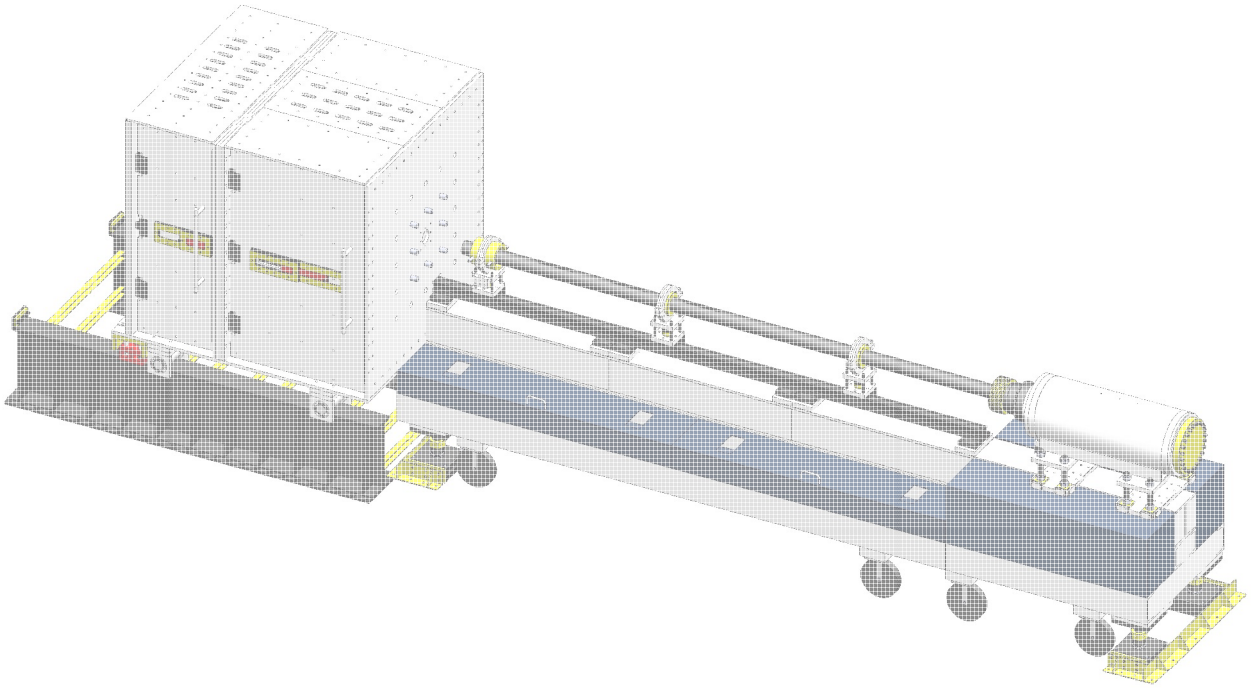
Series of High-Strain-Rate Test Apparatus

