



NEW SPRINKLERS _ CLAMP-T & MECHANICAL-T



- Why a new concept ?
- The idea and first test
- Evolution of the concept
- Pipes
- What this concept is going to change ?



Why a new concept ?



Creation date 2001

Employees 550

Turnover 2021 119 M€



2 workshops
Castets (40) et St Hilaire (50) :

+ 350 000 sprinklers per year



Our goals were to :

- increase prefab productivity
- reduce cost
- saving time on worksite
- saving energy





The idea & the first test



Adaptable on several diameters



Ø 50



Ø 40



Ø 32

STATISTICS

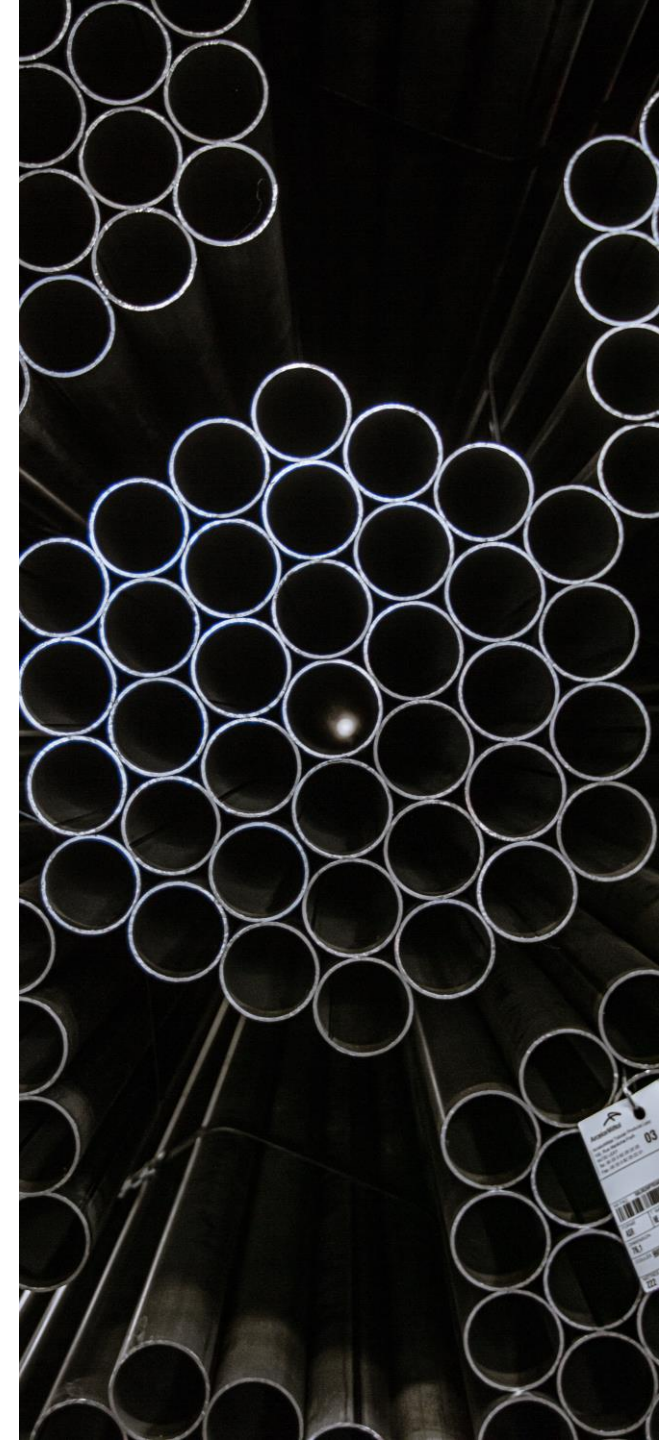
SPRINKLER	PIPE SIZE					
	Ø 25	Ø 32	Ø 40	Ø 50	Ø 65	Ø 80
ND 15 (K 80)	3 %	38 %	59 %			
ND 20 (K 115)		24 %	41 %	35 %		
ND 20 (K 160)			5 %	63 %	32 %	
ND 25 (K 360)					55 %	45 %

Advantages

- **No hurts** on worksite with wrench
- **Facility of modification** on worksite
- Sprinkler will always be well installed on pipe (**avoid screw mistakes**)
- **Time saving** on worksite
- **Gain of productivity** in workshop
- **Avoid welding** = saving energy / saving money
- **No welding leaks**
- For futur **avoid coating** in workshop by no weld
- **Gain in transport** 20 % more pipes if using less thickness pipes

Difficulty

- Changing habit of work





Evolution of the concept

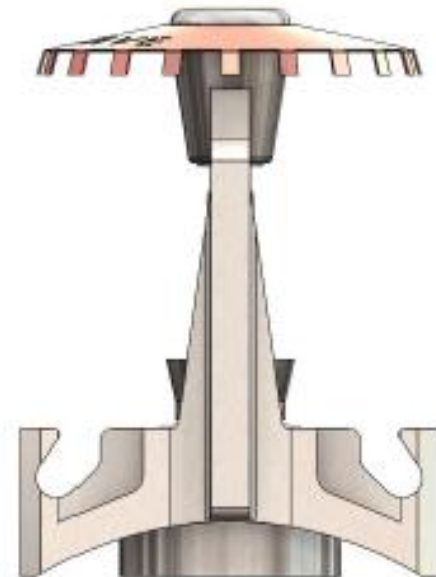
ISO



Top



Right



ISO
(Section)



