

## 1.1 Description

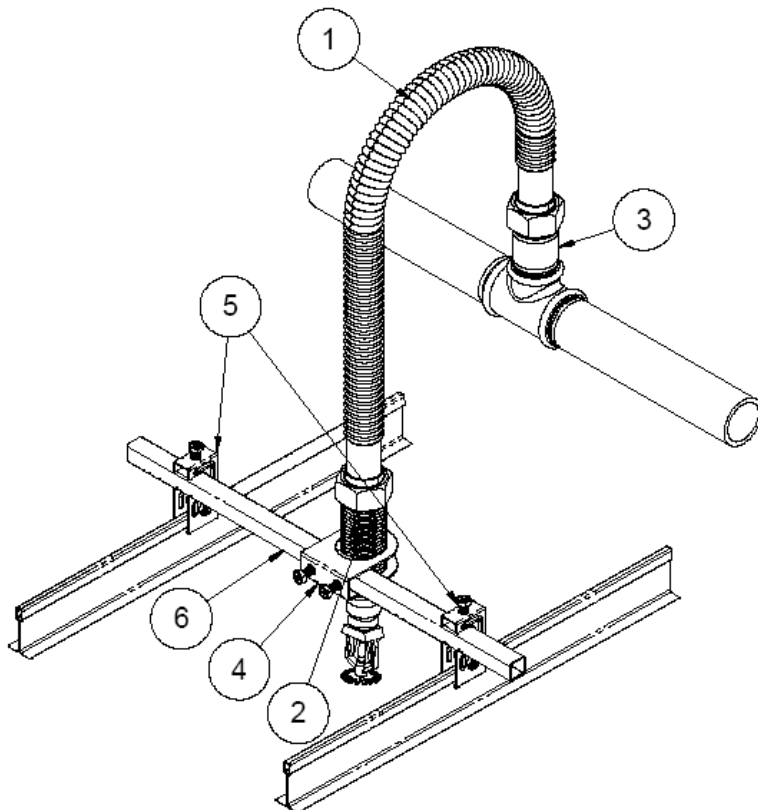


Rapidrop® is the easiest system to enable installers to fit a sprinkler head in the correct position in a suspended ceiling. Installation is done in 10 to 15 minutes and does not required any special preparation and finish.

Easy, simple and efficient !

## 1.2 Components

Rapidrop in its standard model is including a corrugated stainless steel flexible with two nuts inlet and outlet (SP model), a nipple, a reducer , one bar and brackets. These brackets are fitted to the ceiling tile support rail to locate and secure the sprinkler in the correct position. As well as considerably reduced installation time, the risk of mess (from cutting and threading activity associated with the traditional armoover method) in the clean area below the suspended ceiling is eliminated, allowing other activities to proceed more efficiently.



Ref.	Description
1	SP or SPB flexible
2	Reducer (110x1/2, ...)
3	Nipple 1"
4	Bracket A
5	Brackets B
6	Bar

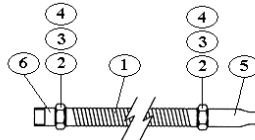
Fire protection

### 1.2.1 Flexible pipes

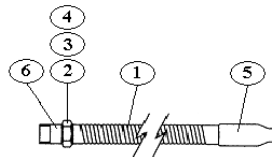
Flexible pipes are in standard models made of 304 stainless steel and on specific SS316.

Six Rapidrop models are available according to the type of flexible pipes:

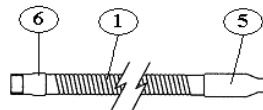
- **SP** models made of a corrugated flexible pipe fitted with two nuts at its ends, plus a reducer and a nipple (LPCB, UL, APSAD, CSTB approved).



- **SPN** models made of a corrugated flexible pipe with just one nut at an end. The reducer is welded to the flexible pipe. The nut enables to fit the nipple (LPCB, UL, APSAD, CSTB approved).



- **SPW** models made of a corrugated flexible pipe. Nipple and reducer are welded on the pipe. (LPCB, UL, APSAD, CSTB approved).



