



WAHAH Electric Supply Co. of Saudi Arabia Ltd.  
(WESCOSA)

**WESCOSA**  
**PRODUCTS & SERVICES**  
**PROFILE**

واحدك ولسا





# شركة واحدة العربية السعودية للإمدادات الكهربائية (المحدودة) Wahah Electric Supply Co. of Saudi Arabia (Ltd.)

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# شركة واحدة العربية السعودية للإمدادات الكهربائية (المحدودة) Wahah Electric Supply Co. of Saudi Arabia (Ltd.)

## Company Details

### 1.1 Introduction



Wahah Electric Supply Company of Saudi Arabia, Ltd. (WESCOSA) has been an active local manufacturer in the Dammam First Industrial Estate since 1976. The Company has grown steadily to its present size of nearly 600 employees occupying over 37,000 square meters of manufacturing and office space. WESCOSA is a 100% Saudi owned electrical equipment manufacturing company. Our owners the Ali Zaid Al-Quraishi Group are well recognized as one of the outstanding business groups in the Kingdom. Thirty percent of our employees are Saudi nationals working at all levels in the company. WESCOSA is a major supplier of electrical distribution equipment in the Saudi market. A detailed list of all WESCOSA products and services is enclosed.



Our IEC Oil type transformers are supplied to all the Saudi Electricity Company branches and their contractors in the Kingdom. We manufacture ANSI type transformers with quality that matches and exceeds any overseas supplier. These transformers have been supplied to Saudi ARAMCO, The Royal Commission, MODA, and other government and private sectors. WESCOSA with its own indigenous high quality design facility is now capable of producing Power Transformers up to 10 MVA and up to 69 kV class, for which the design work is verified and tested by international labs such as NV Kema – Netherlands.

WESCOSA has conducted extensive type certification testing at independent laboratories on all transformer ratings offered, whether to ANSI or IEC standards. Our foreign technology partners have conducted all necessary type certification for switchgear products. We also own NV Kema type test certificates for our medium voltage motor controller.



The production infrastructure includes state of the art machinery for fabrication, active part assembly, painting and quality testing. The developmental activities include an asset development budget to create a unique plant devoted for producing large transformers of over 5 MVA. A new power transformer plant is due to be completed and be operational by end of 2004. This transformer facility will be equipped with latest technology machinery and testing equipment. Meanwhile, large transformers are being successfully manufactured in our existing factory.



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WESCOSA was the first electrical manufacturing company in Saudi Arabia to achieve ISO 9001 certification (from M/s. N.V. KEMA - Netherlands), and has ISO 9000 certification since 1994.

WESCOSA manufactures electrical equipment under technical agreements with reputable American companies as follows:

TECHNOLOGY ASSOCIATE	EQUIPMENT
Powell Industries, Inc.	Medium Voltage Metal-Clad Vacuum Indoor Switchgear built to NEMA / ANSI & IEEE Standards
TAMCO, Inc.	Medium Voltage Metal-Clad Vacuum Indoor Switchgear built to IEC Standards and requirements.
Cuttler-Hammer, Inc.	Medium Voltage Ampgard Starters, Low Voltage Metal Enclosed Switchgear, Low Voltage Motor Control Center, Low Voltage Switch & Panel Boards & Dry Type Transformers
Unibus, Inc.	Medium & Low Voltage Non-Segregated Phase Bus Ducts
MP Husky	Cable Trays and Ladders
Eaton Electrical, Inc.	Eaton Service Program, Retrofit, Upgrading and Modification of Distribution Equipment
Eaton Tabula	IEC Low Voltage Switchgear and MCC.
Allen Bradley	Medium Voltage Motor Controller

Our customer base in the local Saudi Arabian market include all the utility companies, Saudi ARAMCO, SABIC, Royal Commission for Jubail & Yanbu, Oil & Gas and Power & energy sector companies, LSTK and Local contractors serving the utility companies and Saudi ARAMCO etc. WESCOSA has grown by 310% during the last six years, which is a result of introduction of large power transformers; Low Voltage Switchracks; Automatic Transfer Switch (ATS); Busduct; Cable Bus; Roll Formed Cable Trays; Fuse Cut-outs; Site assistance with Testing & Commissioning and Supervision of Erection. During the last four years our efforts to penetrate the other GCC and Arabian countries has given encouraging results with supply of Power Transformers and Cable Support ladders and accessories to UAE, Qatar, Syria, Kuwait, Bahrain, Algiers, etc.

In its quest to exceed the expectations of the customer while satisfying the specification requirements, WESCOSA implements a comprehensive design review of IEC / ANSI transformers in accordance with ISO 9000 standards and procedures. This ensures timely procurement of high quality material and maintenance of a firm-manufacturing schedule to meet the committed dates of delivery and to provide high quality in accordance with the internationally recognized IEC ANSI standards.



## 1.2 Company Milestone

WAHAH Electric Supply Company of Saudi Arabia (Ltd.) (WESCOSA) was formed in 1976 to meet the growing needs of energy and power in the Kingdom of Saudi Arabia.

WESCOSA has experienced substantial growth since its formation. The company now offers a wide range of products designed and manufactured to meet the highest standards of the power generation and distribution industry. Following are some of the milestones in the company history:

- 1976:** WESCOSA started manufacturing Switchboards, Panelboards and accessories under a licensee agreement with Westinghouse Electric Corporation, U.S.A.
- 1978:** WESCOSA started manufacturing NEMA-VE-1 Electrical Cable Ladders, Cable Trays, and Cable Trunking & Supports under a license agreement with the leading manufacturer in the U.S.A., MP HUSKY.
- 1979:** WESCOSA started manufacturing Oil-Filled Distribution Transformer under a license agreement with Westinghouse Electric Corporation. WESCOSA has been independent since 1988, and produces transformers of their own design with the highest standard and quality.
- 1983:** WESCOSA started manufacturing Dry-Type Transformers under a license agreement with Westinghouse Electric Corporation.
- 1992:** WESCOSA started manufacturing Metal-Clad Vacuum Switchgear, under a license agreement with Powell Industries Inc., of USA.
- 1992:** WESCOSA started manufacturing AMPGARD Medium Voltage Starters and Low Voltage MCC's (600V) series 2100 and DS Low Voltage Switchgear under a license agreement with Westinghouse Electric Corporation.
- 1993:** WESCOSA started manufacturing Non-segregated Busducts under a license agreement with UNIBUS of U.S.A.
- 1994:** Westinghouse Electric Corporation sold out the Low Voltage & Medium Voltage products to Cuttler Hammer of USA, and WESCOSA continued to manufacture the above products under a license agreement with Cuttler Hammer with the same specifications.
- 1994:** WESCOSA started assembling Fuse Cutouts under a license agreement with A.B. Chance.
- 1995:** WESCOSA started manufacturing Switchracks to NEMA, UL, CSA and FM Standards and NEC requirements, suitable for outdoor applications in desert environment, corrosive environment and in hazardous locations. All enclosures are labeled with NEMA 4/4X compliance labels approved by independent laboratories.
- 1995:** Large-scale concentration of Service Project was started. A cooperation agreement with Powell Apparatus Division was created in 1999 for servicing and upgrading Switchgear & Motor Control.
- 1996:** WESCOSA started manufacturing Power Transformers.
- 1998:** WESCOSA started manufacturing Power Transformers with On Load Tap Change (OLTC).
- 1998:** WESCOSA started manufacturing Relay and Control Panel, Synchronizing Panel and Instrument Cabinets.
- 1999:** WESCOSA added another product to its product range, namely 5KV, 360A, 40KA, Single-high Motor Control Center (MCC) complying with NEMA ICS 3 specification. This was developed in-house, utilizing Allen-Bradley OEM kit, was tested and proven at NEMA Netherlands.
- 2001:** WESCOSA started manufacturing Cable Bus under a license agreement with M.P. Husky
- 2001:** WESCOSA started manufacturing 10 MVA Power Transformers.
- 2002:** WESCOSA started manufacturing Power Transformers with 69 kV primary voltage.
- 2002:** WESCOSA started manufacturing IEC MV Switchgear under technical agreement with TAMCO.
- 2004:** WESCOSA started manufacturing IEC Switchboard and MCC under cooperation agreement with Eaton Tabula.
- 2004:** WESCOSA extended service activities through an agreement with Eaton Electrical Inc.



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## 1.3 ISO 9001:2000 Certificate

Scope:

- Oil filled distribution and power transformers (including the design) up to 10, 000 kVA with voltages up to 69kV.
- Dry type distribution transformers (including the design up to 5,000 kVA with voltages up to 36kV.
- Package substations with ratings up to 1,600kVA, 15kV.
- Low voltage Panelboards, switchboards, motor control centers, metal enclosed switchgears, non-segregated bus ducts, Switchracks and control panels.
- Medium Voltage metal clad switchgear motor control and bus ducts through 17.5kV.
- Cable support trays of aluminum and steel.
- Fuse Cutouts up to 36kV.
- Cable bus rated up to 15kV, 5,000A.
- Relay, breaker control, Annunciation, interposing, marshalling panels.
- Factory and field services.





## 1.4 Management Statement of Quality

*WESCO SA will build products that meet our customer's requirements.*

*Customer satisfaction is our most important objective.*

*We will manufacture products that are right the first time.*

*We will constantly strive for innovation and improvement in our finished products.*

*We firmly believe that the quality of WESCO SA's total performance is the key of our health as a manufacturer in Saudi Arabia.*

*We recognize the relative importance of balanced cost, product billing and quality.*

*Quality does not cost more.*

**QUALITY COSTS LESS - FOR EVERYONE**

*The Management*



## Product Information

### 2.1 Product List

#### Low Voltage Distribution Equipment

- Metal Enclosed Switchgear NEMA / ANSI Standard
- Metal Enclosed Switchgear IEC Standard
- Motor Control Centers NEMA/ANSI Standard
- Motor Control Centers IEC Standard
- Distribution Panelboards
- Switchracks
- Enclosed Control Panels
- Enclosed Circuit Breakers
- Transfer Switches
- WESCOSA – Tabula IEC Switchboards

#### Medium Voltage Distribution Equipment

- Medium Voltage up to 15kV Indoor Metal Clad Switchgear to NEMA/ANSI Standards.
- Medium Voltage 17.5kV Class Indoor Metal Clad Switchgear to IEC Standards.
- Indoor Metal Enclosed Motor Contrallers up to 5kV – Fixed Mounted Contactors
- Indoor Metal Enclosed Motor Controllers up to 5kV – Draw out Contactors
- Medium and Low Voltage Indoor and Outdoor Non-Segregated / Segregated Busduct rated up to 5kV and up to 5000 Amperes.
- Cable Bus rated up to 15kV and up to 5000 Amperes

#### Cable Trays and Accessories

- Cable Trays, Ladders, Trunking, Supports and Accessories.
- Communication Cable Runways
- Rolled Formed Cable Trays
- Steel Grating Panels – Catch Basin Covers

#### Services and Distribution Protection Equipment

- Relay and Breaker Control Panels
- Annunciation Panel
- Synchronization Panel and Load Shedding Panel
- Marshalling Cabinets





- Fuse Cutouts Series “C”
- Design, Supply and Modification of Transformers and Electrical Distribution Equipment
- Site Service of Distribution Equipment and Testing & Commissioning
- Supervision of Erection for Electrical Equipment

## Calibration

- Calibration of Electrical Test Equipment such as:
  - ◆ **Electrical** (Digital Multimeters, Hipots (0-200kV), Power Factor Meters, Sensors, Frequency Counter, Ammeter/Voltmeter, Voltage Standards and Voltage Divider).
  - ◆ **Calibrator** (Frequency, Multifunction, Pressure, Process, Simulators, Temperature, Oscilloscopes & Resistance Standards).
  - ◆ **Temperature** (Controllers, Indicators, PRT/SPRT, Chart Recorders, RTD's, Transducers & Thermocouples).
  - ◆ **Electronics** (Counters, Decade Boxes, Power Supplies, Signal Generators, Oscilloscopes and Stop Watches).
  - ◆ **Dimensional** (Calipers, Dial Indicators & Micrometers).
  - ◆ **Force/Mass** (Balance/Scales, Torque Wrenches and Crimping Tools).
  - ◆ **Other Instruments** (Recorders, Relative Humidity, Welding Machines & Epstein Tester).
- Repair of Non-Conforming Test Equipment.

## Transformers

- Unit Substation (Package / Compact Substations) up to 1600kVA in 15kV Class with Transformers, Low Voltage and Medium Voltage Compartment.
- Three Phase Distribution Transformers conforming to IEC – 76 and ANSI – C57 standard up to 2000kVA with voltage up to 36kV.
- Three Phase Power Transformers conforming to IEC – 76 and ANSI – C57 standards up to 10000kVA with voltage up to 69kV.
- Dry Type Transformers up to 2000kVA with voltage up to 15kV.
- Cast Resin Transformers up to 5000kVA with voltage up to 24kV.

## 2.2 Low Voltage Distribution Equipments

### 2.2.1 FREEDOM SERIES 2100

#### WESCOSA / EATON ELECTRICAL LOW VOLTAGE MOTOR CONTROL CENTER

Cutler-Hammer / Westinghouse (Subsidiary of Eaton) introduced the first motor control center in 1935 and has advanced the technology to provide motor control centers that meet or exceed the requirement of electrical distribution systems. Freedom 2100 MCC's also provide easier installation and maintenance, in increased safety, and reduced size.

Freedom series 2100, the fourth generation motor control center, features modular plug-in motor control units and components. They are extremely flexible and can be engineered to meet any motor control center requirements.

Standard unit interrupting rating and structural bus withstand bracing is unique at 65,000 amperes. They eliminate costly fault calculations or the increased cost of integrally fused or current limiting circuit breakers. These standard ratings allow larger KVA substation transformers to be applied, resulting in substantial total system cost savings.

Freedom series 2100 Motor Control Centers have the highest standard bus ratings in the industry: horizontal up to 32000 amperes and vertical up to 1,200 amperes.

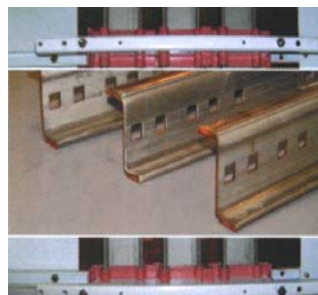
These motor control centers are available with incoming metering devices, adjustable frequency controllers, programmable logic controllers and a complete selection of solid state and electromechanical starters. A wide range of additional components such as feeders, circuit breakers/switches, Panelboards, transformers, analog and digital meters, and special devices may be easily applied to meet expansion requirements.



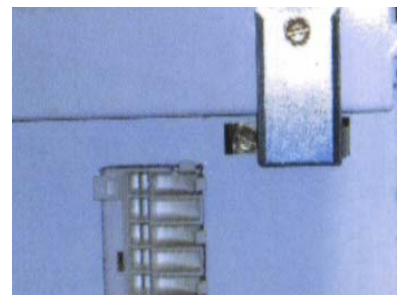
The Freedom Series 2100 Motor Control Center has a smaller configuration than those of other manufacturer (depending on individual ratings). The structure is rigid, self-supporting and is capable of meeting most seismic requirements. Additional structures may easily be added to existing motor control center lineups in the field.



The standard Cutler-Hammer Westinghouse Series C HMCP Molded Case Motor Control Circuit Protector family provides the motor control centers with 65,000 amperes standard interrupting capacity Series C eliminates the need for current limiters, thus saving valuable space.



Unique angular bus configurations ("L" shape for front mounted structures) have independent mechanical strength to withstand fault stresses. Consequently 65,000 RMS symmetrical amperes bus bracing is standard.



The molded polyester barrier from a labyrinth around the bus bars to prevent fault propagation. Shutters automatically cover slab openings when a unit is removed for extra safety.

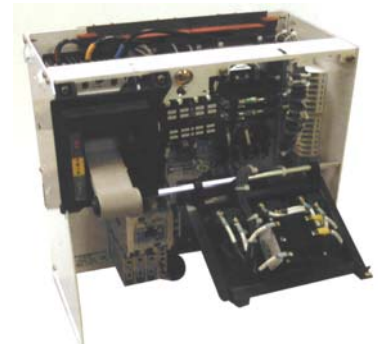
## CONTROL CENTER UNIT

The heart of the Freedom Series 2100 is the control center unit. It includes the standard Series C HMCP Motor Circuit Protector, Freedom Starter, and other components. The control unit center has been designed for durability, safety and ease of installation and maintenance.

Guide rails, mounted in the motor control center structure, provide for easy insertion or drawout. Two mounting points on each side of the unit engaged the rails located near the top of each unit space, providing minimum friction. They also provide precise alignment to the unit for accurate staving on the vertical bus.

Safety is enhanced with a latch that securely holds the unit in the structure. The latch can only be engaged when the stabs are fully mated to the vertical bus. Upon partial withdrawal for inspection or maintenance, the latch can be re-engaged to prevent the unit from being stabbed to the bus or removed from the structure. Each cell is provided with the standard double ground system for maximum operator and maintenance personnel safety.

After fabrication, the control center unit wrapper is cleaned and powder coating. The white color increases visibility within the unit to facilitate wiring and maintenance. Additionally, the wrapper provides ample space for cable entry from the wireway to the unit.

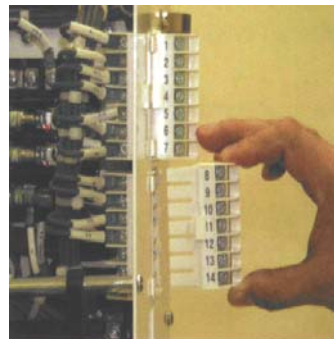


Series C HMCP Motor Circuit Protection is standards in Series 2100 motor starter units

- |                                    |                                    |                     |
|------------------------------------|------------------------------------|---------------------|
| 1. Operating Handle                | 5. Motor Starter                   | 9. Pivot Tube       |
| 2. Short Circuit Protective Device | 6. Terminal Blocks                 | 10. Control Devices |
| 3. Stab Assembly                   | 7. Control Transformer             | 11. Device Panel    |
| 4. Unit Drawout of top rail        | 8. Primary / Secondary Fuse Holder |                     |



The easily operated handle mechanism is mechanically connected to the circuit breaker providing accurate alignment and visual indication of the circuit protector status including on, off and tripped.



Exclusive modular pull-apart terminal blocks provide for easy installation and maintenance. The removable portion can be wired outside of the vertical wireway and then easily installed.



Each cell is provided with a standard stainless steel, corrosion resistant spring steel ground clip. This is in addition to the traditional metal to ground provided by the wheel lance and guide rail system.

## 2.2.2 LOW VOLTAGE METAL-ENCLOSED DRAW-OUT SWITCHGEAR TYPE DSII



### General Standards, Ratings

Type DSII Switchgear is constructed in accordance with ANSI C37.20.1 standards for metal-enclosed low-voltage draw-out switchgear. As such, it contains low-voltage power circuit breakers, Type DSII (no-limiting) and Type DSLII (with limiters) as the over current protective devices both as main and as feeder protection. The draw-out feature of DSII Breakers facilitates testing and maintenance which are important in many applications.

Compartmentalization of the draw-out breakers is part of the standard construction and additional safety barriers are available in maintenance areas. DSII and DSLII Breakers are designed to ANSI Standards C37.13, C37.16 and C37.17 in frame sizes ranging from 800 to 5000 Amperes. Type DSII Switchgear is designed in accordance with ANSI standards C37.20.1, C37.51 and UL Standard 1558.

Ratings are as Follows:

Voltage: 120-600 Volts ac, 3-phase, 3 wire or 4 wire  
Main Bus capacity: 800-5000 amperes continuous.

Short circuit capability: up to 85kA with non-current limiting breakers (DSII) interruption and bus rating: up to 200kA with current limiting type breakers (DSII) at 480 volts ac.

### Features

- 4-position Drawout.
- Double Steel Front Safety Barrier.
- Ease of Inspection and Maintenance.
- Safety Shutter System for Primary Stationary Contacts.
- Standard 100 kA Bus Bracing.
- Front Accessible Terminal Block Trays.
- Rugged formed Steel Base with Jacking Provisions.
- Door with Removable Hinge Pins.

Type DSII Switchgear features removable terminal block trays above each circuit breaker. These trays contain fuses for circuit breaker control protection, short circuiting terminations for circuit breakers secondary wiring and remote control connections. The tray front also provides a location for breaker control and indication devices, and 2% ammeters and switches. Non-adhesive wire anchors are provided to secure factory and field installed wiring. Trays are design to hang from openings of compartment doors for the clear access to terminal blocks and wiring. Standard wire markers further aid in circuit identification and maintenance.

Outer door with quick opening latches closes compartment completely with breaker in and out. All controls of the face of the breaker are protected from unauthorized or accidental operation. Removable hinge pins allow unrestricted access to the breaker and compartment.

### Types DSII and DSLII Power Circuit Breakers

Types DSII and DSLII Power Circuit Breakers constitute a complete, modern and rugged line of low-voltage power circuit breakers utilizing the Westinghouse DE-ION principle of arc extinction. The breaker family is distinguished by its similarity of appearance and operation frame to frame. All frame sizes are either manually or Electrical operated.



**COMPLETE DSII  
3-POLE BREAKER**

### Circuit Breaker Features

- Two-step stored energy closing mechanism.
- Closing spring automatic discharge on breaker withdrawal.
- Interchangeable current sensor.
- Digitrip RMS trip units.
- UL label
- Can be applied at 100% of frame rating.
- Built in trip unit test provision.
- Electric close release.
- Key interlock.
- Operation encounter.
- Capacitor trip (ac).
- Short time delay.
- Shunt trip attachments for manually operated breakers.
- Auxiliary switch.
- Portable test kit.
- Integral breaker ground faulting tripping (3 wire or 4 wire systems)
- Electric lockout for manual breaker.
- Zone interlocking wiring.

### Optional Accessories

- Compartment position switch.
- Under voltage trip either instantaneous or time delay.
- Bell alarm switch (OTS).

### TECHNICAL DATA

**Table 1: Electrical Characteristics of DSII and DSLII Power Circuit Breakers  
DS and DSL Interrupting Ratings**

Breaker Type	Available Ampere	Current Sensor Rating Ampere	UL Listed Interrupting Capacities, kA Symmetrical Amperes					
			With Instantaneous Trip			Without Instantaneous Trip		
			240V	480V	600V	240V	480V	600V
DSII-308	50 – 800	200, 300, 400, 600, 800	42	30	30	30	30	30
DSII-508	50 – 800	200, 300, 400, 600, 800	65	50	42	65	50	42
DSII-608	50 – 800	200, 300, 400, 600, 800	65	65	50	65	65	50
DSII-516	50 - 1600	200, 300, 400, 600, 800, 1200, 1600	65	65	50	65	65	50
DSII-620	50 – 2000	200, 300, 400, 600, 800, 1200, 1600, 2000	65	65	50	65	65	50
DSII-632	800 – 3200	2400, 3200	85	65	65	65	65	65
DSII-840	1000 - 4000	4000	130	85	85	85	85	85
DSII-850	2500 - 5000	5000	130	85	85	85	85	85
DSLII-308	50 – 800	200, 300, 400, 600, 800	200	200	200	200	200	200
DSLII-516	50 – 1600	200, 300, 400, 600, 800, 1200, 1600	200	200	200	200	200	200
DSLII-620	50 – 2000	2000	200	200	200	200	200	200
DSLII-632	800 – 3200	2400, 3200	200	200	200	200	200	200
DSLII-840	1000 – 4000	4000	200	200	200	200	200	200

### Standard Control Voltages

DC: 48, 125, 250V

AC: 120, 240V

**Table 2: Available Digitrip RMS Rating Plugs Marked 50/60 Hertz**

Sensor Ratings, Amperes	Plug Rating in Amperes
200	100, 200
300	200, 250, 300
400	200, 250, 300, 400
600	300, 400, 600
800	400, 600, 800
1200	600, 800, 1000, 1200
1600	800, 1000, 1200, 1600
2000	1000, 1200, 1600, 2000
2400	1600, 2000, 2400
3200	1600, 2000, 2400, 3000, 3200
4000	2000, 2400, 3200, 4000
5000	5000

**Ampacity vs Catalog Number**

Frame	Breaker Designation
800A	DSII-308, -508, -608, DSLII-308*
1600A	DSII-516, -616, DSLII-516*
200A	DSII-620, DSLII-620*
3200A	DSII-632, DSLII-632**
4000A	DSII-840, DSLII-840**
5000A	DSII-850**

\* These Breakers have the current limiters  
Mounted on the breaker

\*\* These breakers have the current limiters  
Mounted separately

**Table 3: Digitrip RMS Adjustable Trip Settings**

Time/Current Characteristic	Pick-up Setting	Pick-up Point (See note)	Time Band, Seconds
Long Delay	0.5, 0.6, 0.7, 0.8 0.85, 0.9, 0.95, 1.0	$I_n$ Times Long Delay Settings	2, 4, 7, 10, 12, 15, 20, 24 (At 6 times pick-up value)
Instantaneous	2, 2.5, 3, 4, 5, 6 $M_1 = 8$ $M_2 = 12$	$I_n$ Times Instantaneous Settings	
Short Delay	2, 2.5, 3, 4, 5, 6 $S_1 = 8$ $S_2 = 10$	$I_n$ Times Short Delay Settings	0.1, 0.2, 0.3, 0.4, 0.5 (Flat Response) 0.1*, 0.3*, 6.5* *( $I^2t$ Response)
Ground Fault	A (.25), B (.3), C (.35), D (.4), E (.5), F (.6) H (.75), K (1.0) (1200A Maximum)	$I_n$ Times Ground Fault Settings	0.1, 0.2, 0.3, 0.4, 0.5 (Flat Response) 0.1*, 0.3*, 6.5* *( $I^2t$ Response)
Note: $I_n$ = Rating Plug Value $I_r$ = Long Delay Pick-up Setting x $I_n$			

### 2.2.3 LOW VOLTAGE METAL ENCLOSED SWITCHGEAR TYPE MAGNUM DS

#### Meets all Standards... Seismically Qualified

Magnum DS Switchgear is built and tested to the following standards:

- ANSI C37.20.1
- ANSI C37.51
- UL 1558
- ANSI C37.20.1
- ANSI C37.51
- UL 1558

Magnum DS Switchgear and Circuit breakers are manufactured and assembled in ISO certified facilities.

The switchgear has been seismically qualified and exceeds requirements of the Uniform Building Code (UNC) and Californian Building Code (CBC).

#### Two Structure Widths Provide Greater Capacity in Less Space

Cutler Hammer engineered magnum DS Switchgear in two space saving structure widths: 22-inches wide for 800-3200A breaker frames. Magnum DS Switchgear provides opportunities for more circuit breakers in less space than any other ANSI Switchgear.



Magnum DS Breakers are designed and engineered specifically for use in Magnum DS Low Voltage Switchgear assemblies applied at nominal voltages of 240,480 and 600V AC. Six continuous rating – 800 amperes through 5000 amperes – are covered by only two breaker sizes.

Controls and indicators are functionally grouped on the front of the breakers... and the through-the-door design means they are easily viewed and accessible.

Magnum DS Breaker Comprises of:-

1. Trip Flag
2. Three Accessory Windows
3. Digitrip RMS Trip Unit
4. Contact States Indicator (Open or Closed)
5. Spring Status Indicator (Charged or Discharged)
6. "Push Off" to Open Breaker Button
7. "Push Off" to Close Breaker Button
8. Manual Charging Handle
9. Optional Operational Counters
10. Optional "off" Key Lock
11. Padlockable Levering Device
12. Color Coded Breaker Position Indicator

#### Higher Ratings, Increased Strength, and Expanded Capabilities... In Less Space

Type Magnum DS Switchgear is constructed structurally stronger while providing greater interrupting and withstand ratings in less space than any other ANSI switchgear. Increased ratings in less space provide opportunities to design more rugged electrical distribution systems that can handle larger available fault current while eliminating the need for limiters in most instances and providing for better coordination with downstream devices.

It is also included capabilities for our customers to utilize Cutler Hammer industry leading communications and power quality measurement technologies.



### **Highest Interruption and Short Time (Withstand) Ratings.**

Magnum DS Breakers provide the industry's highest ANSI Ratings available without current limiters in a physically smaller size.

### **A New Through-the-Door Design**

All Magnum DS Breakers controls, indicators and the trip unit are visible and can be safely accessed without opening the compartment door.

### **Smaller Size**

Magnum DS Breakers include several unique technology breakthroughs making them the industry's physically smallest ANSI Power Breakers.

### **A New Family of Trip Units**

A full range of Digitrip RMS Electronic and Programmable Trip Units has been developed to provide customers with a choice of expanded protection, information, power quality measurement and communication capabilities to meet specific requirements.

### **Only Two Structure Widths**

22 and 44 inch widths

### **Unique Wire way**

A unique 4-inch wireway is located on the side of the structure for quick and safe wiring.

### **Programmable Trip Units**

Digitrip RMS 1150 provides programmability for more sophisticated distribution systems.

- Increased protection and coordination capabilities.
- Systems monitoring information including power factor, voltage current, harmonic distortion values, and waveform capture with three line, (eight characters per line) led display.
- Two programmable contacts for customer use.
- Time stamping of trip events for improved troubleshooting and diagnostics.
- Accuracy of 1% metered values and 2% on energy and power.
- Systems diagnostic information.
- IMPACC Communication.

### **Electronic Trip Units**

- Digitrip RMS 220 provides long time and instantaneous protection only.
- Digitrip RMS 520 enables the user as many as nine phase and ground current protection settings for maximum flexibility in trip curve shaping and multi unit coordination and adds ground current protection settings.
- Digitrip RMS 520M adds phase, neutral and ground current metering... with four character LCD Display window.



## TECHNICAL DATA

Table 1. Available Bus Ratings

Cross Bus Ampacity	Vertical Bus Ampacity	Bus Bracing <sup>①</sup>
3200	2000	100kA, 150kA, 200kA
3200	3200	
4000	4000	
5000	5000	100kA, 150kA, 200kA
6000	-	

① In addition to these available bus bracings, the bus has been tested for short circuit values of 85,000 Amperes for a full 60 cycles.

Table 2. Rating of Magnum DS Breakers

Breaker Type	Frame Amperes	Ratings, RMS Symmetrical Amperes					
		Interrupting Rating			Short Time Rating		
		208-240V	480V	600V	208-240V	480V	600V
MDS-408	800	42,000	42,000	42,000	42,000	42,000	42,000
MDS-608	800	65,000	65,000	65,000	65,000	65,000	65,000
MDS-808	800	85,000	85,000	85,000	85,000	85,000	85,000
MDS-C08	800	100,000	100,000	100,000	85,000	85,000	85,000
MDS-616	1600	65,000	65,000	65,000	65,000	65,000	65,000
MDS-816	1600	85,000	85,000	85,000	85,000	85,000	85,000
MDS-C16	1600	100,000	100,000	100,000	85,000	85,000	85,000
MDS-620	2000	65,000	65,000	65,000	65,000	65,000	65,000
MDS-820	2000	85,000	85,000	85,000	85,000	85,000	85,000
MDS-C20	2000	100,000	100,000	100,000	85,000	85,000	85,000
MDS-632	3200	65,000	65,000	65,000	65,000	65,000	65,000
MDS-832	3200	85,000	85,000	85,000	85,000	85,000	85,000
MDS-C32	3200	100,000	100,000	100,000	85,000	85,000	85,000
MDS-840	4000	85,000	85,000	85,000	85,000	85,000	85,000
MDS-C40	4000	100,000	100,000	100,000	100,000	100,000	100,000
MDS-850	5000	85,000	85,000	85,000	85,000	85,000	85,000
MDS-C50	5000	100,000	100,000	100,000	100,000	100,000	100,000

Table 3. Dimensions, In Inches (Millimeters)

FC <sup>①</sup>	W	D <sup>②</sup>	A <sup>③</sup>	CC <sup>④⑥</sup>	Recommended Number of Power Conduits (Maximum) <sup>⑤</sup>	
					3.5 Inch	4 Inch
36 (914)	22 (259)	54 (1372)	18 (457)	7.3 (185)	3	3
		60 (1524)	24 (611)	13.3 (338)	6	6
		66 (1676)	30 (764)	19.3 (490)	9	9
		72 (1829)	36 (916)	25.3 (643)	12	12
		78 (1981)	42 (1069)	31.3 (795)	15	15
		84 (2143)	48 (1221)	37.3 (948)	18	18
		90 (2286)	54 (1373)	43.3 (1100)	21	21

FC <sup>①</sup>	W	D <sup>②</sup>	A <sup>③</sup>	CC <sup>④⑥</sup>	Recommended Number of Power Conduits (Maximum) <sup>⑤</sup>	
					3.5 Inch	4 Inch
36 (914)	44 (1118)	54 (1372)	18 (457)	7.3 (185)	7	7
		60 (1524)	24 (611)	13.3 (338)	14	14
		66 (1676)	30 (764)	19.3 (490)	21	21
		72 (1829)	36 (916)	25.3 (643)	28	28
		78 (1981)	42 (1069)	31.3 (795)	35	35
		84 (2143)	48 (1221)	37.3 (948)	42	42
		90 (2286)	54 (1373)	43.3 (1100)	49	49

- ① PC is the recommended front clearance for breaker removal with top-of-switchgear-mounted breaker lifter. If a portable breaker is to be used, allow at least 84 inches (2134 mm) of aisle space.
- ② Hinged rear doors add 1.25 inches (32mm).
- ③ Bolt hole location for mounting the center floor channel when required. Floor channels not included.
- ④ When a zero-sequence ground-fault CT is mounted on line-side or load-side of a breaker, reduce CC dimension by 10 inches (254mm).
- ⑤ Stub conduit 2 inches (50mm) maximum in power cable are, 1-inch (25mm) maximum in control wiring area.
- ⑥ For available area for bus duct connection contact Wescosa.

## 2.2.4 WESCOSA ASSEMBLED PANELBOARDS

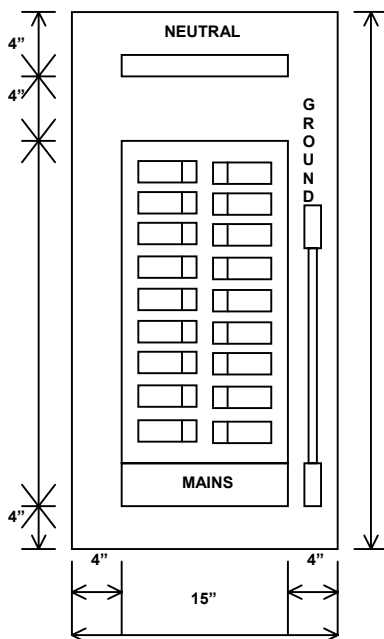
### STANDARD SPECIFICATIONS

#### Boxes

Code gauge commercial galvanized sheet steel. (All box dimensions are I.D.) 15" Wide, 5" Deep

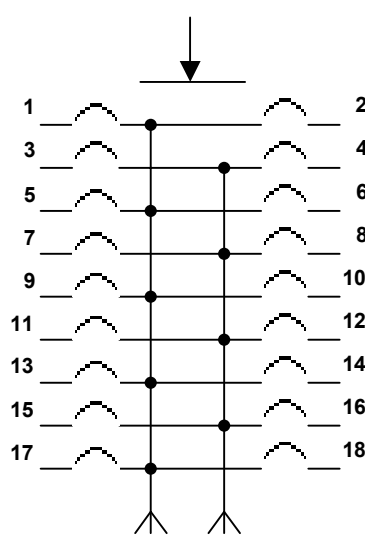
#### Trims (Surface or Flush)

Code gauge sheet steel and finished with gray ANSI-61 or ANSI-70. Doors provided with directory card and transparent cover. Doors up to 48" have single point catch and lock. Doors over 48" in height have one single point catch and lock with two quarter-turn fasteners. All locks keyed alike.

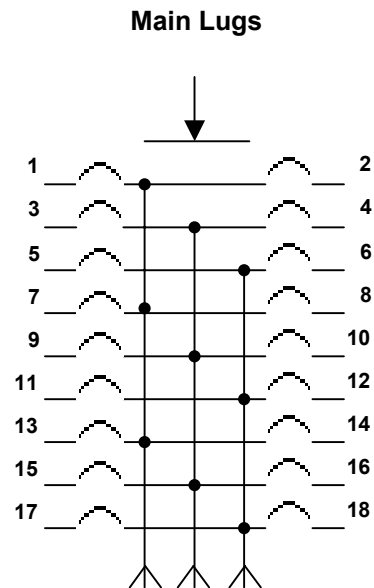


Typical Box with Interior Surface or Flash Trim

### Typical Panelboard Wiring Diagrams Main Lugs



1 Phase 3 Wire,  
1 Phase 2 Wires (No. SN)



3 Phase 4 Wires,  
3 Phase 3 Wires (No. SN)

## Busbars

Tin Plated. Copper Busbars

## Type HQP 10

Plug-in Circuit Breakers  
 Main Lugs Only: 125, 225A  
 Main Breakers: 60, 100, 125, 150, 225A

### Modifications

Split Bus  
 Lighting contactor  
 Override Switch  
 Time Switch  
 Photo Cell  
 Special Enclosure  
 Special Modifications  
 Knock-outs  
 Grand Plate  
 Special Paint  
 Ground Fault Protection  
 Shunt Trip on the Main  
 Shunt Trip on the Branches

**HQP 10**  
**Amps, RMS Sym.**  
**Fully Rated**

### Interiors:

Mains and Branches

Short Circuit Rating

### Main Lugs Only

125, 225A

10,000A & 22,000A  
 (Fully Rated)

### Main Breakers

60A: HQP, GW, GHB, GHC, QPH, FD  
 100A: HQP, GHB, GHC, QPH, FD, GW  
 125A, GW, FD  
 150A FD  
 225A FD

10,000A & 22,000A  
 (Fully Rated)

Branched Devices: 15-30A, 1P, 2P, QPHGF & QPGF

Type: HQP, QPH

Ratings: 15thru 100A-1, 2 & 3 pole

Voltage: 1 Pole 120 Volt

2 Pole 120/240 Volt or 240 Volt

3 Pole 240 Volt or 380Y/220V

## 2.2.5 LOW VOLTAGE PANEL BOARDS



**POWER R-Line 1A, 2A and 3A**

- Standard design utilizing Series C circuit Breakers.
- Increased series ratings (with Series C Main Circuit Breakers) provide higher short circuit ratings using standard breakers.
- Branch Pow-R-Line 3A can accommodate branch breakers dual mounted through 225 Amps.
- Lock and Door opening mechanism includes a positive slide catch and right or left-hand installation.
- Surface of flush trims.
- UL tested and listed. Meets NEC and NEMA standards.

### POWER R-Line 4B and 4F

- Pow-R-Line 4B panel board utilizes circuit breakers.
- Pow-R-Line 4F Panelboards utilizes types FDPW fusible switches.
- A single chassis accommodates both circuit breakers and fusible switches.
- Main and neutral are located at the same ends to provide additional space for branch devices.
- Three-piece trim facilitates installations.
- Will accommodate Series C Circuit Breakers to provide higher ratings in a standard chassis and increased series ratings.
- UL tested and listed. Meets NEC and NEMA standards.



### General Construction Features

WESCOSA assembled Panelboards as per Cutler-Hammer technologies are designed for sequence phase connection of branch circuit devices. This allows complete flexibility of circuit arrangement (1-, 2- or 3-poles) to allow balance of the electrical load on each phase.

Sturdy rigid chassis assembly assures accurate alignment of interior with panel front; prevents flexing and minimizes possibility of loosening or damage to current carrying parts during and after installation.

Four-point in-and-out adjustment of panel interior is provided to meet critical depth dimension on flush installations. This compensates for possible alignment of box at installation. Main lugs are mechanical solder less type and approved for copper or aluminum conductors.

### Enclosure

Boxes are code-gauge galvanized steel except for column type Panelboards that include a painted box finished in ANSI-61 light gray to match the rim.

Standard Panel board cabinets are designed for indoor use. Alternate types are available for indoor and special purpose applications.

All enclosures are furnished in accordance with Underwriters Laboratories standards and include wiring gutters with proper wire bending space. Special cabinets can be provided at an additional charge.

The box dimensions shown are inside dimensions. For outside dimensions, add 14 inch (6.4 mm). Standard Panelboards boxes are supplied without knockouts (blank end walls).

### Fronts

Fronts (trims) for all Panelboards are made of code-gauge steel and have a high durability ANSI-61 light gray finish applied by a baked-on polyester powder coating paint system.

The fronts for lighting and appliance branch circuit Panelboards and small power distribution Panelboards include a door with rounded corners and concealed hinges that allow a 130° door swing. A flush type latch



and lock assembly is included. All locks are keyed alike. These trims are available in both surface and flush mounted designs.

Fronts for power distribution Panelboards utilize a unique breaker front cover design in which each device has a dedicated bolt-on steel cover. The individual covers form a single dead front for the Panelboards that is used in conjunction with two wiring gutter covers to complete the trim. A door is not finished as part of the standard offering on these Panelboards but can be provided, for an additional charge, using a deeper than standard box.

## TECHNICAL DATA

**Table 1: Panelboards Selection Guide**

Panelboard Type	Device Type	Maximum Voltage Rating		Maximum Main Rating, Amperes		Branch Circuit Ampere Range	Short Circuit Current Ratings rms Symmetrical Amperes, AC	
		AC	DC	Main Lugs Only	Main Device		Fully Rated (kA)	Series Rated (kA)
Pow-R-Line 1a	Breaker	240	-	600	600	15 – 100	10 – 22	22 – 200
Pow-R-Line 2a	Breaker	240	250	600	600	15 – 100	65	65 – 200
		480Y/227		600	600	15 – 100	14	22 – 150
Pow-R-Line 3a	Breaker	240	250	800	600	15 – 225	10 – 200	22 – 200
		480		800	600	15 – 225	14 – 100	22 – 150
		600		800	600	15 – 225	14 – 35	-
Pow-R-Line 4b	Breaker	240	250	1200	1200	15 – 1200	10 – 200	22 – 200
		480		1200	1200	15 – 1200	14 – 200	22 – 150
		600		1200	1200	15 – 1200	14 – 200	-
Pow-R-Line 4f	Fusible Switch	240	250	1200	1200	30 – 1200	100 – 200	-
		600		1200	1200	30 – 1200	100 – 200	-

### Terminal Wire Ranges, Pressure-Type Al/Cu Terminal Except as Noted<sup>①</sup>

Where copper-aluminum terminals are supplied on designated Panelboard types, best results are obtained if a suitable joint compound is applied when aluminum conductors are used.

**Table 2: Standard Main Lug Terminals**

Panel Type	Wire Size Ranges for Ampere Capacity						
	100 Amps	225 Amps	250 Amps	400 Amps	600 Amps	800 Amps	1200 Amps
Pow-R-Line 1a	#12-1/0	#6-300 kcmil	-	(2) #2-500 kcmil	-	-	-
Pow-R-Line 2a	#12-1/0	#6-300 kcmil	-	(2) #2-500 kcmil	-	-	-
Pow-R-Line 3a	#12-1/0	-	#6 – 350 kcmil	(3) #2-500 kcmil	(2) #2-500 kcmil	(3) #2 – 500 kcmil	-
Pow-R-Line 4	-	-	#2 – 500 kcmil	(2) #2-500 kcmil	(2) #2-500 kcmil	(3) #2 – 500 kcmil	(4) #2 – 500 kcmil

<sup>①</sup> For other terminals available on some ratings of molded case circuit breakers and FDPW fusible switches, refers to MCCB CD-ROM. Note: Optional 750 kcmil mechanical screw-type terminals are available upon request. Panelboards dimension may be affected. Refer to Wescosa.

**Table 3: Standard Main Breaker, Branch Breaker, Main Switch or Branch Switch Terminals.**

Breaker Type	Ampere Rating	Wire Size Ranges
BAB, HQP	15 – 70 90 – 100	#14 - #4 #8 - #1/0
QBHW, QPHW	15 – 70 90 - 100	#14 - #4 #8 - #1/0
ED, EDH, EDC	100 – 225	#4 - #1/0 or #6 - 300 kcmil
EHD, FDB, FD, HFD, FDC	15 – 100 125 – 225 175 - 225	#14 - #1/0 #4 - #4/0 #6 - #350
FCL	15 – 100	#14 - #1/0
GHB	15 – 100	#14 - #1/0
GHQ	15 – 20	#14 - #1/0
HGHB	15 – 30	#14 - #1/0
GHBS	15 – 30	#14 - #1/0
JD, JDB, HJD, JDC	70 – 250	#4 – 350 kcmil
DK	25 – 350 400	250–500 kcmil (2) 3/0 – 250 kcmil Or (1) 3/0 – 500 kcmil
KD, KDB, HKD, KDC, CKD <sup>③</sup> , CHKD <sup>③</sup>	100 – 225 250 – 350 400	(1) #3 – 350 kcmil (1) 250 – 350 kcmil (1) 3/0 – 350 kcmil (1) 3/0 – 350 kcmil

Breaker Type	Ampere Rating	Wire Size Ranges
LD, HLD, LDC, CLD <sup>④</sup> , CHLD <sup>④</sup> , CLDC <sup>④</sup>	300 – 500 600	(2) 250 – 350 kcmil (2) 400 – 500 kcmil
MDL, HMDL, CMDL <sup>④</sup> , CHMDL <sup>④</sup>	400 – 600 700 – 800	(2) #1 – 500 kcmil (3) 3/0 – 400 kcmil (2) 500 – 750 kcmil
ND, HND, NDC, CND <sup>④</sup> CHND <sup>④</sup> CNDC <sup>④</sup>	600 – 1000 1200	(3) 3/0 – 4000 kcmil (4) 4/0 – 500 kcmil
LCL	125 – 225 250 – 400	(1) #6 – 350 kcmil (1) #4 – 250 kcmil And (1) 3/0 – 600 kcmil
FB-P	15 – 100	#14 – 1/0
LA-P	70 – 225 250 – 400	#6 – 350 kcmil (1) #4 – 250 kcmil And (1) 3/0 – 600 kcmil
NB-P	350 – 700 800	(2) #1 – 500 kcmil (3) 3/0 – 400 kcmil

③ 100% rated breaker.

④ 100% rated breaker

**Table 4: FDPW Switches**

Ampere Rating	Wire Size Ranges
30, 60, 100 200	#14 – 1/0 #4 – 300 kcmil
400	250 – 750 kcmil or (2) 3/0 – 250 kcmil
600	(2) #4 – 600 kcmil or (4) 3/0 – 250 kcmil
800	(3) 250 – 750 kcmil or (6) 3/0 – 250 kcmil
1200	(4) 250 – 750 kcmil or (8) 3/0 – 250 kcmil

Note: For other terminals available on some ratings of molded case circuit breakers and FDPW fusible switches refer to MCCB CD-ROM and product guide.

Note: All terminal sizes are based on wire ampacities corresponding to those shown in NEC Table 310-16 under 75°C insulation columns (75°C wire), regardless of insulation temperature is not permitted without voiding UL labels on device and equipment.

## 2.2.6 SWITCHBOARDS POW-R-LINE C AND TYPE WF

### Pow-R Line C Switchboards

Meet NEMA Standard PB-2 and UL 891

#### Construction Feature

- 6000S Maximum main bus rating.
- Front accessible for placing against a wall or rear accessible for placing away from a wall.
- Sections rear aligned or front and rear aligned.
- NEMA 1 or NEMA 3R enclosures.
- The IQ family of microprocessor based metering devices.
- Group mounted distribution devices.

#### Main Devices

- DS-II air power circuit breakers, 800 – 4 000A, drawout.
- DS-II air power circuit breakers, 800 – 4000A, fixed or drawout.
- RD Molded Case circuit breakers, 1600 – 2500A, fixed or drawout.
- Bolted pressure switches, 400 – 5000A.
- Molded Case circuit breakers, 400 – 1600A.
- FDP fusible switches, 400 – 1200A.

#### Group Mounted Distribution Devices

- Molded Circuit Breakers, 15 – 1200A.
- FDP Fusible Switches, 30 – 1200A.

#### Standard Height

The Pow-R-Line switchboard height is 90 inches.

#### Type 1 Pow-R Line C Front Access / Rear Aligned

Pow-R Line front accessible switchboards align at the rear enabling them to be placed against the wall. If the main section is deeper than the others, due to physical size of the main device, the necessary offset in the line up will occur in the front, and the main section will be accessible from the side as well as from the front.

#### Front Access / Front and Rear Aligned

Pow-R Line C front accessible switchboards may also be built with all section aligned in the front as well as the rear.

#### Type 2 Pow-R Line C Rear Access / Front and Rear Aligned

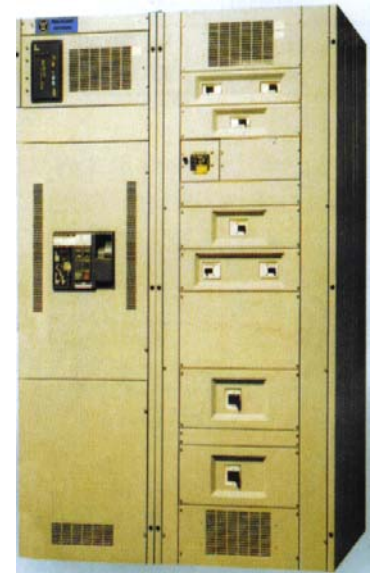
- Pow-R Line C rear accessible switchboards are design to be placed away from a wall. Access to the main device is from the rear and structures align in both the front and rear.

#### Group Mounted Distribution Devices

- Feeder devices are group mounted and may be molded case breakers or FDP fusible switches. Feeder devices are accessible from the front in all Pow-R Line C Switchboards. A main molded case breaker or main FDP switch up, up to 1200A, may be included in the panel mounted assembly in lieu of a separate, individual mounted device.

#### Bus Bar System

- Pow-R Line C Switchboards are provided UL heat tested in tin plated aluminum as standard. Copper and silver plated copper bus are available at an additional price. Copper and aluminum bus based on densities of 1000A/in<sup>2</sup> for copper and 750/in<sup>2</sup> for aluminum are also available.





### Bus Short Circuit Rating

- Standard Bus and Connectors on all Pow-R Line C Switchboards are rated for use on system capable of delivering up to 65,000 amps RMS symmetrical short circuit current at the incoming terminals.
- Increased bus short circuit ratings equal to that of connected switchboard devices, up 200,000 amps RMS symmetrical, are available.

### Provisions for Busway

- Busway connection to switchboard section includes call out and drilling in the top of the switchboard with riser connections are furnished external to the switchboard.

### Transitions

- Transition structures are required for connecting switchboards to the secondary of power center transformer (dry or fluid filled), ATS, Motor Control Centers and for other special switchboard configurations such as “L” or “U” shaped lineups. In some application, an extra structure complete with connection is required; in others, where switchboard depth and space permit, only the connection conductors are required (Refer to factory for these applications).

### Auxiliary Structure

These are normally mounted adjacent to service structures and used where incoming service or feeder conductors require additional space or facilities not included in the standard switchboard, such as:

1. Mounted adjacent to a top connected service structure and used as a cable pull structure where service conductors are brought in underground. Auxiliary structures are the same depth and height as the service structure, and are wide enough to accommodate the incoming cables.
2. Mounted adjacent to a service structure and used as a bus transition compartment for running riser bus up to top outgoing busduct connection when distribution structures are the same depth and height as service structures.

In addition to the above applications, auxiliary structures may be mounted adjacent to a distribution structure and used as a structure for lighting panel or other device, which may be cable, connected to a branch circuit device in the distribution structure. Dimensions are compatible with arrangements required.

- Reduced dimensions with increased device flexibility.
- Utilize the Pow-R-Line 4 chassis design for the distribution section.
- Will accommodate Series C Circuit Breakers and fusible units in the same chassis.
- UL Tested and approved. Meets NEC and NEMA Standards.
- Available with IQ series metering units or conventional customer metering.
- Front or rear accessible.
- Aluminum, copper or silver plated copper main bus.
- A full range of device modifications is available.
- Available NEMA 1 and 3R enclosures, UL Listed.
- Three distribution chassis available: 22X, 38X and 50X.

### Modifications

- Ground fault protection on main and distribution devices.
- Wide range of metering capabilities.
- A full range of device modifications is available.
- Coordination with other Westinghouse Division busway and transformer connections.



### Dimensions

Height	Width(s)	Depth(s)
90°	26", 30" 36" 45", 51"	18", 24", 30" 36", 48", 54", 66"

Voltage: 240-480-600 V Ac, 250 V Dc  
Mains: 400 thru 6000 Amps

Device Type	Amps	Short Circuit Symmetrical Rating
Molded Case Circuit Breakers	400 thru 1600	18 kA thru 200 kA
Bolted Pressure Switches	400 thru 5000	200 kA
Air Power Circuit Breakers, Type DS-II, DSL-II	800 thru 4000	30kA thru 200kA
Fusible Switches, Type FDP	400 thru 1200	200 kA
Main Lugs Only	400 thru 6000	Per Distribution Below

### Distribution

Utilizes the full family of Westinghouse molded case circuit breakers and fusible switches.

Device Type	Amps	Short Circuit Rating
Molded Case Circuit Breakers	15 thru 1600	10 kA thru 200 kA
Fusible Switches, Type FDP	30 thru 1200	200 kA
Stacked-Main/Branch Devices	400 thru 2500	18 kA thru 200 kA

### Switchboard Size Comparison

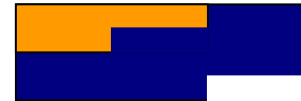
**600 Amps L-Frame Main**  
Circuit Breaker Branches < 600 Amps



**1200 Amps FDP Main**  
Fusible Branches < 800 Amps



**1600 Amps Pringle Main**  
Circuit Breaker Branches < 800 Amps  
Utility Metering  
Customer Metering  
Ground Fault Metering



**2500 Amps RD Main**  
Circuit Breaker Branches < 800 Amps



**4000 Amps Pringle Main**  
Fusible Branches Thru 1200 Amps



## SWITCHBOARD MAIN DEVICE RATINGS

### Molded Case Circuit Breakers

Circuit Breaker Type	Continuous Ampere Rating	Interrupting Rating RMS, Symmetrical Amperes (000)			
		AC Ratings Volts			DC
		240	480	600	250
JD	70 – 250	65	35	18	10
HJD	70 – 250	100	65	25	22
JDC	70 – 250	200	100	35	22
DK	250 – 400	65	-	-	-
KD	70 – 400	65	35	25	22
CKD	70 – 400	65	35	25	22
HKD	70 – 400	100	65	35	25
CHKD	70 – 400	100	65	35	25
KDC	70 – 400	200	100	50	25
LD	300 – 600	65	35	25	22
CLD	300 – 600	65	35	25	22
HLD	300 – 600	100	65	35	25
CHLD	300 – 600	100	65	35	25
LDC	300 – 600	200	100	50	25
CLDC	300 – 300	200	100	50	25
MDL	400 – 800	65	50	25	22
CMDL	400 – 800	65	50	25	22
HMDL	400 – 800	100	65	35	25
CHMDL	400 – 800	100	65	35	25
ND	600 – 1200	65	50	25	-
CND	600 – 1200	65	50	25	-
HND	600 - 1200	100	65	35	-
CNDC	600 – 1200	200	100	50	-
NDC	600 – 1200	200	100	50	-
CHND	600 – 1200	100	65	35	-
RD 1600	800 – 1600	125	65	50	-
CRD 1600	800 – 1600	125	65	50	-
RD 2000	1000 – 2000	125	65	50	-
RD 2500	1000 – 2500	200	65	50	-
CRD 2000	1000 – 2000	125	65	50	-
RDC 1600	800 – 1600	200	100	65	-
CRDC 1600	800 – 1600	200	100	65	-
RDC 2000	1000 – 2000	200	100	65	-
RDC 2500	1000 – 2500	200	100	65	-
CRDC 2000	1000 – 2000	200	100	65	-



# شركة واحدة العربية السعودية للإمدادات الكهربائية (المحدودة) Wahah Electric Supply Co. of Saudi Arabia (Ltd.)

## Bolted Pressure Contact Switches, 250 or 480 v Ac

Amps Rating	Fuse Class Used	Short Circuit Ratings (kA Sym)
QA Manual 800-5000 Amps	L	200 kA
CBC Electric 800-5000 Amps	L	200 kA

## FDP Switches, 250 or 600 V Ac

Amps Rating	Fuse Class Used	Short Circuit Ratings (kA Sym)
400, 600	R	100
400, 600	J	200
800, 1200	L	200

## Power Circuit Breakers, 3-Pole 600V ac Max. w/ Digitrip RMS Solid State Trip Units

Circuit Breaker Type	Available Ampere Ratings	Ratings, Symmetrical Amperes (000)				
		Interrupting Rating			Short Time Ratings	
DS II Circuit Breaker		240V	480V	600V	480V	600V
DS II-308	50-800	42	30	30	30	30
DSII-508	50-800	65	50	42	50	42
DSII-608	50-800	65	65	50	65	50
DSII-516	50-1600	65	50	42	50	42
DSII-616	50-1600	65	65	50	65	50
DSII-620	50-2000	65	65	50	65	50
DSII-632	800-3200	85	65	65	65	65
DSII-840	1000-4000	130	85	85	85	85
DSII-850	1600-5000	130	85	85	85	85
DSLII-Circuit Breakers						
DSLII-308	50-800	200	200	200	-	-
DSLII-516	50-1600	200	200	200	-	-
DSLII-620	500-2000	200	200	200	-	-
DSLII-632	800-3200	200	200	200	-	-
DSLII-840	1000-4000	200	200	200	-	-

## DEAD-FRONT DISTRIBUTION SWITCHBOARDS "TYPE WF".

Type WF Switchboards  
Meet NEMA Standard PB-2, 1972

### CONSTRUCTION DETAILS

#### 400 Ampere Main Bus Maximum

All front accessible – Main Section front and/or side accessible.

#### Front and Rear Accessible

Branch devices panels mounted available.

#### Section flush at rear

Front accessible designs are designed especially mounting against a wall, but self-supporting.



# شركة واحدة العربية السعودية للإمدادات الكهربائية (المحدودة) Wahah Electric Supply Co. of Saudi Arabia (Ltd.)

## **Main Devices, Individually Mounted**

Molded case breaker, 225 – 2000 Amps, Fixed  
Electronic trip breaker: 600 – 2500 Amps, Fixed

## **Thermal Magnetic Trip 600 – 800**

Amps, Fixed  
DSII or MDS Power Circuit Breaker, fixed or drawout, 800 – 4000 Amps  
Bolted pressure contact switch, 800 – 4000 Amps  
FDP fusible switch, 800 – 1200 Amps, fixed

## **Branch Devices, Panel Mounted**

Molded Case Breaker, 15 – 1200 Amps  
Electronic Trip Breaker: 600 – 12000 Amps  
FDP fusible Switch, 30 – 1200 Amps  
Combination motor starter unit, full voltage, non-reversing or reversing;

## **SPECIFICATIONS**

### **General**

Completely metal enclosed (except bottom) self supporting  
Sections bolted together to form rigid line-up  
90 inch high  
Universal Frame construction  
Die formed members bolted and braced using self-tapping bolts  
All covers removable and fastened with self-tapping screws  
Formed edges on all covers  
Code gauge steel covers  
Copper and thin plated aluminum bars sized to U.L. Inc. requirements  
Bus bracing as required  
All-bolted bus joints and connections using high strength zinc coated steel hardware  
Ground bus extends through line-up  
Lifting means furnished for each shipping section  
Maximum conduit space consistent with NEMA requirements  
Finished inside and out with gray powder coating, ANSI 61 except internal brackets galvanized steel  
Hinged wireways for easy access.