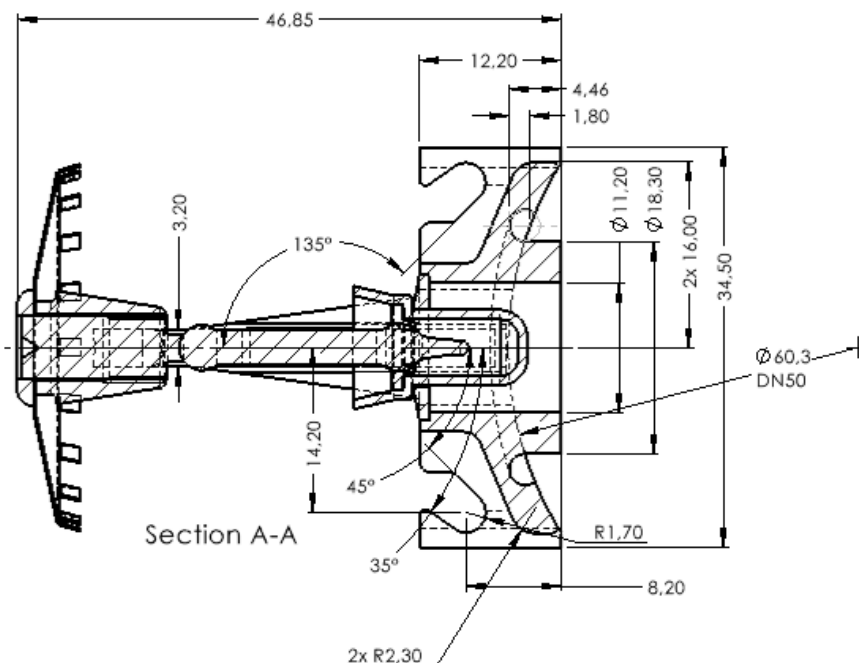
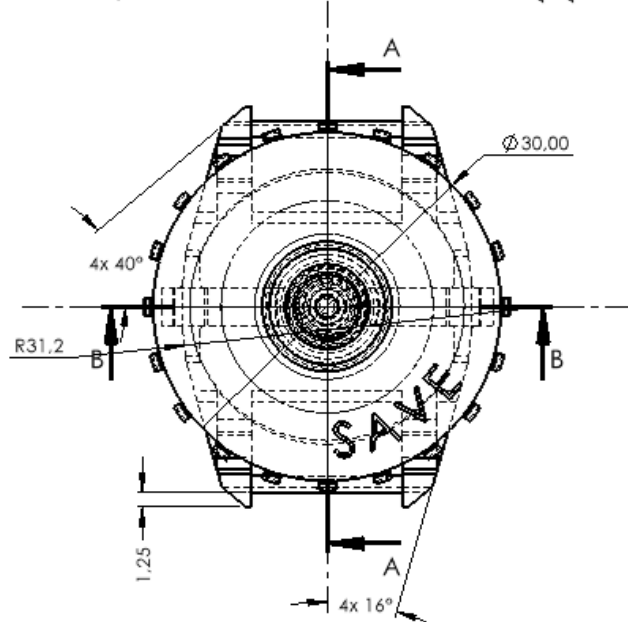
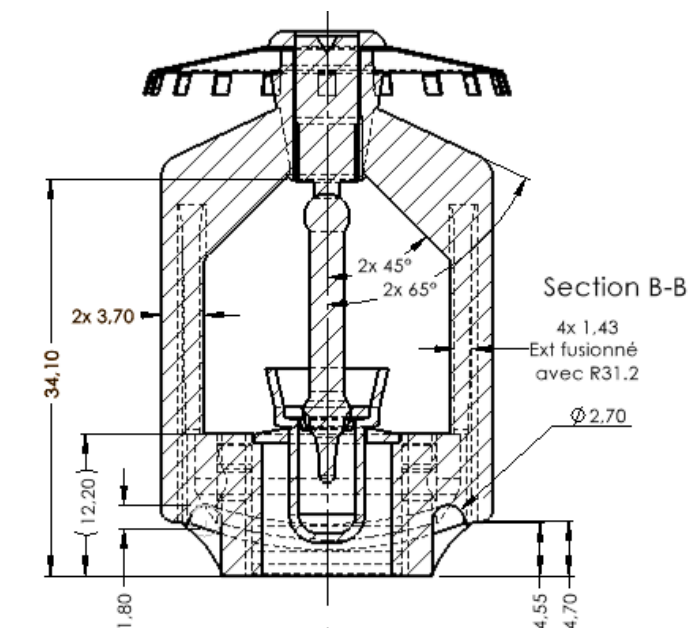
Bottom



