

**Ranges from 32mm to 250mm discharge**  
**Compliant to NFPA 20 Design & Installation Requirements.**

**STUFFING BOX**

Standard stuffing box includes gland packing with a lantern ring incorporating high pressure internal flushing. External flush can be fitted and pump can be supplied with a mechanical seal. Conversion from packed box to mechanical seal and back to packing is easy. All pumps that can operate at 2 pole speed have a close tolerance stuffing box bush fitted.

**BEARING HOUSE**

Rugged cast iron construction with only three bearing housings covering complete range of pumps which gives many common interchangeable parts.

**BEARINGS**

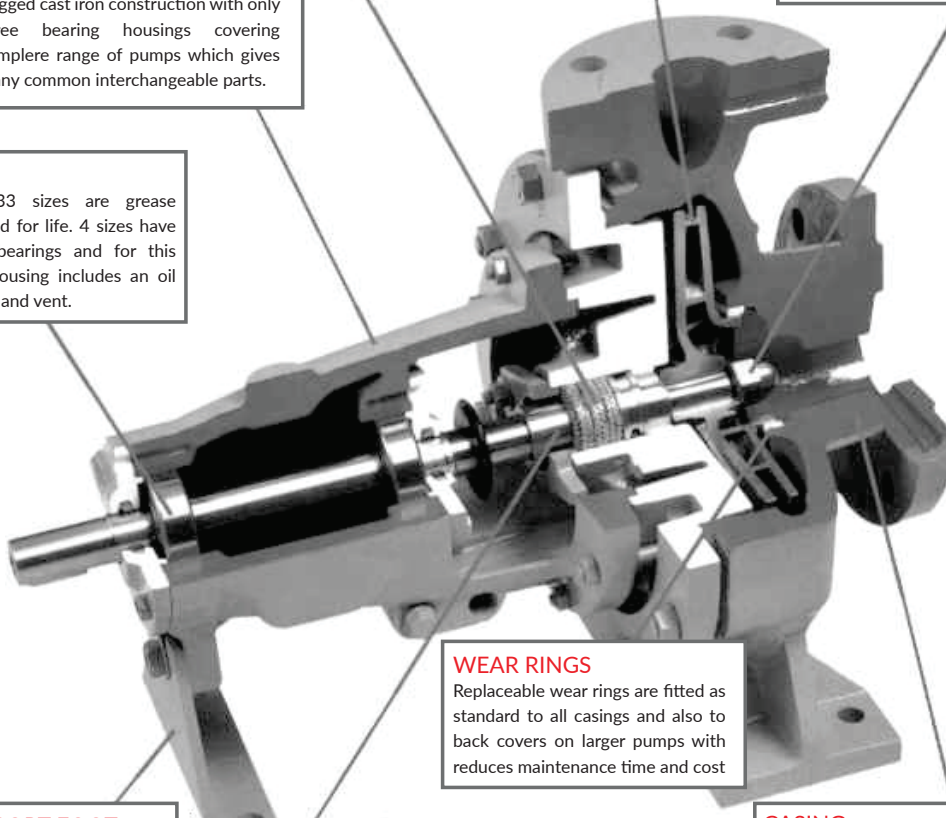
Bearings in 33 sizes are grease lubricated-sealed for life. 4 sizes have oil lubricated bearings and for this arrangement the housing includes an oil level sight glass and vent.

**IMPELLER**

Double shrouded type is hydraulically and positively driven by shaft key and axially locked between sleeve and impeller nut.

**SHAFT**

A domed type locking nut seats the stainless steel shaft at the impeller. Only 4 shafts are required to cover whole 37 sizes and reduces inventory to a minimum.



**WEAR RINGS**

Replaceable wear rings are fitted as standard to all casings and also to back covers on larger pumps with reduces maintenance time and cost

**SUPPORT FOOT**

Each pump has a removable support foot fitted at drive end for greater rigidity.

**SHAFT SLEEVE**

Fully machined hook type shaft sleeve prevents shaft damage under the gland packing which substantially reduces maintenance costs.

**CASING**

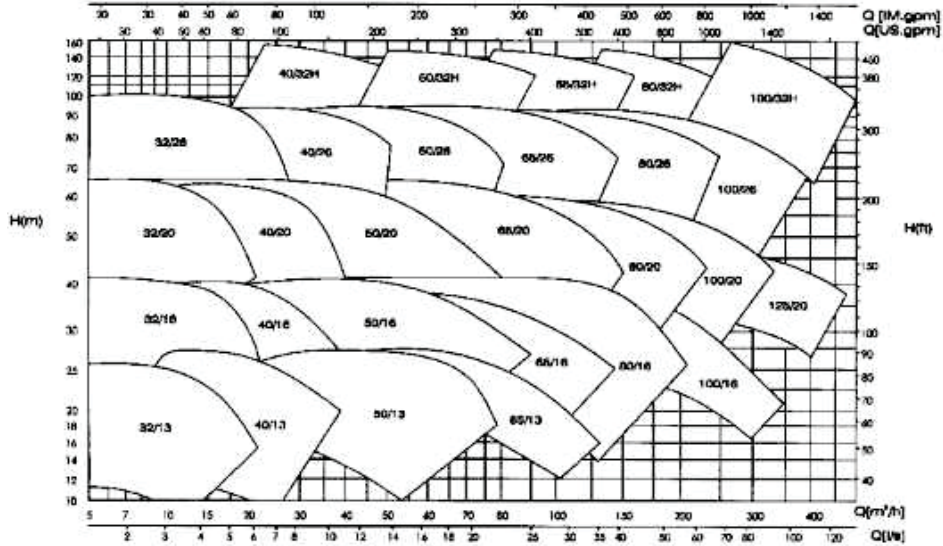
The cast iron volute casing is of robust design with integrally cast feet, vertical top centerline discharge with axial suction incorporating cast inlet vane to give best flow to impeller eye

