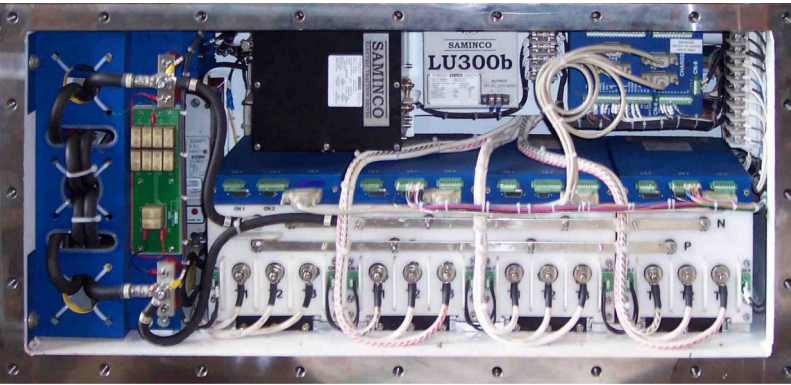


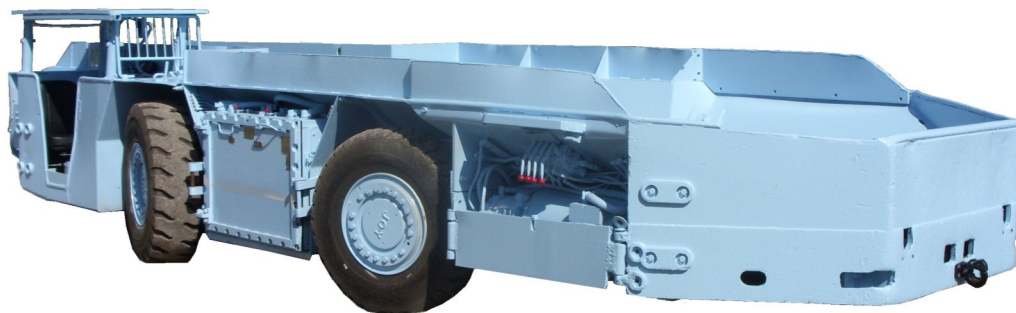
# SAMINCO

ELECTRIC TRACTION DRIVES



## 550VDC DC/AC VFD\* SYSTEM FOR SHUTTLE CARS

\*VARIABLE FREQUENCY DRIVE



2012

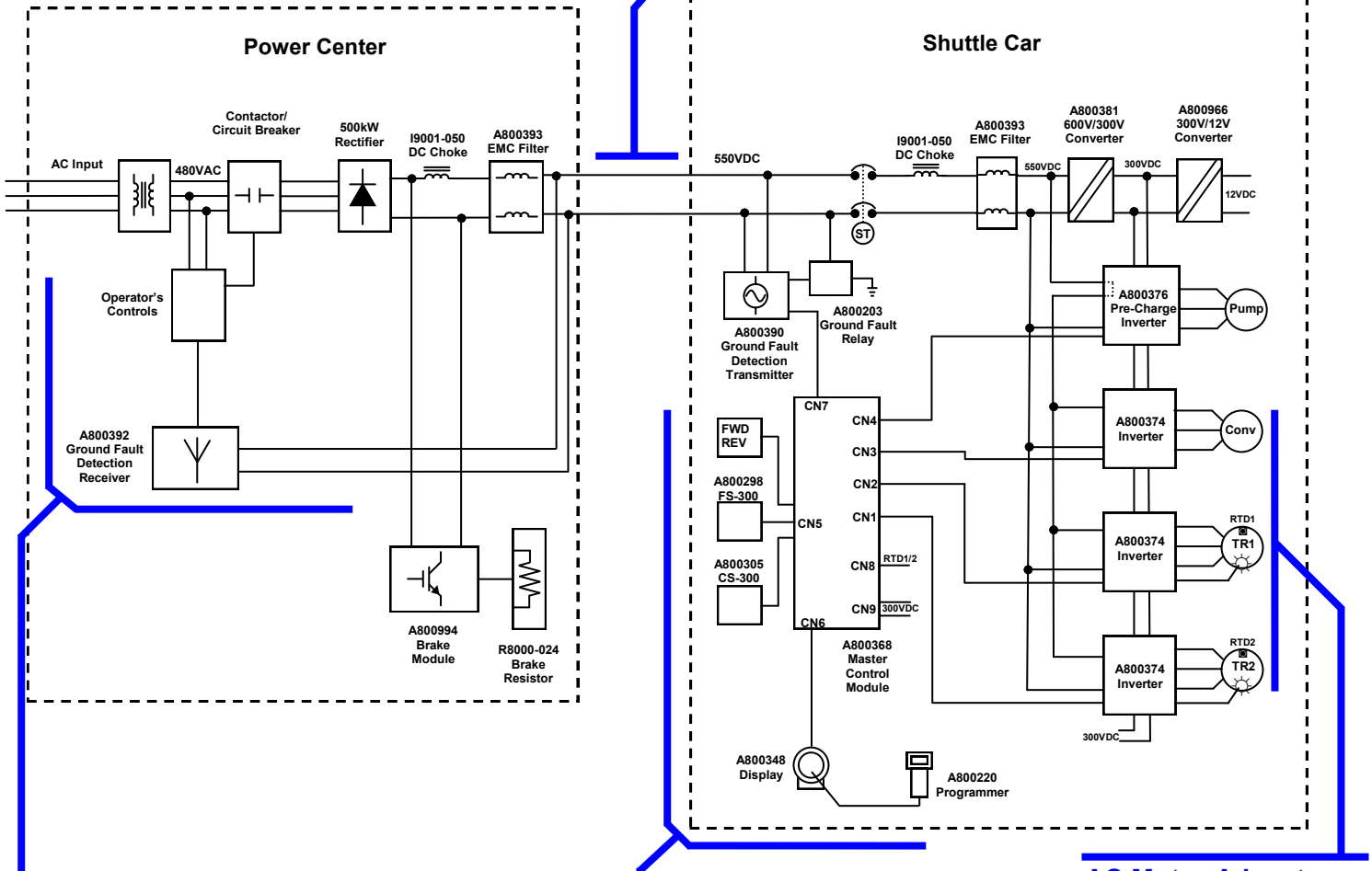
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**Performance Advantages**

- Load Sharing Tram Motors
- Smooth and Reliable Electrical Braking
- Variable Speed / Reversible Conveyor Control
- Approximately two times more power can be delivered to the Shuttle Car via the 550VDC Cable

- DC cable more reliable
- Can get more cable on the reel
- DC cable quicker/easier to troubleshoot and repair
- Longer lengths allowed by MSHA – 850 feet of #2/0 is common