Front



SPK's dimensions (mm) + Exploded view



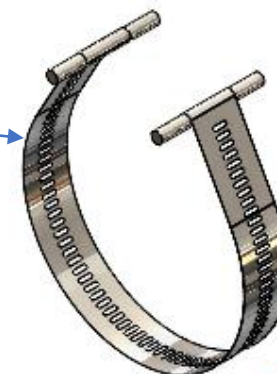
SPK + head



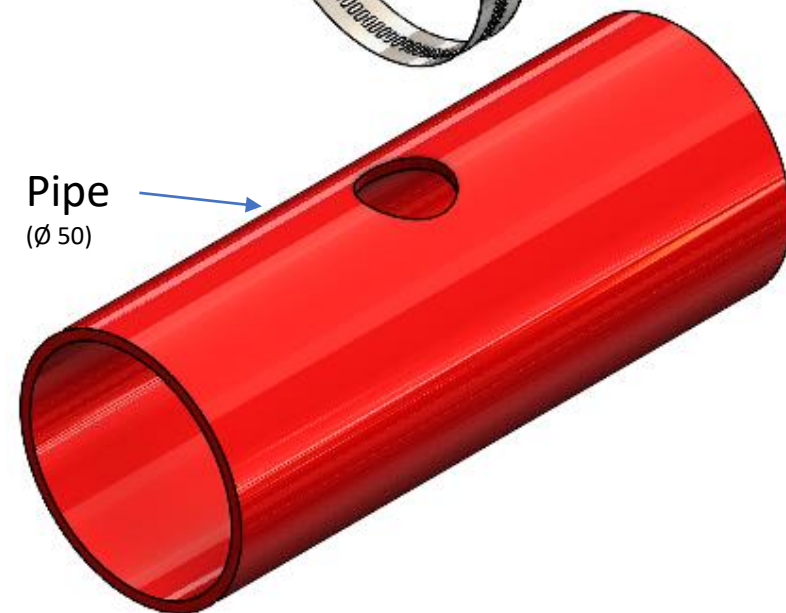
O'Ring
Ø 2,66mm

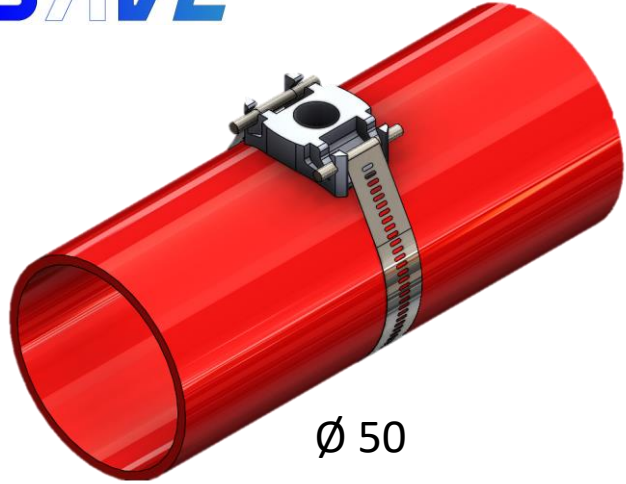


Strap
(Ø 50)

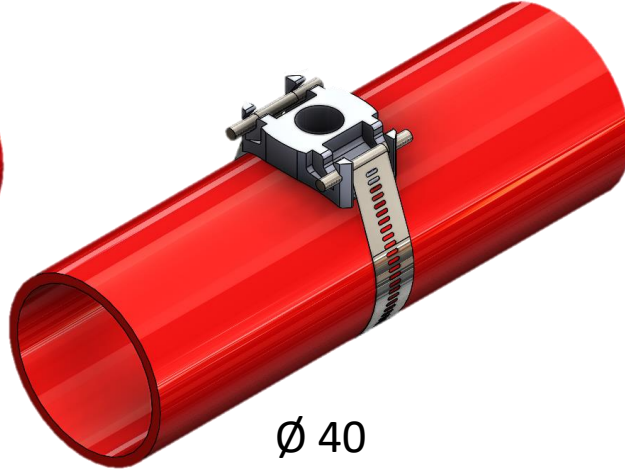


Pipe
(Ø 50)

