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ABN: 48 007 314 632

To design and manufacture:

One (1) A.B.S.S. Blastech Model 4-TR330-D Turbine, Blast cleaning Machine complete with Dust Collector as described in the accompanying specification.

**SPECIAL NOTES: -**

- Distance between turbine rollers 300 mm.**
- Therefore, shortest length of steel is 700 mm.**

Included:

One (1) infeed and one (1) outfeed, conveyor each measuring approximately 2500mm, linked together and driven by the cabinet roller drive assembly.

**NOTE:- This machine is a hybrid machine meaning it is half built in Thailand and half built in Australia.**

**4-TR330-D TURBINE**  
**BLAST CLEANING MACHINE**

**GENERAL SPECIFICATION**

**APPLICATION**

The machine offered is designed to abrasive blast clean structural sections of scale on a continuous conveyor.

The structural sections are positioned on a horizontal roller conveyor system (optional), which transports the piece through the blast-cleaning machine to the blast cabinet region.

Areas of rails to be cleaned are the top, sides and bottom surface areas.

**PRODUCTION**

Work Product	Section:	Min: 50 x 50 SHS Max: 200 x 500 Section (No Cleats)
Machinery Duty	Continuous	

**ABRASIVE**

To be confirmed at the time of order.

**MACHINE DESIGN**

Design of the machine closely follows blast-cleaning machines that we have already working in similar industries, and we have incorporated features and details known to be advantageous in this application.

**MACHINE OPERATION**

The machine is designed for continuous, semi-automatic operation.

The blast cycle is initiated by a work present sensor. The conveyor (optional) moves the section into position, abrasive control valves feed abrasive to the blast wheels, the section travels through the blast stream, and the blast cycle runs until the section exits the blast stream, the section then continues through the machine and exits. The cycle is then repeated as the next section enters the blast zone. Note that the work present sensor is located outside the cabinet to prevent damage to the sensor by the abrasive blasting operation.

Seals are located at the entry and exit vestibules to seal the blast chamber during the blast cycle and assist in the containment of noise within the blast chamber.

All major machine components operate continuously, i.e. blast turbines, separator, elevator and abrasive reclamation system.

All necessary inspection and servicing access, guards etc. are provided and are designed to comply with local standard codes and Occupational Health and Safety regulations.

## **BASIC MACHINE DATA**

### **BLAST CABINET**

Construction	Heavy-duty fabrication of 6mm mild steel plate.
Lining	6mm Bisalloy 500 plate inside blast chamber with 12mm Ni-Hard wear plates to be utilised in the direct blast areas.

### **INLET & EXIT VESTIBULES**

Construction	Heavy-duty fabrication of 6mm mild steel plate, incorporated into the main cabinet.
Seals	A combination of rubber and polycarbonate seals are provided to seal the blast chamber from the surrounding environment of the blast machine.

### **BLAST TURBINES**

Model	RDD-40
No. off	Four (4)
Motors	4 x 2.2 kW (3hp)
Drive	Direct Drive
Wheel Speed	2850 rpm
Abrasive Flow	40kgs/min per wheel
Abrasive Velocity	46.2m/sec

### **ELEVATOR**

Type	Totally enclosed belt and bucket
No. off	One (1)
Take Up	Screw take-up and elevator head
Motor	Direct drive reduction gearbox with .75kW TEFC motor

### **SCREW CONVEYOR**

Type	Rotary screw conveyor enclosed with shedder plate
No. off	One (1)
Motors	Direct drive reduction gearbox with .75kW TEFC motor

### **ABRASIVE SEPARATION**

Type	Abrasive Airwash
Size	500mm wide
No. off	One (1)

### **ABRASIVE STORAGE HOPPER**

Capacity 400kgs (approx.)  
No. off One (1)

### **ABRASIVE CONTROL**

Type Fully enclosed, sound attenuated.  
No. off Four (4)  
Operation Electric solenoid ON/OFF pneumatic trip control

### **VENTILATION**

Volume 112m<sup>3</sup>/min (2000cfm)  
Pressure 0.7 kpa

### **WORK CONVEYOR**

Type Horizontal Roller Conveyor



## **DETAILED SPECIFICATION**

### **BLAST CABINET**

The blast cabinet with integral entrance and exit vestibules measures approximately 2500mm long x 1200mm deep x 1500mm high. It is fabricated from 6mm mild steel plate with exterior structural reinforcement to provide smooth internal wall and roof areas to accept additional wear resistant liners.

