TABLE OF CONTENTS

INTRODUCTION

الشركة السعودية لمعدات الديزل المحدودة
SAUDI DIESEL EQUIPMENT

Saudi Diesel Equipment Co Ltd. (SDEC) is a part of the prestigious Abduljawad Group. Established in 1978, Abduljawad Group is an umbrella over Saudi Diesel Equipment, agencies of Universal Motors, Barwil Shipping, PLC Arabia, and Saudi Amana Construction.

SDEC is a pioneer in the Diesel Generator and Power Accessories Manufacturing Industries. Over fruitful decades, it has grown substantially to include Construction and Concrete Equipment, Lifting Equipment, Parts, Commercial Vehicles and Rental Equipment.

SD EQUIPMENT

The Switchgear Division (SD) houses engineering experts who manufacture a full range of Low Voltage and Medium Voltage switchgears, motor control centers, substations, synchronizing panels, and more. So you get the most flexible solutions that are tailor-made for your individual needs.

The Switchgear Division provides a full range of Low Voltage and Medium Voltage solutions

LOW VOLTAGE SWITCHGEAR

APPLICATION

The Low Voltage (LV) Switchgear is installed downstream of the LV transformers and generators. It feeds into the Distribution Panel Board and Motor Control Center.

At SD Equipment, we are proud to have decades of expertise in designing and integration of LV Switchgears. Our capability in manufacturing IEC 61439-1-2 Certified Panels is unsurpassable. This means you get flexibility in the design and selection of components from ABB, Schneider, Mitsubishi, and other recognized suppliers as per your exact needs.

SPECIFICATIONS

Rated Insulation Voltage (Ui)	Up to 690V AC
Rated Current (In)	6000 A
Rared Short time withstand Current (Icw)	85kA for 1sec
Degree of Protection (IP)	IP 41, IP 54, IP 55
Rated Frequency	50/60 Hz
Installation	Indoor / Outdoor
Form of Separation	Up to Form 4B
Paint Color	RAL 7035 / RAL 7032 / as Requested
Standards	IEC 61439 1&2

MAIN DISTRIBUTION PANEL

APPLICATION

The Main Distribution Panel is a board from where electrical energy is taken out to distribute power to various consumer points. It typically has a single or multiple incoming power sources and includes circuit breakers and protection devices.

SD Equipment's Main Distribution Panel generally installed downstream of Switchgear, LV transformers and generators.

SPECIFICATIONS

Rated Insulation Voltage (Ui)	Up to 690V AC
Rated Current (In)	6000 A
Rared Short time withstand Current (Icw)	85kA for 1sec
Degree of Protection (IP)	IP 41, IP 54, IP 55
Rated Frequency	50/60 Hz
Installation	Indoor / Outdoor
Form of Separation	Up to Form 4B
Paint Color	RAL 7035 / RAL 7032 / as Requested
Standards	IEC 61439 1&2

SUB-MAIN DISTRIBUTION PANEL

APPLICATION

The Sub-Main Distribution Panel (SMDP) is suitable for residential and industrial applications and for indoor and outdoor installation. It is also referred to as Molded Case Circuit Breaker (MCCB), MCCB outgoings connect to downstream Final Distribution Boards. Whereas, the Air Circuit Breaker (ACB) incomers connect to the upstream Main Distribution Board.
The enclosure can be wall-mounted or freestanding designs. These can be with or without metering.

SPECIFICATIONS

Rated Insulation Voltage (Ui)	Up to 690V AC
Rated Current (In)	1250 A
Rared Short time withstand Current (Icw)	50kA for 1sec
Degree of Protection (IP)	Up to IP 65
Rated Frequency	50/60 Hz
Installation	Indoor / Outdoor
Form of Separation	Form 1&2 (can be customized if required)
Paint Color	RAL 7035 / RAL 7032 / as Requested
Standards	IEC 61439 1&2

FINAL DISTRIBUTION BOARD

APPLICATION

The Final Distribution Board (FDB) feeds electrical energy to the end user. FDB comprises protective devices, including two or more fuses or circuit breakers. It is designed for residential and commercial use.