### **Type WF**

All sections 20 inch deep except main device sections requiring greater depth  
Sections line up in rear for against the wall placement  
All installation and maintenance can be performed without rear access  
Branch devices are panel mounted and front removable  
Horizontal bus supported on glass polyester insulators  
Bus bracing standard 50,000 amps, maximum 100,000 amps  
Bus splices connect adjacent bus sections  
Vertical sections designed for bolting together at jobsite  
Individual sections completely assembled and tested  
Build to UL specifications  
Meets all NEC, NEMA and OSHA requirements

## 2.2.7 TABULA IEC SWITCHBOARD SYSTEM

### General

TABULA is a unique low voltage switchboard system, fully tested and certified from international testing labs. From the standard modular parts of TABULA system, WESCOSA builds various assemblies, e.g. small distribution boards, Withdrawable MCC's and heavy distribution boards for extreme current ratings.

### Busbar System

The busbar system complies with BS EN/IEC 60439 and consists of both vertically and horizontally mounted busbars. Vertical busbars are "C" shaped Cu-bars with current ratings 225A-1600A. Horizontal bars are standard shaped Cu-bars 250A – 7800A.

### Vertical Distribution Busbars

The vertical distribution busbars are designed as copper C-Profiles reducing the skin effect to a minimum. The profiles are stiff in order to withstand high short circuit levels and well suited from branching without drilling holes/connections by means of spring nuts.

### Units (Compartments) (Din Rail) Units

The great variation of DIN-rail material demands a flexible built-in system. DIN rail parts are in accordance with DIN 43 880, meaning that all ordinary components can be built-in as standard. This is e.g., MCCB's, domestic fuses, earth-fault relays, motorstarters, etc.

### Air Circuit Breaker (ACB) Units

An ACB is often used as incoming short circuit protection from the current rating of 800 A and up. It comes in fixed and drawout versions, where the drawout versions can be removed from the main busbars without having to loosen any connection in the switchboard.

### Draw-Out Units

#### General Information

Draw-out compartments are used in installations, where a production stop from longer time is unacceptable and where preventive maintenance is demanded.

#### Connected Position

In connected position both main and sliding contacts are connected.

#### Test Position

The push button is activated and the drawer is pulled out. The drawer will automatically lock in the test position, where the sliding contacts are still connected, to maintain the control current.

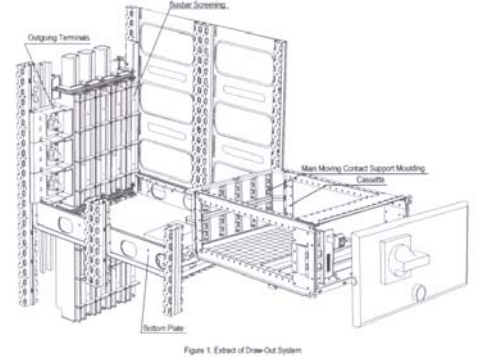


### *Disconnected (Isolated) Position*

From test position, the push buttons is activated and the drawer is pulled out, where stop pawl locks into it. The stop pawl can be locked with the pad lock, in the case that maintenance is executed on the installation. It is possible to mount up till 3 pad locks in both left and right side of the drawer.

### *Security Position*

This position is temporary and prevents heavy drawers to drop while pulling them out in removed position. The stop pawl in the back prevents that the drawer can be pulled out in one movement. This position is not locked with a pad lock, as it is temporary.



### *Main Moving Contacts*

This main moving contact consists of a silver plated U-shaped spring, with another small stainless spring inside. The stainless spring provides a high contact pressure on the same time stiffens the contact.

### *Sliding Contact*

The sliding contacts are primary for control and auxiliary circuits, but can replace an outgoing contact for maximum current of 32 A. The sliding contact consists of a fixed part mounted on the bottom plate and a moving part mounted in the cassette.

## **Enclosures**

Choice of Switchboard model – divided into three categories:

1. Wall Mounted
2. Floor Mounted
3. Floor Panel with closed bottom

### *General*

In general, the enclosure of TABULA is built of plinth and enclosure profiles, intermediate profiles, doors/covers and corner assemblies, all of which contribute to the required stability and strength.

### *Internal Division*

Vertical and horizontal division plates gives possibility for separate component-, cable-, and busbar compartments in order to construct a switchboard in accordance with IEC 439-1/EN 60439-1, from 2-4a.

### *General*

Doors and covers have identical basic forms and are made from 1.5 mm steel plate and designed as a plain surface with double-folded edges, welded at the corners in order to obtain high stability and strength.

Doors / covers are grey RAL 7032. The doors are used for division of electrical components-, cable and busbar compartment in a switchboard. Covers are used for the following purposes: Closing of the rear side of the switchboard (rear covers). Cover sides/top of enclosure frame.

### Door Gasket

The door gasket is a self-adhesive gasket with a closed cell structure, which is mounted in the enclosure profile and the intermediate profile. A narrow as well as a wide version of a gasket is available.

### Mounting of Doors / Covers

Doors can be hinged left or right. The opening angle is 95 degrees.

### Degrees of Protection

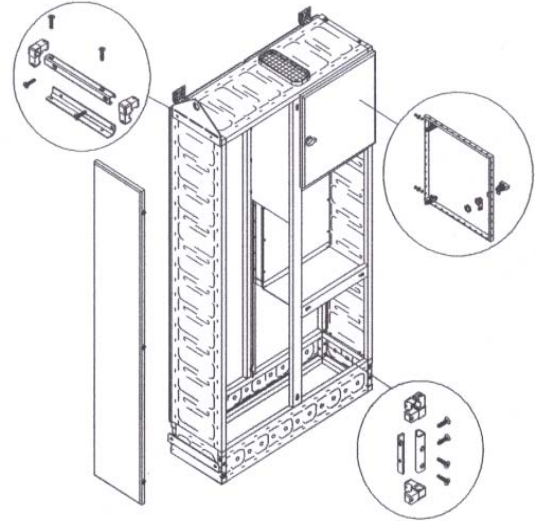
The degree of Protection for a switchboard concerning access to hazardous parts, solid foreign objects and water is started with an IP code in accordance with IEC/EN 60529.

### First Characteristic Numeral

P2X standard design, IP3X standard design with gasket at doors and rear covers, IP4X as IP3X, IP5X standard design with gasket at doors and rear covers and sealing of coners and joint.

### Second Characteristic Numeral

IPX1 standard design with gasket at doors and rear covers, IPX2 as IPX1, IPX3 as IPX1, but corners tightened with Silicon IPX4 standard design with gasket at doors and rear covers. Sealing with silicon when he draw out compartment is in removed position, the busbar screening ensures a degree of protection of IP2X.



## Technical Information

### Enclosure

Principle : Modular Sluzinc assembly System  
Degree of Protection : IP20 to IP54

### Busbar System

Rated Current: 225 A to 7800 A  
Rated Short-Time Withstand Current: 5.4 kA to 115kA  
Rated Peak Withstand Current : 46kA to 253kA  
Rated Operational Voltage : 690 V (1000 V – special design)  
Insulation Rated Voltage, U : 1000V  
Rated Impulse Withstand Voltage,  $U_{imp}$  : 12 kV  
Max. test Voltage,  $V_{eff}$  : 3500 V for 1 minute

### Draw-out System

Rated Current : 125 A to 630 A

### Norm Reference

IEC/EN 60439-1

### Polyester Powder Coating for Doors and Covers

Type : Powder Coating based on epoxy and polyester resins, color grey RAL 7032.

### Service Conditions Ambient Air Temperature

Ambient temperature : -5°C and +40°C

### Altitude

2000m (6600 ft)

### Storage and Installation

-25°C and +55°C

## 2.2.8 LOW VOLTAGE SWITCHRACK AND POWER DISTRIBUTION RACKS

- Special Design for Classified Areas and Corrosive Environments.
- Suitable for Outdoor Application
- Special Design for Classified Areas and Corrosive Environments.
- Switchracks are manufactured to NEMA, UL, CSA, & FM standards and NEC requirements.
- All enclosures are tested and certified by third party laboratories.
- Maximum rating 600 V AC, 50/60 Hz, 1200 Amps.



### Switchrack

Switchracks are manufactured to NEMA, UL, CSA, and FM standards and NEC requirements and are suitable for outdoor applications in the desert environment corrosive and hazardous locations. All enclosures are labeled with NEMA 44X compliance labels approved by independent laboratories.

### Ratings

Switchrack has a rating nameplate attached to the left side of the post. The nameplate shows the general order number under which the rack was built and its electrical ratings, in terms of incoming line voltage, current and frequency. In addition, this nameplate shows a passive circuit (withstand) rating, buyer P.O. no., line item nos., or serial no.

Maximum Voltage: 600V  
Frequency: 50 or 60 Hz  
Continuous Current: 1200 Amps

### Qualified Personnel

Individuals who install, operate or maintain Switchrack must be trained and authorized to operate the equipment associated with the installation and maintenance of a Switchrack, as well as the operation of the equipment that receive its power in the Switchrack.

Such individuals must be trained in the proper procedures and following established safety procedures as outlined in the national Safety Code (ANSI C2) and Electrical Maintenance (NFPA 70).



## 2.3 Medium Voltage Distribution Equipments

### 2.3.1 IEC METAL-CLAD SWITCHGEAR

#### 17.05kV, 25kA Vacuum Metal-Clad Switchgear



#### GENERAL DESCRIPTION

To satisfy the needs of the Utility Companies and a segment of Industrial customers, WESCOVA has developed a 17.5kV, 25kA Switchgear conforming to IEC standards.

The Switchgear utilizes Tamco's VK series of Vacuum Circuit Breakers with world-renowned Cutler-Hammer Vacuum Interrupter.

#### CERTIFICATION AND APPROVAL

Conforms to IEC Specification 60289 and subjected to Type Test in KEMA, Netherlands, including arc resistance test at 25kA.

#### CONSTRUCTION

Typical cross-section and overall dimensions of the switchgear are shown in Fig. 1. As standard, all exterior and interior parts are painted with ANSI 61, Light Grey paint, applied through electronic deposition. Units have provision to enable them to be bolted together to form a rigid freestanding assembly and are designed to permit extension on either side in future.

Each vertical structure consist of the following:

1. VCB Compartment
2. Bus Bar Compartment
3. Low Voltage Compartment
4. Potential Transformer Compartment (For incoming and bus Tie units only)
5. Cable Compartment

#### 1. VCB COMPARTMENT

This compartment accommodates the vacuum circuit breaker. Circuit breakers are available with continuous current rating of 630, 1250 and 2000 Amperes. Movement of VCB inside the compartment is by means of racking mechanism, which is operable with the front door of the compartment closed. Comprehensive interlocks are provided to ensure the following:



- To ensure that VCB cannot be inserted into or withdrawn from Service Position unless it is in open condition.
- VCB can be closed or opened only when it is in the Service or Test/Isolated position.
- To ensure that VCB cannot be inserted into Service position. Unless control circuit pug is inserted.
- To ensure that earthing switch cannot be closed when circuit VCB is in Service position.

## 2. BUS BAR COMPARTMENT

This compartment contains the main bus bars. Bus Bars are made out of rounded-edged electrolytic copper to reduce dielectric stress and joints are silver plated for better contact. Bus Bars are insulated as a standard feature and are braced with epoxy-molded standoff insulators. Bus bar joints are provided with removable bus boots.

## 3. LOW VOLTAGE COMPARTMENT

All the LV components like Relays, Meters, Control Switches, Control Pushbuttons; Indicating Lamps etc. are housed in this compartment.

## 4. POTENTIAL TRANSFORMER COMPARTMENT

Potential Transformer Compartments are provided in front of the Incoming Bus Tie units for monitoring the line/bus voltage. Potential transformers are mounted on Potential Transformers Rollouts. A safety provision is provided to automatically ground the primary connection to Potential Transformers when rollout is withdrawn, before access can be made.

## 5. CABLE COMPARTMENT

Feeder bus bars for incoming/outgoing cable connection are located in this compartment. This compartment also contains the manually operated Earthing switch, which is Type-tested for a short time rating of 25kA for 3 seconds.

## SPECIAL FEATURES

- Minimal Maintenance since VCB is employed.
- Horizontal isolation, horizontal draw-out type circuit breaker.
- Isolating mechanism operable with front door of VCB compartment closed.
- Proven arc-venting system for each high voltage compartment ensures the damage will be minimal in the unlikely event of flashover.
- Mid-panel mounted VCB lends space to enable Potential Transformer Compartment to be located in front, for better accessibility.
- Operation indicators for breaker position (Service/Test), VCB ON/OFF, Closing Spring Charged/Discharged Earthing switch ON/OFF.
- Donut type Current Transformers mounted over specially designed bushings make their removal easy, for maintenance/testing.

## ALL DIMENSIONS ARE IN MM

RATING	W	A	B	C
630A	700	400	500	660
1250A	800	500	600	760
2000A	800	500	600	760

Figure 1 – Cross-section and dimension of Switchgear

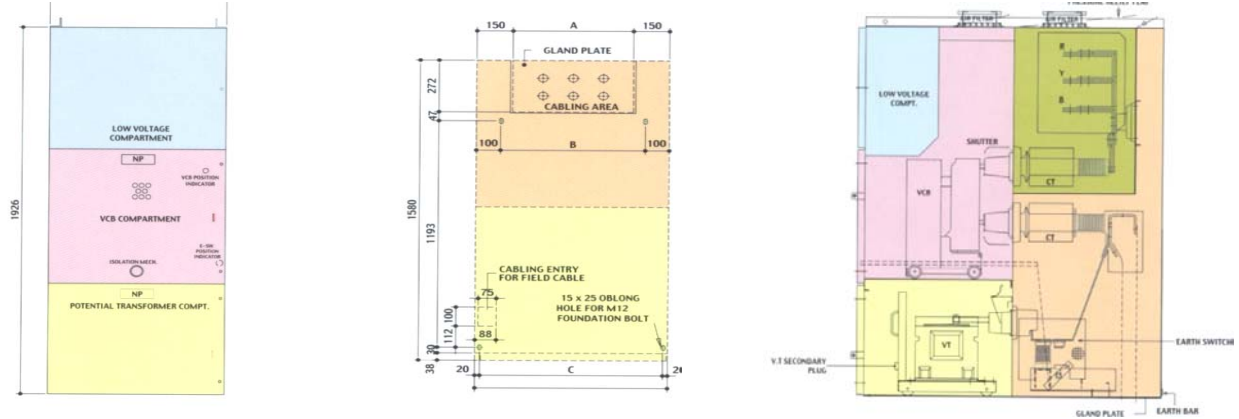


Table 1 – Specification of Vacuum Circuit Breakers

Model #	VK-10J25	VK-10M25	VK-10P25
Rated Voltage		17.5	
1-minute frequency withstand voltage (kV)		38	
Impulse withstand voltage (kV)		95	
Frequency (Hz)		50/60	
Continuous Current (A)	630	1250	2000
Short-Circuit breaking Current (kA)		25	
Short-circuit making current (kAp)		63	
Operating Sequence		O-0.3 S-CO-3 Min-CO	
Duration of Short-circuit (S)		3	
Opening Time (mS)		35	
Break time (mS)		<60	
No-load Closing time (mS)		50	
Closing Supply Voltage (V)		48/60/110/125/220	
Tripping Supply Voltage (V)		48/60/110/125/220	
Full load Switching Life (operations)		20,000	
Auxiliary contacts		3a+3b	
Approximate weight (kg)	75	80	95

Table 2 – Dimensions of Vacuum Circuit Breakers

Model #	Dimension (mm)						
	A	B	C	D	E	F	G
VK-10J25	289.0	302.0	628.0	495.0	69.0	567.0	619.0
VK-10M25	291.0	298.0					
VK-10P25	295.0	290.0					

Note: Information contained in this bulletin is correct at the time of publishing. As we are in the continuous process of improvement of our products, details are likely to change without any notice.

### 2.3.2 ANSI METAL-CLAD SWITCHGEAR



#### **METAL-CLAD SWITCHGEAR 5KV ABD 15 KV CLASS 250 MVA THRU 1000 MVA TESTED TO ANSI STANDARDS The most Significant New Metal-clad Design in 25 years**

Powell Electrical's Custom Designed metal-clad switchgear has been the standard of excellence for over 25 years. Powell Electrical has led the electric industry with quality and innovations to meet customer's needs.

Through this continuous effort, Powell has now introduced POWL-VAC vacuum metal-clad switchgear, incorporating 25 years of custom design and ongoing testing to meet all applicable ANSI, IEEE and NEMA standards.

The ANSI test series is the basic criterion, and includes a complete range of momentary, current interruption, BIL, dielectric, continuous current and mechanical life tests.

Since the successful completion of the ANSI testing in 1982 and the subsequent introduction of the POWL-VAC have completed over 100 installations throughout the United States and around the world.

#### **Over 30 Years Providing Quality Products**

The POWL-VAC is available in one or two high configurations with ratings to 3000 amperes, 100 MVA at 26kV. The POWL-VAC metal clad switchgear and circuit breaker meet all applicable ANSI, IEEE and NEMA standards.

The purpose of this technical catalog is to describe POWL-VAC Medium voltage metal-clad switchgear and to aid in the application and selection of POWL-VAC switchgear arrangements to meet the customer's electrical and space requirements. Powell POWL-VAC type metal-clad switchgear with horizontal disconnect circuit breakers provides control and protection for generators, motors, transformers, capacitors, and all types of feeder circuit.

POWL-VAC metal-clad switchgear is available in ratings of 4.16, 7.2 and 13.8kV with maximum interrupting capacities of 350, 500 and 1000 MVA, respectively. POWL-VAC switchgear is the most extensive ever performed by Powell. Two years of research and development combined with extensive laboratory short circuit and other design testing ensures the customer the highest quality and performance vacuum circuit breaker in the industry.

#### **Designed to Meet ANSI Standards C37.04, C37.06 and C37.20 Tested per ANSI standards C37.09 and C37.20**

POWL-VAC circuit breakers have been ANSI tested and meet ANSI published maximum Symmetrical Ratings using applicable K factors (I.e., 48kA at 1000MVA).

Certified test reports of tests to ANSI standards available upon request.

### Customer Advantages when using POWL-VAC Metal-Clad Switchgear

Vacuum Interrupters have hexagon stems this protecting and eliminating distortion to the internal below.

- Sliding contacts to connect vacuum interrupter stem to load connected primary disconnects.
- Positive interlock visual umbilical cord for control circuitry.
- Cycloaliphatic epoxy insulation system
- 100% copper conductor silver-plated.
- One high or two high equipment designs.
- Chrome copper vacuum interrupter main contacts.
- Direct floor roll out horizontal design.
- Full compliance with ANSI C37.09 and C37.20 standards.
- Meets full interrupter rating through 49kA.
- Free of partial discharge at operating voltages.
- Continuous current rating through 300 amps.

### VACUUM CIRCUIT BREAKER



#### POWELL

Designers and builders of a fully tested and field proven

#### Vacuum Circuit Breaker

More flexibility, more safety... Experienced with quality manufactured electrical equipment throughout the world.... The new Powell Vacuum Breaker has a proud heritage. A thoroughly tested piece of equipment is your assurance that the Powl-Vac will perform.

### Vacuum Interrupters

The vacuum interrupters have ceramic insulators, which permit high temperatures to be used in the evacuation process thus ensuring the highest possible reliability. The contacts materials are used are those having the highest voltage withstand the least loss of material under severe arcing conditions.

### Primary Disconnects

A unique arrangement results in lower primary disconnect temperatures. The unique Powell design has been tested at the maximum continuous and momentary currents required for this class of switchgear.

### Circuit Breaker Frame

The frame of the circuit breaker is made from the components' fabricated by numerical controlled machines and jig welded into a precision rigid assembly thereby eliminating the variability inherent with the bolted assemblies.

### Drawout Mechanism

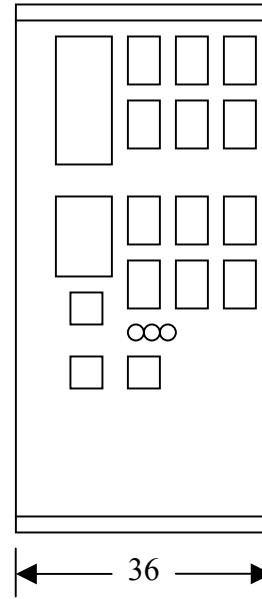
Movement of the circuit breaker between the disconnect and connect positions is by means of crank arms which when engaging in racking slots attached to the compartment frame react with the circuit breaker midway between the line and load contacts. This eliminates all possibility of unequal wipe distances of the primary connections, which can occur when the breaker is pushed by racking mechanism located below the circuit breaker, and the consequent possibility of failures occurring on high momentary currents.

## CHOICE OF EQUIPMENT DESIGNS

### ONE-HIGH DESIGN

95" HIGH X 36" WIDE X 95" DEEP

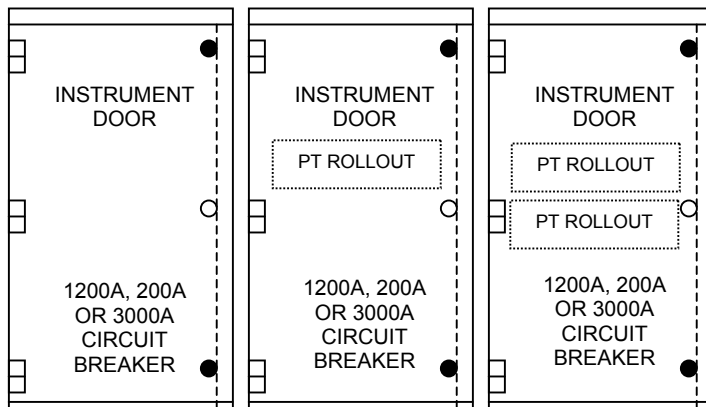
- MINIMUM EQUIPMENT DEPTH
- MAXIMUM ISOLATION OF CIRCUITS
- MAXIMUM CABLE TERMINATION SPACE
- FULL HEIGHT FRONT LEVEL



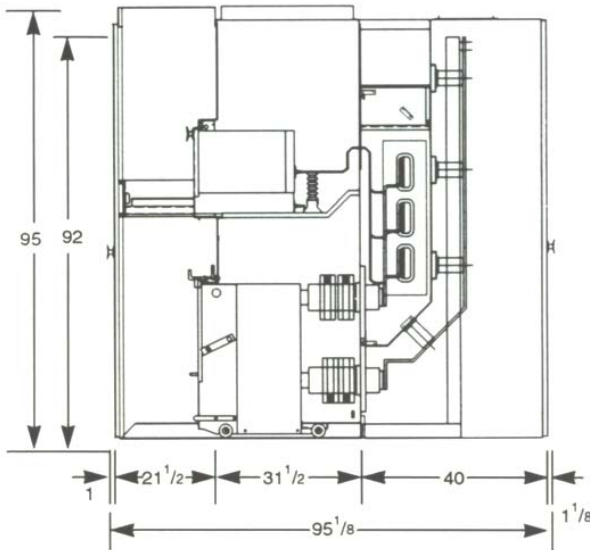
TYPICAL FULL HEIGHT PANEL LAYOUT

FULL HEIGHT FRONT PANEL

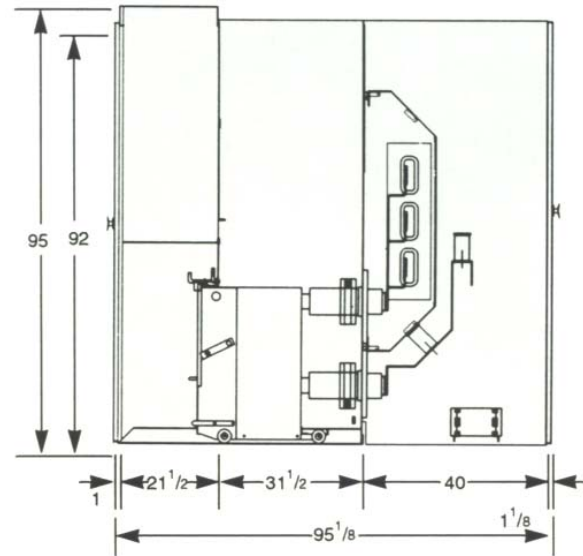
### AVAILABLE ONE-HIGH UNIT ARRANGEMENTS



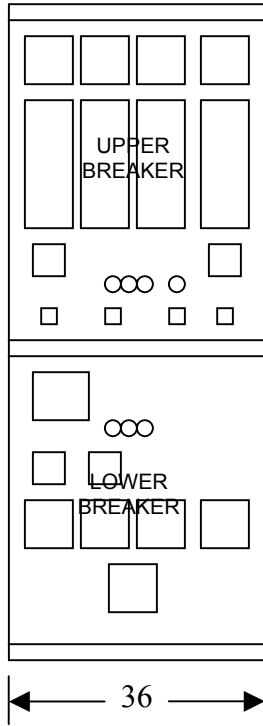
### TYPICAL SIDE VIEWS



1 HIGH POWL-VAC WITH PT AND CPT ROLLOUTS



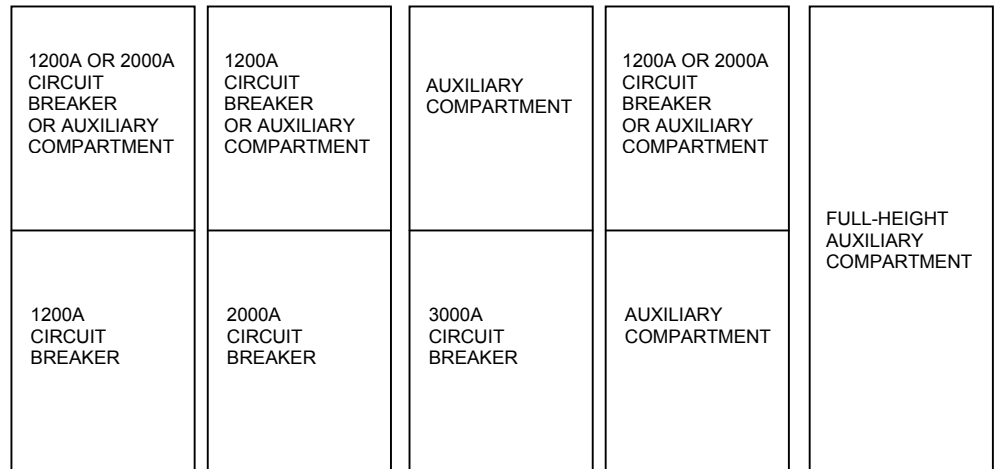
1 HIGH POWL-VAC



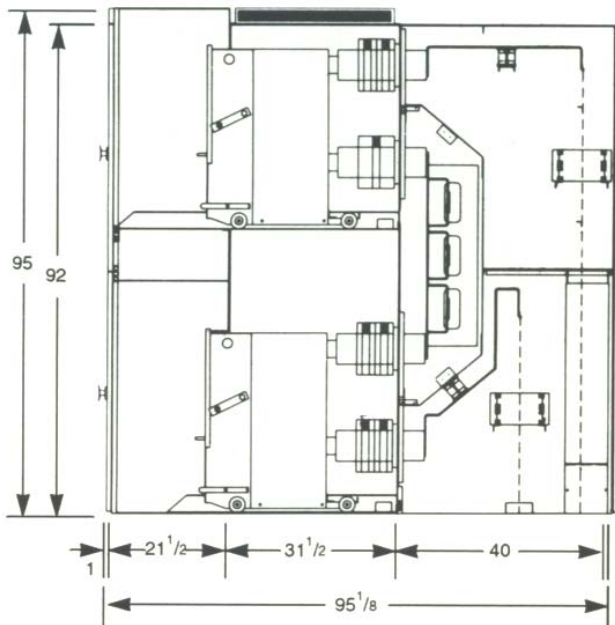
### TWO-HIGH DESIGN

95" HIGH X 36" WIDE X 95" DEEP

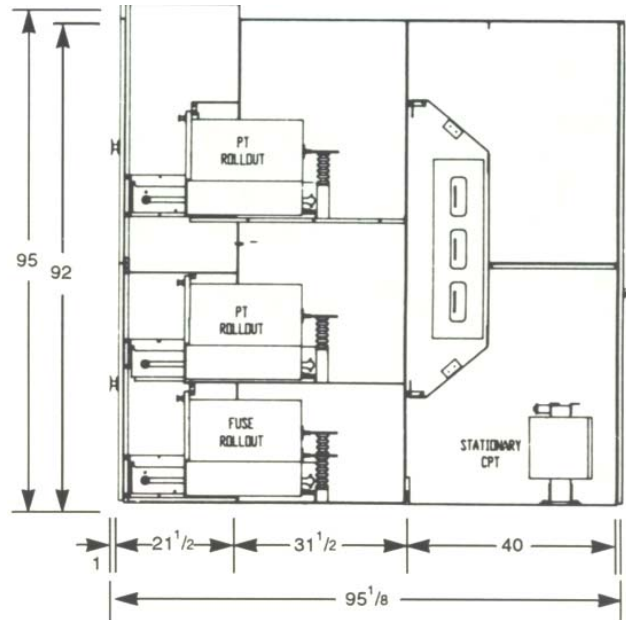
- MAXIMUM UTILIZATION OF FLOOR SPACE
- FULL ISOLATION OF CIRCUITS PER ANSI STANDARDS
- CHOICE OF OVERHEAD LIFTING DEVICE OR PORTABLE LIFT TRUCK TO HANDLE BREAKERS
- FLEXIBLE ARRANGEMENTS



### TYPICAL SIDE VIEWS

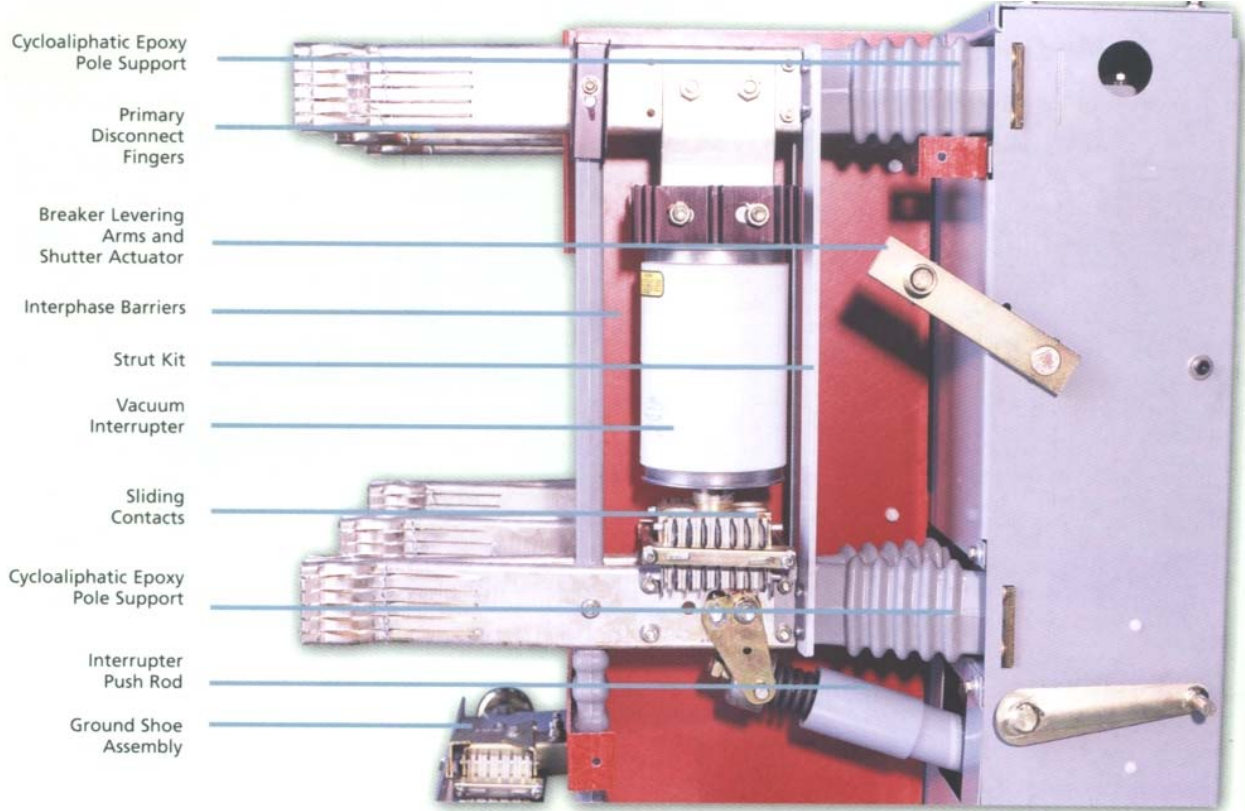


**2 HIGH POWL-VAC**

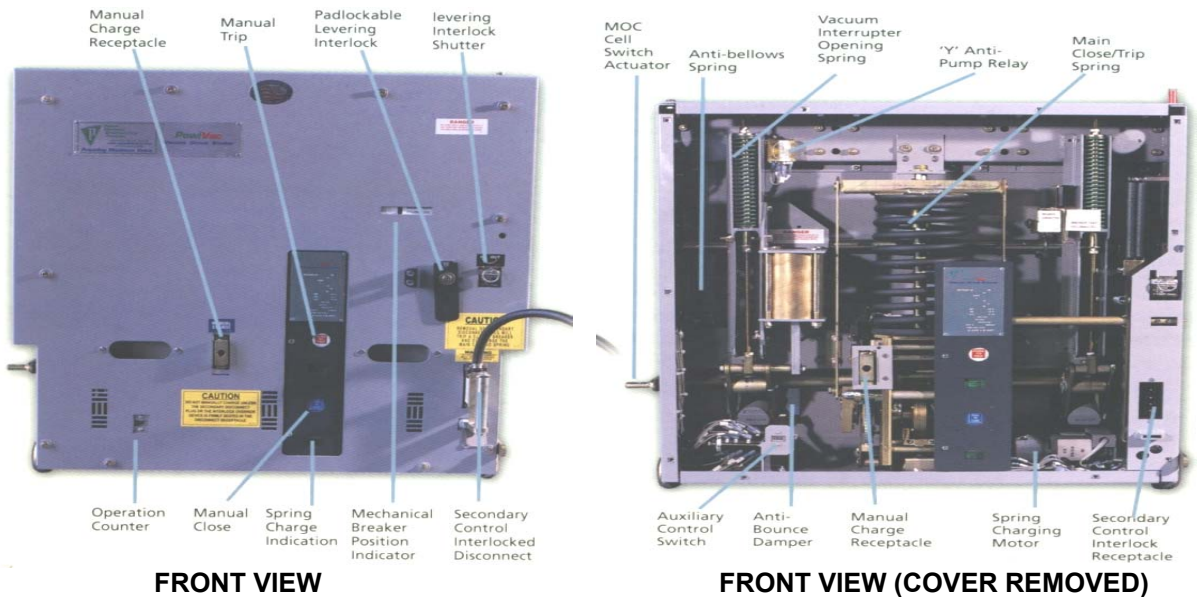


**2 HIGH POWL-VAC WITH STATIONARY CPT AND ROLLOUTS**

**POWL-VAC CIRCUIT BREAKER**



**POWL-VAC 15PV1000-3000**  
Vacuum Circuit Breaker rated 100MVA – 3000 ampere  
Side View with phase barriers removed





## SPECIFICATIONS AND RATINGS

### Ratings of Medium Voltage Circuit Breakers with K Factor = 1.0

Standard Design Powl-Vac® and Powl-Vac-AR® (36" wide)														
5kV	Breaker Type	Cell width Inch/mm	Maximum Voltage	Nominal Voltage	Symmetrical Interrupting Rating (kA rms) (a)	Obsolete MVA Ratings	Continuous Current (A rms)	Power Frequency Withstand (kV)	BIL Crest (kV)	Monetary Close & Latch Rating (kA Crest)	% DC interrupting Current (%) (b)	Rated Interrupting Time (cycle/msec) (b)	Short Time Current 3 sec. (kA)	Back to Back Capacitor Switching (Amps) (c)
	05PV36STD	36/914	4.76	4.16	36	250	1200, 2000, 3000	19	60	97	50	3/50	36	-
	05PV50STD	36/914	4.76	4.16	50	350	1200, 2000, 3000	19	60	135	50	3/50	50	-
	05PV63STD	36/914	4.76	4.16	63	500	1200, 2000, 3000	19	60	170	50	3/50	63	1640
15kV	Breaker Type	Cell width Inch/mm	Maximum Voltage	Nominal Voltage	Symmetrical Interrupting Rating (kA rms) (a)	Obsolete MVA Ratings	Continuous Current (A rms)	Power Frequency Withstand (kV)	BIL Crest (kV)	Monetary Close & Latch Rating (kA Crest)	% DC interrupting Current (%) (b)	Rated Interrupting Time (cycle/msec) (b)	Short Time Current 3 sec. (kA)	Back to Back Capacitor Switching (Amps) (c)
	15PV25STD	36/914	15.0	13.8	25	500	1200, 2000, 3000	36	95	67	50	3/50	25	1640
	15PV36STD	36/914	15.0	13.8	36	750	1200, 2000, 3000	36	95	97	50	3/50	36	1640
	15PV50STD	36/914	15.0	13.8	50	1000	1200, 2000, 3000	36	95	135	50	3/50	50	1640
	15PV63STD	36/914	15.0	13.8	63	1500	1200, 2000, 3000	36	95	170	50	3/50	63	1640
Narrow Design Powl-Vac-ND (26" wide)														
5kV	Breaker Type	Cell width Inch/mm	Maximum Voltage	Nominal Voltage	Symmetrical Interrupting Rating (kA rms) (a)	Obsolete MVA Ratings	Continuous Current (A rms)	Power Frequency Withstand (kV)	BIL Crest (kV)	Monetary Close & Latch Rating (kA Crest)	% DC interrupting Current (%) (b)	Rated Interrupting Time (cycle/msec) (b)	Short Time Current 3 sec. (kA)	Back to Back Capacitor Switching (Amps) (c)
	05PV36SND	26/660	4.76	4.16	36	250	1200,2000	19	60	97	50	3/50	36	-
	05PV50SND	26/660	4.76	4.16	50	350	1200,2000	19	60	135	50	3/50	50	-
Notes: (a) Interrupting Current constant for all voltages less than the maximum voltage. Rated voltage range K factor=1.0 (b) 5 cycle breakers available at the same % DC ratings (c) Back to back capacitor switching rating is applicable for 1200, 200, 3000 and 4000 continuous current ratings. For 1200 Amp circuit breakers the continuous current limits the capacitor switching current.														



### POWL-VAC Operating Characteristics for Stored Energy Mechanism and Control Requirements

Control Voltage	24 DC (1)	48 DC	125DC	250 DC	120 AC	24 AC
Close Current (SR), Amp	NA	10.2	3.2	1.7	3.4	1.7
Shunt Trip Current, Amp	16.9	10.2	3.2	1.7	3.4	1.7
Spring Charge Motor, Amp (2)	NA	8.8	3.5	1.8	3.5	1.8
Close Voltage Range	NA	38 – 56	100 – 140	200 – 280	104 – 127	208 – 254
Trip Voltage Range	14 – 28	28 - 56	70 - 140	140 – 280	104 – 280	208 – 254

(1) Not a recommended voltage

(2) (2) Running Current, inrush approximately 400%.

Spring Charge Time – 7 seconds maximum.

Time for spring to Close Breaker, until contacts touch – 5.0 cycles maximum

### APPLICATION GUIDE

#### Application Guide for Vacuum Switchgear

The vacuum switching surge phenomenon has been clarified and problems in practical applications have been studied and solved.

#### Surge Suppression (Optional)

Because vacuum interrupters may occasionally generate switching surges that could be damaging to unprotected electrical apparatus, Powell recommends the use of surge suppression on all feeder circuits except those feeding liquid filled transformer or gas-filled or dry-type transformer with BIL levels equivalent to that of the switchgear.

#### Loss of Vacuum Detection

Its is often requested by vacuum metal-clad switchgear users that a vacuum gauge be supplied with the equipment to monitor the vacuum in the interrupter during power circuit breaker operation.

For a vacuum breaker, the simplest way of assuring that an adequate vacuum exists is to check the withstand capability by applying a high potential across each interrupter with the breaker open. This procedure is recommended during routine maintenance.

For the POWL-VAC Metal-Clad Circuit Breaker, a lightweight, portable high potential test set will be available to conduct its type of test. This set operates from a conventional 5-ampere single phase, 120 volt, 60Hz power supply. A self-contained instrument is used to show that both the high potential set and the vacuum interrupter are operating correctly.

#### Optional Loss of Vacuum Detection Circuit

A sensitive breaker failure relay has also been developed for those who wish to monitor in-service performance of the POWL-VAC Metal-Clad Circuit Breaker.

Loss of vacuum may be detected in the following manner. Add a sensitive current relay in series with the CT residual current circuit. The sensitive current relay is connected in parallel with a normally open breaker auxiliary contact, thereby permitting the relay to operate if the breaker is open and the current is flowing through one of the vacuum interrupters for more than 3 cycles after its contacts part. Under normal interrupting conditions, the duration of current should continue for about one cycle after it's contacts part.

### Maintenance Requirements

While questions relating to loss of vacuum are sometimes raised, operating experience over the past fifteen years has shown that maintenance and reliability of vacuum circuit breakers has been even better than that of comparably rated breakers employing oil and air as the interrupting media.

The maintenance procedures are simple:

1. Check that the mechanism is clean, lubricated and operating properly.
2. Make a visual inspection to assure that erosion contact material has not exceeded the recommended amount. This is easily done, as the gauge is integral to the interrupter movable rod assembly.
3. Use the high potential test set to check that vacuum integrity still exists.
4. Provide the above are all right; the breaker can be placed in safety.

### Optional Ground and Test Device

The type PV-E Electrically operated Ground and Test Device is an accessory device for use with POWL-VAC Metal-Clad Switchgear. This device is design to be inserted in a metal-clad switchgear unit in place of the vacuum circuit breaker. It may be used to ground either the upper or the lower sets of primary disconnect stabs for testing purposes.

### POWL-VAC DETAILS

Typical POWL-VAC one high feeder rated kV 2000-amp main bus, 750 MVA. Photograph illustrates typical metering and relaying with ample space for field incoming control wire.

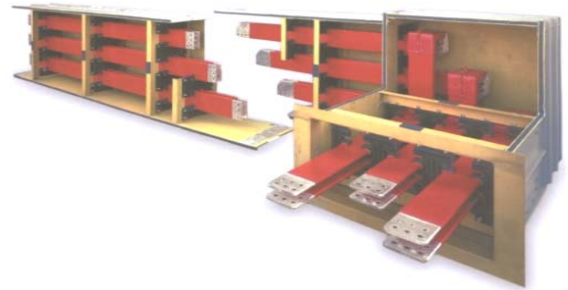
POWL-VAC switchgear features optional MOC, TOC and kirk key interlocking provisions.

### 2.3.3 BUSDUCT For Utilities and Industries

#### WESCOSA Licensee of Unibus, Inc.

WESCOSA is now manufacturing Busduct under license by UNIBUS INC USA, one of the leading manufacturers of custom designed electrical bar system for utilities, industries and research and development establishment.

WESCOSA Licensee of Unibus products and system ranging from 600v to 34.5 kV (1200 to 6000 Amperes) are in use worldwide. Higher voltages and amperages are available, however and details can be obtained from WESCOSA.



Innovative design and quality have been the hallmarks of UNIBUS Inc since its inception. Our qualified experts insure efficient design, careful manufacture and prompt delivery with installation supervision if required. Companies are assured of a more reliable engineered system made to satisfy the most critical requirements.

WESCOSA and UNIBUS INC skilled professionals are committed to developing new and more efficient products for the future to better serve our customers.

So whenever there's a need for a quality custom-designed and engineered bus system, you can count on WESCOSA and UNIBUS INC to provide a completely coordinated system backed by the best expertise and experience everywhere.

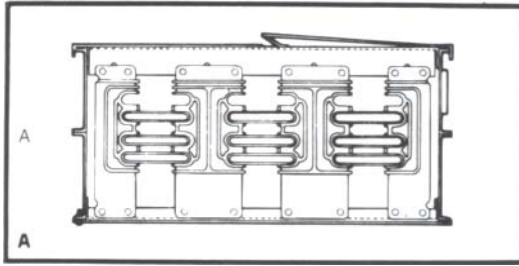
### **WESCOSA Licensee of Unibus, Inc. Has A Bus Product To Cover Every Application**

WESCOSA licensee of Unibus Inc. products and systems are custom-designed to meet the exact specifications for a variety of applications and conditions.

Here are just a few of the alternatives Unibus Inc offers to suit job applications, climates, installation environments, budgetary allotments, and a host of other factors which are carefully weight to provide the best for your needs.

#### **Type "A" Non-segregated Phase Bus**

Description: All phase conductors are in a common metal enclosure with out barriers between the phases.



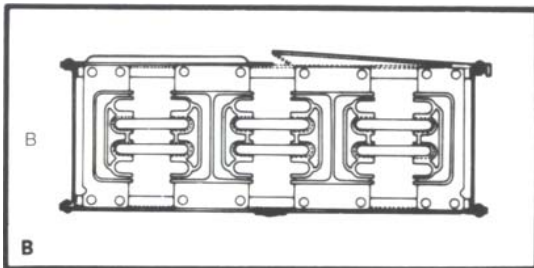
Application: Used to connect transformers to switchgear, for ties connections between motor control centers and large motors, and as the main generator lead in small generator and hydro plants.

Conductors: Copper and aluminum.

Supports: Standard Fiberglass

#### **Type "B" Non-segregated Phase Bus**

Description: All phase conductors are in a common metal enclosure with our barriers between the phases.



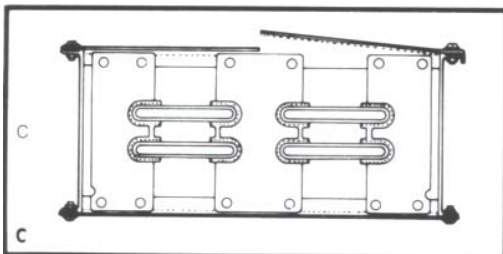
Application: Used to connect transformer to switchgear, for ties connections between motor control centers and large motors, and as the main generator lead in small generator hydro plants.

Conductors: Copper and aluminum.

Supports: High alumina porcelain.

#### **Type "C" Non-segregated Phase Two Pole Bus**

Description: Two A-C phase conductors or Two D-C pole conductors are in a common metal enclosure with out barriers between poles and phases.



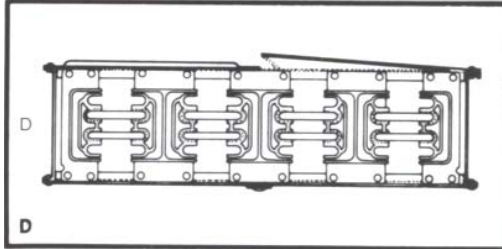
Application: Used to connect Switchgear to single phase loads transformer interconnections for delta connected transformer banks. Two pole D-C rules are used for generator exciter systems and for electric furnace and electroplating application.

Conductors: Copper or Aluminum.

Supports: Standard fiberglass or high alumina porcelain.

### Type "D" Non-segregated Phase Four Pole Bus

**Description:** All phase conductors neutral conductor are in a common metal enclosure without barriers between phases or neutral.



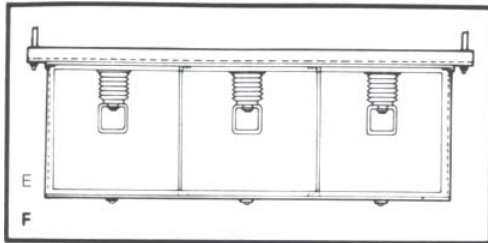
**Application:** Used for wyes connected system with underground neutrals.

**Conductors:** Copper or aluminum.

**Supports:** Standard fiberglass or high alumina porcelain.

### Type "E" Segregated Phase Bus

**Description:** All phase conductors are in common metal enclosure, but are segregated by metal barriers between phases.



**Application:** Used to generator leads in power plants, switchgear tie-in metal enclosed substations, and in factories.

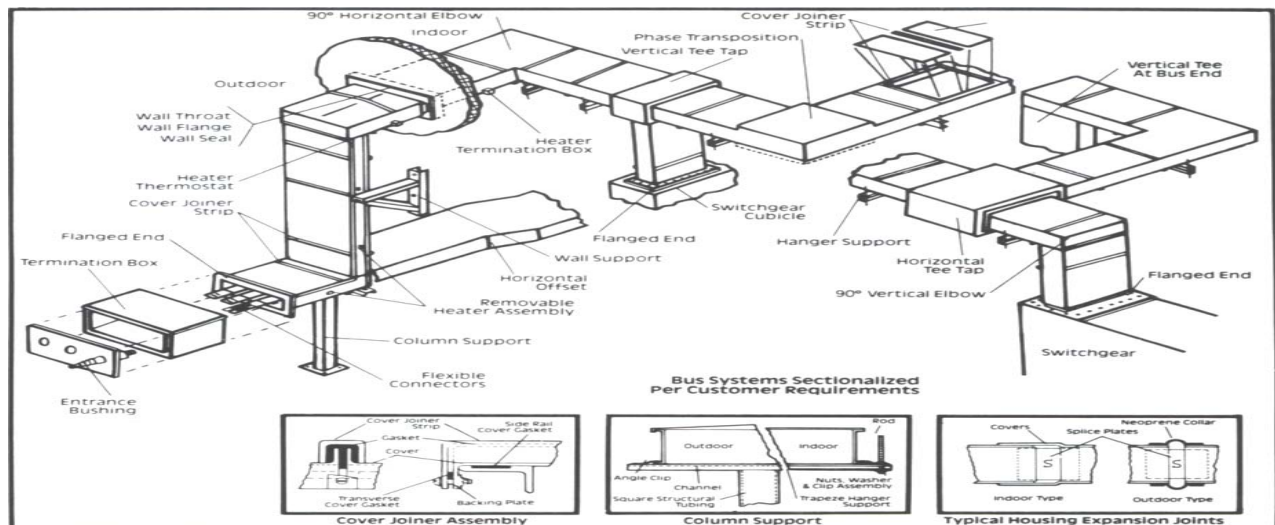
**Conductors:** Aluminum and Copper.

**Supports:** Fiberglass or porcelain.

### Bus Accessories

A full line of Bus System accessories is available. These include metering cubicles with potential and current transformers, surge protection, neutral grounding assemblies, switches and disconnecting links, and facilities for extending or T-tapping existing busses.

### Typical Bar Type Duct Layout (600V, 5kV, 34.5kV)





## Metal-Enclosed Low and Medium Voltage Bus Product Description

### Conductors:

High conductivity. Full round edge copper or aluminum bus bar.

### Insulation:

Extruded Noryl insulating sleeves.

### Bus Bar Supports:

Molded, track resistant, glass-reinforced polyester or porcelain.

Support spacing is appropriate to the momentary current rating of the bus.

### Enclosures:

Ventilated or non-ventilated steel or aluminum housings, primed and painted with purchaser's choice of ANSI standard of special color steel or aluminum housings to 2000 Ampere A-C ratings above 2000 amperes. Non-ventilated outdoor housings provided with manual or thermostatically controlled electric heaters with screened breathers. All outdoor gasketing concealed from weather. Hardware exposed to weather corrosive atmosphere is stainless steel.

### Contact Surfaces:

Copper contact surfaces are silver-plated. Aluminum contact surfaces tin plated over bronze strike by ALSTAN-80A process. All aluminum electrical connections are fitted with conical washers to maintain contact pressure.

### Accessories:

A complete line of elbows, tees, termination for transformers and switchgear, phase Transpositions, expansion or earthquake joints, wall entrance seals, flexible connectors, bushing stud connectors and terminal enclosures is available.

### Structural Supports:

A complete line of steel or aluminum structural supports is available for attaching bus to purchaser's buildings or property.

### Ratings.

See pricing sections for available voltage and current ratings.

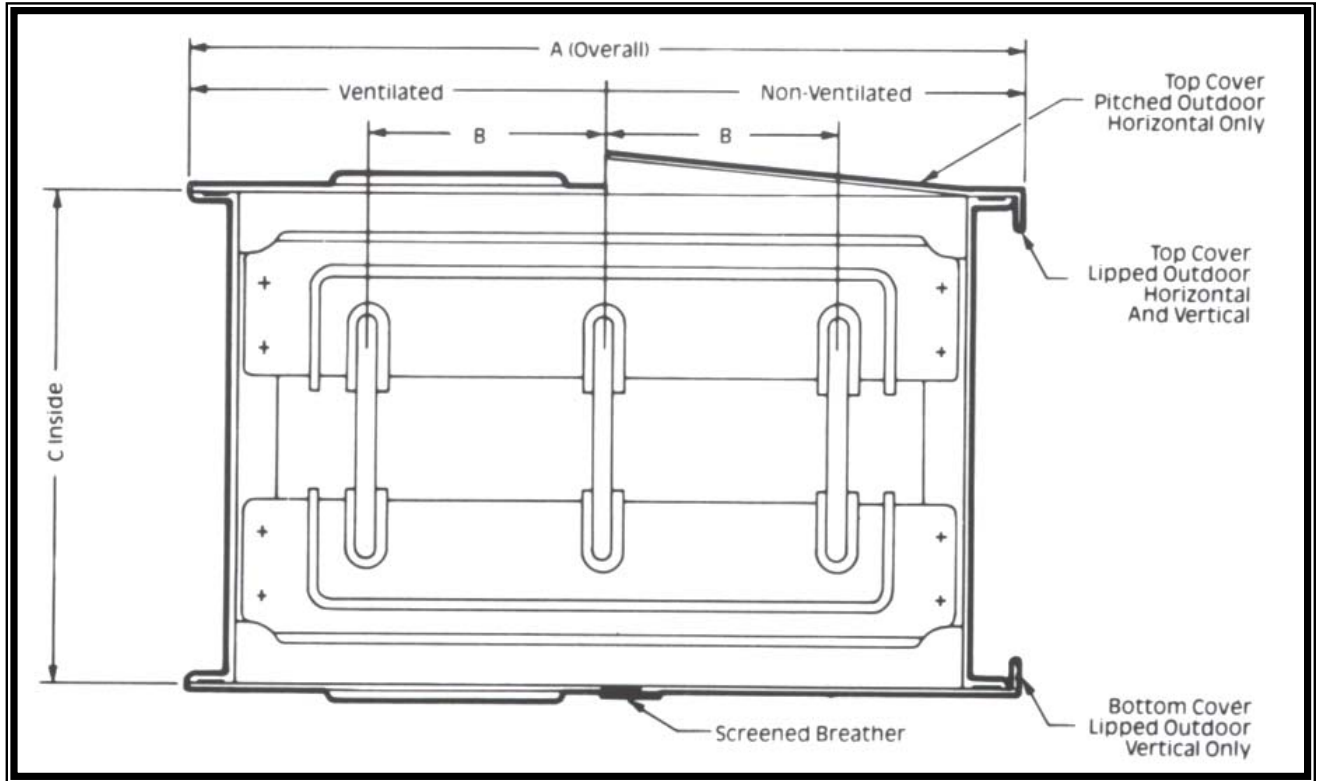
### Standards:

All busses are in complete conformance with the requirements of the applicable IEEE as well as ANSI and NEMA standards.

### Bar Bus Cross-Section for 600V, 3 Phase Service (60,000-150,000 Amperes, Momentary) Maximum Overall Dimensions Conductors (Non-Ventilated Bus)

Ampacity	Aluminum			Copper		
	A	B	C	A	B	C
1200A	21"	6"	10"	21"	6"	10"
1600A	21"	6"	10"	21"	6"	10"
2000A	21"	6"	10"	21"	6"	10"

\*Ventilated bus cross-sections for some ratings are somewhat smaller. Refer to factory for ventilated bus applications.



**Note:** The conductors can also be designed in the horizontal plane for high momentary conditions and would incorporate the same dimensions, as the 5KV system except the conductors will be non-insulated.

#### HOUSINGS:

Aluminum, steel and stainless housing are available to meet a variety of environments. Non-magnetic housings are supplied at ratings above 2000 amperes.

Outdoor Housings are weatherproof and furnished with screened breathers and electric space heaters for condensation control.

Covers are gasket sloped to shed rain and are removable top and bottom.

Ventilated indoor buses with louvered top and bottom covers are available.

500-watt, 240-volt heaters, operated at 120 volts and mounted via weatherproof junction box for easy removal, are supplied on 7' to 8' centers on outdoor bus systems. Facilities are supplied to connecting heaters to purchaser's power supply.

#### CONDUCTORS:

Buses are supplied with copper or aluminum conductors per purchaser's specifications. Tin or silver-plated contact surfaces at all joints or terminations. Internal or external ground bars or neutral bars are available as required.

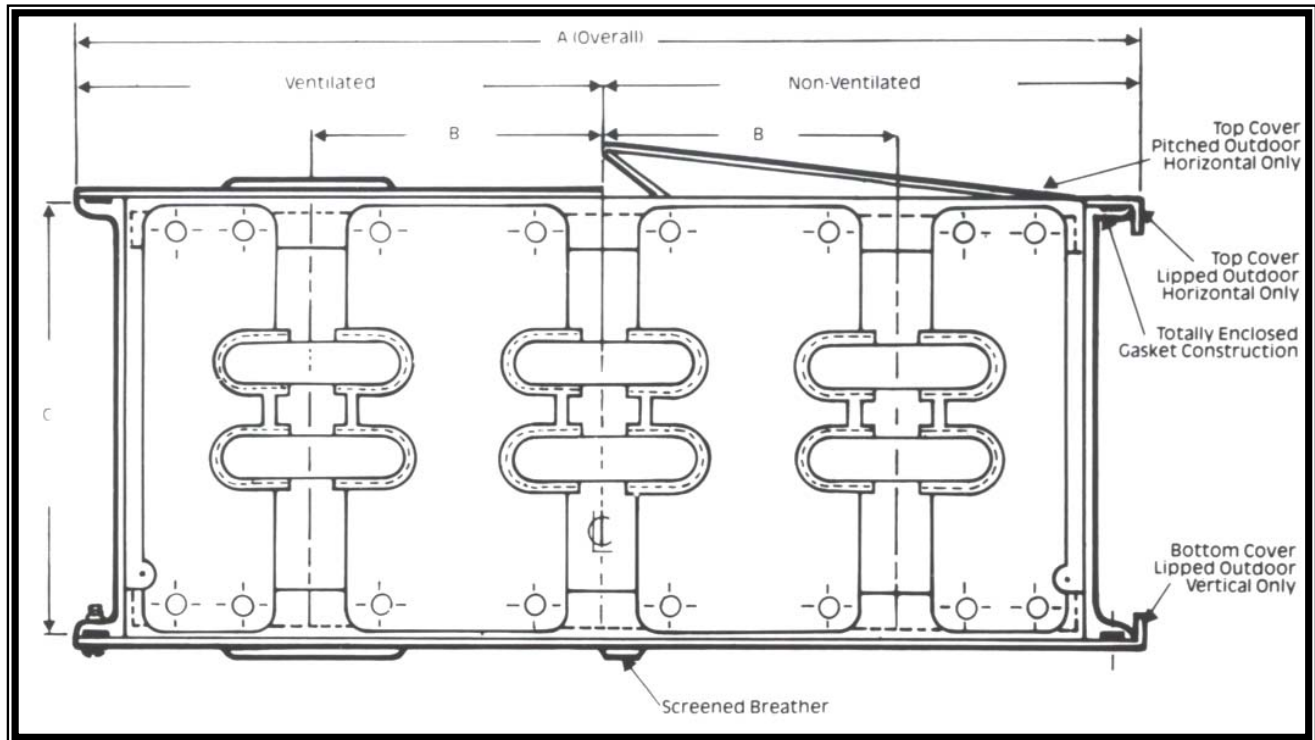
#### INSULATION:

Bus bars are mounted and secured against the movement during short circuit in molded, glass-reinforced polyester support blocks. Bus bars are un-insulated for 600-volt service, but can be furnished insulated on special request. Refer factory for momentary current ratings over 100,000A.

