



Digital Caster Camber Users Manual

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Manual #: 700755-D

Table of Contents

DECLARATION OF CONFORMITY	3
INTRODUCTION	4
SPECIFICATIONS.....	4
<i>Controls</i>	4
<i>Electrical</i>	4
<i>Performance</i>	4
<i>Environmental</i>	4
OPERATIONS	5
CONTROLS.....	5
<i>ON/OFF</i>	5
<i>CASTER/CAMBER</i>	5
<i>ZERO</i>	5
MODES.....	6
<i>Caster</i>	6
<i>Camber</i>	6
<i>Inclinometer</i>	6
MODE MENU.....	7
<i>Backlight</i>	7
<i>15 Degree Caster</i>	7
<i>Print</i>	8
<i>Zero</i>	8
<i>Auto-off</i>	8
<i>Print Mode Select (Serial output)</i>	8
<i>Baud Rate</i>	8
OPERATING INSTRUCTIONS	9
GAUGE ADAPTER ASSEMBLY.....	10
ZERO SET ADJUSTMENT.....	11
ERROR CODES.....	12
HOW TO REACH INTERCOMP SERVICE	13

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Declaration of Conformity



We, Intercomp Company
3839 County Road 116
Medina, Minnesota 55340 USA

Declare under sole responsibility that the Caster Camber Gauge to which this declaration relates meets the essential health and safety requirements and is in conformity with the relevant EC Directives listed below using the relevant section of the following standards and other normative documents.

2001/95/EC - on general product safety
2004/108/EC - relating to electromagnetic compatibility and replacing Directive 89/336/EEC
EN 55011:2009, Class B - Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement
EN61000-6-1:2007 - Generic standards, Residential, commercial and light industry environment
EN 61000-6-2:2005 - Immunity for industrial environments
EN 61000-6-3:2007 - Emission standard for residential, commercial and light-industrial environments
2012/19/EU - on waste electrical and electronic equipment (WEEE) (Directive 20/96/EC Recast)
2013/56/EU amending Directive 2006/66/EC on batteries and accumulators

This product complies with all safety-relevant provision referring to protection against electrical hazards and other hazards, such as mechanical hazards, fire hazards, noise and vibration. The safety issues of this measurement equipment have been evaluated under the self-certification provisions of the relevant directives.

The related technical construction files are held for inspection in the U.K. at Intercomp Europe Limited.
The CE mark and WEEE marks must be affixed as required in the directives.

A handwritten signature in black ink that reads 'Mark Browne'. The signature is written in a cursive style with a small 'B' and 'r' in the middle.

Mark Browne / Quality Manager
June 3, 2014

Introduction

This manual contains specifications and operating instructions for Intercomp's Digital Caster Camber Gauge.

Specifications

Controls

General:	On / Off Caster / Camber display select. Caster zero set
Display:	4 digit, 0.5" LCD

Electrical

Batteries:	9V alkaline or rechargeable (Ni-Cad) battery. Battery life (alkaline) \approx 1000 hours (with backlight off).
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Performance

Display Range:	$\pm 20^\circ$ in camber mode $\pm 30^\circ$ in caster mode
Wheel sweep:	30° or 40° total (selectable function)
Caster zero range:	full zero range
Resolution:	0.1°
Accuracy (0 to $\pm 16^\circ$):	$\pm 0.1^\circ$
Accuracy (above $\pm 16^\circ$):	monotonic

Environmental

Humidity:	10 to 95% Non-Condensing.
Ambient Temperature:	Operating: -10° C to $+45^\circ$ C / $+14^\circ$ F to $+113^\circ$ F. Storage: -40° C to $+75^\circ$ C / -40° F to $+167^\circ$ F.
Air Pressure Temp:	-10° C to $+65^\circ$ C / $+14^\circ$ F to $+149^\circ$ F.

Operations

Controls



ON/OFF

Turns the Caster / Camber gauge on and off.

This gauge has an auto-off feature. If there is no motion or keys pressed for 1 hour, the Caster / Camber gauge will automatically power down.

CASTER/CAMBER

This key is used to toggle between caster, camber, and inclinometer modes.

Note: The Caster / Camber gauge will power up in the mode it was last in.

ZERO

Press this key to obtain a new zero point. **Zero is only active while in caster or inclinometer mode.**

Modes

Note: The Caster / Camber gauge will power up in the mode it was last in.

Caster

If the gauge is going into caster mode the display will show "CAST" for a couple of seconds and then display the caster angle. **Make sure the gauge is in the correct mode for the procedure you are performing (I.E. 15 Degree Caster function).**



Camber

If the gauge is going into camber mode the display will show "CBER" for a couple of seconds and then display the camber angle.



Inclinometer

If the gauge is going into inclinometer mode the display will show "INCL" for a couple of seconds and then display the inclinometer angle. The inclinometer mode allows for reading in true degrees (like camber) but has the ability to zero.