A self-draining exhaust vent plenum for ventilation of blast cabinet and vestibules is provided.

### **LINERS AND WEAR PLATES**

Interior wall areas of the blast cabinet are lined with 6mm Bisalloy 500 plate. In areas subject to direct blast additional Ni-Hard liners are provided.

### **VESTIBULES**

The work entrance and exit vestibules are integral with the blast cabinet. Each vestibule is equipped with rubber and polycarbonate flaps to entrap airborne abrasive during the movement of the sections through the blast machine.

### **SUPERSTRUCTURE**

Structural steel framework is provided for supporting the upper portions of the abrasive recycling system above the cabinet. The superstructure is fabricated from steel support members.

### **BLAST TURBINE**

The abrasive blast is generated by four (4) RDD-40 turbines. Each turbine is directly mounted onto a 72.2kW two-pole motor.

The blast turbine comprises a double-sided runner head, eight radial blades and a central impeller. A control cage is mounted on an adaptor and controls the flow of abrasive to the radial blades.

In principle, the impeller fluidises the abrasive flowing into the turbine and imparts an initial radial velocity to it. The abrasive then passes through a shaped port in the stationary control cage and is picked up by the turbine blade, which accelerates the abrasive to its final high velocity.

The shape and position of the control cage port determines the blast pattern intensity, distribution and position on the work, the position being simply and readily adjusted by rotating the cage. The feature provides excellent definition of the region of maximum blast intensity, improving cleaning performance whilst reducing unnecessary wear on the blast chamber and fixtures.

The wearable parts of the turbine, i.e., blades, impellor, and control cage, are made of special abrasion resistant cast alloy steel. The blast wheels are enclosed inside the blast chamber, which provides the base for control cage and motor mounting.

Each turbine motor circuit is equipped with an ammeter to give a visual indication of the abrasive load of the turbine.

## **ABRASIVE RECLAIM**

Hoppers fabricated from 6mm thick plate and located beneath the blast chamber house a rotary screw conveyor. The conveyor directs spent abrasive onto the boot section of the belt and bucket type elevator.

## **ELEVATOR**

The elevator is a standard non-choke, belt and bucket centrifugal discharge type. The elevator is driven by a .75 kW, 1440rpm motor with reduction gearbox drive.

## **BLOW OFF**

A blow off fan is located on the exit vestibule to remove shot that is laying on the top face of the sections to be cleaned.

## **ABRASIVE AIRWASH**

The abrasive mix from the elevator is controlled by an adjustable swinging baffle, which combined with the natural angle of repose of the abrasive, distributes the abrasive in an even curtain across the full width of the separator air orifice. This allows the ventilating air to act on the abrasive curtain and pulls out the fine materials to the refuse side of the separator.

The usable air washed abrasive then drops into the integral storage hopper, located below the separator, from which it is fed into the turbine units by gravity spouting under valved control.

## **ABRASIVE CONTROL**

Abrasive feed pipes are provided from the abrasive storage hopper to each of the four turbine units. Each of the feed pipes is equipped with a manually operated valve to isolate the abrasive in the storage hopper and an automatic valve, located close to the turbine, to ensure quick feed of the abrasive to the turbine blades.

Totally enclosed abrasive control valves are fitted to reduce the sound pressure levels generated at the entry of the blast turbine.

## **ABRASIVE – INITIAL CHARGE** (Not included in this proposal)

The initial charge of abrasive required will be approximately 1 tonnes.

## **VENTILATION AND DUST COLLECTOR**

All continuous blast cleaning machines must be ventilated to maintain the blast cabinet and associated components under negative pressure to prevent the escape of dust to the environment, to air wash the circulating abrasive, to remove contaminants and undersize metallics, and to collect dust generated in the blast cleaning process.

Ductwork shall be supplied in heavy-duty galvanised steel.

Total ventilation provided is (2000cfm) at 0.7kpa.

## **PERSONNEL AND EQUIPMENT SAFETY FEATUERS**

All exposed power drives are equipped with totally enclosed safety guards, which comply with relevant safety codes. These safety guards are designed so that they may easily and quickly be dismantled when removal is required for maintenance purposes.