**Bar Bus Cross-Section for 5kV, 3 Phase Service (60,000-100,000 Amperes, Momentary; 60kV BIL.)  
Maximum Overall Dimensions Conductors (Non-Ventilated Bus)**

Ampacity	Aluminum			Copper		
	A	B	C	A	B	C
1200A – 200A	25.5"	7.00"	10.0"	25.5"	7.18"	10.0"
2500A – 3000A	31.5"	9.12"	10.0"	25.5"	7.18"	10.0"
3500A – 4000A	31.5"	9.12"	16.0"	31.5"	9.12"	16.0"

\*Ventilated bus cross-sections for some ratings are somewhat smaller. Refer to factory for ventilated bus applications.



**HOUSINGS:**

Aluminum, steel and stainless housing are available to meet a variety of environments. Non-magnetic housings are supplied at ratings above 2000 amperes.

Outdoor Housings are weatherproof and furnished with screened breathers and electric space heaters for condensation control.

Covers are gasket sloped to shed rain and are removable top and bottom. Ventilated indoor buses with louvered top and bottom cover are available.

500-watt, 240-volt heaters, operated at 120 volts and mounted via weatherproof junction box for easy removal, are supplied on 7' to 8' centers on outdoor bus systems. Facilities are supplied to connecting heaters to purchaser's power supply.



## CONDUCTORS:

Buses are supplied with copper or aluminum conductors per purchaser's specifications. Tin or silver-plated contact surfaces at all joints or terminations. Internal or external ground bars or neutral bars are available as required.

## INSULATION:

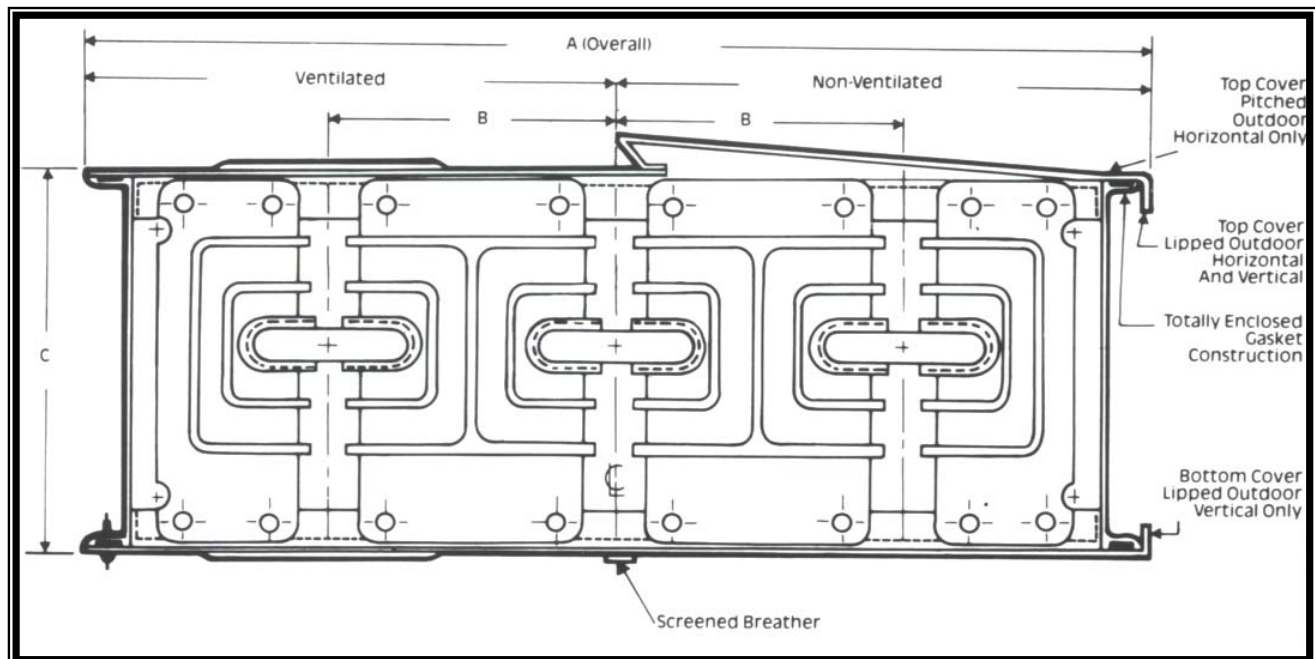
Bus bars are mounted and secured against the movement during short circuit in molded, glass-reinforced polyester support blocks. Bus bars are un-insulated for 600-volt service, but can be furnished insulated on special request. Refer factory for momentary current ratings over 100,000A.

Wet Process porcelain or high Alumina Bus Bar Supports available on request.

### Bar Bus Cross-Section for 5kV, 3 Phase Service (60,000-100,000 Amperes, Momentary; 95kV BIL.) Maximum Overall Dimensions Conductors (Non-Ventilated Bus)

Ampacity	Aluminum			Copper		
	A	B	C	A	B	C
1200A – 1600A	29.5"	8.00"	10.0"	29.5"	8.00"	10.0"
2000A	29.5"	8.00"	12.0"	29.5"	8.0"	12.0"
2500A – 3000A	35.5"	10.0"	12.0"	29.5"	8.12"	12.0"
4000A	35.5"	10.0"	16.0"	35.5"	10.0"	16.0"

\*Ventilated bus cross-sections are somewhat smaller. Refer to factory for ventilated bus applications.



## HOUSINGS:

Aluminum, steel and stainless housing are available to meet a variety of environments. Non-magnetic housings are supplied at ratings above 2000 amperes.

Outdoor Housings are weatherproof and furnished with screened breathers and electric space heaters for condensation control.

Covers are gasket sloped to shed rain and are removable top and bottom. Ventilated indoor buses with louvered top and bottom cover are available.

500-watt, 240-volt heaters, operated at 120 volts and mounted via weatherproof junction box for easy removal, are supplied on 7' to 8' centers on outdoor bus systems. Facilities are supplied to connecting heaters to purchaser's power supply.

**CONDUCTORS:**

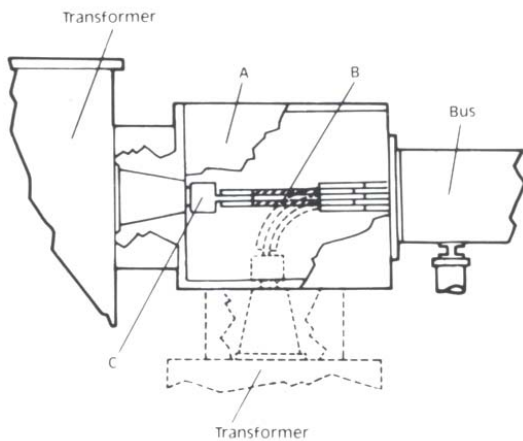
Buses are supplied with copper or aluminum conductors per purchaser's specifications. Tin or silver-plated contact surfaces at all joints or terminations. Internal or external ground bars or neutral bars are available as required.

**INSULATION:**

Bus bars are mounted and secured against the movement during short circuit in molded, glass-reinforced polyester support blocks. Bus bars are un-insulated for 600-volt service, but can be furnished insulated on special request. Refer factory for momentary current ratings over 100,000A.

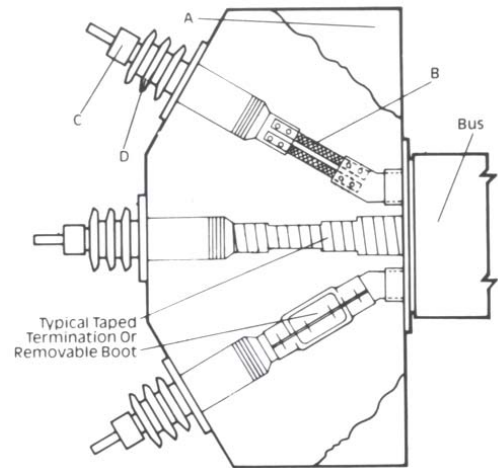
Wet Process porcelain or high Alumina Bus Bar Supports available on request.

Typical Bar Bus Termination



**Transformer Termination  
 Copper and Aluminum 600-34,500 Volts**

Transformer termination can include busway terminating flange, bushing terminal enclosure (A), Flexible connectors (B), bushing stud connectors (C), current transformers and all necessary hardware. Available for either sidewall or cover mounted bushings.



**Bushing Type Busway Termination  
 Copper and Aluminum 600-34,500 Volts**

Bushing type busway termination includes busway-terminating flange, bushing terminal enclosure (A), Flexible connectors (B), bushing stud connectors (C), and terminating assembly bushing (D). This termination assembly is suitable for use with bushing either in vertical or horizontal (side by side) position and outdoor or indoor application.

### 2.3.4 CABLE BUS Power for All Voltages



1. Lower Cost
2. Greater reliability
3. Lower power use

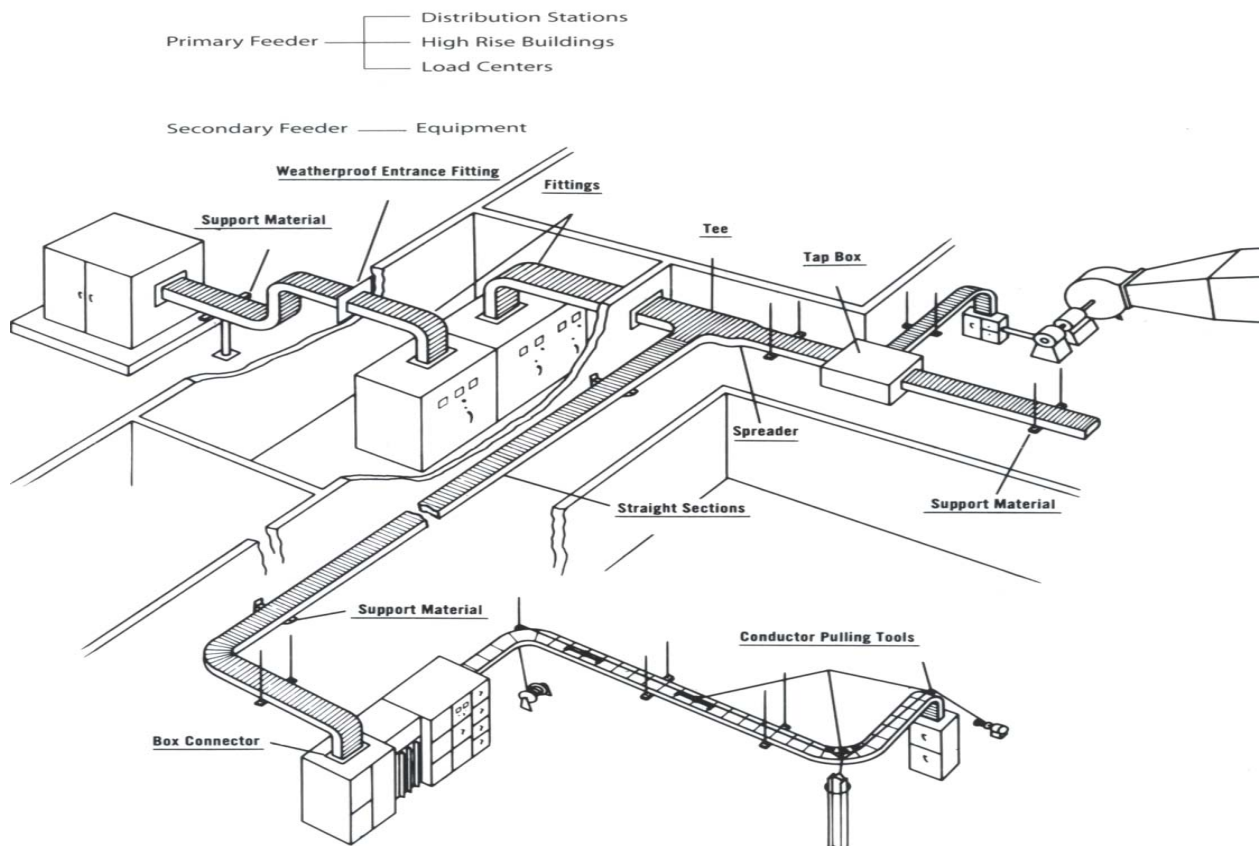
**Lower Cost:** In most electrical application over 1000 amperes, Cabl-Bus® is costly than bar bus or conduit and wire systems. When ampacities increase, the cost savings of Cabl-Bus over other systems are even greater.

**Great Reliability:** Since WESCOSA MP-Husky Cabl-Bus is continuous; there are no power losses from intermediate splices or connections. 25 years of field use and proven test results guarantee a higher quality system. And there is no limit to the voltage class rating of a cable bus system – it depends only on the rating of the cable itself.

**Lower power use:** WESCOSA MP-Husky's Cabl-Bus has lower impedance and lower losses than alternate methods. This means long-term energy savings for the user.

**And there's more!**

WESCOSA MP-Husky Cabl-Bus is of an all-welded structural design for superior strength. Top and bottom covers are ventilated for optimum free air rating so de-rating of cables is not normally required. The design flexibility our Cabl-Bus allows for easy, economical expansion of existing systems without expensive redesign.





# شركة واحدة العربية السعودية للإمدادات الكهربائية (المحدودة) Wahah Electric Supply Co. of Saudi Arabia (Ltd.)

## WESCOSA LICENSEE OF MPHUSKY CABL-BUS™ SYSTEM

The need for modern production processes and ever tightening production schedules demand increased reliability from electrical systems at the lowest possible unit cost. Today, whether in a utility, commercial or an industrial complex, these systems are asked to carry continually larger clouds and when a breakdown occurs the “in plant” cost charged against such failures are becoming prohibitively high.

By the same token available short circuit currents are also on the increase. As such, the electrical design engineer must not only carefully select his equipment but must insure that the entire electrical system tying it together is compatible in all aspects with the equipment.

To gain the ultimate advantage, whether it is for new construction or additions to existing systems, the engineer must also plan for future expansion that allows quick and economic growth. Yet, industry still demands better more reliable systems with even greater flexibility.

WESCOSA Licensee of MP-Husky utilizing advance-engineering concepts provides up to date answers for the growing power needs.

## CABL-BUS SYSTEM ADVANTAGES

### Free Air Rating

- Less copper or aluminum carries full rated current.
- Minimum Temperature rise due to ventilated enclosure and maintained cable spacing by support blocks.
- Maximum ampacity in accordance with ICEA listings for 90oC rated conductors.

### Continuous Runs of Conductors

- Cables “pulled-in” after system in place.
- No intermediate conductor connections (maintains system reliability).
- Eliminates expensive time consuming high voltage splicing.
- Proper Phase Balance
- Designed cable spacing and selection assures low impedance and low voltage drop.
- Cable support blocks provide continuous maintained spacing.
- Cable protected against insulation damage.
- Cable isolated from all metal parts.

### Indoor or Outdoor Applications

- Standard WESCOSA MP-Husky CABL-BUS system is used indoors and outdoors.
- No special finishes are required.
- Excellent protection against adverse atmosphere.

### Safe

- WESCOSA Licensee of MP-Husky CABL-BUS is an all welded rigid construction.
- High-pressure splice joints provide an excellent path to ground.
- Workmen free of shock hazards, no exposed bus elements, only insulated conductors are used.
- Ventilated design prevents entry from foreign objects.
- Support block designs assure proper arrangement of conductors.

### Low Cost

- Substantial savings on materials and installation cost compared to other system.
- Compact space saving and neat appearance.



# شركة واحدة العربية السعودية للإمدادات الكهربائية (المحدودة) Wahah Electric Supply Co. of Saudi Arabia (Ltd.)

## **Labor Savings**

- Lightweight ventilated enclosure.
- No special heavy erection equipment required.
- Two men easily lift 24' length into position.
- No special erection practices required.

## **Less Support Material**

- Design criteria accomplishes high load carrying ability, on long spans with minimum support material.
- Flush bottom design allows use of standard support material.

## **Adaptable**

- Easily routed around foreseen field obstructions, i.e. piping, structural steel, equipment, etc.
- WESCOSA Licensee of MP-Husky CABL-BUS systems can be joined to other types of existing systems by use of adaptors.

## **All Welded Construction**

- Entire support system including top and bottom covers in an all welded system for maximum strength with minimum space requirement.

## **Standard Fittings**

- WESCOSA Licensee of MP-Husky CABL-BUS design offers a complete flexibility with standard fittings.

## **Factory Fabricated**

- Entire system is factory fabricated with bottom cable support block in place.
- Minimum field of labor is required for the installation of splice plates, cables and top blocks.

## **Removable Covers**

- Removable top covers provide for ease of conductor installation, and addition of other circuits or cables at later date.

## **Ease of Conductor Pulling**

- Complete line of MP-Husky standard pulling tools available for ease of installation. (purchase).
- Match-Marked Layout Drawings
- CABL-BUS job layout complete with match-marked drawings to CABL-BUS sections.
- Facilities easy field erection.
- Small straightforward jobs do not require match-marked drawings and sections, because of standardization.

## **TECHNICAL DATA**

Selection of the proper CABL-BUS System must be undertaken with care to assure that it complements the design of the overall electrical power system.

## **ELECTRICAL DESIGN**

To insure an efficient, dependable high quality installation every WESCOSA Licensee of MP-Husky CABL-BUS System is engineered fully with particular emphasis placed on CABLES, SYSTEM BALANCE, SHORT CIRCUIT CAPABILITY and GROUNDING REQUIREMENTS. Each one of these key design considerations must be analyzed separately to determine how they affect the overall system design.



## CABLES

The first electrical consideration of CABL-BUS System is the cables themselves.

Due to complex modern day power layouts a poorly selected cable can result in a below normal performance of interconnected equipment as well as failure or loss in production time.

## CABLE INSULATIONS

There are many insulating materials used today; however, those commonly used are cross-linked Polyethylene and Ethylene-Propylene Rubber. Most other types of insulations have disadvantages such as lack of compactness, flexibility, or the requirement of an additional covering material for mechanical protection and moisture resistance.

CABL-BUS is supplied with cable in accordance with ICEA-NEMA or equivalent IEC Standards. In accordance with ICEA design criteria, all cables used in CABL-BUS have a full voltage rated insulation and are suitable for indoor and outdoor application without being adversely effected by ultra-violet rays.

Cross-Linked Polyethylene is a thermosetting type of insulating material, which has a very good resistance to chemicals weathering, crushing and impact. It has a low temperature-bending limit at  $-65^{\circ}\text{C}$  and has deformation of only 8% at  $150^{\circ}\text{C}$ . XLP (cross-linked polyethylene) is available in all voltage classes up to 35KV. Its normal operating temperature of  $90^{\circ}\text{C}$  with an emergency overloads temperature of  $130^{\circ}\text{C}$  and has a circuit temperature of  $250^{\circ}\text{C}$ . XLP has an insulation resistance constant, minimum, equal to 50,000 at a  $15.6^{\circ}\text{C}$  temperature with a power factor of 0.5% and dielectric constant, SIC, of 2.9.

Ethylene-Propylene Rubber is a flexible mineral filled thermosetting compound with an ethylene propylene elastomer as the base material which has a superior resistance to radiation, high physical strength at operating temperatures, superior resistance to ozone and easy handling at all ambient temperatures. It has a low temperature-bending limit at  $-80^{\circ}\text{C}$ ; EPR (Ethylene Propylene Rubber) is available in all high voltage classes (2kV and greater). Its normal operating temperature is  $90^{\circ}\text{C}$  with an emergency overload temperature of  $130^{\circ}\text{C}$  and a short circuit temperature of  $250^{\circ}\text{C}$ . EPR has an insulation resistance constant, minimum, equal to 30,000 at a  $15.6^{\circ}\text{C}$  temperature with a power factor of 1.0% and a dielectric constant, SIC, of 3.5.

A variety of jacketing materials can be supplied can be supplied with the above listed insulations, for shielded and non-shielded cable applications. The most common jacketing materials are polyvinyl chloride, neoprene and hypalon.

The advantage of the above listed types of insulation when used in WESCO Licensee of MP-Husky's ventilated CABL-BUS enclosure is that the conductors can be current loaded to the free air of  $90^{\circ}\text{C}$  rating. This is assured through the maintained cable spacing as provided by the support blocks, which prevent the accumulation of still or dead air between the cables. WESCO Licensee of MP-Husky' ventilated CABL-BUS enclosure design produces a "chimney effect", which is the principle of hot air rising and being replaced by a cooler air from below, keeping all cables in the system at the lowest ambient temperature. Since the top is fully ventilated, pockets of hot air are not trapped in the enclosure.

Figure 1 shows the free air rating of copper and aluminum conductors for  $90^{\circ}\text{C}$  operating temperature at a  $40^{\circ}\text{C}$  ambient. The 600-volt conductor ampacities are in accordance with the National Electric Code Article 310. At voltages greater than 600 volt, the ratings listed are in accordance with ICEA listing.

The ambient temperature can also be an important factor in limiting the current carrying capacity. Should the conductor be exposed to high ambient temperatures, such as those found in a boiler rooms or near steam pipes. Conversely, the lower the ambient, the higher the capacity.

Cable manufacturers supply correction factors for various ambient. Figure 2 illustrates typical correction factors.

When the cables are grouped closely together ambient conditions may be affected. To verify the fact that close grouping of conductors as used in WESCOSA Licensee of MP-Husky CABL-Bus systems do not adversely affect the allowable conductor temperature rise, various current cycle test were conducted. Listed is typical MP-Husky CABL-BUS performance test results (Figure 3).

**Figure 1**

Conductor Ampacity for*						
90°C conductor at 40°C Ambient						
Conductor Size	Copper			Aluminum		
	600V	5kVt	15kV	600V	5kVt	15kV
4/0	368	400	397	287	312	310
250	414	444	440	323	346	343
350	519	549	543	405	460	455
500	637	688	687	496	539	531
600	710	774	762	560	602	599
750	805	889	872	637	700	687
1000	960	1061	1040	769	841	825
1250	1092	1211	1185	874	969	948
1500	1206	1347	1313	987	1088	1060
1750	1315	1470	1430	7087	1198	1165
2000	1420	1574	1535	7215	1295	1263

\* 600 Volt Class-Nec Art 310:5 kV Class  
ICEA Pub. No. P-46-426

t Ampacity of 5 kV Shielded. 5kV Non-shielded  
Ampacity is slightly higher.

**Figure 2**

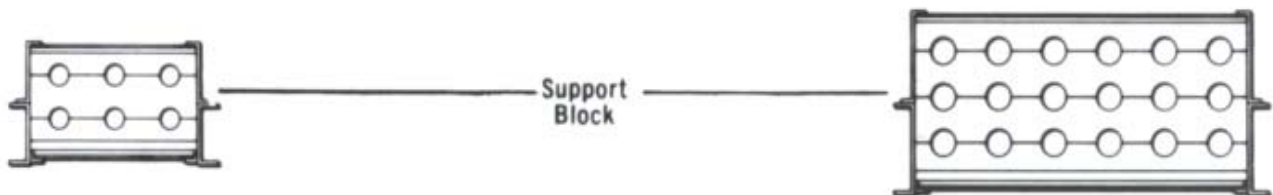
Correction Factor	
Ambient Temp °C.	Factor
10	1.26
20	1.18
30	1.10
40	1.00
50	.90

**Test 1**

Conditions Time: 5 hours  
Current: 4310 amperes  
Conductors: 18 – 750 MCM. Copper, 6  
Per phase ICEA rated at 90°C  
Ambient Temp.30°C  
Note: a thermocouple was inserted into each  
Conductor to a slit in the insulation.

**Test 2**

Time: 5 hours  
Current: 4310 amperes  
Conductors: 18 – 750 MCM. Copper, 6  
Per phase ICEA rated at 90°C  
Ambient Temp.30°C  
Note: a thermocouple was inserted into each  
Conductor to a slit in the insulation.





Results: Maximums Recorded Temp. Rise Top Row: 47°C Bottom Row: 42.5° Average Rise For 6 Conductors: 42°C	Results: Maximums Recorded Temp. Rise Top Row: 46.5°C Mid Row: 46°C Average Rise For 18 Conductors: 42.5°C
Conclusions: Maximum Allowable Temp. Rise: 90 – 30 = 60°C. Maximum Recorded Temp. Rise: 47°C Difference: 13°C. below allowable	Conclusions: Maximum Allowable Temp. Rise: 90 – 30 = 60°C. Maximum Recorded Temp. Rise: 47°C Difference: 13.5°C. below allowable.

## PARALLEL CONDUCTORS

Parallel Conductors (more than one phase) can be used to advantage in CABL-BUS where large conductor size are encountered. The ampacity per circular mil of conductor decreases as the circular mil of conductor increase, i.e.:

A 250 MCM conductor requires circular mil per amp at 4.16kV while 1000 MCM conductor requires 944 circular mils per amp at the same voltage. This loss in capacity is due mainly to “skin” effect and a decrease in heat radiating area per circular mil.

With the close grouping of phase conductors, as found in CABL-BUS, the “Skin” effect must be combined with “Proximity” effect to determine the actual A-C resistance.

Skin effect causes the alternating current to concentrate towards the outer surface (skin) of the conductor. This is due to the self-inductance of the conductor, greatest at the center, and results in a back EMF.

Proximity effect is caused by the magnetic field about all a alive conductor and a nearby current carrying conductor, causing a distortion of current flow in the parts in the nearest to each other. This, is turn, increases the effective resistance and reduces current capacity for a given temperature rise.

## VOLTAGE DROP

Proper system design dictates that voltage drop be considered for both the power feeders separately as well as the entire power system.

A voltage drop of 3 – 4% for power feeders and an overall of 5% or less for the entire power system are considered to be within the acceptable limits.

CABL-BUS is designed for low-voltage drop. Voltage drop data is available upon request, from your local representative, for your specific system. An approximate line to neutral voltage drop can be calculated by using the following formula:

$$V.D.L-N = I (R \cos \phi + X \sin \phi)$$

$$\% V.D. = \frac{KVA (R \cos \phi + X \sin \phi)}{10 (KV)^2}$$

(KVA is the three-phase kva and KV is line-to-line kilovolts)

## SHIELDING

Shielding is used on power cables to confine the dielectric field of the conductor to the cable insulation. Its used should be considered for 4160 volts and above on cables that are to be used in CABL-BUS when any of the following condition exists.





1. Where cables are subject to soot or other heavy deposits that may form paths to ground.
2. Where electrostatic discharge can affect nearby computerized control cables or other low level signals.
3. Transition from wet to dry locations.
4. Personnel safety.

When installing shielded cable, metallic shielding must be solidly grounded. Installation of shielded single conductor cables must be studied to determine the best method of grounding. This is necessary as voltage induced in the shield of a single conductor cable carrying alternating current due to mutual inductance between its shield and any other conductor in its vicinity. This induced voltage can result in two conditions.

1. Metal Shields bonded or grounded at more than one point have circulating currents following in them, the magnitude of which depends on the mutual inductance to the other cables, the current in these conductors, and the resistance of the shield.
2. Shields bonded or grounded at only one point will have a voltage build up in the sheath.

The length of the circuit and the load conditions will indicate which of the above shielding methods is required for any particular application.

#### **SYSTEM BALANCE**

CABLE-BUS is a power distribution system using single conductor insulated power cables and support blocks to maintain cable spacing. Each phase consists of one or more cables connected in parallel. The complete assembly is enclosed in ventilated aluminum or steel enclosure for support and protection.

Parallel conductor transmission lines, using widely spaced conductors, have been in use for many years. The electrical coupling between the conductors of parallel conductor system, which is a function of the geometry of the location of the conductors, can cause an unbalance in the conductor currents. In a widely spaced overhead transmission line, transposition of conductors can economically be used to balance the conductor currents.

The spacing of the CABL-BUS design was to obtain the optimum balance for a parallel conductor system using untransposed conductors system using untransposed conductors with close spacing. MP-Husky has developed a computer program, which solves for the line and phase currents of parallel conductor system, using a mathematical model of the transmission line parameters. Through use of computer programs and verifying the laboratory and field-testing, MP-Husky had designed CABL-BUS Systems with minimal unbalance.

CABL-BUS is designed for intra-phase balance. Most any phasing arrangement will provide inter-phase balance of currents due to the load impedance, but only a few of these combinations will provide a minimal intra-phase current unbalance. CABL-BUS is a fully engineered system utilizing phase arrangements, which reduce the amount of parallel conductor unbalance to a minimum.

#### **SHORT CIRCUIT CAPACITY**

A CABL-BUS system must be able to withstand the forces created by short circuit currents. These forces are transmitted from the conductors, under shorted conditions, to the cable supports. In the case of CABL-BUS the support elements include the support blocks and enclosure itself.

The major concern regarding short circuits is the dangerous mechanical forces that can result; however, it is still an electrical problem as far as determination of magnitude and prevention.



# شركة واحدة العربية السعودية للإمدادات الكهربائية (المحدودة) Wahah Electric Supply Co. of Saudi Arabia (Ltd.)

Short circuit currents are made up of two parts; a symmetrical A-C component and a rapidly decreasing D-C component. (Fig. 5)

A CABL-BUS system must be selected so that its mechanical strength will withstand the maximum short circuit forces developed in a given application. It is therefore necessary to consider the maximum instantaneous current and to a lesser degree the 5 – 8 cycle resultant symmetrical current. The symmetrical current is the actual value that a high voltage breaker will interrupt.

Since CABL-BUS is used for main feeders connecting substation or generators to switchgear, load centers, high voltage machines, the available short circuit current will be that of the utility or generator supply to through the transformers. In some cases, if the cable bus feeds large motors, the motor contribution to short circuit current must also be considered. Numerous tables are available listing motor contributions for various operating conditions.

Even though short circuit sources can be quite large, actual experience indicates the point of fault can be removed from the source therefore available fault currents will be limited by conductor impedance. The impedance can be in the form of conductor length, size or a combination of both.

In MP-Husky CABL-BUS design these added factors of conductor impedance are not used, instead the worst fault conditions are always assumed.

For most application a three-phase short circuit current will result in the maximum mechanical forces for design considerations.

If CABL-BUS is fed directly from the utility company service, short circuit current data is available from them. Where CABL-BUS is connected to the transformer secondary the three-phase fault current can be calculated using the following formula:

$$I = \frac{KVA \times 1000 \times 100}{1.73 \times E \times Z}$$

I = RMS Symmetrical Fault Current  
KVA = Transformer Rating  
E = Secondary Voltage of Transformer  
Z = Impedance of Transformer in Percent

Where motor contributions are considered the fault current due to the motor feedback will be a function of voltage and is usually expressed as multiples of the motor full load current. NEMA standards are available which list these factors.

Certified tests have been conducted to determine the short circuit performance of CABL-BUS using various supporting arrangements.

The CABL-BUS Systems were tested on a 600-volt, 3 phases, 60 Hz circuit having a power factor less than 20. One end of the CABL-BUS was connected to the source terminals the other was short circuited with a three phase bolted faults.

Each test was conducted for a minimum of six cycles. Oscillograms recorded the phase currents during the test. Still photographs are high speed color motion [picture were taken to relevant to the test.

CABL-BUS was subjected to currents of 39,000, 67,500, 82,500 and 107,000 RMS symmetrical amperes with symmetrical currents greater than 200,000 amperes. CABL-BUS withstood the mechanical forces of the test without any damage to the cables, support blocks or enclosure.



## GROUNDING

A CABL-BUS system must afford protection to life and property against faults caused by electrical disturbances. Lightning, electrical system failures as well as failures in the systems connected equipment all constitute possible fault hazard locations.

For this reason, all metal enclosures of the system, as well as non-current carrying or neutral conductors should be tied together and reduced to a common potential. This include the structural steel of the building, water, stream and gas piping, etc.

There are two distinct divisions to the grounding problem, the system and the equipment grounds.

The system ground is the connection of the distribution system to earth by means of neutral or grounded conductor. Grounding serves to limit the voltage, which might appear on the circuit due to lightning or accidental contact.

Equipment grounding is the connection to earth of all exposed non-current carrying metallic components of the distribution system.

CABL-BUS system should be grounded to the substation structure and thus to the substation ground grid and to the steel by means of the CABL-BUS support materials. CABL-BUS should also be grounded to the equipment of switchgear enclosure by means of a box connector.

It is an accepted fact that ground currents tend to concentrate near power conductors and that the cable enclosures take a large portion of the ground currents; therefore, it is important to consider CABL-BUS as a major carrier of ground currents.

Every CABL-BUS system is designed to insure safety of personnel, equipment and plant from ground faults. Figure 6 lists the electrical characteristics of WESCO SA Licensee of MP-Husky CABL-BUS enclosure.

**Figure 6**  
**Electrical Properties of CABL-BUS**

Basic Data	6053-T6
Conductivity	53%
Electrical Resistance @ 20 – Microhms Per Sq. In. per ft.	15.37
Electrical Resistance @ 20 – Microhms Per CM per ft.	19.57

Slide Stringer		
Material	6063-T6	6063-T6
Resistance – Microhms/Ft.	21	16
Resistance Across Splice – Microhms	11	11
Resistance of 24 ft. Length With Splice – Microhms	257	197
Copper Equivalent – MCM	950	1250
Continuous Current Rating (50°C Rise) Amperes	1060	1260
One second Rating (50°C Rise) Ampere	51,500	68,500

### CABL-BUS SYSTEM SELECTION TABLES

For maximum adaptability CABL-BUS straight selection are supplied as follows:

#### STANDARD

**Length** 12 & 24 feet

#### Block Spacing

**Vertical** 18" on centers

**Horizontal** 36" on centers

**Block Hardware** 3/8" diameter

#### Structural Enclosure

Straight section consists of:

**Basic Enclosure**

**Covers: Top - Removable**

**Bottom - Permanently Fixed**

**Support Blocks**

**Splice Plates**

All necessary hardware

ENCLOSURE CHART							
Voltage 600V 5KV 15KVA	Fig. No.	Conductor		Dimensions In Inches			
		No.	Sizes	W	H	h1	X
600V	7	3	500MCM	9	6	-	12 1/2
5.15KV	7	3	500MCM	12	6	-	15 1/2
ALL	7	3	750MCM	12	6	-	15 1/2
ALL	7	3	1000MCM	12	6	-	15 1/2
600V	8	6	500MCM	9	8	2	12 1/2
5.15KV	8	6	500MCM	12	8	2	15 1/2
600V	8	6	750MCM	12	8	2	15 1/2
5.15KV	8	6	750MCM	12	10	4	15 1/2
600V	8	6	100MCM	12	8	2	15 1/2
5.15KV	8	6	1000MCM	12	10	4	15 1/2
600V, 5KV	9	12	500MCM	18	8	2	21 1/2
15KV	9	12	500MCM	24	8	2	27 1/2
600V	9	12	750MCM	18	8	2	21 1/2
5.15KV	9	12	750MCM	24	10	4	27 1/2
600V	9	12	1000MCM	24	8	2	27 1/2
5.15KV	9	12	1000MCM	24	10	4	27 1/2
600V	10	18	500MCM	18	10	4	21 1/2
5.15KV	10	18	500MCM	24	12	6	27 1/2
600V	10	18	750MCM	18	10	4	21 1/2
5.15KV	10	18	750MCM	24	12	6	27 1/2
600V	10	18	1000MCM	24	12	6	27 1/2
5.15KV	10	18	1000MCM	24	12	6	27 1/2

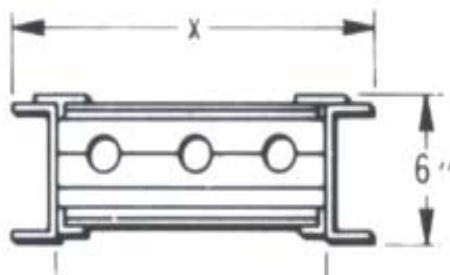


Figure 7

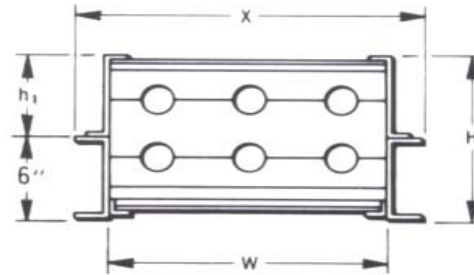


Figure 8

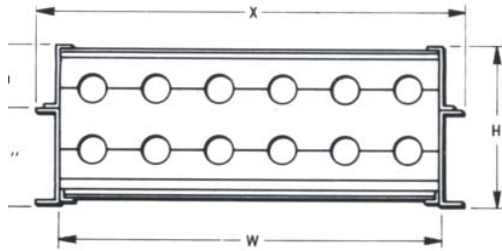


Figure 9

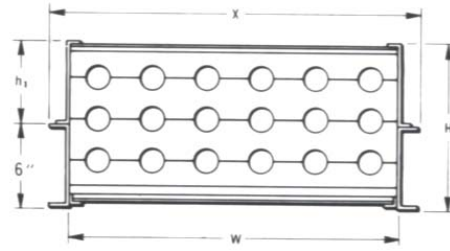


Figure 10

### FITTING SELECTION TABLES

For maximum flexibility CABL-BUS "Fittings" are supplied as follows:

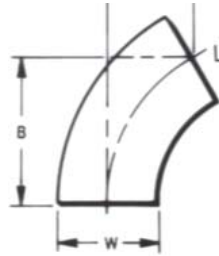
#### STANDARD

Width 9", 12", 18", 24"  
Radius 24"  
Block Spacing Approx. every 18"  
Block Enclosure Aluminum 6063-T6

Straight section consists of:

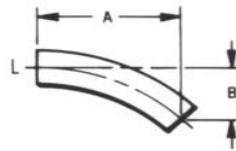
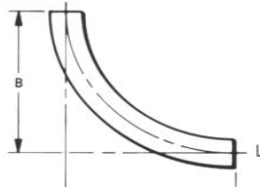
Basic Enclosure  
Covers: Top - Removable  
Bottom - Permanently Fixed  
Support Blocks  
Splice Plates

All necessary hardware



#### Horizontal Bends

Angles	90			60			45			30		
Catalog No	H90			H60			H45			H30		
Widths	A	B	L*	A	B	L*	A	B	L*	A	B	L*
9"	28 1/2	28 1/2	44 3/4	14 1/4	24 11/18	29 4/5	8 3/8	20 11/16	22 3/8	3 13/16	14 1/4	14 7/8
12"	30	30	47 1/8	15	26	31 7/16	8 13/16	21 3/16	23 9/16	4	15	15 11/16
18"	33	33	51 13/16	16 1/2	28 9/16	34 9/16	9 11/18	23 5/16	25 15/16	4 7/16	16 1/2	17 1/4
24"	36	36	56 9/18	18	31 3/16	37 11/16	10 9/16	25 7/16	28 1/4	4 13/16	18	18 7/8



#### Vertical Bends

Angles	90			60			45			30		
Catalog No	H90			H60			H45			H30		
Widths	A	B	L*	A	B	L*	A	B	L*	A	B	L*
All Widths	25 1/2	25 1/2	40 1/16	22 1/16	12 3/4	26 11/16	18	7 7/16	20	12 3/4	3 7/16	13 3/8

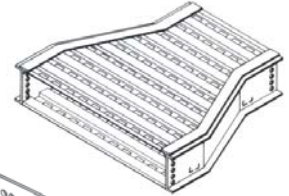
\* "L" dimensions along centerline for 24" radius bend.

Consult factory for dimensions of 12", 18" and 36" radius bends.

NOTE: Due to variations in vertical cover heights, the above dimensions are based on the basic enclosure height of 6". Refer to enclosure selection table on preceding page before determining height clearance.

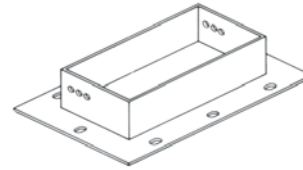
### SPREADER

These fittings provide the additional width required for attachment of CABL-BUS to transformer terminal boxes, switchgear, motor centers, etc.



### BOX CONNECTOR – TYPE BC

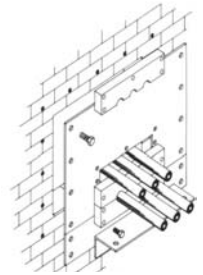
These connectors are used to terminate CABL-BUS at switchgear or other metal structures.



### WATERTIGHT SEAL – TYPE EF (WALL)

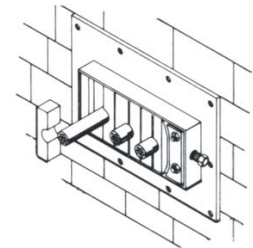
These fittings from a weatherproof seal with walls can also be used for floor penetrations where water tightness is necessary. Conductors are sealed with RTV silicon sealant.

Entrance fittings are furnished with all necessary hardware.



### FIRESTOP WATERTIGHT SEAL – TYPE FS-RGS

Weatherproof seal used at locations within the CABL-BUS run where an absolute watertight fitting is required. Neoprene blocks inserted into fitting after cables installed, for ease of cable pulling, these fittings are furnished with all necessary hardware. These fittings are rated as fire stops, and are UL listed for the 2 and 3 hour fire rating.

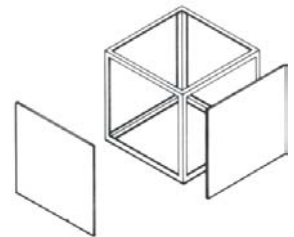


### JUNCTION BOXES

Standard junction boxes are of aluminum construction. Painted steel and stainless steel junction boxes are also available. All junction boxes consist of welded angle frames with either bolted removable side panels or welded fixed panels.

Weatherproof boxes using gasketed removable panels are fully seam welded fixed panels are identified with a "W" prefix. WJB.

Standard boxes or specialty boxes are available for use with CABL-BUS applications, Cable Tray applications or any other application where a sturdy enclosure is required.



### TAP BOXES – Type TB

Tap boxes are used in a CABL-BUS System to allow for intermediate load taping. Tap box design provide, system voltage rated air separation between live parts and adjacent surfaces, to eliminate the necessity of taping all energized components Tap Box consists of:

- Aluminum Framed Enclosure
- Removable Covers (Gasketed for Outdoor Applications)
- Porcelain Post Insulators (above 600 volts)
- Bus Bars
- Cabl-Bus Entrance Fittings
- All necessary Fittings

## ACCESSORIES

### Electrical Connectors

Connectors are available for terminating cables at equipment and tap boxes, and for apparatus equipment studs.



### Cable Termination Kits

Termination Materials are available for all CABL-BUS Systems.

Tape, pennant and molded stress cone kits available for high voltage termination up to 35 kV. Termination kits designed and engineered for reliability and low installed cost. All kits supplied will illustrated instruction sheets.

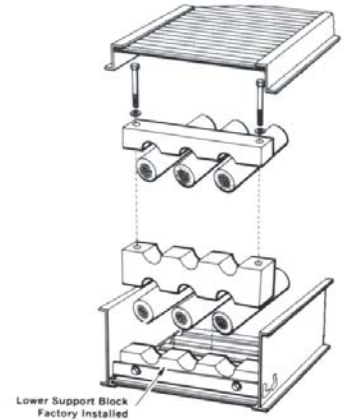
## INSTALLATION SUGGESTIONS

The following practice is suggested to “pull” cables in place on CABL-BUS when using cable installation tools.

Cables with an O.D. larger than 2” should be “pulled” by a pulling eye, a basket grip or both.

Short lengths and small diameter cables maybe “pulled” with a basket grip only, providing the strain does not elongate or damage the insulation.

Best results for installing long lengths of conductor up to 1000 feet, with as many as a dozen bends, are obtained by “pulling” the cable in one continuous operation at a speed of 20 to 25 feet per minute. It may be necessary to employ a braked reel to reduce sagging of the conductor between EZ rolls.



The most economical spacing of EZ rolls depends on the weight of the cable to be pulled. In general, the spacing of EZ rolls should range between approximately ten feet for cable weighing over eight pounds per foot and sixteen feet for cable weighing not more than two pounds per foot.

## DEFLECTION IN CABL-BUS SYSTEM

CABL-BUS systems should be designed for minimum installed cost. In order to achieve this objective, the engineer must bear in mind that the general design rules established for aluminum structure are not always compatible with the design rules for a CABLE-BUS system. This is particularly applicable in the case of restrictions on deflection.

As the most economical CABL-BUS system entails the use of heat-treated aluminum alloys and long spans, any limitations on deflection, which will not permit the best utilization of material and design, will increase the cost. By limiting (for any material) the maximum fiber and shear stress used in design, the adequacy and safety of the structure is assured and there is no reason to impose other limitations unless a specific result is desired at some point of the installation.

## LOADING TABLES

STANDARD SUPPORT BLOCK SPACING IS: Horizontal: 3ft Vertical: 18 in. Material Spec: Alum. 6063-T6

The primary reason to limit deflection is appearance. It is well understood that engineers and owners take pride in the appearance of their plant. Restriction on the deflections of CABL-BUS system installed at or near eye level or in prominent area of installation.

Fig. 11 shows a table listing the total uniformly distributed load carrying capacities of CABL-BUS. The load is expressed in pounds per linear foot of span without exceeding the basic design stress. For each load the corresponding simple beam deflection is listed in inches depending on the loading. The continuous beam deflection varies from 1/5 to 1/2 of the simple beam deflection.

Figure 11

Weight (Inch)	Span Feet															
	6		8		10		12		14		16		18		20	
	Load	Defl.	Load	Defl.	Load	Defl.	Load	Defl.	Load	Defl.	Load	Defl.	Load	Defl.	Load	Defl.
24	100	0.05	78	0.12	56	0.20	35	0.24	107	0.80	90	1.15	72	1.48	54	1.69
18	100	0.05	78	0.12	56	0.20	35	0.24								
12	100	0.05	78	0.12	56	0.20	35	0.24								
9	100	0.05	78	0.12	56	0.20	35	0.24								

## 2.4 Cable Trays

### 2.4.1 CABLE LADDER AND TRAYS

WESCOVA is a licensee for the MP Husky Corporation of the U.S.A., in which we manufacture a cable ladder box shaped rung. The rung goes thru the side rail and it is welded on the outside. This method melts the rung and rail into one joint, and it is impossible for any rung separation. In addition, M.P. Husky has not seen one rung separation in 30 years history.

The rung has a flat surface for ease of pulling cables, and the open bottom box rung prevents moisture build up. Also, the open bottom box shaped design cannot deteriorate from within due to corrosion, foreign objects, rain, oils, acid and alkalies. In addition, the box shaped rung is continuously welded around the complete insertion, as not to pull from the rail under load and pressure.



### ELECTRAY

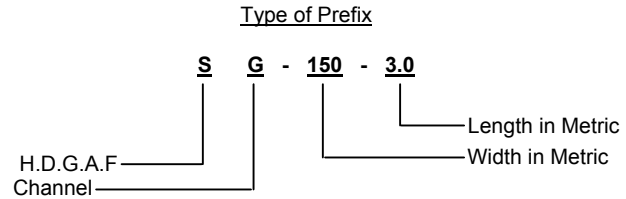
- Best constructed tray available for multiple large cables.
- Typical used by power plants, oil refineries, on & off shore platforms, desalination plants, commercial sites, and industrial construction sites requiring strength and reliability.
- Exclusive welded rungs to the outside of the rails for optimum structural integrity and reduce side rail rotation.
- Rung spacing: 6", 9", 12" and 18". Load Depths: 3", 3 1/2", 4", 5" through 6".
- Materials available: Aluminum; HDGAF, Coated Aluminum or Steel.
- Newer, more efficient and economical designs are now available in addition to older, established design still preferred by long-standing customers.



### WESCOSA Cable tray with returned flange & side stiffener

WESCOSA Cable Trays are supplied in 2.4 or 3 meters standard lengths. The fittings have 900mm, 600mm, and 300mm standard radii. The channel is manufactured in various width and heights, of aluminum or hot dipped galvanized after fabrication steel, with ventilated or solid bottom. H.D.G.A.F., ASTM 123 or BS 729.

#### CATALOG NUMBERING SYSTEM FOR STRAIGHT LENGTH



Channel Standards length; 2.4 meters or 3 meters, with returned flange and without returned flange.

Channel Standard width; 4" (100mm), 6" (150mm), 9" (225mm), 12" (300mm), 18" (450mm), 24" (600mm) 30" (750mm) and 36" (900mm).

Channel Standard Heights; 25mm, 50mm, 80mm, 100mm

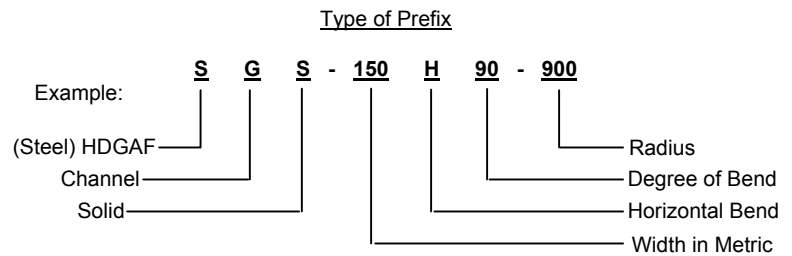
Channel Standard Slot Size: 6mm X 25mm

Channel Standard Thickness; 1.2mm, 1.5mm, and 2.0 mm.

All fittings are Non-Returned flange.

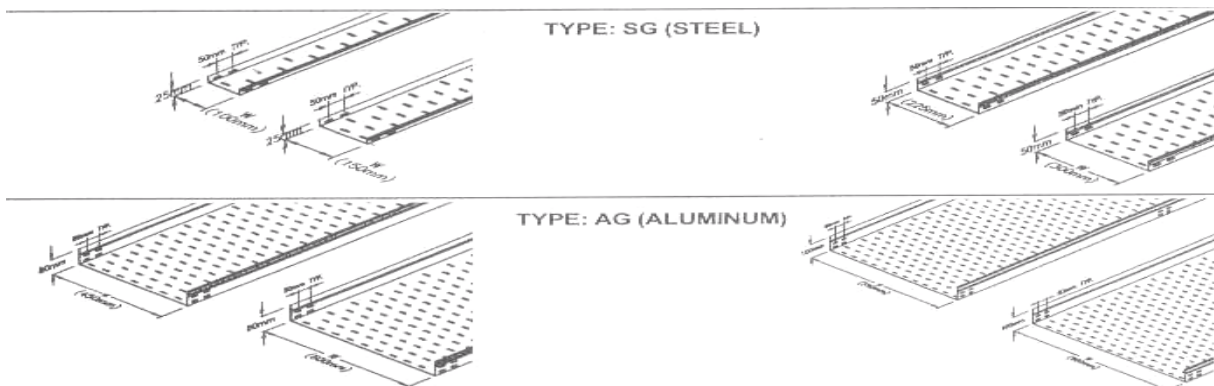
Straight lengths and fittings are ventilated or solid.

#### CATALOG NUMBERING SYSTEM FOR FITTINGS



### STRAIGHT SECTION PLAIN TYPE OR HEAVY DUTY RETURN FLANGE

How to Order: Select Prefix for desired Type Channel And add Basic Catalog Number					
BOTTOM	TYPE PREFIX			BASIC CATALOG NUMBER	
	HDGAF STEEL	ALUMINUM	MILL GALVANIZE	(PREFIX) - W - L	HEIGHT
VENTILATED	SG-	AG-	MG-	( ) 100 - 3 METER	1 3/4" = 25mm
VENTILATED	2SG-	2AG-	2MG-	( ) 150 - 3 METER	2 3/4" = 50mm
VENTILATED	3SG-	3AG-	3MG-	( ) 225 - 3 METER	3 3/4" = 80mm
VENTILATED	4SG-	4AG-	4MG-	( ) 300 - 3 METER	4" - 100mm



**WESCOSA CABLE TRUNKING STRAIGHT LENGTHS: 1.5 MM ANSI GRAY FINISH / APPROVED BY SAUDI ARAMCO, HINGE TYPE COVER, KNOCKOUTS, ISO 9001**

DUCT SIZE	CATALOGUE					
	12 INCH	24 INCH	36 INCH	48 INCH	60 INCH	96 INCH
2 ½ X 2 ½	S-2212	S-2224	S-2236	S-2248	S-2260	S-2296
4 X 4	S-4412	S-4424	S-4436	S-4448	S-4460	S-4496
6 X 6	S-6612	S-6624	S-6636	S-6648	S-6660	S-6696
8 X 8	S-8812	S-8824	S-8836	S-8848	S-8860	S-8896
10 X 10	-	S-101024	S-101036	S-101048	S-101060	-
12 X 12	-	S-121224	S-121236	S-121248	S-121260	-

### STANDARD CABLE RUNWAY

Our most popular Cable Runway is made of 40 x 40 x 5 x 5 mm with cross members welded at 9inch intervals.

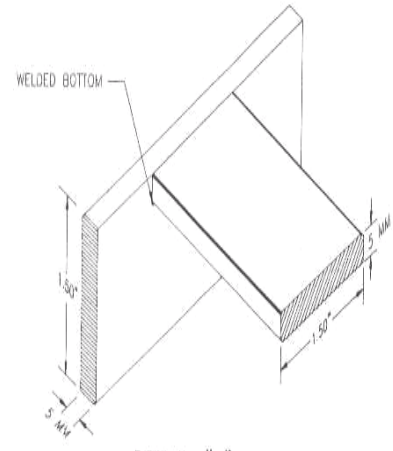
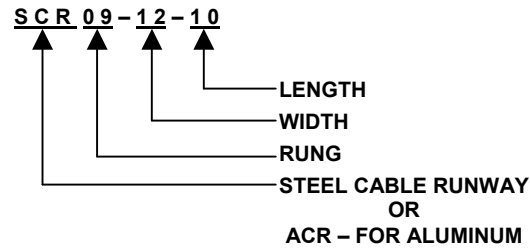
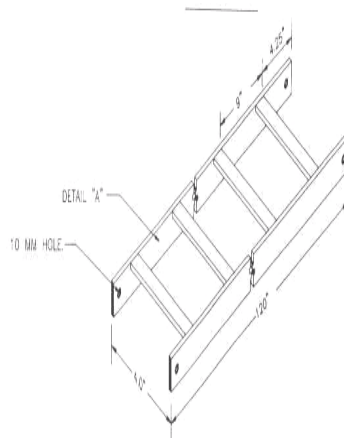
#### Material:

- Steel (Ansi Gray)
- Aluminum

Standard Length is 10 Ft or 20 Ft / Steel  
Standard Length is 8 Ft / Aluminum

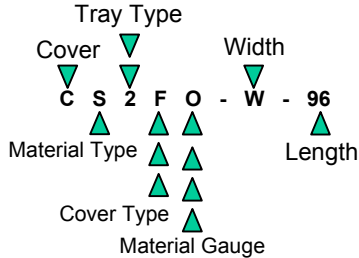
#### Ordering information

Part Number	Width (DimA)
SCR09 - 04 - 10	4"
SCR09 - 06 - 10	6"
SCR09 - 09 - 10	9"
SCR09 - 10 - 10	10"
SCR09 - 12 - 10	12"
SCR09 - 15 - 10	15"
SCR09 - 18 - 10	18"
SCR09 - 20 - 10	20"
SCR09 - 24 - 10	24"
SCR09 - 30 - 10	30"
SCR09 - 36 - 10	36"

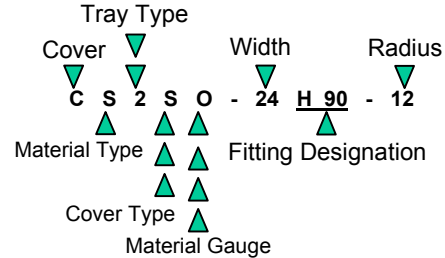


WESCOSA offers covers to provide protection for the cables contained within the system from the sunlight, environmental elements, dirt, debris and falling objects. All of the covers listed here are used for indoors as well as outdoor applications. Covers are fabricated from corrosion resistant aluminum or mill-galvanized steel.

### Straight Covers Example:



### Flat Fitting Covers Example:



### Cover Code Definitions:

#### \* Material Type

(A) Aluminum  
(S) Mill Galvanized

#### \*Tray Type

(O) 3/8" Flanged Down  
(1) 3/8" Flanged Out  
(2) 3/4" Flanged Out  
(1) 1 3/4" Flanged Out

#### \*Cover Type

(S) Flat (Non-ventilated)  
(SL) Flat (Ventilated)  
(F) Flat Flanged (Non-vent.)  
(FL) Flat Flange (ventilated)

#### \*Material Gauge

(0)20 Gauge Standard 1mm  
(8) 18 Gauge 1.2mm  
(6) 16 Gauge 1.5mm  
(4) 14 Gauge 2.0mm

Note: All fitting covers are non-flange.  
Straight length covers are 8' length.

### Wall Brackets

#### Single Strut Brackets

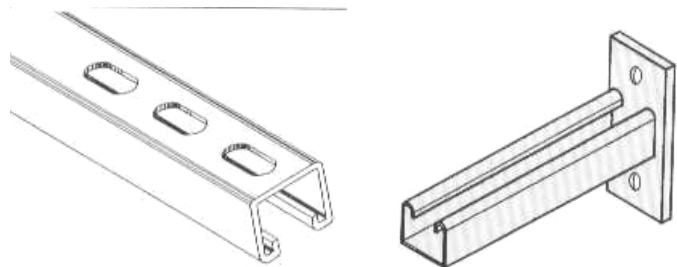
Designed primarily for use with strut framing, these brackets will work well in other applications. The uniform loads shown represent 2.5-safety factor. Furnished HDGAF Steel.

#### Allowable concentrated end load

One-half the listed uniform load.

#### Tray Width Uniform Load Electray

Tray Width	Uniform Load	Electray
24inch	200	HP-S250-30
18 inch	500	HP-S250-24
12 inch	700	HP-S250-18
9 inch	700	HP-S250-15
6 inch	1000	HP-S250-12



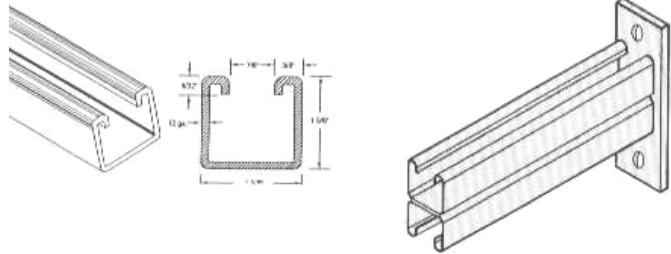
#### Double Strut Brackets

Similar to Single Strut Brackets but for wider trays and heavier loads. The uniform loads represent a 2.5 safety factor. Furnished in HDGAF steel.

### Allowable concentrated end load

One-half the listed uniform load.