- Compliant with IEC 61439-1 & 3
- Current rating up to 250A
- All panels are with IP-41 type of protection.
- Available in Flush and Surface Mounting types.
- Standard Color, RAL 7035 or other colors per request.

LAOD CENTER 3 PHASE

Dimension (HxWxD) (mm)	No. 1P Ways	No. 3P Ways
750x430x130	12	4
800x430x130	18	6
850x430x130	24	8
900x430x130	30	10
950x430x130	36	12
1000x430x130	42	14
1050x430x130	48	16

AUTOMATIC TRANSFER SWITCH

APPLICATION

The Automatic Transfer Switch (ATS) is an electrical switch that automatically reconnects electric power source from its primary source to a standby source.
The ATS is mainly installed in the location of a backup generator. This is so that the generator can provide temporary electrical power if the utility source fails.

- Rated insulation voltage 1000V.
- Rated up to 600 VAC, 100 TO 4000 amperes 3 or 4 pole.
- Can be operated automatically and/or manually.
- Available in bypass-isolation configuration.
- Can communicate with SCADA and BMS.

SDE ATS SOLUTION

We offer Transfer Switches in standard configuration, with or without bypass-isolation and number poles. You can get three or four poles from 400 to 3200 amp on a single ordering cord.

CODE SELECTION

Order Reference							
ATS	No. of doors	Without bypass	with Bypass	No: of Poles	Height	Width	Depth
AT	1	X	B	3	14	10	04
	2	X/B		4	16	14	06
	3				18	16	08
					20	18	10
						20	
						22	
						24	
						26	
						28	
						34	
						38	
						34	
						38	

Additional Features are available as per customer requirements (Additional cost will be charged):

1. Circuit Breaker-Short Circuit Breaking Capacity
2. Circuit Breaker-Withdrawable Version
3. Circuit Breaker-Trip Units (LI, LSIG)
4. Indication Lamp
5. Measuring Package

AUTOMATIC TRANSFER SWITCH

SL.NO.	Ampere Rating	Order Reference	H (mm)	W (mm)	D (mm)	Thickness	
						Frame (mm)	Door (mm)
1	400A	AT1X3141004	1400	1000	400	2	1.5
2	400A	AT1X4141004	1400	1000	400	2	1.5
3	400A	AT3B3141604	1400	1600	400	2	1.5
4	400A	AT3B4141604	1400	1600	400	2	1.5
5	630A	AT1X3141004	1400	1000	400	2	1.5
6	630A	AT1X4141004	1400	1000	400	2	1.5
7	630A	AT3B3141804	1400	1800	400	2	1.5
8	630A	AT3B4142004	1400	2000	400	2	1.5
9	800A	AT2X3161406	1600	1400	600	2	1.5
10	800A	AT2X4161406	1600	1400	600	2	1.5
11	800A	AT3B3162006	1600	2000	600	2	1.5
12	800A	AT3B4162206	1600	2200	600	2	1.5
13	1000A	AT2X3181406	1800	1400	600	2	1.5
14	1000A	AT2X4181406	1800	1400	600	2	1.5
15	1000A	AT3B3182406	1800	2400	600	2	1.5
16	1000A	AT3B4182606	1800	2600	600	2	1.5
17	1250A	AT2X3181406	1800	1400	600	2	1.5
18	1250A	AT2X4181406	1800	1400	600	2	1.5
19	1250A	AT3B3182406	1800	2400	600	2	1.5
20	1250A	AT3B4182606	1800	2600	600	2	1.5
21	1600A	AT2X3181406	1800	1400	600	2	1.5
22	1600A	AT2X4181406	1800	1400	600	2	1.5
23	1600A	AT3B3182406	1800	2400	600	2	1.5
24	1600A	AT3B4182606	1800	2600	600	2	1.5
25	2000A	AT3X3201608	2000	1600	800	2	1.5
26	2000A	AT3X4201808	2000	1800	800	2	1.5
27	2000A	AT4B3202808	2000	2800	800	2	1.5
28	2000A	AT4B4203408	2000	3400	800	2	1.5
29	2500A	AT3X3201608	2000	1600	800	2	1.5
30	2500A	AT3X4201808	2000	1800	800	2	1.5
31	2500A	AT4B3202808	2000	2800	800	2	1.5
32	2500A	AT4B4203408	2000	3400	800	2	1.5
33	3200A	AT3X3202010	2000	2000	1000	2	1.5
34	3200A	AT3X4202210	2000	2200	1000	2	1.5
35	3200A	AT4X3203410	2000	3400	1000	2	1.5
36	3200A	AT4X4203810	2000	3800	1000	2	1.5