Mode Menu

Press the ZERO and CAS/CAM buttons to access the Mode menu. The display will show "L iE". Use the Zero key to cycle through Menu Parameters until the desired function appears. Upon cycling through all functions, the active reading will be displayed. Simply press ZERO and CAS/CAM buttons again to return to the menu.

At times it will be necessary to enter up to a four digit number. When this is necessary the current number will be displayed with the right most digit flashing. The flashing digit may be incremented by pressing the CAS/CAM button. To move one digit to the left, press the ZERO key. When you have finished entering a number press the ZERO and CAS/CAM buttons. The settings are saved once ZERO and CAS/CAM buttons are pressed to advance the menu, and the inclinometer can then be turned off.

Step	Function	Note	Default
L iE	Backlight	Toggles backlight On/Off	
20.15	Caster swing selection	15.15 or 20.20	20.20
Prnt	Print	Prints one line	
ZEro	Reset permanent zero for camber and inclinometer	Hold stable while level Rotate 180deg and hold stable	LL00 LL01
A.off	Auto off	000 = off, 1 to 240 minutes	060
Prnt.k	Print Mode	Prnt = demand print, Cont = Continuous.	Prnt
baud	Printer baud rate	1200, 2400, 4800, 9600, 19.2k, 38.4k, 57.6k, or 115k	9600

Backlight

Press the ZERO and CASTER / CAMBER keys simultaneously to enter into the Mode Menu. Press the CASTER / CAMBER key to toggle the backlight on. Repeat the above process to turn the backlight off.

15 Degree Caster

Press the ZERO and CASTER / CAMBER keys simultaneously to enter into the Mode Menu. Press the ZERO key until the display reads "20.15". Press the CASTER / CAMBER key. The current mode will be blinking. Press the CASTER / CAMBER to toggle between "20.20" or "15.15".

"20.20" is a +20° to -20° sweep (40° degrees) and "15.15", is a +15° to -15° sweep (30° total degrees).

To save the setting, simultaneously press the ZERO and CASTER / CAMBER keys. The display will return to the mode menu.

Print

Reserved for a future update.

Zero

Reset the permanent zero for camber mode or inclinometer mode. See the section titled “Zero Set Adjustment” for more information

Auto-off

The auto off time is how long the scale will remain on without any activity (a key being pressed or a change in weight).

To adjust the auto-off time: Press the ZERO and CASTER / CAMBER keys simultaneously to enter into the Mode Menu. Press ZERO until the display reads “**A.OFF**”. Press the CASTER / CAMBER key and release. Enter the auto-off time (in minutes). To deactivate auto-off, enter 0. The maximum time is 240 minutes. Simultaneously press Zero and CASTER / CAMBER keys to save, the display will return to Mode menu.

Print Mode Select (Serial output)

Reserved for a future update.

