

# Knight & Charger Series

**GAS-FIRED STORAGE  
WATER HEATERS**



CE

Lochinvar Corporation has been designing, manufacturing and distributing water heating products in USA since 1919 and has built an enviable reputation for reliable, efficient and cost effective water heaters and boilers.



In the UK the company is based in Banbury, ideally located to support its established products with a service which is second to none with Area Sales Managers and a head office staff covering Technical support, Service Technicians, Accounts and General Administration.

Water heating equipment was first sold in the UK under the Lochinvar name in 1976. The "Knight" and "Charger" ranges of direct gas fired Storage Water Heater were among the first of their type to be sold in this country and their popularity has continued to grow due to their suitability for the concept of System Separation and Decentralisation.

Following on from the success of the Knight and Charger range, Lochinvar introduced Copper-Fin® water heaters and Boilers in 1981. This range offers even better operating efficiencies and additionally have low NO<sub>x</sub> emissions and offer a wide variety of flueing options. The latest additions to the Copper-Fin® series are Intelli-Fin™, a gas fired condensing boiler or water heater with a gross thermal efficiency of 97% and POWER-Fin® II, a range of high efficiency boilers or water heaters that are the perfect companion to Intelli-Fin™ on multi unit installations

All Lochinvar water heaters and boilers have a range of ancillary equipment designed for the specific needs of the UK market, are CE marked and WRAS (Water Research Advisory Service) listed.



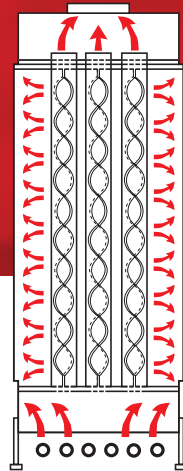
# WHY STORAGE WATER HEATERS?

Traditionally hot water in commercial and industrial properties was supplied from indirect storage cylinders with the energy source being the heating boiler. This type of system had many operating and logistical inefficiencies especially in summer months when the main heating boiler had to be running to deliver hot water.

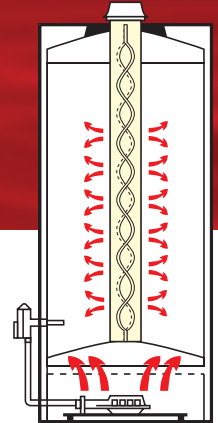
During the 1980's a number of Government sponsored energy saving campaigns promoted system

separation/decentralisation of heating/ water heating plant for which gas-fired storage water heaters are ideal.

The Knight and Charger principle is based on low storage capacity but with extremely fast recovery times. This means that units of the required size can be situated close to the demand point delivering almost instantaneous hot water with far greater efficiency than traditional systems.



## CHARGER



## KNIGHT

... The Knight and Charger series both utilise certain advanced technological features:

### BAFFLED FLUEWAY FOR MAXIMUM HEAT TRANSFER

Custom designed baffles are suspended in the flueways, which increase the amount of heat transfer from the flue gases. This 'scrubbing' action helps to obtain fast recovery of hot water. The products of combustion are taken into a common header and then through a down

draught diverter, which is lightweight and resistant to corrosion.

Knight range units have a singled flueway, but Charger models range from 6 to 16 baffled flueways increasing heat surface area by up to 35%.

### HIGH LEVEL OF INSULATION MINIMISES STANDING HEAT LOSS

A layer of cfc-free polyurethane foam envelops the storage vessel reducing standing heat losses to an absolute minimum, whilst further insulation encapsulates the combustion chamber maximising heat

transfer from the burner into the water tank. All insulation is contained within the attractively designed outer case.

### ENAMELLED STORAGE TANK FOR EXTENDED OPERATING LIFE

At the heart of both water heaters is an A1 category thick gauge welded-steel tank, that is lined internally with a vitreous enamel material, protecting the tank from any corrosive elements in the water and ensuring the water remains contaminant free.

is not subjected to any stresses that could cause fracturing.

The lining has a coefficient of expansion almost identical to that of the tank itself and therefore the lining

100mm hand hole clean out covers are incorporated into the casing, on all Charger models and Knight models LG-75CE and LG85CE, allowing easy access for inspection of the internal surfaces of the tank during servicing.

# KNIGHT CE SERIES WATER HEATERS



## CHOICE OF 10 MODELS FOR SPECIFYING FLEXIBILITY

There are 10 Knight Water Heaters available, 5 of which have permanent pilot and 5 having automatic ignition. Storage capacities range from 109 litres up to 382 litres and varying recovery rates of up to 397 litres per hour are available.