- **SPB** models made of a braided flexible with two nuts at its end, plus a reducer and a nipple (FM, APSAD, CSTB approved).
- **SPNB** models made of a braided flexible pipe with just one nut at an end. The reducer is welded to the flexible pipe. The nut enables to fit the nipple (FM, APSAD, CSTB approved).
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- **SPWB** models made of a corrugated flexible pipe. Nipple and reducer are welded on the pipe. (FM, APSAD, CSTB approved).

Rapidrop® (including flexible pipe, nipple and reducer 110 mm) are available on following lengths:

- 0.78 m
- 1.00 m (Not available with FM approval)
- 1.22 m
- 1.54 m
- 1.88 m
- 2.54 m
- 3.22 m

Lengths over 1.60 metres require an intermediate support the support must be insulated from contact with the corrugated stainless steel tube to protect against corrosion between different materials.

Any lengths can be ordered as far as quantity justify a special manufacturing.

In theory, the life of 304 stainless steel with 0.3 mm thickness is 120 years. It is semi permanent.

#### **ADVANTAGES :**

- **Rapidrop® is manufactured by a specialised company only working of SS pipes.** Their experience make that Rapidrop® is unique and different from any other flexible.



- When the pipe is rolled with classical methods to give its helicoidally corrugation, upper and lower points become finer than the original pipe. These points are the most subjected to stress when flexible pipe is bended. With Rapidrop®, and because of its special manufacturing process the upper and lower points of the corrugated pipe are made thicker than the original thickness of the pipe. Rapidrop® is the only flexible pipe to be thicker on stresses points.
- Rapidrop® has an outside diameter of 27 mm with an internal diameter of **26.4 mm**. Pressure losses due to water friction are thus lower than other flexible pipes which have an outside diameter of 25 mm and of course a lower inside diameter. At the end, pressure losses can be up to 20 % lower with Rapidrop despite longer lengths than competitors.

### 1.2.2 Nuts

Nuts are made of brass zinc plated. They are used to connect the flexible pipe to reducer and nipple.

### 1.2.3 Isolation ring

Isolation ring is made of Nylon (66) and is used at flexible ends to isolate it from nuts. It enables to avoid any corrosion between different materials.

### 1.2.4 Packing seals

A packing seal made of NBR is also fitted on each flexible ends. It enable to avoid any leakage when connecting reducer and nipple. NBR is a semi permanent material. We know from history of NBR that it is used for 50years in the plumbing and heating industry without problems. We recommend to change these NBR seals when time has come to modify installation to new standards.

### 1.2.5 Reducer

Reducer is made of carbon steel zinc plated for the SP model (delivered as standard). It enables to fit sprinkler first time to the right height and to secure this height whatever the ceiling light movements may occur. Two lengths of reducers can be ordered: 110 mm and 170 mm. The length choice must be done according to ceiling configuration.

The reducer is SS304 on SPN/B and SPW/B models and directly welded to the flexible pipe.

### **ADVANTAGES :**

- **The reducer gets flat faces to secure it on the bar when screwing the bracket A..** Risks to unscrew the nut when installing a sprinkler head are suppressed.
- **The reducer is grooved on most of its length** in order to allow a perfect positioning of the sprinkler head according to ceiling. It also avoid that the position move during the years or after during a sprinkler activation.
- **The reducer is chamfered.** It avoids to crush the NBR seal when tightening nut. **Rapidrop® is designed to enable the use of classical tools and do not require any limitation of tightening forces.**

### 1.2.6 Nipple

Nipple is made of carbon steel zinc plated. It links It allows to connect the flexible pipe to the supply sprinkler outlet pipe.

The nipple is SS304 on SPW/B models and directly welded to the flexible pipe.

### **ADVANTAGES :**

- **A chamfered inside the nipple** avoiding to crush the NBR seal when tightening nut. **Rapidrop® is designed to enable the use of classical tools and do not require any limitation of tightening forces.**
- **The 25 mm nipple is specially metric threaded on one side to avoid installers to fit a wrong nipple for connecting with flexible pipe.** It means that it can be fitted in the wrong way limiting risks to see the NBR seal damaged. The special metric threads is also a security to be sure that installers will not use a home made nipple that could cut the NBR seal when screwed.

