

LOADED SOUND TEST SUMMARY SHEET

NAME OF DEVICE UNDER TEST (DUT)
TOOL OPERATOR
COMPUTER OPERATOR
TEST DATE

Grinder
Manual Mode, Brian Kim
Edward Zechmann
5/7/2009

TEST DESCRIPTION
TEST LOCATION
MANUFACTURER
MODEL
SERIAL NUMBER
MODE OF OPERATION
RUN NUMBER
YEAR MADE

Sound Power Level Measurement
UC anechoic lab
Skil
9290-01
E181135
FULL SPEED, LOADED, WITH OPERATOR
1

DIMENSIONS (inches)
WEIGHT (lbs.)
TECHNICAL SPECIFICATIONS
MOUNTING CONDITIONS
LOADING CONDITIONS
K1 (dBA)
K2 (dBA)
TEMPERATURE (CELSIUS)
HUMIDITY %
BAROMETRIC PRESSURE ("Hg)

Length 10.5", Width 2.5", Height 5.0"
4.9
4 1/2 inch angle grinder
Held against 2 inch wide metal bar
FULL SPEED, LOADED, WITH WHEEL ON METAL BAR
0
0.08
24
42
29.87

TEST ENVIRONMENT
TOOL TESTING STANDARD
MEASUREMENT STANDARD
MICROPHONE SET-UP
SURFACE RADIUS

SEMI ANECHOIC, SEMI HEMISPHERICAL
ANSI S12.15-1992
ISO 3744:1994-05-01
10-MICROPHONES
2.00 meters

RATED POWER (WATTS)
ACTUAL INPUT POWER (WATTS)
VOLTAGE (VOLTS)
CURRENT (AMPS)
RATED RPM
ACTUAL RPM

720
530
118
4.91
11000
-

SOUND POWER LEVEL (dBA)
SOUND POWER (WATTS) A-weighted
SWLA - k2 (dBA)
SWLA - k2 (WATTS) A-weighted
SOUND PRESSURE LEVEL (dBA) @ 2 meters

101.4
0.01385
101.3
0.01358
87.4

AT THE NOMINAL HEARING ZONE OF OPERATOR
SOUND PRESSURE LEVEL (dBA)

97.7

Average Directivity Study

TEST DATE 5/7/2009
DUT Grinder
Manufacturer Skil
Model Number 9290-01
Serial Number E181135
Mode FULL SPEED, LOADED, WITH OPERATOR
Run Number 1

A-weighted Sound Pressure Level

Mic #	Position1 dBA
0	88.4
1	87.1
2	85.0
3	85.6
4	85.9
5	87.4
6	85.1
7	86.0
8	90.6
9	89.1
10	97.7

dB difference 5.6

A-weighted Directivity Index

Mic #	dBA
0	1.3
1	0.1
2	-2.0
3	-1.4
4	-1.1
5	0.4
6	-2.0
7	-1.0
8	3.6
9	2.1

SOUND DATA SHEET

PRODUCT INFORMATION

TEST DATE 5/7/2009
DUT Grinder
Manufacturer Skil
Model Number 9290-01
Serial Number E181135
Mode of Operation FULL SPEED, LOADED, WITH OP
Run Number 1

TEST CONDITIONS

Actual Power (watt) 530
Voltage (Volts) 118
Current (Amps) 4.91
Actual RPM -
Temperature (Deg. F) 24
Humidity (%) 42
Baro. Press. (inch of Hg) 29.87

Measurement Data

Linear (unweighted) Position 1

Sound Power (dB)	101.34	102.10	100.68	100.61	100.57
Sound Power (Watts)	0.01363	0.01620	0.01171	0.01150	0.01141
Sound Pressure (dB)	87.34	88.09	86.68	86.60	86.57

A-weighted Position 1

Sound Power (dBA)	101.73	102.24	101.09	100.99	100.85
Sound Power (Watts)	0.01491	0.01675	0.01286	0.01256	0.01217
Sound Pressure (dBA)	87.73	88.24	87.09	86.99	86.85

