



## Water Spray Nozzle

# MEDIUM VELOCITY WATER SPRAY NOZZLE



## TECHNICAL DATA

|  |  |             |
|--|--|-------------|
| MODEL  | MV-A & MV-AS Brass Material<br>MV-B & MV-BS Stainless Steel Material<br>MV-E is with Aluminium Bronze Material   |             |
| TYPE   | MV-A, MV-B & MV-E are without strainer<br>MV-AS & MV-BS are with strainer  |             |
| MAXIMUM WORKING PRESSURE                     | 12 Bar (175 PSI)   |             |
| END CONNECTION                               | ½" BSPT<br>(½" NPT OPTIONAL)   |             |
| MATERIAL                                     | Refer Table-I  |             |
| INCLUDED WATER SPRAY ANGLE FOR EACH K-FACTOR | 140°, 120°, 110°, 100°, 90°, 80° & 65°   |             |
| K FACTOR                                     | MV-A/MV-B & MV-E   | MV-AS/MV-BS |
|  | Metric (US)  | Metric (US) |
|  | K-18 (1.26)  | K-18 (1.26) |
|  | K-22 (1.54)  | K-22 (1.54) |
|  | K-30 (2.10)  | K-30 (2.10) |
|  | K-35 (2.45)  | K-35 (2.45) |
|  | K-41 (2.87)  | K-41 (2.87) |
|  | K-51 (3.57)  |             |
|  | K-64 (4.48)  |             |
|  | K-79 (5.53)  |             |
|  | K-91 (6.37)  |             |
|  | K-102 (7.14)   |             |
| WEIGHT (Approx)                              | 0.110 Kg   |             |
| FINISH                                       | MV-A & MV-AS<br>Natural Brass finish,<br>Chrome plated Nickel,<br>Electroless Nickel plated,<br>Epoxy powder coated.<br>MV-B, MV-BS & MV-E<br>Natural finish |             |
| APPROVALS                                    | Nozzle - UL Listed,<br>FM Approved &<br>Lloyd's Register Type<br>Approved<br>Blow-off Plug- FM Approved  |             |
| ORDERING INFORMATION                         | Specify K-Factor, spray angle,<br>finish, model and end<br>connection  |             |



## DESCRIPTION

The HD® Medium Velocity Water Spray Nozzles are open type (non-automatic nozzles, designed for directional spray application in fixed fire protection system.

Medium velocity water spray nozzle has an external deflector, which discharges water in a directional cone shaped pattern of small droplet size. The water is uniformly distributed over the surface to be protected.

The Nozzles are effectively designed to apply water to exposed vertical, horizontal, curved and irregular shaped surfaces to allow cooling to prevent excessive absorption of heat from external fire and avoid structural damage or spread of fire. In some application nozzles may be installed to control or extinguish the fire depending on water design density as per applicable codes. The nozzle is used in deluge water spray system for special hazard fire protection application.

As the design and intent of specific water spray system may vary considerably, MV nozzle is made available in several combinations of orifice sizes and spray angles.

The minimum desirable pressure to achieve a reasonable spray pattern is 1.4 Kg./Sq.cm. The water distribution pattern as shown in the graph in following pages is at an average pressure of 2.0 Kg/Sq.cm. The change in pressure between 1.4 to 3.5 Kg./sq.cm. does not affect considerable change in spray angle.

The spray pattern shown is with indoor application. System designer must consider wind velocity while designing the system for outdoor application. Field obstruction if any affecting the spray pattern of the nozzle must also be considered. The nozzle may be oriented to any position as deemed necessary to cover the hazard.

The Blow-off plugs can be used to prevent the depositing of foreign materials in the water way of the nozzles, which could interfere with discharge of the spray nozzle. Blow-off plugs are optional and are FM Approved. Blow-off Plugs have identification mark with respect to K factor. Blow off plug for nozzle having K-factor 22 will have identification mark of 22. Minimum operating pressure for nozzle having Blow-off plug is 1.4 Kg./Sq.cm (20 PSI).

The main pipeline strainer as per NFPA-15 is required for system utilizing nozzle orifice diameter less than 9.5mm (3/8 inch), i.e. MV Nozzle having K-factor 51 and less, and also for the system water likely to contain obstructive materials.

