ROCK TEST HAMMER
Standard: ASTM D5873

Compression Strength

The hammer is used for rock classification test. Simple and easy to use and is similar to used for concrete test. The level of impact energy is 0.074 kgm percussion energy. Specimen of rock cores is positional horizontally and the rebound index is obtained from the average of several measurements performed perpendicularly to the longitudinal axis.

Technical Specifications :

Model Number	NL 1033 X / 001
Approx. Weight	0.75 kg
Dimension Of Case	350 (L) x 85 (W) x 85 (H) mm
Level Of Impact Energy	0.074 kgm

Optional Accessories :

Model Number	Accessories Description
NL 1033 X / 001 – A001	Rock Cradle

NL 1033 X / 001 - A001

Aggregate & Rock

SUSTAINABLE PRECISION

INSTRUCTION MANUAL

ROCK TEST HAMMER

MODEL : NL 1033 X / 001

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CONTENTS

I.   INTRODUCTION

The rock test hammer is a mechanical device used for performing rapid, non-destructive quality testing on materials in accordance with the customer's specifications, in this case, however, the material involved is rock. The device for use exclusively on the rock surfaces to be tested & on the testing anvil.

II.   SAFETY

Not allowed to be operated by children & anyone under the influence of alcohol, drugs or pharmaceutical preparations. Anyone who is not familiar with the operating instructions must be supervised when using the rebound hammer. Serious or fatal injury could happen to anyone not using this rebound hammer for testing on appropriate surfaces or using for other wrong intention.

III.   MEASURING PRINCIPLE

This device measures rebound value R which provides the convenience of verifying the strength of structures without damaging it. There is a specific relationship between this value & the hardness & the strength of the rock. The following factors must be taken into account when ascertaining rebound values R:
-      age of rock
-      size & shape of the comparison sample.
-      rock must be 100 mm or more in thickness

IV.   MEASURING PROCEDURE

Perform a few test impacts with the rebound hammer on a smooth, hard surface before taking any measurements which you are going to evaluate. The impact plunger generates rebound action at certain amount of strength when it's activated. So always hold the rebound hammer in both hands, perpendicular to the test surface before you trigger the impact.

 a)   Use the grindstone to smoothen the test rock surface (Figure 2)

b) Position the rebound hammer perpendicular to the test surface.

c) Release the impact plunger by pushing the rebound hammer towards the test surface & moving backward until the pushbutton springs out & impact plunger fully released.
d) Position again the rebound hammer perpendicular to & against the test surface.
e) Push the rebound hammer against the test surface at moderate speed until the impact is triggered & read the pointer in the scale to record the R value. Each test surface should be tested with at least 8 to 10 impacts. The individual impact points must be at a distant of at least 20 mm apart.
f) At the end of the test, you need to keep the rebound hammer with the impact plunger fully pushed in. To do this, just push the pushbutton in at the final test when the impact plunger is fully pushed in & triggered.
g) Calculate the average for the 8 to 10 rebound values (R)
h) From the average R value calculated, relate to its corresponded strength referring to the graphs provided in this manual according to the direction of test.

V.   PERFORMANCE CHECK

It is a normal practice to send back the concrete test hammer to us to carry out performance check at least once a year, every 1000 impacts or if the results are inconsistent due to mishandling. This is important to ensure the results are highly reliable.