SYNCHRONISING PANEL

APPLICATION

The Synchronising Panel is desinged by our skilled engineers to meet your diesel generator's power system requirments.
The generator Synchronizing Panel provides both manual and automatic functions for one or more generator breakers at the same time.

- 3 or 4 pole system as required.
- Factory-built to your specifications.
- Our team can facilitate it to communicate with SCADA and BMS.
- Can handle ambient temperature up to 50 °C.
- Up to IP55, available for indoor & outdoor applications.
- AMF Panels use main controllers of Deep Sea, ComAp and Dief.

MANUAL TRANSFER SWITCH PANEL

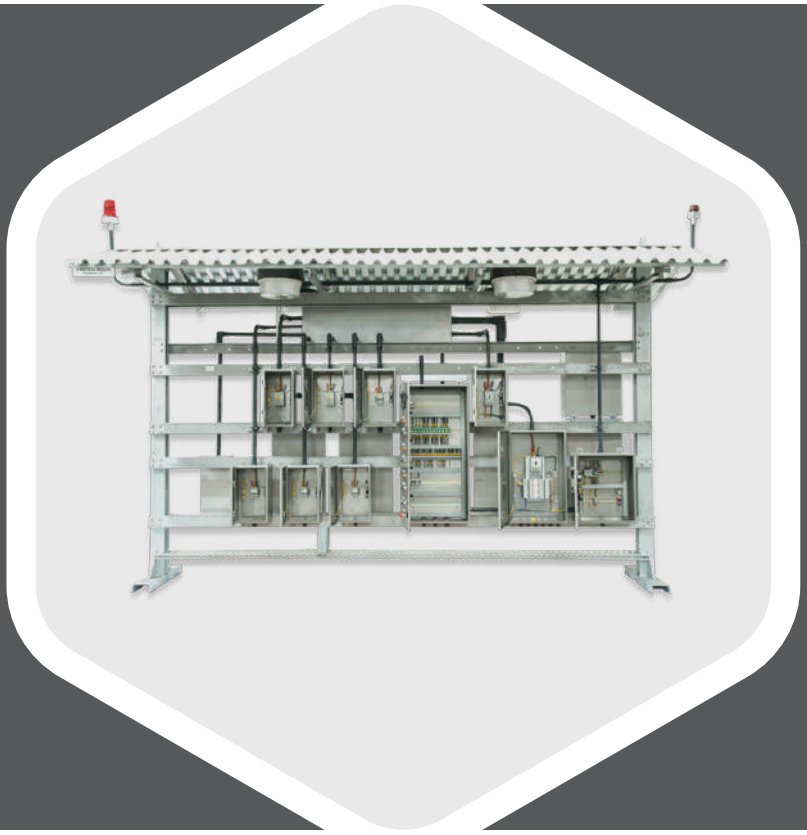
APPLICATION

The Manual Transfer Switch (MTS) reconnects the electric power source from a primary source to a standby source.

It is ideal when you need backup power, you can select the source of power manually.