## INSTALLATION & MAINTENANCE

The spray nozzle must be handled with due care. For best results, the storage as well as any further shipment be made in original packing only.

Nozzle which is visibly damaged should not be installed. Use Teflon tape or soft thread sealant on male thread of the nozzle.

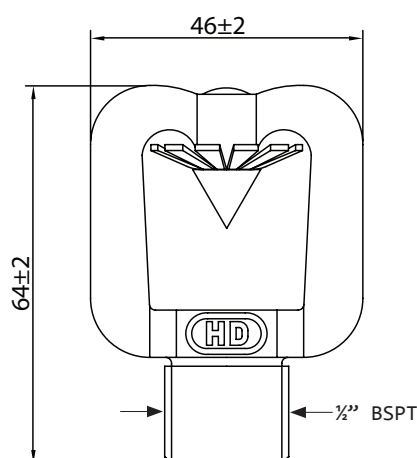
The nozzles must be hand tightened into the fitting. After hand tightening use Nozzle Wrench-NW-M for wrench tightening in to nozzle fittings. Excessive tightening torque may result into serious damage to nozzle arms and the deflector, which may affect spray pattern of the nozzle and its performance.

It is recommended that water spray system be inspected regularly by authorised technical personnel.

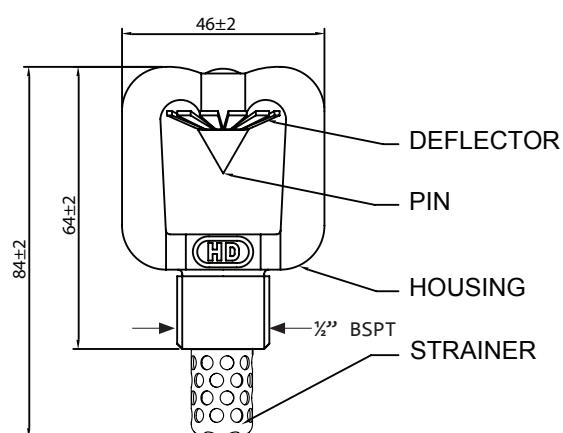
The nozzle must be checked for atmospheric effects, external and internal obstruction, blockage if any. The system must be operated with optimum water flow at least twice in a year or as per the provisions of NFPA /TAC or local authority having jurisdiction.

The owner is solely responsible for maintaining the water spray system and the components there in so that it performs properly when required.

### MODEL MV-A, MV-B & MV-E



### MODEL MV-AS, & MV-BS



### Nozzles with Blow-off Plug

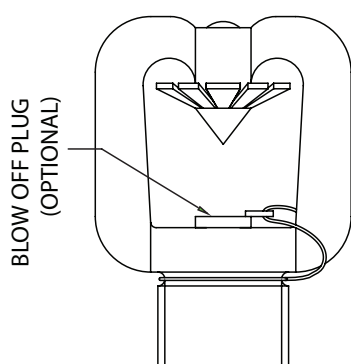
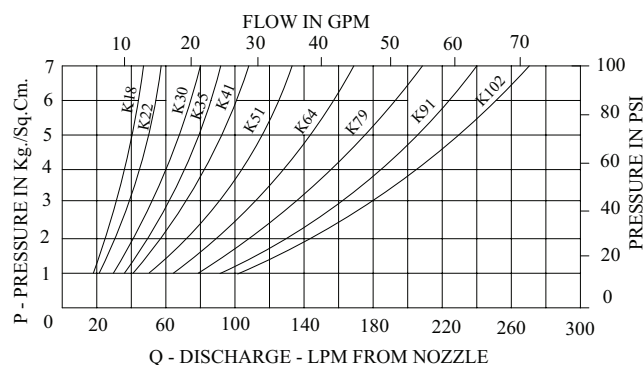