Calculations

Average A-weighted Sound Data

Sound Power (dBA)	101.41
Sound Power (Watts)	0.0138
Sound Pressure (dBA)	87.41

Std. Deviation SWLA 0.5874

95 % Confidence Level 0.7294

Mean SPLA-k2 87.33

LOADED VIBRATIONS TEST SUMMARY SHEET

NAME OF DEVICE UNDER TEST (DUT)	Grinder
TOOL OPERATOR (SUBJECT OF TEST)	Manual Mode, Brian Kim
COMPUTER OPERATOR	Edward Zechmann
TEST DATE	5/7/2009
TEST DESCRIPTION	Human Exposure to Vibrations
TEST LOCATION	UC ANECHOIC LAB
MANUFACTURER	Skil
MODEL	9290-01
SERIAL NUMBER	E181135
MODE OF OPERATION	FULL SPEED, LOADED, WITH OPERATOR
RUN NUMBER	1
YEAR MADE	2008
DIMENSIONS (inches)	Length 10.5", Width 2.5", Height 5.0"
WEIGHT (lbs.)	4.9
TECHNICAL SPECIFICATIONS	4 1/2 inch angle grinder
MOUNTING CONDITIONS	Held against 2 inch wide metal bar
LOADING CONDITIONS	FULL SPEED, LOADED, WITH WHEEL ON METAL BAR
TEMPERATURE (CELSIUS)	24
HUMIDITY %	42
BAROMETRIC PRESSURE ("Hg)	29.87
TEST ENVIRONMENT	SEMI ANECHOIC, SEMI HEMISPHERICAL
MEASUREMENT STANDARD	ISO 5349-1 and ISO 5349-2
ACCELEROMETER SETUP	2 - ACCELEROMETERS
SETUP DIAGRAM	grinder_6_sv_accel_setup.doc
LOCATION ACCEL 1	right hand, top of tool, near back of tool
ORIENTATION ACCEL 1	X toward right side of tool, Y toward grinder wheel, Z toward top of tool
LOCATION ACCEL 2	left hand, left grip, on top of side handle
ORIENTATION ACCEL 2	X toward grinder wheel, Y toward left side of tool, Z toward top of tool
ADAPTER TYPE	Accel 1-side adapter, Accel 2-side adapter
OPERATOR POSTURE	Standing over tool, both hands gripping and moving tool over steel bar
HAND GRIP FORCE	Band clamp over rubber mechanical low-pass filter
RATED POWER (WATTS)	720
ACTUAL INPUT POWER (WATTS)	530
VOLTAGE (VOLTS)	118
CURRENT (AMPS)	4.91
RATED RPM	11000
ACTUAL RPM	-
Vibrations	
Accelerometer 1	
X, Y, Z arms m/s ² weighted	4.5, 4.6, 5.2
X, Y, Z arms m/s ² linear	61.7, 91.3, 119.2
Total arms m/s ² (weighted, linear)	8.2, 162.3
Accelerometer 2	
X, Y, Z arms m/s ² weighted	6.9, 5.5, 10.7
X, Y, Z arms m/s ² linear	82.7, 103.8, 85.1
Total arms m/s ² (weighted, linear)	13.9, 157.7

VIBRATIONS DATA SHEET

TEST DATE	5/7/2009		
DUT	Grinder	Actual Power (watt)	530
Manufacturer	Skil	Voltage (Volts)	118
Model Number	9290-01	Current (Amps)	4.91
Serial Number	E181135	Actual RPM	-
Mode of Operation	FULL SPEED, LOADED, WITH C	Temperature	24
Run Number	1	Humidity (%)	42

Accelerometer 1	arms weighted m/s ²				
Axis	1	2	3	4	5
X	4.8	5.1	5.1	3.4	4.2
Y	4.7	5.0	5.1	3.7	4.1
Z	5.0	5.6	5.7	4.6	4.9
Total arms	8.4	9.1	9.2	6.8	7.7

Accelerometer 1	arms linear m/s ²				
X	64.9	64.5	71.9	49.5	57.5
Y	94.6	101.5	101.7	77.6	81.1
Z	122.6	129.0	134.1	101.0	109.1
Total arms	167.9	176.3	183.0	136.7	147.6

Accelerometer 2	arms weighted m/s ²				
Axis	1	2	3	4	5
X	7.2	7.3	7.3	6.5	6.1
Y	6.0	6.0	6.0	4.5	5.1
Z	11.7	11.2	11.9	9.0	9.9
Total arms	15.0	14.7	15.2	12.0	12.7

Accelerometer 2	arms linear m/s ²				
X	93.8	89.0	85.6	73.1	71.9
Y	110.2	114.5	115.7	84.6	94.0
Z	93.8	88.6	94.9	73.0	75.4
Total arms	172.4	170.0	172.3	133.5	140.3

Average arms					
Weighted m/s ²	Accel 1	Accel 2	Linear	Accel 1	Accel 2
X	4.5	6.9	X	61.7	82.7
Y	4.6	5.5	Y	91.3	103.8
Z	5.2	10.7	Z	119.2	85.1
Total arms m/s ²	8.2	13.9		162.3	157.7
Std. Deviation	1.0	1.5		19.6	19.2
95 % Confidence Level	1.2	1.8		24.3	23.8