**1.2.7 Bracket A**

The bracket A is made of mid steel zinc plated. It is used to secure the nipple to the bar. Two screws make it even more accurate. By keeping the flat face of the reducer to the bar, it avoid risks to get torsion on the flexible pipe.

**1.2.8 Brackets**

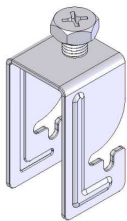
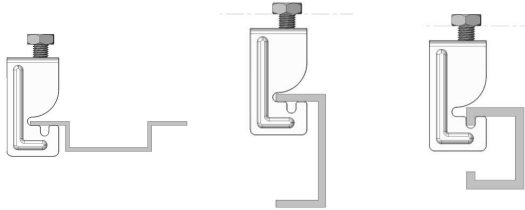

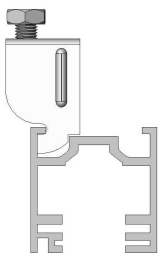




Brackets are made of mild steel zinc plated. It is used to install the sprinkler head first time to the right position.

Different models of brackets are available. Choice is made according to:

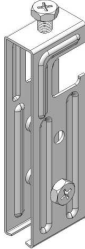

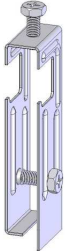

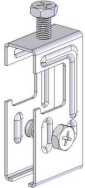
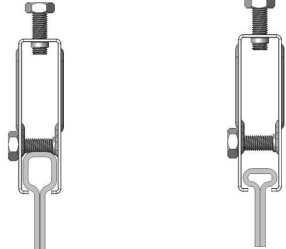






- type of ceiling grid
- Type of sprinkler head and escutcheon

Brackets height are different between standard sprinkler heads and concealed sprinkler heads.

Models B11, B7, B1, B4-1E and B11F are kept in stock. Other brackets are made on specific orders.

Ref.	Model	Description
B1		
B1-1		
B4-1E FM model		
B7		

Fire protection

Ref.	Model	Description
B7-1		
B7-2		
B11		
B11E		
B11E-1		
B11F		

Fire protection



### 1.2.9 Bar

Square bar is made of mild steel zinc plated. It is used to connect bracket A, reducer and brackets B. Several lengths are available :

- 0.64 m
- 1.00 m
- 1.24 m
- 1.60 m

### 1.2.10 Minimum bend radius indicator

This is an optional item used to check that bend radius of Rapidrop is correct.



### 1.2.11 "Sandwich wall ceilings models"

We offer a Rapidrop specially designed for application on "sandwich" wall ceilings. This Rapidrop include the following components:

- A flexible pipe: see 1.2.1.
- Two nuts : see 1.2.2.
- Two isolation rings : see 1.2.3.
- Two packing seals : see 1.2.4.
- One nipple: see 1.2.6
- One special reducer 170 mm threaded on all its length and supplied with one nut. The ceiling sandwich wall is blocked between escutcheon of sprinkler head and this nut that can be tighten to ensure correct installation. These installations are often filled with Glycol. The Rapidrop is not sensible to glycol.

## 1.3 Summary of existing models

MODEL	LENGTH	FLEXIBLE	REDUCER	BAR	BRACKETS	NIPPLE
SP * → SP	0.78 m * → 1	316L* → A	110 mm ½'' * → 1	0.64 m* → A	B1 → 1	1'' * → S
SPN → SPN	1.00 m * → 7	304* → B	170 mm ½'' * → 2	1.00 m* → B	B1-1 → 2	(standard)
SPW → SPW	1.22 m * → 2		110 mm ¾'' * → 3	1.24 m → C	B7 → 3	1'' ¼ → L
SPB → SPB	1.54 m * → 3		170 mm threaded ½'' * → 5	1.60 m → D	B7-1 → 4	(Large)
SPNB → SPNB	1.88 m → 4		Nipple 1'' → 7	On order → 0	B7-2 → 5	Without → X
SPWB → SPWB	2.54 m → 5		Without → X	Without → X	B11 → 6	
	3.22 m → 6				B11E → 7	
	On order → 0				B11E-1 → 8	
					B11F → 9	
					B04** → 10	
					Without → X	
↓	↓	↓	↓	↓	↓	↓
SP	1	A	1	A	6	S