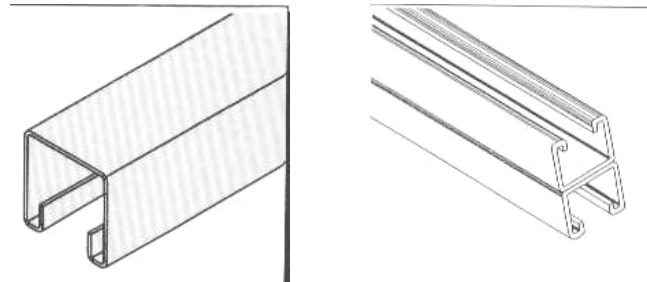
Tray Width	Uniform Load	Electray
36inch	400lb	HP-S251-42
30 inch	650lb	HP-S251-36
24 inch	800lb	HP-S251-30
18 inch	1000lb	HP-S251-24



### Strut Type Support Channel

HP-type channels provide indirect support for hanger rods by spanning between available structural support beams and channels. The channel is supplied in 10' or 20' lengths and can easily be field cut to the length needed for use as a trapeze-type support. Available in single or double (back-to-back) configurations.

	Single	Double
Width	1-5/8"	1-5/8"
Depth	1-5/8"	3-1/4"
Weight/Foot	2 lbs	4 lbs
Black Steel	HP-200-()	HP-202-()
Mill-Galvanize	HP-200-()-P	HP-202-()-P
HDGAF	HP-200-()-G	HP-202-()-G



Note: () = insert 120 for 10' or 240 for 20' length.

## 2.4.2 STEEL GRATING PANEL WESCOVA METAL BAR GRATINGS

Wahah Electric Supply Company of Saudi Arabia (WESCOVA) has been an active local manufacturer in the Dammam first industrial estate since 1976. The company has grown steadily to its present size of nearly 600 employees occupying over 37,000 square meters of manufacturing and office space. As part of our commitment to the industrial world to meet its growing requirements, WESCOVA has most recently begun the manufacturing of heavy duty metal bar gratings specifically used as a catch basin covers according to the customer specifications and dimension.

**WESCOVA Metal Bar Gratings** typical used for oil refineries, desalination plants, commercial job sites, and industrial construction sites requiring catch basin if high strength and reliability.

**Bearing Bars** are vertically positioned bars that are also referred to as the load bearing bars.

**Steel Grating Panels** can be defined as a series of steel bars that are placed equally apart, vertically positioned, with crossed members that are joined to form a rectangular pattern, or a special design pattern according to customer request.

**Cross Bars** are the members that are joined at right angles to the load bars to allow lateral restraint that is also referred to as the transverse bars.

**Span** is the overall length of the load bearing bars, even if the length is shorter than the overall width.

**Width** is the overall dimensional width of the transverse bars, even if the width is longer than the length.

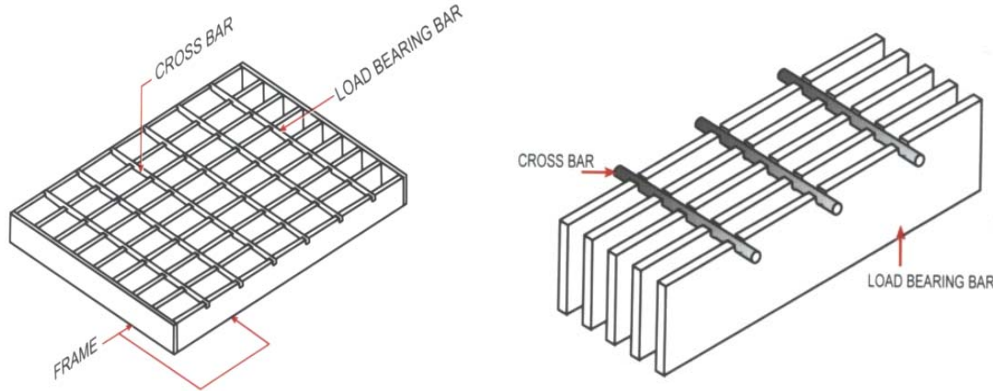
**Binding Bar** is the frame, which is flush with the top of the load bars, and is equal to the bottom of the load bars, or extends below the load bars.

**The starter** refers to the dimensions from the end of the frame, to center to the center of the distance to the first transverse bars.

**Steel Gratings** are manufactured by welding the load bars to the transverse bars at each intersection.

**The Steel Gratings** are hot dipped galvanized after fabrication according to ASTM A123 or BS 1461 (formerly BS729) specifications.

All of the steps in manufacturing till the shipment will be closely inspected by our dedicated quality team to ensure the high quality, reliability and standards, quality of welding, assembly and galvanizing.



## WESCOSA HEAVY DUTY GRATINGS

### TYPE 1:

Bearing Bar or Load Bar Size	: 65 X 10mm
Bearing Bar or Load Bar Pitch	: 30mm
Transverse Bar or Cross Bar Pitch	: 100mm
Bearing Bar or Load Bar Type	: Plain M.S. Flat Bar
Transverse Bar or Cross Bar Type	: 10mm M.S. Round Bar
Material Finish	: Hot Dip Galvanized ASTM A 123 Formerly ASTM A385 & or BS 1461 Formerly BS 729

### TYPE 1 STANDARD SIZES:

WES-GR-698 X 500	GRATING (HDGAF) 698mm W x 500mm L x 65mm H
WES-GR-698 X 698	GRATING (HDGAF) 698mm W x 698mm L x 65mm H
WES-GR-698 X 898	GRATING (HDGAF) 698mm W x 898mm L x 65mm H
WES-GR-698 X 998	GRATING (HDGAF) 698mm W x 998mm L x 65mm H
WES-GR-698 X 1198	GRATING (HDGAF) 698mm W x 1198mm L x 65mm H
WES-GR-698 X 1448	GRATING (HDGAF) 698mm W x 1448mm L x 65mm H

## TYPE 2:

Bearing Bar or Load Bar Size	:	90 X 10mm
Bearing Bar or Load Bar Pitch	:	30mm
Transverse Bar or Cross Bar Pitch	:	100mm
Bearing Bar or Load Bar Type	:	Plain M.S. Flat Bar
Transverse Bar or Cross Bar Type	:	10mm M.S. Round Bar
Material Finish	:	Hot Dip Galvanized ASTM A 123 Formerly ASTM A385 & or BS 1461

## TYPE 2 STANDARD SIZES:

WES-GR-1148 X 1698	GRATING (HDGAF) 1148mm W x 1698mm L x 90mm H
WES-GR-1148 X 1948	GRATING (HDGAF) 1148mm W x 1948mm L x 90mm H
WES-GR-1148 X 2248	GRATING (HDGAF) 1148mm W x 2248mm L x 90mm H
WES-GR-1248 X 1798	GRATING (HDGAF) 1248mm W x 1798mm L x 90mm H
WES-GR-1248 X 1948	GRATING (HDGAF) 1248mm W x 1948mm L x 90mm H
WES-GR-1348 X 1698	GRATING (HDGAF) 1348mm W x 1698mm L x 90mm H
WES-GR-1348 X 2098	GRATING (HDGAF) 1348mm W x 2098mm L x 90mm H

## TYPE 3:

Bearing Bar or Load Bar Size	:	100 X 12mm
Bearing Bar or Load Bar Pitch	:	30mm
Transverse Bar or Cross Bar Pitch	:	100mm
Bearing Bar or Load Bar Type	:	Plain M.S. Flat Bar
Transverse Bar or Cross Bar Type	:	12mm M.S. Round Bar
Material Finish	:	Hot Dip Galvanized ASTM A 123 Formerly ASTM A385 & or BS 1461

## TYPE 3 STANDARD SIZES:

WES-GR-1518 X 1568	GRATING (HDGAF) 1518mm W x 1568mm L x 90mm H
WES-GR-1718 X 1968	GRATING (HDGAF) 1718mm W x 1968mm L x 90mm H

## 2.5 Fuse Cutout & WESCOSA Services Division

### 2.5.1 TYPE C CUTOUTS 110-125-150-170 KV BIL

#### PRODUCT FEATURES

##### Interchangeability

The Chance Company was the first to design a cutout that could interchange fuseholders WITH THOSE OF ANOTHER MANUFACTURER. Another type C fuseholders are mutually interchangeable with S&C Electric Company's Type XS cutout (within the same voltage class) U.S.A.

##### Fusetube

The one-half inch side diameter of the C cutout's 100-ampere fusetube increases internal pressure giving superior and reliable expulsion action. During frequently encountered intermediate fault range this diameter also permits higher TRV (transient recovery voltages) values to be tolerated. This





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small-bore design eliminates any concern related to high impedance phase-to-phase faults on underground wye and delta system.

The inside liner is constructed of arc quenching bone fiber. The tube is made of fiberglass which permits the smaller bore and provides a higher burst strength. It is protected from the weather and environment by a special ultra-violet resistant coating.

Also, the WESCOSA fusetubes operates which fuse links from all major suppliers.

## Crossarm Brackets

C cutouts come package one per carton including brackets for crossarm mounting. Brackets are galvanized steel for long lasting service. Cutouts may be ordered without crossarm brackets.

## “D” Brackets

This bracket is used to mount crossouts and/or arresters directly to the pole. It is commonly referred to as “D” type bracket. Three brackets may be used for three-phase application. It provides a clean, quick mounting for single-phase application without crossarm or special pole bands.

## Higher Interrupt Capacities

By using a copper arc-shortening rod inside the top of the fusetube, higher interrupt ratings are obtainable. An arc-shortening rod is attached to the cap of some fusetubes and lowers the link within the fusetube. This permits a much shorter arc, resulting in less arc energy, less violence during the interruption, and higher interrupting capacities.

It is necessary to use fuse links with removable button heads when arc-shortening rods are employed.

## Terminals

Tin-plated bronze parallel groove type terminals are standard on Type C cutouts. They can accommodate aluminum or conductor sizes ranging from No. 6 solid copper through 4/0 ACSR or 250 MCM stranded copper. The parallel groove design is perfect for handling two different sizes of conductor as in the case when arresters are being used.

## STANDARD TYPE “C” CUTOUT WITH NEMA TYPE “B” BRACKET DIMENSIONS

KV BIL	A	B	C	D	E
110	16" 406mm	5 1/2" 137mm	10 3/4" 273mm	3 1/2" 89mm	21 1/2" 559mm
125	16 3/8" 416mm	7 1/8" 181mm	12 1/2" 318mm	3 1/8" 79mm	26 3/4" 679mm
150	16 3/8" 416mm	7 1/8" 181mm	12 1/2" 318mm	3 1/8" 79mm	26 3/4" 679mm
170	17 1/4" 438mm	8 1/2" 216mm	15" 381mm	1 3/4" 44mm	32 1/2" 826mm



**TYPE C STANDARD CUTOUTS  
 SPECIFICATIONS AND ORDERING INFORMATION**

**15kv (110kv BIL) (Ru listed)**

Catalog Number	Maximum Design Voltage	Nominal System Voltage	Continuous Current (Amps)	Interrupt Capacity (Asym)	Leakage to Ground Metal to Metal		Weight		Arc Shortening Rod
C710-112PB	15KV	Thru 14.4KV	100	10.000	10.2"	260mm	17.4lb	7.98kg	No
C710-114PB	15KV	Thru 14.4KV	100	16.000	10.2"	260mm	17.6	7.98kg	Yes
C710-143PB	15KV	Thru 14.4KV	200	12.000	10.2"	260mm	18.2	8.26kg	Yes
C710-133PB	15KV	Thru 14.4KV	300	12.000***	10.2"	260mm	17.7	8.03kg	N/A

**27kv (125kv BIL) (Ru listed)**

Catalog Number	Maximum Design Voltage	Nominal System Voltage	Continuous Current (Amps)	Interrupt Capacity (Asym)	Leakage to Ground Metal to Metal		Weight		Arc Shortening Rod
C710-211PB	27KV	Thru 24.9KV	100	10.000	12.6"	320mm	20.0lb	9.07kg	No
C710-213PB	27KV	Thru 24.9KV	100	16.000	12.6"	320mm	20.2lb	9.16kg	Yes
C710-242PB	27KV	Thru 24.9KV	200	12.000	12.6"	320mm	20.9lb	9.48kg	Yes
C710-333PB	27KV	Thru 24.9KV	300	12.000***	12.6"	320mm	20.4lb	9.25kg	N/A

**27kv (150kv BIL) (Ru listed)**

Catalog Number	Maximum Design Voltage	Nominal System Voltage	Continuous Current (Amps)	Interrupt Capacity (Asym)	Leakage to Ground Metal to Metal		Weight		Arc Shortening Rod
C710-311PB	27KV	No Restrictions thru 24.9KV +26.4 thru 36kv	100	8.000	17.3"	440mm	26.8lb	11.70kg	No
C710-313PB	27KV	No Restrictions thru 24.9KV +26.4 thru 36kv	100	12.000	17.3"	440mm	26.0lb	11.79kg	Yes
C710-342PB	27KV	No Restrictions thru 24.9KV +26.4 thru 36kv	200	10.000	17.3"	440mm	26.6lb	12.07kg	Yes
C710-333PB	27KV	No Restrictions thru 24.9KV +26.4 thru 36kv	300	12.000***	17.3"	440mm	26.2lb	11.88kg	N/A

**36kv (170kv BIL) (Ru listed)**

Catalog Number	Maximum Design Voltage	Nominal System Voltage	Continuous Current (Amps)	Interrupt Capacity (Asym)	Leakage to Ground Metal to Metal ●		Weight		Arc Shortening Rod
C710-613PB	36KV	Thru 36KV	100	12.000	26"	660mm	28.6lb	12.97kg	Yes
C710-643PB	27KV	No Restrictions thru 24.9KV +26.4 thru 36kv	100	12.000	26"	660mm	29.0lb	13.15kg	Yes
C710-633PB	36KV	Thru 36KV	300	12.000***	26"	660mm	28.6lb	12.97kg	N/A



**36kv (170kv BIL)**

**(Ru listed)**

Catalog Number	Maximum Design Voltage	Nominal System Voltage	Continuous Current (Amps)	Interrupt Capacity (Asym)	Leakage to Ground Metal to Metal		Weight		Arc Shortening Rod
C710-713PB	36KV	Thru 34.5KV	100	8.000	28.4"	720mm	33.9lb	12.97kg	Yes
C710-743PB	27KV	No Restrictions thru 24.9KV +26.4 thru 36kv	100	12.000	28.4"	720mm	34.3lb	15.55kg	Yes
C710-733PB	36KV	Thru 36KV	300	12.000***	28.4"	720mm	33.9lb	15.37kg	N/A

● Creepage distance 560mm is available for this type of cutouts. Specify creepage distance during order.

\*\*\* Momentary rating – solid blade

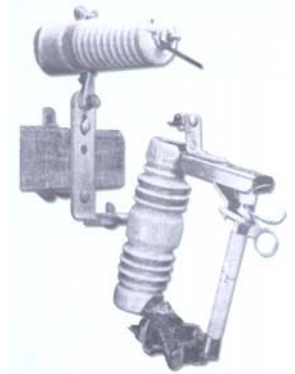
+ For application or single-phase to natural or three phase solidly – grounded Wye – connected circuits where recovery voltage does not exceed the max design voltage of the device.

Note: Due to the higher Creepage distance and BIL requirement, the cutout is connected to the station past insulator to achieve 30, 40 or 50mm/KV creepage distance for 36KV fuse cutout.



15KV cutout with direct-connected Copper, large block, MOV porcelain, 10KV arrester.

KV MAX DES	KV BIL	AMP	SYM	CREEPAGE DISTANCE
C710-613PB-1				
36KV	200	100	8.000	1320MM
C710-613PB-2				
36KV	200	100	8.000	990MM
C710-613PB-3				
36KV	200	100	8.000	1600MM



15KV cutout with direct-connected Ohio Brass large block, MOV polymer, 9KV arrester.

**TYPE C CUTOUT-ARRESTER COMBINATIONS Over-The-Arm-Type**

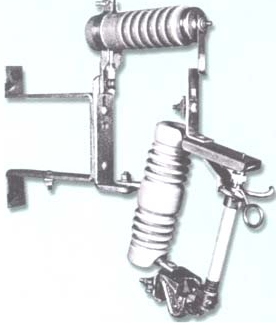
**Advantages of Combination**

WESCOSA cutout/arrester combination cost less than the total cost of separately purchased components. The combination units install faster, more economically and take up less space in the storage transit and service. Each combined unit takes up a minimum of space on the crossarm and has a favorable weight distribution for minimal off-center loading. The field-proven quality of both cutout and arrester assure consistent high performance for the combinations.

**Wider selection of arresters**

WESCOSA distribution cutouts-arresters are available with various combinations of brands, basic designs, housing materials and duty classes of arresters. All combinations are directly connected to the cutout and have isolators on the groundside. Check with the arrester manufacturer for specific application recommendations.

WESCOSA/licensee A.B. Chance now offers Ohio Brass MOV arresters and Copper VariGAP™ and MOV arresters. These new arresters supersede the previous silicon-carbide units offered by Chance.



15 KV Type C cutouts, external gap 9/10KV arresters mounted on "D" type pole bracket.



Over the arm mounted, 15KV Type C cutout, direct connected, 9/10kV arresters, with crossarm mounting bracket.



Over the arm mounted, 15KV Type C cutout, external gap, 9/10KV arresters, on crossarm bracket.

## ORDERING INFORMATION

	Catalog Number**	Maximum Design Voltage	Continuous Current (Amps)	Interrupt Capacity (Asym Amps)	BIL	Arrester Description	Weight
15 kV 110 kV BIL	C7 1A-412PB	15 KV	100	10,000	110 KV	9/10 KV External Gap	25 lbs. 11.25kg.
	C7 1D-412PB	15 KV	100	10,000	110 KV	9/10 KV Direct Connected	25 lbs. 11.25 kg.
27 kV 125 kV BIL	C7 1C-211PB	27 KV	100	8,000	125 KV	18 KV External Gap	32 lbs. 14.51 kg.
	C7 1F-211PB	27 KV	100	8,000	125 KV	18 KV Direct Connected	32 lbs. 14.51 kg.
27 kV 150 kV BIL	C7 1C-311PB	27 KV	100	8,000	150 KV	18 KV External Gap	35 lbs. 15.88 kg.
	C7 1F-311PB	27 KV	100	8,000	150 KV	18 KV Direct Connected	35 lbs. 15.88 kg.

\*\* SUFFIX P = Parallel Groove Clamps B = NEMA Crossarm Mounting Bracket

NOTE: 1 – each of the above cutout-arrester combination includes tin-plated bronze PG Clamps and "Loadbuster" hooks.

## TERMINAL VARIATIONS:

To order with small eyebolt (No. 8 sol. Thru 2/0 str) change the "P" to "E" (ie C7 1A-112EB)

To order with small eyebolt (No. 6 sol. Thru 250 str or 4/0 ACSR) change the "P" to "L" (ie C7 1A-112LB)

## BRACKET VARIATIONS:

To order without crossarm bracket drop the suffix "B" from the catalog number (ie C7 1A-112P)

To order with a "D" pole-mounting bracket, change the suffix "B" to "D" (ie C71A-112PD)

## 2.6.2 SYNCHRONIZING PANEL

WESCOSA Synchronizing panels are designed and manufactured to meet power system requirements.

### FEATURES

- Microprocessor based Auto-Synchronizer
- One Synchronizing unit controls multiple systems with up to six different sets of breaker closing parameters
- Suitable for small Diesel units to large difficult hydro.
- Synchronizer unit suitable for automatic control of the generators.
- Both Manual and Auto synchronizing feature.
- Custom designed Mimic diagram
- High accuracy Analogue / Digital meters (Optional)
- Test switch facilitates testing of Relays and Meters from the front panel.
- Dead Front with rear access or front access, freestanding panel / Wall mounting type panel design available.
- Panel protection – NEMA Type 1, IP 21 to IP 55



Panel construction as per ANSI / NEMA standard

## 2.6.3 RELAY PANEL & CONTROL PANEL

WESCOSA Relay and control panels are designed and manufactured to provide high degree of protection and control to power system equipment i.e. Transmission line, Power transformers and Breakers etc.

### FEATURES

- Microprocessor based / Numerical protective relays
- High accuracy analog / Digital meters (Optional)
- Custom designed Mimic diagrams (Optional)
- Both Freestanding type and Wall mounting type relay panel design available.
- Both Fixed and Swing type 19" rack construction available for Relay / Meters and pilot devices installation on floor mounting type panel.
- Glazed door for floor mounting type panel to view relay panel front mounted components.
- Dead front with rear access or front access type control panels.
- Test switch facilitates testing of Relays and Meters from the front of the panel.
- Panel protection – NEMA type 1, IP 41 to IP 55
- Meets ANSI/NEMA/IEC Standard



## 2.6.4 ANNUNCIATION PANEL

WESCOSA Annunciation panels are manufactured with AMETEK Power Instruments Annunciation AN3100C and meets ANSI/NEMA standard.

### ANNUNCIATION

- Microprocessor Based
- Field Programmable
- Compact Unit
- Programmable Common Relay Output
- High speed event capture (1 ms)
- Auxiliary relay output from windows (Optional) for remote Annunciation
- Rugged Construction
- Modbus Output
- Windows are available in five different color (White/Red/Amber/Green/Blue)
- Suitable for indoor and outdoor application
- Four different size windows to choose
  - Standard: (2.85"x0.83")
  - Medium: 2.85"x1.11")
  - Large: (2.85"x1.67")
  - Extra Large: (2.85"x3.34")
- Available in six different Auxiliary power supply  
24VDC / 48VDC / 125VDC / 250VDC / 120VAC,50 & 60 HZ / 240VAC,50 & 60HZ)
- Transmitter / Alarm signal conditioning module (Optional) for analog inputs.
- Compact Multi-tone Hooter provides 28 different tones
- Type tested for RFI/EMI and radiated emission.



### ENCLOSURE

- Free standing with front or rear access design / Wall mounting type.
- Protection category – IP 52 to IP 65

## WESCOSA SERVICES DIVISION



**WESCOSA** is a pioneer manufacturer of Electrical Distribution Equipments like **TRANSFORMERS, MV & LV SWITCHGEARS, MCC'S CABLE SUPPORT TRAYS, FUSE CUTOUTS, SEGREGATED AND NON-SEGREGATED BUSDUCTS** with technical collaboration from **POWELL INC., CUTLER-HAMMER INC., MP-HUSKY AND AB CHANCE** of U.S.A.

WESCOSA, in same business line of manufacturing, continuously for the past three decades in the Kingdom of Saudi Arabia, has acquired considerable and varied technological experience in major electrical activities. Its aspired diversification, mainly aimed at serving and satisfying its customers, continued with servicing projects involving the same line of manufactured products, for major customers.



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In 1995, large-scale concentration on servicing projects as a result of high demand and bloom in **WESCOSA** servicing activities emerged **WESCOSA SERVICE DIVISION (WSD)** to attend to services task separately. The division comprises of experienced, skilled and well qualified Service Engineers and Service Technician. WSD services can be broadly classified as:

- |   |  |
|---|--|
| a) <b>Service for All Products.</b>               | e) <b>Replace, Retrofit or Retrofill</b> |
| b) <b>Maintenance and Refurbishment</b>           | f) <b>Spare Parts Component</b>          |
| c) <b>Installation, Testing and Commissioning</b> | g) <b>Engineering Support</b>            |
| d) <b>Designing and Modification</b>              | h) <b>Transformer Oil Filtration</b>     |



We extend our services to the following products but not limited to:

**TRANSFORMER** : Power and Distribution Transformer  
**SWITCHGEAR** : **MV. SWITCHGEAR** of vacuum, oil, SF6 etc. **LV. SWITCHGEAR.**  
**MCC's** : All types of MCC's.  
**BREAKERS** : Both MV and LV Breakers.  
**BUS-DUCTS** : Both MV and LV Busducts.  
**SF6 / Oil Switches, Ring Main Units, Switch Boards, Control Panels, All Types of Relays etc.**

In addition to our well-experienced crew, we have all the support from our Licensors to handle the above-mentioned activities of their products and other manufacturer products.

## TESTING AND COMMISSIONING

All testing activities can be conducted at our factory or at site to meet your requirements by using equipments calibrated from certified laboratories to maintain the accuracy of test results.

We have sufficient Engineers and Technicians to commission wide range of products related to transmission and distribution equipment:

**Switchgear  
Transformer  
MCC's  
Breakers  
Relays**

**Motors  
Generators  
Relay Panel  
UPS System  
Cable**

## INSTALLATION:

Call us any time; we carry our termination, electrical installation and control wires interconnection for all distribution equipments.

## DESIGN, SUPPLY AND MODIFICATION:

- Do you need to upgrade or modify your Switchgear and MCC?
- Do you have to change the application?
- Do you have old transformer, which require meeting new standards?
- Do you have a problem in the length of your bus duct?

**Answer:**

**WESCOSA SERVICES DIVISION IS THE SOLUTION.**



## REFURBISHMENTS AND RE-CONDITIONING:

Transformers, Substation, Switchgears, MCC, RMU, Switches and all types of panels.  
We make them as new.

## RETROFITS AND REPLACEMENT:

### 1. Digitrip Retrofit Kits for breakers or Replacement of breakers:

You can do it now with WECOSA Services Division ....

Westinghouse DA & DK Breakers  
Westinghouse DB, DS & SPB Breakers  
GE AK Breakers  
ITE Breakers  
Siemens and Siemens Allies Breakers  
Other Breakers

### 2. Retrofit kits and assemblies for MV starters

Westinghouse AMI air Ampgard  
Westinghouse LF air Ampgard  
GE Limit amp contactor

### 3. Retrofit for MCC

Do you have a problem getting spare parts for your MCC's?

WECOSA can offer a factory retrofit; we replace the breaker handle and the handle mechanism with Cutler-Hammer products. A new door will be manufactured at our factory. The old units wrapper is cleaned and repainted and the existing bus-stabs are reused.

If your MCC has a space for additional buckets, do not look for extensions. Just call WECOSA Services Division.

If many original components are obsolete or no longer feasible for isotrol plug in unit starters, we do install modern equals or equivalents to use the space available.

### Do you have problems with other manufacturer's switchgear?

WECOSA SOLVES PROBLEMS CAUSED BY OBSOLETE BREAKERS  
You call wescosa now!

...We offer **POWELL and CUTLER-HAMMER** Retrofill and Replacement.

The retrofill option allows operators to upgrade obsolete switchgear using the existing structure and bus work, by simply replacing the circuit breaker and cell with modern vacuum, metal-clad circuit breaker. Upgrades can be accomplished on site or at WECOSA factory.



Replacement option: We can supply exact replacements for obsolete General Electric Magneblast and Westinghouse DHP Circuit Breakers. Available for a wide range application:

5 kV, 26" wide cells, 1200 to 2000A  
5kV, 36" wide cells, 1200 to 3000A  
15kV, 36" wide cells, 1200 to 3000A  
38kV, 48" wide cells, 1200 to 2000A

### Installation:

You can depend on us. Our engineers and technicians remove obsolete breakers and cell components, then install the new retrofit cell into the existing enclosure. The new cell contains all new secondary disconnect, a close door racking mechanism and adaptive runback bus to connect to bus termination points. Replacement breakers correctly interface with existing cell switches. Safety interlocks inherent to the original switchgear design are maintained.

## 2.6 Transformers

### 2.6.1 PAD MOUNTED DISTRIBUTION TRANSFORMER

#### Application

The wescosa pad mounted distribution transformer is an oil filled, three phase, specifically designed for servicing such underground distribution loads as shopping centers, schools, institutions, and industrial plants. It is available in both live front and dead front construction, for radial or loop feed applications, with or without fusing or switching.

#### Industry standards

**WESOSA pad mounted transformers meet the following industry standards.**

ANSI C57.12.00	ANSI C57.12.80
ANSI C57.12.22	ANSI C57.12.90
ANSI C57.12.26	NEMA TR1
ANSI C57.12.70	NEMA TR-P9



#### Ratings

- kVA: 45, 75, 112.5, 150, 300, 500, 750, 1000, 1500
- High Voltages (Primary)

4160 Grd Y/2400	2400△
8320 Grd Y/4800	4160△
12470 Grd Y/7200	4800△
13200 Grd Y/7620	7200△
13800 Grd Y/7970	8320△
34500 Grd Y/9920	12000△
	12470△
	13200△
	13800△
	14400△

- HV Taps: 2-2 ½% above and below normal.

■ HV BIL:	45kV BIL	-	2400 volts
	60kV BIL	-	4160 – 4800 volts
	75kV BIL	-	7200 volts
	95kV BIL	-	12000 – 16340 volts
	150kV BIL	-	34500 Grd Y/19920 volts

- Low voltages (Secondary)



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All low voltages are rated 30kV BIL

480/Y277	220Y/127	
231Y/133	480△	400Y/231
208Y/120 (Refer to WESCOSA on 1500 kVA)		
240△ (Refer to WESCOSA on 1500 kVA)		
240△/120 lighting tap (Refer to WESCOSA on 250-1500 kVA)		

## Typical Design Impedances

Impedance for 500 kVA and below range from 2.6% to 5.4%.

A 75 kVA unit would be about 2.6% and a 500 kVA would be about 5.4%. The impedance would increase within this range as kVA increases.

ANSI standards set the impedance for 750 kVA and above to be 5.75%.

Specific design impedances for fault let thru circulations may be obtained by contacting WESCOSA

## Standard Features

1. The weather cover over the cabinet is provided with additional hold-down hardware to secure it more firmly to the cabinet.
2. Four lifting hooks.
3. Bolted-on terminal compartment (18" deep) with removable front sill.
4. Hinged, lift-off cabinet doors.
5. Interlocked hex-head or penta-head bolt/padlock handle operates a cam assembly, which is part of the three-point door latching mechanism.
6. Lighting arrester-mounting pad (live front only).
7. Tank ground pad (1 in HV, 1 in LV).
8. Steel high / low voltage compartment barrier.
9. Two 3/8" hex-head bolts must be removed from the flange formed on the steel high/low barrier before the H.V. door can be opened.
10. Externally clamped low voltage epoxy bushings with threaded copper studs with NEMA 4 hole spade.
11. Nameplate.
12. Fill plug and self-actuating pressure relief device.
13. Drain plug.
14. Removable neutral ground strap.
15. Externally operated tap changer (no load).
16. Liquid temperature gauge.
17. Liquid level gauge.
18. Drain Valve with integral sampler.
  - Five-legged core/coil assembly (inside tank)
  - Handhole cover bolted onto tank top (Protected by weather cover).
  - Panel coolers (112 ½ kVA through 500 kVA). Tabular coolers (750 kVA and above).



### Standard Options Primary Termination

19. For live front construction, externally clamped high voltage porcelain bushings with a double eyebolt for 2/0 cable (45-225kVA) or a single eyebolt for 40 cables (300-1500 kVA).
20. For dead front construction, externally clamped high voltage epoxy bushing wells for loadbreak, or non-loadbreak inserts, 200-amp rating, for maximum 4/0 (95mm<sup>2</sup>) cable.
  - Non-Load break Integral Bushing rated 600 A for cable size upto 1000 mcm (500mm<sup>2</sup>).
21. Primary Switching
  - LBOR oil switch, loop or radial feed.
  - EFD air switch, (loop or radial feed) with current limiting fuse
  - Externally operated series-multiple (dual voltage) switch.

#### Overcurrent Protection

- Internal primary protective links.
- D.O. II bayonet-type fuses.
- Drawout, Drywell load break current limiting fuses.
- Secondary oil or air circuit breaker.
- Internal, partial-range current limiting fuse, in series with protective links or D.O. II bayonet type fuse.

#### Overvoltage Protection

- Distribution class lightning arresters, 3 thru 27kV rating available.

#### Secondary Termination

- Externally clamped bushings with threaded copper studs.
- Externally clamped bushings with NEMA 4 hole spades.

## 2.6.2 POWER SUBSTATION TRANSFORMERS

### Three Phase



WESCOSA Power Substation Transformers are designed to provide electrical service for distribution system. Primary and secondary cables enter the transformer cable boxes from below through openings in the foundation. All exposed live parts are enclosed in cable boxes (or compartments when required). Designs for close-coupled bus-duct are also available.

WESCOSA provides different designs to meet both IEC and ANSI standards.

H.V. TAPS:  $\pm 2 \times 2 \frac{1}{2} \%$  is standard.

Special tapping is available.

Off load/On Load top changer can be provided

#### Standard Ratings

THREE PHASE kVA	HIGH VOLTAGES	LOW VOLTAGES
500-10000	160	20Y/127
11000	1Y/133	
13200	400Y/231	
13800	480Y/277	
33000		
34500		



### Standard Features

1. Bolted or Welded top cover.
2. Four lifting hooks.
3. Dial thermometer with maximum pointer indicates oil temperature and shows the maximum temperature attained since last reset.
4. Oil temperature gauge with contacts. (Optional)
5. Padlockable off-load tap changer provide means of changing the voltage ration of the transformer in steps of fixed percentage voltage.
6. A pressure relief device relieves excessive internal pressure and reseals at a lower positive pressure.
7. Liquid level gauge – indicates the normal liquid level.
8. Magnetic oil level gauge with contacts (Optional).
9. Pressure vacuum gauge (Optional).
10. Drain valve with plug.
11. Jacking pads (Optional).
12. Fill Plug.
13. Skids.
14. Bi-directional roller (Optional).
15. Detachable cooling radiators, or panel cooling fins.
16. Winding temperature indicator with contact (Optional).
17. Rapid rise pressure relay. (Optional)
18. Relief device with trip contacts. (Optional)
19. Forced cooling fans increase capacity by about 25%. (Optional)
20. Hermetically-sealed or conservator type.

### Standard Options

#### Primary Terminations

Side mounted cable box with high voltage bushings suitable for H.V. termination kit.  
Cover-mounted cable box with high voltage bushings suitable for H.V. termination kit.  
Cover –mounted “stand alone” high voltage bushings.  
High voltage cable box with provision for fixing H.V. power fuses.

#### Secondary Terminations

Side-mounted cable box with low voltage bushing with spade connectors.  
Cover-mounted cable box with low voltage bushings with spade connectors.  
Side-mounted low voltage bushing throat for close coupling with busduct/switchgear.  
Cover mounted low voltage bushing throat for close coupling with busduct/switchgear.

### Insulating Liquid

Normal mineral oil conforming to applicable latest international standard specifications.

### Core Construction

High quality, low loss, cold-rolled, grain oriented silicon steel with five-legged, wound-core construction, or three ledge, step lap stacked-core construction is used.

## 2.6.3 POLE MOUNT AND PAD MOUNT DISTRIBUTION TRANSFORMERS

### INTRODUCTION:

WESCOSA has been manufacturing distribution transformer since 1978.

WESCOSA's distribution transformer are designed, manufactured and tested in accordance with IEC 76 and its equivalent standards. Standard type transformer are well suited for serving both industrial and commercial applications: the small, compact design saves value space and lighter weight makes handling and installation easier and less expensive. In addition to the standard type a variety of options are available to meet your specific requirements.

WESCOSA's distribution transformers are designed for continuous operation, self-cooled for tropical climates, and are suitable for indoor and outdoor installation.



### STANDARD FEATURES:

#### High Reliability and Easy Maintenance:

Distribution transformers can be manufactured with simple structure and having compact size, and yet they are mechanically strong and easy to inspect. The self-cooled or ONAN type system requires no auxiliary devices and permits easy maintenance.

#### Well Insulated Against Lighting Surge:

The coil is wound with untreated kraft paper, and the lack of varnish treatment allows the coil to be amply impregnated with degassed oil, which gives it high impulse voltage. Coils of high voltage have multi-layer windings, which minimize internal potential oscillation and electrical stress.

#### Cold-Rolled Grain-Oriented Silicon Steel:

Cold-rolled grain oriented sheet steel is used in the core, resulting in highly efficient transformer of reduced size and weight.

#### Mineral Oil:

The transformer is vacuumed and filled with high quality refined mineral oil having excellent insulating property that complies with IEC-296.

#### Temperature Limits:

WESCOSA distribution transformers are designed for the average winding rise of 55°C and average top oil rise of 50°C at an average ambient temperature of 40°C. Other designs may be provided on special order.

#### Paint Finish:

The tank walls are shot blasted, cleaned and applied with corrosion inhibiting epoxy/polyamide primer. Then an intermediate coat and a topcoat are applied using aliphatic polyurethane paint, which is resistant to corrosive industrial atmosphere. The standard color finish is cement gray.

#### Ratings:

- KVA: 50, 100, 200, 300, 500, 1000, 1500
- High Voltages (Primary)
  - 13800V Delta
  - 33000V Delta
- Low Voltages (Secondary)
- All low voltages are rated 30kV BIL
  - 231Y/133V
  - 400Y231V
- HV TAPS: 2 - 2.5 above and below normal.
- HV BIL: 95 / 110kV BIL – 13800 volt  
170 / 200kV BIL – 3300 volt

## 2.6.4 DRY TYPE TRANSFORMERS (Three phase – 60 HZ)

**WESCOSA** offers a complete line of in-Kingdom manufactured three phase dry type transformers through 1000kVA. The distinguished WESCOSA transformer family provides dependable utilization voltages that are vital in today's energy conscious distribution system in Saudi Arabia are Quiet and Dependable.

WESCOSA provides different designs to meet the variety of customer's needs in Saudi Arabia.



These include:

Voltage

- 480V – 480Y/277V
- 480V – 220Y/127V
- 480V – 208Y/120V
- 380V – 220Y/127V

Connection DELTA – WYE

Frequency 60Hz

Temperature Rise 150°C Average Winding Rise

Enclosure indoor ventilated outdoor (with weathershields).

WESCOSA three-phase design is based on a 220°C rated insulation system. This reduces the size of the cooling duct area providing shorter core loop. The result is a lighter, smaller transformer and a major reduction in core vibrations, keeping the gap vibrations to a minimum along with other important assembly procedures assures quiet operation and low losses.

Steel grid bottoms in the enclosure permits the cooler ambient to enter the terminal compartment on ventilated designs. The grid on the bottom also provides rodent protection.

The front panel is removable for easy access to the wiring compartment. Terminal straps, located in the terminal compartment below the core and coil assembly, facilitate connections.

The smaller unit contains\ knockouts on both side near the bottom. Larger units are equipped with removable plates for economical cable entry.

Wall mounting brackets are available for smaller designs. Transformers can be furnished with weathershields for outdoor service. Lifting accessories are on all designs.

**TYPE DT-3**  
**-150°C AVERAGE WINDING RISE, 220°C INSULATION SYSTEM**

**480 – 220y / 127 VOLTS**

CATALOGUE NO.	KVA	TAPS	RATED TAP	FRAME
V48M31T15A	15	+ 15 – 10	3	912
V48M31T30A	30	+ 15 – 10	3	912
V48M31T45A	45	+ 15 – 10	3	912
V48M31T75A	75	+ 15 – 10	3	915
V48M31T12A	112.5	+ 15 – 10	3	915
V48M31T49A	150	+ 15 – 10	3	916
V48M31T22A	225	+ 15 – 10	3	918
V48M31T33A	300	+ 15 – 10	3	918
V48M31T55A	500	+ 15 – 10	3	920

**480 – 280Y / 120 VOLTS**

CATALOGUE NO.	KVA	TAPS	RATED TAP	FRAME
V48M28T15B	15	+ 15 – 10	3	912
V48M28T30K	30	+ 15 – 10	3	912
V48M28T37K	37.5	+ 15 – 10	3	912
V48M28T45K	45	+ 15 – 10	3	912
V48M28T50J	50	+ 15 – 10	3	912
V48M28T75J	75	+ 15 – 10	3	915
V48M28T12H	112.5	+ 15 – 10	3	915
V48M28T49K	150	+ 15 – 10	3	916
V48M28T22L	225	+ 15 – 10	3	918
V48M28T33K	300	+ 15 – 10	3	918
V48M28T55G	500	+ 15 – 10	3	920
V48M28T77F	750	+ 15 – 10	3	920
V48M28T11G	1000	+ 3.5 – 3.5 **	2	N/A

**380 – 220Y / 127 VOLTS**

CATALOGUE NO.	KVA	TAPS	RATED TAP	FRAME
V38M31T15A	15	+ 15 – 10	3	912
V38M31T30A	30	+ 15 – 10	3	912
V38M31T45A	45	+ 15 – 10	3	912
V38M31T75A	75	+ 15 – 10	3	915
V38M31T12A	112.5	+ 15 – 10	3	915
V38M31T49A	150	+ 15 – 10	3	916
V38M31T22A	225	+ 15 – 10	3	918
V38M31T33A	300	+ 15 – 10	3	918
V38M31T55A	500	+ 15 – 10	3	920

**480 – 280Y / 277 VOLTS**

CATALOGUE NO.	KVA	TAPS	RATED TAP	FRAME
V48M47T15B	15	+ 15 – 10	3	912
V48M47T30N	30	+ 15 – 10	3	912
V48M47T45G	45	+ 15 – 10	3	912
V48M47T75F	75	+ 15 – 10	3	915
V48M47T12E	112.5	+ 15 – 10	3	915
V48M47T49F	150	+ 15 – 10	3	916
V48M47T22F	225	+ 15 – 10	3	918
V48M47T33E	300	+ 15 – 10	3	918
V48M47T55F	500	+ 15 – 10	3	920
V48M47T77A	750	+ 15 – 10	3	920

## 2.6.5 DRY TYPE TRANSFORMERS EPT Resin encapsulated

### Features and Specifications

Suitable for indoor/outdoor mounting (600 volt class).

Can be mounted in any position indoors. Outdoors mount upright only.

Constructed in accordance with NEMA / ANSI and IEEE standards.

Totally enclosed – non – ventilated design permits installation in areas that contain dust, moisture or corrosive fumes.

As much as 40% smaller in cubic volume than equal kVA rating in other dry type designs.

Low sound levels permit installation in hospitals, hotels, schools, and libraries.

Large terminal compartment permits easier connections.

Immersion of core and coil in sand and resin provides rigid construction which means attenuates sound and will withstand short circuit stresses up to 25 times normal load current for two seconds.

15 kVA and below have terminal compartment on the bottom.

30-45 kVA have terminal compartment at top no knockouts.

Lifting holes are provided.

Flexible leads built into the unit for ease of making connections.

115°C rise - 185°C total insulation system.

With the above operating temperatures, EPT types can be used in hazardous areas in which contain substances with ignition temperatures more than 185°C.

### Additional Features and Specifications for shielded isolation type.

1. Includes electrostatic shield with ground wire.
2. Suppress high-frequency signals from reaching sensitive electronic equipment.
3. Prevent electrical disturbances from being transmitted to load units.
4. Contribute to attenuation ratio of 100: 1 for suppression of common mode noise.



## 2.6.6 PACKAGE TRANSFORMER SUBSTATION

WESCOSA transformer substations are available with a wide range of capacities up to 1600 kVA with maximum system voltage 15 kV. The substations assembled as an integrated unit from sheet steel, built on heavy channel foundation frame to withstand the weight of its components.

The substation is divided into three compartments.

- A. MEDIUM VOLTAGE COMPARTMENT.
- B. TRANSFORMER COMPARTMENT.
- C. LOW VOLTAGE COMPARTMENT.

### A. MEDIUM VOLTAGE COMPARTMENT.

M.V. Compartment contains two load break switches and one automatic fused load break switch for transformer (RMU). It is available to mount min. oil or vacuum or SF6 load breakswitch.

### B. TRANSFORMER COMPARTMENT

Transformer compartment is designed to enclose a 3-phase oil immersed naturally air-cooled transformer specially designed for substation. Transformer is connected to L.V. distribution board through copper bus bars. The necessary openings are provided, by which air entry is assured, so that temperature is kept to a minimum.

### C. LOW VOLTAGE COMPARTMENT

L.V. compartment contain the L.V. distribution board. The incoming and outgoing feeders are available providing with either molded case circuit breakers or high rupturing capacity fuses. The incoming unit is equipped with voltmeter and selector switch, 3 ammeters with current transformers, signal lamps and space for optional K.W.H. meter.



## 2.7 Calibration Laboratory



Technology changes are rapidly increasing the numbers and types of electrical/electronic test and measurement tools that typically feature increasing level of sophistication with a growing list of functions and capabilities, all of which need to be calibrated to keep running in top form. With all of these changes and those yet to come you need a calibration service supported by best-in-class quality systems. In the kingdom, an excellent solution to help ensure that you always receive precise, reliable and fast calibration services is WESCOSA.

### SUPERIOR QUALITY SYSTEM

WESCOSA is an ISO 9002 Certified Laboratory. Its quality system meets the exacting and stringent requirements of government and commercial agencies.

ISO 9002:1994  
ISO 10012-1:1992 (E)  
ISO/IEC Guide 25/17025  
MIL-STD-45662A

### CALIBRATION SERVICE CAPABILITIES

Calibration of your instrument are accomplished by comparison to standard maintained by WESCOSA calibration laboratory which has an ISO 9002 certification and using standards that are directly/indirectly traceable to the National Physical Laboratory (UK) and National Institute of Standards and Technology (U.S.) within the limitation of their laboratory services, or have been derived from accepted values of physical constants, or by the ratio type of self calibration techniques.

### REPAIR

WESCOSA also offers repair services on your non-conforming test equipment whenever practicable.





## Major Customers & Alliance

### 3.1 Local Customers

#### **SAUDI ARAMCO**

##### **Saudi Arabian Oil Company**

C-D-144, North Park 1,

Dhahran 31311,

Saudi Arabia

Vendor Code: 10005799

Products:

(885) Switchgear, Metal-Clad, Low Voltage Indoor

(883) Switchgear, Indoor, Low Voltage

(752) Switch: Disconnect, Manually operated

(845) Control and Protective Relay Panel

(859) Panelboard: Electrical: Low Voltage

(929) Cable Bus 16-SAMSS-520

(851) Power Supply, Electrical

(744) Cable Tray

(765) Transformer, Distribution; 60; 30 deg C

(857) Motor Control Center; 16 SAMSS-506; High Voltage

(886) Switchrack, Outdoor Low Voltage

(900) Busduct, Metal-enclosed 16-SAMSS-511

(761) Transformer, Distribution, Pad Mounted

(903) Switch; Disconnect; High Voltage

(898) Controlgear, Indoor Low Voltage

(899) Controlgear, Outdoor High Voltage

Submersible Pump

(764) Transformer, Power Oil Filled

(753) Interrupter, Air Insulated, Air Break

(763) Transformer, Power Dry

(843) Circuit Breaker, Vacuum, ANSI/IEEE or IE

(878) Switchgear, Metal-Clad, Indoor 1-38 KV\*

(738) Bus

(758) Transformer, Special purpose

(762) Transformer, Grounding

(815) Channel, Framing; Channels and

Accessories

#### **SCECO-EAST**

##### **Saudi Consolidated Electric Company**

P.O. Box 5190,

Dammam 31422

Vendor Code: W-5230

Products: Cable Trays per 24-SMSS-2, Rev. 1

Bus Ducts per 24-SMMS-1, Rev. 2

Oil Type and Dry Type Transformers

Panel Boards

Switchboards

Fuse Cutouts

#### **SEC-Central**

P.O. Box 57,

Riyadh 11411

Products:

Oil and Dry Type Transformers

Fuse Cutout

Cable Trays

Busducts

#### **SEC-West**

P.O. Box 9166,

Jeddah

Products:

Oil and Dry Type Transformers

Fuse Cutout

Cable Trays

Busducts

#### **SEC-South**

P.O. Box 616,

Abha.

Products:

Oil and Dry Type Transformers

Fuse Cutout

Cable Trays

Busducts

#### **Royal Commission – MARAFIQ**

P.O. Box 30144,

Al Sinahy , Yanbu

Vendor Code: 00001390

#### **SABIC Services Ltd.**

P.O. Box 11115,

Jubail 31961,

Vendor Code: 102435

#### **Gulf Farabi**

P.O. Box 11763,

Jubail 31961

#### **Al Khafji Joint Operation Company**

P.O. Box 256,

Al Khafji 31971



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## 3.2 Overseas Contractors

### **AMEC BKW Ltd.**

# 11 The Boulevard Crawly,  
West Sussex RH10 1UX,  
U.K.

### **Babcock King-Wilkinson Ltd.**

# 11 The Boulevard Crawly,  
West Sussex RH10 1UX,  
U.K.

### **BECHTEL**

P.O. Box 739,  
245 Hammersmith Road,  
London W68DP

### **Benfield Electric Int'l. Ltd.**

1-1-15 Shiba Daimon,  
Tokyo 105  
Japan

### **Chiyoda**

2-12-1, Tsurumuchio,  
Tsurumi-ku, Tokohama 230-8601  
Japan

### **ENELPOWER**

Carducci 1/3,  
20125 Milan,  
Italy

### **Flour Daniel Ltd.**

U.S.A.

### **JGC Corporation Yokohama**

14-1 Bessho 1-Chome,  
Minami-Kuyokohama 323,  
Japan

### **Snamprogetti**

Viale Alcide, Gasperi 16,  
20097 San Donato, Milanese (MI),  
Italy

### **Toyo Engineering Corporation**

8-1 Akenehama 2 Chome.  
Narashino-Shi, Chiba,  
Japan

### **Techint International Construction**

AV. Del Liberador 498,  
14<sup>th</sup> Floor (100),  
Ben/Aires 68,  
Argentina

### **TECHNICAS**

Paseo de Manuel,  
Lardizabal, 15  
P.O. Box 1555,  
E-20009 San Sebastian  
Spain

### **TECHNIP Italy S.P.A.**

00148 Roma Viale Castello,  
Delamagliana 68,  
Italy

### **TECHNIP France S.P.A.**

92973 Paris, La Defense,  
Imeteur, Isseur,  
Sedex,  
France.

### **TECHNIP Abu Dhabi S.P.A.**

Al Gaith Tower,  
Hamdan Street,  
P.O. Box 7657,  
Abu Dhabi,  
United Arab Emirates



# شركة واحدة العربية السعودية للإمدادات الكهربائية (المحدودة) Wahah Electric Supply Co. of Saudi Arabia (Ltd.)

## 3.3 Alliance

WESCOSA has technical license agreements with alliance partners in the U.S.A for their technology usage in the products manufactured by WESCOSA. WESCOSA has agreements with the following companies:



AB CHANCE is part of the well renowned group of HUBBELL / The AB Chance and OHIO Brass companies with its head quarters in Centralia. AB Chance is a leading manufacturer of Cutouts and Fuse Links, Distribution and Current Limiting Switches and other related products. WESCOSA is licensed to manufacture Fuse-Cutouts Series "C" and Combination of Fuse-Cutout Series "C" with lightning arresters.



Cutler-Hammer Inc. was formerly WESTINGHOUSE ELECTRIC CORPORATION of USA. Cutler-Hammer Inc., which is head quartered in Cleveland USA is world's leading supplier of electrical control products and power distribution equipments.

WESCOSA has an alliance partnership with Cutler-Hammer Inc., to assemble the following products with C-H technology:

- LV Panelboards
- LV Switchboards
- LV Motor Control Centers "Series Freedom 2100" and Advantage
- LV Metal Enclosed Switchgear Type "DS" and "DS-II"
- MV Metal Enclosed Switchgear Type "WLI"
- Dry Type Transformer



LICENSEE

POWELL Electrical Manufacturing Company is a part of the POWELL INC. group with head quarters in Houston, Texas. POWELL designs, manufactures and packages equipment and systems for the distribution and control of electrical energy and other dynamic processes. WESCOSA is licensed for manufacture of Medium Voltage metal-clad switchgear up to 15kV.



MP Husky is America's leading manufacturer of Cable Trays and Cable-Bus with its head quarters in Greenville, South Carolina. They license WESCOSA for the manufacture of Cable Trays and equipments and accessories necessary in the assembly of cable support systems. MP Husky also licenses WESCOSA for their cable-bus product line.



UNIBUS Inc. is part of the POWELL Industries Inc. with its head quarters in Cleveland, Ohio. UNIBUS is the leading manufacturer of Segregated and Non-Segregated Low voltage and Medium voltage Busducts. UNIBUS has licensed WESCOSA for the assembly of electrical 600V, non-segregated Low and Medium voltage phase busduct



Tamco has grown from strength to strength since its humble beginnings in 1964. With over three decades of manufacturing expertise, the company is one of the leading producers of low and medium voltage switchgear in South East Asia. Tamco has licensed WESCOSA for the manufacturing of 15kV IEC Switchgear.