TABLE - I : MATERIAL OF CONSTRUCTION

| COMPONENT    | MODEL MV-A & MV-AS                            | MODEL MV-B & MV-BS              | MODEL MV-E  |
|--------------|---|---------------------------------|---|
| HOUSING      | BRASS, IS:291 GR.-1 (EQUIVALENT TO ASTM B21)  | A351-CF8M                       | Aluminium Bronze IS:305-AB1 (Equivalent to ASTM B148) |
| PIN          | BRASS IS:291. GR. -1 (EQUIVALENT TO ASTM B21) | ASTM-A479 GR 31803              | Ph. Bronze IS:7811 (Equivalent to ASTM B139)          |
| DEFLECTOR    | BRASS IS:2768 (EQUIVALENT TO ASTM B36)        | ASTM A240 GR 2205               | Ph. Bronze IS:7814-GR-II (Equivalent to ASTM B103)    |
| STRAINER     | COPPER (FOR MV-AS)                            | STAINLESS STEEL 316 FOR (MV-BS) | -   |
| BLOW-OFF CAP | ELASTOMER                                     | ELASTOMER                       | ELASTOMER   |

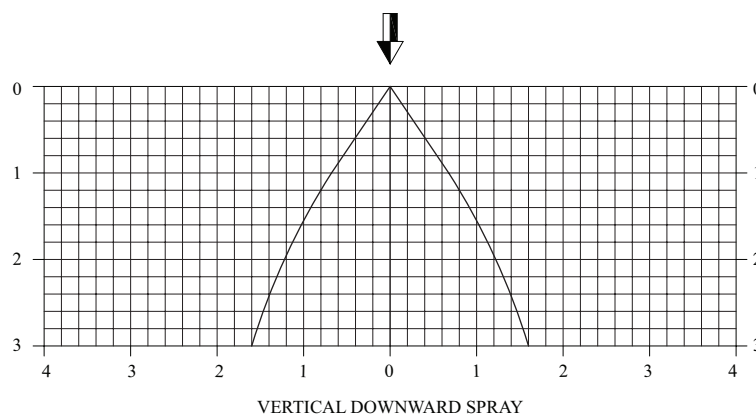
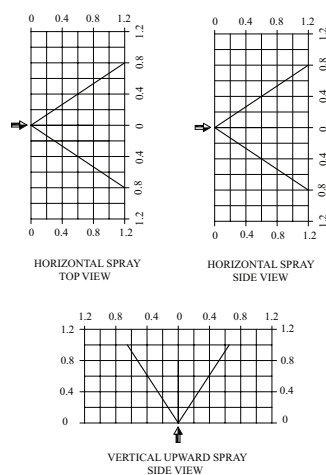
## DISCHARGE CHARACTERISTICS



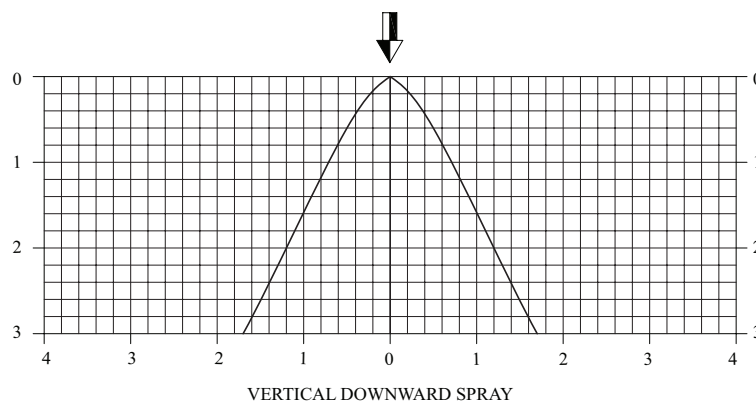
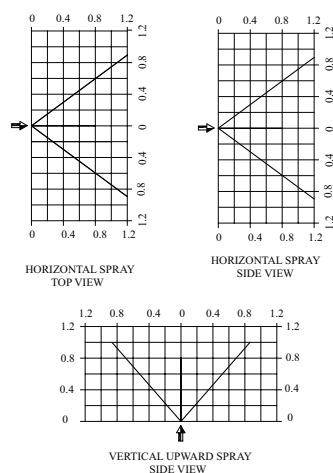
$Q = K \sqrt{P}$  where P is supply pressure in Kg/sq.cm., K = nozzle constant (K-factor) in metric  
 US K factor = Metric K factor  $\div 14.2745$

