CA-7 CHARGING INSTRUCTIONS

SAFETY

The pressure required for pre-charging will usually dictate whether Nitrogen from a high pressure cylinder or air pressure is used.

For low-pressure applications up to 7 Bar it is perfectly acceptable to pre-charge with air, the supply may be from an airline, foot or hand pump.

UNDER NO CIRCUMSTANCES SHOULD OXYGEN EVER BE USED DUE TO THE RISK OF EXPLOSION

Compressed gas is potentially dangerous. Only operators who have been trained in the safe use of gas equipment should carry out this procedure. Before charging is carried out ensure that the equipment being charged is capable of withstanding the intended pre-charge pressure and that it has been pressure tested.

This information together with the units Serial Number pre-fixed "FG" is either marked directly onto the damper Shell (Fig 1) or Nameplate (Fig 2) if fitted or by reference to the units pressure test certificate (Fig 3) which will reference the same "FG" Serial Number. If a plastic weather cap or valve guard is fitted this must be removed to access the details.

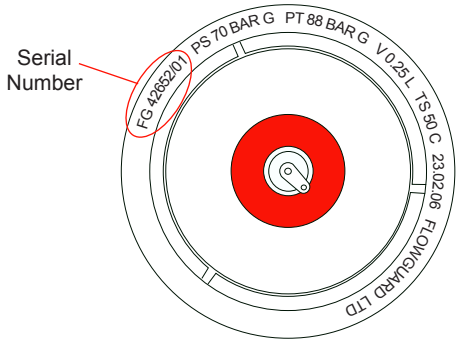

Fig 1
Marking on damper shell

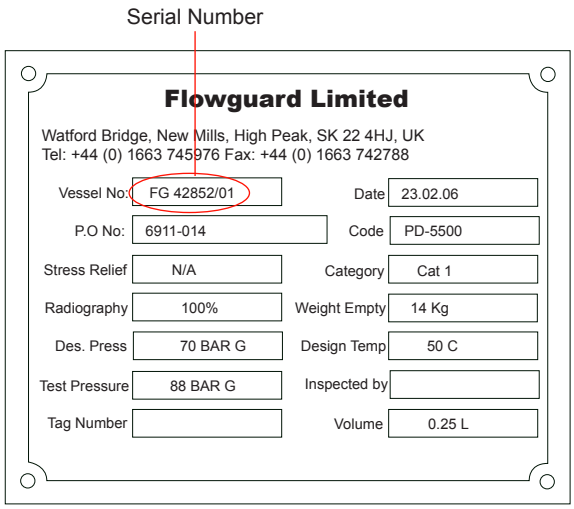

Fig 2
Flowguard Nameplate

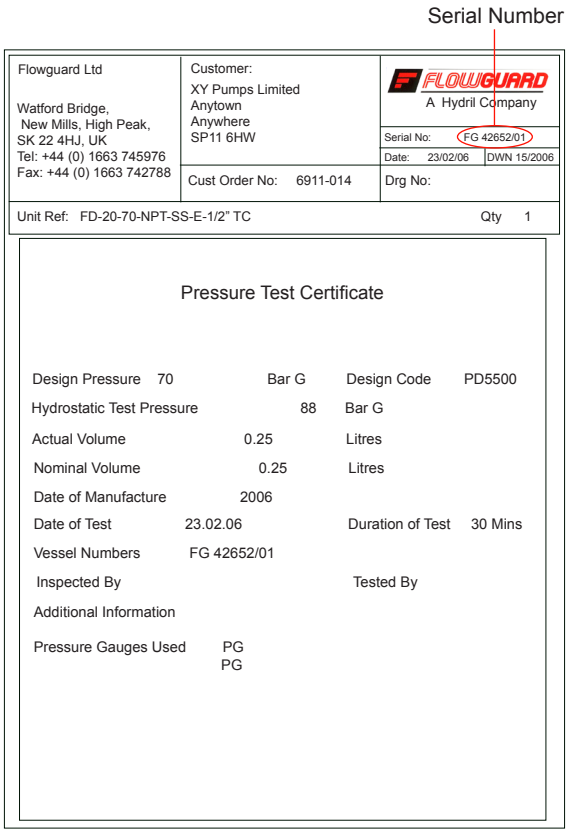

Fig 3
Pressure Test Certificate

Vessel markings according to the European Pressure Equipment Directive (PED) 97/23/EC are as follows.