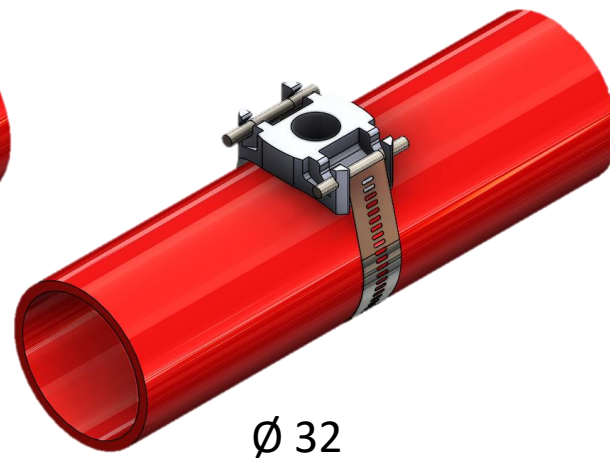




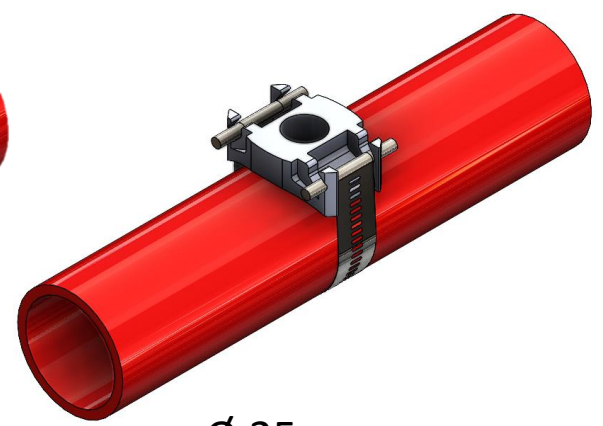
$\varnothing 50$



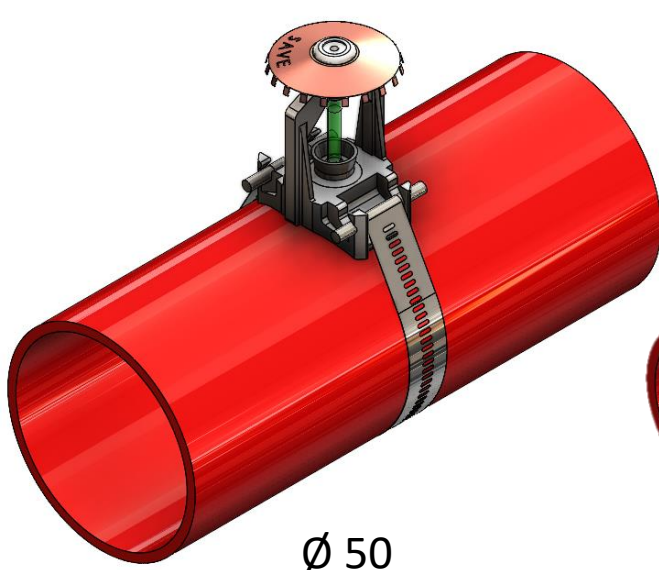
$\varnothing 40$



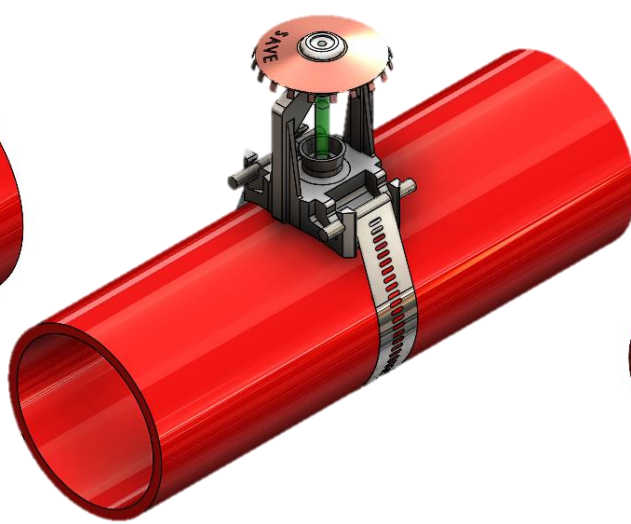
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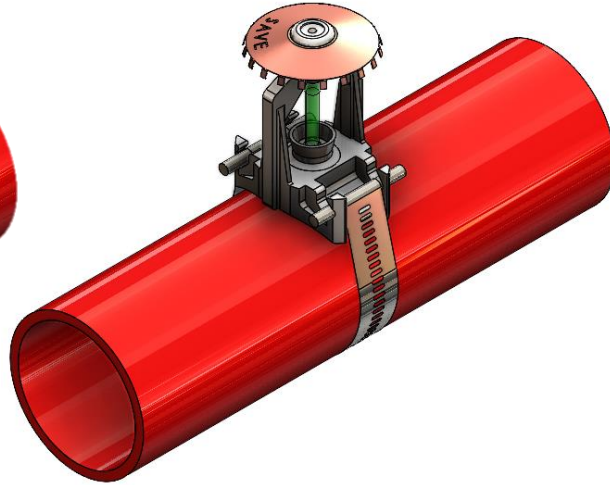
$\varnothing 25$



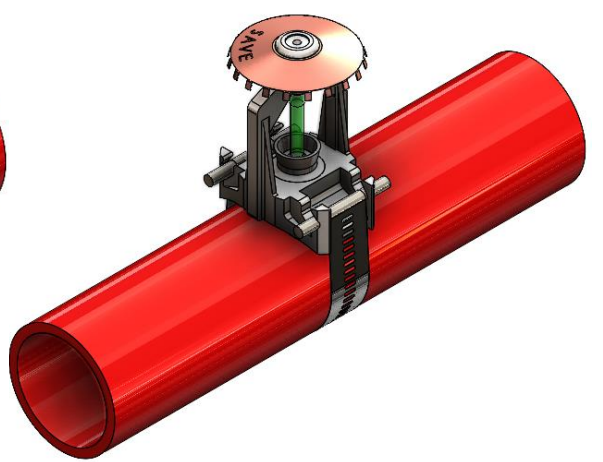
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$\varnothing 40$



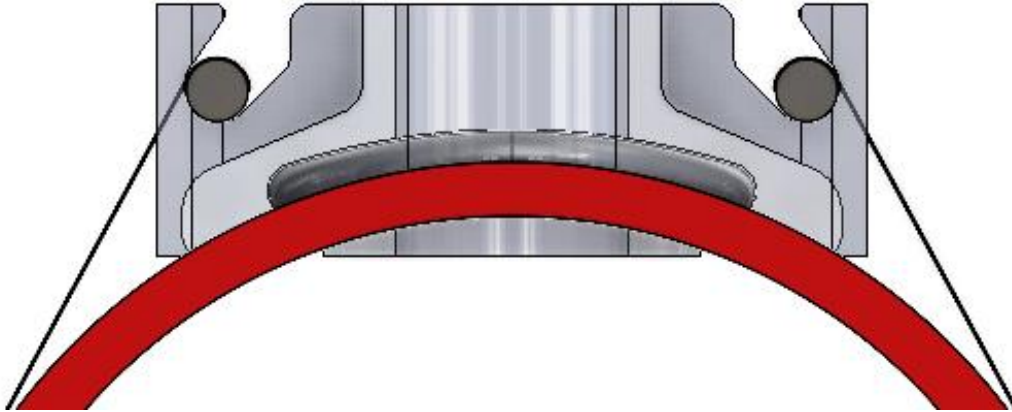
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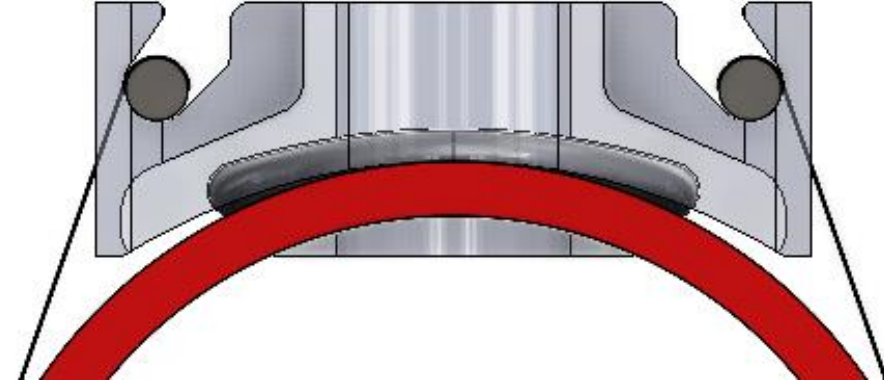
$\varnothing 25$

