Statement of Work

1.0 Introduction

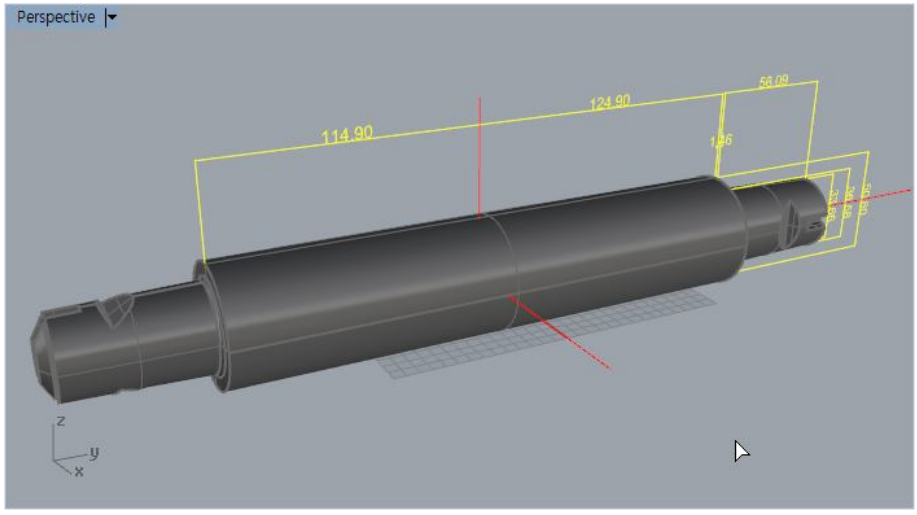
1.1 This Statement of Work describes the requirements for “Design and Fabrication of calibration accessories and calibration of KARI wind tunnel balances”.

2.0 KARI wind tunnel balances

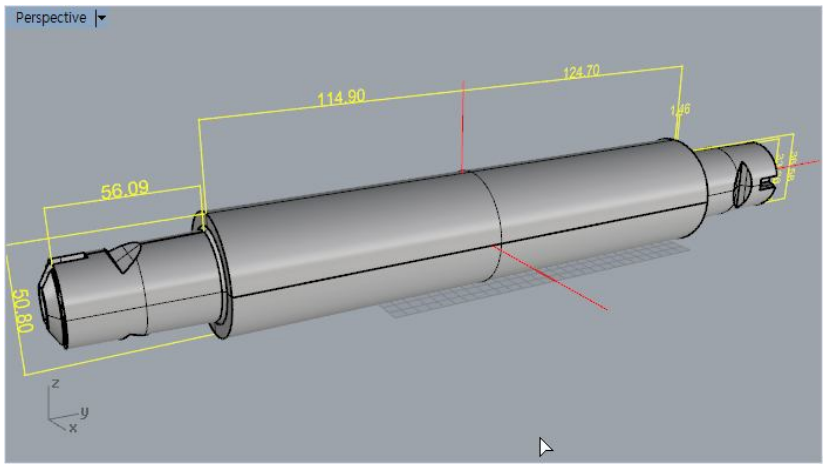
The Supplier shall provide calibration reports and calibration accessories for 3 KARI balances.

2.1 Balance Configurations

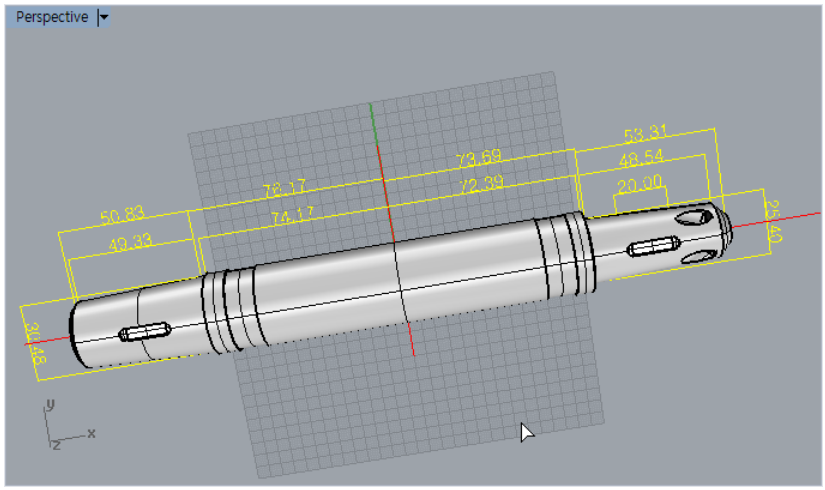
ID	Diameter	Normal Force	Pitching Moment	Side Force	Yawing Moment	Rolling Moment	Axial Force
	Inches	Lbs	In-Lbs	Lbs	In-Lbs	In-Lbs	Lbs
IB6-017	2.0	1000	4000	500	2500	2500	250
IB6-018	2.0	2000	6000	1000	3000	2500	250
IB6-019	1.25	800	2000	400	1100	600	125



IB6-017



IB6-018



IB6-019

IB6-017 has 7 full bridges, 6-component forces and moments and one additional axial force.
IB6-018 has 8 full bridges, 6-component forces and moments and two additional axial force.
IB6-019 has 6 full bridges, 6-component forces and moments.