## **NOISE AND VIBRATION**

The primary source of noise in an airless blast-cleaning machine is the open feed funnels of the blast turbines.

Abrasive Blasting Service and Supplies Pty. Ltd. has developed a totally enclosed mechanical type abrasive control valve, which allows the abrasive feed to the blast wheel to be totally enclosed from the shot storage hopper to the turbine itself.

## **LUBRICATION**

All pillow block, anti-friction bearings are 'lubricated for life' grease type.

## **HORIZONTAL ROLLER CONVEYOR**

Two sets of driven roller conveyor can be provided with the blast machine. The conveyors consist of an infeed and an outfeed conveyor linked by a common drive through the blast cabinet.

The conveyor speed determines the degree of cleanliness achieved by the blast process.

The rollers are designed to fit a sprocket suitable for connection to the infeed and outfeed conveyors via a chain or fitting of a geared variable speed motor.



## TECHNICAL SPECIFICATION

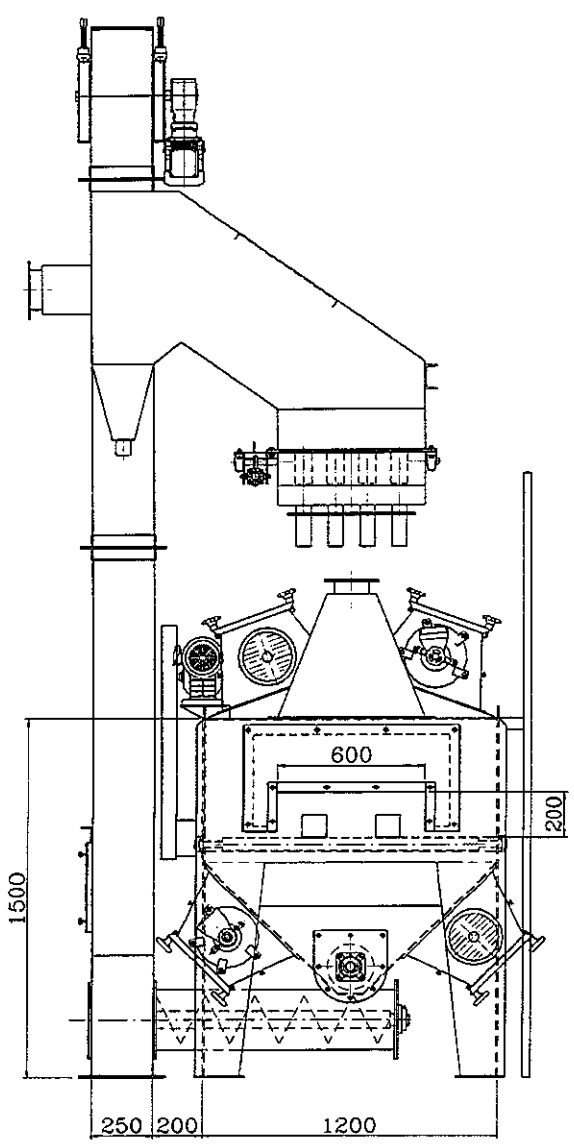
### 2000cfm REVERSE PULSE DUST COLLECTOR

Application:	Venting shot blasting machine
Equipment:	Reverse pulse dust collector
Dust:	Shot, grit and iron/steel dusts
Volume:	(2000cfm)

