W).
5. Clamp the stem in vise on hex portion, and push hose onto stem. Hose should be flush against stem shoulder (See cutaway drawing).

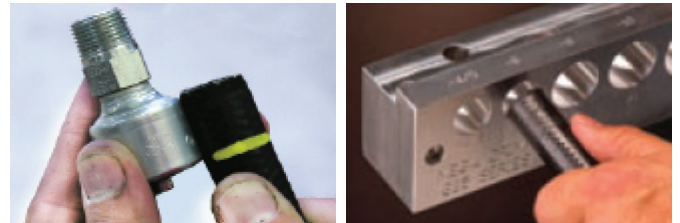


6. Push ferrule so it rests against hex of stem. Hose and coupling are now ready for crimping.



MEGACRIMP® PRE-ASSEMBLED COUPLINGS

1. Cut Hose to desired length.
2. Using Gates Crimp Data Manual #3509 (Ind), 428-7365 (Auto)select the correct MegaCrimp® coupling. Or, log onto www.gates.com/ecrimp for the latest crimp information on-line.



3. Place a visible mark on the hose cover at the insertion length shown in the crimp data manual.



4. Insert coupling into the hose until the mark lines up with the end of the coupling ferrule.
5. Hose and coupling are now ready for crimping.

CAUTION:

See Hose Assembly Guide of the Gates Crimp Data Manual # 35019 (ind) and 428-7365 (Auto) or log onto www.gates.com/ecrimp for more details.



To properly measure a crimp diameter:

NOTE:

DO NOT measure on top of part number stamps.

WHEN USING 21 AND 22 DIES.

1. Using Gates “21/22” dial calipers (Product No 739-1320, Part No 78217) measure halfway between ridges (Fig 1). To be sure crimp diameter is being properly measured mark a crimp flat. Beginning with the flat, count 9 flats to get the diameter. Be sure caliper blades DO NOT touch ridges



2. Measure halfway between the ends of crimped portion of the ferrule (Fig 2).

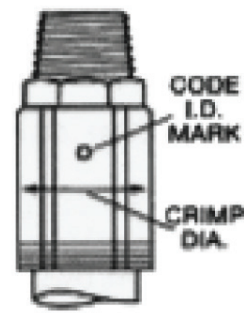


FIG. 2

1. Using Gates STAINLESS STEEL DIGITAL CALIPER (Product NO 7369-0322, Part NO 78241) which are notched to clear ridges, measure halfway between ridges (Sketch 1). Be sure caliper number stamps



2. Measure halfway down the crimped portion of the ferrule (Sketch 2).



SKETCH 2

3. Should actual crimp diameter not be within recommended crimp tolerance, check calibration of the machine and recalibrate. If machine is properly calibrated, you may need to make a slight adjustment to the Dial Vernier Adjuster.

4. To obtain a smaller crimp diameter, change the Vernier Adjuster to a smaller number. To get a larger crimp diameter, change the Vernier Adjuster to a larger number. Changing the adjuster readout by .05 will change the crimp diameter .001". Record the new setting on your crimp chart for future reference.

CALIBRATION

The swaging machine is provided with a “dial indicator” which indicates when the operator needs to stop the hydraulic flow to the head. It is recommended that users familiarise themselves with the dial indicator operation before carrying out calibration procedures. This can be done by crimping the same assembly specification several times and noting the difference in the Crimp Outer Diameter (COD) with each assembly. The calibration process is a trial and error procedure, the goal of which is for operators to be confident that they can repeatedly crimp to 1.000” when using the dial indicator.



Insert 16-33 Dies Into Head

Unpack 33 dies from container insert each individual die into shoe, 8 dies total



Adjust Dial Indicator Knob

Adjust dial indicator knob to number 0123. This number is the factory calibration number for a 1” inch crimp.



Crimp 8G MegaCrimp®

While holding the thread end of an 8G MegaCrimp® coupling, insert coupling into crimper so that ferrule is 1/8” from front edge of die shoe.

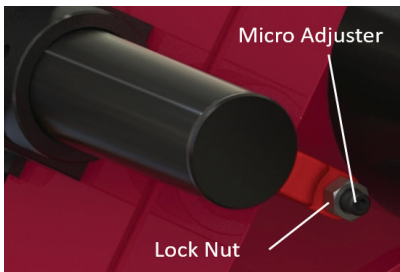
CALIBRATION



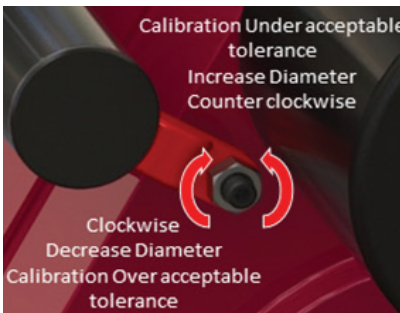
Press and hold the pump power switch whilst watching the LED on the front of the indicator knob. The crimper will begin to close and the central indicator pin on the knob will rise. Once the LED is illuminated, release the pump power switch. Stopping the pump will allow the oil to drain and the crimper will open.