3.0 Balance Calibration

3.1 Calibration loading schedule

Primary load for each axis and two-combined load will be applied to the balance. Maximum loading points for each balances will be about 3200 points. Details about the loading points will be decided with supplier's suggestion. KARI's suggestion is attached as a appendix.

3.1.1 Primary loading : Primary load for each components will be applied to the balance with more than 5 steps from zero to a full load condition.

3.1.2 Combined loading ; Two-combined load for all components will be applied to the balance to achieve the 6x97 calibration matrix.

3.1.3 The balance shall be designed so that failure (other than a taper failure) during a test does not result in the model separating from the sting.

3.1.4 The recommended excitation voltage is 5V.

3.2 Calibration accessories

Supplier shall design and fabricate all accessories including the calibration body, balance holders and free end adapter for all three balances. Taper gages will be provide to Supplier by KARI.

4.0 Schedule

All calibration shall be finished within 8 months after contraction.

5.0 Deliverables

Shipment and insurance for both side is responsibility of KARI.

A. Return 3 balances and taper gages.
B. Calibration report with electric file
   - The test results from all loadings shall be included, as well as the deflection data. The constants, equations and standard deviations will also be included.
C. Calibration accessories
   - Calibration Accessories made by this project
   - Electric drawing file for calibration accessories

6.0 Qualification of Supplier

Supplier shall be able to calibrate the KARI wind tunnel balances by designing and fabricate all accessories including the calibration body, balance holders and free end adapter described in this Statement of Work.

Supplier shall provide the evidence of the appropriate equipment and facility for calibration of the wind tunnel balances described in the Statement of Work.

Appendix 1 : Loading schedule (KARI's suggestion)

Loading scheme

Fx(v1) set	Fz1(v1) set	Fz2(v1) set
• Fx(v1) only • Fx(v1) with Fz1(v2) • Fx(v1) with Fz2(v2) • Fx(v1) with Fy1(v2) • Fx(v1) with Fy2(v2) • Fx(v1) with Mx(v2)	• Fz1(v1) only • Fz1(v1) with Fz2(v1) • Fz1(v1) with Fy1(v1) • Fz1(v1) with Fy2(v2) • Fz1(v1) with Mx(v2)	• Fz2(v1) only • Fz2(v1) with Fy1(v1) • Fz2(v1) with Fy2(v2) • Fz2(v1) with Mx(v2)

Fy1(v1) set	Fy2(v1) set	Mx(v1) set
• • Fy1(v1) only • Fy1(v1) with Fy2(v2) • Fy1(v1) with Mx(v2)	• • Fy2(v1) only • Fy3(v1) with Mx(v2)	• • • Mx(v1) only

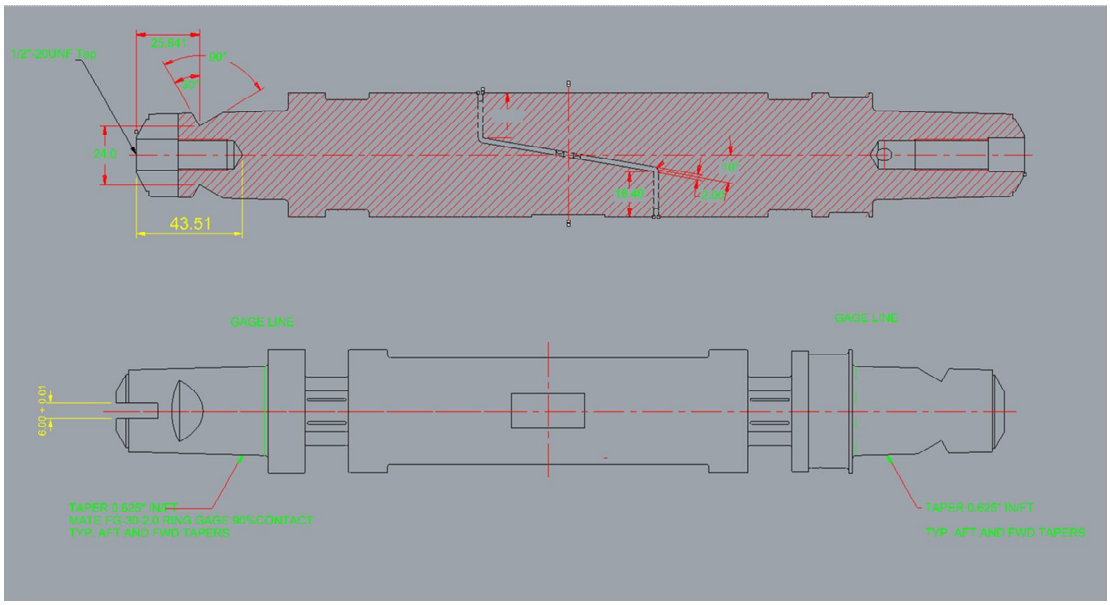
V1 = {0,-50,-100,-75,-50,-40,-20,-10, 0, 10, 20, 40, 50, 75, 100, 60, 30, 0} % of Maximum load range