**MECHANICAL SEAL**

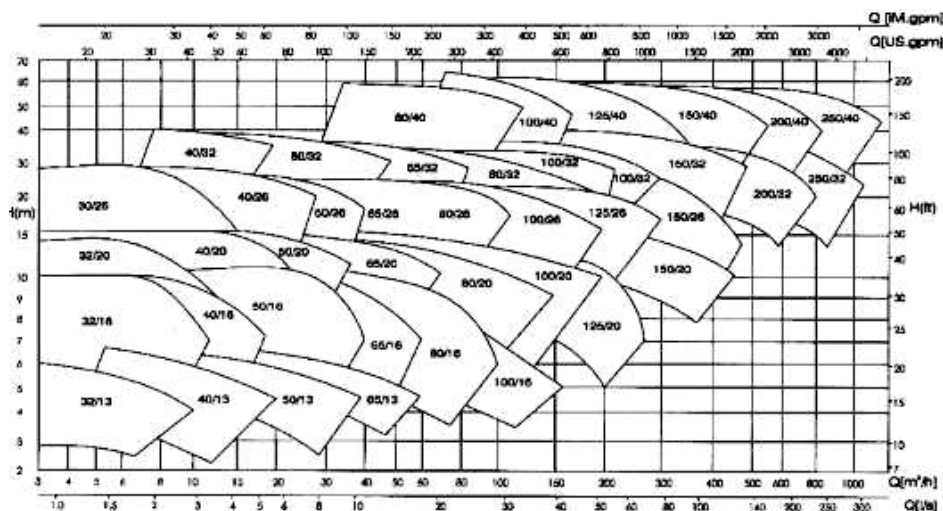


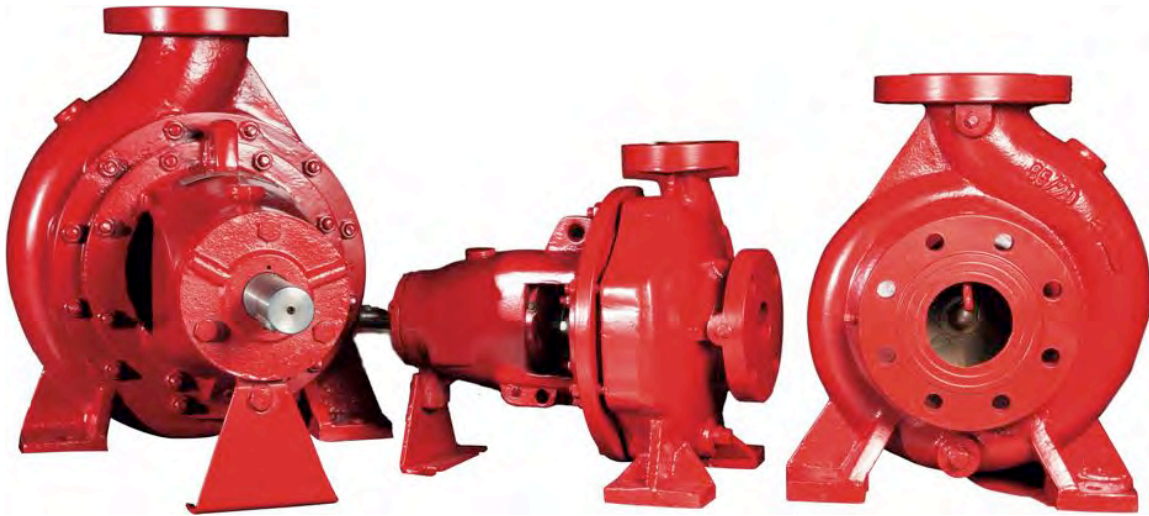
LIFECO Pumps range comply to both performance and dimensional standards for the international standard DIN 24255.

**SELECTION CHARTS OF PA SINGLE STAGE CENTRIFUGAL PUMP**  
**n = 2900 rpm**



**SELECTION CHARTS OF PA SINGLE STAGE CENTRIFUGAL PUMP**  
**n = 1450 rpm**





**APPLICATIONS**

- Air Conditioning
- Heating and Ventilating
- Refrigeration
- Fire Protection
- Plumbing
- Food & Drink Manufacture
- Circulating
- Water Pressure Boosting
- Transfer
- Water Treatment & Supply
- Irrigation
- Drainage
- Factory Pumping
- Process Industry
- Petroleum Products
- General Industry



Material	Nearest Equivalent Standard			
	Australian	British	American	DIN
<b>Cast Iron</b>	AS 1830/T200	BS 1452:GR220	ASTM A48 Class 30	DIN 1691 GG 20
<b>Bronze</b>	AS 1565/836B	BS 1400 : LG 2	ASTM B145 CDA836	DIN 1705
<b>Stainless Steel</b>	AS 1444 GR 420	BS 970 : 420/S37	AISI 420	DIN 17440

