

Tandem Pumps Calibration Procedure using Tandem Pumps Analog Calibration Kit

Use this procedure to calibrate two valves/pumps mounted in Adjustable Tandem Pump Mounting Hardware using the Tandem Pump Analog Calibration Kit.

Purpose

To align two nozzles to the same relative Z-axis position. The Tandem Pump Analog Calibration Kit used during this process is permanently mounted near the calibration station at the front of the dispense system work area.

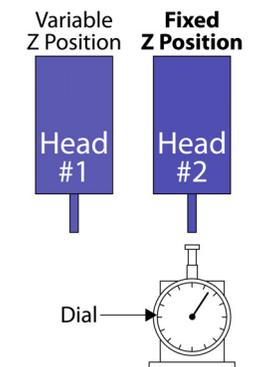
References

Use the following assembly drawings, located at the end of this procedure, during the calibration process:

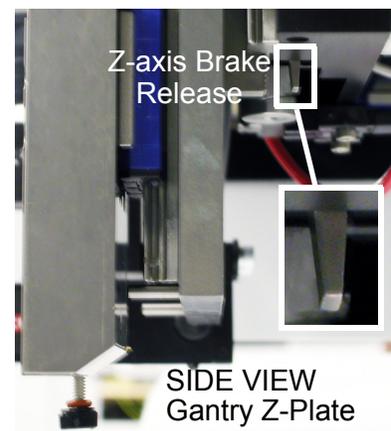
- 22293250 - Tandem Pump Mount_Taper Lock_Staged
- 22213000 - Tandem Pump Analog Calibration Kit

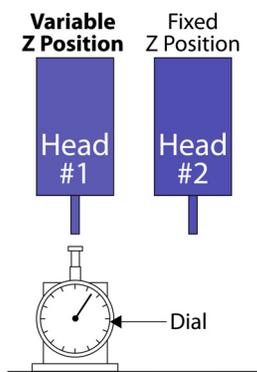
Procedure

NOTE: After an initial calibration is performed, re-calibration should not be necessary after changing dispense tips unless Luer-style tips rather than precision needles are being used.



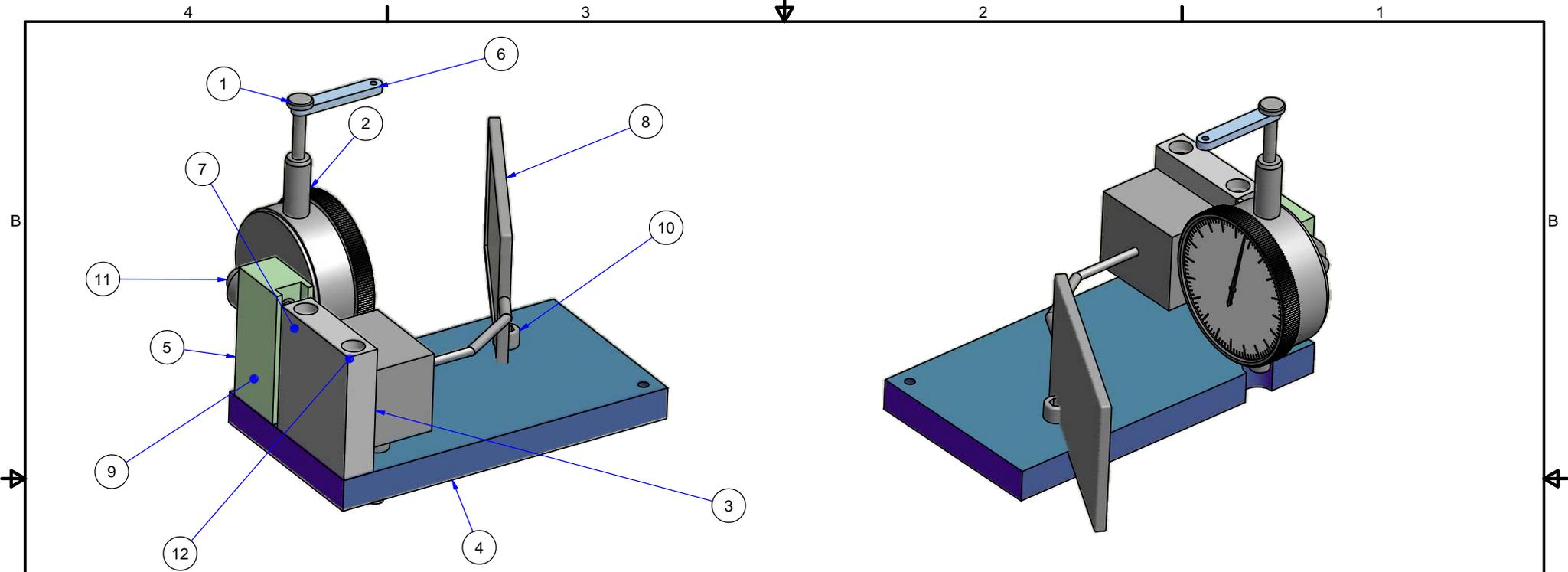
1. Open the hood or press the Motion Stop button to disable all motor movement.
2. Zero the vertical position for **Head Mount Station #2**:
 - a. Manually position the nozzle in Station #2 above the Indicator Point (Dwg 22213000, Item 4).
 - b. Pull forward on the Z-axis Brake Release (see at right and at rear of the gantry Z-plate) and move the gantry plate downward, allowing the nozzle to depress the Indicator Point for approximately 1 revolution of the Dial Indicator (Dwg 22213000, Item 3).
 - c. Release the Z-axis Brake to lock gantry Z-plate vertical motion.
 - d. Zero the Dial Indicator by rotating the dial.
 - e. Depress the Indicator Point with a finger and then move the gantry to the right making sure the needle in Station #2 does not contact the Indicator Point.