V2 = {-100, -75, -60, -45, -30, -15, 15, 30, 45, 60, 75, 100} % of Maximum load range

* Load Rhombus should be applied on {Fy1 + Fy2} and {Fz1 + Fz2} loads

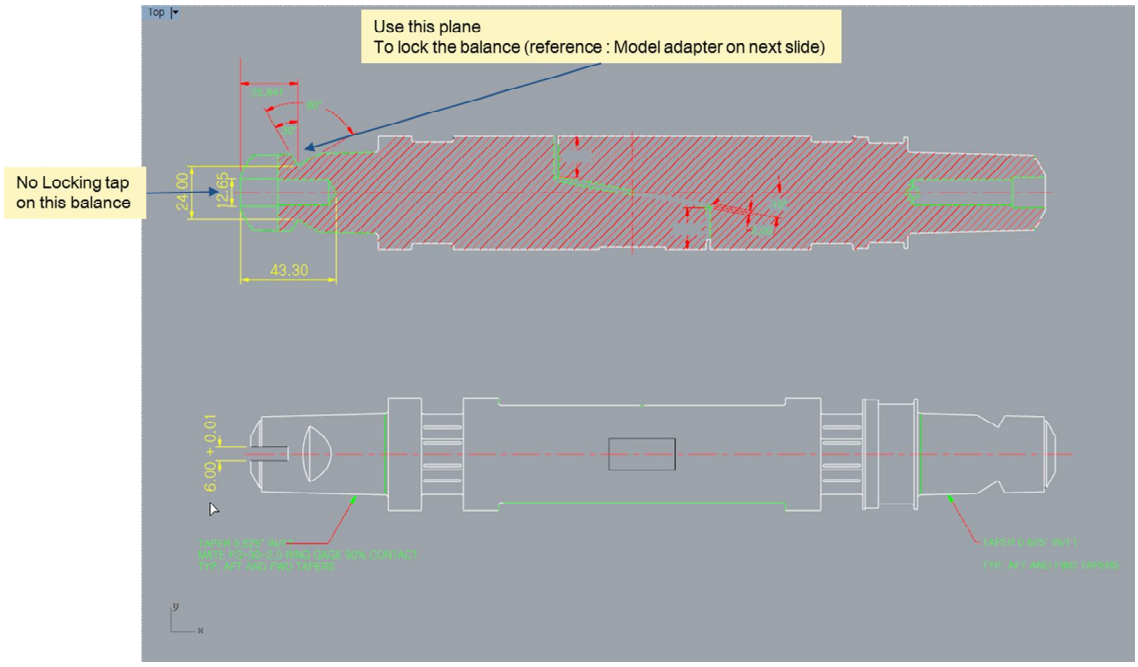
Appendix 2 : Reference drawing