When tested on a standard test anvil, the R value shall be within 74 + 2

VI. TEST DIRECTIONS
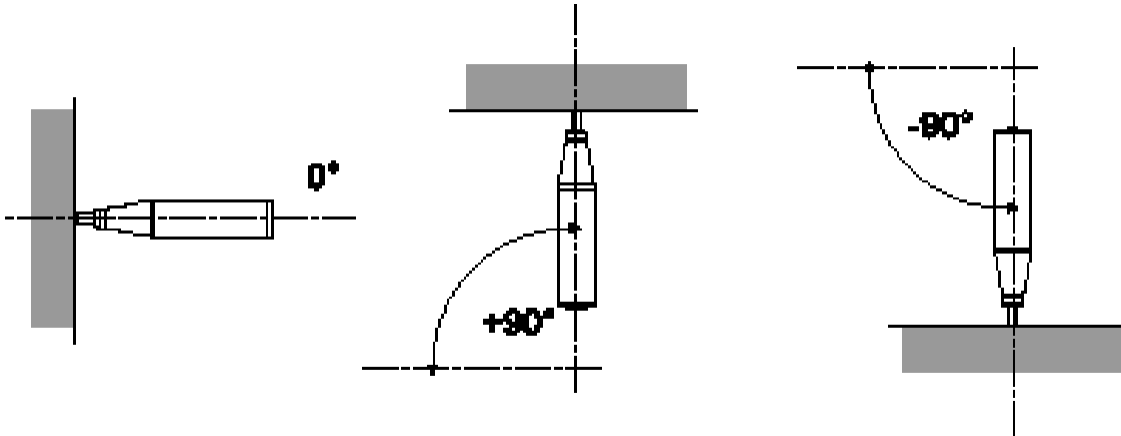
Conversion Curves :-
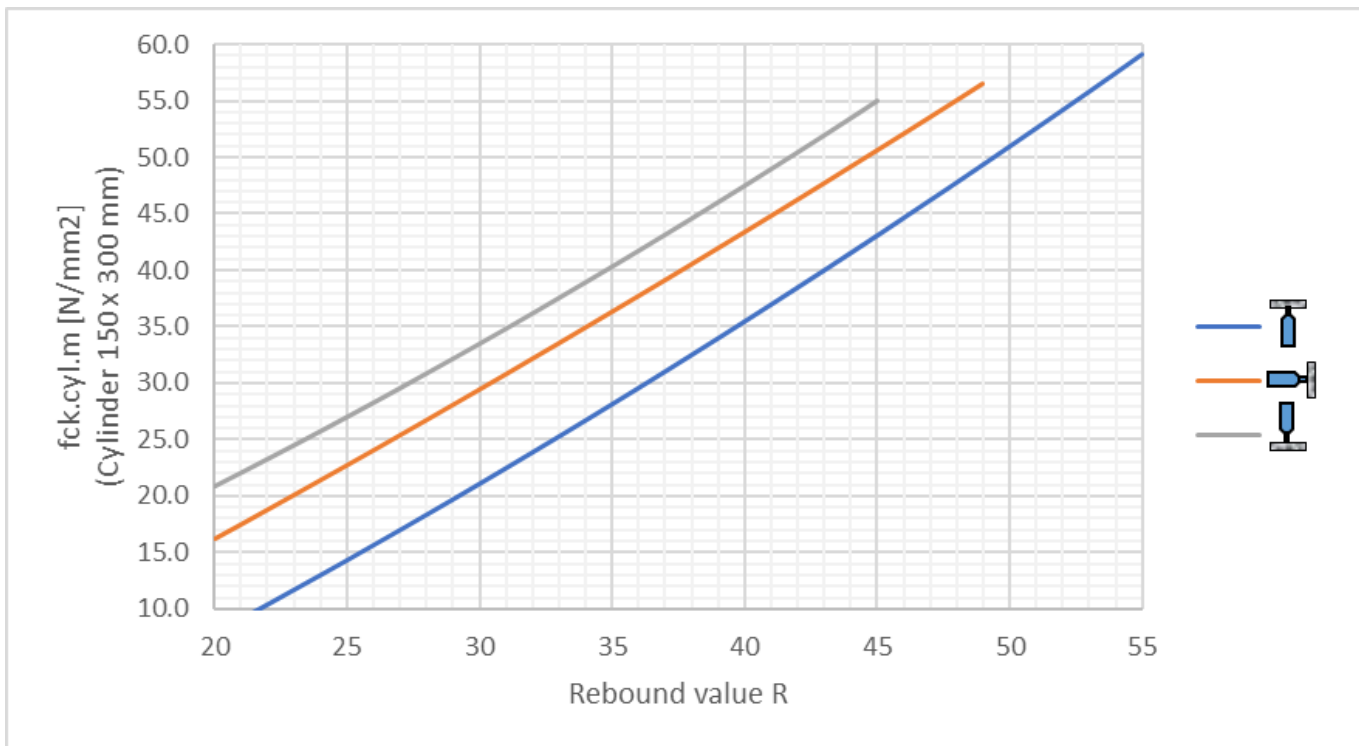
The correlation of rebound R with strength of rock (N/mm²) was defined by carrying out series of tests on standard rock, with the analysis of results being accepted generally to be applied on any rock surfaces.