LW-9396 Penetration Tester



Design & Manufacture

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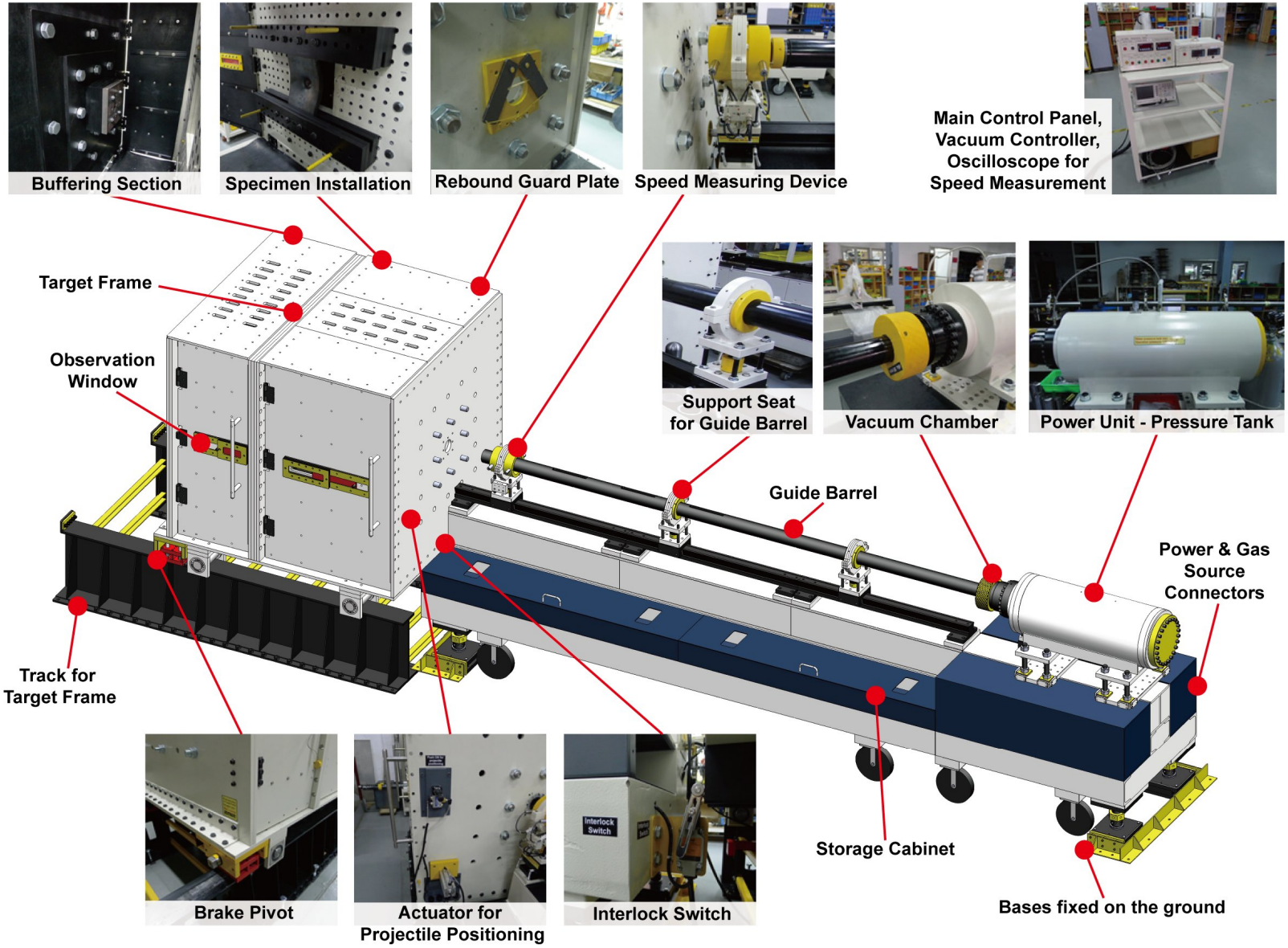
I. System Drawing of Penetration Tester

LW-9396 Penetration Tester



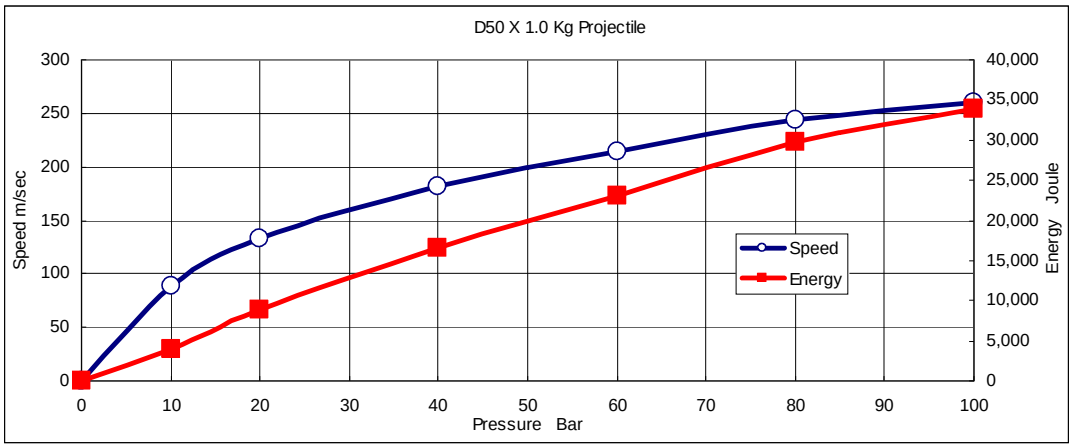
II. System Specification

No.	Item	Description		Remark
1.	Power Unit	Pressure tank	Volume: 40 liter	**Spec. adjustable**
2.		Operation range	0~100 kg/cm^2	
3.		Supplied gas	Compressed nitrogen gas, including regulator and related assembly	
4.	Control Panel	Feed-back control, pressure display, and feed-back control value controlled by built-in loop		
5.		For system operation, indication, interlock switch for safety issues		
6.		2 sets of vacuum pump control		
7.	Guide Barrel	Inner diameter: 30, 40, and 50 mm Replaceable		
8.		Including mechanism for center alignment		
9.	Target Frame	Effective clamping range: 600 × 600 mm max.		**(Ref.)**
10.		Protection cover structure		
11.		Dimension: 1.1 (W) x 1.1 (H) x 1.4 (L) m		**(Ref.)**
12.	Projectile Material	SCM440, HRC30		**Spec. adjustable**
13.	Projectile Dimension	Diameter 30 mm; Length 105 mm; Weight 0.5 kg		**Spec. adjustable**
14.		Diameter 40 mm; Length 100 mm; Weight 0.8 kg		
15.		Diameter 50 mm; Length 125 mm; Weight 1.0 kg		
16.	Speed Measurement	Optical sensor	2 sets	
17.		Oscilloscope	Model: GW GDS1052	
18.	Dimension	1.4 (W) × 1.8 (H) × 10 (L) M		**(Ref.)**
19.	Power Source	AC220V, single phase, 50/60 Hz, 20 Amp		**Prepared by clients**
20.	Compressed Air Source	5~7 kg/cm^2 Air consumption: < 1 liter/min.		
21.	Gas Source	Nitrogen gas cylinders 130 kg/cm^2		