Maximum allowable Design Pressure	=	PS
Maximum/Minimum Design Temp	=	TS
Test Pressure	=	PT

Non PED vessel marking are as follows.

Maximum allowable Design Pressure	=	DP
Maximum/Minimum Design Temp	=	DT
Test Pressure	=	HTP

The units normally adopted are Bar G. and Degrees C.

When charging from a high pressure Nitrogen cylinder a regulator should always be fitted to the cylinder. It is advisable that the outlet pressure of the regulator does not exceed the Design Pressure of the equipment being charged. When the unit is installed in a pipe work system it is imperative that the process line is at zero pressure and vented to atmosphere before and during charging or checking pre-charge pressures.

PRE-CHARGE PRESSURES.

When the Pre-Charge is set at the factory prior to despatch a label indicating the Pre-Charge Pressure in Bar Absolute is attached to the Shell. (See Fig. 4).

If this label is left blank then the pre-charge will be set at 2.0 Bar A. and a Warning Label (Fig. 5.) will be wired to the Gas Charging Valve stating that the unit is Pressurised to 2.0 Bar A for transport purposes only. The vessel will require charging on installation after ascertaining the correct operating parameters from the end user, or if specified, to the “Set Pressure” stated on the Warning Label.

In any event the Warning Label should not be removed until the vessel has received the correct Pre-Charge pressure and that information has been recorded on the “Pre-Charge Pressure Label”

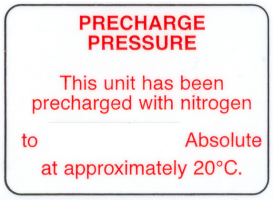

Fig 4
Pre-Charge Sticker

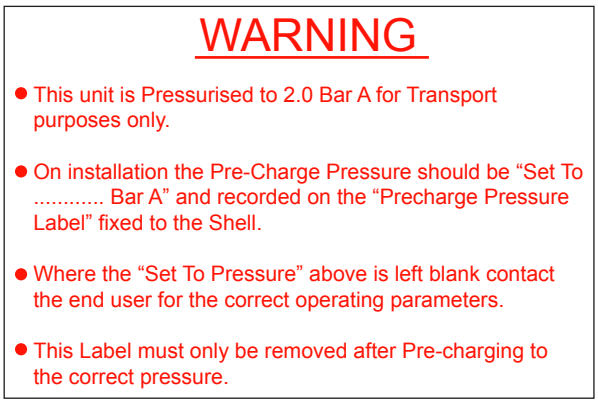

Fig 5 Warning Label

CA-7 CHARGING KIT

The CA-7 Charging Assembly is for use with the Flowguard 1215 Charging Valve and consists of a flexible hose, adapter, a body complete with pressure gauge, hose connection, vent valve and a swivel connection. (Fig 6)