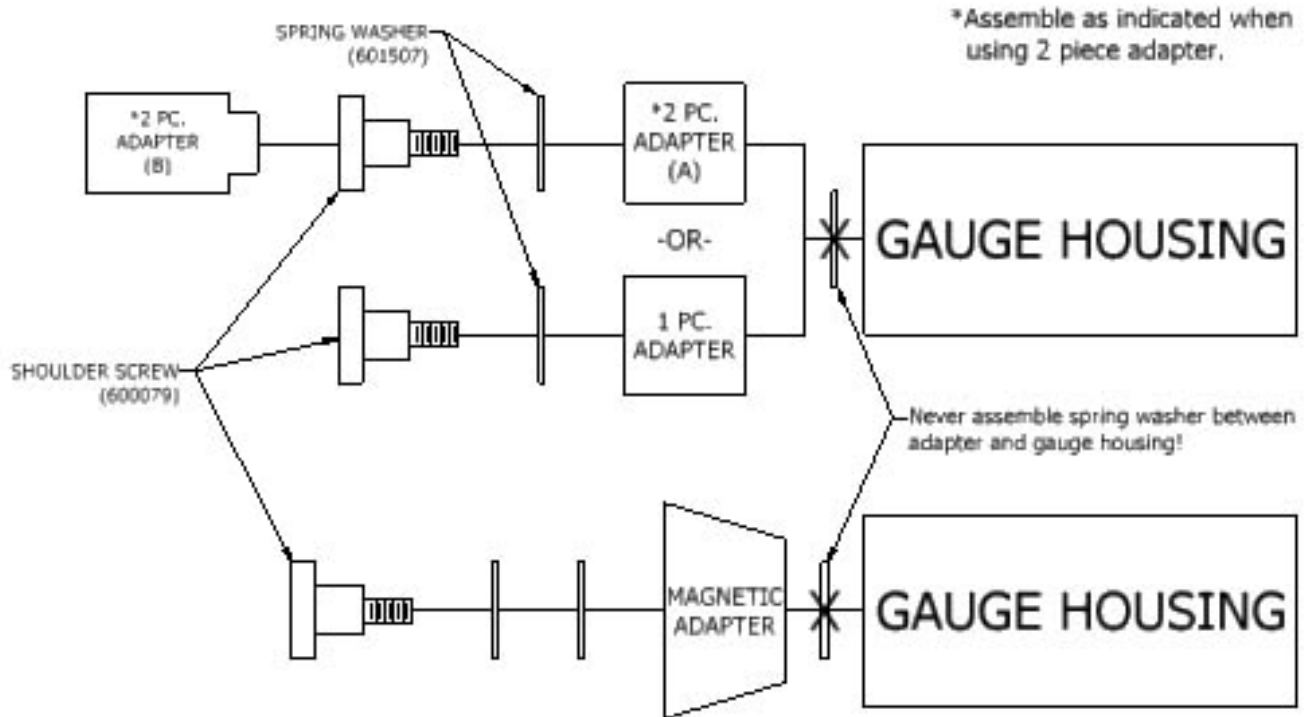
Baud Rate

Reserved for a future update.

Operating Instructions

1. Remove wheel bearing nut, if necessary, install gauge and hand tighten (or attach magnet adapter if using magnets). Make sure wheel is centered. Turn power on.
2. **Read Camber:**
Level the gauge by centering the bubble in the leveling vial, set Camber / Caster switch to *Camber*. Record the reading in the display window
3. **Read Caster: (Make sure the gauge is in the**
 - a) Set Camber / Caster switch to *Caster*.
 - b) Turn the spindle 20°(or 15° in 15 Degree Caster) forward from center (turn right if on left, turn left if on right)
 - c) level the gauge with the leveling vial
 - d) adjust display to zero by pressing the ZERO key
 - e) Move spindle back to center, then 20°(or 15° in 15 Degree Caster) rearward
 - f) Re-level the gauge
 - g) Record reading on display.
4. Turn off power and remove gauge.

Gauge Adapter Assembly



Zero Set Adjustment

Note: This is a periodic requirement for the gauge determined by the usage of the gauge. It is recommended that this be performed monthly. This is different than the temporary caster zero set by pressing the ZERO key.

Performing this operation takes 2 readings, and it will recalibrate the camber zero reference point. This procedure must be performed on a **flat** surface, but the surface does not have to be level. If the unit has the 3 inch magnet, it must be removed so the Caster Camber Gauge can sit flat. Use a 3/16 hex key to remove the screw holding the magnet in place.

To reset camber zero: Simultaneously press the ZERO and CASTER / CAMBER keys. Press ZERO until the display reads "ZE-0". At this time, press the ZERO and CAS / CAM keys together again. The display will read "LL.00". With your gauge settled on a flat surface, press the ZERO and CASTER / CAMBER keys together.



The display will read "HoLd" for a few seconds while the gauge is taking the reading and the display will then show "LL.0 I". Pick up the gauge, turn it 180° around, and place it back in the same exact spot, except that it faces the opposite direction.



Wait a few seconds, and press the ZERO and CASTER / CAMBER keys again. The display will read "HoLd" for a few seconds and the Caster/Camber Gauge will save the information and return to normal mode.

Replace the magnet if it was removed.

Error codes

Error messages, displayed in priority order:

Message	Meaning
'EEPE'	EEPROM FAILURE Calibration information lost or corrupted
Calibration information is held in a special permanent memory area. A checksum code is generated and written to this memory during the calibration process. Each time the power is turned on this code is regenerated and compared to the stored value. If a change is found this error message is displayed. Recalibration may clear the error display, but if the problem persists the control panel will have to be replaced.	
'Ad I'	A/D converter failure
The A/D circuit board has indicated a fault and needs to be repaired or replaced.	
'Lcb I'	Power-up Self Test has detected an angle sensor error
The angle sensor may have failed or there is a bad connection. If the sensor resistance checks are good then the A/D circuit board has indicated a fault and needs to be repaired or replaced.	
'LE I'	Run-time checking has detected an angle sensor error
The angle sensor circuit may have failed or there is a bad connection. . If the sensor resistance checks are good then the A/D circuit board has indicated a fault and needs to be repaired or replaced.	
'L.bAt'	Low battery voltage
This message displayed intermittently indicates that the control panel has measured the battery voltage and found it to be too low. The most likely cause is that the batteries may need to be changed. If a new set of batteries fail to correct the situation, then the control panel may need to be replaced. Also check the battery holder and wiring.	
'CAP'	Overload or calibration information lost or bad angle sensor
The control panel has detected an angle reading that is larger than expected. If setting the unit on a flat surface does not clear the error attempt to recalibrate the unit. If this does not clear the problem then replace the angle sensor or control panel.	
'ZER0'	Zero Range Error
Inclinometer tried to zero off an angle outside the range specified in the zero range setting. Level the unit and press zero.	
'HELD'	Key is held down
If this message is displayed with no key pressed examine the key pad and key pad connector ribbon.	

How to reach Intercomp Service

Things to know:

Inform the Service Dept. that the product is a digital caster / camber gauge.

When was the gauge purchased?

Where was the gauge purchased?

What is the serial number?

For Intercomp Service call or fax:

FAX # (763)-476-2613

(763)-476-2531

1-800-328-3336

or fill out Service Support Form at:

www.intercomp-racing.com