### DUST COLLECTOR SPECIFICATION

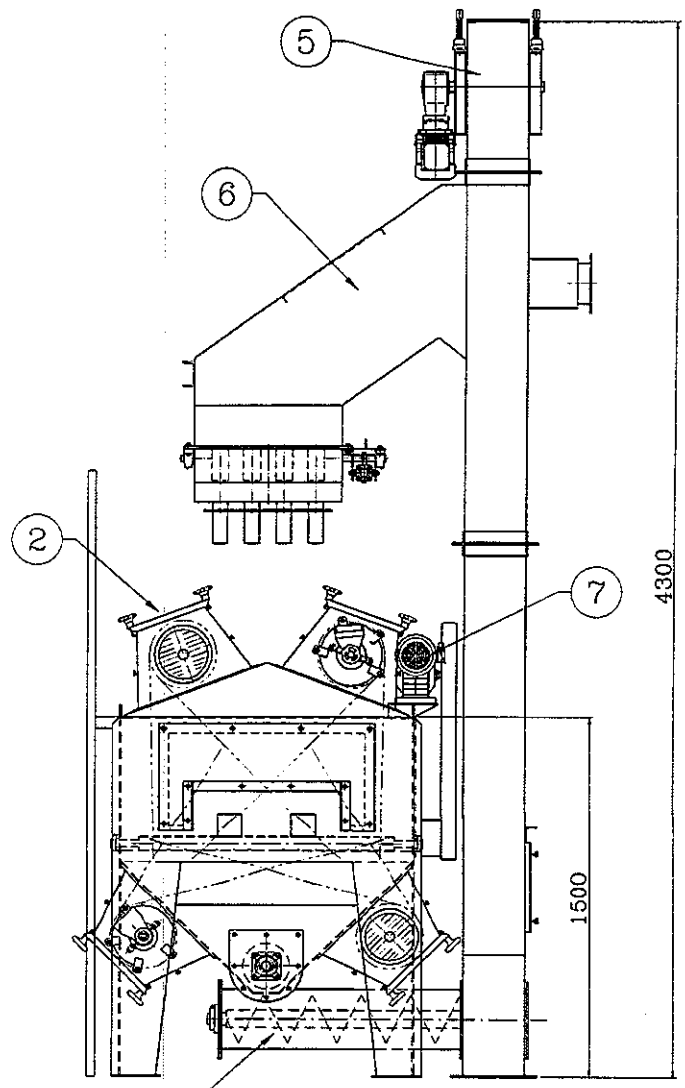
The 4000cfm cartridge type reverse pulse fully automatic dust collector would be constructed generally as specified below and have the following features and requirements:

Filter Area:	80m <sup>2</sup>
Filter Type:	Pleated Cartridge
Pressure Drop:	The operating pressure drop of the dust collector would be approximately 125mm water gauge.
Filter Housing:	The housing would be constructed generally of 3mm thick mild steel with flat bar stiffeners welded on edge.
Dust Hopper:	A pyramid type hopper would be provided. The hopper would incorporate the dirty air inlet and one (1) dust discharge outlet to suit a bin cover seal complete with dust receival bin.
Filter Access:	At the side of the filter housing, one (1) hinged access door would be provided.
Support Structure:	The dust collector would be supported on angled legs, which would provide clearance to suit the dust collector recieval bin.
Compressed Air:	The dust collector cleaning mechanism operates from compressed air at the pressure of 700kpa and a maximum flow rate 0.19m <sup>3</sup> /min.
Exhaust Fan:	The fan would be mounted off the dust collector plenum and powered by a 2.2kW TEFC 2 pole motor, suitable for 415V power supply.
Equipment Painting:	External mild steel surfaces of the dust collector would be wire brushed, prime coated and coated with green hammer tone machine enamel.
Delivery Condition:	The dust collector, plenum, body and support legs would be fully assembled. The compressed air manifold, right angle valves and solenoid valves are fitted to the plenum fully assembled. Electronic timer would be supplied loose for site installation.  All assembly on site would be of a bolted nature.
Exclusion:	Exhaust stack and silencer from the top of the dust collector.



"ENTRANCE VIEW"