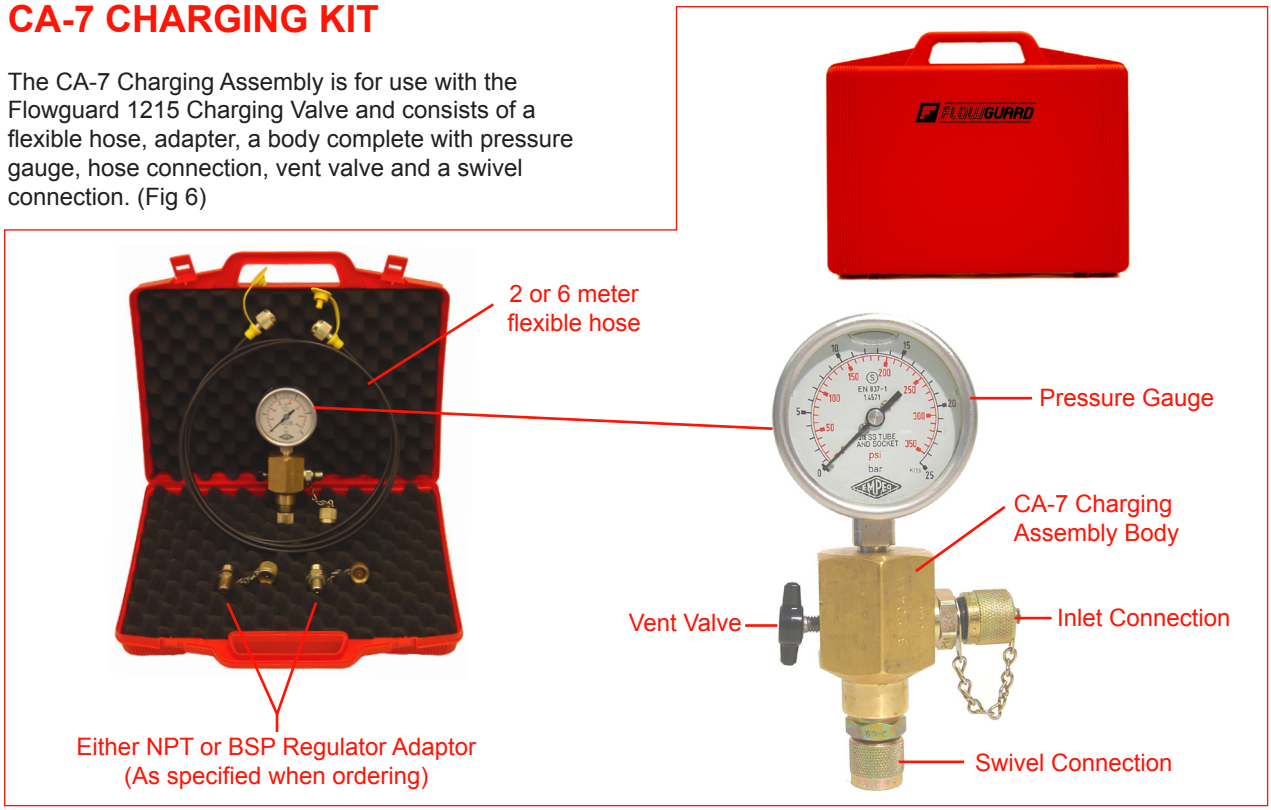

Fig 6 CA-7 Charging Kit

Fig 7
1215 Gas Charging Valve

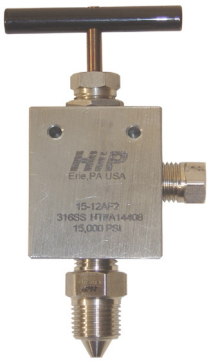

Fig 8
HIP 15-12AF2 Needle Valve

GAS CHARGING VALVES

The Gas Charging Valve is permanently attached to the unit, its purpose is to retain the gas pressure inside the unit, and provide a means of adjusting, venting or replenishing the gas pressure by means of a CA-7 Charging Assembly Tool fitted to it.

There are two types of charging valve currently used,

The 1215 Gas Charging Valve (Fig7) is fitted as standard for Design Pressures up to 630 Bar G and Design Temperatures up to 150°C.

The HIP 15-12AF2 Needle Valve (Fig 8) is fitted for Design Pressures from 630 Bar G to 1034 Bar G and Design Temperatures up to 200°C.

CHARGING FROM A NITROGEN CYLINDER - Via the Standard 1215 Gas Charging Valve

A protective plastic weather cap may be fitted to the unit to prevent ingress of moisture, this must be removed to expose the charging valve.

Depending on the amount of headroom available above the Damper there are two options as to the method of operation of the charging assembly. All units are to be in a vertical position whilst being charged.