- Less Trailing Cable heat - up to 75 percent less heat than 250VDC Trailing Cables

**Trailing Cable Advantages**



**Safety Advantages**

- Detects Trailing Cable Faults
- No live open wires on ground with cut cable
- Motor and Drive Ground Faults detected immediately
- Power center *instantly* shuts down in case of cable break

**AC Motor Advantages**

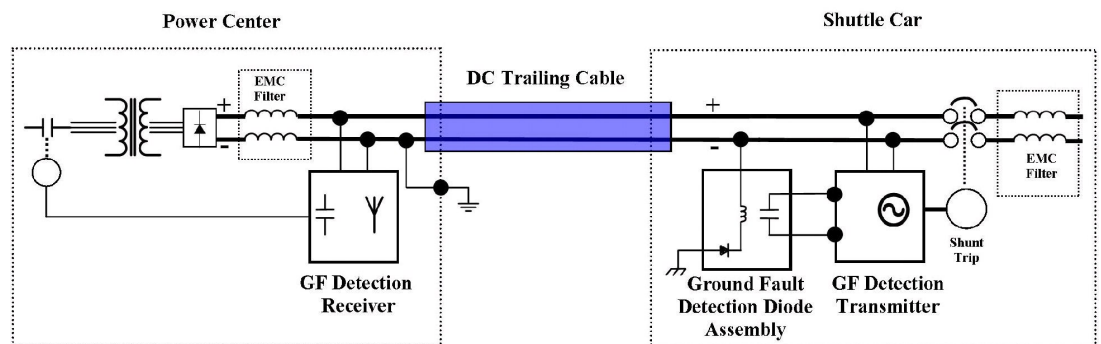
- Substantial increase in torque as compared to competitive motor
- RTD's in windings to monitor motor temperature
- Fabricated Copper

**Shuttle Car Controller Advantages**

- Less heat in XP box
- No front end losses
- System Programming via port in display - no need to open XP Enclosure