Front (Clamp in transparency for a better understanding of the O'Ring's placement on different pipes Ø)

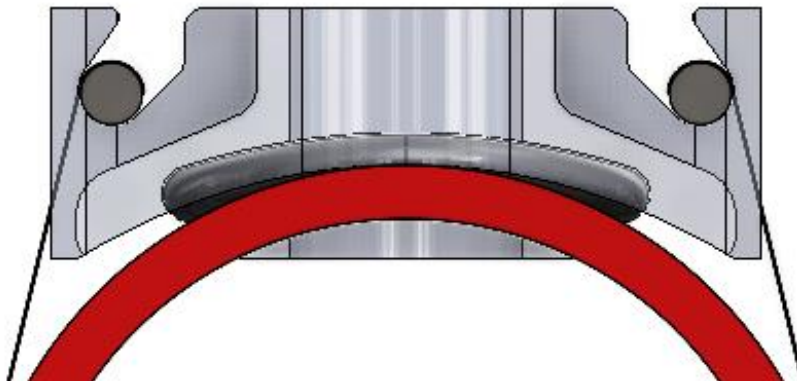
Ø 50



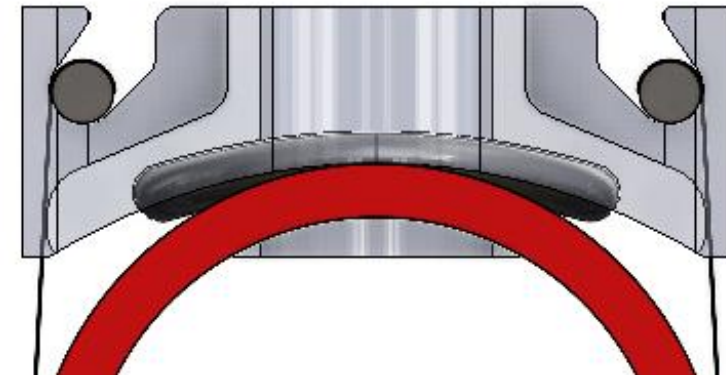
Ø 40



Ø 32



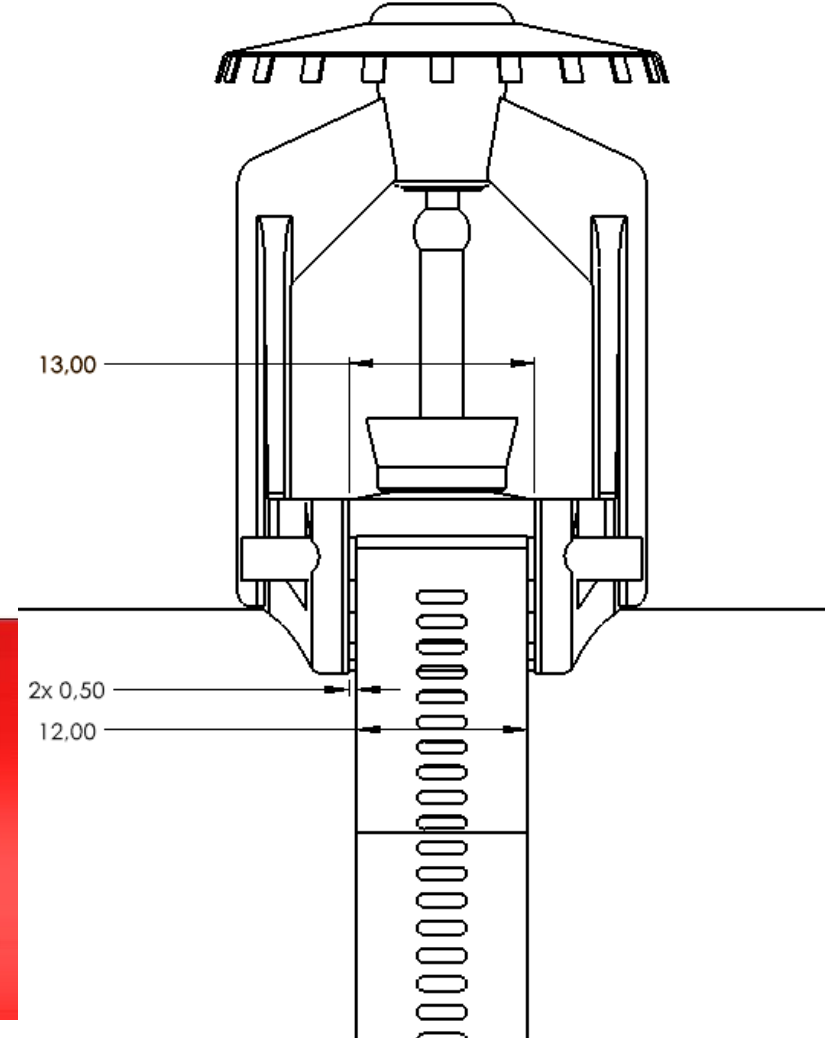
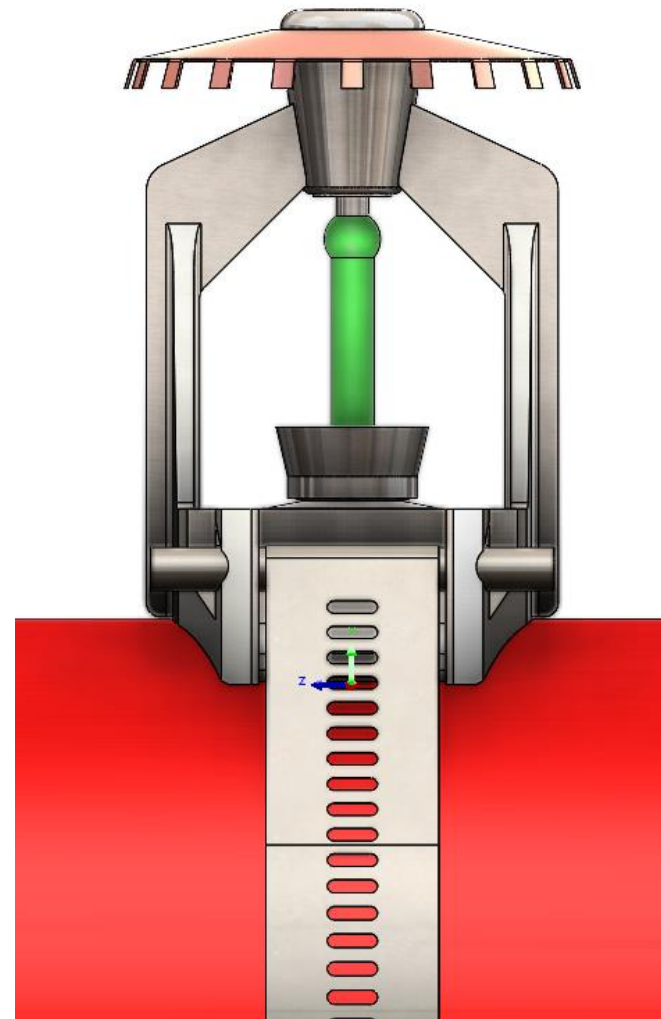
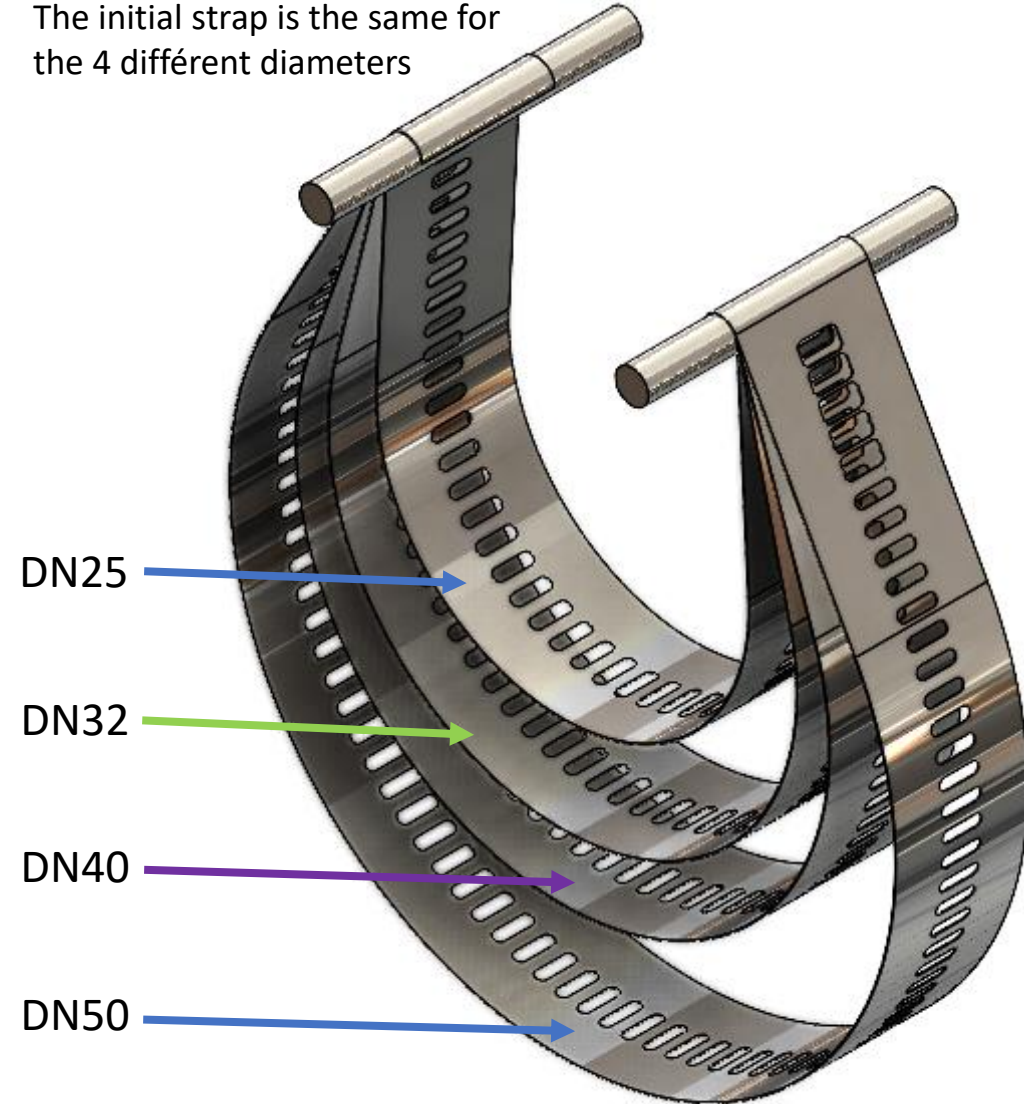
Ø 25