3. Zero the vertical position for **Head Mount Station #1**:
 - a. Manually depress the Indicator Point and move the nozzle in Station #1 above the Indicator Point.
 - b. Gently guide the upward movement of the Indicator Point, fully releasing it only after it contacts the nozzle.
 - c. Adjust the Z-axis position of Station #1 by turning the Z-Axis Thumb Wheel (Drawing 22295556, Item 12) until the Dial Indicator reads zero (0).
 - d. When zero (0) is attained, move the Z-axis gantry plate upward while using the Z-axis Brake Release [as described in [Step b \(pg 1\)](#)] so the Indicator Point is no longer in contact with the Station #1 nozzle.

Calibration is now complete.



Parts List

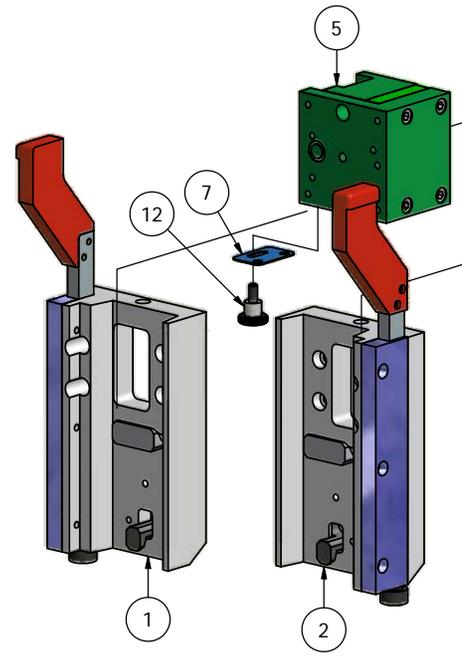
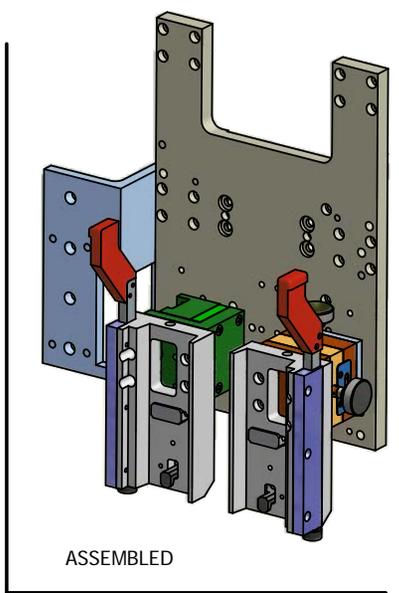
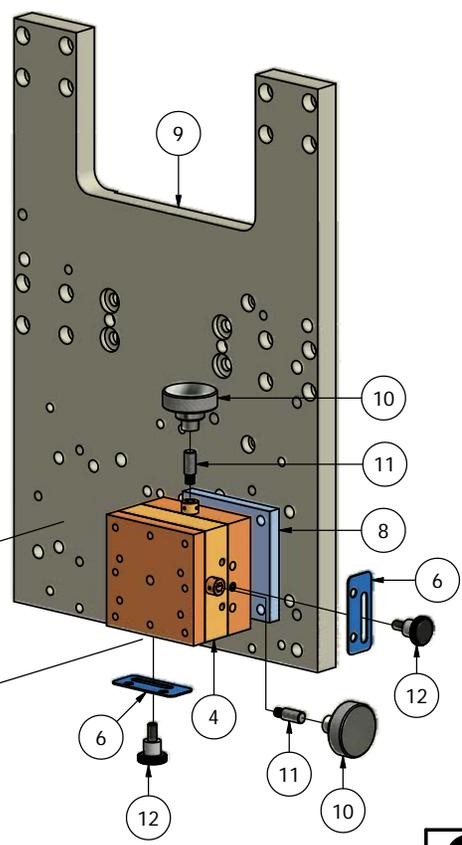
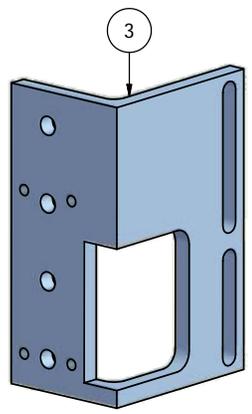
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	10/3999	INDICATOR_POINT_ .3/8" DIA.
2	1	10_4802	DIAL INDICATOR, 1/2 TRAVEL
3	1	22201455	BLOCK_MAG MOUNT_DUAL VALVE CAL KIT
4	1	22203397	BASE_LEVELING PLATE
5	1	22203398	BAR_VERTICAL SUPPORT_INDICATOR
6	1	22203400	THUMB LEVER_INDICATOR
7	1	ANSI B18.2.2 - 1/4 - 20	Hex Nuts (Inch Series) Hex Nut
8	1	M5531	MIRROR_MAG BASE_PURGE STATION VIEWING
9	2	SACSN0632062	6-32 X 5/8 CAP SCREW SS
10	2	SACSN2520087	CAP SCREW, 1/4-20 X 7/8
11	1	SACSN2520125	CAP SCREW, 1/4-20 X 1-1/4 SST
12	2	SACSN2520200	CAP SCREW, 1/4-20 X 2 SST