## SPRAY PATTERN

### SPRAY ANGLE 65°



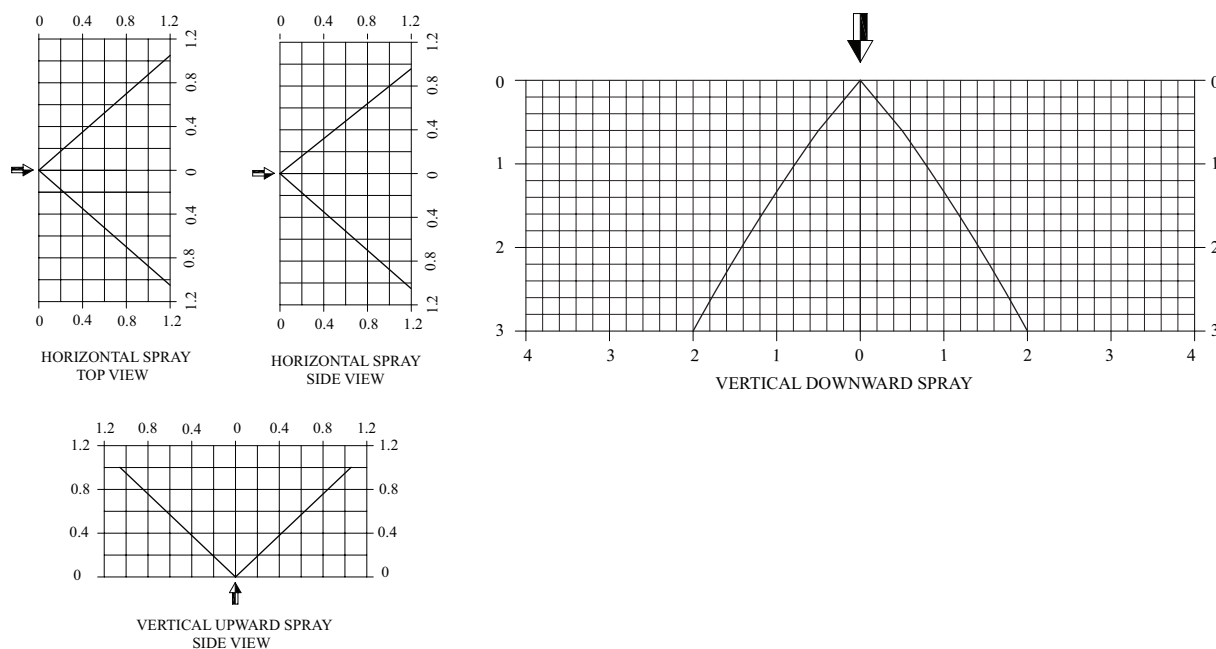
### SPRAY ANGLE 80°



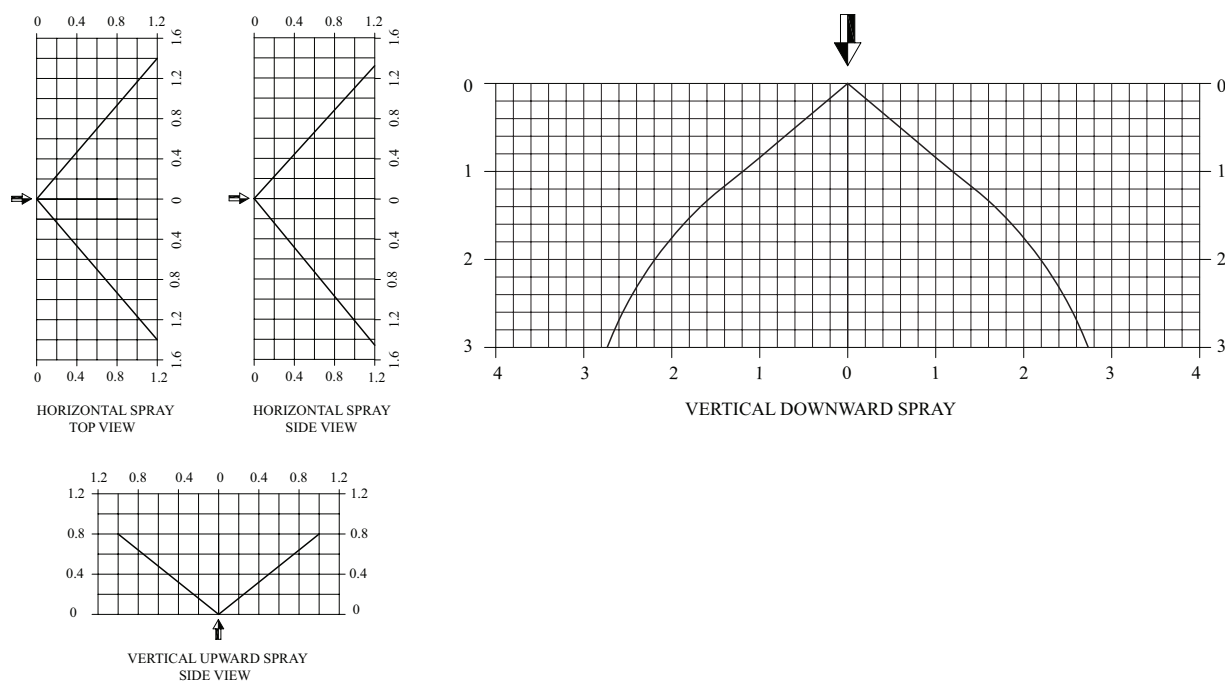
ALL DIMENSIONS ARE IN METERS

## SPRAY PATTERN

### SPRAY ANGLE 90°



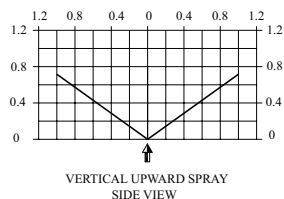