III. Correlation of Tank Pressure and Projectile Speed

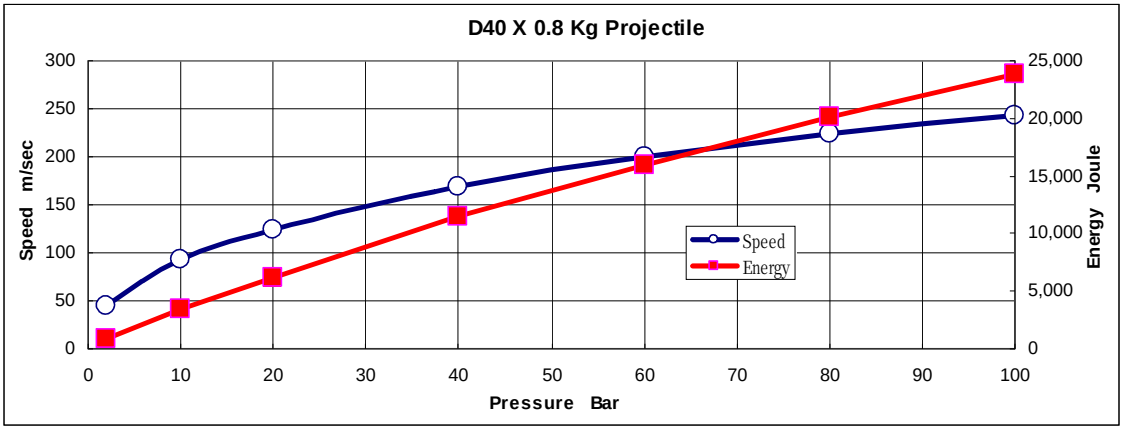
1. Projectile: dia. 50 mm

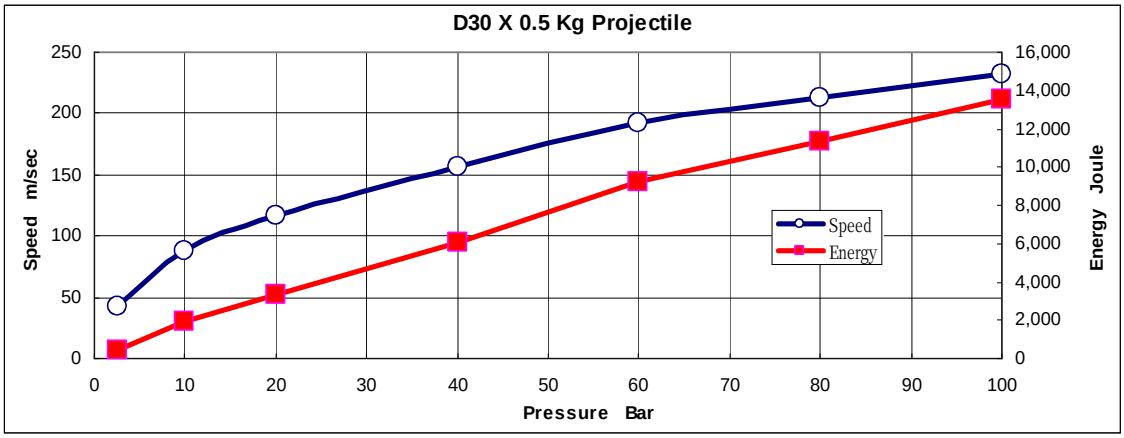
Mass	Length	pressure	Kg/cm2	0	10	20	40	60	80	100
Kg	mm	speed	m/sec	0	89.3	133.3	181.8	215	243.9	260
1.0	125	Energy	Joule	0	3,987	8,884	16,526	23,113	29,744	33,800



2. Projectile: dia. 40 mm

Mass	Length	pressure	Kg/cm2	2	10	20	40	60	80	100
Kg	mm	speed	m/sec	45.5	92.5	125	169.5	200	224	243.9
0.8	100	Energy	Joule	826	3,423	6,250	11,492	16,000	20,070	23,795



3. Projectile: dia. 30 mm

Mass	Length	pressure	Kg/cm2	2.5	10	20	40	60	80	100
Kg	mm	speed	m/sec	43.1	87.72	116.3	156.2	192.3	212.8	232.6
0.5	105	Energy	Joule	464	1,924	3,381	6,100	9,245	11,321	13,526