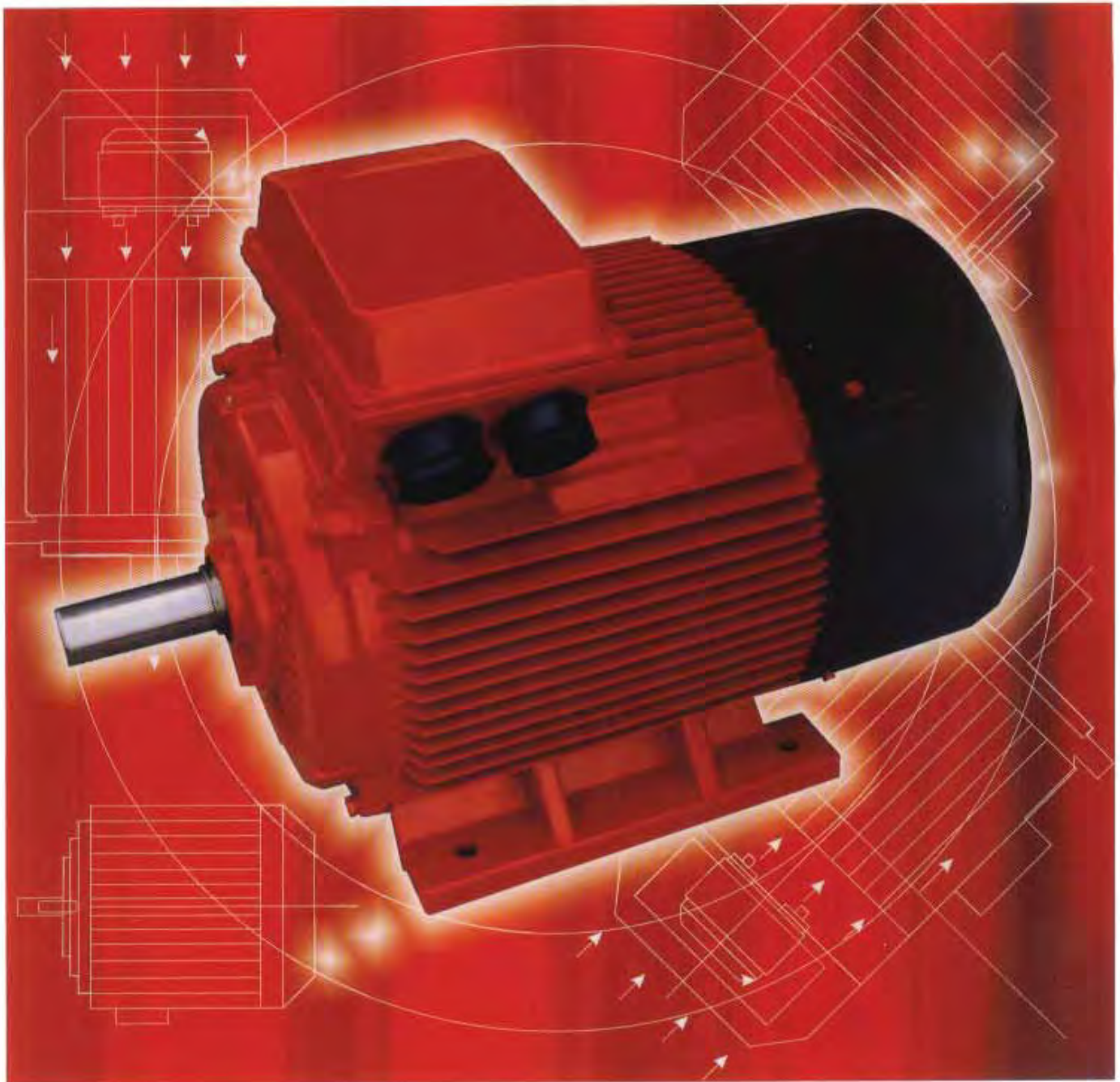
	Bronze	Cast Iron	All Iron
<b>Casing</b>	Cast Iron	Cast Iron	Cast Iron
<b>Impeller</b>	Bronze	Cast Iron	Cast Iron
<b>Wear Ring</b>	Cast Iron	Cast Iron	Cast Iron
<b>Shaft</b>	Stainless Steel	Stainless Steel	Stainless Steel
<b>Shaft Nut</b>	Stainless Steel	Stainless Steel	Cast Iron
<b>Shaft Sleeve</b>	Stainless Steel	Stainless Steel	Stainless Steel
<b>Lantern Ring</b>	Cast Iron	Cast Iron	Cast Iron
<b>Gland</b>	Cast Iron	Cast Iron	Cast Iron

**Back Pull-Out Features**

This design feature allows the complete rotating element to be removed for servicing without disconnecting pipework. If a spacer coupling is fitted then motor does not have to be moved. On re-assembly of pump coupling re-alignment problems are completely eliminated.

# HITEC<sup>®</sup>

## 3-PHASE INDUCTION MOTORS



**0.75 KW TO 200 KW**



**HITEC** induction motors have been designed according to the IEC standards. The standard range of **HITEC** three phase squirrel cage, Totally enclosed fan cooled electric motors have high efficiency and excellent electrical characteristics. The frame and the shields are made of cast iron. Cast iron has been successfully tried and tested during the many years of our wide experience in the manufacture of electric motors. For certain arduous applications cast iron is the preferred construction material.

Strength is further enhanced by the use of metal terminal boxes and steel fan covers as standard. The overall construction of this range is therefore ideally suited to the harsher environments like petrochemical, quarrying and heavy industries.