## Experience List

### 4.1 Low Voltage Distribution Equipments

JOB NO.	CUSTOMER	PROJECT / P.O. NUMBER	DESCRIPTION
1540-M	SAUDI ARAMCO	HARADH GOSP 1 & HAWTAH GOSP 3	2 SWITCHRACKS
1544-M	ARABIAN CHEMICAL CO.	GAS METERING STATION (JUBAIL)	1 SWITCHRACK
1575-M	SAUDI ARAMCO	SUB-31 REFRIGERATED LPG PLANT	1 SWITCHGEAR & 2 MCC'S
1587-M	A. Y. AL-YAMI EST.	UPGRADE EMERGENCY GEN. BLDG. 840	2 SWITCHGEARS
1614-M	SAUDI ARAMCO	GOAE-X15-16-0001-DA	1 MCC
1623-M	SAUDI ARABIAN BECHTEL	RAS TANURA REFINERY UPGRADE	2 SWITCHRACKS
1632-M	UNITED ARAB CAN MFG	UAC CAN & END PLANT	1 SWITCHGEAR
1649-M	SAUDI ARAMCO	AL-JOUF BULK PLANT X19	1 SWITCHRACK
1655-M	JAFFAR MOHD ALHAMOOD	61-ASP-069	27 PANELS, 1 MCC
1677-M	SAUDI ARAMCO	GOAE-X54-16-0008-DA	1 DISTRIBUTION PANEL
1681-M	JAFFAR MOHD ALHAMOOD	SABG SCHOOLS	26 PANELS, 8 SWITCHBOARDS
1704-M	SAUDI ARABIAN KENT CO.	RAS TANURA REFINERY UPGRADE	1 SWITCHGEAR
1705-M	SAUDI ARABIAN KENT CO.	RAS TANURA REFINERY UPGRADE	2 MCC'S
1721-M	SAUDI ARAMCO	DAAE-843-16-0001-DA	1 SWITCHBOARD
1724-M	SAUDI ARAMCO	25 MBCD NUAIYYIM TO HAWTAH	2 SWITCHRACKS
1726-M	FLUOR DANIEL INC.	RABIGH STEAM POWER PLANT EXT. STAGE IV	3 SWITCHGEARS
1741-M	LG CONSTRUCTION	ABQAIQ PRODUCING FACILITIES	196 PANELS
1745-M	SAUDI ARAMCO	RIYADH REFINERY	18 CONTROL PANELS
1753-M	SNAMPROGETTI S.P.A.	RIYADH PRODUCTS SUPPLY SYSTEM	7 SWGR, 11 MCC'S, 6 PNLS
1755-M	SAUDI ARAMCO	SULAYYIL BULK PLANT	2 MCC'S & 1 ATS
1765-M	BECHTEL OVERSEAS LTD.	SHAYBAH PRODUCING FACILITIES PROJECT	5 SWITCHGEARS, 20 MCC'S
1770-M	SAUDI ARAMCO	SULAYYIL BULK PLANT	1 SWITCHGEAR
1783-M	SAUDI ARAMCO	RDAE-B05-16-0102-DA	243 PANELS
1799-M	FLUOR ARABIA LTD.	CHEVRON PETROCHEMICALS	3 MCC EXTENSIONS
1801-M	SAUDI ARAMCO	INCREASE UA/AA PIPELINES SURGE RELIEF CAPACITY	1 SWITCHRACK
1806-M	SAUDI ARAMCO	TANK FARM, RIYADH REFINERY	2 SWITCHRACKS
1814-M	JAFFAR MOHD ALHAMOOD	ONCOLOGY TREATMENT CENTER, DHAHRAN	2 SWITCHGEARS
1825-M	SAUDI ARAMCO	DR-055-16-0299-DA	1 SWITCHGEAR & 2 MCC'S
1827-M	SAUDI ARAMCO	ROAE-B05-16-0104-DA	375 SAFETY SWITCHES
1829-M	SAUDI ARAMCO	DR-054-16-7039-DA	8 COMBINATION STARTERS
1830-M	GETCO	WATER TREATMENT FACILITIES	2 MCC'S
1846-M	SAUDI ARAMCO	GKAE-Z36-16-0002-DA	1 POWER DISTRIBUTION PANEL
1857-M	SAUDI ARAMCO	JEDDAH REFINERY	5 SWITCHRACKS
1867-M	SAUDI ARAMCO	ZBAE-M98-16-1224-DA	1 AUTOMATIC TRANSFER SW.
1871-M	SAUDI ARAMCO	DRAE-846-16-9811-DA	3 ENCLOSED CIRCUIT BRKRS
1876-M	SAUDI ARAMCO	QBAE-M98-16-2506-DB	4 MCC'S
1883-M	SAUDI ARAMCO	ZUAE-M98-16-8553-DA	3 SWITCHRACKS
1884-M	SNAMPROGETTI S.P.A.	UBTG 3 PIPELINE, SAUDI ARAMCO	13 SWITCHRACKS
1891-M	ROYAL COMMISSION	SEAWATER COOLING EXPANSION PROJECT	3 MCC'S
1892-M	SAUDI ARAMCO	SHAYBAH	3 SWITCHRACKS
1893-M	JAFFAR MOHD ALHAMOOD	SABG SCHOOLS	2 MCC'S, 6 SWBDS, 17 PNLS
1913-M	SAUDI ARAMCO	YANBU REFINERY	1 MCC
1916-M	SAUDI ARAMCO	QBAE-M98-16-6840-DA	60 SAFETY SW, 10 MCCB
1918-M	SAUDI ARAMCO	KHUFF GAS	66 SWITCHRACKS
1920-M	SAUDI ARAMCO	QBAE-M98-16-6908-DA	81 SAFETY SWITCHES
1922-M	IMAD CO.	BULK PLANT MODERNIZATION	4 MCC'S & 12 PANELS
1931-M	SAUDI ARAMCO	SHAYBAH DRILLING SITES / WELL HEAD FAC.	13 SWITCHRACKS
1939-M	JGC, JAPAN	HAWIYAH GAS TREATING FACILITIES	5 SWGR, 16 MCC'S



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1946-M	ARAB EST.	HAWIYAH SUPPORT - CORE AREA COMPLEX	6 MCC'S
1947-M	CCE LTD	HAWIYAH SUPPORT - MAINTENANCE COMPLEX	1 SWGR, 7 MCC'S
1950-M	SAUDI ARAMCO	NAJRAN BULK PLANT / DHAHRAN BULK PLANT	2 SWITCHRACKS
1960-M	TECHNIP, ITALY	HAWIYAH SULPHUR & RECOVERY UTILITIES	3 SWGR, 22 MCC'S
1961-M	TECHINT, ARGENTINA	HAWIYAH IAF	4 SWGR, 27 MCC'S
1985-M	TECHINT, ARGENTINA	HAWIYAH IAF	1 AUTOMATIC TRANSFER SW.
1993-M	CCE LTD	HAWIYAH GAS PLANT	3 SWITCHRACKS
1994-M	CCE LTD	HAWIYAH GAS PLANT	2 MCC'S
1995-M	AMEC-BKW LTD, LONDON	BERRI - NGL ETHANE RECOVERY	9 SWGR'S, 18 MCC'S
1997-M	SALEM SALEH AL-HARETH	MEDICAL WASTE TREATMENT, DHAHRAN & AL-HASSA	2 MCC'S, 2 ENCL. CKT. BRKR
10000-M	SAUDI ARAMCO	RIYADH REFINERY	1 SWITCHRACK
10002-M	SAUDI ARAMCO	RIYADH REFINERY	1 SWITCHGEAR
10004-M	SAUDI ARAMCO	WASTE WATER TREATMENT, RIYADH REFINERY	1 SWITCHGEAR
10012-M	SAUDI ARAMCO		16 SWITCHRACKS
10028-M	TECHNIP, ITALY		31 PANELBOARDS, 15 ECB'S
10033-M	NATIONAL CONTRACTING	BERRI GAS PLANT	1 SWGR, 4 MCC'S, 32 PNLs
10047-M	SAUDI ARAMCO		2 SWITCHRACKS, 1 PNL, 5 BKRS
10049-M	SAUDI SPECIALIST CO.	HARADH BACHELOR CAMP	2 SWITCHGEARS
10055-M	SAUDI ARAMCO		8 SWITCHRACKS
10068-M	TECHNIP SAUDI ARABIA	HARADH GAS PLANT	17 SWITCHRACKS
10076-M	SUEDROHRBAU S A		7 SWITCHRACKS
10078-M	SAUDI ARAMCO		415 HAND STATIONS
10079-M	SAUDI ARAMCO		1 AUTOMATIC TRANSFER SW.
10081-M	SAUDI ARAMCO		97 SWITCHRACKS
10086-M	SAUDI ARAMCO		1 MCC
10087-M	SAUDI ARAMCO		17 STARTER CONTROL PANELS
10088-M	SAUDI ARAMCO		3 STARTER CONTROL PANELS
10089-M	SAUDI ARAMCO		1 SWITCHRACK
10091-M	SNAMPROGETTI S.P.A.	HARADH ARABIAN LIGHT CRUDE INC. II	2 SWITCHGEARS, 5 MCC'S
10092-M	JAFFAR MOHD ALHAMOOD		SWITCHGEAR
10094-M	SAUDI CONST'NEERS EST.		87 PANELS, 11 C.PANELS
10097-M	SAUDI ARAMCO		1 MCC, 2 SWITCHGEARS
10099-M	SAUDI ARAMCO		3 SWITCHRACKS
10104-M	AL-MUHAIIDIB CONT.		2, MCC'S 22 PANELS, 3 C. PNLs
10105-M	JAFFAR MOHD ALHAMOOD		32 PANELS, 1 SWITCHBOARD
10106-M	SNAMPROGETTI S.P.A.	KUFF CONDENSATE FACILITIES	9 MCC'S, 3 SWITCHGEARS
10110-M	SAUDI ARAMCO		12 COMBINATION STARTERS
10112-M	TECHNIP - FRANCE	ARIBIAN GAS COMPRESSION CAPACITY ABQAIQ	1 SWITCHGEAR
10115-M	SNAMPROGETTI S.P.A.	KUFF CONDENSATE FACILITIES	2 ATOMATIC TRANSFER SWTC
10117-M	ENELPOWER		6 SWBRD'S, 4, SWGR, 4 MCC
10118-M	SAUDI ARAMCO		4 MCC'S
10122-M	AL-OSAIS CONT. CO.	OIL SWITCHES & XFR'S REPLACEMENT ABQAIQ	1 SWGR, 3 MCC'S
10123-M	AHMED Y. AL-YAMI EST.		2 ATS, 2 PNLs
10127-M	JGC, JAPAN		32 PANELS
10130-M	LUMMUS ALI-REZA LTD.		4 SWITCHRACKS, 4 PANELS
10132-M	SNAMPROGETTI S.P.A.	KUFF CONDENSATE FACILITIES	1 SWITCHGEAR
10137-M	AL-MABANI CONTRACTING	SABIC TECHNOLOGY CENTER, JUBAIL	2 SWGR, 12 MCC'S 118 PANELS
10138-M	AGAP ARABIA LTD.		2 MCC'S & 2 PANELS
10140-M	SAUDI ARABIAN SAIPEM	YANBU SALES GAS AY-1 CONVERSION	6 SWITCHRACKS
10142-M	FLOUR ARABIA LTD.	SALES GAS & ETHANE METERING, JUBAIL	1 MCC
10145-M	SAUDI ARAMCO	OFF SHORE PROJECT, ABU SAFWA	1 MCC
10147-M	SAUDI ARAMCO		1 SWITCHRACK
10150-M	FLOUR ARABIA LTD.	SALES GAS SUPPLY FOR SIPC PROJECT	1 MCC



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10153-M	AQESA JEDDAH	KING ABDUL AZIZ UNIVERSITY	2 SWITCHBOARDS, 1 PANEL
10155-M	SAUDI ARAMCO		30 ENCLOSED CKT. BKRS.
10158-M	SAUDI ARAMCO	DUBA BULK PLANT	1 ATS
10159-M	AL-MABANI CONTRACTING	SABIC TECHNOLOGY CENTER, JUBAIL	115 PANELS & 5 SWBRDS
10162-M	SUEDROHRBAU S A	QATIF PROJECT	8 SWITCHRACKS
10164-M	AL-MABANI CONTRACTING	SABIC TECHNOLOGY CENTER, JUBAIL	12 MCC'S
10165-M	TECHNIP COFLEXIP, ITALY	QATIF FACILITIES AT BERRI GAS PLANT	4 SWITCHGEARS
10166-M	TECHNIP COFLEXIP, ITALY	QATIF FACILITIES AT BERRI GAS PLANT	14 MCC'S
10168-M	SAUDI ARAMCO		1 MCC
10169-M	AL-MABANI CONTRACTING	SABIC TECHNOLOGY CENTER, JUBAIL	1 SWITCHGEAR
10170-M	SAUDI ARAMCO	RAS TANURA RTR WASTWATER TREATMENT PLANT	1 SWITCHRACK
10171-M	AQESA DAMMAM	JUPC PROJECT	9 PANELS
10178-M	SAUDI ARAMCO	1-SOUR GAS WELL SHUTDOWN	196 HAND STATIONS
10179-M	AL-MUHAIIDIB CONT.	SABG BOYS' ELEMENTARY & INTERMEDIATE SCHOOL	26 PANELS, 6 SWBRD, 10 CP
10191-M	SAUDI ARAMCO	ABQAIQ PUMP STATION # 06	2 MCC'S
10196-M	AL-MUHANA EST.	AL-RAHIYA DEVELOPMENT OF HOME OWNERSHIP	3 SWITCHBOARDS, 2 ECB'S
10198-M	AL-OSAIS CONT. CO.	OIL SWITCHES & XFR'S REPLACEMENT ABQAIQ	2 MCC'S
10203-M	SAUDI ARAMCO	INCIDENTAL SERVICES AT DHAHRAN	5 ATS
10204-M	SAUDI ARAMCO	INCIDENTAL SERVICES AT DHAHRAN	5 ATS
10205-M	JAFFAR MOHD ALHAMOOD	AIN-DAR GOSP-2	2 MCC'S
10207-M	SAUDI ARAMCO	KHURSANIYA PIPELINE PROJECT	9 SWITCHRACKS
10212-M	S.A. KENT	FEED STOCK PRODUCT PORTTANK FARM FACILITIES	1 SWGR & 1 MCC
10214-M	SAUDI ARAMCO	JUAYMAH GAS PLANT	54 SWITCHRACKS
10215-M	SAUDI ARAMCO	QATIF ONSHORE OFFSHORE	100 SWITCHRACKS
10217-M	SAUDI ARAMCO	DAMMAM OFFICE BLDG. POWER UPGRADE PROJECT	1 SWGR & 7 PANELS
10220-M	SNAMPROGETTI S.P.A.	QATIF GOSP-1	PANELS
10225-M	SAUDI ARAMCO	MARJAN POWER DISTRIBUTION PLANTS	2 SWITCHRACKS, 10 PANELS
10226-M	SAUDI ARAMCO	1-SOUR GAS WELL SHUTDOWN	196 HAND STATIONS
10227-M	SAUDI ARAMCO		1 SWITCHRACK
10236-M	SAUDI ARAMCO	MODIFICATION OF 480V @ QATIF LPG LOCATION	1 SWITCHGEAR MODIFICATION
10238-M	SNAMPROGETTI S.P.A.	QATIF PRODUCING FACILITIES	2 SWITCHRACKS
10239-M	SAUDI ARAMCO	FEED CONDITIONING FACILITIES RIYADH REFINERY	1 SWITCHGEAR
10245-M	METITO ARABIA IND.	MARJAN GOSP-2	1 MCC
10262-M	JGC, JAPAN	BERRI CO-GENERATION PLANT	1 SWITCHGEAR & 2 MCC'S
10278-M	SALEM SALEH AL-HARETH	RAS TANURA ARAMCO SUBSTATION # 210	MCC BUCKETS
10281-M	SAUDI ARAMCO	JUAYMAH ABU SAFAH MAIN TRANKLINE PROJECT	3 SWITCHRACKS
10286-M	AL-OSAIS CONT. CO.	ABU ALI REPLACE OF SUBSTATION # 72, 321 & F07	1 SWITCHRACK
10288-M	SAUDI ARAMCO	RAS TANURA RTDB PIPELINE	1 SWITCHRACK
10289-M	SAUDI ARAMCO	N/A	6 CONTROL PANELS
10290-M	AL-OSAIS CONT. CO.	YANBU NGL OBSOLETE BREAKERS REPLACEMENT	31 SWITCHBOARDS
10297-M	MASTOURA TRADING CO.	QATIF GAS PLANT	78 ENCLOSED CKT. BKR'S
10300-M	AL-AZZAZ TRADING	N/A	5 PANELBOARDS
10301-M	AL-OSAIS CONT. CO.	ABQAIQ MEDICAL CLINIC PROJECT	2 SWITCHGEARS
10302-M	JAL INTERNATIONAL	UPGRADE OF UPS SYSTEM EXP. DHAHRAN	1 SWITCHGEAR



## 4.2 Medium Voltage Distribution Equipments

JOB NO.	CUSTOMER	PROJECT NAME / P.O. NUMBER	BUSDUCT		
			VOLTAGE	CURRENT	FAULT CURRENT
2001-M	ISCOSA	-	5KV	1200A	52KA
2006-M	S.A. KENT	HARA,TALATIYAH & BATTALIAH S/S	15KV	2000A	38KA
2008-M	ARABIA ELECTRIC LIMITED	SAFANIYAH	5KV	1200A	52KA
2014-M	SAUDI ARAMCO	SAFANIYAH GOSP1	600V	3000A	65KA
2017-M	SAUDI ARAMCO	RASTANURA SUBSTATION - 215	15KV	3000A	42KA
2025-M	ARABIA ELECTIC LIMITED	ROYAL COMMISSION, JUBAIL	5KV	1200A	52KA
2034-M	A.B.B., KHOBAR	NORTH-AIN-DAR WIP-1	600V	1200A	42KA
2036-M	ARABIAN BECHTEL	UAC FACTORY	600V	4000A	60KA
2042-M	SAUDI ARAMCO	SHEDGUM - 69KV SUBSTATION	5KV	2000A	49KA
2048-M	RAYTHEON EBASCO LTD.	RIYADH POWER PROJECT (PP-9)	15KV	3270A	60KA
2052-M	A.B.B.,	UTHMANIYAH GAS#1 REBUILD	600V	300A	80KA
2053-M	SAUDI ARAMCO	UTHMANIYAH GAS #1 REBUILD	600V	3000A	80KA
2055-M	SAUDI ARAMCO	UTHMANIYAH GAS #1 REBUILD	15KV	3000A	50KA
2057-M	SNAMPROGETTI	RIYADH PRODUCTS S.S.	600V	3200A	65KA
2060-M	BECHTEL, LONDON	SHAYBAH PRODUCING FACILITIES	15KV	3000A	50KA
2062-M	SAUDI ARAMCO	ABQAIQ - SUBSTAION 19, 24	600V	4000A	85KA
2064-M	BECHTEL, LONDON	SHAYBAH PRODUCING FACILITIES	600V	4000A	65KA
2066-M	SAUDI ARAMCO	SULAYYIL BULK PLANT	600V	2500A	65KA
2067-M	AL-MOJIL, DAMMAM	RIYADH REFINERY	600V	3500A	50KA
2069-M	SAUDI ARAMCO	RASTANURA REFINERY	600V	1200A	42KA
2070-M	NATIONAL CONTRACTING CO.	TABOUK POWER PLANT EXPN. II	15KV	5000A	40KA
2088-M	ABB, RIYADH	UTHMANIYAH	600V	600A	42KA
2093-M	J.G.C., JAPAN	BERRI GAS PLANT	5KV	1200A	42KA
2102-M	SAUDI ARAMCO	SAFANIYA - REPLACE SUBSTATION 4,5,6	600V	1600A	42KA
2105-M	C.A.T., KHOBAR	SABTANK PROJECT, YANBU	600V	3000A	50KA
2107-M	ISCOSA, AL-KHOBAR	LUBEREF, YANBU	15KV	3000A	50KA
2110-M	J.G.C., JAPAN	HAWIYAH GAS PROCESSING	5KV	1200A	42KA
2113-M	CCE, RIYADH	HAWIYAH SUPPORT	600V	1600A	65KA
2096-M	ROYAL COMMISSION, JUBAIL	SEAWATER COOLING SYSTEM PROJECT	5KV	2500A	35KA
2102-M	SAUDI ARAMCO	SAFINAYAH GAS PLANT	5KV	2500A	35KA
2110-M	JGC CORPORATION	HAWIYAH GAS PLANT	5KV	2500A	35A
2114-M	TECHNIP ITALY	HAWIYAH GAS PLANT	600V	1600A	65KA
2115-M	TECHINT	HAWIYAH GAS PLANT	600V	1600A	65KA
2122-M	AL-OSAIS EST.	RIYADH REFINERY UPGRADE	15KV	3000A	60A
2124-M	SAUDI ARAMCO	RIYADH REFINERY UPGRADE	600V	1600A	65KA
2129-M	SAUDI ARAMCO		480V	1200A	
2131-M	TECHNIP ITALY	ABQAIQ	480V	1200A	
2133-M	M.R. KHATHLAN	TANAJIB, MARINE FACILITIES.	5KV		
2135-M	AMEC BKW LTD.,	BERRI GAS PLANT	15KV		



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JOB NO	CUSTOMER	PROJECT NAME / P.O. NO.	DESCRIPTION
2017-M	SAUDI ARAMCO	JNAE-J31-16-9665-DA	13.8KV POWL-VAC SWITCHGEAR
2018-M	BAOBCOCK KINGWILKINSON ENGLAND	C3715/0068	13.8KV POWL-VAC SWITCHGEAR
2019-M	BAOBCOCK KINGWILKINSON ENGLAND	C3715/0069	4.16KV POWL-VAC SWITCHGEAR
2022-M	SAUDI ARAMCO	LBAE439-16-2178DA	4.16KV MCC
2026-M	SAUDI ARAMCO	CNAE-059-16-4102DA	4.16KV POWL-VAC SWITCHGEAR
2027-M	SAUDI ARAMCO	GK-Z51-16-0003DA	4.16KV MCC
2036-M	SAUDI ARABIAN BECHTEL CO.	22863-E-001SAC	13.8KV & 5KV SWITCHGEAR
2042-M	SAUDI ARAMCO	LBAE-281-162179DA	13.8KV POWL-VAC SWITCHGEAR
2050-M	SAUDI ARAMCO	AUAE-R36-16-0151DA	13.8KV SWITCHGEAR
2054-M	FOUR DANIEL	858131-6-0006-001	4.16KV SWITCHGEAR
2055-M	SAUDI ARAMCO	AUAE-R-36-16-0161DA	13.8KV SWITCHGEAR
2058-M	SAUDI ARAMCO	00215-16-6856	15KV SWITCHGEAR
2059-M	BUGSHAM S & W	JNCI-M98-16-A002DC	15KV SWITCHGEAR
2060-M	BECHTEL LTD.,	23394100POAES001LC	13.8KV & 4.16KV SWITCHGEAR
2061-M	SAUDI ARAMCO	QB.111-16-6600DA	CONTROL PANEL
2063-M	JGC CORPORATION	PQ2181-101-A	13.8KV SWITCHGEAR
2090-M	SAUDI ARAMCO	AUAE-R36-16-0179DA	CKT. BREAKERS
2104-M	SAUDI ARAMCO	CNAE-M98-16-4000DB	4.16KV SWITCHGEAR
2116-M	SAUDI ARAMCO	00AE-183-16-8220DA	13.8KV SWITCHGEAR
2117-M	SAUDI ARAMCO	DRAE-846-16-911	15KV CKT. BREAKERS
2096-M	ROYAL COMMISSION JUBAIL	072-PP2C2	5KV SWITCHGEAR
2111-M	SAUDI ARAMCO	RSAE986-169441DB	5KV MCC
2112-M	SAUDI ARAMCO	DBAE879-16-6385DA	5KV MCC
2126-M	AMEC-BKW LTD.,	L3812/31/E010-001	15KV SWITCHGEAR & MCC
2130-M	NCC	BA/L3812/51/SC003/OK/PC09	15KV SWITCHGEAR
2123-M	TECHNIP	2067A0003 REV.02	15KV SWITCHGEAR
2149-M	AMEC-BKW LTD.,	L3812/31/E010/001 AMND 7	13.8KV SWITCHGEAR
2150-M	TECHNIP FRANCE	1652-01-00	13.8KV & 4.16KV SWITCHGEAR
2154-M	ENELPOWER	PDP29B107	4.16KV SWITCHGEAR
2156-M	SNAMPROGETTI	10296	13.8KV SWITCHGEAR
2157-M	AL-OSAS	67221	13.8KV SWITCHGEAR
2160-M	SAUDI OGER	0288	4.16KV MCC





### 4.3 Cable Trays

JOB. NO. / YEAR	CUSTOMER	PROJECT NAME / P.O. NO.	DESCRIPTION
5179-M	AQ DAMMAM		CABLE DUCT &/or TRUNKING
5185-M	AQ DAMMAM		CABLE DUCT &/or TRUNKING
5205-M	AL-NASSAR TRD.		CABLE DUCT &/or TRUNKING
5215-M	AL-GUHAIIDAN		CABLE DUCT &/or TRUNKING
5240-M	AL-MARAE EST.		CABLE DUCT &/or TRUNKING
5247-M	AQ DAMMAM		CABLE DUCT &/or TRUNKING
5294-M	AL-MARAE EST.		CABLE DUCT &/or TRUNKING
5327-M	AL-MUHAIIDIB		CABLE DUCT &/or TRUNKING
5437-M	CIDC DAR AL-RIYADH		CABLE DUCT &/or TRUNKING
5439-M	CIDC DAR AL-RIYADH		CABLE DUCT &/or TRUNKING
5440-M	CIDC DAR AL-RIYADH		CABLE DUCT &/or TRUNKING
5441-M	CIDC DAR AL-RIYADH		CABLE DUCT &/or TRUNKING
5443-M	AL-NASSAR TRD.		CABLE DUCT &/or TRUNKING
5455-M	CIDC DAR AL-RIYADH		CABLE DUCT &/or TRUNKING
5477-M	CIDC DAR AL-RIYADH		CABLE DUCT &/or TRUNKING
5482-M	AL-NASSAR TRD.		CABLE DUCT &/or TRUNKING
5501-M	AL-MUHAIIDIB		CABLE DUCT &/or TRUNKING
5546-M	CIDC DAR AL-RIYADH		CABLE DUCT &/or TRUNKING
5551-M	AL-FALAK		CABLE DUCT &/or TRUNKING
5560-M	SAUDI ARAMCO		CABLE DUCT &/or TRUNKING
5568-M	AQ DAMMAM		CABLE DUCT &/or TRUNKING
5584-M	CIDC DAR AL-RIYADH		CABLE DUCT &/or TRUNKING
5595-M	CIDC DAR AL-RIYADH		CABLE DUCT &/or TRUNKING
5597-M	CIDC DAR AL-RIYADH		CABLE DUCT &/or TRUNKING
5603-M	AL-FAME TRADING		CABLE DUCT &/or TRUNKING
5613-M	AL-FAME TRADING		CABLE DUCT &/or TRUNKING
5615-M	CIDC DAR AL-RIYADH		CABLE DUCT &/or TRUNKING
5618-M	AL-NASSAR TRD.		CABLE DUCT &/or TRUNKING
5624-M	AL-NASSAR TRD.		CABLE DUCT &/or TRUNKING
5635-M	AL-MUHAIIDIB		CABLE DUCT &/or TRUNKING
5642-M	NAJHRAN COMPANY		CABLE DUCT &/or TRUNKING
5675-M	REZAYATH CO. LTD.		CABLE DUCT &/or TRUNKING
5704-M	NAJHRAN COMPANY		CABLE DUCT &/or TRUNKING
5728-M	REZAYATH CO. LTD.		CABLE DUCT &/or TRUNKING
5758-M	AL GAWF TRADING		CABLE DUCT &/or TRUNKING
5777-M	AL-FALAK		CABLE DUCT &/or TRUNKING
58011	SAUDI TECHNICAL		CABLE DUCT &/or TRUNKING
58027	AL-NASSAR TRD.		CABLE DUCT &/or TRUNKING
58039	AQ-DAMMAM		CABLE DUCT &/or TRUNKING
58059	AL-NASSAR TRD.		CABLE DUCT &/or TRUNKING
58080	AL-FALAK		CABLE DUCT &/or TRUNKING
58091	AL-MUHANA EST.		CABLE DUCT &/or TRUNKING
58093	ABDUL KARIM TRADING		CABLE DUCT &/or TRUNKING
58101	ABDUL KARIM TRADING		CABLE DUCT &/or TRUNKING



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58124	ABDUL KARIM TRADING		CABLE DUCT &/or TRUNKING
58134	IHAB EST.		CABLE DUCT &/or TRUNKING
58141	ABDUL KARIM TRADING		CABLE DUCT &/or TRUNKING
58154	AL-NASSAR TRD.		CABLE DUCT &/or TRUNKING
58159	AL-NASSAR TRD.		CABLE DUCT &/or TRUNKING
58160	SAUDI TECHNICAL		CABLE DUCT &/or TRUNKING
58163	ABDUL KARIM TRADING		CABLE DUCT &/or TRUNKING
58167	AL-NASSAR TRD.		CABLE DUCT &/or TRUNKING
58170	A.Y. AL-YAMI EST.		CABLE DUCT &/or TRUNKING
58191	ARCAN		CABLE DUCT &/or TRUNKING
58196	ABDUL KARIM TRADING		CABLE DUCT &/or TRUNKING
58202	ABDUL KARIM TRADING		CABLE DUCT &/or TRUNKING
58191 2003	ARCAN		CABLE DUCT &/or TRUNKING
CURRENT 2003	TOYO ENGINEERING CORP.	JUPC - EO/EG PROJECT	ALUMINUM CABLE LADDERS,
CURRENT 2003	TOYO ENGINEERING CORP.	JUPC - EO/EG PROJECT	FITTINGS, ACCESSORIES & SUPPORTS
CURRENT 2003	AL THAWIYA ENGG. SUPPLIES	CAUSTIC PLANT PROJECT	COATED HDG CABLE LADDERS,
CURRENT 2003	AL THAWIYA ENGG. SUPPLIES	CAUSTIC PLANT PROJECT	FITTINGS, ACCESSORIES & SUPPORTS
CURRENT 2003	AL THAWIYA ENGG. SUPPLIES	TAKREER PROJECT	COATED HDG CABLE LADDERS,
CURRENT 2003	AL THAWIYA ENGG. SUPPLIES	TAKREER PROJECT	FITTINGS, ACCESSORIES & SUPPORTS
CURRENT 2003	AL THAWIYA ENGG. SUPPLIES	FUJAIRAH WATER & POWER PROJ	COATED HDG CABLE LADDERS,
CURRENT 2003	AL THAWIYA ENGG. SUPPLIES	FUJAIRAH WATER & POWER PROJ	FITTINGS, ACCESSORIES & SUPPORTS
CURRENT 2003	TECHNIP-COFLEXIP, ITALY	2124 - QATIF FACILITIES AT BERRI	ALUMINUM CABLE LADDERS,
CURRENT 2003	TECHNIP-COFLEXIP, ITALY	2124 - QATIF FACILITIES AT BERRI	FITTINGS, ACCESSORIES & SUPPORTS
CURRENT 2003	S A KENT CO. LTD.	QATIF SOUTH GOSP 2 PROJECT	ALUMINUM CABLE LADDERS,
CURRENT 2003	S A KENT CO. LTD.	QATIF SOUTH GOSP 2 PROJECT	FITTINGS, ACCESSORIES & SUPPORTS
CURRENT 2003	TECHNIP ITALY S.P.A.	2121 - SABIC ACETIC PROJECT	ALUMINUM CABLE LADDERS,
CURRENT 2002	TECHNIP ITALY S.P.A.	2121 - SABIC ACETIC PROJECT	FITTINGS, ACCESSORIES & SUPPORTS
CURRENT 2002	TOYO ENGINEERING, JAPAN	ARABIAN PETROCHEMICAL CO.	STEEL (HDG) CABLE LADDERS, FITTING
CURRENT 2002	TOYO ENGINEERING, JAPAN	ARABIAN PETROCHEMICAL CO.	ACCESSORIES AND SUPPORTS
CURRENT 2002	FAFCO	ABQAIQ PLANTS PROJECT	ALUMINUM CABLE LADDERS,
CURRENT 2002	FAFCO	ABQAIQ PLANTS PROJECT	FITTINGS, ACCESSORIES & SUPPORTS
CURRENT 2002	BENFIELD ELECTRIC INT'L	QJH-8661 HMR BOOSITNG PROJECT	STEEL CABLE LADDERS, FITTINGS,
CURRENT 2002	BENFIELD ELECTRIC INT'L	QJH-8661 HMR BOOSITNG PROJECT	ACCESSORIES AND SUPPORTS
CURRENT 2002	SNAMPROGETTI, ITALY	HARADH GAS PLANT PROJECT	ALUMINUM CABLE LADDERS,
CURRENT 2002	SNAMPROGETTI, ITALY	HARADH GAS PLANT PROJECT	FITTINGS, ACCESSORIES & SUPPORTS
CURRENT 2002	SAUDI SPECIALIST CONST.	SAUDI SPECIALIST CONST. LTD.	ALUMINUM CABLE LADDERS, TRAYS,
CURRENT 2001	SAUDI SPECIALIST CONST.	HARADH GAS PLANT PROJECT	FITTINGS, ACCESSORIES & SUPPORTS
2001	TECHNIP ITALY S.p.A.	HARADH GAS PLANT PROJECT	ALUMINUM CABLE LADDERS,



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CURRENT			
2001			
CURRENT	TECHNIP ITALY S.p.A.	HARADH GAS PLANT PROJECT	FITTINGS, ACCESSORIES & SUPPORTS
2001			
CURRENT	AMEC BKW LTD. U.K.	RECOVERY GAS PLANT PROJECT	ALUMINUM CABLE LADDERS,
2001			
CURRENT	AMEC BKW LTD. U.K.	RECOVERY GAS PLANT PROJECT	FITTINGS, ACCESSORIES & SUPPORTS
2001			
CURRENT	BENFIELD ELECTRIC DIST.	MHI - SEVERNAYA GAS	HDGAF CABLE LADDERS, FITTINGS,
2001			
CURRENT	BENFIELD ELECTRIC DIST.	MHI - SEVERNAYA GAS	ACCESSORIES & SUPPORTS
2001			
CURRENT	JAL INTERNATIONAL	SAMAD FLUID BED COOLER PROJECT	ALUMINUM CABLE LADDERS,
2001			
CURRENT	JAL INTERNATIONAL	SAMAD FLUID BED COOLER PROJECT	FITTINGS, ACCESSORIES & SUPPORTS
2000			
CURRENT	MITSUBISHI HEAVY IND'S.	GHAZLAN II POWER PLANT PROJ.	HDGAF & ALUMINUM CABLE LADDERS
2000			
CURRENT	MITSUBISHI HEAVY IND'S.	GHAZLAN II POWER PLANT PROJ.	FITTINGS, ACCESSORIES & SUPPORTS
1997			
CURRENT	BECHTEL	GHAZLAN II POWER PLANT PROJ.	HDGAF & ALUMINUM CABLE LADDERS
1997			
CURRENT	BECHTEL	GHAZLAN II POWER PLANT PROJ.	FITTINGS, ACCESSORIES & SUPPORTS
1996			
CURRENT	BECHTEL	DESALINATION & POWER PROJECT	HDGAF CABLE LADDERS,
1996			
CURRENT	BECHTEL	DESALINATION & POWER PROJECT	ACCESSORIES & SUPPORTS
2002	PETROFAC INT'L LTD. U.A.E.	MUNGA FIELD FACILITIES & PIPELINE	HDGAF & ALUMINUM CABLE LADDERS
2002	PETROFAC INT'L LTD. U.A.E.	MUNGA FIELD FACILITIES & PIPELINE	FITTINGS, ACCESSORIES & SUPPORTS
2001	MARITIME IND'L SERVICES	CONOCO-TIE-IN CONNEC, FOR AFPC	HDGAF CABLE LADDERS, FITTINGS,
2001	MARITIME IND'L SERVICES	CONOCO-TIE-IN CONNEC, FOR AFPC	ACCESSORIES & SUPPORTS
2000	TECHNIP ITALY S.P.A.	HAWIYAH GAS PLANT PROJECT	ALUMINUM CABLE LADDERS,
2000	TECHNIP ITALY S.P.A.	HAWIYAH GAS PLANT PROJECT	FITTINGS, ACCESSORIES & SUPPORTS
2000	SAIPEM/TECHINT	HAWIYAH GAS DEVELOPMENT	HDGAF & ALUMINUM CABLE LADDERS,
2000	SAIPEM/TECHINT	SAUDI ARAMCO	FITTINGS, ACCESSORIES & SUPPORTS
2000	AL-FALAK SYS SOLUTIONS	SAUDI ARAMCO CONNECTIVITY	STEEL CABLE LADDERS, FITTINGS,
2000	AL-FALAK SYS SOLUTIONS	SAUDI ARAMCO CONNECTIVITY	ACCESSORIES AND SUPPORTS
2000	GHAMDAN TRADING	HODIEDAH-PORT, SANAA	ALUMINUM CABLE LADDERS,
2000	GHAMDAN TRADING	HODIEDAH-PORT, SANAA	FITTINGS, ACCESSORIES & SUPPORTS
2000	EASTERN BECHTEL	TAWEELAH "B" EXTENSION PROJ.	HDGAF CABLE LADDERS,
2000	EASTERN BECHTEL	TAWEELAH "B" EXTENSION PROJ.	ACCESSORIES & SUPPORTS
2000	SANKO JIDOKIKI CO. JAPAN	TAWEELAH "B" EXTENSION PROJ.	HDGAF CABLE LADDERS, FITTINGS,
2000	SANKO JIDOKIKI CO. JAPAN	TAWEELAH "B" EXTENSION PROJ.	ACCESSORIES & SUPPORTS
2000	MARITIME IND'L SERVICES	MIS SHARJAH OPERATION	HDGAF CABLE LADDERS, FITTINGS,
2000	MARITIME IND'L SERVICES	MIS SHARJAH OPERATION	ACCESSORIES & SUPPORTS
1999	JGC / QATAR	RAS LAFFAN LNG / QATAR	ALUMINUM & HDGAF LADDERS,
1999	JGC / QATAR	RAS LAFFAN LNG / QATAR	TRAYS, ACCESSORIES & SUPPORTS
1999	JGC CORPORATION	BERRI GAS PLANT PROJECT	ALUMINUM CABLE LADDERS,
1999	JGC CORPORATION	BERRI GAS PLANT PROJECT	FITTINGS, ACCESSORIES & SUPPORTS
1998	JGC ARABIA LTD.	JU' AYAMAH GAS PLANT	ALUMINUM CABLE LADDERS,
1998	JGC ARABIA LTD.	JU' AYAMAH GAS PLANT	FITTINGS, ACCESSORIES & SUPPORTS
1998	SAUDI TOYO ENG'G. CO.	YANBU PETRO CHEMICAL PROJ.	HDGAF CABLE LADDERS, FITTINGS,
1998	SAUDI TOYO ENG'G. CO.	YANBU PETRO CHEMICAL PROJ.	ACCESSORIES & SUPPORTS
1997	SAUDI ARAMCO	SAUDI ARABIAN OIL COMPANY	ALUMINUM CABLE LADDERS,
1997	SAUDI ARAMCO	SAUDI ARABIAN OIL COMPANY	FITTINGS, ACCESSORIES & SUPPORTS



1997	BECHTEL LTD.	SHAYBAH PRODUCING FACILITIES	ALUMINUM CABLE LADDERS,
1997	BECHTEL LTD.	SHAYBAH PRODUCING FACILITIES	FITTINGS, ACCESSORIES & SUPPORTS
1996	SAUDI SHINWHA	RAS TANURA REFINERY UPGRADE	ALUMINUM CABLE LADDERS,
1996	SAUDI SHINWHA	RAS TANURA REFINERY UPGRADE	FITTINGS, ACCESSORIES & SUPPORTS
1996	SAUDI ARAMCO	3127 UTHMANIYAH PHASE - II	ALUMINUM CABLE LADDERS,
1996	SAUDI ARAMCO	3128 UTHMANIYAH PHASE - II	FITTINGS, ACCESSORIES & SUPPORTS
1996	BECHTEL	RAS TANURA OIL REFINERY	ALUMINUM CABLE LADDERS,
1996	BECHTEL	RAS TANURA OIL REFINERY	FITTINGS, ACCESSORIES & SUPPORTS
1995	LG CONSTRUCTION	ABQAIQ OIL REFINERY	ALUMINUM CABLE LADDERS,
1995	LG CONSTRUCTION	ABQAIQ OIL REFINERY	FITTINGS, ACCESSORIES & SUPPORTS
1995	SAUDI ARAMCO	3136 UTHMANIYAH PHASE - 1	ALUMINUM CABLE LADDERS,

#### 4.4 Fuse Cutout & Services

JOB	CUSTOMER	PO. NO.	JOB DESCRIPTION
214 – S	SAUDI ARAMCO	251-16-0001 DA	SERVICING
232 – S	A. AL-SHUWAYER	N/A.	TESTING & COMNG. OF SWGR, MCC, X'FMR & BUSDUCT
237 – S	BECHTEL	22863-E-001-SAC	INST. & COMNG. OF SWGR.
246 – S	BABCOCK	C 3715 / 0233	SWGR. MODIFICATION
253 – S	SAUDI ARAMCO	N/A.	SERVICING OF 4.16KV SWGR.
255 – S	LUMMUS ALIREZA	07800-9736	SWITCHGEAR MODIFICATION
262 – S	SCECO-EAST	82709 / 00	REPAIR OF OIL SWITCH & RMU
266 – S	SCECO-EAST	82714 / 00	REPAIR OF LV. PANELS
295 – S	AL-HAIDER	AHC/EWPS/24/97	TESTING OF BREAKERS
296 – S	AL-HAIDER	AHC/EWPS/25/97	TESTING & COMNG. OF RELAYS
303 – S	SNAMPROGETTI	647200/RPS/179	SWITCHGEAR MODIFICATION
307 – S	SAUDI ARAMCO	400473 / 035	TESTING OF RELAYS, X'FMR, AND SWGRS. & BUSDUCTS
317 – S	SAUDI ARAMCO	400473 / 044	VACUUMING, OIL FILLING OF 100MVA X'FMRS.
318 – S	BECHTEL	23394/100/TSC/23 & 24	TESTING & COMMISSIONING OF SWGR. MCC & BDUCT
322 – S	SAUDI ARAMCO	400473 / 053	TESTING & COMNG. OF 100MVA X'FMRS.
327 – S	SCECO-EAST	82882 / 00	REFURBISHMENT OF TRANSFORMERS
337 – S	FLOUR ARABIA LTD.	858141-6-0010-01	MCC MODIFICATION
340 – S	SAUDI ARAMCO	400473 / 064	TESTING OF RELAYS & SWGRS.
348 – S	SNAMPROGETTI	647200 / RPS / 107 / 126 / 127	TESTING COMMISSIONING OF LV & MV SWITCHGEARS
356 – S	PARSON INT'L.	103701/0005	SUPPLY OF WLI, SWGR. COMMISSIONING & TESTING.
368 – S	ISCOSA	N/A.	TESTING OF MCC
369 – S	SAUDI ARAMCO	DDAE-972-16-0104 DA	RETROFIT BREAKERS.
371 – S	JGC ARABIA LTD.	JGP-98-419	RELAY PANEL MODIFICATION
373 – S	JGC ARABIA LTD.	L-JJF/OTH-1130	DESIGN & INSTALLATION OF BUSBAR CONNECTIONS.



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384 – S	JGC ARABIA LTD.	JGP-98-463	BUSDUCT MODIFICATION
408 – S	SAUDI ARAMCO	400561 / 015	TESTING & COMMISSIONING
431 – S	SAUDI ARAMCO	400489 / 027	SUPPLY & INSTALLATION OF MECHANICAL SWITCHES.
432 – S	PARSONS S.A.	103516 / 7038	REPAIR OF 7.5MVA X'FMR.
435 – S	SAUDI ARAMCO	400475 / 076	MCC & SWITCHGEAR MODIFICATION.
453 – S	SAUDI ARAMCO	400516 / 058	REFURBISHMENT & INSTALLATION OF SWITCHGEAR.
464 – S	ISCOSA – DAMMAM	99-056-90	RETROFIT BREAKERS
465 – S	JAFFAR AL-HAMOOD	70-SFC-0039	MV. SWGR. MODIFICATION
476 – S	SAUDI ARAMCO	400516 / 060	REFURBISHMENT OF SWGR.
481 – S	ISCOSA – DAMMAM	99-194-90	RETROFIT MCC PLUG IN UNITS
485 – S	POWELL – ESCO	28802	REPAIR OF TRANSFORMERS
493 – S	SAUDI ARAMCO	DDAE M98-16-7921 DA	TESTING & MODIFICATION OF MV. SWITCHGEAR.
494 – S	FLUOR DANIAL	AWC/RAB 3127	SUPERVISION RELAY TESTING & INSTALLATION.
504 – S	S.A. KENT	322 / 567 REV. 02	RETROFIT MCC PLUG IN UNIT.
518 – S	SAUDI ARAMCO	400591 / 013	RELAY PANEL MODIFICATION.
530 – S	AQ-JUBAIL (SADAF)	5001306	TESTING OF LV & MV MCC'S
536 – S	ROYAL COMMISSION	072-P22C2	SUPERVISION FOR TESTING AND COMMISSIONING
539 – S	FAFCO	27324	SUPPLY OF PLUG IN UNIT
575 – S	JAFFAR AL-HAMOOD	73-R&D-1425-1	TESTING & MODIFICATION OF MV SWITCHGEAR
580 – S	AQ-JUBAIL	5001682	TESTING & MODIFICATION OF MV. SWGR.
591 – S	SAUDI BINLADIN	LP – 6376	TESTING & COMMISSIONING AND SUPPLY OF PARTS
592 – S	MCCONNELL DOWEL	LRCI-030-16-D461-DA	SUPPLY OF 15KV METAL CLAD SWITCHGEAR
593 – S	SAUDI ARAMCO	400524 / 092	REPAIR OF FLASHOVER CUBICLE
665 – S	MCCONNELL DOWEL	22172	TESTING & COMMISSIONING OF SWITCHGEAR
676 – S	SAUDI ARAMCO	972-16-0137 DA09	TESTING & COMMISSIONING OF SWITCHGEAR
691 – S	SAUDI ARAMCO	400599 / 009	ASL STABILIZER 38KV SWITCHGERAR REPLACEMENT
708 – S	SAUDI ARAMCO	400591 / 070	TESTING & COMMISSIONING
760-S	C.C.E. – RIYADH	4635	SUPPLY & INSTL. OF SIEMENS & SWITCHES
784-S	SAUDI CONDRECO	SGWC-2001/696	TESTING & COMMNG OF 27/36MVA POWER XFMR.
806-S	SNAMPROGETTI	9817	TESTING & COMMISSIONING
817-S	SAUDI ARAMCO	SFC#. 400573057	PREVENTIVE MAINTENANCE
828-S	AMEC BKW LTD.	L3812/31/E010	SWITCHGEAR MODIFICATION
859-S	TAMIMI CO. LTD.	C – 200	TESTING & COMMISSIONING
869 – S	TECHNIP	2067A0003	TESTING & COMMISSIONING
874-S	ENEL POWER	PDP29B107	TESTING & COMMISSIONING



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875-S	ENEL POWER	PDP29B114	TESTING & COMMISSIONING
881-S	SAUDI ARAMCO	4500093324	SUPPLY OF 69KV PROTECTION RELAY PANELS.
882-S	S.A. KENT CO. LTD.	01141/584	TRANSFORMER OIL PROCESSING & FILTERATION.
887-S	AL-QAHTANI	AHQ-WESCOSA-0214	SUPPLY OF RELAY PANELS
890-S	AMEC BKW LTD.	L3812/31/E010	TESTING, COMMISSIONING & MODIFICATION OF SWGR.
891-S	IMAD COMPANY	IW/086/0039	SUPPLY, INSTALLATION & TESTING OF ELECT. EQUIP.
893-S	ISCOSA – DAMMAM	2002-280-90	SUPPLY OF PT ASSEMBLY
899-S	SAUDI ARAMCO	4500147429	MCC MODIFICATION
900-S	AL-OSAIS CONT. CO.	67562	SUPPLY OF PROTECTION RELAY PANELS
906-S	AL-MUHAIIDIB CONT.	9129	MODIFICATION OF 2.4KV MOTOR STARTER PANELS.
914-S	CCC / JGC	HDGP-S/C-010	TESTING & COMMISSIONING OF ELECTRICAL EQUIP.
915-S	SNAMPROGETT	2023	TESTING & COMMISSIONING OF ELECTRICAL EQUIP.
916-S	SAUDI CONDRECO	SA-004/C05/02	SUPPLY, INSTALLATION & TESTING OF ELECT'L EQUIP.
917-S	SAUDI ARAMCO	4500199554	INSTALLATION, MODIFICATION & TESTING OF BREAKER
919-S	AMEC BKW LTD.	L3812/31/E016	480V MCC MODIFICATION
928-S	AMEC BKW LTD.	L3812/31/E016	MCC BUCKET MODIFICATION
930-S	SAUDI ARAMCO	400605 / 039	SWITCHRACK MODIFICATION
946-S	TECHNIP	2067FP0084	SWITCHGEAR MODIFICATION
959 – S	JGC ARABIA LTD.	2181-2231	480V MCC MODIFICATION
983 – S	AL-OSAIS CONT'G.	70373	SUPPLY OF AIR CIRCUIT BREAKER
987 – S	SNAMPROGETTI	11855	SITE ASSISTANCE FOR MV. SWITCHGEAR
990 – S	SNAMPROGETTI	11860	SITE ASSISTANCE FOR LV. SWITCHGEAR
101 – S	AL-OSAIS	70725	13.8KV SWITCHGEAR MODIFICATION
110 – S	ABDULKARIM TRAD.	500KR-1119-41NC	SUPPLY OF ALSTOM RELAYS
128 – S	SAUDI SPECIALISTS	A3E/02/959	TESTING AND COMMISSIONING OF ELECTRICAL EQUIP.
130 – S	TECHNIP ABU DHABI	6849-P00-PO-1652-02/023	MODIFICATION OF 13.8KV SWITCHGEAR SUPPLY OF RELAY PANELS AND ANNUNCIATION PANELS
145 – S	S.A. KENT CO. LTD.	00538 / 588	
147 – S	S S T	16980	TESTING AND COMMISSIONING OF 69KV SUBSTATION
148 – S	IMAD CO.	IW/086/0039	TESTING AND COMMISSIONING OF S/S # 51
160 – S	SAUDI ARAMCO	400606 / 036	TESTING AND COMMISSIONING OF MCCB'S
169 – S	AL-OSAIS CONT.	71881	MODIFICATION OF 4.16KV SWITCHGEAR
176 – S	SAUDI ARAMCO	4500507430	MODIFICATION OF LV. SWITCHRACKS
192 – S	TECHNIP – ITALY	2124A0080	MCC BUCKET MODIFICATION
204 – S	AQ – JUBAIL	5004299	CABLE TERMINATION AND TESTING
206 – S	SAUDI ARAMCO	4500543152	SUPPLY OF COMMUNICATION & FIBER PATCH PANELS



219 – S	S R B	44658-SRB-PO-029-01	SUPPLY OF RELAY PANEL
234 – S	ENELPOWER	PDP29B114	SUPPLY, MODIFICATION OF LV. SWITCHGEAR AND MCC
249 – S	TECHNIP ABU DHABI	1654-02/092	LV. CONTROLGEAR MODIFICATION
264 – S	METITIO	110698	SUPPLY OF CONTROL PANELS
296 – S	SAUDI ARAMCO	660040222/034	TESTING AND COMMISSIONING
359 – S	HADI HAIDER & CO.	HHC/660066/23	SUPPLY OF LOAD SHADING PANELS
371 – S	SAUDI ARAMCO	400677/020	MODIFICATION OF ELECTRICAL SYSTEM AT TINAT
372 – S	SAUDI ARAMCO	400677/021	MODIFICATION OF ELECTRICAL SYSTEM AT WAQR

## 4.5 Transformer

ANSI TYPE TRANSFORMER			
JOB NO.	CUSTOMER	PROJECT NAME/P.O. NO.	DESCRIPTION
7033-M	ISCOSA	105-05-53-66	75KVA-13.8KV/110V
7034-M	AQESA RIYADH	7217-1766	750KVA-13.8KV-480/277
7035-M	AL HASSAN CONT.	562	225KVA-13.8KV-208/120V
7036-M	SAUDI ARAMCO	DDAE-099-14-9920 DA	300KVA-13.8KV-208/120V
7036-M	SAUDI ARAMCO	DDAE-099-14-9920 DA	300KVA-13.8KV-480/277V
7036-M	SAUDI ARAMCO	DDAE-099-14-9920 DA	300KVA-2400-208/277V
7036-M	SAUDI ARAMCO	DDAE-099-14-9920 DA	500KVA-2400-208/277V
7036-M	SAUDI ARAMCO	DDAE-099-14-9920 DA	500KVA-13.8KV-208/120V
7036-M	SAUDI ARAMCO	DDAE-099-14-9920 DA	750KVA-13.8KV-208/120V
7036-M	SAUDI ARAMCO	DDAE-099-14-9920 DA	1000KVA-13.8KV-208/120V
7036-M	SAUDI ARAMCO	DDAE-099-14-9920 DA	500KVA-13.8KV-480/277V
7037-M	AQESA-DAMMAM	7216-60742	750KVA-13.8KV-220/127V
7038-M	A. H. AL-SHUWAYER	9384/PF-040	500KVA-13.8KV-480/277V
7039-M	SAUDI ARAMCO	DDAD-235-14-1414 DA	225KVA-13.8KV-208/120V
7040-M	SAUDI ARAMCO	DDAD-186-14-1493 DA	225KVA-13.8KV-208/120V
7041-M	SAUDI ARAMCO	CNAE-321-14-4001 DA	500KVA-13.8KV-480/277V
7042-M	IBRAHIM AL-KHALDI	N/A	500KVA-13.8KV-208/120V
7043-M	SAUDI ARAMCO	CNAE-390-14-4005 DA	300KVA-13.8KV-480/277V
7043-M	SAUDI ARAMCO	CNAE-390-14-4005 DA	225KVA-13.8KV-480/277V
7044-M	SCECO-EAST	S-9404-49518	1500KVA-13.8KV-480/277V
7045-M	SAUDI ARAMCO	CNAE-369-14-4007 DA	500KVA-13.8KV-480/277V
7046-M	ARABIANDARTEST.	0240	500KVA-13.8KV-220/127V
7047-M	SAUDI ARAMCO	DDAE-843-14-0002 DA	225KVA-13.8KV-208/120V
7048-M	SAUDI ARAMCO	DBAE-099-14-6331 DA	225KVA-13.8KV-208/120V
7049-M	A.M.AL-SHALAWI EST.	AS/L-2224/94	300KVA-4.16KV-480/277V
7050-M	NASSER S. AL-HAJRI	N/A	150KVA-13.8KV-208/120V
7051-M	SCECO-EAST	S-9407-51627	100KVA-34500KV-480/277V
7052-M	SAUDI ARAMCO	CNAE-059-14-4007 DA	300KVA-4.16KV-480/277V
7053-M	SAUDIARAMCO	QBAE-327-14-6900 DA	75KVA-2.4KV-480/277V
7053-M	SAUDIARAMCO	QBAE-327-14-6900 DA	1000KVA-13.8KV-2400V



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Wahah Electric Supply Co. of Saudi Arabia (Ltd.)

7054-M	NAFA MAINT.SVC	PO/94/NA-0033	167KVA-7967KV-240/120V
7055-M	SCECO-EAST	S-9411-54235	300KVA-13.8KV-208/120V
7056-M	KASSAB INTRNTINAL CO.	N/A	225KVA-13.8KV-480/277V
7057-M	BABCOCK KING-WILKINSON	C3715/0087	500KVA-4160KV-480/277V
7058-M	A.H.AL-MUHANA EST.	PDC-2499-234	1000KVA-13.8KV-480/277V
7059-M	AQESA-DAMMAM	7211-50424	1250KVA-34.5/19.5-400/231
7060-M	SCECO-EAST	S-9501-55300	500KVA-34.5KV-480/240V
7061-M	SAUDI ARAMCO	DDAE-999-14-3043-DA	500KVA-13.8KV-208/120V
7062-M	SAUDI ARAMCO	DDAE-565-14-3032-DA	500KVA-13.8KV-208/120V
7063-M	AQESA-DAMMAM	7211-50427	1000KVA-13.8KV-480/277V
7064-M	SAUDI ARAMCO	DDAD-878-14-1516 DA	1000KVA-13.8KV-480/277V
7065-M	SCECO-EAST	S-9504-57318	75KVA-34.5KV-480/240V
7066-M	A.H.AL-MUHANA EST.	PDC-2679-236	500KVA-13.8KV-480/277V
7067-M	SAUDI AL-MIDAN CO.	N/A	300KVA-13.8KV-7970-220V
7068-M	SAUDI ARAMCO	DRAE-999-14-2667 DA	500KVA-13.8KV-208/120V
7069-M	CONSULATE GENERAL OF THE USA. DHAHRAN	S-SA200-95-M-0156	300KVA-2400KV-208/120V 300KVA-2400KV-480/277V
7070-M	A.Y.AL-YAMI EST.	AYA/600/011P	1500KVA-13.8KV-480/277V
7071-M	IBRAHIM E.AL-KHALDI	N/A	112.5KVA-13.4KV-208/120V
7072-M	A.R.DOSSARY & PARTNER.	6805	750KVA-13.8KV-480/277V
7073-M	SAUDI ARABIAN BECHTEL	22700-100-P-11B-LAC.	500KVA-13.8KV-480/277V
7073-M	SAUDI ARABIAN BECHTEL	22700-100-P-11B-LAC.	300KVA-13.8KV-480/277V
7074-M	IBRAHIM A. AL-KHATANI EST.	0213	1500KVA-13.8KV-2400V
7074-M	IBRAHIM A. AL-KHATANI EST.	0213	45KVA-2.4KV-220/127V
7075-M	SAUDI BINLADIN GROUP	LP-2527	2000/2576KVA-13.8KV/400V
7076-M	IMAD CO. FOR TRDG & CONT.	IP/071/95012	112.5KVA-13.8KV-220/127V
7076-M	IMAD CO. FOR TRDG & CONT.	IP/071/95012	225KVA-13.8KV-220/127V
7076-M	IMAD CO. FOR TRDG & CONT.	IP/071/95012	300KVA-13.8KV-220/127V
7076-M	IMAD CO. FOR TRDG & CONT.	IP/071/95012	500KVA-13.8KV-220/127V
7077-M	SAUDI BINLADIN GROUP	LP-2763	750KVA-13.8KV-480/277V
7078-M	SAUDI ARAMCO	GOAE-X54-14-0002 DA	2000KVA-13.8KV-480/277V
7079-M	SAUDI ARAMCO	CNAE-M18-14-4000 DA	150KVA-13.8KV-480/277V
7080-M	IBRAHIM ASHOUR	N/A	500KVA-13.8KV-220/127V
7081-M	SAUDI ARAMCO	QBAE-M59-14-6600 DA	2000KVA-13.8KV-480/227V
7082-M	BUGSHAN S & W CO.	JNCI-M98-14-A001 DA	1000/1120KVA-2.4KV/480V
7082-M	BUGSHAN S & W CO.	JNCI-M98-14-A001 DA	2000/2576KVA-13.8KV/480V
7083-M	BUGSHAN S & W CO.	JNCI-M98-14-A001 DB	750KVA-13.8KV/480V
7083-M	BUGSHAN S & W CO.	JNCI-M98-14-A001 DB	500KVA-13.8KV/480V
7083-M	BUGSHAN S & W CO.	JNCI-M98-14-A001 DB	225KVA-13.8KV/480V
7084-M	SAUDI ARAMCO	QBAE-M59-14-6601 DB	500KVA-13.8KV-480V
7085-M	LUCKY DEVELOPMENT LTD.	QBCCI-M59-14-A122 DA	1000KVA-13.8KV-480V
7086-M	S. A. INTERNATIONAL SCHOOL	4769	1000KVA-13.8KV-220/127V
7087-M	AL-MUHAIIDIB TRDG & CONT.	6503	225KVA-13.8KV-208/120V
7088-M	IBRAHIM E.AL-KHALDI EST.	051	225KVA-13.8KV-480/277V
7089-M	SAUDI ARAMCO	AUAE-R36-14-0153 DA	1500KVA-13.2KV-480/277V





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7090-M S.A.KENT CO.	PO/00041/531	1500KVA-13.8KV/480V
7091-M IHAB ESTABLISHMENT	1004/26/238	300KVA-13.8KV/480V
7092-M SAUDI ARAMCO	QBAE-340-14-6601 DA	2000KVA-13.8KV/480V
7092-M SAUDI ARAMCO	QBAE-340-14-6601 DA	2500KVA-13.8KV/480V
7093-M SAUDI ARAMCO	QBAE-M98-16-6601 DA	1000KVA-13.8KV/480V
7094-M SNAMPROGETTI	647200/RPS/107	2500/3125KVA-13.8KV-480V
7094-M SNAMPROGETTI	647200/RPS/107	1500KVA-13.8KV-480V
7094-M SNAMPROGETTI	647200/RPS/107	2000KVA-13.8KV-480V
7094-M SNAMPROGETTI	647200/RPS/107	1000KVA-13.8KV-480V
7095-M AL ABDUL KARIM	7183	112.5KVA-13.8KV-380/220V
7096-M FAYADAH FOR TRADING	OR-AK-96-80	500KVA-13.8/220-110V
7096-M FAYADAH FOR TRADING	OR-AK-96-80	630KVA-13.8/220-110V
7097-M NESMA & AL FADL CONT.	0084960	1000KVA-380/13.8KV
7098-M SAUDI ARAMCO	OOAE-V16-14-2232 DA	300KVA-13.8KV-220/127V
7098-M SAUDI ARAMCO	OOAE-V16-14-2232 DA	500KVA-13.8KV-220/127V
7099-M NASE AL JAZIRA CO.	EMP-258	225KVA-13.8KV-220/127V
7099-M NASE AL JAZIRA CO.	EMP-258	300KVA-13.8KV-220/127V
7099-M NASE AL JAZIRA CO.	EMP-258	500KVA-13.8KV-220/127V
7100-M TAREG AL JAFIRI CONT EST.	TAJ 0130 EL-97	1500KVA-13.8KV-380/220V
7101-M ABDUL KARIM TRAD. EST	LOC-YA-0302-61/97	630KVA-13.8KV-220/110V
7102-M SAUDI ARAMCO	GDAE-Y31-14-3396 DA	500KVA-6.3KV-400/230V
7103-M NAJRAN GENERAL CONST CO	914/97	500KVA-13.8KV-480/277V
7104-M IBRAHIM AL KHADI & PART	N/A	300KVA-13.8KV-480/277V
7105-M SAUDI ARAMCO	GOAE-X33-14-0001 DA	500KVA-13.8KV-231/133V
7106-M SAUDI ARAMCO	OOAE-215-14-2025 DA	2000KVA-13.8KV/2.4 KV
7107-M SAUDI ARAMCO	DDAE-148-14-0006 DA	500KVA-13.8KV-480/277V
7108-M SAUDI ARABIAN INL. SCHOOL	9159	1500KVA-13.8KV-400/231V
7109-M PARSON INTRNATIONAL	103516 1196	1500/1680KVA-13.8KV/480V
7109-M PARSON INTRNATIONAL	103516 1196	750KVA-13.2KV/240V
7109-M PARSON INTRNATIONAL	103516 1196	750KVA-4.16KV/240V
7110-M SAUDI ARAMCO	RDAE-B05-14-0101 DA	35KVA-13.8KV-480/277V
7110-M SAUDI ARAMCO	RDAE-B05-14-0101 DA	45KVA-13.8KV-480/277V
7110-M SAUDI ARAMCO	RDAE-B05-14-0101 DA	75KVA-13.8KV-480/277V
7110-M SAUDI ARAMCO	RDAE-B05-14-0101 DA	37.5KVA-13.8KV-220/127V
7112-M SAUDI ARAMCO	DR-054-14-0072 DA	500KVA--2400V-480/277V
7114-M CARLO GAVAZZI YAM CO	CGY/6009/9710/97	150KVA-13.8KV/480V
7114-M CARLO GAVAZZI YAM CO	CGY/6009/9710/97	45KVA-13.8KV/480V
7114-M CARLO GAVAZZI YAM CO	CGY/6009/9710/97	10KVA-13.8KV-120/240V
7115-M SAUDI ARAMCO	KOAE-398-14-5308 DA	500KVA-480-4.16KV
7116-M SAUDI ARAMCO	DR-054-14-0071 DA	225KVA-2400-480/277V
7116-M SAUDI ARAMCO	DR-054-14-0071 DA	300KVA-2400-480/277V
7117-M S.A. KENT CO.	3319/531	750KVA-2400-480/277V
7118-M SAUDI ARAMCO	GOAE-X14-14-0001 DB	1000KVA-13.8KV/240V
7118-M SAUDI ARAMCO	GOAE-X14-14-0001 DB	500KVA-13.8KV-480/277V
7118-M SAUDI ARAMCO	GOAE-X14-14-0001 DB	150KVA-13.8KV-480/277V