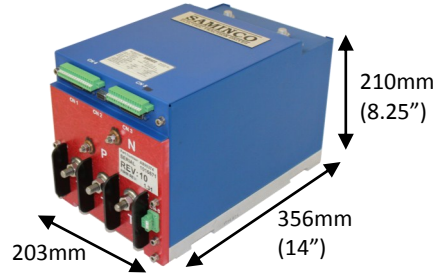
**GROUND FAULT AND CABLE BREAK DETECTION SYSTEM**

- Only system that removes high voltage from DC trailing cable
- Instantly detects cable break- no exposed live conductors on mine floor
- Detects ground fault condition at the shuttle car, power center and trailing cable
- Grounding diode/relay assembly for negative ground DC shuttle cars
- Sensing current 15A DC maximum
- If vehicle shunt trip/circuit breaker does not clear the ground fault, the power center will be shut down



## VF1-75R TRAM AND CONVEYOR DRIVE

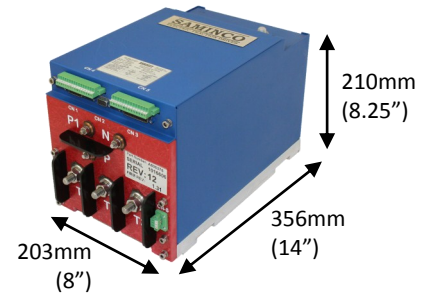
Saminco Part #: A800374



- 75kW 480V Regen Drive
- PWM Flux Vector inverter using the latest NPT (non-punch through) IGBT technology
- Flux Vector torque control provides differential traction control for superb cornering
- Rugged, short circuit proof power circuit provides excellent long term reliability
- Multiple control options: standard analog foot switch, Radio Remote control, Operator Station

## PRECHARGE / PUMP START INVERTER

Saminco Part #: A800376



- Dual Function:
- Soft charge of 550VDC power Bus DC Bus by-pass contactor
  - Pump motor soft start inverter 25kW @ 460VAC programmable pump motor current limit setting

Specifications	Tram / Conveyor Drive		Pump Drive	
	Rectified Input (DC)	Output (AC)	Rectified Input (DC)	Output (AC)
Rated Power @Rated Volts	72kW @ 550V	75kVA @ 440V	98kW @ 550V	39kVA @ 460V
Frequency range	DC	0 - 125Hz	DC	0-125Hz
Voltage Range	500V - 750V	0 - 525V	500 - 750V	0 - 525VV
Amps @ Rated Power	110A	100A(250A peak)	150A	50A (125A peak)

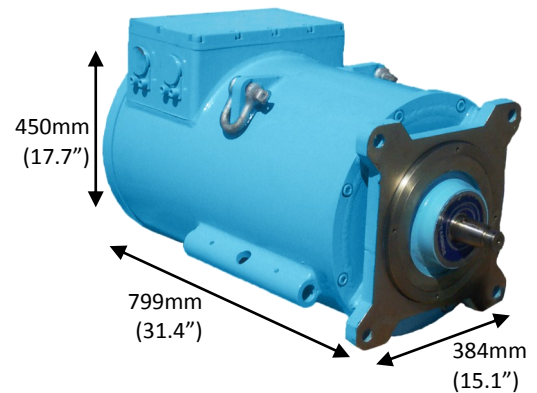
- Robust all steel "mine-duty" round barrel construction
- Low-loss copper-barred rotors are a copper alloy fabricated design for high efficiency, less slip and lower rotor losses (compared to equivalent aluminum die-cast rotors)
- Saminco encoder has 120° thermal rating
- Motor has flexibility to adapt to individual load requirements
- Custom manufactured for Saminco

## XV55 - 1000Nm XP TORQUE TRAM MOTOR

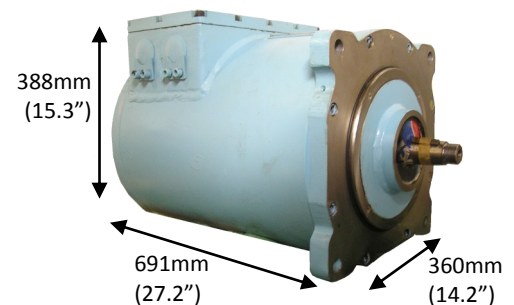
	XV55 Torque Tram Motor	XV25 Conveyor Motor
Saminco Part #	M6005-010	M6005-020
kW	-	26kW
Peak Torque	1000Nm	-
Voltage	440	460
Frequency (Hz)	50	60
Phase	3	3
Poles	4	4
Current (AMPS)	93A	50A
RPM	1478	1720
Duty	1 hour	1 hour
Enclosure	TEXP	TEXP
Insulation	H	H
Mounting	Flange	Flange
Max Temp	120°C	120°C
Weight	635kg (1400 lbs.)	377kg (831 lbs.)
MSHA ASSY #	15190C	13920 F
MSHA Approval #	07-JA050005-0	07-JA060014-0