## the **HITEC**<sup>®</sup> difference

- **Durable motor and components**
- **Trouble free performance**
- **Low Vibration Design**
- **Silent functioning**
- **Easy to service**
- **Corrosion proof construction**



### CONSTRUCTION MATERIALS

Frame	: Cast Iron
	The body casting has longitudinal ribs, with integral feet for additional stability.
End Shields	: Cast Iron
Fan Cover	: Sheet Steel
Fasteners	: All fasteners are protected against corrosion.

### PROTECTION

All the motors have a degree IP55. The cooling fan is protected by a cover with a degree of protection IP 2x.

### VOLTAGE

Standard motors are wound for delta voltage of 380-415V with frequency of 50Hz or 220-240, 380-460V at 60Hz.

### INSULATION

The motors are insulated in Class F. Class F allows for temperature rises of 100K and maximum temperatures of 155°C at the spots in the machine. The impregnation of windings is made with thermo-hardening hot paints made of polyester resins which protect effectively against damp and they have a great resistance to warmth.

Motors with Class B and Class F insulation are also available as per request.

### CLASSES OF INSULATION

Max permissible Class of Insulation Temperature °C	Less Ambient Winding Temp. Rise K	Less Ambient Temperature °C Rise	Less Hotspot Allowance K	Equals Max. Permissible	Less Max. Design Temp.	Equals Min. Safety Margin K.
B	130	40	10	80	80	-
F	155	40	15	100	80	20
H	180	40	15	125	80	45

# HITEC<sup>®</sup> motors - built to last



## TEMPERATURE RISE

Hitec motors are built to have a maximum winding temperature rise of 80K under normal operating conditions (ambient temperature 40°C, altitude below 1000m)

## TERMINAL BOX

Terminal boxes on all motors are of a generous size for ease of connecting.

## SHAFTS

All shaft diameters are machined to fine limits.

## BEARINGS

All motors are provided with high quality ball bearings, having full contact seals, prepacked with grease, which under normal operating conditions, provide a high degree of operational reliability.

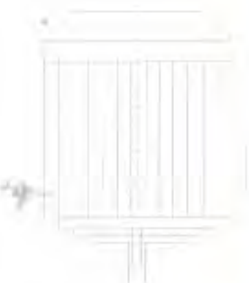
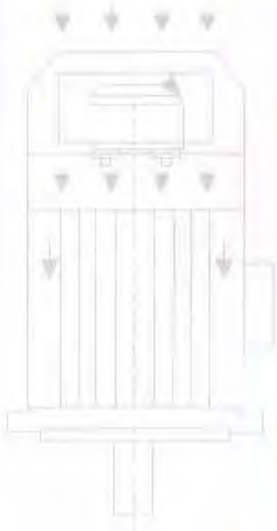
## BALANCE

All motors are dynamically balanced to BS 4999 Part 142\* (normal balance)

