

## VIBRATION EVALUATION STANDARD - ISO 8528-9 RIC ENGINE & GENERATOR

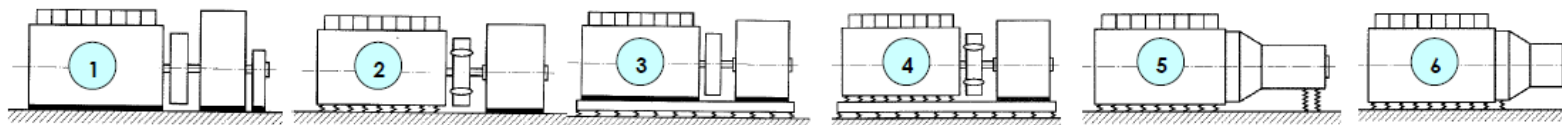
RIC ENGINE SPEED RPM	GENERATOR SYSTEM Rated Power Output kVA      kW		DISPLACEMENT - $S_{rms}$ in mm <sup>(a)</sup>			VELOCITY - $V_{rms}$ in mm/sec			ACCELERATION - $a_{rms}$ in m/sec <sup>2</sup> ( <sup>a</sup> )		
			RIC ENGINE	GENERATOR		RIC ENGINE	GENERATOR		RIC ENGINE	GENERATOR	
				Value 1	Value 2		Value 1	Value 2		Value 1	Value 2
≥ 2000 rpm ≤ 3600 rpm	≤ 15	≤ 15	-	1.1	0.27	-	70	80	-	44	50
	≤ 50	≤ 40	-	0.8	0.95	-	50	60	-	31	38
	> 50	> 50	-	2.54 <sup>(d)</sup>	0.8 <sup>(d)</sup>	-	40 <sup>(d)</sup>	50 <sup>(d)</sup>	-	25 <sup>(d)</sup>	31 <sup>(d)</sup>
≥ 1300 rpm < 2000 rpm	≤ 10	≤ 8	-	-	-	-	-	-	-	-	-
	> 10 but < 50	> 8 & < 40	-	0.64	-	-	40	-	-	25	-
	> 50 & ≤ 125	> 40 & ≤ 100	-	0.4	0.48	-	25	30	-	16	19
	> 125 & ≤ 250	> 100 & ≤ 200	0.77	0.4	0.48	45	25	30	-	16	19
> 250	> 200	3.72	0.52	0.45	45	20	28	-	13	18	
> 720 rpm < 1300 rpm	≥250 & ≤ 1250	≥200 & ≤ 1000	0.72	0.32	0.39	45	20	24	28	13	15
	> 1250	> 1000	0.72	0.29	0.35	45	18	22	28	11	14
≤ 720 rpm	> 1250	> 1000	3.72	0.24 <sup>(e)</sup>	0.32 <sup>(e)</sup>	45	15 (10 <sup>(e)</sup> )	20 (15 <sup>(e)</sup> )	28	9.5 (6.5 <sup>(e)</sup> )	13 (9.5 <sup>(e)</sup> )

\*All measurement parameter scaling are in RMS; The measurement frequency range for Engine is 2 Hz to 300 hz and for Generator – 2 Hz to 1000Hz

Note: (a) Displacement -  $S_{rms}$  and Acceleration -  $a_{rms}$  are derived from Velocity -  $V_{rms}$  as follows ;  $S_{rms} = 0.0159 \times V_{rms}$  ;  $a_{rms} = 0.628 \times V_{rms}$

(d) subject to end-user and original equipment manufacturer ; (e) values in parenthesis are meant for the Generators installed in concrete foundation

### CONFIGURATION OF RECIPROCATING INTERNAL COMBUSTION (RIC) ENGINE cum GENERATOR INSTALLATION



(1) Engine and Generator are rigidly mounted

(2) Engine resiliently mounted & Generator rigidly mounted with flexible coupling on rigid base

(3) Engine and Generator rigidly mounted on resilient base frame

(4) Engine resiliently mounted & Generator rigidly mounted with flexible coupling on resilient base frame

(5) Engine & flanged housing Generator assembly mounted on independent resilient mounts

(6) Engine & flanged housing Generator assembly with resilient mounting of Engine

# ISO 8528-9:1995 - Reciprocating internal combustion engine driven alternating current generating sets -- Part 9: Measurement and evaluation of mechanical vibrations