IB6-017



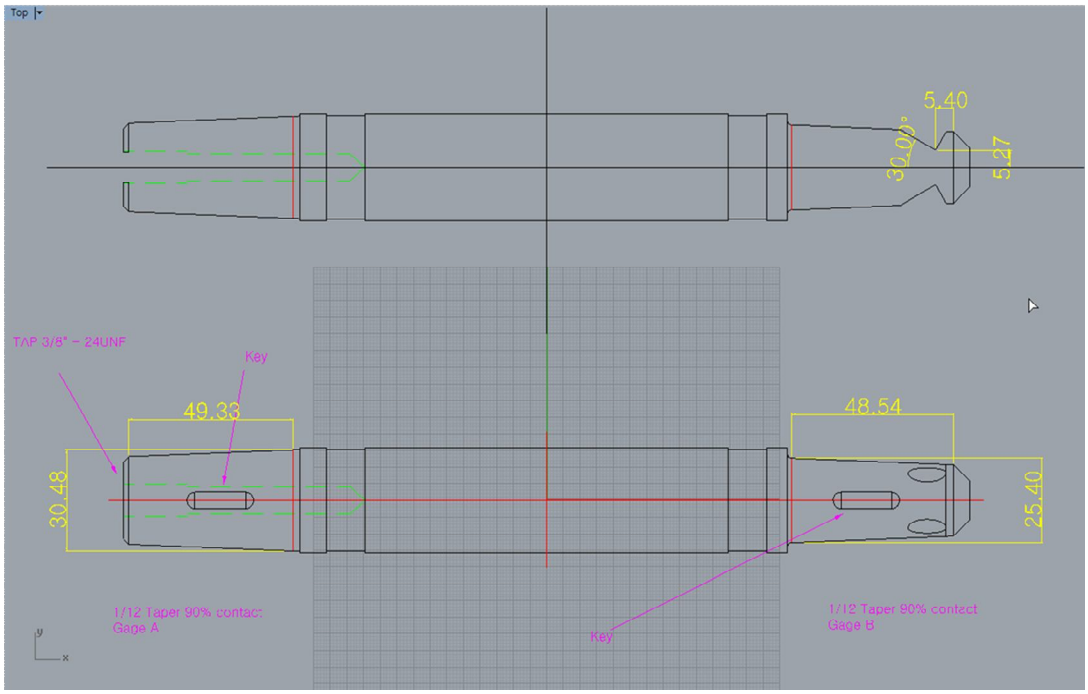
IB6-017 Taper drawing

IB6-018

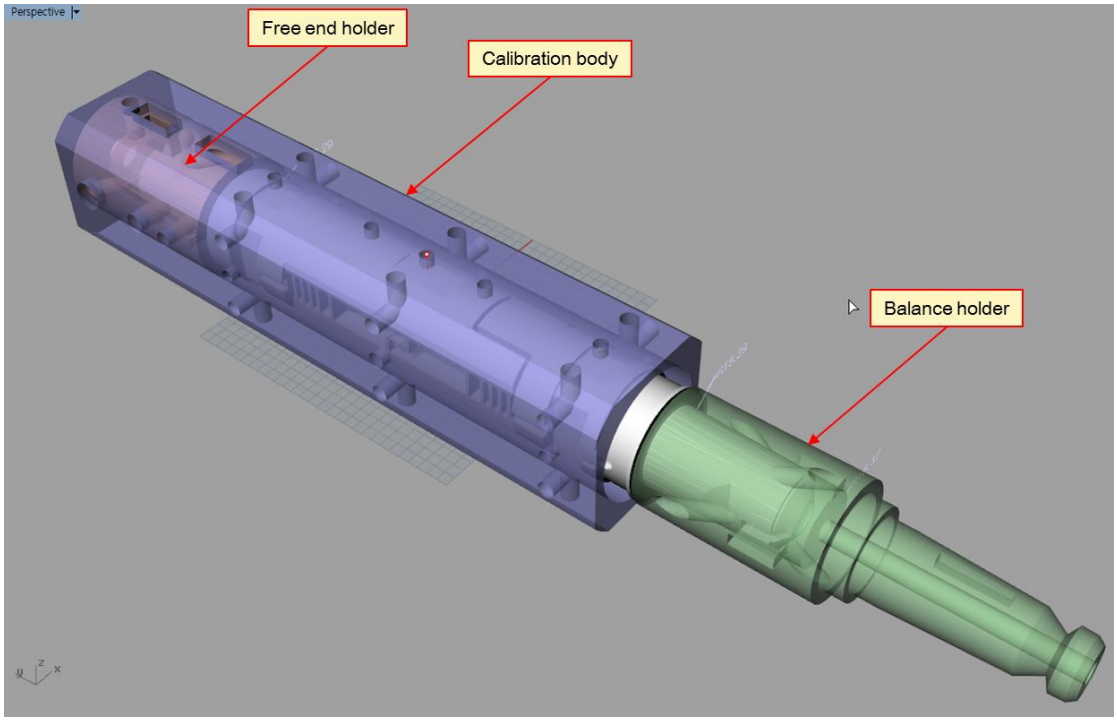


IB6-018 Taper drawing

IB6-019



IB6-019 Taper drawing



Example of Calibration accessories