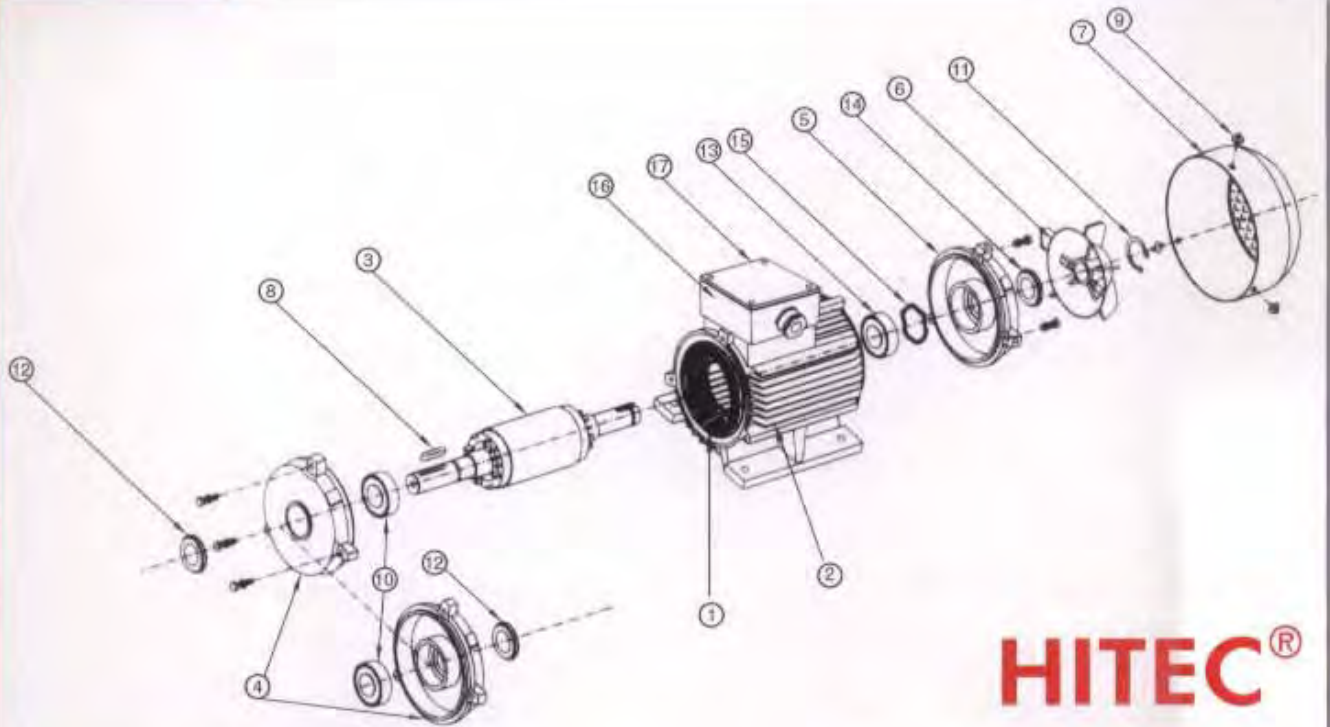


## INDUCTION MOTORS COMPONENTS CONSTRUCTION

Component	Materials	Remarks
1. Finned Housing	Cast Iron	- 4 holes for foot mounting
2. Stator	Insulated low-carbon magnetic steel laminations Cathode Copper	- low carbon content guarantees long-term lamination pack stability - welded packs - Class F insulation
3. Rotor	Insulated low-carbon magnetic steel laminations Aluminium	- rotor cage pressure die-cast in aluminium - dynamically balanced rotor
4. Shaft	Steel	Superior grade with more torque absorbing capability
5. End Shields	Cast Iron	- both the drive end and non-drive end
6. Bearings		- ball bearings
7. Fan	Plastic Material or Aluminium Alloy	
8. Fan Cover	Pressed Steel	
9. Terminal Box	Cast Iron	



# maintenance & installation



**HITEC<sup>®</sup>**

No.	DESCRIPTION
<b>1</b>	WOUND STATOR
<b>2</b>	HOUSING
<b>3</b>	ROTOR
<b>4</b>	DRIVE END SHIELD
<b>5</b>	NON DRIVE END SHIELD
<b>6</b>	FAN
<b>7</b>	FAN COVER
<b>8</b>	KEY
<b>9</b>	FAN COVER SCREW

No.	DESCRIPTION
<b>10</b>	DRIVE END BEARING
<b>11</b>	NON DRIVE END CIRCLIP
<b>12</b>	DRIVE END SEAL
<b>13</b>	NON DRIVE END BEARING
<b>14</b>	NON DRIVE END SEAL
<b>15</b>	PRE LOADING WASHER
<b>16</b>	TERMINAL BOX
<b>17</b>	TERMINAL BOX LID

# HITEC<sup>®</sup> motors

## designed specifically for application

### GENERAL SPECIFICATIONS

Mains Supply 380-415V, 50Hz, 3 Phase, 2 Pole

Model	Rated Power at 50 Hz		Rated Speed R.P.M.	Rated Current A	Efficiency %	Power Factor Cos	Rated Torque Nm	Noise LwdB(A)	Weight Kg
	kW	HP							
HM 801-2	0.75	1.00	2825	1.80	75	0.83	2.54	67	16.5
HM 802-2	1.10	1.50	2825	2.60	77	0.84	3.72	67	17.5
HM 90S-2	1.50	2.00	2840	3.40	78	0.84	5.04	72	21
HM 90L-2	2.20	3.00	2840	4.90	81	0.85	7.40	72	25
HM 100L-2	3.00	4.00	2880	6.30	82	0.87	9.95	76	33
HM 112M-2	4.00	5.50	2900	8.10	85	0.88	13.22	77	41
HM 132S1-2	5.50	7.50	2900	11.00	86	0.88	18.11	80	63
HM 132S2-2	7.50	10.00	2930	14.90	87	0.88	24.70	80	70
HM 160M1-2	11.00	15.00	2930	21.30	88	0.89	35.85	86	110
HM 160M2-2	15.00	20.00	2930	28.80	89	0.89	48.89	86	120
HM 160L-2	18.50	25.00	2930	34.70	90	0.90	60.30	86	135
HM 180M-2	22.00	30.00	2940	41.00	90.5	0.90	71.46	89	165
HM 200L1-2	30.00	40.00	2950	55.50	91.2	0.90	97.12	92	218
HM 200L2-2	37.00	50.00	2950	67.90	92	0.90	119.78	92	230
HM 225M-2	45.00	60.00	2970	82.30	92.3	0.90	144.70	92	280
HM 250M-2	55.00	75.00	2970	100.40	92.5	0.90	176.85	93	365
HM 280S-2	75.00	100.00	2970	131.40	93.2	0.91	241.16	94	495
HM 280M-2	90.00	125.00	2970	160.20	93.8	0.91	289.39	94	565
HM 315S-2	110.00	150.00	2980	195.40	94	0.91	352.51	96	890
HM 315M-2	132.00	180.00	2980	233.20	94.5	0.91	423.02	96	980
HM 315L1-2	160.00	220.00	2980	279.30	94.5	0.92	512.75	99	1055
HM 315L2-2	200.00	270.00	2980	378.40	94.8	0.92	640.94	99	1110