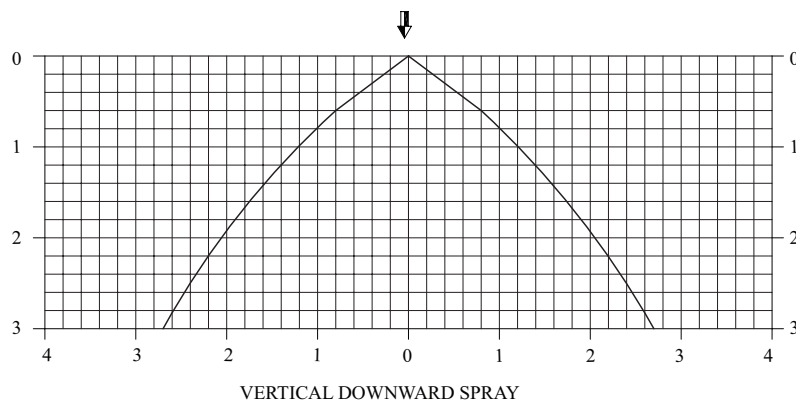
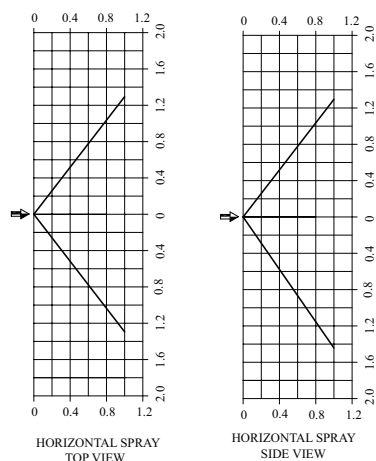
### SPRAY ANGLE 100°



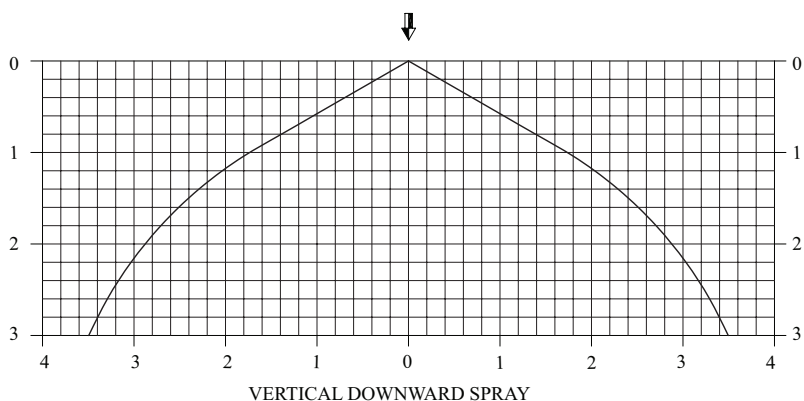
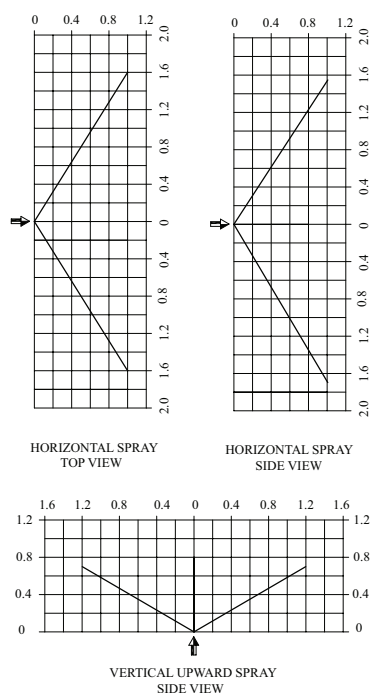
ALL DIMENSIONS ARE IN METERS