1650

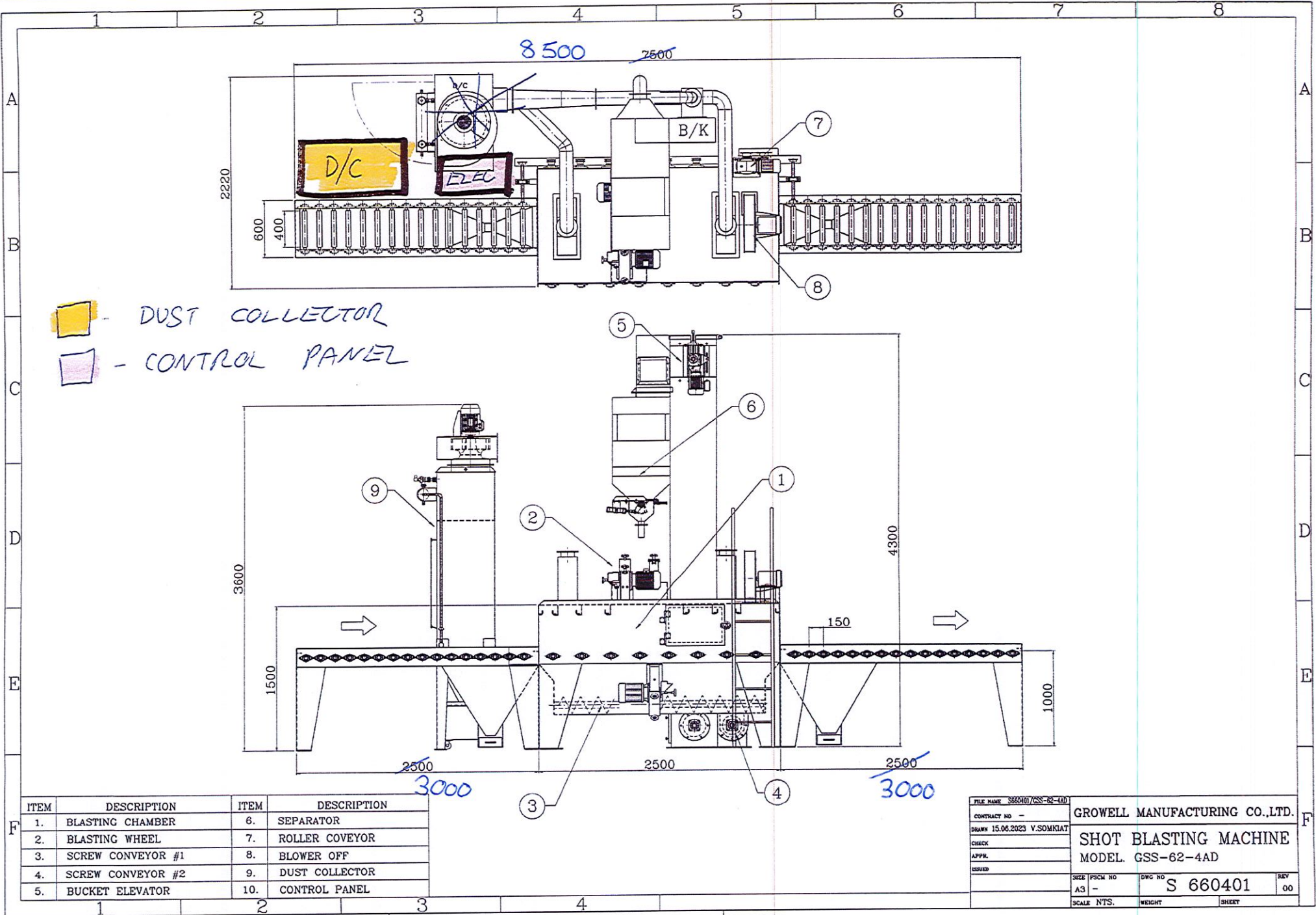


"EXIT VIEW"

FILE NAME	S660401/GSS-62-4AD		
CONTRACT NO.	-		
DRAWN	15.08.2021 V.SOMKIAT		
CHECK			
APPR.			
ISSUED			
SIZE	PSCM NO	DWG NO	REV
A3	-	S 660401	00
SCALE	NTS.	WEIGHT	SHEET

GROWELL MANUFACTURING CO.,LTD.

SHOT BLASTING MACHINE  
MODEL. GSS-62-4AD



ITEM	DESCRIPTION	ITEM	DESCRIPTION
1.	BLASTING CHAMBER	6.	SEPARATOR
2.	BLASTING WHEEL	7.	ROLLER COVEYOR
3.	SCREW CONVEYOR #1	8.	BLOWER OFF
4.	SCREW CONVEYOR #2	9.	DUST COLLECTOR
5.	BUCKET ELEVATOR	10.	CONTROL PANEL

FILE NAME S660401/GSS-62-11D		GROWELL MANUFACTURING CO.,LTD.	
CONTRACT NO. -		SHOT BLASTING MACHINE	
DRAWN 15.06.2023 V.SOMKIAT		MODEL. GSS-62-4AD	
CHECK		SIZE PSCM NO	
APPR.		A3 -	
ISSUED		SCALE NTS.	
		DWG NO S 660401	
		WEIGHT	
		SHEET 00	