*Pictured: Copper bar rotors*



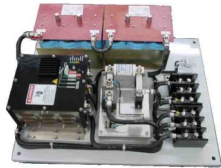
## XV25 - 26kW 440VAC XP CONVEYOR MOTOR



## OTHER SYSTEM COMPONENTS\*



600VDC to 300VDC Down Chopper  
Self powered, self starting  
300VDC control and auxiliary  
power supply  
(Part #: A800381)



Brake Module Assembly  
**Located in Power Center**  
Adjustable brake current and  
voltage threshold  
(Part #: A800994)



VFD Master Control  
Module  
Input supply: 180VDC to  
340VDC  
(Part #: A800368)



Diagnostic Display  
with programming port  
(Part #: A800348)



Conveyor Switch  
20V to 26VDC @  
20mA  
(Part #: A800305)



FS400 Footswitch  
Input Supply: 20V to 26VDC  
@ 20mA  
(Part #: A800498)



DC Choke  
(in power center and shuttle  
car)  
(Part #: I9001-050)



LU300b 12VDC 300W  
Light Supply  
Input Supply: 96V to 360VDC  
(Part #: A800966)



Handheld Programmer  
Input Supply: 24VDC via  
digital display  
(Part #: A800220)

### GROUND FAULT AND CABLE BREAK DETECTION SYSTEM FOR DC TRAILING CABLE POWERED SHUTTLE CARS (DC/AC (VFD) OR DC/DC) 200VDC - 600VDC (SEE DIAGRAM ON PAGE 2)



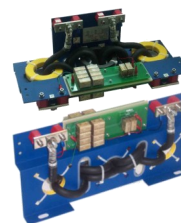
Ground Fault Detection  
Receiver  
**Located in Power Center**  
(Part #: A800392)



Ground Fault Detection  
Transmitter  
(Part #: A800390)



Ground Fault Detection  
Diode Assembly  
(Part #: A800203)



EMC Filter  
**Located one each in Power  
Center and Shuttle Car**  
(Part #: A800393)

(Showing front and back)

\*NOT to scale

## SYSTEM PARTS LIST FOR THE DC/AC VFD SHUTTLE CAR SYSTEM\*\*

Part Name	Description	SAMINCO Part Number
VF1-75 Motor Controller	75kW 480VAC traction and conveyor drives	A800374
Pre-Charge / Pump Start Inverter	VFD precharge / pump	A800376
Down Chopper	600VDC to 300VDC Down Chopper	A800381
VFD Master Control Module	Master Control Module	A800368
Brake Module Assembly	Located in power center, adjustable brake current	A800994
LU300b	12VDC 300W Light Supply, 90V to 360VDC input	A800966
Diagnostic Display	With programming port	A800348
Handheld Programmer	Allows setting and viewing of system parameters and logs	A800220
Foot Switch	FS-400 foot switch assembly	A800498
Conveyor Switch	Controls forward/ reverse operation, precise speed control of conveyor chain	A800305 or A800300
DC Choke	.5mh, 150AMP, NOMEX insulation, U Barrier Guards	I9001-050
EMC Filter	170A @ 550VDC, 100kW @ 550VDC	A800393
Ground Fault Diode/ Relay	200V- 750VDC, sensing current: 15A max	A800203
Ground Fault Detector	Monitors ground fault relay and trailing cable	A800390
Ground Fault Receiver	Located in Power Center, input supply: 120VAC	A800392

\*\*Partial list shown. Please see your salesperson for all available options and configurations

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239-561-1561 FL & International  
304-523-4700 Lavalette, WV  
304-752-6043 Logan, WV  
618-378-3270 Midwest  
970-623-0000 West  
011 397 6026 South Africa



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