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7118-M SAUDI ARAMCO	GOAE-X14-14-0001 DB	500KVA13.8KV-208/120V
7118-M SAUDI ARAMCO	GOAE-X14-14-0001 DB	150KVA13.8KV-208/120V
7118-M SAUDI ARAMCO	GOAE-X14-14-0001 DB	1000KVA-13.8KV-208/120V
7119-M SAUDI ARAMCO	RDAE-B05-14-0109 DA	225KVA-13.8KV-208/120V
7120-M SCECO - EAST	S-9709-10193	1000KVA-34.5KV-480/277V
7121-M BW/IP INTERNATIONAL	P – 204483	1500KVA-13.8KV/240V
7122-M AL KHAMSAN EST.	0314	500KVA-13.8KV-208/120V
7123-M ABDULLAH AL SHUWAYER	9606/PF-681	150KVA13.8KV-220/127V
7124-M AL ZAKARY (ARCH GROUP)	52-07-12-97	630KVA-13.8KV/220V
7125-M SAUDI ARAMCO	Z61-14-0001 DA	1000KVA-13.8KV/480V
7126-M AL- ARFAJ ENGI. CO. W.L.L.	SN/971389/97/255	150KVA-34.6KV/480V
7127-M SAUDI ARAMCO	ZUAE-M98-14-8600 DA	750KVA-13.8KV-480/277V
7128-M SAUDI ARAMCO	QBAE-113-14-6900 DA	150KVA-4.16KV-480/277V
7129-M A.A. TURKI CORPORATION	2348	25KVA-13.8KV-480/240V
7130-M HADI HAIDER BROS CO.	HHBC-237/109	75KVA-34.5KV-480/277V
7131-M EIDCO	00107	225KVA-13.8KV-208/120V
7131-M EIDCO	00107	750KVA-13.8KV-480/277V
7131-M EIDCO	00107	300KVA-13.8KV-480/277V
7132-M SAUDI ARAMCO	ZUAE-173-14-6900 DA	37.5KVA-13.8KV/277V
7133-M JGC CORPARATION	0-007-P-2181-005-B	2000KVA-4.16KV/480V
7133-M JGC CORPARATION	0-007-P-2181-005-B	2000KVA-4.16KV/480V
7134-M SAUDI ARAMCO	ZUAE-M98-14-8502 DA	37.5KVA-13.8KV/277V
7134-M SAUDI ARAMCO	ZUAE-M98-14-8502 DA	37.5KVA-4.16KV/277V
7134-M SAUDI ARAMCO	ZUAE-M98-14-8502 DA	112.5KVA-13.8KV-480/277V
7134-M SAUDI ARAMCO	ZUAE-M98-14-8502 DA	112.5KVA-4.16KV-480/277V
7134-M SAUDI ARAMCO	ZUAE-M98-14-8502 DA	30KVA-13.8KV-480/277V
7134-M SAUDI ARAMCO	ZUAE-M98-14-8502 DA	75KVA-13.8KV-480/277V
7135-M BALCK & VEATCH PRITCHARD	034687-12-G02-072	75KVA-4.16KV/480V
7136-M SAUDI ARAMCO	GOAE- H41-14-8307 DA	25KVA-34.5KV-120/240V
7137-M AL ABDUL KARIM TRADING	97/RE/2634/NB/K	500KVA-13.8KV-208/120V
7138-M FAYADAH EST.	FE/6-17/3135/98	75KVA-13.8KV/480V
7139-M SAUDI ARAMCO	ZBAE M98-14-1221 DA	750KVA-13.8KV-480/277V
7140-M S.A KENT	00206/560	30KVA-13.8KV-480/277V
7141-M ABDULLAH AHAMED DOSARY	145-CO4-CCO # 2	75KVA-34.5KV-480/277V
7142-M SAUDI ARAMCO	DLAE-918-14-7905 DA	1250KVA-6.3KV/0.4KV
7143-M ROYAL COMMISSION JUBAIL	RCO-Q-720404 P	400KVA-13.8KV/230V
7144-M SAUDI ARAMCO	DDAE-999-14-0049 DA	500KVA-13.8KV-120/208V
7145-M SAUDI ARAMCO	DKAE 876-14-1990 DA	150KVA-33KV/480V
7146-M SAUDI ARAMCO	KOAE M98-14-5355 DA	150KV-4.16KV-480/277V
7147-M ABDULLAH AL SHUWAYER	9802/PFY-066	112.5KVA-13.8KV-380/220V
7148-M CARLO GAVAZZI YAM CO.	CGY/6400/9853/98	25KVA-13.8KV/480V
7148-M CARLO GAVAZZI YAM CO.	CGY/6400/9853/98	75KVA-13.8KV/480V
7149-M GTE TELECOM S.A. LTD.	GTE-SA-784	37.5KVA-13.8KV-220/127V
7150-M SAUDI ARAMCO	DDAE-567-14-0315 DA	750KVA-13.8KV/480V
7151-M SNAMPROGETTI	LDCI-M98-14-D326-DA (1387)	150KVA-13.8KV-480/277V



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7151-M	SNAMPROGETTI	LDCI-M98-14-D326-DA (1387)	225KVA-4.16KV-480/277V
7151-M	SNAMPROGETTI	LDCI-M98-14-D326-DA (1387)	37.5KVA-480-208/120V
7152-M	SAUDI ARAMCO	ZUAE 173-14-8651 DA	75KVA-13.8KV-480/277V
7153-M	SAUDI ARAMCO	DDAD 878-14-8001 DA	500KVA-13.8KV-480/277V
7153-M	SAUDI ARAMCO	DDAD 878-14-8001 DA	500KVA-13.8KV-208/120V
7154-M	ABDULLAH A.M. AL-KHODARI	NG/VC/16/296	500KVA-2.4KV-208/120V
7155-M	ROYAL COMMISSION JUBAIL	072-P22C2	2500KVA-4.16KV-480/277V
7155-M	ROYAL COMMISSION JUBAIL	072-P22C2	1750KVA-4.16KV-480/277V
7155-M	ROYAL COMMISSION JUBAIL	072-P22C2	1000KVA-4.16KV-480/277V
7156-M	SAUDI ARAMCO	KOAE M98 14-5354 DA	2000KVA-13.8KV/4.16KV
7156-M	SAUDI ARAMCO	KOAE M98 14-5354 DA	2.5/3.125MVA-13.8/4.16KV
7157-M	ADVANCED ENGINEERING	PO/RVS/106/98	630KVA-13.8KV-220/127V
7158-M	SAUDI ARAMCO	DKAE-916-14-9801 DA	1600KVA-13.8KV/416KV
7159-M	SAUDI ARAMCO	DUAE 099-14-1427 DA	25KVA-34.5KV-120/240V
7160-M	SAUDI ARAMCO	QBAE-M98-14-6821 DA	30KVA-13.8KV-480/277V
7160-M	SAUDI ARAMCO	QBAE-M98-14-6821 DA	45KVA-13.8KV-480/277V
7161-M	SAUDI ARAMCO	DRAE 060-14-8210 DA	150KVA-13.8KV-480/277V
7162-M	AL BABBAIN TRADING CO.	041/LP/99	500KVA-13.8KV-480/277V
7162-M	AL BABBAIN TRADING CO.	041/LP/99	250KVA-13.8KV-240/120V
7163-M	CARLO GAVAZZI YAM CO.	CGY/6417/9853/99	150KVA-13.8KV-2.41KV
7164-M	SAUDI ARAMCO	QBAE M59 14-6603 DA	2500KVA 13.8KV (Up Grading)
7165-M	AHMAD N AL BINALI & SONS CO.	519369	225KVA-13.8KV-480/277V
7165-M	AHMAD N AL BINALI & SONS CO.	519369	800KVA-13.8KV-480/277V
7165-M	AHMAD N AL BINALI & SONS CO.	519369	1000KVA-13.8KV-480/277V
7166-M	EL SEWEDY ENT.	ESE/2547	500KVA-34.5KV-220/127V
7166-M	EL SEWEDY ENT.	ESE/2547	500KVA-34.5KV-380/220V
7167-M	SAUDI ARAMCO	DDAE -148-14-0007 DA	150KVA-13.8KV-208/120V
7168 - M	A.E.P ADVANCE ENGINEERING	PO/RVS/106A/98	630KVA-13.8KV-220/127V
7169 - M	SAUDI ARAMCO	DLAE 918-14-8228 DA	800KVA-6.3KV/400V
7170 - M	IHAB EST.	IHAB/1179/MB/06/IK/99	2500/3125KVA-13.8KV-480/277V
7171 - M	SAUDI ARAMCO	DUAE 999-14-3150 DA	75KVA-13.8KV-480/277V
7171 - M	SAUDI ARAMCO	DUAE 999-14-3150 DA	112.5KVA-4.16KV-480/277V
7171 - M	SAUDI ARAMCO	DUAE 999-14-3150 DA	75KVA-13.8KV-480/277V
7172 - M	J.G.C. CORPORATION	0-2000-P-2181-001-B	2500/3125KV-4.16KV/480V
7172 - M	J.G.C. CORPORATION	0-2000-P-2181-001-B	2500/3125KV-13.8KV/480V
7173 - M	SAUDI ARAMCO	QBAE M98-14-6826 DA	30KVA-13.8KV-480/277V
7173 - M	SAUDI ARAMCO	QBAE M98-14-6826 DA	45KVA-13.8KV-480/277V
7174 - M	CONTRACTING & CONSTRUCTION	1998	1500KVA-13.8KV-480/277V
7174 - M	CONTRACTING & CONSTRUCTION	1998	750KVA-13.8KV-480/277V
7175 - M	AHMED YAHYA AL-YAMI EST	AYA/760/004P	1000KVA-34.5KV-480/277V
7176 - M	TECHINP ITALY	1961A0034	2500/3125KVA-4.16KV/480V
7176 - M	TECHINP ITALY	1961A0034	3150/3928KVA-4.16KV/480V
7176 - M	TECHINP ITALY	1961A0034	750KVA-13.8KV/480V
7176 - M	TECHINP ITALY	1961A0034	1250KVA-4.16KV/480V
7177 - M	SAUDI ARAMCO	DDAE 569-14-0172 DA 09	750KVA-13.8KV-480/277V



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7178 - M SAUDI ARAMCO	DUAE 999-14-0100DA	75KVA-13.8KV-480/277V
7179 - M SAUDI ARAMCO	DUAE 999-14-0099 DA	112.5KVA-4.16KV-480/277V
7180 - M SAUDI ARAMCO	DUAE 999-14-0102 DA	75KVA-13.8KV-480/277V
7181 - M TECHINT INTERNATIONAL	3580-E-MR-H90-010/3580-E-	1500KVA-13.8KV-480/277V
7181 - M TECHINT INTERNATIONAL	MR-H99-019 (072)	3000/3750KVA-13.8KV-480/277V
7181 - M TECHINT INTERNATIONAL	MR-H99-019 (072)	45KVA-480V-208/120V Dry Type
7181 - M TECHINT INTERNATIONAL	MR-H99-019 (072)	112.5KVA-480V-208/120V Dry Type
7182 - M SAUDI ARAMCO	OOAE 183-14-9498 DA	2000/2500KVA-13.8KV/480V
7183 - M AL ABDUL KARIM TRADING	00/YE/3001/14/M	1000KVA-13.8KV-380/220V
7184 - M SAUDI ARAMCO	ZUAE-M98-14-6031 DA	30KVA-13.8KV-480/277V
7186 - M MCCONNELL DOWELL	LRCI-052-14-D642-DA	2500/3150KVA-13.8KV-4.16/277V
7187 - M AL HAMMAM CO	101	500KVA-13.8KV-480/277V
7188 - M LUCENT TECH	SA127692	75KVA-13.8KV-220/127V
7189 - M SAUDI ARAMCO	DKAE-099-14-1721 DA	300KVA-13.8KV-480V
7190 - M MCCONNELL DOWELL	LRCI-D21-14-A-001-DA	75KVA-13.8KV-480/277V
7190 - M MCCONNELL DOWELL	LRCI-D21-14-A-001-DA	10KVA-13.8KV/277V
7191 - M SAUDI ARABIAN BECHTEL CO.	20085-SAC-REV.00	30KVA-13.8KV-480/277V
7192 - M ELECTRIC WORLD	2004761	75KVA-13.8KV-208/120V
7192 - M ELECTRIC WORLD	2004761	100KVA-13.8KV-400/231V
7193 - M SAUDI ARAMCO	DDAE-560-14-0065 DA	30KVA-13.8KV-480/277V
7194 - M AQESA DAMMAM	2004852	1000KVA-60KV-380/120V
7195 - M TECHINT.	3580-E-MR-H89-003 (146)	500KVA-13.8KV-480/277V
7196 - M AL OSAIS CONT. EST.	60300	750KVA-13.8KV-480/277V
7197 - M SAUDI ARAMCO	DUAE 999-14-3439 DA	112.5KVA-13.8KV-480/277V
7198 - M SAUDI ARAMCO	QBAE M98-14-6829DA	30KVA-13.8KV-480/277V
7198 - M SAUDI ARAMCO	QBAE M98-14-6829DA	45KVA-13.8KV-480/277V
7199 - M SAUDI ARAMCO	DBAE-099-14-7361 DA	150KVA-13.8KV-480/277V
7200 - M AMEC BKW	L3812/31/E052/001	3750/4690KVA-13.8KV/4.16V
7200 - M AMEC BKW	L3812/31/E052/001	2000KVA-13.8KV/480KV
7200 - M AMEC BKW	L3812/31/E052/001	500KVA-4.16KV/480V Dry Type
7200 - M AMEC BKW	L3812/31/E052/001	500KVA-480KV/4.16KV Dry Type
7201 - M MOHD AL OJAIMI	APO-0347	225KVA-13.8KV/480V
7202 - M ROYAL COMMISSION	RCO Q 7204-Q-27	400KVA-13.8KV/230V
7202 - M ROYAL COMMISSION	RCO Q 7204-Q-27	630KVA-13.8KV-220/127V
7203 - M AQESA JEDDAH	30010772	500KVA-13.8KV/480V
7204 - M SAUDI ARAMCO	GKAE-M98-14-5313 DA	75KVA-13.8KV/480V
7205 - M ROYAL COMMISSION	RCO Q-7204-Q4G	400KVA-13.8KV/230V
7206 - M SAUDI ARAMCO	DDAE-099-14-6019 DA	750KVA-13.8KV-227/480V
7207 - M SAUDI ARAMCO	GOAE-H41-14-6900 DA	350/300/50KVA-33KV-250/211V
7207 - M SAUDI ARAMCO	GOAE-H41-14-6900 DA	50KVA-33KV-211V
7208 - M SAUDI ARAMCO	DDAE-M22-14-9044 DA	10KVA-4.16KV-480/240V
7209 - M MADI M AL HAJRI & PART. CO.	0611	150KVA-13.8KV-208/120V
7210 - M ISCOSA	2000-760-50.	2000KVA-13.8KV-2.4/4.16KV
7211 - M SAUDI ARAMCO	GKAE Z44-14-0011 DA	2000KVA-13.8KV/480V
7212 - M SAUDI ARAMCO	DRAE-054-14-0308 DA	225KVA-4.16KV-480/277V



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7213 - M SAUDI ARAMCO	DDAE-14-0145 DA	75KVA-13.8KV-480/277V
7214 - M SAUDI ARAMCO	DUAE-999-14-2331- DB	75KVA-13.8KV-480/277V
7215 - M SAUDI ARAMCO	DDAE-972-14-0012 DA	1000KVA-13.8KV-480/277V
7216 - M AQESA DAMMAM	6000050	225KVA-13.8KV-220/127V
7217 - M SAUDI ARAMCO	CNAE-M98-14-4017 DA	2500/3125KVA-4.16KV-480/277V
7217 - M SAUDI ARAMCO	CNAE-M98-14-4017 DA	2000KVA-13.2KV-4.16/2.4KV
7219 - M MOHD H HAMMAM CO.	0604	37.5KVA-4.16KV-208/120V
7220 - M NATIONAL CONTRACTING CO.	BA/L3812/51SC000310K/PC	1000KVA-13.8KV-480//277V
7221 - M AQESA JEDDAH	3001168	3000KVA-13.8KV-380/220V
7221 - M AQESA JEDDAH	3001168	2500KVA-13.8KV-380/220V
7221 - M AQESA JEDDAH	3001168	1000KVA-13.8KV-380/220V
7221 - M AQESA JEDDAH	3001168	500KVA-13.8KV-380/220V
7222 - M SAUDI ARAMCO	GKAE-M98-14-5314 DA	2500/3125KVA-13.8KV-480V
7223 - M SAUDI ARAMCO	LUAE K04-14-2178 DA	300KVA-4.16KV-480/277V
7224 - M JAL INTERNATIONAL	JAL/2474	1500/1750KVA-13.8KV-480/277V
7225 - M ROYAL COMMISSION	RCO-Q-7204 Q86	630KVA-13.8KV-220/127V
7226 - M AL TOUKHI CO.	POH/141-01	1000/1250KVA-13.8KV-480/277V
7226 - M AL TOUKHI CO.	POH/141-01	225KVA-380-220/127V
7226 - M AL TOUKHI CO.	POH/141-01	112.5KVA-380-220/127V
7227 - M AQESA DAMMAM	6000115	1500KVA-13.8KV-380/220V
7228 - M JGC CORPORATION	0-1700-P-2181-001 A	2500/3125KVA-4.16/0.48KV
7228 - M JGC CORPORATION	0-1700-P-2181-001 A	2000KVA-4.16KV/480V
7229 - M SAUDI ARAMCO	DUAE-99-14-5997 D	75KVA-13.8KV-480/277V
7230 - M AQESA DAMMAM	3001231/GO # 93661-AQJ	225KVA-13.8KV-480/277V
7231 - M SAUDI ARAMCO	DDAE-561-14-0092 DA	75KVA-13.8KV-480/277V
7232 - M AQESA DAMMAM	6000137	300KVA-13.8KV-220/127V
7233 - M AQESA DAMMAM	2006676	225KVA-13.8KV-208/120V
7234 - M TECHNIP - ITALY	2067A0040	1000KVA-13.8KV-480V (Step-down)
7234 - M TECHNIP - ITALY	2067A0040	1500KVA-4.16KV/480V
7234 - M TECHNIP - ITALY	2067A0040	1000KVA-13.8KV-480V (Step-up)
7234 - M TECHNIP - ITALY	2067A0040	3.1/3.875MVA-4.16KV/480V
7235 - M TECHNIP SAUDI ARABIA. LTD	142-060415-0007-00	10KVA-13.8KV-277V
7235 - M TECHNIP SAUDI ARABIA. LTD	142-060415-0007-00	75KVA-13.8KV-480/277V
7235 - M TECHNIP SAUDI ARABIA. LTD	142-060415-0007-00	37.5KVA-13.8KV-277V
7235 - M TECHNIP SAUDI ARABIA. LTD	142-060415-0007-00	10KVA-33KV-277V
7235 - M TECHNIP SAUDI ARABIA. LTD	142-060415-0007-00	75KVA-34.5KV-480/277V
7235 - M TECHNIP SAUDI ARABIA. LTD	142-060415-0007-00	300KVA-4.16KV-480/277V
7236 - M CARLO GAVAZZI	2001/1596	1000KVA-4.16KV/480V
7236 - M CARLO GAVAZZI	2001/1596	500KVA-4.16KV/480V
7236 - M CARLO GAVAZZI	2001/1596	500KVA-13.8KV/480V
7237 - M AQESA DAMMAM	2007004	1500KVA-69/13.8KV
7237 - M AQESA DAMMAM	2007004	3750/4687KVA-69/12.8KV
7237 - M AQESA DAMMAM	2007004	500KVA-13.8KV/480V
7238 - M SAUDI ARAMCO	GZAE V04-14-2504 DA	7500/9375KVA-13.8/4.16KV
7239 - M SNAMPROGETTI ITALY.	9638	5/6.25MVA-13.8KV/4.16KV



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7239 - M SNAMPROGETTI ITALY.	9638	2.5/3.125MVA-13.8KV/480V
7239 - M SNAMPROGETTI ITALY.	9638	1000KVA-13.8KV/4.16KV
7240 - M SNAMPRIGETTI SAUDI ARABIA.	CRCI-J64-14-A001-DA	2000/2300/2576KVA-13.8KV/480V
7240 - M SNAMPRIGETTI SAUDI ARABIA.	CRCI-J64-14-A001-DA	500KVA-13.8KV-480/277V
7241 - M SAUDI OGER LTD.	3029	300KVA-34.5KV/480-277V
7242 - M SAUDI ARAMCO	COAE-054-14-2501 DA	750KVA-2.4KV-480/277V
7243 - M SAUDI ARAMCO	DUAЕ-999-14-7126 DA	75KVA-13.8KV-480/277V
7244 - M SAUDI CONSTRUCTINEERS EST.	SCE/HRD/SUP-CON/013/01	2500/3125KVA-13.8KV/480V
7245 - M AQESA DAMMAM	4002971	3000/3750KVA-13.8KV-480/277V
7246 - M SAUDI ARAMCO	DBAE-999-14-2401 DA	45KVA-13.8KV-480/277V
7247 - M SAUDI ARAMCO	QBAE-M98-14-6830 DA	30KVA-13.8KV-480/277V
7248 - M TECHNIP FRANCE	6650D010 PO 1641 01 0008	2500/3125KVA-13.8/0.48KV
7249 - M AQESA JUBAIL	5003272	75KVA-34.5KV/19.9KV-480/277V
7250 - M AL MUHAIDIB TRADING. CO.	9046	1000KVA-13.8KV-480/277V
7250 - M AL MUHAIDIB TRADING. CO.	9046	500KVA-13.8KV-480/277V
7250 - M AL MUHAIDIB TRADING. CO.	9046	75KVA-13.8KV-480/277V
7250 - M AL MUHAIDIB TRADING. CO.	9046	30KVA-13.8KV-480/277V
7250 - M AL MUHAIDIB TRADING. CO.	9046	10KVA-480-240/120V
7251 - M SCECO - EAST	S 020155136	300KVA-13.8/7.97KV-220/127V
7252-M AL-OSAIS CO.	66614	500KVA-4.16/0.48KV
7252-M AL-OSAIS CO.	66614	1500KVA-13.8KV/480V
7252-M AL-OSAIS CO.	66614	2000/2300KVA-13.8KV/480V
7252-M AL-OSAIS CO.	66614	7500/9375KVA-13.8/2.4KV
7253-M SAUDI ARAMCO	4500059593	1000KVA-69KV/13.8KV
7254-M SHADE CORP.	IIP-108/5323	300KVA-13.8KV208/120V
7255-M SCECO - EAST	S 011153093	1000KVA-34.5KV-480/277V
7256-M IMCO KUWAIT	IMCO/02/613	100KVA-34.5KV-480/277V
7256-M IMCO KUWAIT	IMCO/02/613	200KVA-34.5KV-480/277V
7257-M AL ABDUL KARIM TRAD.	02/DE/1330/MT/M	225KVA-13.8KV-480/277V
7258-M AL OSAIS CONT. CO.	67390	1500KVA-13.8KV-480/277V
7258-M AL OSAIS CONT. CO.	67390	1000KVA-13.8KV-480/277V
7258-M AL OSAIS CONT. CO.	67390	750KVA-13.8KV-480/277V
7259-M AL OSAIS CONT. CO.	67396	1500KVA-13.8KV-480/277V
7260-M SAUDI ARAMCO	4500104051	50KVA-2.16KV/277V
7261-M AL JEHMAH TRADING	AJT/PO-00046/2002	150KVA-34.5KV-480/277V
7261-M AL JEHMAH TRADING	AJT/PO-00046/2002	100KVA-34.5KV-480/277V
7261-M AL JEHMAH TRADING	AJT/PO-00046/2002	100KVA-13.8KV-480/277V
7261-M AL JEHMAH TRADING	AJT/PO-00046/2002	250KVA-34.5KV-1100-2200V
7261-M AL JEHMAH TRADING	AJT/PO-00046/2002	250KVA-13.8KV-1100-2200V
7261-M AL JEHMAH TRADING	AJT/PO-00046/2002	275KVA-34.5KV-1100-2200V
7261-M AL JEHMAH TRADING	AJT/PO-00046/2002	450KVA-34.5KV-1100-2200V
7261-M AL JEHMAH TRADING	AJT/PO-00046/2002	275KVA-13.8KV-1100-2200V
7262-M ROYAL COMMISSION	RCO-Q-20420-02-059	500KVA-13.8KV-208/120V
7263-M SAUDI ARAMCO	4500149922	45KVA-13.8KV-480/277V
7264-M JAFFAR AL HAMOOD	081-CIM-0186-00	1500KVA-13.8KV-480/277V



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7264-M	JAFFAR AL HAMOOD	081-CIM-0186-00	112.5KVA-480V-208/120V
7264-M	JAFFAR AL HAMOOD	081-CIM-0186-00	300KVA-480V-208/120V
7265-M	SAUDI ARAMCO	4500177478	45KVA-13.8KV-480/277V
7266-M	SAUDI ARAMCO	4500188814	75KVA-13.8KV-480/277V
7266-M	SAUDI ARAMCO	4500188814	225KVA-13.8KV-120/208V
7267-M	ARCON	2002/11426/LPO/2418/187/041/00	300KVA-4.16KV-480/277V
7268-M	AQESA - DAMMAM	2008044	37.5KVA-13.8KV-240/120V
7269-M	SAUDI ARAMCO	4500205691	75KVA-13.8KV-208/120V
7270-M	SAUDI ARAMCO	4500215280	30KVA-13.8KV-480/277V
7271-M	SAUDI ARAMCO	450015036	1500/1750KVA-13.8KV-4.16KV
7272-M	NASSER AL HAJRI CORP.	20723	112.5KVA-13.8KV-380/220V
7272-M	NASSER AL HAJRI CORP.	20723	300KVA-13.8KV-220/127V
7273-M	SAUDI ARAMCO	4500224342	500KVA-13.8KV-208/120V
7273-M	SAUDI ARAMCO	4500224342	1000KVA-13.8KV-208/120V
7273-M	SAUDI ARAMCO	4500224342	500KVA-13.8KV-480/277V
7273-M	SAUDI ARAMCO	4500224342	750KVA-13.8KV-480/277V
7274-M	SAUDI ARAMCO	4500224020	5000/6250KVA-13.8KV/4.16KV
7274-M	SAUDI ARAMCO	4500224020	2000KVA-13.8KV/0.480KV
7275-M	SAUDI ARAMCO	4500260699	75KVA-13.8KV-480/277V
7276-M	SAUDI ARAMCO	4500260704	75KVA-13.8KV-480/277V
7277-M	SAUDI ARAMCO	4500260702	75KVA-13.8KV-480/277V
7278-M	SAUDI ARAMCO	4500260701	75KVA-13.8KV-480/277V
7279-M	SAUDI ARAMCO	4500260703	75KVA-13.8KV-480/277V
7280-M	SAUDI ARAMCO	4500260706	75KVA-13.8KV-480/277V
7281-M	SAUDI ARAMCO	4500260705	75KVA-13.8KV-480/277V
7282-M	SAUDI ARAMCO	4500260700	75KVA-13.8KV-480/277V
7283-M	AL OSAIS CONT. CO.	69293	2500/3125KVA-13.8KV/0.48KV
7284-M	ROYAL COMM.	RCO-Q-20420-02-152	100KVA-13.8KV-240/120V
7285-M	SAUDI ARAMCO	4500253914	1000KVA-13.8KV-480/277V
7286-M	SAUDI ARAMCO	4500272773	750KVA-13.8KV-480/277V
7286-M	SAUDI ARAMCO	4500272773	500KVA-13.8KV-480/277V
7287-M	MADI AL HAJRI	07/128	112.5KVA-480-208/120V
7287-M	MADI AL HAJRI	07/128	45KVA-480-208/120V
7287-M	MADI AL HAJRI	07/128	750KVA-13.8KV-480/277V
7288-M	AQESA - JEDDAH	3001469	75KVA-13.8KV-220/127V
7289-M	AL MABANI GEN CONT.	AGC- PO- 1214	3000KVA-13.8KV/480V
7290-M	SNAMPROGETTI.	11567	2500/3125KVA-13.8/4.16KV
7290-M	SNAMPROGETTI.	11567	2500/3125KVA-13.8/0.48KV
7290-M	SNAMPROGETTI.	11567	3750/4680KVA-13.8/4.16KV
7290-M	SNAMPROGETTI.	11567	1000KVA-13.8KV/480V
7290-M	SNAMPROGETTI.	11567	225KVA-13.8KV/480V
7290-M	SNAMPROGETTI.	11567	2000KVA-13.8KV/4.16KV
7290-M	SNAMPROGETTI.	11567	750KVA-13.8KV/480V
7290-M	SNAMPROGETTI.	11567	4000KA-13.8KV Auto Transformers
7291-M	SAUDI ARAMCO	4500291939	1000KVA-13.8KV-480/277V



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7292-M MOHD AL OJAIMI	N/A	225KVA-13.8KV/480V
7293-M SAUDI ARAMCO	4500324688	500KVA-13.8KV-480/277V
7293-M SAUDI ARAMCO	4500324688	750KVA-13.8KV-480/277V
7294-M SAUDI ARAMCO	4500329608	75KVA-13.8KV-480/277V
7295-M SAUDI ARAMCO	4500330055	30KVA-13.8KV-480/277V
7296-M S.A. KENT CO. LTD.	00503/588	1500KVA-13.8KV/480V
7297-M S.A. KENT. CO LTD.	00502/588	2500/3125KVA-13.8KV/480V
7298-M SAUDI ARAMCO	4500335471	50KVA-4.16KV/277V
7299-M TECHNIP ABUDHABI	1641 01 0 001	2500/3125KVA-13.8KV/4.6KV
7299-M TECHNIP ABUDHABI	1641 01 0 001	2500/3125KVA-13.8KV/0.48KV
7300-M S.A KENT. CO. LTD.	00504/588	7500/9.38KVA-13.8/4.16KV
7301-M AL OSAIS CONT. CO.	70472	2500KVA-13.8KV/0.48KV
7302-M TAMIMI CO	C-3380	75KVA-13.8KV-480/277V
7303-M AQESA - DAMMAM	2008800	500KVA-13.8KV-280/220V
7304-M ISAM KABBANI & CO.	14146	75KVA-13.8KV-480/277V
7305-M AL MUHAIDB CONT. CO.	A-0102	500KVA-13.8KV-2.4KV
7306-M SAUDI ARAMCO	4500388398	300KVA-13.8KV-480/277V
7307-M TECHNIP ITALY	2124A0076	2500/3125KVA-4.16/0.48KV
7307-M TECHNIP ITALY	2124A0076	2000KVA-13.8KV/480V
7308-M TECHNIP ITALY	2124A0075	5000/6250KVA-13.8/4.16KV
7309-M SUEDROHRBAU Saudi Arabia. Ltd	44658-SRB-MR-033-01	112.5KVA-13.8KV-480/277V
7310-M S.A. KENT. CO. LTD	00509/588	225KVA-0.48/4.16KV
7310-M S.A. KENT. CO. LTD	00509/588	75KVA-4.16KV/0.48KV
7311-M SAUDI ARAMCO	4500390787	75KVA-13.8KV-480/277V
7312-M SAUDI ARAMCO	4500380302	50KVA-33KV-240/120V
7313-M SAUDI ARAMCO	4500377814	1000KVA-13.8KV-480/277V
7314-M AL MUHAIDIB CONT. CO.	A-0121	225KVA-2.4KV-480/277V
7315-M SAUDI ARAMCO	4500371979	750KVA-4.16KV-480/277V
7316-M ABDULLAH AHMED DOSSARY	AAD/137/02	75KVA-34.5KV-480/277V
7317-M SAUDI ARAMCO	4500401617	300KVA-13.8KV-480/277V
7318-M AQESA - DAMMAM	2008888	225KVA-13.8KV-480/277V
7319-M NESMA	770012	1000KVA-13.8KV-480/277V
7320-M NESMA	770017	5000/6650KVA-13.8KV-4610/240V
7321-M SAUDI ARAMCO	4500384917	1500KVA-13.8KV-480/227V
7322-M SAUDI ARAMCO	4500398113	2500/3125KVA-13.8KV/0.48KV
7323-M IHAB ESTABLISHMENT	1384/PO/19/03	1000KVA-13.8KV/0.48KV
7323-M IHAB ESTABLISHMENT	1384/PO/19/03	45KVA-480/208/120V
7323-M IHAB ESTABLISHMENT	1384/PO/19/03	30KVA-480/208/120V
7323-M IHAB ESTABLISHMENT	1384/PO/19/03	15KVA-480/208/120V
7323-M IHAB ESTABLISHMENT	1384/PO/19/03	150KVA-480/208/120V
7324-M IHAB ESTABLISHMENT	137620/PO/19/03	1000KVA-13.8KV/0.48KV
7324-M IHAB ESTABLISHMENT	137620/PO/19/03	500KVA-13.8KV/0.48KV
7324-M IHAB ESTABLISHMENT	137620/PO/19/03	225KVA-13.8KV/0.48KV
7324-M IHAB ESTABLISHMENT	137620/PO/19/03	75KVA-480/208/120V
7324-M IHAB ESTABLISHMENT	137620/PO/19/03	15KVA-480/208/120V





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Wahah Electric Supply Co. of Saudi Arabia (Ltd.)

7325-M AQESA DAMMAM	2008986	150KVA-13.8KV-480/277V
7326-M AQESA - YANBU	6000588	300KVA-13.8KV-220/127V
7327-M AQESA - YANBU	6000582	1500KVA-13.8KV-380/220V
7328-M SAUDI ARAMCO	4500417945	75KVA-13.8KV-480/277V
7329-M SAUDI ARAMCO	4500422234	75KVA-13.8KV-480/277V
7330-M C.C.E.	QISF/0021/02	2500/3125KVA-13.8KV/0.48KV
7331-M SAUDI ARAMCO	4500425525	75KVA-13.8KV-480/277V
7332-M AL MUHAIDIB CONT. CO.	A-0162	500KVA-13.8KV-208/120V
7333-M SAUDI ARAMCO	4500416609	300KVA-13.8KV-480/277V
7333-M SAUDI ARAMCO	4500416609	500KVA-13.8KV-480/277V
7333-M SAUDI ARAMCO	4500416609	750KVA-13.8KV-480/277V
7334-M AL ANWAR EASTERN CONT. Est	APO - 077/02	75KVA-34.5/19.918KV-480/277V
7335-M APTC CONT. EST.	AR - 03/03/03	500KVA-2.4KV-480/277V
7336-M S.A. KENT. CO.	00516/588	5000KVA-13.8KV-480/277V
7337-M SAUDI ARAMCO	4500462024	750KVA-4.16KV-480/277V
7338-M SAUDI ARAMCO	4500460221	30KVA-13.8KV-480/277V
7338-M SAUDI ARAMCO	4500460221	75KVA-13.8KV-480/277V
7338-M SAUDI ARAMCO	4500460221	225KVA-13.8KV-480/277V
7339-M SAUDI CONSTRUCTIONEERS Est	SCH/HRD/SUP-CON/045/03	75KVA-13.8KV-480/277V
7340-M SAUDI ARAMCO	4500477383	150KVA-13.8KV-480/277V
7340-M SAUDI ARAMCO	4500477383	112.5KVA-13.8KV-480/277V
7341-M Contracting & Construction Ent.	QISF/0031/02	750KVA-13.8KV-480/277V
7341-M Contracting & Construction Ent.	QISF/0031/02	500KVA-13.8KV-480/277V
7341-M Contracting & Construction Ent.	QISF/0031/02	75KVA-13.8KV-480/277V
7342-M ROYAL SAUDI NAVAL FORCES	9/R	500KVA-13.8KV-208/220V
7343-M AQESA - DAMMAM	2009374	1500KVA-13.8KV-480/277V
7344-M AQESA - DAMMAM	2009385	500KVA-13.8KV-480/277V
7345-M SAUDI ARAMCO	4500520980	225KVA-13.8KV-480/277V
7346-M SAUDI ARAMCO	4500518262	10KVA,4160/7200KV-240/480V
7347-M AQESA - RIYADH	4003790	1500KVA-13.8KV-480/277V
7348-M S.A. KENT. CO.	00604/591-0.0.	7.5/10/12.45MVA-34.5/4.16KV
7348-M S.A. KENT. CO.	00604/591-0.0.	1000/1250KVA-4.16KV/480V
7349-M SAUDI ARAMCO	4500562734	30KVA-13.8KV-480/277V
7350-M SAUDI ARAMCO	4500565359	75KVA-4.16KV-480/277V
7351-M SAUDI ARAMCO	4500524917	500KVA-480V-208/120V
7352-M ROYAL SAUDI NAVEL FORCES	337	150KVA-13.8KV-208/120V
7353-M SNAMPROGETTI.	13131	75KVA-4.16KV/480V
7354-M MOHD AL-NOJAIID EST.	1921	300KVA-13.8KV-480/277V
7355-M ROYAL SAUDI NAVEL FORCES	28 / 23.	75KVA-13.8KV-208/120V
7355-M ROYAL SAUDI NAVEL FORCES	28 / 23.	150KVA-13.8KV-208/120V
7355-M ROYAL SAUDI NAVEL FORCES	28 / 23.	750KVA-13.8KV-208/120V
7355-M ROYAL SAUDI NAVEL FORCES	28 / 23.	750KVA-13.8KV-480/277V
7355-M ROYAL SAUDI NAVEL FORCES	28 / 23.	1500KVA-13.8KV-480/120V
7355-M ROYAL SAUDI NAVEL FORCES	28 / 23.	75KVA-13.8KV-480/277V
7356-M KAMCO	13960	1500KVA-13.8KV-480/277V



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7356-M	KAMCO	13960	300KVA-13.8KV-208/120V
7357-M	MADI M AL-HAJRI & PARTNERS.	04 / 260.	1000KVA-13.8KV-480/277V
7358-M	AQESA - RIYADH.	4003976	300KVA-13.8KV-208/120V
7359-M	A T C O.	0 4 5 2	750KVA-13.8KV-480/277V
7360-M	IMCO - KUWAIT.	2738/03/845.	100KVA-34.5KV-480/277V
7360-M	IMCO - KUWAIT.	2738/03/845.	100KVA-34.5KV,415/240V
7361-M	KELLOGG BROWN - KUWAIT	RIO/JKK-PO1861	1250KVA-6.6KV-400/231V
7361-M	KELLOGG BROWN - KUWAIT	RIO/JKK-PO1861	750KVA-6.6KV-400/231V
7362-M	AQESA - YANBU	6000765	150KVA-13.8KV-220/120V
7362-M	AQESA - YANBU	6000765	225KVA-13.8KV-220/127V
7362-M	AQESA - YANBU	6000765	225KVA-13.8KV-380/220V
7362-M	AQESA - YANBU	6000765	400KVA-13.8KV-380/220V
7362-M	AQESA - YANBU	6000765	500KVA-13.8KV-380/220V
7363-M	KELLOGG BROWN - KUWAIT	RIO/JKK-PO2172	750KVA-6.6KV-400/231V
7364-M	KAMCO	14456	2000KVA-4.16KV-480/277V
7365-M	AQESA DAMMAM	2010251	1000KVA-13.8KV-480/277V
7366-M	AQESA JUBAIL	7000014	1000KVA-13.8KV-480/277V
7367-M	SAUDI ARAMCO	4500716726	150KVA-4.16KV/480V
7368-M	A G A P. SAUDI ARABIA.	670210	1000KVA-13.8KV/4.16KV
7368-M	A G A P. SAUDI ARABIA.	670210	1000KVA-13.8KV-480/277V
7369-M	SAUDI ARAMCO	4500688318	1500 KVA 13.8KV / 480V
7370-M	SAUDI ARAMCO	4500724002	75 KVA - 13.8 KV - 480 / 277 V
7371-M	ARCAN	PO-J-RP-140-03	300 KVA - 34.5 KV - 480 / 277V
7372-M	M.H.AL-BARGHASH & BROS.CO.	0908-DTD-14/10/2003.	500 KVA - 13.8 KV - 480 / 277V
7373-M	BANDARIYAH INTL.CO. Ltd.	30452A-34597A	1000 KVA - 13.8 KV - 220 / 127V
7374-M	AL-JEHMAH TRADING CO.	AJT/PO-05127/2003.	150 KVA - 34.5 KV - 480 / 277 V
7374-M	AL-JEHMAH TRADING CO.	AJT/PO-05127/2003.	100 KVA - 34.5 KV - 480 V
7374-M	AL-JEHMAH TRADING CO.	AJT/PO-05127/2003.	100 KVA - 13.8 KV - 480 V
7374-M	AL-JEHMAH TRADING CO.	AJT/PO-05127/2003.	250 KVA - 34.5 KV - 1100 - 2200 V
7374-M	AL-JEHMAH TRADING CO.	AJT/PO-05127/2003.	250 KVA - 13.8 KV - 1100 - 2200 V
7374-M	AL-JEHMAH TRADING CO.	AJT/PO-05127/2003.	275 KVA - 34.5 KV - 1100 - 2200 V
7374-M	AL-JEHMAH TRADING CO.	AJT/PO-05127/2003.	450 KVA - 34.5 KV - 1100 - 2200 V
7374-M	AL-JEHMAH TRADING CO.	AJT/PO-05127/2003.	275 KVA - 13.8 KV - 1100 - 2200 V

## PACKAGE SUBSTATION, COMPACT SUBSTATION & MINI-POWER CENTER

JOB NO.	CUSTOMER	PROJECT NAME/P.O. NO.	DESCRIPTION
3164-M	AL-RASHID TRDNG & CONT. CO.	GH-166/94	1000KVA-13.8KV-380/220V
3164-M	AL-RASHID TRDNG & CONT. CO.	GH-166/94	250KVA-13.8KV-220/127V
3164-M	AL-RASHID TRDNG & CONT. CO.	GH-166/94	200KVA-13.8KV-220/127V
3181-M	SCECO - WEST	CPB51600334	500KVA-13.8-11KV-400/231V
3192-M	SCECO-WEST	CPB31600769	500KVA-13.8KV-231/133V
3203-M	SCECO-CENTRAL	371/16/R/PC	1000KVA-13.8KV-231/133V
3209-M	SCECO-WEST	CPB11700100	500KVA-13.8KV-231/133V
3209-M	SCECO-WEST	CPB11700100	500KVA-13.8KV-11KV-400/231V
3209-M	SCECO-WEST	CPB11700100	1000KVA-13.8KV-231/133V
3209-M	SCECO-WEST	CPB11700100	500KVA-13.8KV-231/133V



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3209-M	SCECO-WEST	CPB11700100	500KVA-13.8KV-11KV-400/231V
3209-M	SCECO-WEST	CPB11700100	500KVA-13.8KV-11KV-400/231V
3211-M	AQESA-RIYADH	7217-2412	400KVA-11KV-380/220V
3211-M	AQESA-RIYADH	7217-2412	400KVA-11KV-380/220V
3211-M	AQESA-RIYADH	7217-2412	630KVA-11KV-380/220V
3213-M	AQESA RIYADH	7217-2492	150KVA-7.2KV/380V
3214-M	SCECO-WEST	CPB11700219	500KVA-13.8KV-231/133V
3214-M	SCECO-WEST	CPB11700219	500KVA-13.8KV-11KV-400/231V
3214-M	SCECO-WEST	CPB11700219	500KVA-13.8KV-11KV-400/231V
3220-M	NESMA & ALFADL CONT. CO.	76731 MODA DHAHRAN	250KVA-13.8KV-380/220V
3220-M	NESMA & ALFADL CONT. CO.	76731 MODA DHAHRAN	500KVA-13.8KV-380/220V
3220-M	NESMA & ALFADL CONT. CO.	76731 MODA DHAHRAN	650KVA-13.8KV-380/220V
3220-M	NESMA & ALFADL CONT. CO.	76731 MODA DHAHRAN	200KVA-13.8KV-380/220V
3220-M	NESMA & ALFADL CONT. CO.	76731 MODA DHAHRAN	600KVA-13.8KV-380/220V
3220-M	NESMA & ALFADL CONT. CO.	76731 MODA DHAHRAN	50KVA-13.8KV/3.3KV
3220-M	NESMA & ALFADL CONT. CO.	76731 MODA DHAHRAN	150KVA-13.8KV-380/220V
3220-M	NESMA & ALFADL CONT. CO.	76731 MODA DHAHRAN	75KVA-13.8KV-380/220V
3222-M	AL-OJAIMI EST.	N/A	1000KVA-13.8KV-231/133V
3227-M	AQESA-JEDDAH	7219-7064	1000KVA-13.8KV-220/127V
3228-M	IBN OMAIRA EST.	N/A	1000KVA-13.8KV-231/133V
3235-M	AQESA-JEDDAH	7219-7065	1000KVA-13.8KV-231/133V
3239-M	NESMA & ALFADL CONT.	0084878	MINI POWER CENTER
3240-M	NESMA & ALFADL CONT.	0084880	MINI POWER CENTER
3247-M	NESMA & ALFADL CONT.	0088111 MODA JUBAIL	150KVA-13.8KV-380/220V
3247-M	NESMA & ALFADL CONT.	0088111 MODA JUBAIL	300KVA-13.8KV-380/220V
3247-M	NESMA & ALFADL CONT.	0088111 MODA JUBAIL	600KVA-13.8KV-380/220V
3247-M	NESMA & ALFADL CONT.	0088111 MODA JUBAIL	500KVA-13.8KV-380/220V
3247-M	NESMA & ALFADL CONT.	0088111 MODA JUBAIL	200KVA-13.8KV-380/220V
3247-M	NESMA & ALFADL CONT.	0088111 MODA JUBAIL	50KVA-13.8KV/3.3KV
3249-M	AQESA-JEDDAH	7219-7067	1000KVA-13.8KV-400/231V
3253-M	SCECO-WEST	CPB11701346	500KVA-13.8KV-231/133V
3253-M	SCECO-WEST	CPB11701346	500KVA-13.8KV-11KV-400/231V
3253-M	SCECO-WEST	CPB11701346	1000KVA-13.8KV-231/133V
3253-M	SCECO-WEST	CPB11701346	1600KVA-13.8KV-231/133V
3256-M	SAUDI CEMENT CO.	9788	1600KVA-11KV-400/231V
3264-M	AQESA-JEDDAH	7219-7071	500KVA-13.8KV-11KV-400/231V
3286-M	AQESA-JEDDAH	7219-7073	1000KVA-13.8KV-400/231V
3296-M	SCECO - WEST	CPB11801229	1000KVA-13.8KV-231/133V
3321-M	SCECO - WEST	CPB11801701	1600KVA-13.8KV-231/133V
3325-M	AQESA-JEDDAH	3000269	500KVA-13.8KV-11KV-400/231V
3339-M	AQESA-JEDDAH	3000292	500KVA-13.8KV-11KV-400/231V
3351-M	AL YAMAMA CO	YC/MODA/EE-019	150KVA-13.8KV/380V
3351-M	AL YAMAMA CO	YC/MODA/EE-019	750KVA-13.8KV/380V
3351-M	AL YAMAMA CO	YC/MODA/EE-019	250KVA-13.8KV/380V
3351-M	AL YAMAMA CO	YC/MODA/EE-019	100KVA-13.8KV/380V



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Wahah Electric Supply Co. of Saudi Arabia (Ltd.)

3351-M AL YAMAMA CO	YC/MODA/EE-019	50KVA-13.8KV/3300V
3353-M S.S.O.C	ES-17579	800KVA-13.8KV-11KV-380/220V
3353-M S.S.O.C	ES-17579	400KVA-13.8KV-11KV-380/220V
3373-M SCECO - WEST.	CPB11901278	500KVA-13.8-11KV-400/231V
3373-M SCECO - WEST.	CPB11901278	1000KVA-13.8-11KV-400/231V
3373-M SCECO - WEST.	CPB11901278	1600KVA-13.8-11KV-400/231V
3378-M ABUNAYYAN ELECTIC	2468	500KVA-13.8KV-231/133V
3402 - M AQESA - RIYADH	4001449	1000KVA-13.8KV-400/231V
3411 - M SAUDI NAVAL FORCE.	12/20	300KVA-13.8KV-380/220V
3415 - M SCECO - SOUTH	2010019012JA0004	1000KVA-13.8KV-231/133V
3441 - M SCECO - WEST	CPB12101195	500KVA-13.8KV-231/133V
3441 - M SCECO - WEST	CPB12101195	500KVA-13.8-11KV/400V
3441 - M SCECO - WEST	CPB12101195	500KVA-13.8-11KV/400V
3446 - M SCECO - EAST	S 001141905	500KVA-13.8-4.16KV-231/133V
3446 - M SCECO - EAST	S 001141905	500KVA-13.8-4.16KV-231/133V
3446 - M SCECO - EAST	S 001141905	500KVA-13.8-4.16KV-231/133V
3447 - M SCECO - EAST	S 001242581	500KVA-13.8KV-4.16KV-400/231V
3462 - M AL YAMAMA CO.	YC/MODA/EE-004	1000KVA-13.8KV-380/220V
3462 - M AL YAMAMA CO.	YC/MODA/EE-004	630KVA-13.8KV-380/220V
3462 - M AL YAMAMA CO.	YC/MODA/EE-004	300KVA-13.8KV-380/220V
3462 - M AL YAMAMA CO.	YC/MODA/EE-004	100KVA-13.8KV-380/220V
3462 - M AL YAMAMA CO.	YC/MODA/EE-004	75KVA-13.8KV/3300V
3462 - M AL YAMAMA CO.	YC/MODA/EE-004	150KVA-13.8KV-380/220V
3462 - M AL YAMAMA CO.	YC/MODA/EE-004	250KVA-13.8KV-380/220V
3462 - M AL YAMAMA CO.	YC/MODA/EE-004	100KVA-13.8KV-380/220V
3462 - M AL YAMAMA CO.	YC/MODA/EE-004	5KVA-3.3KV/220V Mini Power Centre.
3463 - M HISHAM EL-SEWEDY	162/2001	500KVA-13.8KV-231/133V
3466 - M SCECO - EAST	S 010649015	500KVA-13.8KV-4.16KV-231/133V
3470 - M SCECO - WEST	CPB20101245	300KVA-13.8KV-231/133V
3478 - M AL-TURSHID CONT.	N/A	100KVA-13.8KV-220/127V
3481 - M AQESA DAMMAM	4002956	500KVA-13.8KV-220/127V
3487 - M AQRAT REAL ESTATE	948/12/2001	500KVA-13.8KV-231/133V
3489 - M RAKAN TRAD & CONT.	MD/155/2001	500KVA-13.8KV-380/220V
3489 - M RAKAN TRAD & CONT.	MD/155/2001	750KVA-13.8KV-380/220V
3489 - M RAKAN TRAD & CONT.	MD/155/2001	630KVA-13.8KV-380/220V
3489 - M RAKAN TRAD & CONT.	MD/155/2001	500KVA-13.8KV-380/220V
3489 - M RAKAN TRAD & CONT.	MD/155/2001	250KVA-13.8KV-380/220V
3489 - M RAKAN TRAD & CONT.	MD/155/2001	630KVA-13.8KV-380/220V
3489 - M RAKAN TRAD & CONT.	MD/155/2001	50KVA-13.8KV-380/220V
3489 - M RAKAN TRAD & CONT.	MD/155/2001	100KVA-13.8KV-380/220V
3489 - M RAKAN TRAD & CONT.	MD/155/2001	5KVA-3.3KV/220V Mini Power Center
3507-M SCECO - EAST	S 020356663	500KVA-13.8-11KV-231/133V
3508-M AQESA - RIYADH	4003154	500KVA-13.8KV-231/133V
3509-M IBRAHIM AL HAJILAN	N/A	100KVA-13.8KV-380/220V
3511-M SCECO - WEST	CPB20200679	300KVA-13.8KV-231/133V



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3511-M SCECO - WEST	CPB20200679	300KVA-13.811KV-400/231V
3520-M AQESA - JEDDAH	3001439	100KVA-13.8KV-380/220V
3525-M SCECO - SOUTH	2.0024E+11	500KVA-13.8KV-231/127V
3525-M SCECO - SOUTH	2.0024E+11	500KVA-13.8KV-231/127V
3525-M SCECO - SOUTH	2.0024E+11	1000KVA-13.8KV-231/133V
3525-M SCECO - SOUTH	2.0024E+11	1000KVA-13.8KV-231/133V
3525-M SCECO - SOUTH	2.0024E+11	500KVA-13.8KV-231/127V
3525-M SCECO - SOUTH	2.0024E+11	500KVA-13.8KV-231/127V
3525-M SCECO - SOUTH	2.0024E+11	1000KVA-13.8KV-231/133V
3525-M SCECO - SOUTH	2.0024E+11	1000KVA-13.8KV-231/133V
3525-M SCECO - SOUTH	2.0024E+11	500KVA-13.8KV-231/127V
3525-M SCECO - SOUTH	2.0024E+11	500KVA-13.8KV-231/127V
3525-M SCECO - SOUTH	2.0024E+11	1000KVA-13.8KV-231/133V
3525-M SCECO - SOUTH	2.0024E+11	1000KVA-13.8KV-231/133V
3530-M SCECO - WEST	CPB20201193	500KVA-13.8-1KV-400/231V
3532-M HESHAM EL SEWEDY	MS-162/02	500KVA-13.8KV-231/133V
3532-M HESHAM EL SEWEDY	MS-162/02	1000KA-13.8KV-231/133V
3536-M HESHAM EL SEWEDY	MS-162/02	500KVA-13.8KV-231/133V
3541-M SCECO-EAST	S - 0212 65490	1000KVA-13.8KV-231/133V
3545-M AQESA RIYADH	4003668	1000KVA-13.8KV-231/133V
3545-M AQESA RIYADH	4003668	500KVA-13.8KV-231/133V
3548-M SCECO - EAST	S 0301 66856	1000KVA-11/13.8KV-400/231V
3550-M BASMAN EST.	75/B/2003	1000KVA-13.8/0.231KV
3553-M SCECO - WEST.	CPB20300236	500KVA-13.8-11KV-400/231V
3554-M BASMAN EST.	110/B/2003	1000KVA-13.8/0.231KV
3554-M BASMAN EST.	110/B/2003	500KVA-13.8/0.231V
3555-M BASMAN EST.	111/B/2003	1000KVA-13.8-11KV/0.4KV
3555-M BASMAN EST.	111/B/2003	1000KVA-13.8-11KV/0.4KV
3557-M SCECO - WEST.	CPB20300233	1000KVA-13.8KV-231/133V
3558-M AL ZAHRANI EST.	N/A	1000KVA-13.8/11KV-400/231V
3565-M HESHAM EL-SEWEDY	MS - 128 / 03.	1000KVA-13.8/11KV-400/231V
3565-M HESHAM EL-SEWEDY	MS - 128 / 03.	1000KVA-13.8/11KV-400/231V
3567-M AQESA JEDDAH	3001600	1000KVA-13.8KV-380/220V
3568-M AQRAT REAL ESTATE	N / A.	1000KVA-13.8KV-231V
3569-M AQRAT REAL ESTATE	N / A.	500KVA-13.8KV-231V
3576-M RAKAN TRAD & CONT.	RC/JA/025/03.	500KVA-13.8KV-231/133V
3580-M BASMAN EST.	319/B/2003.	1000KVA-13.8KV-400V
3580-M BASMAN EST.	319/B/2003.	1000KVA-13.8KV-400V
3588-M SCECO-SOUTH	200330010031 JA 0002	500KVA-13.8KV/231V
3590-M SCECO-WEST	CPB40301106	500KVA-13.8-11KV/400V
3590-M SCECO-WEST	CPB40301106	500KVA-13.8-11KV/400V
3590-M SCECO-WEST	CPB40301106	500KVA-13.8-11KV/400V
3595-M AQESA RIYADH	4004010	1000KVA-13.8KV-220/127V
3598-M AL ABDUL KARIM Trad.	03/DE/2245/KH/M	1000 KVA - 13.8 KV / 231V
3598-M AL ABDUL KARIM Trad.	03/DE/2245/KH/M	500 KVA - 13.8 KV / 231 V



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3600-M HESAHM ELSEWEDY	MS/161/03.	100 KVA - 13.8 KV - 400 / 231V
3601-M BASMAN EST.	632/B/2003-O-H.	1000 KVA - 13.8 KV - 231 V
3601-M BASMAN EST.	632/B/2003-O-H.	1000 KVA - 13.8 KV - 231 V
3601-M BASMAN EST.	632/B/2003-O-H.	500 KVA - 13.8 KV - 231 V
3610-M SCECO-WEST	CPB40301542	500 KVA - 13.8 / 11 KV - 400 / 231 V
3612-M SCECO-WEST	CPB40301692	500 KVA - 13.8 KV - 231 / 133 V
3616-M BASMAN EST.	746/B/2003-0	1000 KVA - 13.8 KV - 231 V
3616-M BASMAN EST.	746/B/2003-0	500 KVA - 13.8 KV - 231 V
7093 - M SAUDI ARAMCO	QBAE-M98-16-6601 DA	1000KVA-13.8KV/480V
7189 - M SAUDI ARAMCO	DKAE-099-14-1721 DA	300KVA-13.8KV-480/277V

## DRY TYPE TRANSFORMERS

JOB NO.	CUSTOMER	PROJECT NAME/P.O. NO.	DESCRIPTION
4269-M	KUKDONG	7206-50126	DRY TYPE TRANSFORMERS
4270-M	AQESA RIYADH	7208-0342	DRY TYPE TRANSFORMERS
4272-M	MARINE SERVICES	7210WES001	DRY TYPE TRANSFORMERS
4275-M	KAU, CENTRAL UTILITY PLANT	7210-365	DRY TYPE TRANSFORMERS
4276-M	HYUNDAI	7208-0431	DRY TYPE TRANSFORMERS
4277-M	AT & T	7208-0436	DRY TYPE TRANSFORMERS
4278-M	MITSUBISHI HEAVY INDUSTRY	720850163	DRY TYPE TRANSFORMERS
4281-M	AQESA JEDDAH	7210-WES012	DRY TYPE TRANSFORMERS
4284-M	AQESA RIYADH	7208-0545	DRY TYPE TRANSFORMERS
4285-M	AQESA JEDDAH	7210WES016	DRY TYPE TRANSFORMERS
4287-M	INTERNATIONAL CENTER	7208-0571	DRY TYPE TRANSFORMERS
4288-M	SAUDI ARAMCO	DR-922-14-0012	DRY TYPE TRANSFORMERS
4290-M	EEMCO	7208-0589	DRY TYPE TRANSFORMERS
4291-M	AHMED NAJEEB EST.	7208-0597	DRY TYPE TRANSFORMERS
4293-M	SAUDI REAL ESTATE	7208-0602	DRY TYPE TRANSFORMERS
4294-M	HYUNDAI	7208-0609	DRY TYPE TRANSFORMERS
4296-M	SAUDI ARAMCO	DR-141-14-2288	DRY TYPE TRANSFORMERS
4297-M	AQESA RIYADH	7208-0649	DRY TYPE TRANSFORMERS
4299-M	AQESA JEDDAH	7210WES025	DRY TYPE TRANSFORMERS
4301-M	AQESA RIYADH (AL SADEH)	7208-0731	DRY TYPE TRANSFORMERS
4303-M	AQESA DAMMAM (ARAMCO)	7206-50227	DRY TYPE TRANSFORMERS
4304-M	AQESA JEDDAH	7210WES030	DRY TYPE TRANSFORMERS
4308-M	AL MUHANNA	PDC1225-173	DRY TYPE TRANSFORMERS
4309-M	RANDAH TRADING	651	DRY TYPE TRANSFORMERS
4313-M	AQESA DAMMAM (SAIPEM)	7206-50238	DRY TYPE TRANSFORMERS
4314-M	AL BADER EST.	00667/90	DRY TYPE TRANSFORMERS
4315-M	AL OJAIMI	102/90	DRY TYPE TRANSFORMERS
4316-M	BATOOK HAITAI	BH/90-551	DRY TYPE TRANSFORMERS
4318-M	SAUDI ARAMCO	912-14-8304	DRY TYPE TRANSFORMERS
4319-M	SOUKS SUPERMARKET	206	DRY TYPE TRANSFORMERS
4322-M	SAUDI ARAMCO	QU-433-14-2011 DA	DRY TYPE TRANSFORMERS
4323-M	AQESA DAMMAM (AL HAMOUR)	7206-50254	DRY TYPE TRANSFORMERS