- Rated insulation voltage 1000V.
- Rated up to 600 VAC Amperes 3 Or 4 pole.

LOW VOLTAGE SWITCHRACK



APPLICATION

The Freestanding Low Voltage Switchrack is an ideal solution for petrochemical and industrial industries. This is because they perform flawlessly in both indoor and outdoor environments.

It possesses sturdy features like metal racks that house self-contained low-voltage electric motor starters and controls.

The roofing protects against direct solar radiation.

This makes the product applicable for outdoors, and for hazardous weather.

MOTOR CONTROL CENTER

APPLICATION

The Motor Control Center (MCC) is a physical grouping of Motor Starters, Feeder Units and Interlocking Relays in a multi-section floor-mounted enclosure.
In a range of 0.01kw to 500kw, you get different types of starters such as:

- Direct Online (reversing & non-reversing).
- Star/Delta.
- Variable Speed Drive.
- Soft Starters.
- Two-Speed Starters.

SPECIFICATIONS

Rated Insulation Voltage (Ui)	Up to 690V AC
Rated Current (In)	6000 A
Rared Short time withstand Current (Icw)	85kA for 1sec
Degree of Protection (IP)	IP 41, IP 45, IP 55
Rated Frequency	50/60 Hz
Installation	Indoor / Outdoor
Form of Separation	Up to Form 4B
Paint Color	RAL 7035 / as Requested
Standards	IEC 61439-1

WITHDRAWABLE MOTOR CONTROL CENTER

OUR SOLUTIONS

Withdrawable Motor Control Center (MCC) is designed for chemical plants, hospitals and other industrial applications.
It is suitable for ABB, Schneider, Hyundai and Eaton.
MCC's cabinets dimensions:

- 600 mm depth
- 400 to 600 mm width
- 1400 to 2200 mm height

ADVANTAGES

The Fully withdrawable MCC technology can correct malfunctions without interrupting operations. They offer a degree of protection of IP31, IP43, and IP55.

- The withdrawable units are plug-in, to insert and retract.
- In case of any failure, immediate disconnection can be done without tools.
- You get power transmission without wear and tear in the contact module.
- Rapid exchange of withdrawable modules.
- Automatic locking during operation of modules.
- Standard configurations of withdrawable module 3 and 4 pole, 125A, 315A, 400A, 630A, as per IEC 61439-2.

WITHDRAWABLE MOTOR CONTROL CENTER

ADVANTAGES OF THE SWITCHING PRINCIPLE

The technical principle of the contact module in relation to the power contacts is "switching" and not the conventional "plugging". This ensures that plug contact materi al fatigue doesn't occur. This gives you significant system advantages.
In the "operational" position, the switching contact reaches the field distribution busbar and the cable connection module. This is done with the extended control plug.
In the "disconnected" position, switching contact and control contacts are retracted. This allows the fully withdrawable module to be removed from the equipment compartment.

PROTECTION

Safe locking mechanisms protect the system against incorrect operation. For instance, the operating slider for the contact module can only be switched without load. It's not possible to open the control cabinet module door when the contact module is engaged.

CONTROL PLUG

The control plug can be extended individually, thus establishing only the connection to the control. The main contacts are open in this situation, corresponding to the "disconnected" position.

MAIN CONTACT OF THE CONTACT MODULE

The withdrawable units are equipped with contact modules and moving parts, run in the rail guide of the fixed units. The contact is connected with field unit busbars.

CONTACT

The withdrawable modules come equipped with contacts. These contacts have fully withdrawable modules leading the side guide rails. In the "inserted" position, the switching contacts can reach the field distribution busbar and the cable terminal module. We construct the main contacts as an encapsulated design without base points to prevent arc faults.

SWITCH LOCK

When the control cabinet module is closed, the switch lock initiates functions of "operation", 'test'' and "disconnected".