Note: Motors up to 430 H.P. available

### GENERAL SPECIFICATIONS

Mains Supply 220-240, 380-460, 380-460v, 60Hz, 3 Phase, 2 Pole

Model	Rated Power at 50 Hz		Rated Speed R.P.M.	Rated Current A	Efficiency %	Power Factor Cos	Rated Torque Nm	Noise LwdB(A)	Weight Kg
	kW	HP							
HM 801-3	0.75	1	3400	1.6	75	0.88	2.0	67	16.5
HM 802-3	1.10	1.50	3400	1.75	76	0.86	2.5	67	17.5
HM 90S-3	1.50	2	3420	2.4	80.5	0.88	3.6	72	21
HM 90L-3	2.20	3.00	3450	3.7	82	0.90	6	72	25
HM 100L-3	3.00	4.00	3450	4.4	83	0.91	7.4	76	33
HM 112M-3	4.00	5.50	3455	6.3	82	0.87	10	77	41
HM132S1-3	5.50	7.50	3490	11.5	84	0.87	18	80	63
HM 132S2-3	7.50	10.00	3510	15.1	86	0.87	24.5	80	70
HM 160M1-3	11	15.00	3485	18	86	0.90	30.2	86	110
HM 160M2-3	15	20.00	3510	21.2	88	0.89	35.9	86	120
HM 160L-3	18.50	25.00	3490	28.5	89	0.90	49.3	86	135
HM 180M-3	22	30	3545	32.8	91.4	0.88	56.6	89	165
HM 200L1-3	30	40	3545	39.0	91.4	0.88	67.4	92	218
HM 200L2-3	37	50	3550	51.0	92.0	0.91	91.5	92	230
HM 225M-3	45	60	3560	64	92.5	0.89	112.7	92	280
HM 250M-3	55	75	3555	77	93.2	0.91	139.8	93	365
HM 280S-3	75	100	3560	95	93.4	0.89	169	94	495
HM 280M-3	90	125	3575	124	94.3	0.92	229.8	94	565
HM 315S-3	110	150	3575	148	94.9	0.92	275.3	96	890
HM 315M-3	132	180	3575	183	94.9	0.91	336.7	96	980
HM 315L1-3	160	220	3575	220	95.2	0.91	406.2	99	1055
HM 315L2-3	200	270	3575	267	95.2	0.91	491.7	99	1110

Note: Motors up to 430 H.P. available







**HITEC**® multi-purpose motors are the ideal choice for installation in arduous environmental conditions. The range offers a variety of induction motors with a power rating of 0.09kW (0.12H.P.) to high powered motor providing 160 kW (220H.P.). Motors for other voltages, frequencies, specifications and non-standard features are available on request. **HITEC** series motors are highly engineered to cope up with sudden load increase, longer thermal life, higher altitudes and voltage variations. All the motors are manufactured under strict quality control procedures (ISO 9001) and are fully tested against the applicable standard.

## multipurpose uses

### DESIGN FEATURES

- High efficiency, thus saving energy.
- Extended longevity of bearings.
- Non-hygroscopic Class F insulation system with temperature rise limited to Class B.
- Higher torque.
- High power density with increased kW to weight ratio.
- Excellent thermal reserve.
- Higher reliability and easy maintainability.
- Good aesthetics.



**HITEC**® uses integrated design management techniques for enhancing the efficiency and durability of its products. Reliability, integrity, simplicity in design and ease of maintenance, all endorse the product as a world leader in electric motors.

**HITEC**® motors can handle load and can continue working reliably for long hours. The balanced design and the precision of the motor ensure superb performance with minimum energy consumption.

- **Economical**
- **Flexible**
- **Easy to Service**
- **Low Noise**
- **Low Vibration**
- **Durable**
- **Reliable**
- **System Functional**

# HITEC<sup>®</sup>

**ELECTRIC MOTORS AND EQUIPMENT**

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United Kingdom. Tel: +44 (0) 870 066 4401 Fax: +44 (0) 870 066 4402  
E-mail: [info@lifeco-uk.com](mailto:info@lifeco-uk.com) • Website: [www.lifeco-uk.com](http://www.lifeco-uk.com)

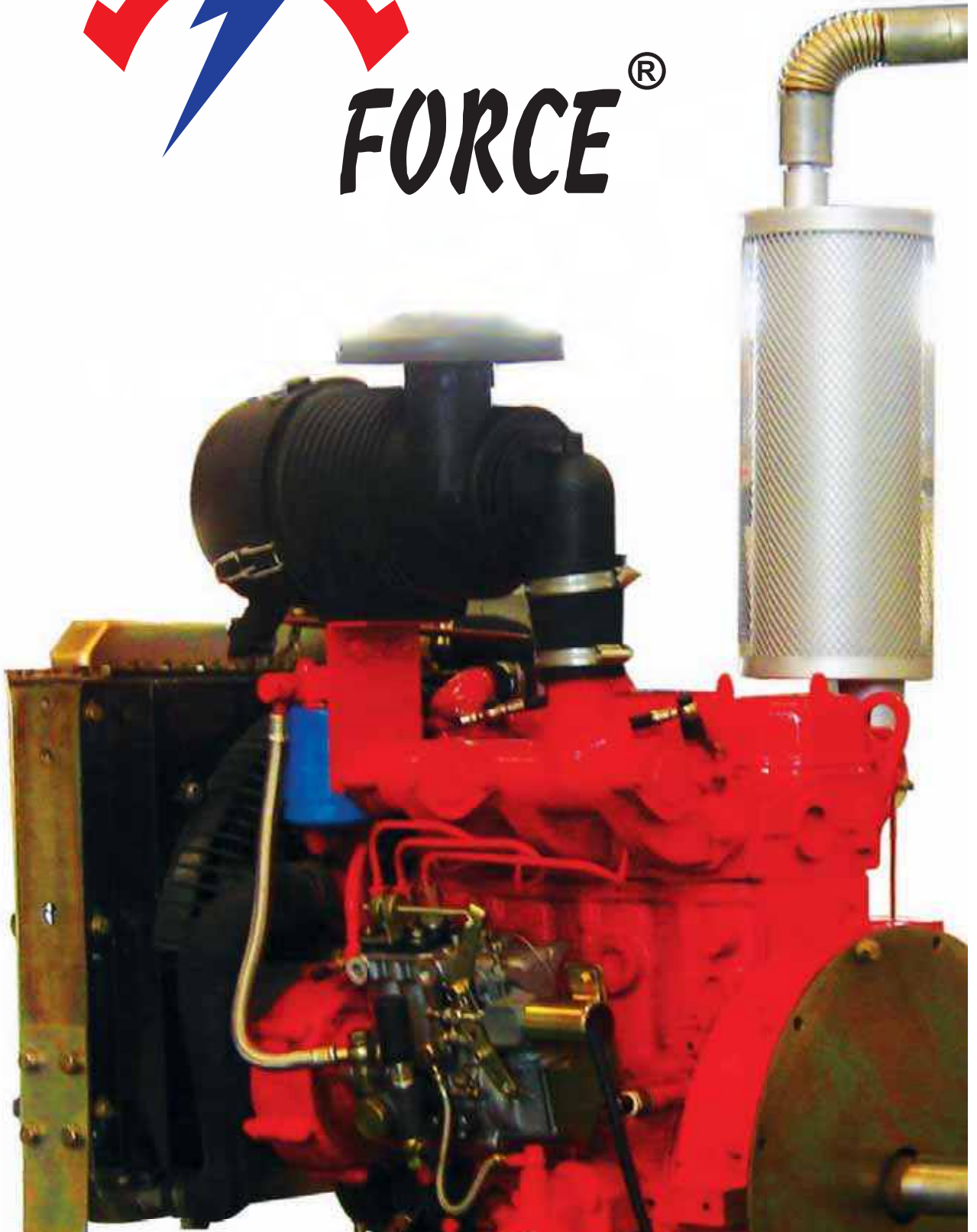
We reserve the right to modify the specifications without prior notice.  
CAT. NO. HM/01/2001