\* Models kept in stock. \*\* FM only

E.g. : SP1B1A6S : Rapidrop® SP 0.78 m, SS 304, reducer 110 mm ½'', Bar 0.64 m, Brackets B11, Standard nipple 1''



## 1.4 Approvals

### 1.4.1 Tests results

#### **Point load**

Point loads measured from laboratory, and due to Rapidrop on a suspended ceiling are very low (see CSTB tests for more information).

#### **Fire resistance**

Fire exposure (see BRE Test report 206538)

According to LPC tests, after a 6 minutes exposure to 800 °C temperature, the structural integrity of the flexible pipe has been kept without any damages.

#### **Hydraulic tests**

Hydrostatic pressure (see BRE Test report 206538)

According to LPC tests, Rapidrop has been maintained under 80 bars pressure for 5 minutes without any leakage.

### 1.4.2 Approvals and agreements

International approvals are valid for complete Rapidrop boxes for suspended ceilings. Each component was tested by those laboratories. Specific models (sandwich wall ceilings) must be recognised by authorities having jurisdiction in the area before installation.

#### **UL approval**

Rapidrop is approved by UL (Underwriters Laboratories USA)

Tests reports ML Field n° EX4957 et EX5175

Pressure 12 bars

#### **LPC approval**

Rapidrop is approved by BRE (Building Research Establishment UK) Test report n°206538 February 2002 according to test procedure LPS 1261 Issue 1 July 2001. Pressure 16 bars.

#### **Factory Mutual approval**

Rapidrop is Factory Mutual only for braided models.

#### **CSTB (France) approval**

Rapidrop is approved by CSTB with "avis technique favourable" regarding its use on suspended ceilings. This document is used in France by all "bureaux de contrôle" (Socotec, Apave, Veritas, ...).

Avis technique n°AC-2003579 dated 30/03/2005

#### **CNPP (France) agreement**

The Rapidrop is agreed by CNPP. réf : M.Karzazi November 2002

Pressure 16 bars

#### **VKF-AEAI (Suisse) agreement**

The Rapidrop is agreed by VKF-AEAI. réf : M.Moreillon 5 May 2003

Pressure 16 bars

#### **Quality**

Manufacturing of Rapidrop is assessed by LPCB (Loss Prevention Certification Board, UK). ISO 9001:2000 n° 565

Distribution is assessed by LPCB (Loss Prevention Certification Board, UK) ISO 9001:2000 n°566

## 1.5 Pressure losses

Equivalent lengths to use for hydraulic calculation (based on UL results)

Pressure losses are similar between models SP, SPN et SPW and braided models.

Rapidrop® lengths (metres)	Equivalent length (metres) (Schd 40 pipe)	Equivalent length (metres) (BS1387 pipe)
0.78	5.5	6.0
1.22	10.1	11.0
1.54	13.1	14.2
1.88	16.8	18.2
2.54	23.2	25.2
3.22	29.9	32.5

Fire protection



## 1.6 Installation instructions

### 1.6.1 For suspended ceilings :

1. Install the 25 mm nipple (pipe thread end) in the fitting on the range pipe using the normal sealing and tightening methods for connecting pipe threads for leak proof joints.  
  
