



NAFFCO
PASSION TO PROTECT

Kitchen Hood Fire Protection System & Equipment



CERTIFICATE NO:463
(Ref redbooklive.com)



AN INTRODUCTION TO NAFFCO

NAFFCO was founded in Dubai, UAE to become the world's leading producer and supplier of life safety solutions. By recognizing the importance and convenience of having easy access to multiple safety services, we became specialized by offering complete solutions under one roof for all types of high quality firefighting equipment, fire protection systems, fire alarms, addressable emergency systems, security systems, custom-made vehicles such as fire trucks, ambulances, mobile hospitals and airport rescue firefighting vehicles (ARFF).

With the most talented and dedicated employees from around the world, NAFFCO has over 2,000 passionate engineers and over 6.5 million square feet of manufacturing facilities. We are currently exporting to over 100 countries worldwide.

NAFFCO manufactures UL, FM, BSI & Global Mark approved products in our facility in consistent with International Standards UL-DQS, BSI certifies for the Quality Management System against ISO 9001. Our Environmental (ISO 14001) & Occupational Health & Safety (ISO 45001) Management Systems have been certified by UL-DQS. Our Trucks & Vehicles division has been assessed & certified for Quality Management System requirement for Aviation, Space & Defense organization (AS 9100) by UL-DQS.

Our success is driven by our passion to protect; our vision is to become the world's number one provider of innovative solutions in protecting life, environment and property.



KITCHEN FIRE SUPPRESSION SYSTEM

INTRODUCTION

NAFFCO Kitchen Fire suppression system is designed with Fusible link or Sensor Tube in compliance to LPS 1223 Standard and approved by LPCB. for the fire protection during cooking operations. The System is a pre-engineered with the fixed nozzles extinguishing agent distribution network.

The Pre-engineered system extinguishes cooking fires caused by grease or grease-laden vapors (class F/K fire). The system does not require electrical power or connection to either domestic water supply or fire sprinkler supply lines. In case of fire, the system actuates automatically or by manual release.

NAFFCO pre-engineered Kitchen Fire suppression system is designed with 3, 5, 6, 7, 9, 10, 15 and 20 nozzles. One nozzle protects a surface area of approximately 1.6m² and extinguishes for example a fire caused by a burning 45 liter deep fat fryer. One Nozzle protects the hood and one nozzle for protection of plenum and other nozzle for the protection of cooking appliances that produce grease and grease-laden vapors as applicable depending on size of the kitchen equipment. The operating temperature range of the NAFFCO kitchen suppression system is +5°C to +60°C.

NAFFCO's Kitchen Fire Suppression system can be supplied with the wide range of cylinder and nozzle combinations to cover small to large size fryers.