**MEGA**



**FORCE<sup>®</sup>**

**DIESEL ENGINES & EQUIPMENTS**



*product of* **Lichfield UK.**

# GENERAL SPECIFICATIONS

## BASIC ENGINE COMPONENTS

Flywheel Housing S.A.E  
Flywheel  
Fire Resistant Fuel Pipes  
Rigid Mounts  
Fresh Water Circulating Pump  
Thermostat  
Fuel Pump Governor Rating 4.5% Rating  
Fuel Lift Pump  
Full Flow Fuel Filters  
Full Flow Lub. Oil Filters  
Exhaust Manifold - Dry Type  
Exhaust Manifold Adaptor  
Dry Type Air Cleaner  
Use and Maintenance Manual  
Belt Guards  
Flexible Engine Mounts  
Stop Lever

## COOLING SYSTEM

Radiator  
Heat Exchanger  
Air Cooled

## STARTING SYSTEM

Electric Starter Motor  
Starter Solenoids - Auto

## INSTRUMENTATION & PROTECTION SYSTEM

Instrument Panel  
Oil Pressure Gauge  
Water Temperature Gauge  
Starter Lock Out Module  
Engine Running Lamp  
Wiring Loom

## EXHAUST SYSTEM

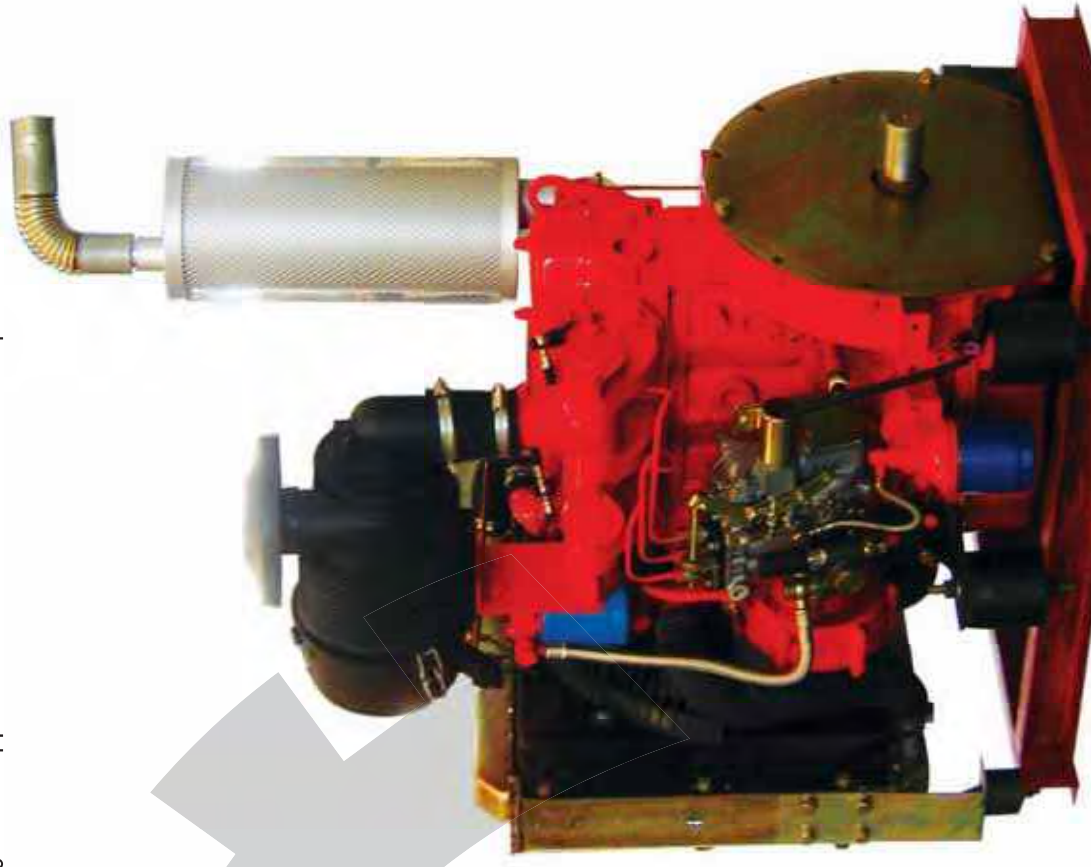
Exhaust Silencer  
Flexible Exhaust Bellows  
Flexible Exhaust Pipe  
90° Bend

ECONOMICAL | FLEXIBLE | DURABLE | RELIABLE  
EASY TO SERVICE | ENVIRONMENTALLY ACCEPTABLE | SYSTEM FUNCTIONAL

**MEGA FORCE Diesel Engines** are specially tailored to meet the customer's specification and optimum performance, thus guaranteeing the product best suited to the application.

