

**TAMCO 33kV GAS INSULATED SWITCHGEAR
SCHEDULE OF TECHNICAL DATA**

Item no.	Description Ratings & Electrical Requirements	Unit	Performance Data*
1	General Details		
	Manufacturer's Name Typical Layout and sectional Drg of Switchgear supplied to Australian environment Switchgear Model No Type		TAMCO REFER DRG NOS CC/33GIS/08/2008 SHTS 1&2 CC/33GIS/08/2008 SHT 3 GV3 GAS INSULATED
2	Applicable Standards		
	Enclosure Circuit Breaker Curren Transformers Voltage Transformers		IEC 62271:200 IEC 62271:100 AS60044.2 AS60044.2
3	General Performance Details		
	Rated Frequency	Hz	50
	Rated Voltage	kV (RMS)	33
	Highest Voltage	kV	36
	Rated Insulation Level: One minute power frequency withstand voltage Impulse withstand	kV (RMS) kV (Peak)	70 200
	Rated Short Time Current	kA (RMS)	25 & 31.5kA
	Rated Duration of Short Circuit	Sec	3
	Peak withstand current	kAp	63
	Rated Fifteen-Minute DC Withstand Voltage of Parts Directly Connected to Power Cables: Between Phases Between All Phases and Earth	kV DC kV DC	66 66
	Operating Cycle		0-0.3S -CO-3 Min-CO
	Configurations & Model Nos	Single Bus Double Bus	GV3 GV3D
	SF6 Gas Density Pressure at 20 °C Bus chamber Breaker chamber	Kg/cm ² Kg/cm ²	1.35 1.35
	Minimum SF6 Gas Density Pressure at 20 °C	Kg/cm ²	1.2
4	Enclosure		
	Material (Main Tank and LV compartment) Thickness of material (main Tank) Thickness of material (main Tank)	 mm	STEEL 6 2

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	Separate compartments for each of	mm	VCB, DISCONNECTOR SWITCH, BUSBAR AND CABLE COMPARTMENTS
	Normal SF6 Gas Operating Pressure	Kg/cm ²	1.35
	Type of Pressure Relief Device		BURSTING DISC FITTED TO EACH COMPARTMENT
	Location		BACK & TOP OF ENCLOSURE
5	Circuit Breakers		
	Rated Short Circuit Making Current	kAp	63
	Rated AC component Short Circuit Breaking Current	kA(rms)	25
	DC Component of Short Circuit Breaking Current		43%
	TRV Peak Value for Terminal Faults at Rated Short Circuit Breaking Current (u_c)	kV	62
	Time Co-ordinate (t_3)	μ s	108
	Time Delay (t_d)	μ s	16
	Voltage Co-ordinate (u^1)	kV	21
	Time Co-ordinate (t^1)Rate of Rise (u_c/t_3)	μ s	52
	Rate of Rise	Kv/ μ s	0.57
	First-Pole-to-Clear Factor		1.5
	Rated Power Frequency Recovery Voltage	kV (RMS)	36
	Small Inductive Breaking Current: Rated Small Induction Breaking Current	A (RMS)	20
	Maximum Instantaneous Value of Current chopped by Circuit Breakers when breaking Small Inductive Currents	A (RMS)	3
	Cable-Charging Breaking Current: Rated Cable-Charging Breaking Current	A (RMS)	50
	Maximum Instantaneous Value of Current chopped by Circuit Breakers when breaking Cable Charging Currents	A (RMS)	3
	Rated Out of Phase Breaking Current	A (RMS)	6.25
	Maximum TRV when Breaking Cable-Charging Current up to rated Value: On Supply Side of Circuit Breaker	kV (Peak)	36
	On Load Side of Circuit Breaker	kV (Peak)	64
	Opening Time	ms	27
	Maximum Arching Time	ms	14.7
	Rated Maximum Total Break Time	ms	< 54
	Closing Time	ms	< 50
	Rated Normal Current	A	630/1250/ 2000/2500