## PERMANENT PILOT UNIT

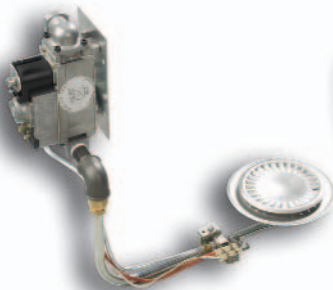
The composite gas valve incorporates flame failure safety, variable thermostat and high limit switch, giving the user ability to control water temperature, whilst giving complete safety in the event of thermostat or gas valve failure. An enomoniser type pilot burner considerably reduces the amount of gas necessary to maintain adequate temperature for the operation of the flame failure device.

## AUTOMATIC IGNITION UNIT

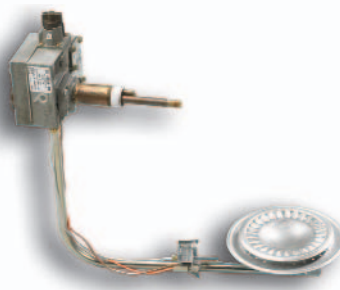
For additional operating control and efficiency, these units offer fully automatic ignition without standing pilot. Interface with Building Management systems is available with RLY2716 relay (optional ancillary).

## RADIAL PORT BURNER

Incorporated into the design is the stainless steel circular burner giving a high level of efficiency, ensuring that heat transfer to the water is maximized. The burner assembly is easily removed reducing maintenance time required.



Auto Pilot Burner



Permanent Pilot Burner

### ENAMELLED TANK

Durable vitreous enamel lining bonded to the tank interior affords lasting protection against rust and corrosion

### MAGNESIUM TANK SAVER

Large magnesium anode prolongs tank life and inhibits corrosion. Alternative methods of protection are available in the form of V - line couplings and Correx electrical anodes (see ancillaries)

### TANK WORKING PRESSURE

Up to 10.2 bar

### INSULATION

High density insulation for maximum heat retention - lowest standby heat loss

### PIEZO IGNITOR

Permanent Pilot Models

### LARGE ACCESS DOOR

Permits easy servicing of burner and controls. Clean out door on tank of models LG75CE and LG85CE

### SUITABLE FOR

Natural Gas or LPG (except LG85CE which is Natural Gas only)

### ANCILLARY OPTIONS

Wide range available to suit individual applications.

# CHARGER CE SERIES WATER HEATERS



## 12 MODELS

### ULTIMATE CHOICE FOR THE SPECIFIER

Charger Water Heaters are available in 2 ranges - Permanent Pilot and Automatic Ignition. Each range offers 6 individually sized Water Heaters with storage capacities ranging from 150 litres to 370 litres. Extremely fast recovery rates of up to 1,920 litres per hour are available.

### PERMANENT PILOT UNITS

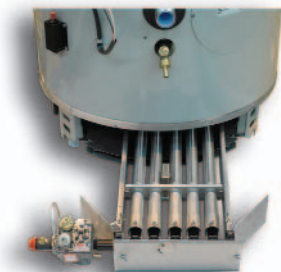
Offers Piezo ignition with clock control available as an optional ancillary. This series has a millivolt control system, which enables the units to operate independently of an electric power supply. The self-generating thermopile allows for fail-safe operation of the gas valve, operating thermostat and high limit thermostat.

### AUTOMATIC IGNITION UNITS

For additional operating control and efficiency, this range offers fully automatic ignition without standing pilot. Interface with Building Management Systems is available with WH18 Relay (optional ancillary) and Flue Dampers are available which keeps standing losses to an absolute minimum.

### HIGH OUTPUTS

Charger Water Heaters are built upon the proven principles of the Knight series, but incorporate a series of flue tubes running up through the water tank. This allows for higher rated burners to be used offering fast heat-up times and high outputs of hot water.



Auto Pilot Burner



Permanent Pilot Burner

### ENAMELLED TANK

Durable vitreous enamel lining bonded to the tank interior affords lasting protection against rust and corrosion

### MAGNESIUM TANK SAVER

2 or 3 magnesium anodes (depending on model) prolong tank life and inhibit corrosion. Alternative methods of protection are available in the form of V - line couplings and Correx electrical anodes (see ancillaries)

### TANK WORKING PRESSURE

Up to 10.2 bar

### INSULATION

High density insulation for maximum heat retention - lowest standby heat loss

### PIEZO IGNITOR

Permanent Pilot models

### LARGE ACCESS DOOR

Permits easy servicing of burner and controls. Tank clean out door on all models

### SUITABLE FOR

Natural Gas or LPG (Permanent Pilot units) - Auto units available for Natural Gas only.

### ANCILLARY OPTIONS

Wide range available to suit individual applications.