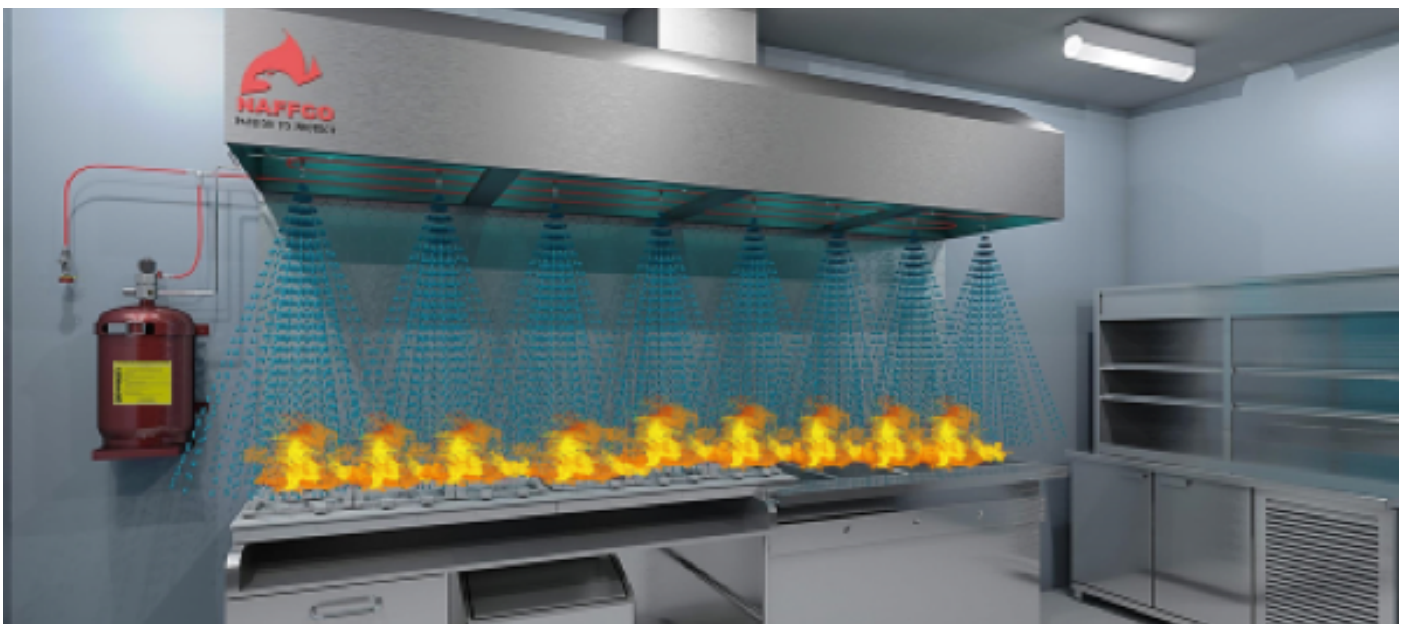
SPECIFICATIONS

Cylinder Capacity	No. of Cylinders	No. of Nozzles	Fusible Link	Sensor Tube
9.5 Liter	1	3	N100951	N200951
9.5 Liter	2	6	N100952	N200952
9.5 Liter	3	9	N100953	
15 Liter	1	5	N100151	N200151
15 Liter	2	10	N100152	N200152
15 Liter	3	15	N100153	
22.5 Liter	1	7	N1002251	N1002251
22.5 Liter	2	15	N1002252	
22.5 Liter	3	20	N1002253	

PRE-ENGINEERED KITCHEN FIRE SUPPRESSION SYSTEM USING HEAT SENSOR TUBE



The heart of the Kitchen Fire Suppression System is sensor tubing is a linear thermal fire detector and activation device which is pressurized and routed throughout the fire hazard area and works as a fire detector at a temperatures around 140°C to 170°C. When exposed to a fire condition the Kitchen Fire Suppression System sensor tubing ruptures anywhere along its entire length and activates the system within a few seconds.



SYSTEM ACTIVATION

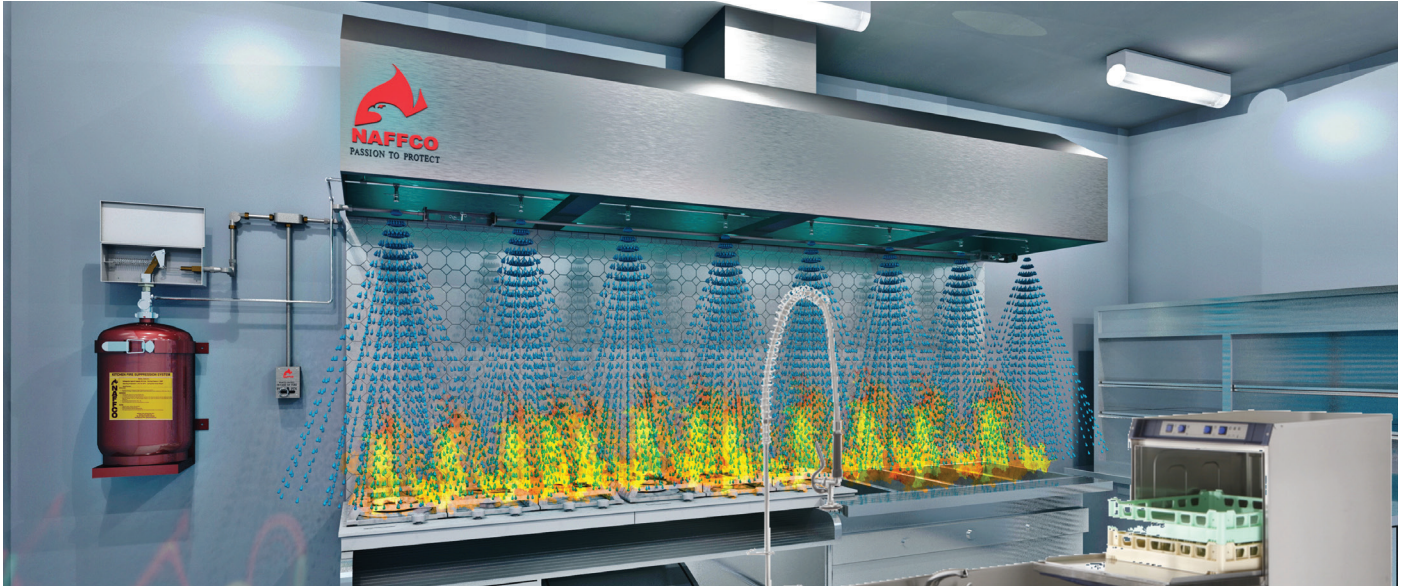
In case of fire, the system actuates automatically or by manual release device