NB: For SPW, this nipple is permanently fixed to the flexible pipe and care must be taken not to twist the pipe or use it as a lever when tightening in the nipple.  
For SPW, see point 4.  
For SPN, see point 3.
2. For SP only: Connect reducer (M33x1.5) to flexible pipe end and tighten nut. Do not use leak proof material (Teflon, ...) on the thread fitted to flexible pipe. Tighten nut to reducer.  
For SPN and SPW, reducer is permanently fixed to flexible pipe.
3. For SP and SPN: Connect the other flexible pipe end to the 25 mm nipple and tighten nut. Leak proof and tighten method are similar to point 2.
4. Bend the flexible by hand (**Minimum bend radius 75 mm for UL/LPCB/APSAD models, 140 mm for FM Models**) to take up the desired route for the flexible and position the reducer for the sprinkler location (e.g. Centre of tile). **Do not bend the flexible pipe 60 mm from ends on each side.** Check that bending is correct and use minimum bend radius indicator if necessary. According to authorities having jurisdiction, a minimum bend radius indicator could be installed on Rapidrop® to check correct bending. For any Rapidrop® length over 1.60 m it is necessary to install an intermediate support fixed on the building structure.
5. Install the two B brackets on the ceiling grid, with the bar and bracket A. The reducer must be located securely to prevent movements relative to the ceiling resulting from the system being pressurised, from sprinkler operation and from discharge of water if the sprinkler operates as the result of a fire. The fixing must also resist torsional forces which result from a sprinkler being installed in the reducer. This is why connection points must be correctly tightened. Do not over tighten the bracket setscrews.  
Various type of brackets B are available to suit the ceiling suspension cross tees and main runners and with variable heights to enable both normal sprinklers with escutcheons or concealed sprinklers to be installed.
6. Reducer is then fixed to the bar by using bracket A. Vertical adjustment can be done in few seconds. Install sprinkler head and escutcheon if required.
7. Pressure test in the normal way according to standards. Maximum working pressure: 16 bars.
8. After filling with water for pressure test, keep the sprinkler system always filled with water. Do not leave the system drained.

### 1.6.2 For "sandwich wall" ceilings

Please use recommendations and instructions given by authorities having jurisdiction. Normally, the use of glycol make necessary the installation of a tee upstream the Rapidrop to check when necessary glycol rate.



## 1.7 ADVANTAGES COMPARED TO COMPETITION

Use this table, and compare Rapidrop® with its competitors :

Description	RAPIDROP®	Competitor
A European approval LPCB required for application of European Norm EN12845 :2000	.	
French agreement CNPP	.	
CSTB approval to be in accordance with legislation of “bureaux de controle” in France.	.	
UL approval for NFPA projects	.	
Factory Mutual approval	.	
Standard tools for installing Rapidrop specially because of its chamfered reducer and nipple.	.	
A 27 mm outside diameter and lower pressure losses than any other flexible pipes.	.	
A special nipple chamfered and metric threaded on one side to avoid installers to install wrong component that could damage NBR seal.	.	
A bigger thickness on upper and lower points of the corrugated flexible pipe to resist to stress when bended.	.	
No limitations from approvals in number of elbows.	.	
No limitations from approvals for a global angle greater than 90°	.	
Optional item such as minimum bend radius indicator to be sure to get right radius.	.	
Large choice of flexible pipe lengths.	.	
SS304 (as standard) or SS316L flexible pipes	.	
Large choice of reducers.	.	
Large choice of bars	.	
Large choice of brackets	.	
Large stock of components in France and UK	.	
Components available as spare parts (except FM)	.	
A grooved reducer to get a perfect fixing and height.	.	
A BSPT thread with large tolerance that enable use of BSP and NPT sprinklers	.	

Fire protection

## 1.8 Recommendations

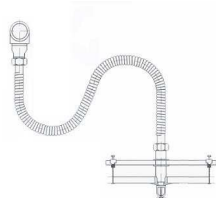
### 1.8.1 Outlet orientation

Outlet orientation may vary from authorities having jurisdiction. Normally, it is prohibited to install the outlet below supply line. Outlets below the centre line often lead to incorrect routing and allow sediment from the range pipe to enter the flexible where an accumulation could lead to blockage.

### 1.8.2 Route of flexible

The route of the flexible must allow draining throughout its entire length, either back into the range pipe or through the sprinkler reducer outlet. Sections which can not be drained are not acceptable.