### LOW PROFILE DRAUGHT DIVERTER



# KNIGHT TECHNICAL SPECIFICATIONS

MODEL NO.		LG30CE	LG40CE	LG50CE	LG75CE	LG85CE
		LG30CEAUTO	LG40CEAUTO	LG50CEAUTO	LG75CEAUTO	LG85CEAUTO
Storage Capacity	(litres)	109	145	182	286	382
Recovery Rate at 44°C Temperature rise	(litres/hr)	178	183	278	324	397
Recovery Rate at 50°C Temperature rise	(litres/hr)	157	161	245	285	349
Gas Flow Rate	(m <sup>3</sup> /hr)	1.11	1.16	1.71	2.04	2.42
Heat Input (net)	(kW)	10.9	11.3	16.7	19.9	23.5
Heat Output	(kW)	9.1	9.4	14.3	16.6	19.7
Water Pipe Connection BSP Ext	(ins)	1	1	1	1	1 1/4
Gas Connection BSP Int	(ins)	1/2	1/2	1/2	1/2	1/2
Height to flue	(mm)	1276	1327	1589	1669	1788
Height	(mm)	1149	1200	1446	1526	1654
Diameter	(mm)	457	508	508	622	718
Flue Diameter	(mm)	100	100	100	125	125
Weight empty	(kg)	43	57	65	110	181
Weight full	(kg)	151	202	247	396	562

**\*DIRECT MAINS FEED KIT** For direct mains connection or pressurised systems. Unvented kits are available

Kit No.	WH10	WH10	WH10	WH15	WH16
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## OPTIONAL ANCILLARIES

- Correx Non-Sacrificial Electrical Anode - All Knight models .....(CKT9000)
- Remote Control Solenoid Kit .....(WH6)
- Pilot Monitoring Device .....(WH8)
- De-stratification Pump Set .....(WH9)
- Relay for BMS (Automatic Units) .....(RLY2716)
- Direct Mains Feed/Unvented Kit .....\*See Table

## WARRANTY

- Tank .....3 years
- All Other Components .....1 year

## DRAWINGS

Dimensional drawings for all models are available as hard copy or CAD files, which can be downloaded from our website [www.lochinvar.ltd.uk](http://www.lochinvar.ltd.uk)

## V-LINE INSULATED COUPLINGS

For additional protection against Electrolytic Action, V-Line Couplings are available for all Knight Water Heaters.



## FITNESS FIRST HEALTH CLUBS

One of many companies who benefit from Lochinvar Knight and Charger Water Heater installations.



# CHARGER TECHNICAL SPECIFICATIONS

MODEL NO.		155CE CE155AUTO	200CE CE200AUTO	300CE CE300AUTO	400CE CE400AUTO	500CE CE500AUTO	600CE CE600AUTO
Storage Capacity	(litres)	150	297	370	370	280	245
Recovery Rate at 44°C Temperature rise	(litres/hr)	627	796	1042	1216	1565	1920
Recovery Rate at 50°C Temperature rise	(litres/hr)	552	700	917	1070	1377	1690
Gas Flow Rate	(m <sup>3</sup> /hr)	3.71	4.64	6.03	7.43	9.46	11.89
Heat Input (net)	(kW)	36.1	45.1	58.6	72.1	91.9	115.4
Heat Output	(kW)	32.0	40.5	53.0	62.0	80.0	98.0
Water Pipe Connection BSP Ext	(ins)	1½	1½	1½	1½	1½	1½
Gas Connection BSP Int	(ins)	¾	¾	¾	¾	¾	¾
Height to flue	(mm)	1286	1825	2105	2172	1896	1829
Height	(mm)	1096	1635	1915	1915	1635	1635
Diameter	(mm)	711	711	711	711	711	711
Flue Diameter	(mm)	150	150	150	200	200	250
Weight empty	(kg)	190	240	275	280	265	305
Weight full	(kg)	340	537	645	650	545	550
<b>*DIRECT MAINS FEED KIT</b> For direct mains connection or pressurised systems. Unvented kits are available							
Kit No.		WH17	WH20	WH20	WH20	WH20	WH20

## OPTIONAL ANCILLARIES

Correx Non-Sacrificial Electrical Anode - All Charger models .....	(CKT9003)
Relay for Remote Control (Permanent Pilot Units).....	(WH13)
Pilot Monitoring Device (Permanent Pilot Units).....	(WH8)
Relay for BMS (Automatic Ignition Units).....	(WH18)
De-stratification Pump Set .....	(WH9)
Flue Damper for Models: CE155Auto to CE400Auto.....	(D150)
Flue Damper for Models: CE500Auto .....	(D200)
Flue Damper for Models: CE600Auto .....	(D250)
Direct Mains Feed/Unvented Kit.....	* See Table

## WARRANTY

Tank .....	3 years
All Other Components.....	1 year

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## V-LINE INSULATED COUPLINGS

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