- **Automatic Activation:** Fire is detected by the flexible, heat-sensitive, nitrogen pressurized sensor tubing, which must be routed throughout the hazard area. In case of fire, the sensor tube ruptures, the pressure in the sensor tube decreases suddenly and activates the system automatically.
- **Manual Activation:** The manual release device for system activation is to be used if a fire is recognized by the kitchen staff before the automatic activation has started. The manual release device must be accessible in the event of a fire and located along a route of egress from the kitchen area.

PRE-ENGINEERED KITCHEN FIRE SUPPRESSION SYSTEM USING HEAT FUSIBLE LINK



The heart of the Kitchen Fire Suppression System is Fusible Link which is connected to the mechanical control box by the steel rope and routed through the conduit pipe to the fire hazard area and works as a fire detector at a specific temperature of 360° F or 182°C. When exposed to a fire condition the fusible link breaks and thereby releasing the tension in the steel rope and activating the system within a few seconds.



SYSTEM ACTIVATION

In case of fire, the system actuates automatically or by manual pull station Fire Detection is in 2 ways:

1. Heat Sensing Fusible Link: In case of fire, the Fusible link will break and there will be loss of tension in the steel rope thereby activating the system automatically.
2. Manual activation giving signal to Fire Alarm Panel to actuate the valve through Remote Mechanical Pull Station connection.
 - **Automatic Activation:** Fire is detected by the Fusible Link which must be routed throughout the fire hazard area. In case of fire, the Fusible Link breaks and spring tension reduces immediately thereby activating the system automatically.
 - **Manual Activation:** The manual release device for system activation is to be used if a fire is seen visibly by the kitchen staff before the automatic activation has commenced. The manual pull station must be placed in an accessible location in the event of a fire along a route of egress from the kitchen area. Simply pull the pin handle for manual system activation.

IN EITHER AUTOMATIC OR MANUAL ACTUATION THE SYSTEM WORKS IN THIS MANNER:

1. When the system is activated, the valve at the cylinder opens and the extinguishing agent flows from the cylinder through the extinguishing line to the nozzles.
2. Protective nozzle covers ensure protection against contamination and blockage by grease or other cooking by-products that can inhibit the proper discharge of the extinguishing agent. The nozzle cover blows free of the nozzle prior to discharge and will not interfere with the discharge pattern.
3. The extinguishing agent, designed specifically for the challenges posed by oil and grease in a kitchen environment, is sprayed through the strategically positioned nozzles as a fine mist, which ensures prevention of grease splash and fire re-ignition, while extinguishing the fire and cooling the appliance.

Description	Product No.	Fusible link	Sensor Tube
Nozzle	N200041, N200051	✓	✓
Fusible Link	N1003535	✓	✗
Sensor Tube	N07800302	✗	✓
Head Valve	NF-KSV23BSP	✓	✗
Head Valve	NB07010505	✗	✓
Manual Release	NB04420115	✗	✓
Remote/Mechanical Control Box	N1002121	✓	✗
Cylinder Bracket	N1009501	✓	✓
Remote/Manual Pull Station		✓	✗
Pulleys (Corner & Three Way)	N100017/N100019	✓	✗
Micro switch		✓	✗

CYLINDER

The NAFFCO Kitchen Fire Suppression System is available in three (3) cylinder sizes, Cylinder Sizes are based on the flow points, so for example, the N1000951, is capable of supporting a maximum of three (3) flow points.

All Cylinders are manufactured, marked, and tested in accordance to EN3 Standard. Each cylinder is shipped pre-filled with extinguishing agent, and charged with nitrogen to a pressure of 218 psig (15 bar) @ 70°F (21°C).