OPTION 1 - Unlimited Headroom

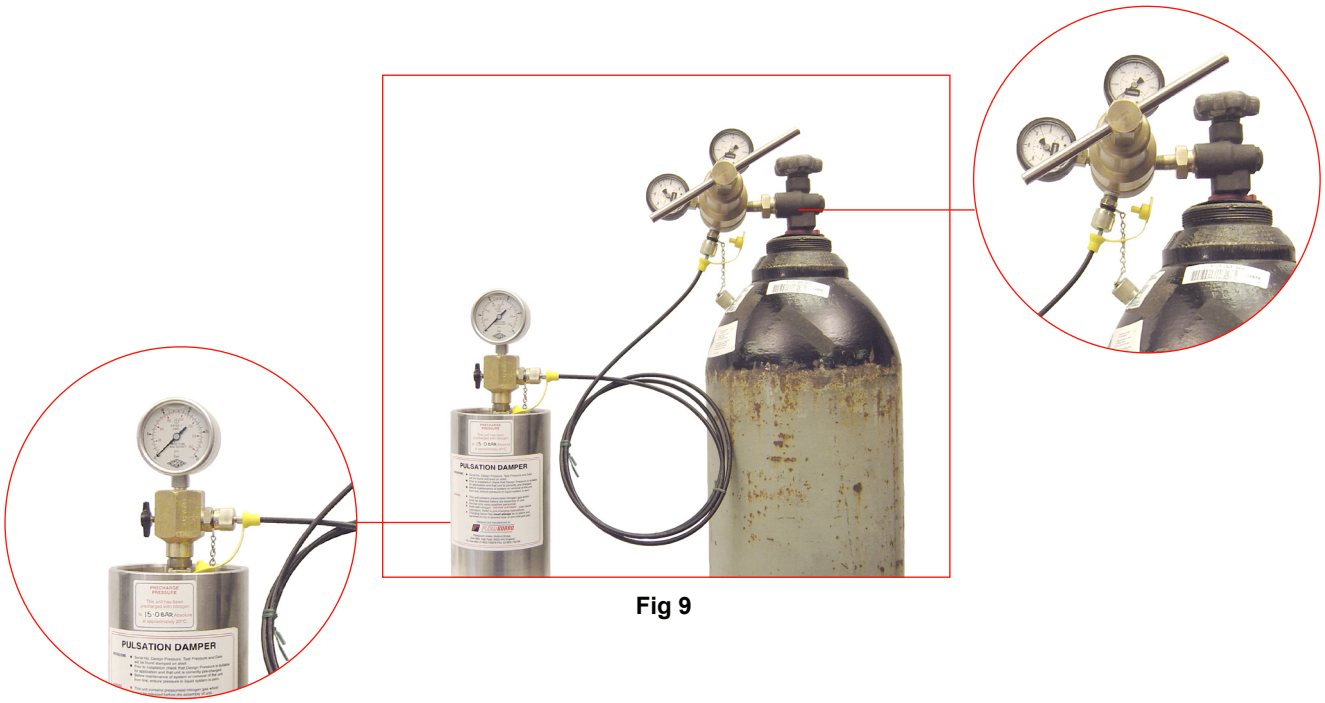

Fig 9

1. Check that the gauge fitted to the charging assembly is the correct range to cover the pressure to which you will be charging the damper. If you are changing the pressure in a damper which has already been charged the gauge should be suitable for the pressure already in the damper or alternatively the damper pre-charge should be vented first with the gauge removed.

2. Ensure that the vent valve on the charging assembly is closed, attach charging assembly via its swivel connection to the damper, the pressure contained in the damper will now register on the pressure gauge.

3. To reduce an existing pre-charge, open the vent valve slightly to let gas out. When the pressure has dropped to the correct level close the vent valve and watch the gauge. The pressure may climb again slightly. This is because of the pressure drop through the valve due to its small bore size. If a large amount of gas has been released the pressure may rise again for a few minutes as the temperature stabilises.

4. To re-charge an empty damper or increase a pre-charge pressure, fit the pressure regulator to the Nitrogen cylinder, a non-venting regulator is best. Fit the adapter supplied to the outlet port of the regulator and attach the hose, the other end can now be attached to the charging assembly body.

5. Let pressure into the damper very slowly using the regulator, it may be necessary to have the pressure showing on the gauge slightly higher than that needed in order to overcome the pressure drop in the hose and valve. When sufficient gas has entered the damper close the pressure regulator. If the pre-charge is too high follow the steps in paragraphs 2 & 3 to reduce it.

6. Once the required pre-charge is set ensure that the regulator is backed right off or that the cylinder valve is closed. The charging assembly can be removed from the damper simply by unscrewing the swivel connection from the charging valve. A small amount of gas will be trapped between the swivel connection and the nitrogen regulator. The charging valve is specifically designed to vent this pressure as it is being unscrewed whilst locking the pre-charge pressure in the damper.