LAST REVISED 06/16/15

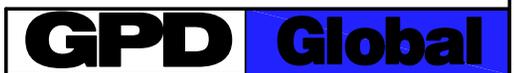


TOLERANCES UNLESS OTHERWISE SPECIFIED		DESCRIPTION	
FRACTIONS	± 1/32	ANALOG CALIBRATION KIT_DUAL VALVE	
X.XX	± 0.015	0 MM	± 1.0 MM
X.XXX	± 0.005	0.0 MM	± 0.4 MM
ANGULAR	± 0.5°	0.00 MM	± 0.1 MM
RUNOUT	± 0.003 T.I.R.	ASSEMBLY	
FINISH		DUAL VALVE CALIBRATION	
HEAT TREATMENT		MATERIAL	
NA		PLATED ALUMINUM	
DWG SIZE		DWG NO	
B		22213000	
DRAWN BY ARM		6/19/2010	SHEET 1 OF 1

Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	22110291	TAPER LOCK QUICK RELEASE
2	1	22110483	TAPER LOCK QUICK RELEASE RH
3	1	22204702	CAMERA BRACKET MODIFIED
4	1	22204723	XY STAGE MODIFIED_OPTOSIGMA
5	1	22204724	Z STAGE_LINEAR_5MM TRAVEL_DOVETAILED
6	2	22204725	FLEXURE LOCK_XY STAGE_60X50MM
7	1	22204727	FLEXURE LOCK_Z STAGE_OPTOSIGMA
8	1	22204728	XY STAGE SPACER_5mm
9	1	22204729	PUMP MOUNT PLATE MODIFICATION
10	2	22204730	THUMB KNOB_X&Z AXIS
11	2	22204731	STUB SHAFT_THUMB KNOB_M4 THREAD
12	3	2525-0023	THUMB SCREW_STEPPED_M3 THD X 6.0 BODY



LAST REVISED 5/12/2015



TOLERANCES UNLESS OTHERWISE SPECIFIED		DESCRIPTION	
FRACTIONS	1/32	TANDEM PUMP MT_TAPER LOCK_STAGED	
X.XX	0.015	0 MM	1.0 MM
X.XXX	0.005	0.0 MM	0.4 MM
ANGULAR	0.5°	0.00 MM	0.1 MM
RUNOUT	0.003 T.I.R.		
FINISH		MATERIAL	
NA		NA	
HEAT TREATMENT		DWG NO	
NA		22293250	
DWG SIZE		DRAWN BY ALJ	
B		5/7/2015	
		SHEET 1 OF 1	