TECHNICAL DATA

Cylinder Capacity	9.5Ltr	15Ltr	22.5Ltr
External Diameter	270 mm ± 1 mm		
Working pressure	15 bar		
Test pressure	30 bar		
Temperature Range	+5°C / + 60°C		
Material	CRCA Steel Sheet		



DIFFERENTIAL HEAD VALVE

MODEL NO: N B07010505

The valves used in Kitchen Fire Suppression Systems are exclusively designed by NAFFCO for the use in fire suppression systems that are actuated by the Kitchen Fire Suppression System sensor tubing - a linear thermal detector.



VALVE ASSEMBLY

MODEL NO: NF-RSV23BSP

NAFFCO-Kitchen Fire Suppression System Cylinders utilize the mechanical operate valve assembly. The valve comes equipped with a pin that will, upon system actuation, displace the valve in the open position assuring full discharge of the extinguishing agent. To reset the valve after actuation, simply pull the lever on the detent pin and the valve stem will return to its closed position

All NAFFCO-Kitchen Fire suppression system cylinders utilizes the mechanical operate valve assembly. The valve comes equipped with a pin that will, upon system actuation, displace the valve in the open position assuring full discharge of the extinguishing agent. To reset the valve after actuation, simply pull the lever on the detent pin and the valve stem will return to its closed position.



BRACKET KIT ASSEMBLY

MODEL NO: N1003535

The NAFFCO Kitchen Fire suppression system uses fusible link for system activation. Fusible links are designed to separate at specific temperatures, releasing tension from the fusible link detection line and thereby actuating the system.

Correct fusible link selection is an essential element in the design of any restaurant fire suppression system. After performing a temperature study to determine the maximum ambient temperature at the fusible link location, the appropriate fusible link should be selected. Bracket Kit Assembly containing bracket, end connector, Fusible Link, "S" hook and Steel Rope.

DESCRIPTION

The temperature rating of the fusible link is 360° F or 182°C. The fusible link is used to detect the fire hazard and thereby actuating the system's cylinders by the appropriate means as installed in the detection line to detect the fire hazard.



SENSOR TUBE

MODEL NO: N07800302

The nitrogen pressurized Kitchen Fire Suppression System sensor tubing is a linear thermal fire detector and activation device. When exposed to temperatures around 170°C the Kitchen Fire Suppression System sensor tubing ruptures and activates the system within a few seconds. The release of pressure in the Kitchen Fire Suppression System sensor tubing activates the valve and results in the discharge of the extinguishing agent.

The Kitchen Fire Suppression System sensor tubing must be replaced every 3 years or as and when there is a defect. The Kitchen Fire Suppression System sensor tubing must be replaced immediately.



MECHANICAL CONTROL BOX/ SYSTEM RELEASING MODULE

MODEL NO: N1002121

APPLICATION

To actuate discharge of single cylinder to discharge.
(for any size of cylinder).

OPERATING PRINCIPLE:

Any one of the following 3 actions will actuate the cylinder through mechanical control box:

- Fusible link bracket which is fixed to kitchen hood
- Pull pin removal from the control box
- Pull pin removal from the remote manual release

Mechanical Control Box/System releasing module for Multiple cylinders. For multiple cylinder installations, mechanical control box can simultaneously discharge multiple NAFFCO cylinders regardless of cylinder size.

All control boxes are connected to one detection system.

System discharge occurs when:

- A fusible link operates
- A pull pin in the mechanical control box connected to the steel wire rope is removed or
- The remote manual control is operated.

Each control box provided with SPDT or DPDT switches to operated electrical circuits. The cover of the mechanical control box is closed with a screw fastener.



MECHANICAL CONTROL BOX

ADDITIONAL FEATURES:

Mechanical Control Box can also be used to actuate mechanical gas valve and single (SPDT) or double (DPDT) pole Micro switches, if they are installed in the system.

ACCESSORIES

For initial set-up and maintenance of the Mechanical Control Box, a special cocking tool is required.

TANDEM CONTROL BOX

DESCRIPTION:

For multiple cylinder installations, one mechanical control box and two tandem control box can simultaneously discharge three NAFFCO cylinders regardless of cylinder size. All control boxes are connected to one detection system. System discharge occurs when:

- A fusible link operates,
- The pull pin in the mechanical control box connected to the detection cable is removed, or
- The remote manual control is operated.