7. After removal of the charging assembly ensure that the knurled cap on the charging valve is replaced.

OPTION 2 - Restricted Headroom

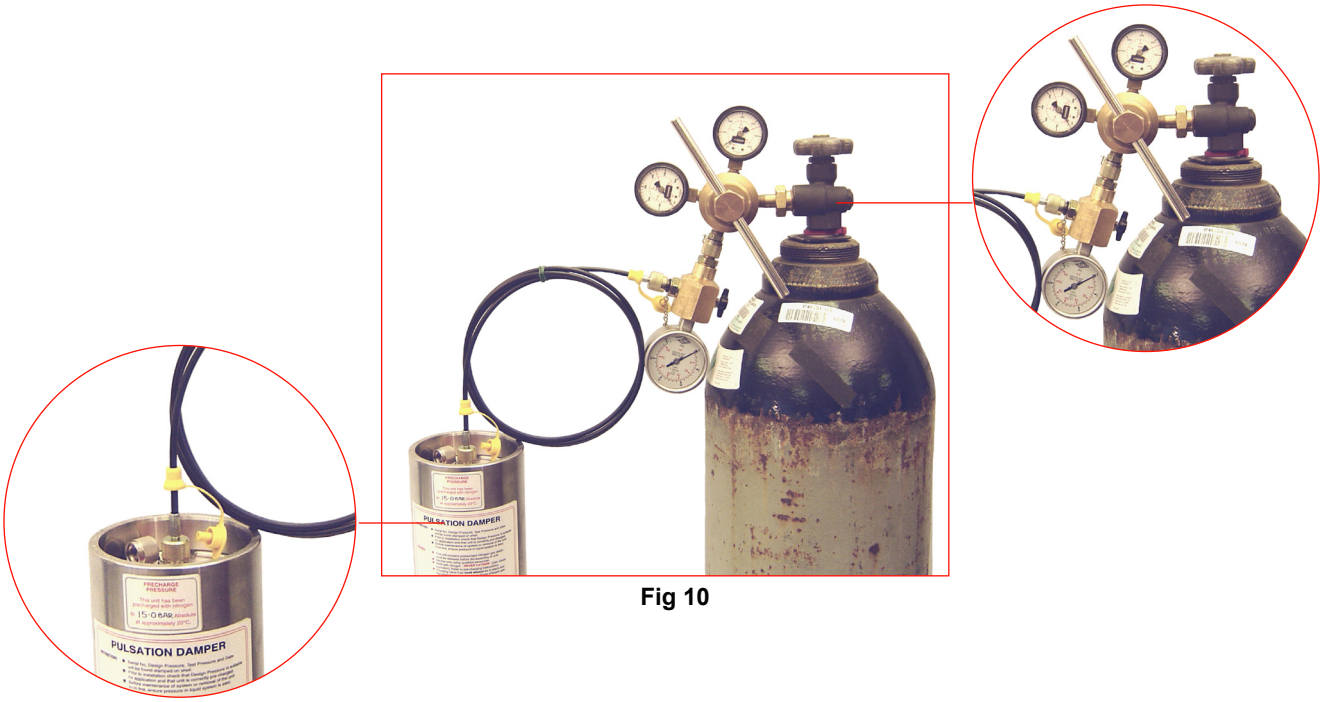

Fig 10

1. Check that the gauge fitted to the charging assembly is the correct range to cover the pressure to which you will be charging the damper. If you are changing the pressure in a damper which has already been charged the gauge should be suitable for the pressure already in the damper or alternatively the damper pre-charge should be vented first with the gauge removed.

2. To re-charge an empty damper or increase/reduce a pre-charge pressure; fit the pressure regulator to the nitrogen cylinder, a non-venting regulator is best. Fit the adapter supplied to the outlet port of the regulator and attach the charging assembly to the regulator via the swivel connection provided, the vent valve must be closed. Ensure that the hose is attached to the charging assembly before attaching the other end to the damper, the pressure contained in the damper will now register on the pressure gauge.

3. To reduce an existing pre-charge, open the vent valve slightly to let gas out. When the pressure has dropped to the correct level close the vent valve and watch the gauge. The pressure may climb again slightly. This is because of the pressure drop through the valve and hose due to their small bore size. If a large amount of gas has been released the pressure may rise again for a few minutes as the temperature stabilises.

4. To pre-charge an empty damper or increase the pre-charge pressure; let pressure into the damper very slowly using the regulator, it may be necessary to have the pressure showing on the gauge slightly higher than that needed in order to overcome the pressure drop in the hose and valve. When sufficient gas has entered the damper close the pressure regulator. If the pre-charge is too high follow the steps in paragraphs 2 & 3 to reduce it.