Remove the assembly from the machine and measure across the flats of the crimped area. This should read 1.000". If the measurement does not read 1.000" then the micro adjuster needs to move until the Crimp Outer Diameter (COD) is correct.



Insert supplied 2.5mm hex key into micro adjuster to ensure it does not rotate while lock nut is being loosened. Loosen lock nut on back of micro adjuster using supplied 8mm or equivalent combo spanner (it does not need to be removed).



Once lock nut is loose rotate the micro adjuster to suit required crimp diameter changes. Refer to table below. When adjustment is made, tighten lock nut with allen key still in micro adjuster ensuring it does not rotate.

Crimp the same hose again to check calibration. If crimper still not accurate rotate micro adjuster as per chart until final diameter achieved.

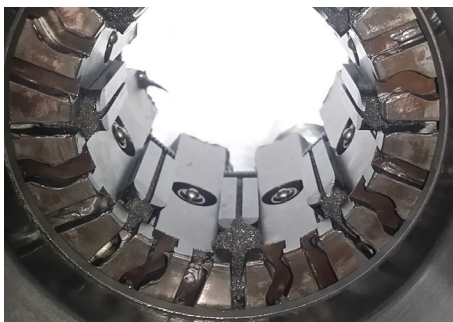
Calibration Data for Micro Adjustment Screw (Use if first crimp is not to specification)		
Micro Adjuster Outcome	Diameter Outcome	
Counter-Clockwise	Increase Diameter	Calibration under acceptable tolerance
Clockwise	Decrease Diameter	Calibration over acceptable tolerance
Turns	Diameter Change	Notes
1/4 Turn	0.0029	Diameter Change
1/2 Turn	0.0057	Diameter Change
3/4 Turn	0.0086	Diameter Change
1 Turn	0.0115	Diameter Change



Periodically Redistribute Grease Build-Up.

The crimper is designed to automatically redistribute some grease around the cone. Grease will also build up over time as some is pushed out. This can be redistributed with a brush periodically. At the rear of the crimper, use a grease brush to distribute grease inward that has been pushed out by the crimping action. To properly care for your machine this should be done every 100 crimps, or whenever a significant amount of grease has been pushed out of circulation.

Warranty is VOID if alternative grease is used.