Each control box provided with SPDT or DPDT switches to operated electrical circuits, and the tandem control box can operate a mechanical gas valve. The cover of the tandem control box is closed with a screw fastener. Each control box may be separated by a maximum of 15 feet of detection cable and 25 corner pulleys.



DISCHARGE NOZZLES

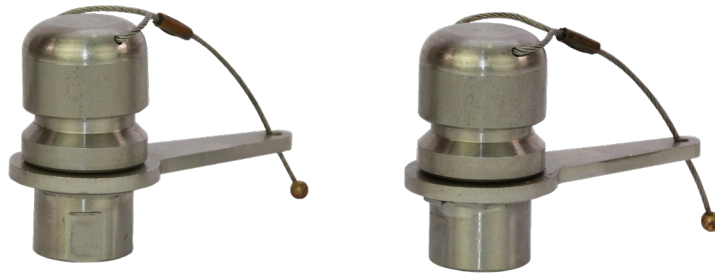
Kitchen Fire Suppression System unique nozzles are available in stainless steel, 360° dispersal patterns, with predetermined discharge orifices to meet the flow requirements of the pre-engineered system. They control the flow and distribute the agent into the protected area. Each nozzle is protected by a cap to prevent the entrance of grease vapors, moisture, or other foreign materials.

This cap is automatically ejected when the pressure increases in the stainless steel tubing. Discharge nozzles have been specifically developed for appliance, duct, and plenum applications. Each nozzle has a predetermined flow point value and comes equipped

with a blow-off cap to protect the end orifice from blockage. Each nozzle is identified by the model number stamped on the nozzle body for easy visual identification.

SPECIFICATION

Model No.	Placing Point
N200041	Fryer & Duct
N200051	Plenum



REMOTE MECHANICAL PULL STATION

MODEL NO: N1002122

The Remote Mechanical Pull Station provides Remote Mechanical Actuation of the systems releasing module. It is connected to the Systems Releasing Module / Mechanical control Box

The Model N1002121 Remote Mechanical Pull Station provides Remote Mechanical Actuation of the systems releasing module. It is connected to the Systems Releasing Module / Mechanical control Box with:

- 2mm Steel rope enclosed in 18mm EMT conduit with a corner pulley at each change of direction.
- A Steel rope which does not require a corner pulley at each change of direction or conduit or a combination of both.

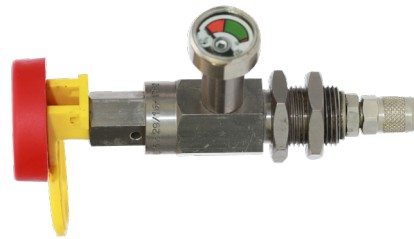


MANUAL RELEASE DEVICE

MODEL NO: NB04420115

The manual release device is an inline device which is connected to the end of the Kitchen Fire Suppression System sensor tubing. This device provides an independent possibility of operating the Kitchen Fire Suppression System without external power. To operate it, simply pull the safety device and push the red handle.

These operations result in the release of the pressurized nitrogen contained in the Kitchen Fire Suppression System sensor tubing, activating the valve and resulting in discharge of extinguishing agent. A product sticker on the manual release device explains how to operate the system.



CORNER PULLEY

MODEL NO: N100017

The Corner Pulley is used to change the direction of the system cable runs. The cable's protective conduit is attached to the corner pulley with the provided coupling nuts. The Corner Pulley is equipped with a ball-bearing pulley for minimum resistance to the cable travel.

DESCRIPTION:

- Can be installed in high or low temperature application.
- Can be used in and out exhaust hood.
- Provided with Stainless Steel ball-Bearing corner pulley for friction free movement.
- Compression conduit connections are used, which cause no cable interference, allowing friction free operation.

APPLICATION:

Used for every change in direction in detection line, gas valve and remote pull station line.



LIQUID SEAL DEVICE

MODEL NO: N1003536

Available for different pipe sizes. Locking Device has got no effect on system operation. Every penetration needs its own locking device. Locking device is made up of Brass with chrome plated finish for pleasing appearance.

Available for different pipe sizes. The Locking Device has got no effect on the system operation. Every penetration needs its own locking device. Locking Device is made up of Brass with Chrome Plated finish for an enhanced finish. Any number of Locking Devices can be used in a system.