TECHNICAL DETAILS

The system wall integrates the field distribution busbar between the equipment and cable compartments. Because of the internal subdivision of the fields (up to form 4), this ensures the highest level of safety for you and other operators.
Cable entry can be done from above and below into the terminal compartment. We design the fields and modules based on a 25 mm grid according to DIN 43660 (25 mm=1 unit). You can get standardized modules with height groupings of 75 mm (3 units) in 3/6/9/12 units. The preferred width for the equipment compartment is 600 mm.

WITHDRAWABLE MOTOR CONTROL CENTER

SAFETY

We build drawers in compliance with the international standard of IEC 60439-1. This regulates the drawer extraction and locking system. The design of the connection mechanism allows the drawer to be set to any of the four positions listed below:

1) Connected Position: power and auxiliary circuits are all connected. This position may be locked using up to three padlocks.

The safety system prevents the door opening when the circuit breaker is closed ("ON" position). The interlocking mechanism connects the door handle and the operating shaft on the circuit breaker.

2) Test Position: power circuits are disconnected (upstream and downstream). Auxiliary circuits remain connected. This position may be used to check the auxiliary circuits and may be locked using up to three padlocks.

3) Disconnected Position: all circuits are disconnected, this position may be locked using up to three padlocks.

4) Withdrawal Position: busbars are segregated, shutter is released in the contact surface, and power is isolated from the cable termination points.

All positions (Connected, Test, Disconnected and Withdrawal) maintain the switchboard's degree of protection. This is because the door will stay closed in all four positions.

INTELLIGENT DESIGN

You get an improved arc fault protection because the design is without base points, that enables complete insulation and additional subdivision of the individual contactors. The shutters release the contact surfaces of the field distribution busbar and cable terminal module. This happens once you insert the fully withdrawable module. This ensures IP20 protection level against accidental contact, independent of the module configuration.

According to your project needs, the fully withdrawable modules can be combined in any manner with regard to size and function. You also get full flexibility to make modifications during operation without switching the system off.

TYPES OF WITHDRAWABLE UNITS

AC-2, AC-3, 400V, 50Hz, TYP 2				
Module Height	**Direct Starter** **DOL Starter**	**Reversing Switch**	**Star Delta**	**Fuse Modules**
75	0,37KW-15KW	0,37KW-15KW	—	—
150	15KW-45KW	15KW-45KW	5,5KW-30KW	up to 3P 250A
225	45KW-90KW	45KW-90KW	30KW-55KW	up to 4P 250A
300	90KW-160KW	90KW-160KW	55KW-95KW	up to 3P - 4P 630A
600	160KW-300KW	160KW-300KW	95KW-125KW	—

WITHDRAWABLE MOTOR CONTROL CENTER

SPECIFICATIONS

Test of Ant Seismic	IEC 60068-3-3
Test of Vibration	
Using Area	Indoor
Grid Type	TN-C, TN-S, TN C-S, TT, IT
Voltage, Un	400/480 V
Rated Service Voltage, Ue	Up to 690V
Rated Insulation Voltage	Up to 1000V
Rated Impluse Withstand Voltage, Uimp	12kV
Overvoltage Category	III / IV
Pollution Degree	3
Rated Current	up to 6300A
Vertical Busbar Rated Current	up to 1400A
Rated Short time Short-circuit withstand current Icw	up to 1400A
Vertical Rated Short Time Short-circuit withstand current Icw	up to 120kA
Rated Peak Short-circuit Current Ipk	264kA
Vertical Rated Peak Short-circuit Current Ipk	187kA
Rated Frequency	50-60 Hz
Segregation	up to Form 4b Form 4b
Degree of Protection	up to IP55 IP55
Mechanical Resistance to Impacts	IK10
Ambient Temperature	40 dgC
Frame	Galvanized Steel
Doors and Covers	Steel, Electrostatic Powder Paint
Installation Plates	Galvanized Steel
Colour	RAL 7035

POWER FACTOR CORRECTION PANEL

APPLICATION

The Power Factor Correction Panels improves the power in electrical systems while enhancing energy and cost efficiency.
They are suitable for a variety of processing plants with fluctuating loads, such as steel, chemical, and automotive plants, paper mills, and hospitals.