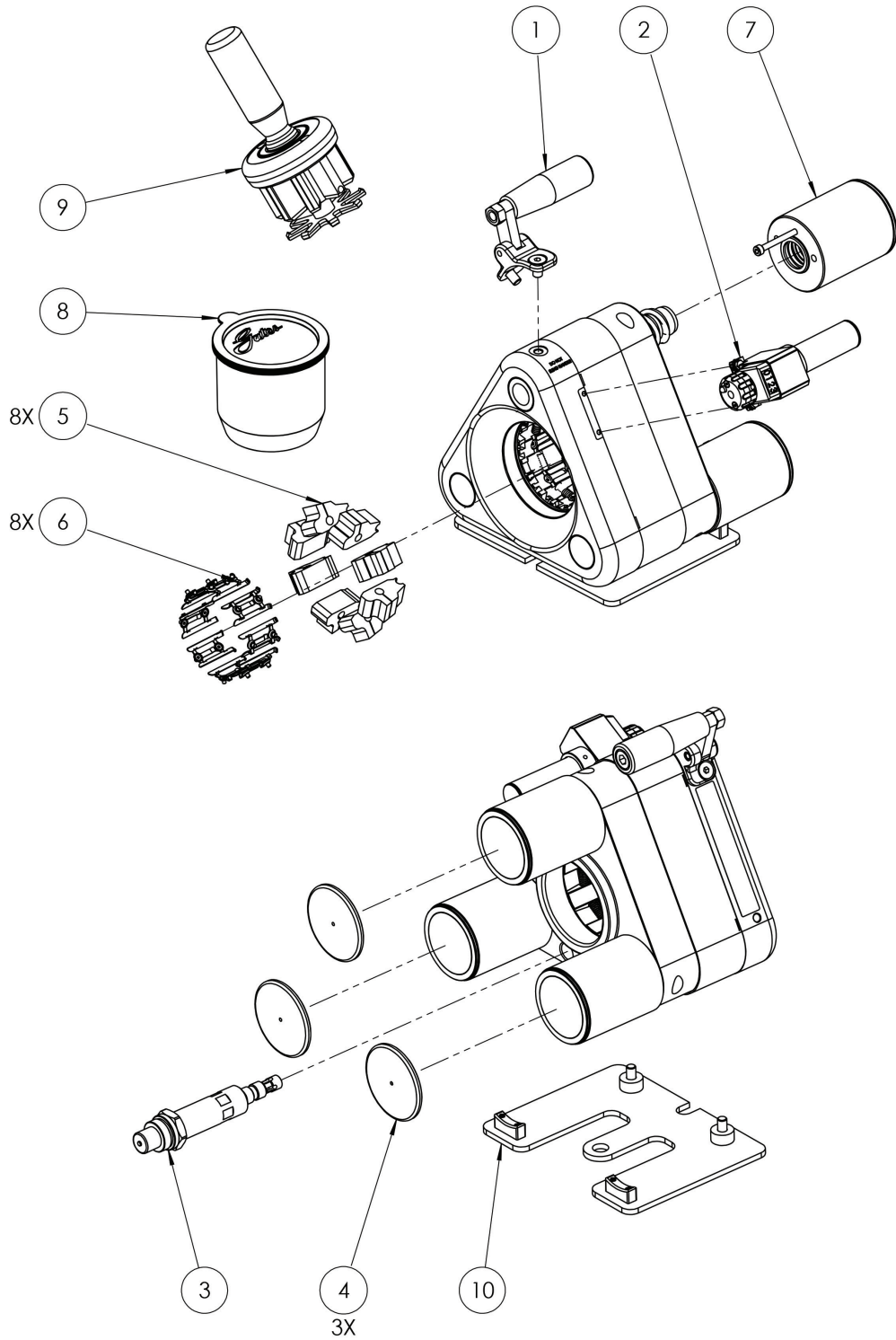
Periodically Check Foam Fillers

The foam fillers have been provided to prevent metal partials from entering the working area.



Always ensure the head is in the OPEN position when storing. If the shoe cluster moves back with the retracting piston plate this is a sign that there is not enough grease on the crimp plane. Close the machine and lightly tap the rear of the shoe cluster with a rubber mallet. The shoe cluster should snap back into position. Re-grease the crimping cone and close/retract machine several times to re distribute.

REPLACEMENT PARTS



REPLACEMENT PARTS



SPARE PARTS

ITEM NO.	PRODUCT NUMBER	DESCRIPTION
1	7482-0098	GC16XD Folding Handle Replacement
2	7482-0097	GC16XD Electronic Dial Indicator
3	7482-7306	GC16XD Standoff Assembly
4	7482-7305	GC16XD Endcaps
5	7482-7302	GC16XD Foam Fillers
6	7482-7307	GC16XD Die Retainer Clip Set
7	7482-0096	GC16XD Kicker replacement Kit
8	7482-7303	GC16XD Die Tub and Lid
9	7482-7304	GC16XD Quick Change Tool
10	7482-7309	GC16XD Bracket Assembly

DIES

ITEM NO.	PRODUCT NUMBER	DESCRIPTION
1	7482-7321	Die Set GC16-21
2	7482-7322	Die Set GC16-22
3	7482-7333	Die Set GC16-33
4	7482-7334	Die Set GC16-34
5	7482-7335	Die Set GC16-35
6	7482-7336	Die Set GC16-37
7	7482-7310	Die Set GC16-35L



TWO-YEAR LIMITED WARRANTY ON EQUIPMENT

For two years from the date of shipment of the equipment to the original user, Gates will, at its option, replace or repair any unit which proves to be defective in material or workmanship, or both, at no cost to the original user of the equipment. Warranty claims require proof of purchase. This is the exclusive remedy. THERE IS NO OTHER EXPRESS OR IMPLIED WARRANTY. ALL INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED TO TWO YEARS FROM DATE OF SHIPMENT OF THE EQUIPMENT TO THE ORIGINAL USER. LIABILITY FOR CONSEQUENTIAL AND INCIDENTAL DAMAGES UNDER ANY AND ALL WARRANTIES IS EXCLUDED TO THE EXTENT EXCLUSION IS PERMITTED BY LAW. Some states do not allow the exclusion of incidental or consequential damages, and some states do not allow limitations on how long an implied warranty lasts, so the above limitation and exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state. For warranty service, contact Service Department, Gates Customer Solution Center, 330 Inverness Dr. S, Englewood, CO 80112.

FOR WARRANTY SERVICE, CONTACT

Service Department,
Gates Customer Solution Center,
330 Inverness Dr. S,
Englewood, CO 80112.
Attn: Marty Bauer
303.618.0043
marty.k.bauer@gates.com

For selling prices on inventoried parts, refer to Hydraulic Equipment and Parts List Price Schedule. Selling prices for parts not shown in these lists will be furnished on request, or parts will be shipped at prevailing prices and you will be billed accordingly. For information regarding prices, contact your local Gates representative or your Customer service Representative.

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NOTES



Multiple horizontal lines for writing notes.



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GC16XD
(Auto.) 428-3509
(Ind.) 34008-M