APPLICATION:

Used for every change in direction in detection line, gas valve and remote pull station line.



THREE – WAY PULLEY

MODEL NO: N100019

Used for steel rope travel in two directions at the same time, in remote pull station line.

DESCRIPTION:

- Can be installed in low temperature applications.
- Can be installed only outside the exhaust hood.
- May be installed as shown or with bull outlet facing left or right.
- Compression conduit connections are used, which cause no steel rope interference, thereby allowing friction free operation.



MICRO SWITCHES

MS-DPDT

Used to open or close electrical circuits in order to

- Sound an alarm
- Trip a magnetic contactor to turn off an electrically operated cooking appliance.
- Operate an electrical gas valve.

APPLICATION:

The Locking Device is used to seal the penetration in the exhaust hoods or ducts when pipe passes through the same.

DESCRIPTION

- Micro Switch are available in two models, i.e. Single switch kit and double switch kit.
- Single switch kit provides a micro switch rated at 11amps-125/250 VAC.
- Double switch kit includes a micro switch rated at 11amps - 125 / 250VAC, 1/2amp-125VDC and a 15amp-125 / 250VAC, 1/2amp-125VDC micro switch that actuate simultaneously.
- Switch kit consists of one or two switches, and electrical wiring for each micro switch.
- Up to two micro switches can be installed in any control box. When more contacts are required, an optional pressure switch may be installed in the discharge piping.



**Note: When electrical appliances have a higher amp rating than the switches, a magnetic contactor, shunt trip panel or relay device must be used. These appliances cannot be wired directly to the micro switch.*

PRESSURE SWITCHES

MODEL NO: N028255048

The pressure switch can be connected either to the valve or to the manual release device. It provides additional electrical functions that may be required.

The pressure switch has a free contact, which can be used to shut off all sources of electric power or gas in case of system activation. If it is connected directly to the valve it monitors the pressure in the cylinder. If the pressure within the detecting tube drops below the pressure switches preset pressure, the switch opens the contact which for example causes an alarm because of the release of the fire extinguishing system.



**Note: When electrical appliances have a higher amp rating than the switches, a magnetic contactor, shunt trip panel or relay device must be used. These appliances cannot be wired directly to the micro switch.*

PRESSURE GAUGES

To indicate the low pressure within the detecting tube or valves often small pressure gauges are used.

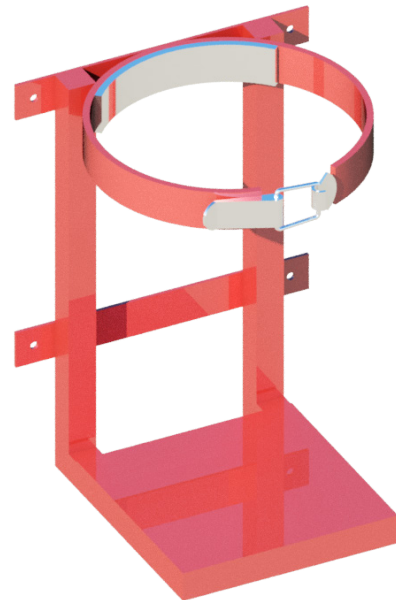
The recommended working pressure to secure a correct function of the system should not be below 11bar and not exceed 23bar on the whole temperature range (green range in gauge). The optimal filling pressure is 18bar.



MOUNTING BRACKETS

The Mounting Bracket is used to mount the Cylinders. The Model N1009501 Mounting Bracket is used to mount the different capacity Cylinders. The lock pins (N200500) are used to lock the two clamps of the cylinder bracket in order to secure the cylinders.

Cylinder Capacity	Bracket No
9.5 Liter, 15 Liter & 22.5 Liter	N1009501



TUBE FITTINGS

MODEL NO: NB07835027, NB07835028, NB07835037, NB07835029

Tube fittings warrant a safe and swiveling connection between two pipes or between a pipe and a nozzle or a stainless steel flexible hose. The cross panel-fitting (Art. No. N200730) should be used to cross a panel and to fix the tubing on this panel.

SPECIFICATION

Cylinder Capacity	Bracket No
9.5 Liter, 15 Liter & 22.5 Liter	N1009501





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In line with NAFFCO policy for continuous product development,
NAFFCO has the right to change specifications without prior notice.

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