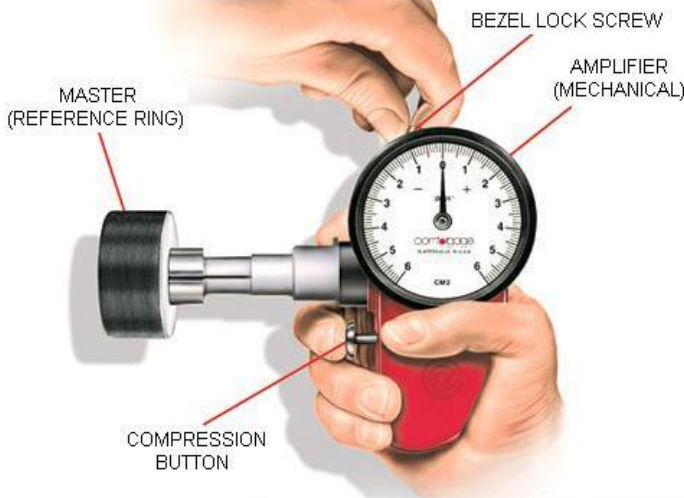


PRECISION GAGING WITH COMTORGAGE

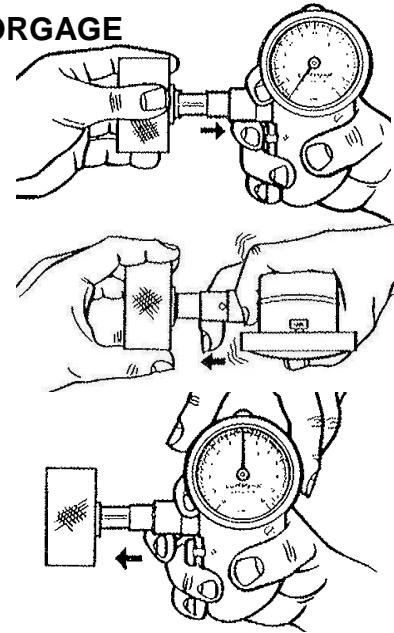
The unique COMTORGAGE Expansion Plug provides self-centering, true 2-point gaging. The Comtorgage compares the work piece to the Master size with reliable accuracy to a fractional ten-thousandth.



A Comtor Amplifier (Mechanical) or Coupler (Electronic) may be used interchangeably with any Gage that is manufactured for that particular model Amplifier/Coupler.

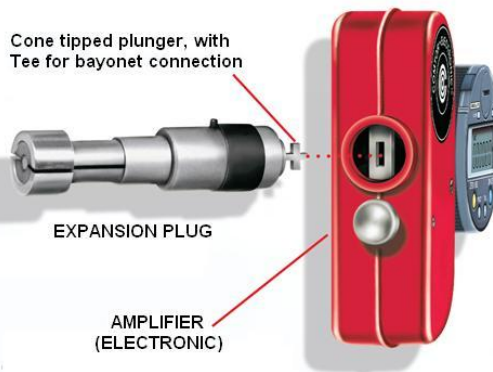
SETTING THE COMTORGAGE

1. Press compression button and insert the Comtorgage in Master.
2. Release compression button. With Amplifier facing operator, gently settle gage in a front to back motion, settling the Comtorgage to full diameter.
3. Loosen bezel lock screw, turn dial so "0" coincides exactly with pointer, and tighten bezel lock screw. The Comtorgage is now "set", ready to measure the work piece.



To assemble the Comtorgage to Amplifier

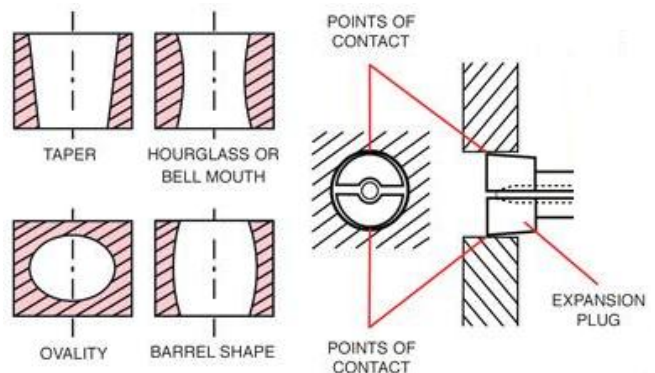
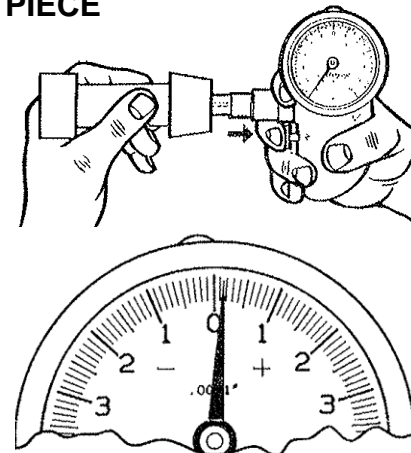
1. Loosen the four screws in the back of the red case.
2. While aligning the split of the gage with the parting line between the halves of the case, insert the gage until the tee passes through the slotted lever.
3. Rotate the gage a quarter turn, so the split is at right angles to the parting case. Twisting the gage gently and at the same time working the compression button may help with this engagement.