## SPRAY PATTERN

### SPRAY ANGLE 110°



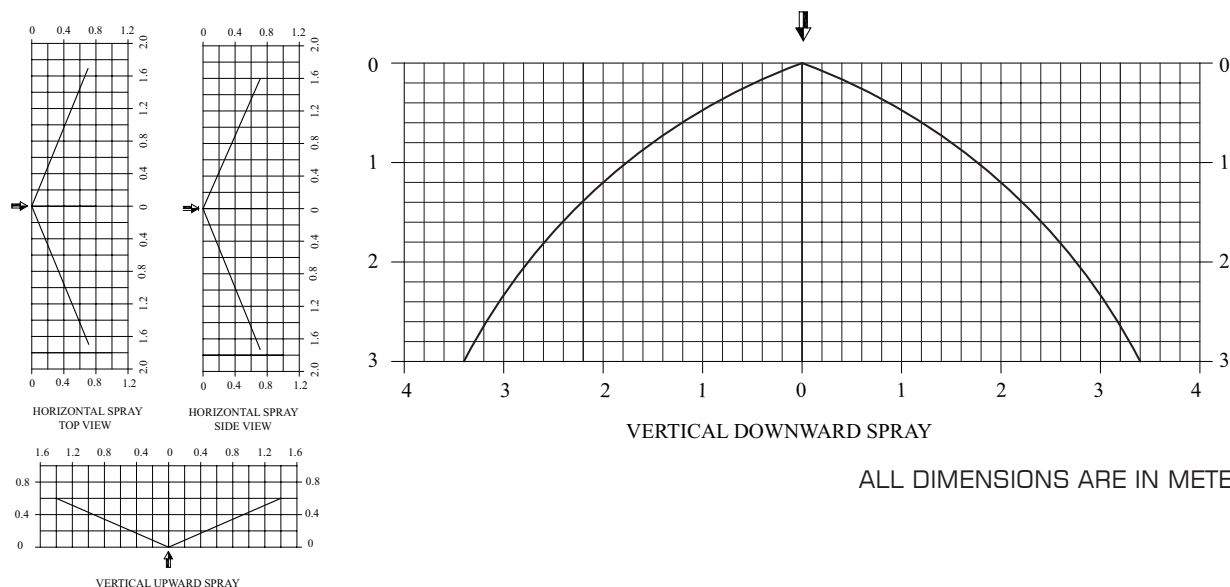
### SPRAY ANGLE 120°



ALL DIMENSIONS ARE IN METERS

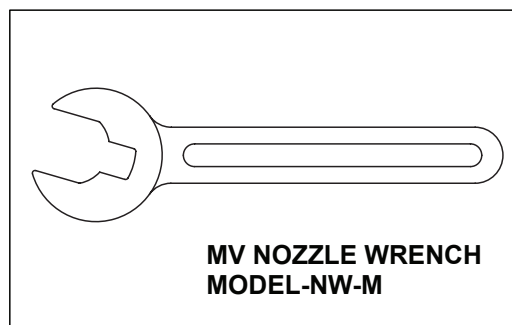
## SPRAY PATTERN

### SPRAY ANGLE 140°



#### Note :

- 1) The design spray pattern given in graph are included spray angle of 65 Deg. to 140 Deg. at nozzle inlet pressure of 1.4 to 4.1 Bar. When the nozzle pressure above 4.1 Bar is applied, the coverage area will decrease because the spray pattern tends to draw inward at higher pressure. Consult HD Technical Services for pressure upto 12.1 Bar.
- 2) The spray data are obtained from the test in still air.



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