5. Once the required pre-charge is set ensure that the regulator is backed right off or that the cylinder valve is closed, the hose can be removed from the damper simply by unscrewing the swivel connection from the charging valve. A small amount of gas will be trapped between the charging assembly and the damper. The charging valve is specifically designed to vent this pressure as it is being unscrewed whilst locking the pre-charge pressure in the damper.

6. After completion the knurled cap on the charging valve must be replaced.

CHARGING FROM A NITROGEN CYLINDER - Via HIP Needle Valve

A steel valve guard fitted with a protetive plastic weather cap may be fitted to the unit, both the plastic cap and guard must be removed to facilitate fitting the charging assembly.

When an HIP Needle Valve is fitted to the unit, the Blank Gland (Fig 11) must be removed and a High Presssure Charging Adaptor with a cone seat (Fig 11a) fitted into the side of the valve. Charging is carried out through a 1215 Charging Valve supplied with the Charging Assembly which is screwed into the Adaptor (Fig 12)

Fig 11a

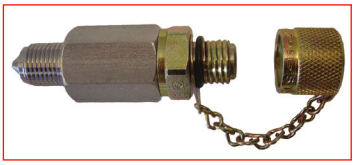

Fig 11a
High Pressure Adaptor

Fig 12

With the Adaptor and 1215 Valve fitted the CA-7 Charging Assembly can be attached (See Fig.13a) after opening the needle valve slowly, pressurising, de-pressurising and checking can be carried out as detailed in Option 1 and 2 above, once the work is completed the needle valve must be closed before the CA-7 Charging Assembly and Adaptor is removed and the Blank and Gland refitted to the Needle Valve .

Fig 13a Option 1- Unlimited Headroom

Fig 13b Option 2- Restricted Headroom

Fig 13

CHARGING FROM AN AIR SUPPLY.

For low-pressure applications up to 7 Bar it is perfectly acceptable to pre-charge with air, the supply may be from an airline, foot or hand pump.

For this type of application an Adapter, Part No. SK-AD-15/11 (Fig 15) can be supplied to convert the 1215 valve to allow the use of automotive tyre inflation equipment for charging.

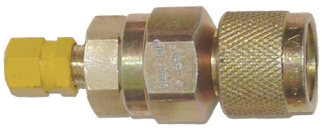

Fig 15
Adapter (Part No: SK-AD-15/11)

Fig 14
Charging from an air supply

BASIC ACCESSORIES AND SPARES

DESCRIPTION	PART NUMBER	
Standard 1215 stainless steel charging valve – BSP thread	SK-CV-1215/B	Fig 7
Standard 1215 stainless steel charging valve – UNF thread	SK-CV-1215/U	
High Pressure Charging Adaptor	SK-AD-15B/HIP-AF2	Fig 11a
Low Pressure Adapter, allows 1215 valves to be charged using a foot pump	SK-AD-15/11	Fig 15
2 Metre Flexible hose	SK-TL-15/15-2	Fig 6
6 Metre Flexible hose	SK-TL-15/15-6	
Charging Assembly with ¼" NPT regulator connection	CA7/N	
Charging Assembly with ½" UNF regulator connection	CA7/U	
Charging Assembly with ¼" BSP regulator connection	CA7/B	

The charging assembly is supplied with one or more pressure gauges. The current range consists of 0-2, 0-7, 0-10, 0-25, 0-100, 0-250, 0-400 & 0-600, e.g. CA7/B-7 (CA with BSP adapter and 0-7 Bar pressure gauge).

Note: For reasonable accuracy and also for safety reasons the pre-charge being measured should be between 50 & 75% of the gauge range.

Pressure gauge, xx denotes the range	SK-TL-PG/xx	Fig 6

SERVICE TOOLS

Levers Set Short (325mm) for removing gas headers	SK-TL-LVR/S
Lever Set Long (625mm) for removing gas headers	SK-TL-LVR/L
Gas Header Extractor with 1/4" BSP Thread	SK-TL-GHX/B
Gas Header Extractor with 1/2" UNF Thread	SK-TL-GHX/U
Peg Spanner for removal of Threaded Retaining Rings (on HG Series units)	SK-TL-PSR

FLOWGUARD

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