X axis: rebound value (R)
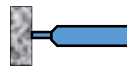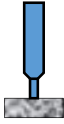*Y axis: Compressive strength N/mm²*

Table of Test position for Rock Test Hammer (Cylinder 150 x 300 mm)					
(+)90˚		0˚		(-)90˚	
R	MPa	R	MPa	R	MPa
20	7.9	20	14.9	20	19.6
21	9.2	21	16.2	21	20.8
22	10.5	22	17.5	22	22.0
23	11.8	23	18.8	23	23.2
24	13.1	24	20.1	24	24.5
25	14.4	25	21.4	25	25.7
26	15.7	26	22.8	26	27.0
27	17.1	27	24.1	27	28.2
28	18.4	28	25.4	28	29.5
29	19.8	29	26.8	29	30.8
30	21.1	30	28.1	30	32.1
31	22.5	31	29.5	31	33.5
32	23.9	32	30.8	32	34.8
33	25.3	33	32.2	33	36.2
34	26.8	34	33.6	34	37.5
35	28.2	35	35.0	35	38.9
36	29.6	36	36.3	36	40.3
37	31.1	37	37.7	37	41.7
38	32.6	38	39.2	38	43.1
39	34.0	39	40.6	39	44.6
40	35.5	40	42.0	40	46.0
41	37.0	41	43.4	41	47.5
42	38.5	42	44.8	42	49.0
43	40.0	43	46.3	43	50.4
44	41.6	44	47.7	44	52.0
45	43.1	45	49.2	45	53.5
46	44.7	46	50.6	46	55.0
47	46.2	47	52.1	47	
48	47.8	48	53.6	48	
49	49.4	49	55.1	49	
50	51.0	50	56.6	50	
51	52.6	51		51	
52	54.2	52		52	
53	55.9	53		53	
54	57.5	54		54	
55	59.2	55		55	

Figure 3 – Graph test of Compressive Strength (Mpa)

VII. TECHNICAL SPECIFICATIONS

Model Number   : NL 1033 X / 001

Approx. Weight   : 0.75 Kg

Level of Impact Energy : 0.074 kgm

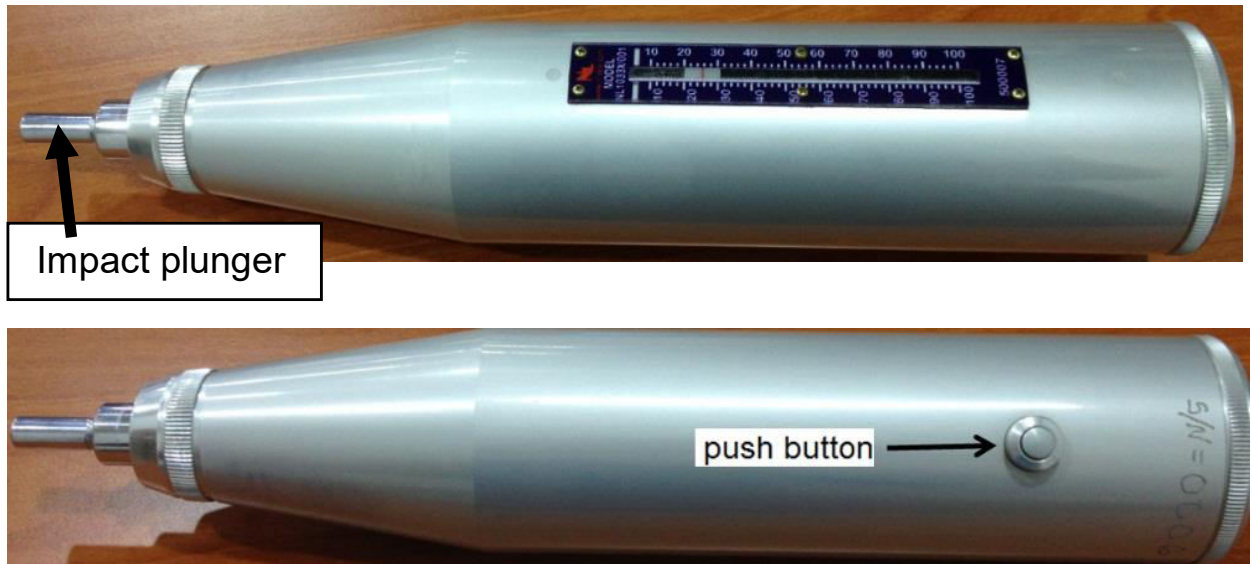## VIII.   PART DESCRIPTIONS

Impact plunger

push button

Figure 1 – The Apparatus

Figure 2 - Use the grindstone to smoothen the test rock surface.