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	Length of Each Break	mm	23
6	Earthing Devices		
	Rated Circuit Withstand Current	kA (RMS)	UP TO 31.5
	Duration of Short Circuit	sec	3
7	Busbars & Connectors		
	Main Busbar Rating	kA (RMS)	UP TO 2500
	Primary Busbar Insulation	kV	36
	Busbar Material		SOLID ROUND COPPER BAR
	Busbar Insulation medium		SF6
	Temperature Rise of Busbars at Rated Current	°C	56.1
	Resistance of Main contacts of VCB	μohm	22-35
8	Combined Disconnecter/Earthing Switch		
	Insulating Medium		SF6
	Disconnecter Switch		OFF LOAD TYPE
	Rated Voltage	kV	36
	Rated Power Frequency Withstand Voltage:		
	Common Value	kV	70
	Across The isolating Contact	kV	80
	Rated Power Impulse Withstand Voltage:		
	Common Value	kVp	200
	Across The isolating Contact	kVp	210
	Rated peak withstand current	kAp	UP TO 31.5
9	Cubicle		
	Degree of Protection:		
	HV compartment		IP65
	LV compartment		IP42
	Whether Space Heater is provided in the Switchgear		YES
10	Circuit Breakers		
	Type of Circuit Breaker (i.e. whether Vacuum or SF6)		VACUUM (SURROUNDED BY SF6 GAS)
	Make of Vacuum Interrupter		EATON OR EQUIVALENT
	Number of breaks per Pole		SINGLE BREAK PER POLE
	Length of Each Break	mm	23
	Material of Current Carrying Conductors		COPPER
	Type of Main Current Contact/Material		BUTT
	Material of Contact Surfaces		CHROMIUM COPPER
	Type of Arc Control Devices		VACUUM
	Type of Isolating Contacts:		

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	On Circuit Breaker On Fixed Portion Material of Contacts		FIXED CONTACT FIXED CONTACT CHROMIUM COPPER
11	Interlocks		ELECTRICAL & MECHANICAL
12	Earthing		
	Earthing of Circuits Earthing of Busbar Method of Circuit Earthing		YES OPTIONAL THROUGH CIRCUIT BREAKER
13	Durability		
	Operating Design Life (Rated Current)	Times	10,000
	Contact Life at Rated Interrupting Capacity	Times	30
	Type of Power Closing Devices		MOTOR SPRING CHARGED
	Method of Opening Devices		SHUNT TRIP COIL
14	Recommended Maintenance Intervals		
	Recommended Life Expectancy	Years/Ops	10,000
	Operating Mechanism	Years/Ops	5/500
	Contacts & Interrupting Mechanisms	Years/Ops	5/500
	Control & Ancillary Gear	Years/Ops	5/1000
15	Operational Facts		
	Whether Closing Spring can be Charged with the Circuit Breaker in the Closed Position		YES
	Whether Circuit Breaker can be Closed whilst the Closing Spring is being charged		NO
	Whether Locking Facilities are provided for the Manual Tripping of the Circuit Breaker		YES
	Whether the following Position Indicators are provided for Circuit Breaker: Spring Charged Spring Free "ON" "OFF" Earth "ON" Earth "OFF"		YES YES YES YES
16	Dimensions and Weights		FOR SINGLE BUS & DOUBLE BUS
	Width	mm	600 800 NOTE: FOR 600MM WIDE PANEL VOLTAGE TEST PLUGS AT REAR NOT FITTED
	Depth	mm	1925 TO 2580 DEPENDING ON RATING & CONFIGURATION
	Height	mm	1900 TO 2500 DEPENDING ON RATING & CONFIGURATION

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	Weights	Kg	APPROX 1700 TO 2,000 DEPENDING ON SIZE AND QUANTUM OF CTS AND PANEL WIDTH
17	Cable Terminations		
	Type of Cable Termination		PLUG IN TYPE - CONNEX
	Size		UP TO SIZE 4
	Make		PFISTERER OR EQUIVALENT
18	Voltage Transformers		
	Whether 3 Phase or Single Phase VTS are employed		3 X 1 SINGLE PHASE
	Type of VT		EPOXY RESIN
	Whether VTs Withdrawable Type		YES – PLUG IN TYPE
	Position in Panel		AT TOP OF PANEL
	Provision of VT Primary Isolation switch		YES
19	Current Transformers		
	Type of Current Transformer		RING TYPE ON PRIMARY BAR