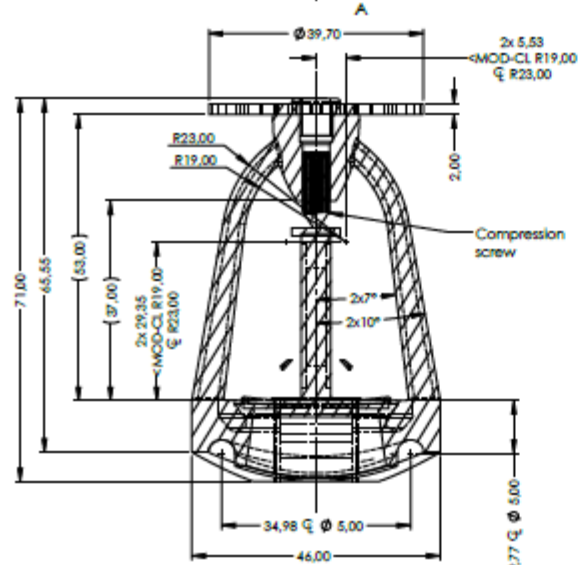
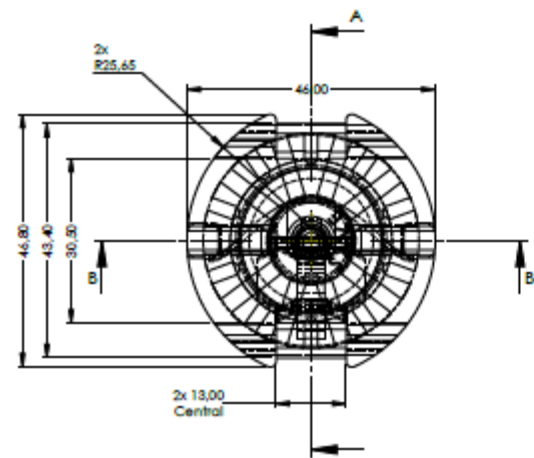


Strap size adaptable

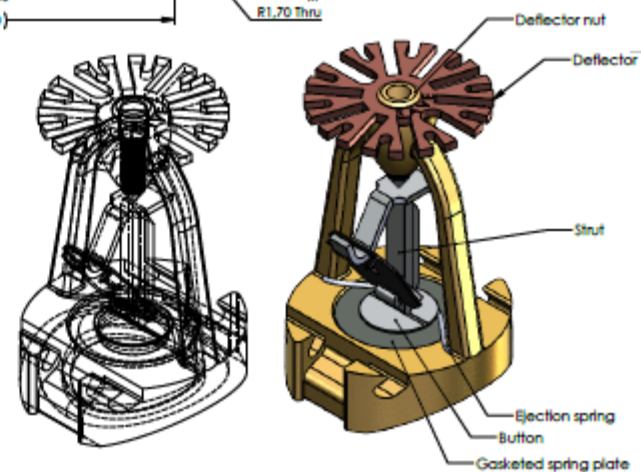
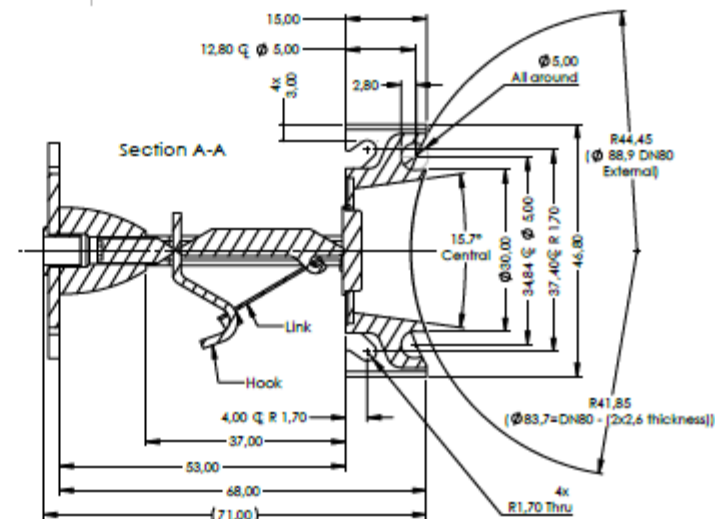
Vision of the ending strap depending of diameter.

The initial strap is the same for the 4 différent diameters





Section B-B



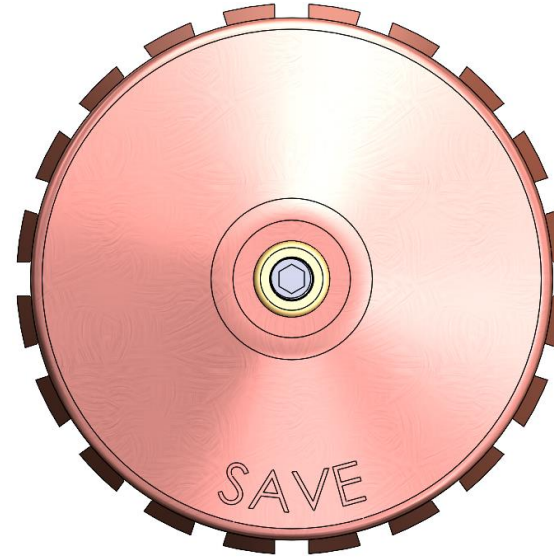
NOTES

- 1. REFER TO THE LITER FILE FOR ANY DIMENSIONS NOT SPECIFIED HERE.
- 2. DIMENSIONAL & GEOMETRICAL TOLERANCES MUST BE APPLIED ACCORDING TO ISO 2768, CLASS MT.
- 3. DIMENSIONS MAY VARY BUT WEIGHT IS UNACCEPTABLE.
- 4. LATCH OR BURGLARIZ ITCH PART NUMBER WITH REVISION LETTER, DATE, VENDOR, MATERIAL & DATE HERE.
- 5. REMOVE ALL BURR AND BREAK ALL SHARP EDGES TO 0.5MM CHAMFER OR RADIUS UNLESS OTHERWISE SPECIFIED.
- 6. ALL DIMENSIONS ARE IN MILLIMETERS.
- 7. ALL DIMENSIONS UNLESS OTHERWISE SPECIFIED.