4. Hold the gage firmly in place. **Making sure that the black calibration sleeve is sandwiched solidly between the boss on the case of the Amplifier and the calibration pin on the Gage.**
5. Tighten the four screws in the back of the case. (Torque wrench setting: 15 in.-lbs)

GAGING THE WORK PIECE

4. Insert contracted Comtorgage into work piece, expand, and gently settle gage in a front to back motion as described in step 2 above.
5. "0" reading indicates that the work piece is exactly the Master size. Large clear graduations show actual size. For example, the picture to the right indicates work piece is +.00015" compared to the Master.
6. The greatly exaggerated diagram below shows the true 2-point contact, assured by the slight back taper and slightly oval shaped of the Expansion Plug. By positioning the Expansion Plug forward and then back in the hole, you check taper, bell mouth, and barrel shape. By positioning it at various axes around the hole, you check for ovality.



comtorgage®

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www.comtorgage.com

To disassemble gage for cleaning and lubrication

1. Remove the gage from the amplifier by loosening the four screws in the back of the amplifier case, rotate the gage a quarter turn, and withdraw.
2. Slide the black calibration sleeve off of the gage stem and remove the cross pin.
3. Remove the tapered plunger from the gage.
4. Clean the disassembled gage with denatured alcohol and dry with compressed air.
5. Lubricate the tapered end of the plunger with a light coating of petroleum jelly / molybdenum disulfide mixture (1 teaspoon molybdenum disulfide to 1 lb. petroleum jelly). **DO NOT USE GREASE OR MICRO OIL!**
6. Apply a small amount of petroleum jelly on the opposite end of the plunger, closest to the tee where it slides through the guide bushing.
7. Insert the plunger back into the gage.
8. Align the slot in the plunger with the hole in the gage stem and insert the cross pin.
9. Slide the calibration sleeve onto the gage stem with the scribed line abutting the calibration pin. Each sleeve is custom fitted to each gage and should not be interchanged with any other gage.
10. The Comtorgage is now ready to be assembled to the Amplifier.

To obtain maximum life from COMTORGAGE equipment

- Never twist the gage in the work piece or master, or attempt to insert or remove the gage from the work piece or master without depressing the compression button fully. This may damage the gage and will cause unnecessary wear.
- Only a gentle front to back motion is required to assure full seating of the gage in the work piece or master. Violent shaking, twisting, or wringing can be harmful to the gage.
- Return the COMTORGAGE for regrinding and recalibrating when worn or if accidentally damaged. In most cases, when wear is less than .002", the gage can be reground and recalibrated to size, thereby greatly increasing its useful life.
- If the amplifier bezel is removed for any reason, avoid possible damage to the small key on the inside of the bezel by making sure it is properly seated in the slot that is located on the edge of the dial face.

Remember...

If you have to measure it

comtorgage®

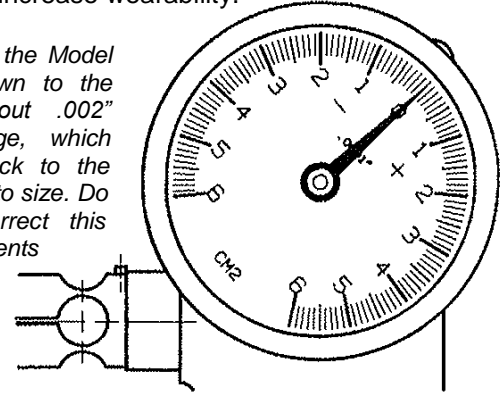
it!

SELF-COMPENSATING FOR WEAR

The comparator principle used by COMTORGAGE assures that accuracy is maintained. Gradual wear at the gaging contact points is reflected in a gradual progression of "0" to the plus (+) side, as the dial is kept adjusted to the master. Substantial wear is thus compensated for without loss of accuracy.

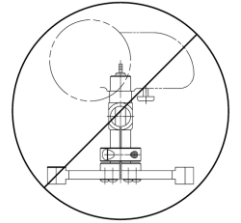
Expansion Plugs can be obtained with Carbide Inserts or Chrome Plating to increase wearability.

The dial position of the Model CM2 Amplifier shown to the right indicates about .002" wear on the Gage, which should be sent back to the factory for restoring to size. Do not attempt to correct this situation by adjustments to the Amplifier.



Storage of Comtorgages

Gages should be stored in an environmentally controlled area when not in use. **DO NOT** store gages in the "upright" position, as this puts undo pressure on the critical hinge points.



To assemble electronic digital indicator into Coupler

1. Assemble Gage into Coupler as described in "To assemble the Comtorgage to Amplifier", on the reverse side of this sheet.
2. Slightly loosen the two screws on the back of the aluminum split clamp. Loosen/Tighten these screws only on the split clamp
3. Fully insert Digital Indicator stem into Coupler.
4. Tighten loosened screws on the back of the aluminum split clamp. **CAUTION: DO NOT OVER TIGHTEN.**
5. Follow Electronic Digital Indicator setting instructions to set required gaging range and tolerance limits.



DO always compress button to insert or reposition THE COMTORGAGE in the work piece or master.

DON'T twist or reposition THE COMTORGAGE while expanded in the work piece or master.