FEATURES

- Rated insulation voltage 1000V
- Type tested assemblies for busbars as per IEC 61439-1.
- Available for indoor and outdoor application.
- Power factor correction by multi-step design.
- Standard and detuned capacitor banks.
- Manufactured to Form 2 construction.
- Microprocessor based power factor controller with various switching sequences.
- User-Friendly Interface.

SD EQUIPMENT STANDARD CAPACITOR BANK SERIES

APPLICATION

SD Equipment Capacitor Banks are an ideal power factor correction solution for industrial and commercial applications.
For convenience, we offer Preassembled Capacitor Units ready for installation along with protection devices.
The capacitor power module has a standard range of 220 to 690V. Ratings start from 6.25 up to 100 kvar in one module. The option with detuning reactor includes up to 50 kvar.

POWER CAPACITORS MODULE
(PREASSEMBLED IN THE FACTORY)

The power module is all-in-one, pre-wired for ease-of-use. This includes QCap type capacitor, contactor, fuses and reactors (if existing). The power module provides all advantages of the QCap dry capacitor technology in a compact case, delivering high performance within a small footprint.

CONTROLLERS

RVC Controller:
SD Equipment Capacitor Bank Series are simple and easy to operate due to the automatic functions provided by the RVC controller.
- User-friendly interface
- Easy commissioning
- Complete automatic set-up
- Display of Cos j, V, I, THDV, THDI
- Multiple built-in protection
- Not affected by harmonics
- Designed for hot environments (+60°C)
- Hardware and software switches

RVT Controller:
For enhanced functionality, ABB recommends its advanced RVT controller with the following features:
- Three-phase measurement and control
- Communication interfaces: ethernet, USB2 and RS-485 Modbus adapter, complete graphic display, touchscreen with back-lighting
- Multi-language interface
- Programmable protection thresholds

De-tuning Reactors:
The presence of harmonics may overstress the capacitors. This can result in technical issues or premature ageing. In such cases, reactors can protect capacitors. The specially designed dry type of resin embedded reactors suit the reactive power compensation application. Their exceptional linearity and thermal stress resistance characteristics secure a high degree of reliability, even in case of temporary overvoltage.

Other Options:
- Main circuit-breaker
- Main disconnect switch
- Main fusible disconnect switch
- Main fusible disconnect switch with blown fuse indicators
- Indicating lights, blown fuse indicators, state indicators
- Metering devices of ammeter and voltmeter

SDEC STANDARD CAPACITOR BANK SERIES

SPECIFICATIONS

Working Ambient Temperature	-5°C (23°F)/+40°C (104°F) according to EN 61921
Connection	3Three-phase, balanced network
Protection	IP23/IP54, protected against direct and accidental contact
Execution	Indoor
Ventilation	Forced air cooling
Power Factor Setting	From 0.7 inductive to 0.7 capacitive
Starting Current Setting (C/k)	From 0.01A to 3A for the RVC controller, From 0.01A to 5A for the RVT controller
Operation	During operation, RVC (RVT) controller displays: -the number of active outputs -the inductive or capacitive power factor -the alarm conditions; target cos j, over/under voltage, THDV, over temperature -the demand for switching on/off a capacitor step.
Losses at 400V 50 Hz	Without reactors: less than 1.5 Watt/kvar With reactors: less than 5.5 Watt/kvar
Capacitors QCap Type	Dry type self-healing according to IEC 60831-1&2 Dielectric: 2.15 Un between terminals during 10 sec at rated frequency Acceptable overvoltage: +10% max. (maximum 8h/day) as per IEC 60831-1 Acceptable overcurrent: +30% permanently Temperature range: -25°C/+55°C (class D according to IEC 60831-1&2)
Reactors	Dry type resin embedded according to IEC 289, IEC 76 Maximum harmonic pollution: 8% THDV with specific spectrum
Starting Current Setting (C/k)	IEC 61439 IEC 60831-1&2 (capacitors)

