



# SkelStart

## ENGINE START MODULE

### FEATURES

#### MORE STARTING POWER

ULTRACAPACITORS HAVE MULTIPLE BENEFITS OVER BATTERIES

- Much higher peak power than batteries can provide
- Temperature won't affect starting power
- Starting power even with "Dead" batteries
- If SkelStart energy is used, it needs only 18V to be recharged again.
- SkelStart will be fully charged in few minutes.
- Available in 12V & 24V
- Battery Life Increased 1.5-2X
- No idling needed to charge batteries
- Maintenance Free, 1 Million cycle lifetime
- 6 year Warranty



### BATTERIES

VS

### ULTRACAPACITORS

#### CHEMICAL REACTION (SLOW)



- + Slow charging and discharging
- + Low power
- + High energy
- + Temperature sensitive
- + Short lifetime

#### ELECTRIC FIELD (FAST)

- + Almost instant charging and discharging
- + High power
- + Low energy
- + Not temperature sensitive
- + Long lifetime

# CONFIGURATIONS

## FOR HAUL TRUCKS, LOADERS, DOZERS AND EXCAVATORS

**ESM-243**



25L - 45L Engines  
3500 CCA

**ESM-244**



45L - 60L Engines  
4700 CCA

**ESM-245**



60L - 80L Engines  
5800 CCA

### ESM-244 45L to 60L Engines

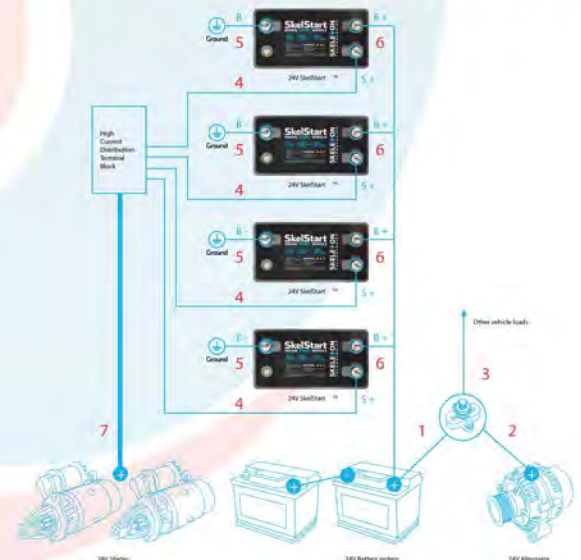
#### Haul Truck Package - 100-320 Ton Trucks

- 4,684 CCA's
- NEVER BOOST AGAIN!
- FULL POWER IN FREEZING COLD
- ELIMINATE STARTING & CHARGING LOADS FROM ELECTRICAL SYSTEM
- EXTEND BATTERY, STARTER & ALTERNATOR LIFE
- 6 YEAR WARRANTY



#### ESM244 Specifications

Specifications	Unit	SkelStart™ 24V
Charged full Voltage	V	28.2
Rated Capacitance, initial	F	1280
Resistance IEC	mΩ	0.56
Maximum Peak Current (for 0,4s duration)	A	15,600
Maximum Stored Energy	Wh	139
CCA	A	4,684
Peak Power	kW	350.0
Charging current	A	max. 64
Charging voltage range	V	18-30
Recharge time FROM 0 V	min	8.5
Net mass	kg	32



## SKELSTART EASY INSTALLATION

Skelstart is installed between the batteries and the starter, which means the batteries are disconnected from the starter.

Skelstart will always provide the starting power for the engine, and the batteries will only need to provide energy for lights, air conditioning, heating, etc.



## SPECIFICATION SHEET

# SkelStart

## ENGINE START MODULE



SkelStart 24V	Unit	
Cold Cranking Amps (CCA)	A	1218
Maximum Peak Current (0,4 sec current)	A	4460
Peak Power	kW	109.6
Charged full voltage	V	28.2
Energy	Wh	35
Rated Capacitance	F	320
Individual Cell Capacitance	F	3200
Charging current	A	16 (max)
Continuous input voltage range	V	18-30
Continuous input voltage range with specified charge time	V	23-30
Recharge time (from 0 V)	min	8.5
Operating temperature	Deg °C	-40 + +65
ESR IEC	mOhm	1.79
Standby current draw	mA	<10
Dimensions	mm	328 L x 171 W x 241 H
Weight	kg	8