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4327-M	AQESA RIYADH (INMA)	7208-0917	DRY TYPE TRANSFORMERS
4328-M	AQESA RIYADH	7208-0840	DRY TYPE TRANSFORMERS
4330-M	AQESA RIYADH	7208-0929	DRY TYPE TRANSFORMERS
4331-M	AQESA DAMMAM	7206-50263	DRY TYPE TRANSFORMERS
4334-M	AQESA JEDDAH	7210-040	DRY TYPE TRANSFORMERS
4335-M	AQESA RIYADH / ALI REZA	7208-0971	DRY TYPE TRANSFORMERS
4337-M	AQESA DAMMAM/ SAIPEM	7206-50271	DRY TYPE TRANSFORMERS
4338-M	AQESA RIYADH	7208-0984	DRY TYPE TRANSFORMERS
4340-M	AQESA DAMMAM	7206-50273	DRY TYPE TRANSFORMERS
4342-M	AQESA JEDDAH	7210-045	DRY TYPE TRANSFORMERS
4344-M	AQESA DAMMAM	7206-50274	DRY TYPE TRANSFORMERS
4346-M	SATELLITES	W/C/001/90	DRY TYPE TRANSFORMERS
4348-M	AQESA JEDDAH	7210-046	DRY TYPE TRANSFORMERS
4350-M	AQESA RIYADH/AL BURNDY	7208-1063	DRY TYPE TRANSFORMERS
4351-M	AQESA DAMMAM/SAUDI CATAREING	7206-50281	DRY TYPE TRANSFORMERS
4353-M	NESMA AL FADL	12594	DRY TYPE TRANSFORMERS
4354-M	U.S ARMY	WESC-006	DRY TYPE TRANSFORMERS
4356-M	ABDULLAH SAID BUGSHAN BROS	N/A.	DRY TYPE TRANSFORMERS
4357-M	U.S. ARMY	WESC-007	DRY TYPE TRANSFORMERS
4358-M	BIN QUARYA EST.	N/A.	DRY TYPE TRANSFORMERS
4360-M	U.S. ARMY	WESC 012	DRY TYPE TRANSFORMERS
4362-M	U.S ARMY	WESC 12	DRY TYPE TRANSFORMERS
4366-M	AQESA RIYADH	7208-1218	DRY TYPE TRANSFORMERS
4367-M	SESCO	3-3179-X-NS	DRY TYPE TRANSFORMERS
4368-M	AQESA DAMMAM	7211-50296	DRY TYPE TRANSFORMERS
4369-M	AQESA JEDDAH	7219-WEES-059	DRY TYPE TRANSFORMERS
4371-M	ABDUL AHMED DOSSARY EST.	2019	DRY TYPE TRANSFORMERS
4372-M	AQESA RIYADH	7217-1299	DRY TYPE TRANSFORMERS
4373-M	AQESA DAMMAM	7219-WES-064	DRY TYPE TRANSFORMERS
4374-M	AQESA JUBAIL	7216-60524	DRY TYPE TRANSFORMERS
4375-M	AQESA JEDDAH	7219-WES-065	DRY TYPE TRANSFORMERS
4376-M	ELSEWEDY ENT	N/A.	DRY TYPE TRANSFORMERS
4377-M	AQESA JEDDAH	7219-WES-0681	DRY TYPE TRANSFORMERS
4378-M	AQESA JEDDAH	7219-WES-0682	DRY TYPE TRANSFORMERS
4379-M	ARABIAN GULF CONT.CO.	14510	DRY TYPE TRANSFORMERS
4380-M	A.H.AL GHAMDI EST.	0116	DRY TYPE TRANSFORMERS
4381-M	AQESA RIYADH	7217-1389	DRY TYPE TRANSFORMERS
4382-M	AQESA RIYADH	7217-1411	DRY TYPE TRANSFORMERS
4383-M	AQESA RIYADH	7217-1413	DRY TYPE TRANSFORMERS
4384-M	U.S. ARMY	WESC-035	DRY TYPE TRANSFORMERS
4385-M	AQESA JUBAIL	7216-60544	DRY TYPE TRANSFORMERS
4386-M	AQESA RIYADH	7217-1428	DRY TYPE TRANSFORMERS
4387-M	AQESA RIYADH	7217-1430	DRY TYPE TRANSFORMERS
4388-M	IYADH EST. FOR AGR	N/A.	DRY TYPE TRANSFORMERS
4389-M	CADO CONSTRUCTION	92,569.00	DRY TYPE TRANSFORMERS



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4390-M	AQESA JEDDAH	7219-WES 072	DRY TYPE TRANSFORMERS
4391-M	AQESA RIYADH	7217-1452	DRY TYPE TRANSFORMERS
4392-M	IHAB EST	N-754/91	DRY TYPE TRANSFORMERS
4393-M	SAUDI ARAMCO	DD-882-14-0821 DA	DRY TYPE TRANSFORMERS
4394-M	S.A. BECHFIL CO.	0767	DRY TYPE TRANSFORMERS
4395-M	AQESA JUBAIL	7216-60559	DRY TYPE TRANSFORMERS
4396-M	AQESA DAMMAM	7211-50324	DRY TYPE TRANSFORMERS
4397-M	U.S. ARMY	WESC-047	DRY TYPE TRANSFORMERS
4398-M	AQESA DAMMAM	7211-50325	DRY TYPE TRANSFORMERS
4399-M	U.S. ARMY	WESC047	DRY TYPE TRANSFORMERS
4400-M	U.S ARMY	WESC-048	DRY TYPE TRANSFORMERS
4401-M	MIDDLE EAST CIRCUIT BREAKES	017	DRY TYPE TRANSFORMERS
4402-M	E.P.S. LTD	13802	DRY TYPE TRANSFORMERS
4403-M	ARABIAN ELECT.	LPO-0199	DRY TYPE TRANSFORMERS
4404-M	ALROBAY EST.	N/A.	DRY TYPE TRANSFORMERS
4405-M	U.S ARMY	WESC-0501	DRY TYPE TRANSFORMERS
4406-M	ARABIAN ELECT.	207	DRY TYPE TRANSFORMERS
4407-M	MEEPCO	J014/91/II/HA1	DRY TYPE TRANSFORMERS
4408-M	M.E.C.B.CO	026	DRY TYPE TRANSFORMERS
4409-M	AQESA DAMMAM	7211-50338	DRY TYPE TRANSFORMERS
4410-M	U.S ARMY	WESC-050-4	DRY TYPE TRANSFORMERS
4411-M	M.E.C.B.CO	031	DRY TYPE TRANSFORMERS
4412-M	ABDULLAH SAID BUGSHAN BROS	N/A	DRY TYPE TRANSFORMERS
4413-M	AQESA DAMMAM	7211-50348	DRY TYPE TRANSFORMERS
4414-M	GULF PROJECTS	N/A	DRY TYPE TRANSFORMERS
4415-M	AQESA DAMMAM	7211-50353	DRY TYPE TRANSFORMERS
4416-M	AQESA DAMMAM	7211-50354	DRY TYPE TRANSFORMERS
4417-M	ALI M ALAJINAH	N/A	DRY TYPE TRANSFORMERS
4418-M	AQESA JUBAIL	7216-60598	DRY TYPE TRANSFORMERS
4419-M	ELSEWEDY ENT.	ELS-DM-9	DRY TYPE TRANSFORMERS
4420-M	ALI MUHAIDIBAK & SONS	4235	DRY TYPE TRANSFORMERS
4421-M	AQESA RIYADH	7217-1634	DRY TYPE TRANSFORMERS
4422-M	ABDUL LATHIF JAMEEL CO.	N/A	DRY TYPE TRANSFORMERS
4423-M	CONSOLIDTED CONTRACTORS	1287	DRY TYPE TRANSFORMERS
4424-M	NAFA MAINT & SERVICES	0140	DRY TYPE TRANSFORMERS
4425-M	M.E.C.B.CO	045	DRY TYPE TRANSFORMERS
4426-M	AQESA DAMMAM	7211-50357	DRY TYPE TRANSFORMERS
4427-M	ELSEWEDY ENT.	N/A	DRY TYPE TRANSFORMERS
4428-M	AQESA DAMMAM	7211-50356	DRY TYPE TRANSFORMERS
4429-M	AQESA DAMMAM	7211-50364	DRY TYPE TRANSFORMERS
4430-M	ELSEWEDY ENT.	102/ELS/DM/92	DRY TYPE TRANSFORMERS
4431-M	A.H.AL GHAMDI EST.	0018	DRY TYPE TRANSFORMERS
4432-M	MADI AL HAJRI EST.	N/A	DRY TYPE TRANSFORMERS
4433-M	IHAB EST.	806/91	DRY TYPE TRANSFORMERS
4434-M	AQESA JUBAIL	7216-60629	DRY TYPE TRANSFORMERS





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4435-M SAUDI ARAMCO	CNAE441-14-4001 DA	DRY TYPE TRANSFORMERS
4436-M FAHAD AL KHAFREE	N/A	DRY TYPE TRANSFORMERS
4437-M ELSEWEDY ENT.	N/A	DRY TYPE TRANSFORMERS
4439-M SAUDI FISHRIES	;04161	DRY TYPE TRANSFORMERS
4440-M AHMAD N ALBINALI SONS	502070	DRY TYPE TRANSFORMERS
4441-M AQESA DAMMAM	7211-50376	DRY TYPE TRANSFORMERS
4442-M AQESA JUBAIL	7216-60649	DRY TYPE TRANSFORMERS
4443-M SAUDI FISHRIES	03295	DRY TYPE TRANSFORMERS
4445-M AQESA RIYADH	7217-1791	DRY TYPE TRANSFORMERS
4447-M AQESA DAMMAM	7211-50382	DRY TYPE TRANSFORMERS
4448-M AQESA JUBAIL	7216-60659	DRY TYPE TRANSFORMERS
4449-M OLAYAN DESCON IND. CO.LTD.	;003758	DRY TYPE TRANSFORMERS
4450-M SAUDI FISHRIES	5345	DRY TYPE TRANSFORMERS
4451-M ARABIAN PIPE COATING CO. LTD.	2481	DRY TYPE TRANSFORMERS
4452-M AQESA JUBAIL	7216-60661	DRY TYPE TRANSFORMERS
4453-M AL SUWAIKET TRAD & CONT. CO.	N/A	DRY TYPE TRANSFORMERS
4454-M AQESA JUBAIL	7216-60664	DRY TYPE TRANSFORMERS
4455-M AQESA JUBAIL	7216-60665	DRY TYPE TRANSFORMERS
4456-M TAMIMI CO.	TC-CO/WES/0232	DRY TYPE TRANSFORMERS
4457-M AQESA DAMMAM	7211-50388	DRY TYPE TRANSFORMERS
4459-M ELSEWEDY EST.	037	DRY TYPE TRANSFORMERS
4460-M AQESA JUBAIL	7216-60669	DRY TYPE TRANSFORMERS
4461-M BAKER TRADING	N/A	DRY TYPE TRANSFORMERS
4462-M SCECO EAST	S 9210-35434	DRY TYPE TRANSFORMERS
4463-M AL QAHTANI CONT.	N/A	DRY TYPE TRANSFORMERS
4464-M AQESA RIYADH	7217-1850	DRY TYPE TRANSFORMERS
4465-M MECBCO	111	DRY TYPE TRANSFORMERS
4466-M AQESA DAMMAM	7211-50397	DRY TYPE TRANSFORMERS
4467-M AQESA DAMMAM	NA/	DRY TYPE TRANSFORMERS
4468-M MITSUBISHI ELE.	N/A	DRY TYPE TRANSFORMERS
4469-M ALI H AL GHAMDI EST.	N/A	DRY TYPE TRANSFORMERS
4471-M ARABIAN MFG & ELECT.SERV.CO.	114-05-93/G	DRY TYPE TRANSFORMERS
4477-M AQESA DAMMAM	7211-50408	DRY TYPE TRANSFORMERS
4478-M AQESA DAMMAM	7211-50409	DRY TYPE TRANSFORMERS
4479-M AQESA DAMMAM	7211-50410	DRY TYPE TRANSFORMERS
4482-M AQESA DAMMAM	7211-50412	DRY TYPE TRANSFORMERS
4484-M GEYAD FOR COMM & IMPORT CO.	4664	DRY TYPE TRANSFORMERS
4487-M AQESA DAMMAM	7211-50413	DRY TYPE TRANSFORMERS
4488-M AQESA RIYADH	7217-2034	DRY TYPE TRANSFORMERS
4493-M AQESA RIYADH	7217-2073	DRY TYPE TRANSFORMERS
4496-M MINITRY OF DEFENCE & AVISATION	1439	DRY TYPE TRANSFORMERS
4500-M ARABIAN INDUSTRIAL FIBERS CO.	22162-00N-14E-LAC	DRY TYPE TRANSFORMERS
4508-M SAUDI ARAMCO	CNAE-059-14-4000 DA	DRY TYPE TRANSFORMERS
4509-M SAUDI ARAMCO	CNAE-M98-14-4006 DA	DRY TYPE TRANSFORMERS
4510-M MITSUI - XENEL CONT. LTD.	XCL-369547	DRY TYPE TRANSFORMERS



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Wahah Electric Supply Co. of Saudi Arabia (Ltd.)

4519-M	BABCOCK	C-3715/0086	DRY TYPE TRANSFORMERS
4520-M	AL AWSAT TRADING	N/A	DRY TYPE TRANSFORMERS
4521-M	SAUDIENERGY CO.	ES-900035	DRY TYPE TRANSFORMERS
4522-M	AL SHUWAYER	9456/TF-032	DRY TYPE TRANSFORMERS
4523-M	AL AKAREM	N/A	DRY TYPE TRANSFORMERS
4524-M	AL MUHANA	PDC2679-236	DRY TYPE TRANSFORMERS
4525-M	SAUDI FISHERIES	PF173/065/25	DRY TYPE TRANSFORMERS
4526-M	AL MUHANAM	PDC2680-237	DRY TYPE TRANSFORMERS
4527-M	AL SADIQ EST.	3871	DRY TYPE TRANSFORMERS
4528-M	AL RASHID TRADING	GHF/219/95	DRY TYPE TRANSFORMERS
4529-M	S.A.KENT	SAK/BER/658/95	DRY TYPE TRANSFORMERS
4530-M	RAJAB & TAYEB	RT/HOB-701	DRY TYPE TRANSFORMERS
4531-M	H. AL SHUWAYER	9453/PF-200	DRY TYPE TRANSFORMERS
4532-M	H. AL SHUWAYER	9455/PF-107	DRY TYPE TRANSFORMERS
4534-M	ABDUL KARIM	DLM-0806-SR	DRY TYPE TRANSFORMERS
4535-M	AL FANTEER MALL	N/A	DRY TYPE TRANSFORMERS
4536-M	AL ZOUMAN AVIATION	N/A	DRY TYPE TRANSFORMERS
4537-M	DOSSARY & PARTNER	6805	DRY TYPE TRANSFORMERS
4538-M	BADER AL MULLAH	4650	DRY TYPE TRANSFORMERS
4539-M	SAUDI TECHINT	YMWTS-E-6002/A	DRY TYPE TRANSFORMERS
4540-M	SAUDI IND. CONT. CO.	1078	DRY TYPE TRANSFORMERS
4541-M	AQESA DAMMAM	7211-50432	DRY TYPE TRANSFORMERS
4543-M	AL FADHEL CONT. EST.	42	DRY TYPE TRANSFORMERS
4544-M	AL MOJIL	81610	DRY TYPE TRANSFORMERS
4545-M	SAUDI BINLADIN	LP-3082	DRY TYPE TRANSFORMERS
4546-M	AL MOJIL	82771	DRY TYPE TRANSFORMERS
4548-M	BABCOCK	C-3715/02238	DRY TYPE TRANSFORMERS
4549-M	NESMA	65148	DRY TYPE TRANSFORMERS
4550-M	SAUDI IND. CONT.CO.	1644	DRY TYPE TRANSFORMERS
4551-M	SAUDI ARAMCO	DBAE-566-14-0033 DA	DRY TYPE TRANSFORMERS
4552-M	MITSUI ENGG	H-04314	DRY TYPE TRANSFORMERS
4553-M	YASSIN INT'L	7184	DRY TYPE TRANSFORMERS
4554-M	TEST ELECTRO MECH	4535/4536	DRY TYPE TRANSFORMERS
4555-M	SAUDI ARAMCO	DGAE-836-14-3857 DA	DRY TYPE TRANSFORMERS
4556-M	NASSER A AL HAJRI	1284	DRY TYPE TRANSFORMERS
4557-M	MOHD OBAID AL MERRY	N/A	DRY TYPE TRANSFORMERS
4558-M	AL FAALYA EST	16/F/96	DRY TYPE TRANSFORMERS
4559-M	CONSOLIDATED CONTRACTORS CO	51577	DRY TYPE TRANSFORMERS
4560-M	NESMA	80748	DRY TYPE TRANSFORMERS
4561-M	S.A.KENT	01673/531	DRY TYPE TRANSFORMERS
4562-M	AHMED YAMYA AL YAMI EST.	AYA/670/013P	DRY TYPE TRANSFORMERS
4563-M	NESMA & AL FADL	81313	DRY TYPE TRANSFORMERS
4564-M	AL FANATEER MALL	N/A	DRY TYPE TRANSFORMERS
4565-M	ELECTRIC HOUSE EST.	N/A	DRY TYPE TRANSFORMERS
4566-M	IHAB EST.	IHAB/1004/10/IK/18	DRY TYPE TRANSFORMERS



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Wahah Electric Supply Co. of Saudi Arabia (Ltd.)

4567-M S.A.KENT	02030/532	DRY TYPE TRANSFORMERS
4568-M IBRAHIM AL KHALDI	N/A	DRY TYPE TRANSFORMERS
4569-M SAUDI TECHINT LTD.	TEARA-YM-WTS-E-6002/B	DRY TYPE TRANSFORMERS
4570-M NAJRAN COMPANY	1162/97	DRY TYPE TRANSFORMERS
4571-M NAJRAN COMPANY	1192/97	DRY TYPE TRANSFORMERS
4572-M NAJRAN GENERAL CONST. CO	999/97	DRY TYPE TRANSFORMERS
4573-M SAUDI ARAMCO	GOAE-X14-14-0002 DA	DRY TYPE TRANSFORMERS
4574-M SNAMPROGETTI	647200/RPS/180	DRY TYPE TRANSFORMERS
4575-M SAUDI ARAMCO	DR-055-14-0062 DA	DRY TYPE TRANSFORMERS
4576-M ABDUL RAHMAN A AL HURAISH TRAD	AAH-0581/97	DRY TYPE TRANSFORMERS
4577-M ABDULLAH AL MOAIBED ENG.	492	DRY TYPE TRANSFORMERS
4578-M ARABIAN FAL COMPANY	6372	DRY TYPE TRANSFORMERS
4579-M SAUDI ARAMCO	AUAE-M98-14-1154 DA	DRY TYPE TRANSFORMERS
4580-M SAUDI ARAMCO	LBAE 281-14-2181 DA	DRY TYPE TRANSFORMERS
4581-M SAUDI ARAMCO	NUAE-M98-14-8444 DA	DRY TYPE TRANSFORMERS
4582-M SAUDI ARAMCO	DDAE-568-14-0037 DA	DRY TYPE TRANSFORMERS
4583-M MITSUI ENGINEERIG CO.	762468	DRY TYPE TRANSFORMERS
4584-M NASSIR MANEA WEBRAN CO.	45119	DRY TYPE TRANSFORMERS
4585-M SCECO - SOUTH	193003890FN0001	DRY TYPE TRANSFORMERS
4587-M SAUDI ARAMCO	CNAE-M98-14-4001 DA	DRY TYPE TRANSFORMERS
4588-M SCECO - CENTRAL	112/19/R/SM	DRY TYPE TRANSFORMERS
4589-M AHMAD N AL BINALI & SONS CO.	510601	DRY TYPE TRANSFORMERS
4590-M SAUDI ARAMCO	DBAE-569-14-0078 DA	DRY TYPE TRANSFORMERS
4591-M NAJRAN COMPANY	101/99	DRY TYPE TRANSFORMERS
4592-M TECHNIP ITALY	1961A0047	DRY TYPE TRANSFORMERS
4593-M SAUDI ARAMCO	DDAE-099-14-4602 DA	DRY TYPE TRANSFORMERS
4594-M SCECO -WEST	CPA72100298	DRY TYPE TRANSFORMERS
4595-M ABB CONT. CO.	2000-T-0410	DRY TYPE TRANSFORMERS
4596-M SAUDI ARAMCO	DBAE-560-14-0088 DA	DRY TYPE TRANSFORMERS
4597-M SAUDI ARAMCO	DRAE-560-14-0089 DA	DRY TYPE TRANSFORMERS
4598-M SAUDI TECHINT.	N/A	DRY TYPE TRANSFORMERS
4599 - M MC CONNELL DOWELL S.A.LTD.	LRCI-M98-14-D466DA	DRY TYPE TRANSFORMERS
4600 - M SAUDI ARAMCO	DRAE-999-14-3636DA	DRY TYPE TRANSFORMERS
4601 - M AQESA JEDDAH	3001146	DRY TYPE TRANSFORMERS
4602 -M AQESA JUBAIL	5002636	DRY TYPE TRANSFORMERS
4603 - M TECHNIP ITALY	2025A2024	DRY TYPE TRANSFORMERS
4604 - M AL-ABDUL RAHMAN CONT. EST	1185-PO-30	DRY TYPE TRANSFORMERS
4605 - M SAUDI ARAMCO	DBAE-561-14-0122 DA	DRY TYPE TRANSFORMERS
4606 - M SAUDI ARAMCO	DDAE-972-14-0014DA	DRY TYPE TRANSFORMERS
4607 - M SAUDI ARAMCO	DBAE-824-14-1414 DA	DRY TYPE TRANSFORMERS
4608 -M SAUDI ARAMCO	DBAE-561-14-0170DA	DRY TYPE TRANSFORMERS
4609-M MADI AL HAJIRI & PARTNEMRS.	01/45	DRY TYPE TRANSFORMERS
4610-M SCECO - WEST	CPA30200183	DRY TYPE TRANSFORMERS
4611-M SAUDI ARAMCO	4500055857	DRY TYPE TRANSFORMERS
4612-M SAUDI ARAMCO	4500055856	DRY TYPE TRANSFORMERS



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4613-M	SNAMPROGETTI S.p.A	10381	DRY TYPE TRANSFORMERS
4614-M	SAUDI ARAMCO	4500184394	DRY TYPE TRANSFORMERS
4615-M	SAUDI ARAMCO	4500183334	DRY TYPE TRANSFORMERS
4616-M	S.A. KENT. CO. LTD	00378/586	DRY TYPE TRANSFORMERS
4617-M	ENEL POWER S.p.A	PDP29B114	DRY TYPE TRANSFORMERS
4618-M	AMERON Saudi Arabia. Ltd	4500008722	DRY TYPE TRANSFORMERS
4619-M	SNAMPROGETTI. S.A.	300000/SPSA/2085	DRY TYPE TRANSFORMERS
4620-M	SAUDI ARAMCO	450047428	DRY TYPE TRANSFORMERS
4621-M	BP SOLAR ARABIA. LTD.	3794	DRY TYPE TRANSFORMERS
4622-M	SAUDI ARAMCO	4500513859	DRY TYPE TRANSFORMERS
4623-M	SNAMPROGETTI. S.A.	300000/SPSA/2189	DRY TYPE TRANSFORMERS
4624-M	NESMA EMCOR	770077	DRY TYPE TRANSFORMERS
4625-M	GAMA AL MOUSHEGAH	BGP/2000-270.	DRY TYPE TRANSFORMERS
4626-M	SAUDI ARAMCO	4500545296	DRY TYPE TRANSFORMERS
4627-M	SAUDI ARAMCO	4500546006	DRY TYPE TRANSFORMERS
4628-M	FOUAD ABDULLAH FOUAD	4110	DRY TYPE TRANSFORMERS
4629-M	UNITED ELECTRIC	1574	DRY TYPE TRANSFORMERS
4630-M	SAUDI ARAMCO	4500376101	DRY TYPE TRANSFORMERS
4631-M	AL-SUWAIDI INDUSTRIAL SER.	3004889	DRY TYPE TRANSFORMERS

## IEC DISTRIBUTION TRANSFORMERS

JOB NO.	CUSTOMER	PROJECT NAME/P.O. NO	DESCRIPTION
3050-M	MERLIN GERIN (EPC)	900804	500KVA-13.8KV-231/133V
3051-M	SCECO - EAST	S-9104-21856	50KVA-13.8KV-231/133V
3052-M	ABDULLAH AL KHALIFA	N/A	300KVA-13.8KV-231/133V
3054-M	SCECO - SOUTH	11N1AA614	50KVA-13.8KV-231/133V
3054-M	SCECO - SOUTH	11N1AA614	200KVA-13.8KV-231/133V
3054-M	SCECO - SOUTH	11N1AA614	50KVA-33KV-231/133V
3054-M	SCECO - SOUTH	11N1AA614	200KVA-33KV-231/133V
3055-M	SCECO - EAST	S 9104-22264	100KVA-13.8KV-400/231V
3056-M	AQESA RIYADH	7217-1322	1500KVA-13.8KV-231/133V
3056-M	AQESA RIYADH	7217-1322	1000KVA-13.8KV-231/133V
3057-M	AQESA DAMMAM	7211-50306	1000KVA-13.8KV-231/133V
3058-M	AL HAWAS TRADING	N/A	200KVA-13.8KV-231/133V
3059-M	SCECO - EAST	S 9106-23181	100KVA-13.8KV-231/133V
3060-M	ISCOSA	E 10501-50-11	200KVA-13.8-400/231V
3061-M	AQESA RIYADH	7217-1404	750KVA-13.8KV-231/133V
3062-M	ELECTRICITY CORP.	D/412/268	1500KVA-13.8KV-380/220V
3063-M	SCECO - EAST	S 9108-25371	100KVA-13.8KV-231/133V
3063-M	SCECO - EAST	S 9108-25371	100KVA-13.8KV-400/231V
3064-M	SCECO - EAST	S 9109-25824	50KVA-13.8KV-231/133V
3065-M	AQESA DAMMAM	7217-1492	500KVA-33KV-231/133V
3066-M	ISCOSA	10505-53-59	500KVA-13.8KV-480/277V
3066-M	ISCOSA	10505-53-59	500KVA-13.8KV-400/231V
3067-M	REMAL ELECTRIC FACTORY	AKE-17512	100KVA-13.8KV-400/21V



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3068-M	SCECO - CENTAL	283/12/R/PC	100KVA-13.8KV-231/133V
3068-M	SCECO - CENTAL	283/12/R/PC	100KVA-33KV-231/133V
3069-M	AL MUQBEL EST	N/A	500KVA-33KV-400/231V
3070-M	SCECO - SOUTH	12N1AA916	50KVA-13.8KV-231/133V
3070-M	SCECO - SOUTH	12N1AA916	100KVA-13.8KV-231/133V
3070-M	SCECO - SOUTH	12N1AA916	100KVA-13.8KV-400/231V
3070-M	SCECO - SOUTH	12N1AA916	300KVA-13.8KV-231/133V
3070-M	SCECO - SOUTH	12N1AA916	50KVA-33KV-231/133V
3070-M	SCECO - SOUTH	12N1AA916	300KVA-33KV-231/133V
3070-M	SCECO - SOUTH	12N1AA916	100KVA-33KV-231/133V
3071-M	SCECO - CENTRAL	338/12/R/PC	1000KVA-13.8KV-231/133V
3072-M	AL HAMAD TRAD & CONT	N/A	100KVA-13.8KV-400/231V
3073-M	ELECTRICITY CORP.	6136/412/D	50KVA-13.8KV-231/133V
3073-M	ELECTRICITY CORP.	6136/412/D	100KVA-13.8KV-231/133V
3073-M	ELECTRICITY CORP.	6136/412/D	100KVA-13.8KV-400/231V
3073-M	ELECTRICITY CORP.	6136/412/D	200KVA-13.8KV-231/133V
3073-M	ELECTRICITY CORP.	6136/412/D	100KVA-33KV-400/231V
3075-M	SCECO - SOUTH	12/N5/109	200KVA-33KV-400/231V
3076-M	E.P.S. LTD	16803	50KVA-13.8KV-231/133V
3077-M	ELECTRICITY CORP.	6737/412D	50KVA-13.8KV-231/133V
3077-M	ELECTRICITY CORP.	6737/412D	100KVA-13.8KV-231/133V
3077-M	ELECTRICITY CORP.	6737/412D	200KVA-13.8KV-231/133V
3078-M	AIR BASE BACKERY	N/A	200KVA-13.8KV-400/231V
3079-M	ELECTRICITY CORP.	7663/412/D	100KVA-13.8KV-400/231V
3077-M	ELECTRICITY CORP.	6737/412D	100KVA-33KV-231/133V
3077-M	ELECTRICITY CORP.	6737/412D	200KVA-33KV-231/133V
3082-M	ELECTICITY CORP. AL JANDAL	7855/412/D	200KVA-13.8KV-231/133V
3082-M	ELECTICITY CORP. AL JANDAL	7855/412/D	300KVA-13.8KV-231/133V
3082-M	ELECTICITY CORP. AL JANDAL	7855/412/D	300KVA-33KV-400/231V
3083-M	ALSHAMRANG CO.	NA/	100KVA-33KV-400/231V
3084-M	SCECO CENTRAL	569/12/R/PC	100KVA-13.8KV-231/133V
3084-M	SCECO CENTRAL	569/12/R/PC	100KVA-33KV-231/133V
3084-M	SCECO CENTRAL	569/12/R/PC	100KVA-33KV-400/231V
3084-M	SCECO CENTRAL	569/12/R/PC	200KVA-13.8KV-231/133V
3084-M	SCECO CENTRAL	569/12/R/PC	200KVA-33KV-231/133V
3084-M	SCECO CENTRAL	569/12/R/PC	200KVA-33KV-400/231V
3086-M	AL RASHEED ALOMRA	ROC/3595/92	100KVA-13.8KV-400/231V
3088-M	SCECO SOUTH	13N15M1175	100KVA-13.8KV-231/133V
3088-M	SCECO SOUTH	13N15M1175	50KVA-33KV-231/133V
3088-M	SCECO SOUTH	13N15M1175	300KVA-13.8KV-231/133V
3088-M	SCECO SOUTH	13N15M1175	300KVA-33KV-231/133V
3091-M	ELECTRIC CORP.S.A.	1985	100KVA-13.8KV-231/133V
3092-M	A.R. NAMLAH CORP.	N/A	100KVA-13.8KV-400/231V
3093-M	TAMIMI COMPANY	37945	200KVA-13.8KV-231/133V
3094-M	AL JABREIN EST.	N/A	200KVA-13.8KV-220/127V



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3095-M	A.R. NAMLAH CORP.	792/F/92	100KVA-13.8KV-400/231V
3096-M	EAST & WEST FACTORY	060-92/EWF	300KVA-13.8KV-231/133V
3097-M	AL AQEEL WORKSHOP	N/A	100KVA-33KV-231/133V
3098-M	MEEDCO	SDA-004E-PU01	50KVA-33KV-231/133V
3098-M	MEEDCO	SDA-004E-PU01	100KVA-33KV-231/133V
3098-M	MEEDCO	SDA-004E-PU01	200KVA-33KV-231/133V
3098-M	MEEDCO	SDA-004E-PU01	50KVA-33KV-231/133V
3098-M	MEEDCO	SDA-004E-PU01	100KVA-33KV-231/133V
3099-M	SCECO CENTRAL	216/13/R/PC	300KVA-33KV-400/231V
3100-M	AQESA RIYADH	7217-1858	20KVA-13.8KV-220/127V
3102-M	ENGR. ALI REHAN	N/A	500KVA-13.8KV-400/231V
3103-M	AL HAMAD TRADING CO.	707	50KVA-13.8KV-400/231V
3104-M	REMAL ELECTRIC FACT.	MUN-2306	200KVA-13.8KV-400/231V
3105-M	AQESA JEDDAH	7219-7012	100KVA-13.8KV-380/220V
3106-M	REMAL ELECTRIC FACT.	MUN-2306	200KVA-13.8KV-400/231V
3106-M	REMAL ELECTRIC FACT.	MUN-2306	100KVA-13.8KV-400/231V
3107-M	AQESA RIYADH	7217-1882	200KVA-33KV-231/133V
3109-M	MOUF OPER & MAINT.EST.	N/A	100KA-33KV-231/133V
3110-M	SCECO CENTRAL	42013/R/PC	300KVA-33KV-231/133V
3110-M	SCECO CENTRAL	42013/R/PC	300KVA-33KV-400/231V
3111-M	AQESA RIYADH	7217-1912	300KVA-13.8KV-231/133V
3111-M	AQESA RIYADH	7217-1912	200KVA-13.8KV-231/133V
3312-M	ELECTRICITY CORP.	6639/413/D	50KVA-13.8KV-231/133V
3312-M	ELECTRICITY CORP.	6639/413/D	100KVA-13.8KV-231/133V
3312-M	ELECTRICITY CORP.	6639/413/D	100KVA-13.8KV-400/231V
3312-M	ELECTRICITY CORP.	6639/413/D	200KVA-13.8KV-231/133V
3312-M	ELECTRICITY CORP.	6639/413/D	50KVA-33KV-231/133V
3312-M	ELECTRICITY CORP.	6639/413/D	50KVA-33KV-400/231V
3312-M	ELECTRICITY CORP.	6639/413/D	100KVA-33KV-231//133V
3312-M	ELECTRICITY CORP.	6639/413/D	100KVA-33KV-400/231V
3312-M	ELECTRICITY CORP.	6639/413/D	200KVA-33KV-231/133V
3312-M	ELECTRICITY CORP.	6639/413/D	200KVA-33KV-400/231V
3313-M	MANEH AL KAHTANE EST.	5876/93	1000KVA-13.8KV-400/231V
3313-M	MANEH AL KAHTANE EST.	5876/93	500KVA-13.8-400/231V
3114-M	SAUDI ARAMCO	LNAE448142180DA	50KVA-13.8KV-2.4KV
3116-M	AQESA RIYADH	7217-1943	1000KVA-13.8KV-231/133V
3116-M	AQESA RIYADH	7217-1943	300KVA-13.8KV-231/133V
3117-M	MAGHWA MUNICIPALITY	201	100KVA-33KV-400/231V
3118-M	ABRAHIM A HAMMAD	NA/	200KVA-33KV-231/133V
3120-M	AR REHAN AL ARABIA	NA/	1000KVA-13.8KV-400/231V
3120-M	AR REHAN AL ARABIA	NA/	500KVA-13.8KV-400/231V
3121-M	SAUDI ARAMCO	DDAE878148040DA	75KVA-13.8KV-208/120V
3122-M	AQESA RIYADH	7217-1951	100KVA-13.8KV-231/133V
3122-M	AQESA RIYADH	7217-1951	200KVA-13.8KV-231/133V
3122-M	AQESA RIYADH	7217-1951	200KVA-13.8KV-400/231V



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3122-M AQESA RIYADH	7217-1951	500KVA-13.8KV-400/231V
3123-M AQESA RIYADH	7217-1975	500KVA-13.8KV-480/277V
3124-M SCECO EAST	S09309-44625	50KVA-13.8KV-231/133V
3124-M SCECO EAST	S09309-44625	100KVA-13.8KV-231/133V
3125-M SCECO EAST	S-9309-44614	200KVA-13.8KV-231/133V
3125-M SCECO EAST	S-9309-44614	1000KVA-13.8KV-231/133V
3125-M SCECO EAST	S-9309-44614	200KVA-13.8KV-400/231V
3126-M SCECO CENTAL	397/13/R/PC	100KVA-13.8KV-231/133V
3126-M SCECO CENTAL	397/13/R/PC	100KVA-13.8KV-400/231V
3126-M SCECO CENTAL	397/13/R/PC	100KVA-33KV-231/133V
3126-M SCECO CENTAL	397/13/R/PC	100KVA-33KV-400/231V
3126-M SCECO CENTAL	397/13/R/PC	200KVA-13.8KV-400/231V
3126-M SCECO CENTAL	397/13/R/PC	200KVA-33KV-231/133V
3126-M SCECO CENTAL	397/13/R/PC	00KVA-13.8KV-231/133V
3126-M SCECO CENTAL	397/13/R/PC	200KVA-33KV-400/231V
3126-M SCECO CENTAL	397/13/R/PC	300KVA-13.8KV-231/133V
3126-M SCECO CENTAL	397/13/R/PC	300KVA-13.8KV-400/231V
3127-M COCO COLA BOTTLING CO	N/A	1000KVA-13.8KV-400/231V
3128-M SCECO EAST	S 9309-44625-01	50KVA-13.8KV-231/133V
3128-M SCECO EAST	S 9309-44625-01	100KVA-13.8KV-231/133V
3129-M REMAL ELECTRIC FACT	GRC-2489	100KVA-13.8KV-400/231V
3130-M AMEERI STORES	KSA/93/L5647/AM	1500KVA-11KV/415V
3131-M SAUDI DEV. & CONT. CO.	371	1500KVA-13.8KV-220/127V
3132-M REMAL ELECTRIC FACT	BAT-2527	100KVA-13.8KV-400/231V
3133-M AL NAJIM EST.	N/A	1500KVA-13.8KV-400/231V
3134-M MINISTRY OF MUNCIPAL	49/SH/M	500KVA-13.8KV-231/133V
3135-M REMAL ELECTRIC FACT	N/A	100KVA-13.8KV-400/231V
3136-M AL HAMAD TRAD & CONT.	N/A	100KVA-13.8KV-400/231V
3138-M AQESA RIYADH	7217-2120	1000KVA-13.8KV-220/127V
3139-M SCECO - EAST	S-9402-48706	200KVA-13.8KV-400/231V
3140-M SCECO - EAST	S-9402-48727	100KVA-13.8KV-231/133V
3141-M SCECO - EAST	S-9403-48838	200KVA-13.8KV-231/133V
3141-M SCECO - EAST	S-9403-48838	50KVA-13.8KV-231/133V
3142-M SCECO - EAST	S-9402-48717	100KVA-13.8KV-400/231V
3143-M AL AMAL KUWAIT	K-66160	300KVA-13.8KV-480/277V
3144-M AL AMAL KUWAIT	K-02104	75KVA-13.8KV-480/277V
3144-M AL AMAL KUWAIT	K-02104	112.5KVA-13.8KV-480/277V
3145-M SCECO - EAST	S-9404-49835	50KVA-13.8KV-231/133V
3147-M SAUDI ARAMCO	099-14-3345 DA	1000KVA-13.2KV/480V
3148-M TAMIMI COMPANY	G-67750	500KVA-13.8KV-231/133V
3149-M SCECO - EAST	S-9406-50611	50KVA-13.8KV-231/133V
3150-M SCECO - EAST	S-9406-50647	100KVA-13.8KV-231/133V
3151-M AQESA JEDDAH	7219-7044	2000KVA-13.8KV-380V
3152-M AQESA JEDDAH	7219-7045	750KVA-13.8KV-208/120V
3153-M AQESA JUBAIL	7219-60956	500KVA-13.8KV-231/133V



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3154-M	MEEDCO	SSK-0018EP-0004	500KVA-345KV-380/220V
3156-M	SAUDI ARAMCO	DBAE-099-14-9199DA	500KVA-13.8KV-480/277V
3157-M	SCECO - EAST	B WE94-00181-001	200KVA-13.8KV-231/133V
3158-M	SCECO - EAST	B WE94-00181-002	50KVA-13.8KV-231/133V
3159-M	AHMED HAMAD AL	2421-232	112.5KVA-13.8KV-380/220V
3160-M	SCECO - EAST	B WE94-00181-004	100KVA-13.8KV-231/133V
3161-M	AL HAMAD TRADING	N/A	100KVA-13.8-400/231V
3162-M	BINLADIN FO CONT.	537	100KVA-33KV-231/133V
3163-M	AL ZAID EST FO CONT.	N/A	200KVA-13.8KV-231/133V
3165-M	REMAL ELECTRIC FACTORY	GUL-94/26-01	200KVA-13.8KV-400/231V
3167-M	NATIONAL CONT. COMPANY	SE/82131/PO/41	1000KVA-34.5KV-380/220V
3168-M	AL AMAL KUWAITI ELEC. CO	AMAL/0173/95/02	30KVA-13.8KV/460V
3169-M	mitsui engi . CO	PO-463413	1500KVA-6.6KV-400/231V
3169-M	mitsui engi . CO	PO-463413	1000KVA-6.6KV-400/231V
3170-M	SCECO - EAST	B-WE94-00181-006	100KVA-13.8KV-231/133V
3170-M	SCECO - EAST	B-WE94-00181-006	200KVA-13.8KV-231/133V
3170-M	SCECO - EAST	B-WE94-00181-006	100KVA-13.8KV-380/240V
3171-M	BIN FARDAN TRAD. EST.	BT/ORD-1406/95	50KVA-33KV-231/133V
3172-M	SULAIMAN AWAD AL ATWI	N/A	100KVA-13.8KV-231/133V
3173-M	SCECO- WEST	PB3/PO/0992/1415	100KVA-13.8-11KV-400/231V
3174-M	DOUMAT ELECT.CO.	1751/2	50KVA-13.8KV-231/133V
3175-M	SAUDI ARAMCO	Z81-14-0001 DA	2800KVA-13.8KV-480/277V
3176-M	AL ZEID EST FOR CONT.	N/A	100KVA-13.8KV-231/133V
3177-M	AL ZEID EST FOR CONT.	N/A	200KVA-13.8KV-231/133V
3178-M	SAUDI ARAMCO	QBAE-340-14-6600 DA	2500/3125KVA-13.8KV/240V
3179-M	MGA TRADING	MGA-2605A	15KVA-13.8KV/480V
3180-M	ABAHSAN-SECEM LTD.	LE-3377	1500KVA-13.8KV-380/120V
3182-M	AQESA JUBAIL	5000187	1500KVA-13.8KV-400/231V
3183-M	EPS-RIYADH	402502	1000KVA-13.8KV-231/133V
3184-M	EBRAHIM BIN JASSIM .	1112	300KVA-13.8KV-1400/1350V
3185-M	IMCO INT'L & MAINT.CO.	N/A	15KVA-13.8KV/480V
3186-M	SCECO - EAST.	S-9510-60530	500KVA-13.8-11KV-400/231V
3187-M	SAUDI TECHINT LTD.	YMWTS-E-6002 A	160KVA-0.5KV/220V
3187-M	SAUDI TECHINT LTD.	YMWTS-E-6002 A	125KVA-0.5KV/220V
3187-M	SAUDI TECHINT LTD.	YMWTS-E-6002 A	250KVA-0.5KV/220V
3188-M	SAUDI IND. CONT. CO.LTD	1094	500KVA-380KV-220/127V
3189-M	AQESA DAMMAM	7211-50431	300KVA-13.8KV-231/133V
3190-M	MUNICIPALITY OF DAMMAM	245	100KVA-13.8KV-380/220V
3190-M	MUNICIPALITY OF DAMMAM	245	150KVA-13.8KV-380/220V
3191-M	AL HAMAD TRAD.& CONT.	3/12/365	500KVA-13.8KV-400/231V
3193-M	AQESA RIYADH	7217-2442	50KVA-13.8KV-400/231V
3194-M	SAUDI ARAMCO	LBAE281-16-2179 DA09	1200/1600KVA-69KV/4.16KV
3195-M	AL JUBAIL MUNICIPALITY	1860	100KVA-13.8KV-400/231V
3196-M	SCECO -EAST	B-WE94-00181-007	100KVA-13.8KV-231/133V
3196-M	SCECO -EAST	B-WE94-00181-007	50KVA-13.8KV-231/133V





شركة واحدة العربية السعودية للإمدادات الكهربائية (المحدودة)  
Wahah Electric Supply Co. of Saudi Arabia (Ltd.)

3197-M	AL GENAHAIN TRAD. EST.	N/A	1000KVA-13.8KV-400/231V
3197-M	AL GENAHAIN TRAD. EST.	N/A	1000KVA-13.8KV-231/133V
3198-M	SCECO-WEST	CPB1161027	100KVA-13.8-11-400/231V
3198-M	SCECO-WEST	CPB1161027	100KVA-33KV-400/231V
3199-M	NATIONAL CONTR. CO	N/A	2000KVA-33KV/440V
3200-M	SCECO - CENTRAL	214/16/R/DS	200KVA-13.8KV-231/133V
3201-M	AQESA RIYADH	7211-2482	200KVA-380V/915V
3202-M	SCECO - CENTRAL	072/16/R/PC	100KVA-13.8KV-231/133V
3202-M	SCECO - CENTRAL	072/16/R/PC	100KVA-33KV-231/133V
3202-M	SCECO - CENTRAL	072/16/R/PC	200KVA-33KV-231/133V
3202-M	SCECO - CENTRAL	072/16/R/PC	200KVA-13.8KV-231/133V
3202-M	SCECO - CENTRAL	072/16/R/PC	500KVA-33KV-231/133V
3202-M	SCECO - CENTRAL	072/16/R/PC	1000KVA-13.8KV-231/133V
3202-M	SCECO - CENTRAL	072/16/R/PC	1000KVA-13.8KV-400/231V
3204-M	SAUDI SADELMY TECH. CO	9895	1000KVA-13.8KV/220V
3205-M	MGA TRADING CO.	MGA1216A	75KVA-13.8KV/480V
3206-M	SAUDI BINLADIN GROUP (JEDAC)	L-960251	500KVA-13.8KV/480V
3206-M	SAUDI BINLADIN GROUP (JEDAC)	L-960251	500KVA-13.8KV/380V
3206-M	SAUDI BINLADIN GROUP (JEDAC)	L-960251	500KVA-13.8KV/380-220V
3206-M	SAUDI BINLADIN GROUP (JEDAC)	L-960251	750KVA-13.8KV/480V
3206-M	SAUDI BINLADIN GROUP (JEDAC)	L-960251	1000KVA-13.8KV/4.16KV
3206-M	SAUDI BINLADIN GROUP (JEDAC)	L-960251	1000KVA-13.8KV/220-127V
3206-M	SAUDI BINLADIN GROUP (JEDAC)	L-960251	1000KVA-13.8KV-220V
3206-M	SAUDI BINLADIN GROUP (JEDAC)	L-960251	1000KVA-4.16KV/480V
3206-M	SAUDI BINLADIN GROUP (JEDAC)	L-960251	1000KVA-13.8KV/480V
3206-M	SAUDI BINLADIN GROUP (JEDAC)	L-960251	1500KVA-13.8KV/480V
3206-M	SAUDI BINLADIN GROUP (JEDAC)	L-960251	1500KVA-13.8KV/380-220V
3206-M	SAUDI BINLADIN GROUP (JEDAC)	L-960251	2000KVA-13.8KV/480V
3206-M	SAUDI BINLADIN GROUP (JEDAC)	L-960251	2500KVA-13.8KV/480V
3206-M	SAUDI BINLADIN GROUP (JEDAC)	L-960251	2500/3300KVA-13.8KV/480V
3207-M	REMAL ELECTRIC FACTORY	PUR-0241/96042-01	200KVA-13.8KV-400/231V
3208-M	AL ZEID EST.	N/A	200KVA-33KV-231/133V
3208-M	AL ZEID EST.	N/A	300KVA-33KV-231/133V
3208-M	AL ZEID EST.	N/A	1000KVA-13.8KV-231/133V
3208-M	AL ZEID EST.	N/A	200KVA-13.8KV-231/133V
3210-M	AQESA-RIYADH	7217-2524	100KVA-440-220/127V
3211-M	AQESA-RIYADH	7217-2412	400KVA-11KV-380/220V
3211-M	AQESA-RIYADH	7217-2412	630KVA-11KV-380/220V
3212-M	KHALED AL OMAR	N/A	200KVA-13.8KV-231/133V
3215-M	SCECO - CENTRAL	585/14/R/DS	200KVA-13.8KV-231/133V
3216-M	IBN OMAIRA EST.	N/A	100KVA-13.8KV-231/133V
3217-M	AQESA-JEDDAH	7217-7063	1000KVA-13.8KV-231/127V
3218-M	IBN OMAIRA EST.	N/A	100KVA-13.8KV-231/133V
3218-M	IBN OMAIRA EST.	N/A	200KVA-13.8KV-231/133V
3219-M	AQESA-RIYADH	7217-2571	160KVA-11-13.8KV-231/133V



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3221-M	GENERAL CONT.SUPPLIES .	3580/96	100KVA-33KV-231/133V
3221-M	GENERAL CONT.SUPPLIES .	3580/96	200KVA-33KV-231/133V
3223-M	ELECTRICITY CORP.	R/5/-/5/95	500KVA-33-0.5KV
3224-M	AL ESILAN EST.	N/A	100KVA-33KV400/231V
3225-M	IBN OMAIRAN EST.	N/A	100KVA-33KV-231/133V
3226-M	ELECTRICITY CORP.	98/4/4/31/AIN	100KVA-33KV-230/133V
3229-M	GENERAL CONTRACTING.	3580/96	200KVA-33KV-231/133V
3229-M	GENERAL CONTRACTING.	3580/96	100KVA-33KV-231/133V
3230-M	SCECO - EAST	B-WE94-00181-010	100KVA-13.8KV-231/133V
3230-M	SCECO - EAST	B-WE94-00181-010	200KVA-13.8KV-231/133V
3231-M	IBN OMAIRA EST.	N/A	100KVA-33KV-231/133V
3232-M	A AL DHUBIYAH EST.	N/A	100KVA-13.8KV-231/133V
3232-M	A AL DHUBIYAH EST.	N/A	100KVA-33KV-231/133V
3233-M	SCECO - EAST	B-WE94-00181-011	100KVA-13.8KV-231/133V
3233-M	SCECO - EAST	B-WE94-00181-011	200KVA-13.8KV-231/133V
3234-M	IBN OMAIRA EST.	N/A	100KVA-33KV-231/133V
3236-M	IBN OMAIRA EST.	N/A	100KVA-33KV/400V
3237-M	REMAL ELECTRIC FACTORY	PUR-0626/96128-01	100KVA-13.8KV-380/220V
3237-M	REMAL ELECTRIC FACTORY	PUR-0626/96128-01	200KVA-13.8KV-380/220V
3238-M	SCECO - EAST	B-WE94-00181-012	100KVA-13.8KV-231/133V
3241-M	AL ZEID EST. FOR CONT.CO.	N/A	100KVA-33KV-231/133V
3242-M	GENERAL CONT. SUPPLIERS.	N/A	200KVA-33KV-400/231V
3243-M	SCECO - EAST	B-WE94-00181-013	50KVA-13.8KV-380/220V
3243-M	SCECO - EAST	B-WE94-00181-013	200KVA-13.8KV-380/220V
3244-M	JEDDAC	L-970064	160KVA-13.8KV/400/231V
3245-M	ABDUL AZIZ M. AL OMRAN	N/A	200KVA-13.8KV-400/231V
3246-M	SCECO - EAST	B-WE94-00181-014	100KVA-13.8KV-231/133V
3248-M	ABDUL REHMAN AL FARA	N/A	100KVA-33KV-231/133V
3250-M	SCECO - EAST	B-WE94-00181-015	100KVA-13.8KV-400/231V
3250-M	SCECO - EAST	B-WE94-00181-015	50KVA-13.8KV-231/133V
3250-M	SCECO - EAST	B-WE94-00181-015	200KVA-13.8KV-231/133V
3250-M	SCECO - EAST	B-WE94-00181-015	100KVA-13.8KV-231/133V
3251-M	GENERAL CONT. SUPPLIERS.	285/97	300KVA-13.8KV-400/231V
3251-M	GENERAL CONT. SUPPLIERS.	285/97	300KVA-13.8KV-400/231V
3252-M	NASSER SAIED	N/A	100KVA-33KV-231/133V
3254-M	SAUDI ARABIAN BECHTEL CO.	82300-COB-FPA-XF-00001-001	500KVA-13.8/6.9KV/220V
3254-M	SAUDI ARABIAN BECHTEL CO.	82300-COB-FPA-XF-00001-001	750KVA-13.8/6.9KV/220V
3254-M	SAUDI ARABIAN BECHTEL CO.	82300-COB-FPA-XF-00001-001	750KVA-13.8/6.9KV/480V
3254-M	SAUDI ARABIAN BECHTEL CO.	82300-COB-FPA-XF-00001-001	1000KVA-13.8/6.9KV/220V
3254-M	SAUDI ARABIAN BECHTEL CO.	82300-COB-FPA-XF-00001-001	2500KVA-13.8/6.9KV/480V
3254-M	SAUDI ARABIAN BECHTEL CO.	82300-COB-FPA-XF-00001-001	1000KVA-13.8/6.9KV/480V
3254-M	SAUDI ARABIAN BECHTEL CO.	82300-COB-FPA-XF-00001-001	1600KVA-13.8/6.9KV/220V
3255-M	RAJAB & SISILAH CO.	RS/MOH1/3233	100KVA-33KV/0.4KV
3257-M	SCECO - EAST	B-WE94-00181-016	100KVA-13.8KV-231/133V
3258-M	SCECO - EAST	B-WE94-00181-017	200KVA-13.8KV-231/133V



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Wahah Electric Supply Co. of Saudi Arabia (Ltd.)

