

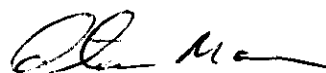
PROCEDURE # 34

ROCKWELL HARDNESS TESTER
STANDARD
AND
SUPERFICIAL

SUPERIOR GAGE SERVICE

LAST AMENDED 03/20/93

Q.C. MANAGER



TECHNICIAN

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1.1 This procedure describes the calibration of Rockwell hardness testers, both superficial and standards, as specified in A.S.T.M. spec E 18-89 part 13.2 the Indirect Verification method.

2.0 EQUIPMENT REQUIREMENTS

	ITEM	SPECIFICATIONS	CALIBRATION EQUIPMENT
2.1	STANDARDIZED TEST BLOCKS	ACCURACY: .2 OF A ROCKWELL UNIT	S-24
2.2	OIL	WILSONS ELL SKID	N/A

3.0 PRELIMINARY OPERATION

- 3.1 Remove top cover from test instrument. Clean and oil moving parts. If the test instrument is a mechanical model disassemble upper mechanism, checking the knife edge for proper alignment, rust or burrs. Service knife edge if needed, oil and reassemble.
- 3.2 Check the anvils for burrs and rust, service if needed.
- 3.3 Remove the lead screw cover and clean. Clean and oil the lead screw. Check for proper lead screw alignment by removing indenter and raising the lead screw so the indenter holder is positioned inside the anvil slot of the lead screw. At this point visually inspect the distance between the lead screw and indenter holder front, back, and sides. Service if needed.
- 3.4 When possible check all indenters on optical comparator using 20x lens for chipped or loose diamonds, or a flat spot on ball type. Replace if needed.

4.0 CALIBRATION PROCESS

- 4.1 The test instrument shall be verified for each scale to be used. For each scale standardized three blocks within the hardness ranges given in TABLE A will be tested. The test instrument can not be adjusted between test made on the three blocks. Using an old block make at least 2 indentations to ensure that the test instrument is working freely and that the block, indenter, and anvil are seated correctly. Make at least 5 indentations on each block. Record readings on back of working calibration form to within .2 of a rockwell unit. The mean hardness value for the 5 test shall not differ by more than the mean tolerance of the test blocks. Check readings against TABLE B, and TABLE C.

5.0 TABLE A

HARDNESS RANGES USED IN VERIFICATION BY
STANDARDIZED TEST BLOCK METHOD

ROCKWELL SCALE	HARDNESS RANGE
C	20 TO 30
	35 TO 55
	59 TO 65
B	40 TO 59
	60 TO 79
	80 TO 100
30 N	40 TO 50
	55 TO 73
	75 TO 80
30 T	43 To 56
	57 To 70
	70 To 82

Table A is a copy of Table 16 A.S.M.E., Spec E-18-89

5.0

TABLE B

REPEATABILITY OF MACHINES

RANGE OF BLOCKS	REPEATABILITY SHALL BE NOT GREATER THAN:
C SCALE	
25 TO 30	2.0
35 TO 55	1.5
59 TO 65	1.0
B SCALE	
40 TO 59	2.5
60 TO 79	2.0
80 TO 100	2.0
30 N	
40 TO 50	2.0
55 TO 73	1.5
75 TO 80	1.0
30 T	
45 TO 56	2.5
57 TO 70	2.0
70 TO 82	2.0

TABLE B IS A COPY OF TABLE 20, A.S.M.E. SPEC. E-18--89

6.0

TABLE C
TOLERANCE VALUES

NOMINAL HARDNESS	SHALL NOT BE GREATER THAN
C SCALE	
60 AND GREATER	+/- .5
BELOW 60	+/-1.0
A SCALE	
80 AND GREATER	+/- .5
BELOW 80 TO 60.5	+/-1.0
15 N SCALE	
90 AND GREATER	+/- .7
BELOW 90 TO 69.4	+/-1.0
30 N SCALE	
77.5 AND GREATER	+/- .7
BELOW 77.5 TO 41.5	+/-1.0
45 N SCALE	
66.5 AND GREATER	+/- .7
BELOW 66.5 TO 19.6	+/-1.0
B SCALE	
45 AND GREATER	+/-1.0
BELOW 45 TO 1.5	+/-1.5
F SCALE	
99.6 TO 57.0	+/-1.0
15 T SCALE	
75.3 AND GREATER	+/-1.0
BELOW 75.3 TO 60.5	+/-1.5
30 T SCALE	
46.2 AND GREATER	+/-1.0
BELOW 46.2 TO 15.0	+/-1.5
45 T SCALE	
17.6 AND GREATER	+/-1.0
BELOW 17.6 TO 10.	+/-1.5

TABLE C IS A COPY OF TABLE 21 A.S.M.E. SPEC.E-18 89