Engine Fuel Systems calibrated to specific power and speed requirements, ensure **MEGA FORCE Diesel Engines** for maximum efficiency

**MEGA FORCE Diesel Engines** have long periods of idleness, coupled to routine testing at maximum speed and at times with no load, necessitates a power unit of exceptional qualities. The range offers from small cylinder engine giving an output of 19kW @ 2900rpm to a high powered configured engine of 400kw. All power units are manufactured to comply with strict control procedures (ISO 9001) and fully tested against the applicable standards in line with client requirements



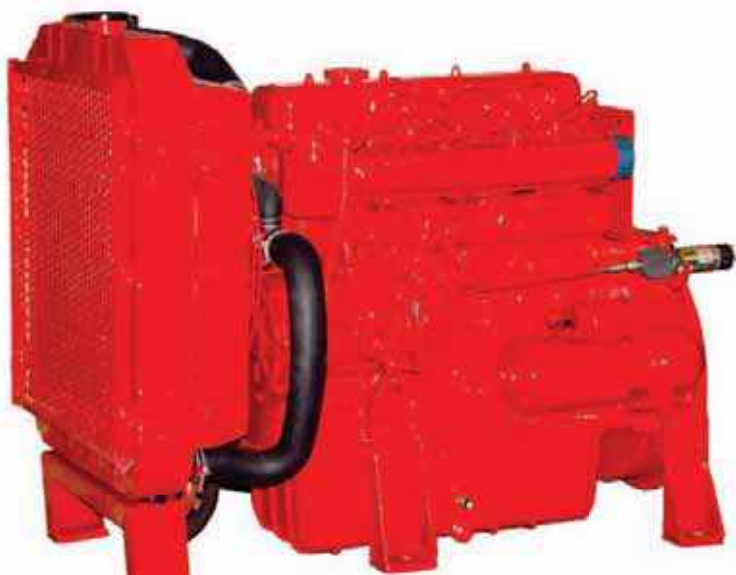
# TECHNICAL SPECIFICATIONS

Legend: NA - Naturally Aspirated

T: Turbo Charged

Diesel Engines of High Capacities is available as per Customer Requirements

MODEL	RATING [kW (HP)]	RPM	CONFIGURATION	BORE x STROKE (mm)	DIAMETER (mm)	LENGTH (mm)	WIDTH (mm)	HEIGHT (mm)
MFS 25	19 (25)	3000	3 Cylinder/4 Stroke/Inline	80 x 90	42	600	515	608
MFS 40	30 (40)	2900	4 Cylinder/4 Stroke/Inline	85 x 95	48	735	515	645
MFS 60	45 (60)	3000	4 Cylinder/4 Stroke/Inline	95 x 100	48	735	515	650
MFS 85	63 (85)	3000	4 Cylinder/4 Stroke/Inline	102 x 118	60	810	695	780
MFS 110	82 (110)	3000	4 Cylinder/4 Stroke/Inline	113 x 125	60	920	595	800
MFS 130	97 (130)	3000	6 Cylinder/4 Stroke/Inline	113 x 120	60	1280	700	985
MFS 150	112 (150)	3000	6 Cylinder/4 Stroke/Inline	115 x 125	60	1280	700	985
MFS 180	134 (180)	3000	6 Cylinder/4 Stroke/Inline	115 x 125	60	1280	700	995
MFS 220	164 (220)	3000	6 Cylinder/4 Stroke/Inline T	126 x 130	70	1520	950	1180
MFS 270	201 (270)	3000	6 Cylinder/4 Stroke/Inline T	126 x 130	70	1520	950	1180
MFS 300	224 (300)	3000	6 Cylinder/4 Stroke/Inline T	126 x 140	70	1520	950	1180
MFS 320	239 (320)	3000	6 Cylinder/4 Stroke/Inline T	126 x 140	70	1520	950	1180
MFS 350	261 (350)	2900	6 Cylinder/4 Stroke/Inline T	126 x 140	70	1520	950	1180
MFS 375	280 (375)	2900	6 Cylinder/4 Stroke/Inline T	126 x 155	70	1520	950	1200
MFS 425	317 (425)	2900	6 Cylinder/4 Stroke/Inline T	135 x 169	100	1497	904	1233
MFS 475	354 (475)	2900	6 Cylinder/4 Stroke/Inline T	135 x 169	100	1497	904	1233
MFS 536	400 (536)	2900	6 Cylinder/4 Stroke/Inline T	135 x 169	100	1497	904	1233



With a power range form 19 kW to 400 kW and running speeds desired to meet the requirements of approved pump ends,

**MEGA FORCE Diesel Engines** are the most comprehensive engines in the world.

**LICHFIELD  
FIRE & SAFETY  
EQUIPMENT  
CO. LTD.**

**HEADQUARTERS:**  
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