3259-M	MOTS	3276	75KVA-13.8KV/330V
3260-M	SCECO -WEST	CPB11800189	100KVA-33KV-400/231V
3261-M	AQESA - JEDDAH	7219-7070	100KVA-13.8KV-231/133V
3261-M	AQESA - JEDDAH	7219-7070	50KVA-13.8KV-231/133V
3262-M	AQESA - RIYADH	7217-2809	50KVA-33KV-231/127V
3262-M	AQESA - RIYADH	7217-2809	50KVA-33KV-231/127V
3262-M	AQESA - RIYADH	7217-2809	100KVA-33KV-231/127V
3262-M	AQESA - RIYADH	7217-2809	100KVA-33KV-231/127V
3262-M	AQESA - RIYADH	7217-2809	50KVA-13.8KV-231/127V
3262-M	AQESA - RIYADH	7217-2809	100KVA-13.8KV-231/127V
3263-M	SCECO - SOUTH	18N2AA3373	1000KVA-13.8KV-231/127V
3263-M	SCECO - SOUTH	18N2AA3373	500KVA-13.8KV-231/133V
3263-M	SCECO - SOUTH	18N2AA3373	400KVA-13.8KV-231/133V
3265-M	AQESA - RIYADH	7217-2823	50KVA-33KV-231/127V
3265-M	AQESA - RIYADH	7217-2823	50KVA-33KV-231/127V
3265-M	AQESA - RIYADH	7217-2823	100KVA-33KV-231/127V
3265-M	AQESA - RIYADH	7217-2823	100KVA-33KV-231/127V
3265-M	AQESA - RIYADH	7217-2823	100KVA-13.8KV-231/133V
3265-M	AQESA - RIYADH	7217-2823	50KVA-13.8KV-231/133V
3266-M	SCECO - EAST	B-WE94-00181-018	200KVA-13.8KV-231/133V
3267-M	SCECO - SOUTH	1830018441HW0001	100KVA-33KV-231/133V
3267-M	SCECO - SOUTH	1830018441HW0001	200KVA-33KV-231/133V
3268-M	AL SIRAT TRAD. EST.	N/A	100KVA-13.8KV-400/231V
3269-M	SCECO - EAST	B-WE94-00181-019	100KVA-13.8KV-231/133V
3270-M	AROMEST	N/A	100KVA-33KV-231/133V
3270-M	AROMEST	N/A	200KVA-33KV-231/133V
3271-M	AQESA - RIYADH	7217-2817	1000KVA-13.8KV-400/231V
3273-M	AQESA - JEDDAH	7219-7072	100KVA-33KV-231/133V
3273-M	AQESA - JEDDAH	7219-7072	200KVA-33KV-231/133V
3273-M	AQESA - JEDDAH	7219-7072	300KVA-33KV-231/133V
3273-M	AQESA - JEDDAH	7219-7072	50KVA-33KV-231/133V
3274-M	AQESA - RIYADH	7217-2887	50KVA-13.8KV-231/133V
3274-M	AQESA - RIYADH	7217-2887	100KVA-13.8KV-231/133V
3274-M	AQESA - RIYADH	7217-2887	200KVA-13.8KV-231/133V
3274-M	AQESA - RIYADH	7217-2887	300KVA-13.8KV-231/133V
3274-M	AQESA - RIYADH	7217-2887	200KVA-33KV-231/133V
3275-M	SCECO - SOUTH	18N2JA3587	300KVA-33KV-231/133V
3275-M	SCECO - SOUTH	18N2JA3587	300KVA-13.8KV-231/133V
3275-M	SCECO - SOUTH	18N2JA3587	200KVA-33KV-231/133V
3275-M	SCECO - SOUTH	18N2JA3587	200KVA-13.8KV-231/133V
3276-M	AL MUFTAHA TRAD. EST.	1758	50KVA-33KV-220/127V
3276-M	AL MUFTAHA TRAD. EST.	1758	100KVA-33KV-220/127V
3276-M	AL MUFTAHA TRAD. EST.	1758	200KVA-33KV-220/127V
3277-M	SCECO - SOUTH	1830018526HW0001	100KVA-33KV-231/133V
3277-M	SCECO - SOUTH	1830018526HW0001	200KVA-33KV-231/133V



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3278-M AL ZEID EST.	N/A	100KVA-33KV-231/133V
3279-M ELECTRICTY CORP.	81/13/10/21/M	200KVA-13.8KV-231/133V
3280-M IBRAHIM HUSSAIN AL FAQUE	N/A	200KVA-13.8KV-231/133V
3281-M ABDUA HEGAB	N/A	100KVA-33KV-231/133V
3282-M SCECO SOUTH	18N2MD3602	100KVA-33KV-231/133V
3283-M SCECO EAST	S-9710-11121	1500KVA-13.8KV-480/277V
3284-M AL MUFTAHA TRAD.EST.	001781	100KVA-13.8KV-220/127V
3285-M SCECO SOUTH	18N2MI3618	50KVA-13.8KV-231/133V
3285-M SCECO SOUTH	18N2MI3618	100KVA-13.8KV-231/133V
3285-M SCECO SOUTH	18N2MI3618	50KVA-33KV-231/133V
3285-M SCECO SOUTH	18N2MI3618	100KVA-33KV-231/133V
3285-M SCECO SOUTH	18N2MI3618	200KVA-33KV-231/133V
3285-M SCECO SOUTH	18N2MI3618	300KVA-33KV-231/133V
3285-M SCECO SOUTH	18N2MI3618	500KVA-33KV-231/133V
3287-M DOUMAT AL JANDAL	1459	700KVA-13.8KV-231/133V
3287-M DOUMAT AL JANDAL	1459	300KVA-13.8KV-231/133V
3287-M DOUMAT AL JANDAL	1459	200KVA-13.8KV-231/133V
3287-M DOUMAT AL JANDAL	1459	100KVA-13.8KV-231/133V
3287-M DOUMAT AL JANDAL	1459	50KVA-13.8KV-231/133V
3288-M SCECO EAST	B-WE94-00181-020	200KVA-13.8KV-231/133V
3289-M SCECO EAST	B-WE94-00181-021	100KVA-13.8KV-231/133V
3290-M SCECO SOUTH	18N2MI3637	50KVA-13.8KV-231/133V
3290-M SCECO SOUTH	18N2MI3637	100KVA-13.8KV-231/133V
3290-M SCECO SOUTH	18N2MI3637	50KVA-33KV-231/133V
3290-M SCECO SOUTH	18N2MI3637	100KVA-33KV-231/133V
3291-M SCECO EAST	B-WE94-00181-022	200KVA-13.8KV-231/133V
3292-M AQESA JEDDAH	7219-7074	75KVA-10KV-220/127V
3293-M AQESA RIYADH	7219-2992	1000KVA-13.8KV-231/133V
3294-M SCECO EAST	B-WE94-00181-023	50KVA-13.8KV-231/133V
3295-M WESCOSA RIYADH	SA109832	100KVA-13.8KV-231/133V
3297-M SAUDI SERVICES & OPER.	ES316353	500KVA-13.8KV-231/133V
3298-M ELECTRICITY CORP	98/12/7/2/A	100KVA-13.8KV-231/133V
3298-M ELECTRICITY CORP	98/12/7/2/A	300KVA-13.8KV-231/133V
3298-M ELECTRICITY CORP	98/12/7/2/A	100KVA-33KV-231/133V
3299-M SCECO EAST	B-WE94-00181-024	50KVA-13.8KV-231/133V
3300-M WESCOSA RIYADH	R971208T	500KVA-13.8KV-231/133V
3301-M FAYEZ	N/A	100KVA-13.8KV-231/133V
3302-M ELECTRICITY CORP.	68/97	200KVA-13.8KV-231/133V
3302-M ELECTRICITY CORP.	68/97	300KVA-13.8KV-231/133V
3303-M AQESA RIYADH	7217-3015	50KVA-13.8KV-231/133V
3303-M AQESA RIYADH	7217-3015	100KVA-13.8KV-231/133V
3304-M SCECO WEST	CPB11801227	100KVA-33KV-400-231V
3305-M HAIF TRADING .EST	KMO-SJA-0043	50KVA-33KV-231/133V
3305-M HAIF TRADING .EST	KMO-SJA-0043	100KVA-33KV-231/133V
3305-M HAIF TRADING .EST	KMO-SJA-0043	200KVA-33KV-231/133V



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3305-M HAIF TRADING .EST	KMO-SJA-0043	300KVA-33KV-231/133V
3305-M HAIF TRADING .EST	KMO-SJA-0043	500KVA-33KV-231/133V
3305-M HAIF TRADING .EST	KMO-SJA-0043	50KVA-13.8KV-231/133V
3305-M HAIF TRADING .EST	KMO-SJA-0043	100KVA-13.8KV-231/133V
3305-M HAIF TRADING .EST	KMO-SJA-0043	200KVA-13.8KV-231/133V
3305-M HAIF TRADING .EST	KMO-SJA-0043	300KVA-13.8KV-231/133V
3305-M HAIF TRADING .EST	KMO-SJA-0043	500KVA-13.8KV-231/133V
3305-M HAIF TRADING .EST	KMO-SJA-0043	500KVA-33KV-400/231V
3305-M HAIF TRADING .EST	KMO-SJA-0043	500KVA-13.8KV-400/231V
3305-M HAIF TRADING .EST	KMO-SJA-0043	200KVA-33KV-400/231V
3305-M HAIF TRADING .EST	KMO-SJA-0043	200KVA-13.8KV-400/231V
3305-M HAIF TRADING .EST	KMO-SJA-0043	300KVA-13.8KV-400/231V
3305-M HAIF TRADING .EST	KMO-SJA-0043	300KVA-33KV-400/231V
3306-M AL MUFTAHA TRADING	001857	50KVA-33KV-231/133V
3306-M AL MUFTAHA TRADING	001857	100KVA-33KV-231/133V
3306-M AL MUFTAHA TRADING	001857	50KVA-13.8KV-231/133V
3306-M AL MUFTAHA TRADING	001857	100KVA-13.8KV-231/133V
3307-M SAUD AL AMRI CONST.	980104T	300KVA-13.8KV-231/133V
3308-M AROMEST	R980103T	300KVA-33KV-400/231V
3309-M AL MUFTAHA TRADING	001895	200KVA-33KV-231/133V
3310-M AQESA RIYADH	7217-3023	200KVA-13.8KV-231/133V
3310-M AQESA RIYADH	7217-3023	300KVA-13.8KV-231/133V
3311-M ABB CONTRACTING CO.	97-T-0823	1500KVA-13.8KV-380/220V
3312-M SCECO SOUTH	18N2AM3675	100KVA-13.8KV-231/133V
3312-M SCECO SOUTH	18N2AM3675	100KVA-33KV-231/133V
3313-M AQESA JEDDAH	3000113 GO 9360 AQJ	1600KVA-13.8KV-440/231V
3314-M SCECO EAST	B-WE94-00181-025	100KVA-13.8KV-231/133V
3314-M SCECO EAST	B-WE94-00181-025	200KVA-13.8KV-231/133V
3315-M BALLAST NEDAM GROUP	158E80001	160KVA-13.8KV-11KV-231V
3316-M AL MASHARIQ COMPANY	ADM 0033	750KVA-13.8KV-500/289V
3317-M AQESA JEDDAH	3000164 GO 9389	500KVA-13.8KV-400/277V
3318-M DEEMA FOR TRADING CONT. EST	2479	100KVA-33KV-231/133V
3318-M DEEMA FOR TRADING CONT. EST	2479	200KVA-33KV-231/133V
3319-M TECHNICAL FACTORY	1984	100KVA-13.8KV/400V
3319-M TECHNICAL FACTORY	1984	160KVA-13.8KV/400V
3320-M AQESA RIYADH	4000197	50KVA-33KV-231/133V
3322-M AQESA RIYADH	4000192	50KVA-13.8KV-231/133V
3322-M AQESA RIYADH	4000192	100KVA-13.8KV-231/133V
3322-M AQESA RIYADH	4000192	200KVA-13.8KV-231/133V
3322-M AQESA RIYADH	4000192	300KVA-13.8KV-231/133V
3322-M AQESA RIYADH	4000192	300KVA-33KV/200V
3322-M AQESA RIYADH	4000192	100KVA-13.8KV-231/133V
3322-M AQESA RIYADH	4000192	200KVA-13.8KV-231/133V
3322-M AQESA RIYADH	4000192	300KVA-13.8KV-231/133V
3324-M REMAL ELECTRIC FACTORY	PUR-0183/98038-02	500KVA-13.8KV-231/133V



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Wahah Electric Supply Co. of Saudi Arabia (Ltd.)

3326-M	NESAM & AL FADL CONT.	126210	1000KVA-13.8KV-480/277V
3327-M	NESAM & AL FADL CONT.	126200	500KVA-13.8KV-400/231V
3327-M	NESAM & AL FADL CONT.	126200	500KVA-13.8KV-400/231V
3328-M	NESAM & AL FADL CONT.	126196	750KVA-13.8KV-231/133V
3329-M	AQESA - RIYADH	4000217	100KVA-13.8KV-231/133V
3330-M	AL MUFTAHA TRAD.EST.	002033	300KVA-13.8KV-231/133V
3331-M	SCECO-WEST	CPB11900060	100KVA-13.8-11KV/400-231V
3331-M	SCECO-WEST	CPB11900060	200KVA-13.8-11KV/400-231V
3331-M	SCECO-WEST	CPB11900060	200KVA-13.8-11KV/400-231V
3331-M	SCECO-WEST	CPB11900060	200KVA-13.8-11KV/400-231V
3331-M	SCECO-WEST	CPB11900060	200KVA-13.8-11KV/400-231V
3332-M	ADWAA AL WATHANIAH CO.	2332	200KVA-13.8KV=231/133V
3332-M	ADWAA AL WATHANIAH CO.	2332	200KVA-13.8KV=231/133V
3333-M	AQESA - RIYADH	4000277	1250KVA-6.3KV/400-231V
3334-M	RAJAB & SILSILAH	RS/MOHI/9596	160KVA-33KV-400/231V
3335-M	AQESA - RIYADH	4000311	50KVA-13.8KV-231/133V
3335-M	AQESA - RIYADH	4000311	100KVA-13.8KV-231/133V
3335-M	AQESA - RIYADH	4000311	200KVA-13.8KV-231/133V
3335-M	AQESA - RIYADH	4000311	100KVA-13.8KV-400/231V
3335-M	AQESA - RIYADH	4000311	50KVA-33KV-231/133V
3335-M	AQESA - RIYADH	4000311	100KVA-33KV-231/133V
3335-M	AQESA - RIYADH	4000311	200KVA-33KV-231/133V
3335-M	AQESA - RIYADH	4000311	500KVA-13.8KV-400/231V
3335-M	AQESA - RIYADH	4000311	1000KVA-13.8KV-400/231V
3336-M	SCECO - EAST	B WE94 00181-026	100KVA-13.KV-400/231V
3337-M	NESMA & AL FADL CO.	0130420	100KVA-13.8KV-400/231V
3337-M	NESMA & AL FADL CO.	0130420	1500KVA-13.8KV-400/231V
3338-M	AQESA - RIYADH	4000333	150KV-13.8KV/220V
3340-M	SCECO - EAST	B WE94-00181-027	100KVA-13.8KV-400/231V
3342-M	MOHD AL OJAIMAI EST.	TD/98/03/0031	100KVA-13.8KV-231/133V
3342-M	MOHD AL OJAIMAI EST.	TD/98/03/0031	100KVA-33KV-231/133V
3342-M	MOHD AL OJAIMAI EST.	TD/98/03/0031	200KVA-13.8KV-231/133V
3342-M	MOHD AL OJAIMAI EST.	TD/98/03/0031	200KVA-33KV-231/133V
3343-M	SCECO - EAST	B WE94-00181-029	100KVA-13.8KV-231/133V
3343-M	SCECO - EAST	B WE94-00181-029	50KVA-13.8KV-231/133V
3344-M	NESMA & AL FADL CONT.	130105	1250KVA-13.8KV-231/133V
3345-M	RATBAH CONT. EST.	N/A	300KVA-13.8KV-231/133V
3346-M	AL ZAID EST.	N/A	200KVA-13.8KV-231/133V
3347-M	A. ABUNAYYAN ELECTRIC CORP.	2119	1000KVA-13.8KV-231/133V
3348-M	AQESA - RIYADH	400469	200KVA-13.8KV-231/133V
3348-M	AQESA - RIYADH	400469	300KVA-13.8KV-231/133V
3348-M	AQESA - RIYADH	400469	500KVA-13.8KV-231/133V
3348-M	AQESA - RIYADH	400469	1000KVA-13.8KV-400/277V
3349-M	NAHDAA CONT & ENG EST.	491	300KVA-13.8KV/400V
3350-M	GROUPE SCHNEIDER	209704	500KVA-13.8KV-400/277V



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3352-M	ARABIAN TRASFORMERS	N/A	1000KVA-13.8KV-400/231V
3354-M	TECHNICAL FACTORY	2072	50KVA-13.8KV-400/231V
3355-M	SCECO - EAST	B WE 94-00181-0031	200KVA-13.8KV-231/133V
3356-M	SAEED ABU MUSHAIK	N/A	50KVA-13.8KV-231/133V
3357-M	REMAL ELECTRIC FACTORY	PU-9475/98098-01	50KVA-13.8KV-380/220V
3358-M	SCECO - SOUTH	19NIJA3928	100KVA-13.8KV-231/133V
3358-M	SCECO - SOUTH	19NIJA3928	200KVA-13.8KV-231/133V
3358-M	SCECO - SOUTH	19NIJA3928	300KVA-13.8KV-231/133V
3358-M	SCECO - SOUTH	19NIJA3928	100KVA-33KV-231/133V
3358-M	SCECO - SOUTH	19NIJA3928	200KVA-33KV-231/133V
3358-M	SCECO - SOUTH	19NIJA3928	300KVA-33KV-231/133V
3359-M	SCECO - EAST	B WE94-00181-030	100KVA-13.8KV-231/133V
3360-M	AQESA RIYADH	4000648	500KVA-13.8KV-480/277V
3360-M	AQESA RIYADH	4000648	200KVA-13.8KV-480/231V
3360-M	AQESA RIYADH	4000648	1000KVA-13.8KV-231/127V
3360-M	AQESA RIYADH	4000648	500KVA-13.8KV-231/127V
3361-M	SCECO - EAST	S981019326	500KVA-13.8-11KV-400/231V
3362-M	DAMMAM MUNICIPALITY	N/A	100KVA-13.8KV-400/231V
3363-M	SCECO - SOUTH	19N5JA3976	100KVA-13.8KV-231/133V
3363-M	SCECO - SOUTH	19N5JA3976	200KVA-13.8KV-231/133V
3363-M	SCECO - SOUTH	19N5JA3976	300KVA-13.8KV-231/133V
3363-M	SCECO - SOUTH	19N5JA3976	500KVA-13.8KV-231/133V
3364-M	RAJAB & SILSILAH	TIH/AH/M-950	50KVA-33KV/220V (170BIL)
3364-M	RAJAB & SILSILAH	TIH/AH/M-950	100KVA-33KV/220V (170 BIL)
3364-M	RAJAB & SILSILAH	TIH/AH/M-950	200KVA-33KV/220V (170 BIL)
3364-M	RAJAB & SILSILAH	TIH/AH/M-950	50KVA-33KV/220V (200BIL)
3364-M	RAJAB & SILSILAH	TIH/AH/M-950	100KVA-33KV/220V (200 BIL)
3364-M	RAJAB & SILSILAH	TIH/AH/M-950	200KVA-33KV/220V (200 BIL)
3364-M	RAJAB & SILSILAH	TIH/AH/M-950	300KVA-33KV/220V (170 BIL)
3364-M	RAJAB & SILSILAH	TIH/AH/M-950	500KVA-33KV/220V (170 BIL)
3364-M	RAJAB & SILSILAH	TIH/AH/M-950	300KVA-33KV/220V (200 BIL)
3364-M	RAJAB & SILSILAH	TIH/AH/M-950	500KVA-33KV/220V (200 BIL)
3365-M	ADWAA AL JAZEERAH	1451	200KVA-13.8KV-380/231V
3365-M	ADWAA AL JAZEERAH	1451	100KVA-13.8KV-380/231V
3365-M	ADWAA AL JAZEERAH	1451	50KVA-13.8KV-380/231V
3366-M	RAJAB & SILSILAH	TIH/AM/M-1030	100KVA-33KV-231/1333V
3366-M	RAJAB & SILSILAH	TIH/AM/M-1030	200KVA-33KV-231/133V
3367-M	SCECO - SOUTH	2/28A/6287	300KVA-13.8KV-231/133V
3367-M	SCECO - SOUTH	2/28A/6287	200KVA-13.8KV-231/133V
3367-M	SCECO - SOUTH	2/28A/6287	300KVA-33KV-231/133V
3367-M	SCECO - SOUTH	2/28A/6287	200KVA-33KV-231/133V
3368-M	SCECO - WEST	CPB11901162	200KVA-13.8-11KV-400/231V
3369-M	AQESA RIYADH	4000778	150KVA-13.8KV-208/120V
3369-M	AQESA RIYADH	4000778	500KVA-4.16/2.4KV-208/120V
3369-M	AQESA RIYADH	4000778	500KVA-13.8KV-231/127V



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Wahah Electric Supply Co. of Saudi Arabia (Ltd.)

3370-M	ELECTRICITY CORP.	81/04/04/208/M	2000KVA-33KV/4.4KV
3371-M	SCECO CENTRAL	162/19/R/PC	100KVA-33KV-231/133V
3371-M	SCECO CENTRAL	162/19/R/PC	200KVA-13.8KV-400/231V
3371-M	SCECO CENTRAL	162/19/R/PC	200KVA-33KV-231/133V
3371-M	SCECO CENTRAL	162/19/R/PC	200KVA-13.8KV-231/133V
3371-M	SCECO CENTRAL	162/19/R/PC	500KVA-33KV-231/133V
3374-M	AQESA RIYADH	4000882	1500KVA-13.8KV-480/277V
3375-M	AQESA RIYADH	4000762	50KVA-13.8KV-231/133V
3375-M	AQESA RIYADH	4000762	50KVA-13.8KV-400/231V
3375-M	AQESA RIYADH	4000762	100KVA-13.8KV-231/133V
3375-M	AQESA RIYADH	4000762	100KVA-13.8KV-400/231V
3375-M	AQESA RIYADH	4000762	200KVA-13.8KV-231/133V
3375-M	AQESA RIYADH	4000762	200KVA-13.8KV-400/231V
3375-M	AQESA RIYADH	4000762	300KVA-13.8KV-231/133V
3375-M	AQESA RIYADH	4000762	300KVA-13.8KV-400/231V
3375-M	AQESA RIYADH	4000762	50KVA-33KV-231/133V
3375-M	AQESA RIYADH	4000762	50KVA-33KV-400/231V
3375-M	AQESA RIYADH	4000762	100KVA-33KV-231/133V
3375-M	AQESA RIYADH	4000762	100KVA-33KV-400/231V
3375-M	AQESA RIYADH	4000762	200KVA-33KV-231/133V
3375-M	AQESA RIYADH	4000762	200KVA-33KV-400/231V
3375-M	AQESA RIYADH	4000762	300KVA-33KV-231/133V
3375-M	AQESA RIYADH	4000762	300KVA-33KV-400/231V
3376-M	ADWAA AL WATANIA	N/A	300KVA-33KV-23133V
3377-M	RAJAB & SILSIAH	RS/MOHI/1607	100KVA-33KV-400/231
3377-M	RAJAB & SILSIAH	RS/MOHI/1607	160KVA-33KV-400/231V
3379-M	SCSCO - SOUTH	19NIJA4071	100KVA-13.8KV-231/133V
3379-M	SCSCO - SOUTH	19NIJA4071	50KVA-33KV-231/133V
3379-M	SCSCO - SOUTH	19NIJA4071	100KVA-33KV-231/133V
3379-M	SCSCO - SOUTH	19NIJA4071	200KVA-33KV-231/133V
3380-M	AQESA IYADH	4000945	500KVA-33KV-400/231V
3381-M	HAIF TRADING & CONT.EST.	KMO-SJA-FT-0589	100KVA-33KV-380/220V
3382-M	ADWAN MARKETING CO.	3SPL99Z5878S	150KVA-13.8KV-480/277V
3383-M	SCECO - WEST	CPB11901753	300KVA-13.8-11KV-400/231V
3383-M	SCECO - WEST	CPB11901753	300KVA-33KV-400/231V
3384-M	EASTERN EST.	N/A	100KVA-13.8KV-400/231V
3384-M	EASTERN EST.	N/A	200KVA-13.8KV-400/231V
3385-M	ARABIAN TRANSFORMERS CO	0805/99/ATC	1000KVA-13.8KV-400/231V
3386-M	SCECO - CENTRAL	190/19/J/DS	150KVA-13.8KV/230V
3387-M	HAIF TRADING & CONT. EST	KMO-SJA-FT-0691/99	1000KVA-13.8KV-231/133V
3388-M	HAIF TRADING & CONT. EST.	KMO-SJA-FT-0695	50KVA-13.8KV-231/133V
3388-M	HAIF TRADING & CONT. EST.	KMO-SJA-FT-0695	100KVA-13.8KV-231/133V
3388-M	HAIF TRADING & CONT. EST.	KMO-SJA-FT-0695	200KVA-13.8KV-231/133V
3388-M	HAIF TRADING & CONT. EST.	KMO-SJA-FT-0695	300KVA-13.8KV-400/231V
3388-M	HAIF TRADING & CONT. EST.	KMO-SJA-FT-0695	500KVA-33KV-231/133V





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3388-M HAIF TRADING & CONT. EST.	KMO-SJA-FT-0695	500KVA-33KV-400/231V
3389-M ELECTRICITY CORP. (Qurayat)	81/04/10/63/M	300KVA-13.8KV-231/133V
3390-M HAIF TRADING & CONT. EST.	KMO-SJA-FT-0764/99	300KVA-13.8KV-231/133V
3390-M HAIF TRADING & CONT. EST.	KMO-SJA-FT-0764/99	300KVA-13.8KV-400/231V
3391-M DOUMAT AL JANDAL AL JOUF	822/8	500KVA-13.8KV-231/133V (Pole)
3391-M DOUMAT AL JANDAL AL JOUF	822/8	300KVA-13.8KV-400/231V (Pole)
3391-M DOUMAT AL JANDAL AL JOUF	822/8	300KVA-13.8KV-400/231V (Ground)
3391-M DOUMAT AL JANDAL AL JOUF	822/8	200KVA-13.8KV-400/231V (Pole)
3391-M DOUMAT AL JANDAL AL JOUF	822/8	100KVA-13.8KV-400/231V (Pole)
3392-M ADWAN MARKETING	3SPL99Z6133S	75KVA XFMR (Modification)
3393-M HAIF TRADING & CONT. EST.	KMO-SJA-FT-0854/99	50KVA-13.8KV-231/133V
3393-M HAIF TRADING & CONT. EST.	KMO-SJA-FT-0854/99	200KVA-33KV-400/231V
3393-M HAIF TRADING & CONT. EST.	KMO-SJA-FT-0854/99	300KVA-13.8KV-231/133V
3393-M HAIF TRADING & CONT. EST.	KMO-SJA-FT-0854/99	300KVA-13.8KV-400/231V
3393-M HAIF TRADING & CONT. EST.	KMO-SJA-FT-0854/99	300KVA-33KV-231/133V
3393-M HAIF TRADING & CONT. EST.	KMO-SJA-FT-0854/99	500KVA-33KV-231/133V
3394-M SCECO- CENTRAL	11/20/6/B/C	100KVA-13.8KV-231/133V
3394-M SCECO- CENTRAL	11/20/6/B/C	100KVA-33KV-231/133V
3394-M SCECO- CENTRAL	11/20/6/B/C	200KVA-13.8KV-400/231V
3394-M SCECO- CENTRAL	11/20/6/B/C	200KVA-13.8KV-231/133V
3394-M SCECO- CENTRAL	11/20/6/B/C	300KVA-13.8KV-231/133V
3394-M SCECO- CENTRAL	11/20/6/B/C	300KVA-13.8KV-400/231V
3394-M SCECO- CENTRAL	11/20/6/B/C	300KVA-33KV-231/133V
3395-M SCECO - EAST	B WE94-00181-032	200KVA-13.8KV-231/133V
3395-M SCECO - EAST	B WE94-00181-032	100KVA-13.8KV-231/133V
3396 - M RAJAB & SILSILAH	RS/MOHI/1607	160KVA-33KV-400/231V
3397 - M AL MUFTAHA TRADING	2901	300KVA-13.8KV-231/133V
3398 - M SNAMPROGETTI	4640	2000KVA-13.8KV-425/245V
3399 - M ABB CONTRACTING CO.LTD	99-T-0522	1500KVA-34.5KV-380Y/220V
3400 - M AQESA - RIYADH	N/A	100KVA-33KV-231/133V
3400 - M AQESA - RIYADH	N/A	200KVA-33KV-231/133V
3401 - M SCECO - EAST	S 9911-30643	500KVA-4.16KV-480/277V
3403 - M HAIF FOR TRADING & CONT.	103/K/99	50KVA-13.8KV-231/133V(95 BIL)
3403 - M HAIF FOR TRADING & CONT.	103/K/99	50KVA-13.8KV-231/133V(110 BIL)
3403 - M HAIF FOR TRADING & CONT.	103/K/99	50KVA-33KV-231/133V (170 BIL)
3403 - M HAIF FOR TRADING & CONT.	103/K/99	50KVA-33KV-231/133V (200 BIL)
3403 - M HAIF FOR TRADING & CONT.	103/K/99	100KVA-13.8KV-231/133V(95 BIL)
3403 - M HAIF FOR TRADING & CONT.	103/K/99	100KVA-13.8KV-231/133V(110BIL)
3403 - M HAIF FOR TRADING & CONT.	103/K/99	100KVA-33KV-231/133V (170 BIL)
3403 - M HAIF FOR TRADING & CONT.	103/K/99	100KVA-33KV-231/133V (200 BIL)
3403 - M HAIF FOR TRADING & CONT.	103/K/99	200KVA-13.8KV-231/133V (95 BIL)
3403 - M HAIF FOR TRADING & CONT.	103/K/99	200KVA-13.8KV-231/133V(110BIL)
3403 - M HAIF FOR TRADING & CONT.	103/K/99	200KVA-33KV-231/133V (170 BIL)
3403 - M HAIF FOR TRADING & CONT.	103/K/99	200KVA-33KV-231/133V (200 BIL)
3403 - M HAIF FOR TRADING & CONT.	103/K/99	100KVA-13.8KV-400/231V (95 BIL)



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3403 - M HAIF FOR TRADING & CONT.	103/K/99	100KVA-13.8KV-400/231V(110BIL)
3403 - M HAIF FOR TRADING & CONT.	103/K/99	100KVA-33KV-400/231V (170 BIL)
3403 - M HAIF FOR TRADING & CONT.	103/K/99	100KVA-33KV-400/231V (200 BIL)
3403 - M HAIF FOR TRADING & CONT.	103/K/99	200KVA-13.8KV-400/231V (95 BIL)
3403 - M HAIF FOR TRADING & CONT.	103/K/99	200KVA-13.8KV-400/231V(110BIL)
3403 - M HAIF FOR TRADING & CONT.	103/K/99	200KVA-33KV-400/231V (170 BIL)
3403 - M HAIF FOR TRADING & CONT.	103/K/99	200KVA-33KV-400/231V (200 BIL)
3404 - M MOHD AL OWAIMER CONT.	N/A	100KVA-33KV-231/1333V
3404 - M MOHD AL OWAIMER CONT.	N/A	100KVA-33KV-400/231V
3404 - M MOHD AL OWAIMER CONT.	N/A	200KVA-33KV-231/1333V
3405 - M AL BABTAIN INDUSTRIES	PR/1341	1000KVA-13.8KV-400/231V
3406 - M DEEMA FOR Trading & Cont.	N/A	100KVA-33KV-231/1333V
3407 - M SCECO - EAST	B WE 94-00181-033	200KVA-13.8KV-231/1333V
3407 - M SCECO - EAST	B WE 94-00181-033	100KVA-13.8KV-231/1333V
3408 - M AQESA RIYADH	4001621	100KVA-33KV-231/1333V
3409 - M AQESA DAMMAM	2004191	500KVA-13.8KV-231/1333V
3410 - M HAIF TRADING & CONT. EST	KMO/AAE-FT-0120	300KVA-13.8KV-231/1333V
3410 - M HAIF TRADING & CONT. EST	KMO/AAE-FT-0120	500KVA-13.8KV-231/1333V
3412 - M AL MUFTAHAH TRAD.	003179	100KVA-13.8KV-400/231V
3413 - M SCECO - WEST.	CPB12001689	100KVA-13.8-11KV-231/1333V
3413 - M SCECO - WEST.	CPB12001689	100KVA-13.8-11KV-400/231V
3413 - M SCECO - WEST.	CPB12001689	200KVA-13.8-11KV-231/1333V
3413 - M SCECO - WEST.	CPB12001689	100KVA-33KV-231/1333V
3414 - M HAIF TRADING & CONT.	01/ED/1421	50KVA-33KV-231/1333V
3416 - M ELECTRICITY CORP	37/5/00/14/Z	100KVA-13.8KV-231/1333V
3416 - M ELECTRICITY CORP	37/5/00/14/Z	100KVA-13.8KV-400/231V
3416 - M ELECTRICITY CORP	37/5/00/14/Z	200KVA-13.8KV-231/1333V
3416 - M ELECTRICITY CORP	37/5/00/14/Z	200KVA-13.8KV-400/231V
3416 - M ELECTRICITY CORP	37/5/00/14/Z	300KVA-13.8KV-231/1333V
3416 - M ELECTRICITY CORP	37/5/00/14/Z	300KVA-13.8KV-400/231V
3416 - M ELECTRICITY CORP	37/5/00/14/Z	500KVA-13.8KV-231/1333V
3416 - M ELECTRICITY CORP	37/5/00/14/Z	100KVA-33KV-231/1333V
3416 - M ELECTRICITY CORP	37/5/00/14/Z	300KVA-33KV-231/1333V
3417 - M AL SUWAIDI TRAD. CO	R-211-001/002/003	6000/7500KVA-34.5KV/4.16
3418 - M HAIF TRADING & TRAD.	11/ED/1421	300KVA-33KV-231/1333V
3419 - M AL MUFTAHA TRAD.	003236	500KVA-33KV-231/1333V
3420 - M HAIF TRADING & CONT.	13/ED/1421	500KVA-33KV-231/1333V
3421 - M SALEM AL GUTHMI EST.	SGWO-200/468	50KVA-33KV-231/1333V
3421 - M SALEM AL GUTHMI EST.	SGWO-200/468	100KVA-33KV-231/1333V
3421 - M SALEM AL GUTHMI EST.	SGWO-200/468	500KVA-33KV-231/1333V
3421 - M SALEM AL GUTHMI EST.	SGWO-200/468	200KVA-13.8KV-231/1333V
3421 - M SALEM AL GUTHMI EST.	SGWO-200/468	500KVA-13.8KV-231/1333V
3421 - M SALEM AL GUTHMI EST.	SGWO-200/468	100KVA-13.8KV-400/231V
3422 - M KONGSIN INFOR. & TEL. COM	OBT-000608-10	50KVA-33KV-231/1333V(170 BIL)
3422 - M KONGSIN INFOR. & TEL. COM	OBT-000608-10	50KVA-33KV-231/1333V(200 BIL)



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Wahah Electric Supply Co. of Saudi Arabia (Ltd.)

3422 - M KONGSIN INFOR. & TEL. COM	OBT-000608-10	100KVA-33KV-231/133V(170 BIL)
3422 - M KONGSIN INFOR. & TEL. COM	OBT-000608-10	100KVA-33KV-231/133V(200 BIL)
3422 - M KONGSIN INFOR. & TEL. COM	OBT-000608-10	200KVA-33KV-231/133V(170 BIL)
3422 - M KONGSIN INFOR. & TEL. COM	OBT-000608-10	200KVA-33KV-231/133V(200 BIL)
3422 - M KONGSIN INFOR. & TEL. COM	OBT-000608-10	300KVA-33KV-231/133V(200 BIL)
3422 - M KONGSIN INFOR. & TEL. COM	OBT-000608-10	500KVA-33KV-231/133V(200 BIL)
3423 - M AQESA DAMMAM	1000000JR	50KVA-33KV-231/133V
3423 - M AQESA DAMMAM	1000000JR	100KVA-33KV-231/133
3423 - M AQESA DAMMAM	1000000JR	200KVA-33KV-231/133
3423 - M AQESA DAMMAM	1000000JR	300KVA-33KV-400/231V
3423 - M AQESA DAMMAM	1000000JR	300KVA-33KV-231/133
3423 - M AQESA DAMMAM	1000000JR	500KVA-33KV-231/133
3423 - M AQESA DAMMAM	1000000JR	500KVA-33KV-231/133
3423 - M AQESA DAMMAM	1000000JR	500KVA-33KV-400/231V
3423 - M AQESA DAMMAM	1000000JR	1000KVA-33KV-231/133
3423 - M AQESA DAMMAM	1000000JR	1000KVA-33KV-400/231V
3423 - M AQESA DAMMAM	1000000JR	50KVA-13.8KV-231/133V
3423 - M AQESA DAMMAM	1000000JR	100KVA-13.8KV-231/133V
3423 - M AQESA DAMMAM	1000000JR	200KVA-13.8KV-231/133V
3423 - M AQESA DAMMAM	1000000JR	300KVA-13.8KV-231/133V
3423 - M AQESA DAMMAM	1000000JR	300KVA-13.8KV-231/133V
3423 - M AQESA DAMMAM	1000000JR	500KVA-13.8KV-400/231V
3423 - M AQESA DAMMAM	1000000JR	500KVA-13.8KV-231/133V
3423 - M AQESA DAMMAM	1000000JR	500KVA-13.8KV-231/133V
3423 - M AQESA DAMMAM	1000000JR	1000KVA-13.8KV-400/231V
3423 - M AQESA DAMMAM	1000000JR	1000KVA-13.8KV-400/231V
3424 - M AQESA DAMMAM	2005024	35KVA-4.16KV-220/127V
3425 - M SCECO - EAST	B WE94- 00181- 034	200KVA-13.8KV-231/133V
3427 - M AQESA DAMMAM	4002034	50KVA-33KV-231/133V
3427 - M AQESA DAMMAM	4002034	100KVA-33KV-231/133V
3427 - M AQESA DAMMAM	4002034	200KVA-33KV-231/133V
3427 - M AQESA DAMMAM	4002034	300KVA-33KV-231/133V
3427 - M AQESA DAMMAM	4002034	50KVA-13.8KV-231/133V
3427 - M AQESA DAMMAM	4002034	100KVA-13.8KV-231/133V
3427 - M AQESA DAMMAM	4002034	200KVA-13.8KV-231/133V
3428 - M AL-KHALFA TRADING	N/A	100KVA-13.8KV-400/231V
3429 - M SCECO - SOUTH	N/A	500KVA-13.8KV-400/231V
3429 - M SCECO - SOUTH	N/A	500KVA-13.8KV-231/133V
3430 - M SAUDI BECHTEL CO.	82300-COB-FPA-XF-00011	500KVA-13.8KV-6.9KV/480V
3431 - M AL OTHMAN AGRI. TRAD.	O/MMF-10-95/2000	1500KVA-13.8KV-400/231V
3432 - M SCECO - WEST.	CPD12100783	5000KVA-13.8KV/4.16KV
3434 - M AQESA RIYADH	4002128	100KVA-13.8KV-231/133V
3434 - M AQESA RIYADH	4002128	300KVA-13.8KV-231/133V
3434 - M AQESA RIYADH	4002128	300KVA-13.8KV-400/231V
3434 - M AQESA RIYADH	4002128	100KVA-33KV-400/231V



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3434 - M AQESA RIYADH	4002128	300KVA-33KV-231/133V
3435 - M AMEERI STORES.	LOC/2000/FO95/AM	1500KVA-11KV/400V
3436 - M SALEM M GUTHMI EST	SGWO-2000/718.	500KVA-33KV-400/231V
3437 - M SCECO - EAST.	BWE9400181036	100KVA-13.8KV-231/133V
3438 - M SCECO - EAST.	BWE94001810335	100KVA-13.8KV-400/231V
3439 - M AQESA RIYADH	4002218	300KVA-13.8KV-231/133V
3440 - M DEEMA FOR TRAD.	WESCOSA/4747/JNM	100KVA-33KV-231/133V
3440 - M DEEMA FOR TRAD.	WESCOSA/4747/JNM	200KVA-33KV-231/133V
3442 - M AL-TOUKI & CO.	POH/462-00/WES	500KVA-33KV/1000V
3443 - M SCECO - EAST	B WE94-00181-037	100KVA-13.8KV-231/133V
3444 - M ELECTRICITY CORP. TABUK	2899	200KVA-13.8KV-231/133V
3444 - M ELECTRICITY CORP. TABUK	2899	300KVA-13.8KV-231/133V
3444 - M ELECTRICITY CORP. TABUK	2899	500KVA-13.8KV-231/133V
3445 - M AQESA RIYADH	4002292	1200KVA-13.8KV-380/277V
3448 - M SCECO - WEST	CPB12101489	100KVA-13.8-11KV-231/133V
3448 - M SCECO - WEST	CPB12101489	100KVA-13.8-11KV/400/231V
3448 - M SCECO - WEST	CPB12101489	300KVA-13.8-11KV-231/133V
3448 - M SCECO - WEST	CPB12101489	100KVA-33KV-231/133V
3448 - M SCECO - WEST	CPB12101489	200KVA-33KV-231/133V
3449 - M SCECO - WEST	CPB10000020	100KVA-13.8-11KV-231/133V
3449 - M SCECO - WEST	CPB10000020	100KVA-13.8-11KV/400-231V
3449 - M SCECO - WEST	CPB10000020	200KVA-13.8-11KV-231/133V
3449 - M SCECO - WEST	CPB10000020	100KVA-33KV-231/133V
3450 - M AQESA RIYADH	4002428	100KVA-13.8KV-231/133V
3450 - M AQESA RIYADH	4002428	200KVA-13.8KV-231/133V
3450 - M AQESA RIYADH	4002428	300KVA-13.8KV-231/133V
3450 - M AQESA RIYADH	4002428	500KVA-13.8KV-231/133V
3450 - M AQESA RIYADH	4002428	1000KVA-13.8KV-231/133V
3450 - M AQESA RIYADH	4002428	100KVA-33KV-231/133V
3450 - M AQESA RIYADH	4002428	200KVA-33KV-231/133V
3450 - M AQESA RIYADH	4002428	300KVA-33KV-231/133V
3450 - M AQESA RIYADH	4002428	500KVA-33KV-231/133V (Pole)
3450 - M AQESA RIYADH	4002428	500KVA-33KV-231/133V (Pad)
3451 - M AL OTHMAN AGRI	O/PR10081164/01	500KVA-13.8KV-400/231V
3451 - M AL OTHMAN AGRI	O/PR10081164/01	1500KVA-13.8KV-231/133V
3453 - M SCECO - EAST	B WE94-00181-038	100KVA-13.8KV-400/231V
3454 - M SCECO - EAST	B WE 94-00181-039	100KVA-13.8KV-231/133V
3455 - M AL MUFTAHA TRAD.	003655	500KVA-13.8KV-208/120V
3455 - M AL MUFTAHA TRAD.	003655	300KVA-13.8KV-380/220V
3456 - M AQESA RIYADH	4002536	50KVA-13.8KV-220/127V
3457 - M AQESA RIYADH	4002603	1000KVA-13.8KV-400/231V
3459 - M AQESA DAMMAM	4002593	300KVA-13.8KV-220/127V
3460 - M SCECO - EAST	B WE94-00181-040	100KVA-13.8KV-231/133V
3461 - M SCECO - EAST	B WE94-00181-041	200KVA-13.8KV-231/133V
3464 - M AL ZAHARANI EST.	5/M/2001	300KVA-13.8-11KV-400/231V



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3465 - M AQESA DAMMAM	6000129	1000KVA-4.16KV-600V
3467 - M SCECO - CENTRAL	277/21/R/PC	100KVA-13.8KV-231/133V
3467 - M SCECO - CENTRAL	277/21/R/PC	100KVA-33KV-231/133V
3467 - M SCECO - CENTRAL	277/21/R/PC	200KVA-13.8KV-231/133V
3467 - M SCECO - CENTRAL	277/21/R/PC	300KVA-13.8KV-231/133V
3468 - M AQESA RIYADH	4002794	500KVA-33KV-400/231V
3469 - M AQESA RIYADH	4002793	500KVA-33KV-400/231V
3471 - M SCECO - WEST	CPB10101366	100KVA-13.8-11KV-231/133V
3471 - M SCECO - WEST	CPB10101366	100KVA-138-11KV-400/231V
3471 - M SCECO - WEST	CPB10101366	300KVA-13.8-11KV-231/133V
3472 - M AL-AZIZIA STEEL	N/A	3000KVA-13.8KV-380V
3473 - M AQESA JEDDAH	3001255/GO#93676-AQJ	1000KVA-13.8KV-231/133V
3474 - M AQESA DAMMAM	4002829	50KVA-33KV-231/133V
3474 - M AQESA DAMMAM	4002829	100KVA-33KV-231/133V
3474 - M AQESA DAMMAM	4002829	100KVA-33KV-400/231V
3474 - M AQESA DAMMAM	4002829	200KVA-33KV-231/133V
3474 - M AQESA DAMMAM	4002829	200KVA-33KV-400/231V
3474 - M AQESA DAMMAM	4002829	300KVA-33KV-400/231V
3474 - M AQESA DAMMAM	4002829	300KVA-33KV-231/133V (Pole)
3474 - M AQESA DAMMAM	4002829	300KVA-33KV-231/133V (Pad)
3474 - M AQESA DAMMAM	4002829	500KVA-33KV-231/133V (Pad)
3474 - M AQESA DAMMAM	4002829	500KVA-33KV-231/133V (Pole)
3474 - M AQESA DAMMAM	4002829	500KVA-33KV-400/231V (Pad)
3474 - M AQESA DAMMAM	4002829	1000KVA-33KV-231/133V (Pad)
3474 - M AQESA DAMMAM	4002829	1000KVA-33KV-400/231V (Pad)
3474 - M AQESA DAMMAM	4002829	50KVA-13.8KV-231/133V
3474 - M AQESA DAMMAM	4002829	100KVA-13.8KV-231/133V
3474 - M AQESA DAMMAM	4002829	100KVA-13.8KV-400/231V
3474 - M AQESA DAMMAM	4002829	200KVA-13.8KV-231/133V
3474 - M AQESA DAMMAM	4002829	200KVA-13.8KV-400/231V
3474 - M AQESA DAMMAM	4002829	300KVA-13.8KV-231/133V (Pole)
3474 - M AQESA DAMMAM	4002829	300KVA-13.8KV-400/231V
3474 - M AQESA DAMMAM	4002829	300KVA-13.8KV-231/133V (Pad)
3474 - M AQESA DAMMAM	4002829	500KVA-13.8KV-400/231V (Pad)
3474 - M AQESA DAMMAM	4002829	500KVA-13.8KV-231/133V (Pad)
3474 - M AQESA DAMMAM	4002829	500KVA-13.8KV-231/133V (Pole)
3474 - M AQESA DAMMAM	4002829	1000KVA-13.8KV-231/133V (Pad)
3474 - M AQESA DAMMAM	4002829	1000KVA-13.8KV-400/231V (Pad)
3474 - M AQESA DAMMAM	4002829	1500KVA-13.8KV-400/231V (Pad)
3475 - M JEDAC - GE.	L010640	1000KVA-13.8KV-231/133V
3476 - M AQESA DAMMAM	4002885	100KVA-33KV-231/133V (Pole)
3476 - M AQESA DAMMAM	4002885	100KVA-33KV-400/231V (Pole)
3476 - M AQESA DAMMAM	4002885	200KVA-33KV-231/133V (Pole)
3476 - M AQESA DAMMAM	4002885	200KVA-33KV-400/231V (Pole)
3476 - M AQESA DAMMAM	4002885	300KVA-33KV-231/133V (Pole)



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3476 - M AQESA DAMMAM	4002885	100KVA-13.8KV-231/133V (Pole)
3476 - M AQESA DAMMAM	4002885	100KVA-13.8KV-400/231V (Pole)
3476 - M AQESA DAMMAM	4002885	200KVA-13.8KV-231/133V (Pole)
3476 - M AQESA DAMMAM	4002885	300KVA-13.8KV-231/133V (Pole)
3476 - M AQESA DAMMAM	4002885	300KVA-13.8KV-400/231V (Pole)
3476 - M AQESA DAMMAM	4002885	300KVA-13.8KV-231/133V (Pad)
3476 - M AQESA DAMMAM	4002885	1000KVA-33KV-231/133V (Pad)
3476 - M AQESA DAMMAM	4002885	1000KVA-33KV-400/231V (Pad)
3477 - M AL-AZIZIA STEEL	104	1500KVA-13.8KV-3300V
3478 - M AL-TURSHID CONT.	N/A	100KVA-13.8KV-220/127V
3480 - M SCECO - EAST	B WE91-00181-042	200KVA-13.8KV-231/133V
3482 - M AQESA DAMMAM	4002959	300KVA-13.8KV-231/133V (Pole)
3482 - M AQESA DAMMAM	4002959	300KVA-13.8KV-231/133V (Pad)
3483 - M AL MUFTAHA TRAD.	4012	500KVA-33KV-400/231V (Pad)
3484 - M RAJAB & SILSILAH CO.	RS/TIH/AA/4236	50KVA-33KV/220V (200KV Bil)
3484 - M RAJAB & SILSILAH CO.	RS/TIH/AA/4236	100KVA-33KV/220V (200KV Bil)
3484 - M RAJAB & SILSILAH CO.	RS/TIH/AA/4236	200KVA-33KV-220V (200KV Bil)
3485 - M MADI AL HAJRI & PART.	011/25	300KVA-13.8KV-480/277V (Pad)
3486 - M INT'L HARDWARE.	N/A	200KVA-4.16KV-2.4VK-380/220V
3488 - M SCECO - SOUTH	22NIJA5185	300KVA-33KV-231/133V
3488 - M SCECO - SOUTH	22NIJA5185	500KVA-33KV-231/133V
3488 - M SCECO - SOUTH	22NIJA5185	1000KVA-33KV-231/133V
3488 - M SCECO - SOUTH	22NIJA5185	100KVA-13.8KV-231/133V
3488 - M SCECO - SOUTH	22NIJA5185	200KVA-13.8KV-231/133V
3488 - M SCECO - SOUTH	22NIJA5185	300KVA-13.8KV-231/133V
3491 - M ABB CONT.	2001-T-0645	1000KVA-34.5KV-380/220V
3492 - M MINISTRY OF ELECTRICTY (SYRIA)	195/EXT/DIS/2001	1600KVA-20KV-400/231V
3493 - M AL-TOUKHI CO.	N/A	300KVA-380-480/220V
3494 - M AQESA RIYADH	4003054	300KVA-33KV-480/277V (Oil Type)
3494 - M AQESA RIYADH	4003054	300KVA-33KV-400/231V (Pad)
3495 - M AQESA RIYADH	4003055	1000KVA-33KV-231/133V
3496-M AQESA RIYADH	4003056	300KVA-13.8KV-400/231V
3498-M SCECO - EAST	B WE94-00181-046	100KVA-13.8KV-231/133V
3499-M SCECO - EAST	B WE94-00181-047	200KVA-13.8KV-231/133V
3500-M NATIONA CONT. CO.	SE/84417/PO-28	1000KVA-13.8KV-380/220V
3501-M ARABIAN Transformers. Co.	222/ATC/02/02	1000KVA-13.8KV-400/231V
3502-M AL-MOYYED TRAD.	ATC-000264	1000KVA-11KV/415V
3502-M AL-MOYYED TRAD.	ATC-000264	1250KVA-11KV/33KV
3503-M SCECO-EAST	B WE 94 00181 048	200KVA-13.8KV-231/133V
3504-M DAEWOO ARABIA. LTD.	N/A	300KVA-13.8KV-231/133V
3505-M AQESA DAMMAM	4003086	1000KVA-13.8KV-231/133V
3506-M ABDUL AZEEZ AL Jameel	N/A	300KVA-13.8KV-231/133V
3510-M AQESA RIYADH	4003187	100KVA-13.8KV-231/133V
3510-M AQESA RIYADH	4003187	100KVA-13.8KV-400/231V
3510-M AQESA RIYADH	4003187	100KVA-33KV-231/133V



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3510-M AQESA RIYADH	4003187	100KVA-33KV-400/231V
3510-M AQESA RIYADH	4003187	200KVA-13.8KV-231/133V
3510-M AQESA RIYADH	4003187	200KVA-13.8KV-400/231V
3510-M AQESA RIYADH	4003187	200KVA-33KV-231/133V
3510-M AQESA RIYADH	4003187	200KVA-33KV-400/23V
3510-M AQESA RIYADH	4003187	300KVA-13.8KV-231/133V
3510-M AQESA RIYADH	4003187	300KVA-13.8KV-400/231V
3510-M AQESA RIYADH	4003187	300KVA-13.8KV-231/133V (Pad)
3510-M AQESA RIYADH	4003187	300KVA-33KV-231/133V
3510-M AQESA RIYADH	4003187	300KVA-33KV-400/231V
3510-M AQESA RIYADH	4003187	500KVA-33KV-400/231V (Pad)
3510-M AQESA RIYADH	4003187	1000KVA-33KV-231/133V (Pad)
3511-M SCECO-WEST	CPB20200679	300KVA-13.8KV-400/231V
3512-M STANDENG INT'L	MH - 1670	50KVA-13.8KV-480V
3513-M AQESA - RIYADH	4003273	500KVA-33KV-400/231V
3514-M AQESA - RIYADH	4003292	1000KVA-13.8KV-380/220V
3515-M SCECO-WEST	CPB10200889	100KVA-13.8KV-231/133V
3515-M SCECO-WEST	CPB10200889	100KVA-13.8-11KV-400/231V
3515-M SCECO-WEST	CPB10200889	300KVA-33KV-400/231V
3516-M SCECO-EAST	B WE 94 00181 049	100KVA-13.8KV-231/133V
3517-M HAIF TRADING. CO	42/ED/1423	200KVA-13.8KV-231/133V
3518-M AQESA - RIYADH	4003367	500KVA-13.8KV-380/220V
3519-M AQESA - RIYADH	4003368	500KVA-13.8KV-380/220V
3521-M DUBAI Electricity (DEWA)	CE/025B/2002	1000KVA-11-6.6/0.4KV
3522-M AQESA - DAMMAM	4003417	300KVA-13.8KV-220/127V
3523-M AQESA - RIYADH	4003424	100KVA-13.8KV-400/231V
3523-M AQESA - RIYADH	4003424	100KVA-33KV-231/133V
3523-M AQESA - RIYADH	4003424	100KVA-33KV-400/231V
3523-M AQESA - RIYADH	4003424	200KVA-13.8KV-231/133V
3523-M AQESA - RIYADH	4003424	200KVA-33KV-231/133V
3523-M AQESA - RIYADH	4003424	200KVA-33KV-400/231V
3523-M AQESA - RIYADH	4003424	300KVA-13.8KV-231/133V
3523-M AQESA - RIYADH	4003424	300KVA-13.8KV-231/133V (Pad)
3523-M AQESA - RIYADH	4003424	300KVA-13.8KV-400/231V
3523-M AQESA - RIYADH	4003424	300KVA-13.8KV-400/231V (Pad)
3523-M AQESA - RIYADH	4003424	300KVA-33KV-231/133V
3523-M AQESA - RIYADH	4003424	300KVA-33KV-231/133V (Pad)
3523-M AQESA - RIYADH	4003424	300KVA-33KV-400/231V
3523-M AQESA - RIYADH	4003424	300KVA-33KV-400/231V (Pad)
3523-M AQESA - RIYADH	4003424	500KVA-13.8KV-231/133V
3523-M AQESA - RIYADH	4003424	500KVA-13.8KV-231/133V (Pad)
3523-M AQESA - RIYADH	4003424	500KVA-13.8KV-400/231V
3523-M AQESA - RIYADH	4003424	500KVA-13.8KV-400/231V (Pad)
3523-M AQESA - RIYADH	4003424	500KVA-33KV-231/133V
3523-M AQESA - RIYADH	4003424	500KVA-33KV-231/133V (Pad)



شركة واحدة العربية السعودية للإمدادات الكهربائية (المحدودة)  
Wahah Electric Supply Co. of Saudi Arabia (Ltd.)

3523-M AQESA - RIYADH	4003424	500KVA-33KV-400/231V
3523-M AQESA - RIYADH	4003424	500KVA-33KV-400/231V (Pad)
3523-M AQESA - RIYADH	4003424	1000KVA-13.8KV-231/133V (Pad)
3523-M AQESA - RIYADH	4003424	1000KVA-13.8KV-400/231V (Pad)
3523-M AQESA - RIYADH	4003424	1000KVA-33KV-231/133V (Pad)
3523-M AQESA - RIYADH	4003424	1000KVA-33KV-400/231V (Pad)
3524-M AL MUFTAHA Trading. Co.	N/A	2500KVA-13.8KV-460V
3525-M SCECO - SOUTH	200240010055	200KVA-13.8KV-231/133V
3525-M SCECO - SOUTH	200240010055	200KVA-13.8KV-231/133V
3525-M SCECO - SOUTH	200240010055	300KVA-13.8KV-231/133V
3525-M SCECO - SOUTH	200240010055	200KVA-33KV-231/133V
3525-M SCECO - SOUTH	200240010055	300KVA-33KV-231/133V
3525-M SCECO - SOUTH	200240010055	300KVA-33KV-231/133V
3526-M AQESA - JEDDAH	3001463	1600KVA-13.8KV-220/127V
3526-M AQESA - JEDDAH	3001463	1600KVA-13.8KV-380/220V
3527-M ABDUL KARIM	02/DE/1814/AB/M	200KVA-13.8KV-400/231V
3527-M ABDUL KARIM	02/DE/1814/AB/M	1000KVA-13.8KV-400/231V
3528-M AMEERI STORES	KSA/2002/F1649/AM	1500KVA-11KV-415/240V
3529-M AQESA - RIYADH	4003477	300KVA-13.8KV-231/133V
3530-M SCECO - WEST	CPB20201193	500KVA-13.8KV-11KV/400V
3531-M SCECO WEST	CPB10201300	100KVA-13.8KV-231/133V
3531-M SCECO WEST	CPB10201300	100KVA-13.8-11KV-400/231V
3533-M AL MUFTAHA TRAD.	4447	100KVA-13.8KV-400/231V
3534-M TECHNICAL FACTORY	2757	100KVA-13.8KV-400/231V
3534-M TECHNICAL FACTORY	2757	150KVA-13.8KV-400/231V
3535-M CARLO GAVAZZI Arabia.	CGA/1019/0140/02	500KVA-11KV-380/220V
3537-M TECHNICAL FACTORY	2768	200KVA-13.8KV-400/231V
3538-M AQESA - DAMMAM	4003613	100KVA-13.8KV-400/231V
3538-M AQESA - DAMMAM	4003613	100KVA-33KV-231/133V
3538-M AQESA - DAMMAM	4003613	100KVA-33KV-400/231V
3538-M AQESA - DAMMAM	4003613	200KVA-13.8KV-400/231V
3538-M AQESA - DAMMAM	4003613	200KVA-33KV-231/133V
3538-M AQESA - DAMMAM	4003613	300KVA-13.8KV-400/231V
3538-M AQESA - DAMMAM	4003613	300KVA-13.8KV-231/133V (Pad)
3538-M AQESA - DAMMAM	4003613	300KVA-13.8KV-400/231V (Pad)
3538-M AQESA - DAMMAM	4003613	300KVA-33KV-231/133V (Pad)
3538-M AQESA - DAMMAM	4003613	300KVA-33KV-400/231V (Pad)
3538-M AQESA - DAMMAM	4003613	300KVA-13.8KV-231/133V
3538-M AQESA - DAMMAM	4003613	500KVA-13.8KV-400/231V
3538-M AQESA - DAMMAM	4003613	500KVA-13.8KV-231/133V (Pad)
3538-M AQESA - DAMMAM	4003613	500KVA-13.8KV-400/231V (Pad)
3538-M AQESA - DAMMAM	4003613	500KVA-33KV-231/133V
3538-M AQESA - DAMMAM	4003613	500KVA-33KV-400/231V
3538-M AQESA - DAMMAM	4003613	500KVA-33KV-231/133V (Pad)
3538-M AQESA - DAMMAM	4003613	1000KVA-13.8KV-231/133V (Pad)





# شركة واحدة العربية السعودية للإمدادات الكهربائية (المحدودة) Wahah Electric Supply Co. of Saudi Arabia (Ltd.)

3538-M AQESA - DAMMAM	4003613	1000KVA-13.8KV-400/231V (Pad)
3538-M AQESA - DAMMAM	4003613	1000KVA-33KV-231/133V (Pad)
3538-M AQESA - DAMMAM	4003613	1000KVA-33KV-400/231V (Pad)
3539-M TECHNICAL FACTORY	2776	100KVA-13.8KV-400/231V
3540-M PARAMOUNT Arabia. Ltd	10480	1500KVA-480-14.4/7.2/3.6KV
3542-M SCECO-EAST	B WE94 00181 050	200KVA-13.8KV-231/133V
3543-M TECHNICAL FACTORY	2789	100KVA-13.8KV-400/231V
3544-M TECHNICAL FACTORY	2792	200KVA-13.8KV-400/231V
3546-M TECHNICAL FACTORY	2796	100KVA-13.8KV-400/231V
3547-M AQESA RIYADH	4003677	100KVA-13.8KV-400/231V
3549-M AQESA RIYADH	4003678	50KVA-13.8KV-400/231V
3551-M TECHNICAL FACTORY	2819	200KVA-13.8KV-400/231V
3552-M AQESA - RIYADH	4003737	300KVA-13.8KV-231/133V
3556-M SCECO - WEST.	CPB30300247	100KVA-13.8/11-400/231V
3556-M SCECO - WEST.	CPB30300247	300KVA-33KV-400/231V
3559-M MODECOR JUBAIL.	MODI/PROJ/PO-192/2002	300KVA-480-380/220V
3561-M RAJAB & SILSILAH CO.	RS/SEC(S)/SS-85/AA-164.	500KVA-13.8KV-220/120V
3564-M SALEM M AL-GUTHMI EST.	SGWO-2003/2175.	100KVA-13.8KV/400V
3564-M SALEM M AL-GUTHMI EST.	SGWO-2003/2175.	200KVA-13.8KV/400V
3566-M ELECTRIC WORLD.	1 2 1 2.	160KVA-13.8KV-400/231V
3570-M ARABIAN BEMCO	LP-7770	500KVA-13.8KV-380/220V
3570-M ARABIAN BEMCO	LP-7770	500KVA-13.8KV-380/220V
3571-M ARABIAN BEMCO	LP-7772	500KVA-13.8KV-380/220V
3572-M AJECT.	1871	1000KVA-440Y/254V-11KV.
3573-M AL - MUFTAHA TRAD.	4 7 2 4.	150KVA-13.8KV-400/231V
3574-M AQESA - RIYADH	4003846	500KVA-13.8KV-380/220V
3575-M AQESA - RIYADH	4003847	1500KVA-13.8KV-380/220V
3577-M AL-MUFTAHA TRAD.	4 7 5 4.	150KVA-13.8KV/400V
3578-M M.R. KHATHLAN	MRK/PO/188/2003.	500KVA-13.8KV-380/220V
3579-M AQESA - RIYADH	4003879	300KVA-13.8KV-480/277V
3581-M ASAS CONT.CO.LTD.	WAF-PO-6.	100KVA-33KV-231/127V
3581-M ASAS CONT.CO.LTD.	WAF-PO-6.	200KVA-33KV-231/127V
3582-M MANSOUR AL-MOSAID EST.	MAHD-PO-6.	100KVA-33KV-231/127V
3582-M MANSOUR AL-MOSAID EST.	MAHD-PO-6.	200KVA-33KV-231/127V
3582-M MANSOUR AL-MOSAID EST.	MAHD-PO-6.	300KVA-33KV-231/127V
3583-M AQESA RIYADH	4003883	3000KVA-33KV-480/277V
3583-M AQESA RIYADH	4003883	3000KVA-4.16KV-480/277V
3584-M SCECO-CENTRAL	4011/03/2. (B12003210 0009 002)	200 KVA - 33 KV - 231 / 133 V
3585-M NATIONAL CONT. CO.	RC/071-C10/PC-024.	1000KVA-34.5KV-380/220V
3586-M AMEERI STORES	RA/F196/06/03/G	1500KVA-11KV-415/240V
3588-M SCECO-SOUTH	200330010031 JA0002.	100KVA-13.8KV-231/133V
3588-M SCECO-SOUTH	200330010031 JA0002.	100KVA-13.8KV-231/133V
3588-M SCECO-SOUTH	200330010031 JA0002.	300KVA-13.8KV-231/133V
3588-M SCECO-SOUTH	200330010031 JA0002.	300KVA-13.8KV-231/133V



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# شركة واحدة العربية السعودية للإمدادات الكهربائية (المحدودة) Wahah Electric Supply Co. of Saudi Arabia (Ltd.)

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