**WRONG**



### 1.8.3 No combined lengths (flexible pipes must not be joined)

Flexible connections must be designed so that they cannot be joined together by installers to make longer lengths by using components generally available as part of the kit or normally available on site.

**WRONG**



### 1.8.4 Minimum bend radius

The minimum bend radius is different between manufacturers and approvals. Rapidrop® is 75 mm minimum bend radius for UL/LPC/APSAD flexible pipe (standard) and 140 mm for FM flexible pipes (braided).

**WRONG**



### 1.8.5 Bend restriction

Rapidrop® is not limited in number of bends. It enable an easy and quick installation. For some flexibles, typically those with smaller bore which have higher pressure losses when bent, the sum of the angles of all installation bends must not exceed 90 degrees. It is essential to read the approval information and the installation instructions to establish the limitations of the flexible pipes being used. Always ask it to the manufacturer.

### 1.8.6 Accessories

Accessories from a manufacturer must not be used with flexible pipes of another manufacturers. Approvals will not apply because these approvals are valid with tested and approved components from same manufacturer. The use of specific accessories must be done in accordance with authorities having jurisdiction.

### 1.8.7 Intermediate supports

Flexible pipes from different manufacturers have different requirements for intermediate supports. Rapidrop do not require supports until the length exceeds 1.6 metres while others require intermediate support every 0.6 metre. Intermediate support must be insulated from the stainless steel flexible.

### 1.8.8 Marking

As flexible pipe vary in performance, where they are used in sprinkler installations the manufacturer's name or brand name must be recorded. This information together with a copy of the manufacturer's Installation Instructions must be provided to whoever requires it including the AHJ and the Insurance Company.

## 1.9 Installation time / system cost

Use the following table to compare Rapidrop® with your classical armovent installation method. Do this test with one sprinkler head and then for a fully new project.

DESCRIPTION	RAPIDROP®			Traditional armovent installation method		
	Quantity	Net price per unit	Total price	Quantity	Net price per unit	Total price
Rapidrop®	1			-		
Nipple(s)	-					
Elbow(s)	-					
Telescopic pipe or sandwich wall ceiling products	-					
Unskilled labour cost	0.20					
Skilled labour cost	-					
Measuring	-					
Painting	-					
On site preparation	-					
Factory preparation	-					
Staff vehicles costs	1					
Staff travel costs (hotel, meals)						
On site machines installation	-					
Movements from installation zone and on site machines	-					
Measuring mistakes (%)	-					
Dirty tiles to change (%)						
Truck level floor rent (sandwich wall ceiling)	-					
Miscellaneous						
Total cost					:	

Fire protection

## NOMENCLATURE

		<b>Example</b>
<b>MODEL</b>	SP* → Flexible with 2 nuts (LPC/UL) SPN → Flexible with 1 nut (LPC/UL) SPW → Flexible all welded (LPC/UL) SPB* → Braided flexible with 2 nuts (FM) SPBN → Braided flexible with 1 nut (FM) SPWB → Braided flexible all welded (FM)	SP
<b>LENGTH</b>	0.78 m* → 1 1.00 m* → 7 (LPC/UL only) 1.22 m* → 2 1.54 m* → 3 1.88 m → 4 2.54 m → 5 3.22 m → 6 On order → 0	1
<b>FLEXIBLE</b>	316L → A 304* → B	B
<b>REDUCER</b>	110 mm 1/2" * → 1 170 mm 1/2" * → 2 110 mm 3/4"* → 3 170 mm threaded 1/2" * → 5 Nipple 1" → 7 Without → X	1
<b>BAR</b>	0.64 m* → A 1.00 m* → B 1.24 m* → C 1.60 m* → D On order → 0 Without → X	A
<b>BRACKETS</b>	B1* → 01 B1-1 → 02 B7* → 03 B7-2 → 04 B7-2 → 05 B11* → 06 B11E → 07 B11E-1 → 08 B11F → 09 B4-1 → 10 (FM)	06
<b>NIPPLE</b>	1" (standard)* → S 1"1/4 (large) → L Without → X	S

Fire protection

\* Models kept in stock