PACKAGE SUBSTATION

APPLICATION

The Package Substation Contains a power transformer, Medium Voltage (MV) Switchgear and Low Voltage Distribution Panel. All in a single transportable unit ready for operation. It connects to SEC, generator or any MV supply. The LV Distribution panel can be connected to the Switchgear or any other load.

SPECIFICATIONS

HV & LV Rating	2400 to 13800 volts/600 volts or less
Rated KVA	Up to 2500 KVA
LV Current Rating	Up to 6300 A
Degree of Protection (IP)	IP 54
Rated Frequency	60 Hz
Installation	Indoor / Outdoor
Individual IP (RMU//Xfmer/LV)	54 / 23 / 54
Paint Color	RAL 7033 Polyester Powder Coated / as Requested
Standards/SEC	1&2 IEC 61330 / SC / TS-38, 56 SDMS-01

PACKAGE SUBSTATION

FEATURES

• Transformer connection is connected directly or through cable to the Ring Main Unit (RMU)
• LV connection is through the bus duct
• Common skid for all equipment
• Separate doors for access to individual compartments for easy operation & maintenance
• Housing is fabricated from 2mm high-quality electro-galvanized steel with a sloping double roof canopy
• Customized to all site conditions

MEDIUM VOLTAGE SYSTEMS

APPLICATION

We offer a complete range of Medium Voltage Switchgear in accordance with the national and international standards of quality and safety.
Our medium voltage product portfolio includes Air-Insulated Switchgear and Ring Main Units.

CHARACTERISTICS

• 4.16 to 20 kV
• 250 to 1000 MVA
• 1200 to 3000 Amps
• Custom designed transition sections to extend any-make existing switchgear

SD EQUIPMENT
STANDARD ENCLOSURE

WALL MOUNTED ENCLOSURES

- Material: 1.2 to 2 mm GI steel sheet or 1.2 to 2 mm stainless steel sheet
- Panel Finish: RAL 7035 powder coated IP-65 protection level
- Supply includes: 1 body, 1 door, 4 wall brackets and assembly parts, and a removable bottom gland plate.

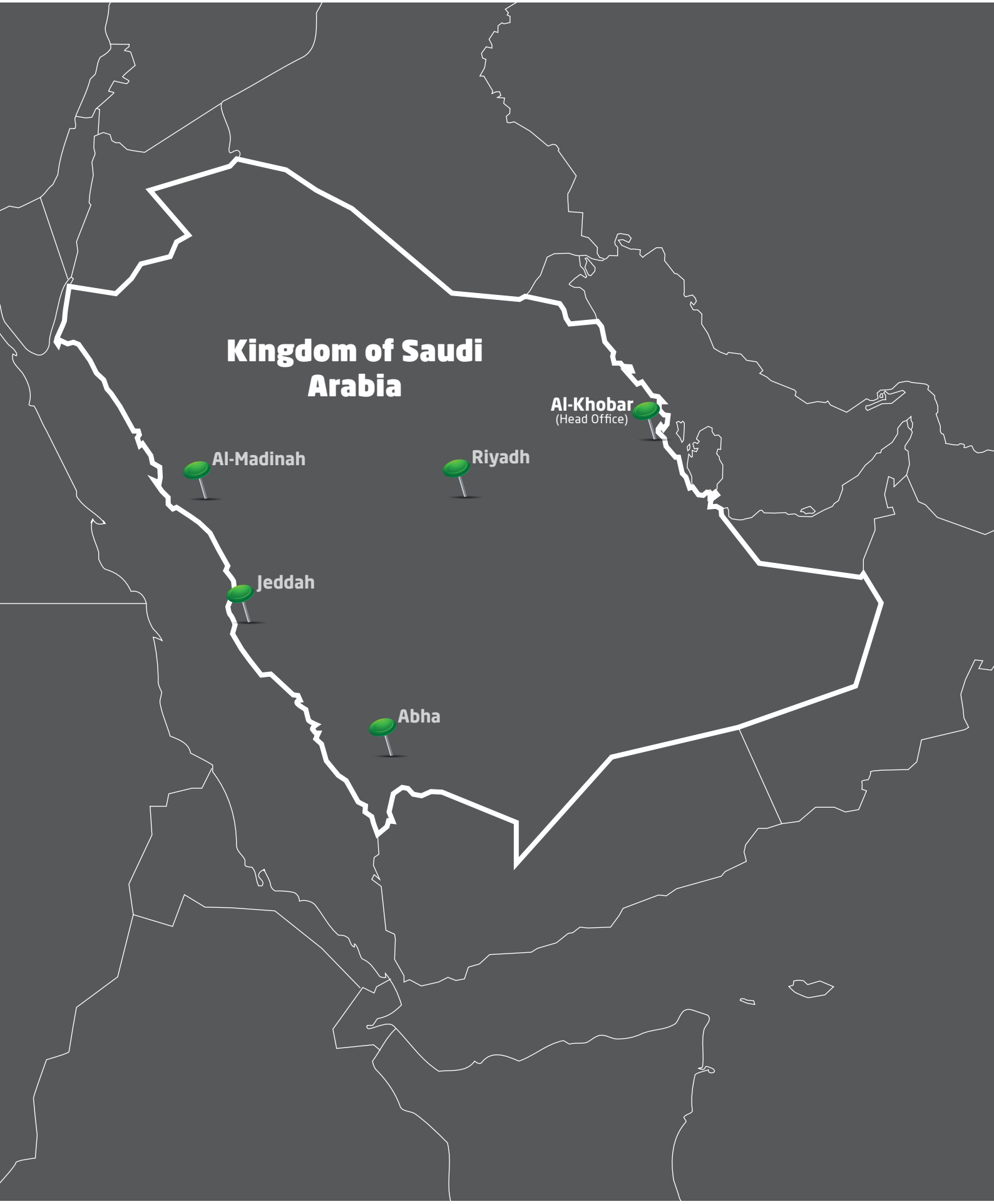
FREE STANDING ENCLOSURES

- Form type construction
- 2 mm thick frame
- Galvanized steel sheet
- Covers and doors are made of 1.5 mm thick galvanized steel sheet
- Paint finish RAL 7035, or as per request

	Order Reference																							
Type	**Wall Mounted**														**Free Standing**									
Hight (H)	300	400	500	600	500	600	700	800	600	700	800	1000	800	100	1200	1600	1800	2000	2200	1600	1800	2000	2200	1600	1800	2000	2200
Depth (D)	150, 200, 250				150, 200, 250				150, 200, 250				150, 200, 250			400	600	800	1000	400	600	800	1000	400	600	800	1000
Width (W)	300				400				600				800			600				800				1000			

•Other sizes can be provided upon request

OUR LOCATIONS



CONTACT US

AL-KHOBAR **+966 13 820 8999**
Qurtuba, Prince Sultan Street

RIYADH **+966 11 231 1932**
Alnaseem, Khurais Road

JEDDAH **+966 12 659 8500**
Almarwah, Imamm Idrees Street

MADINAH **+966 14 869 7313**
Albasteah, Prince Naif Street

ABHA **+966 17 227 0000**
Sirr Ad Ghalidh, King Fahd Road

9200123456

info@SaudiDiesel.com.sa

www.SaudiDiesel.com.sa

SWITCHGEAR & PANEL-BOARD MANUFACTURER

SD EQUIPMENT

A Division of
Saudi Diesel Equipment Co. Ltd.

TECHNICAL INFORMATION