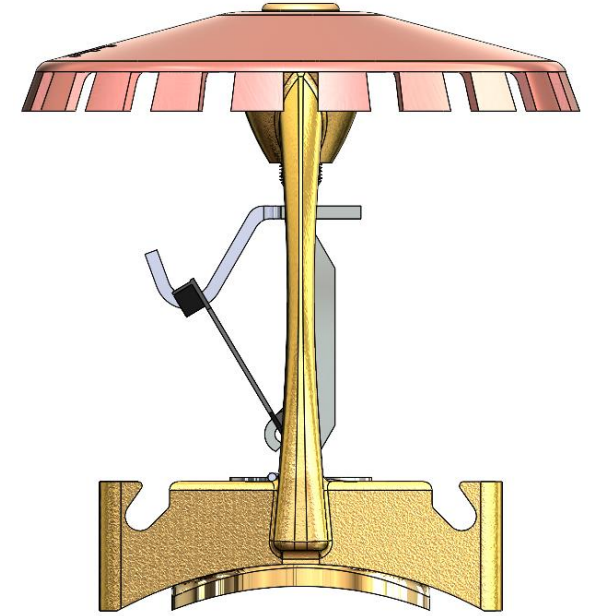
CPC Head		R&D6 V7.2	
Drawing by		A	
Scale 1:1 or modified		Sheet V1	



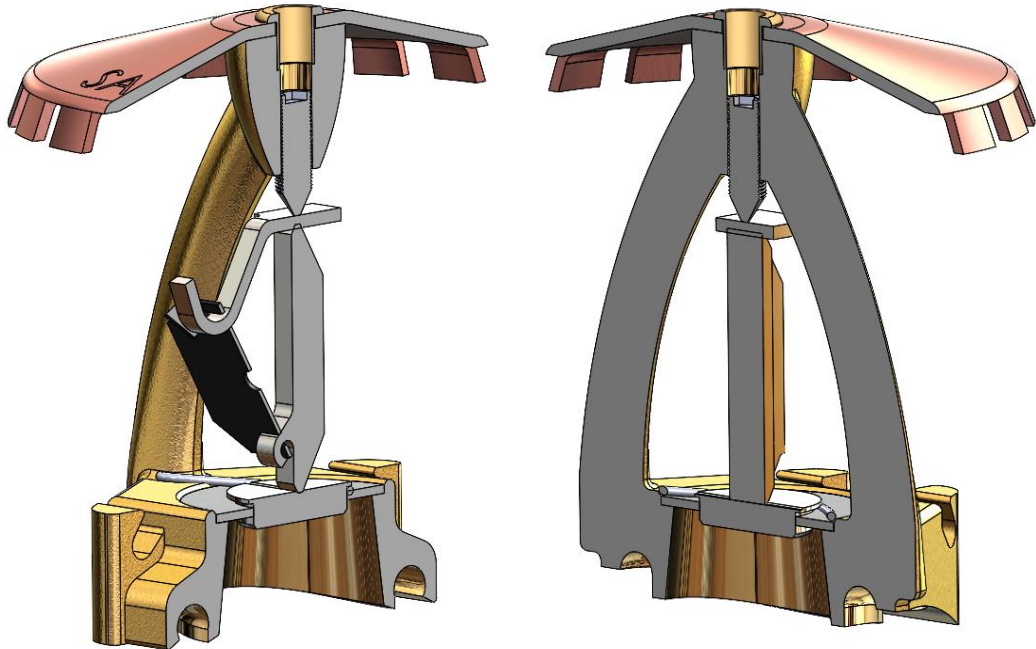
Top



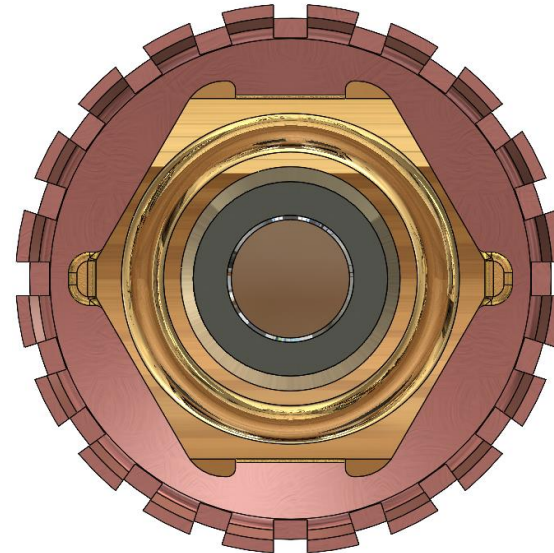
Right



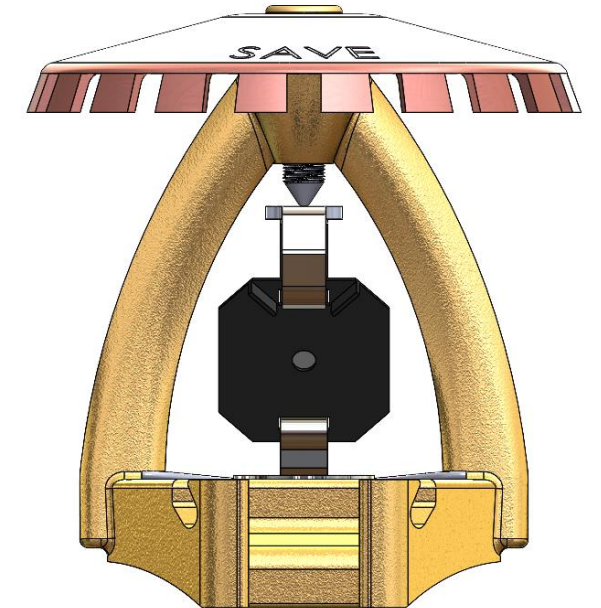
Section



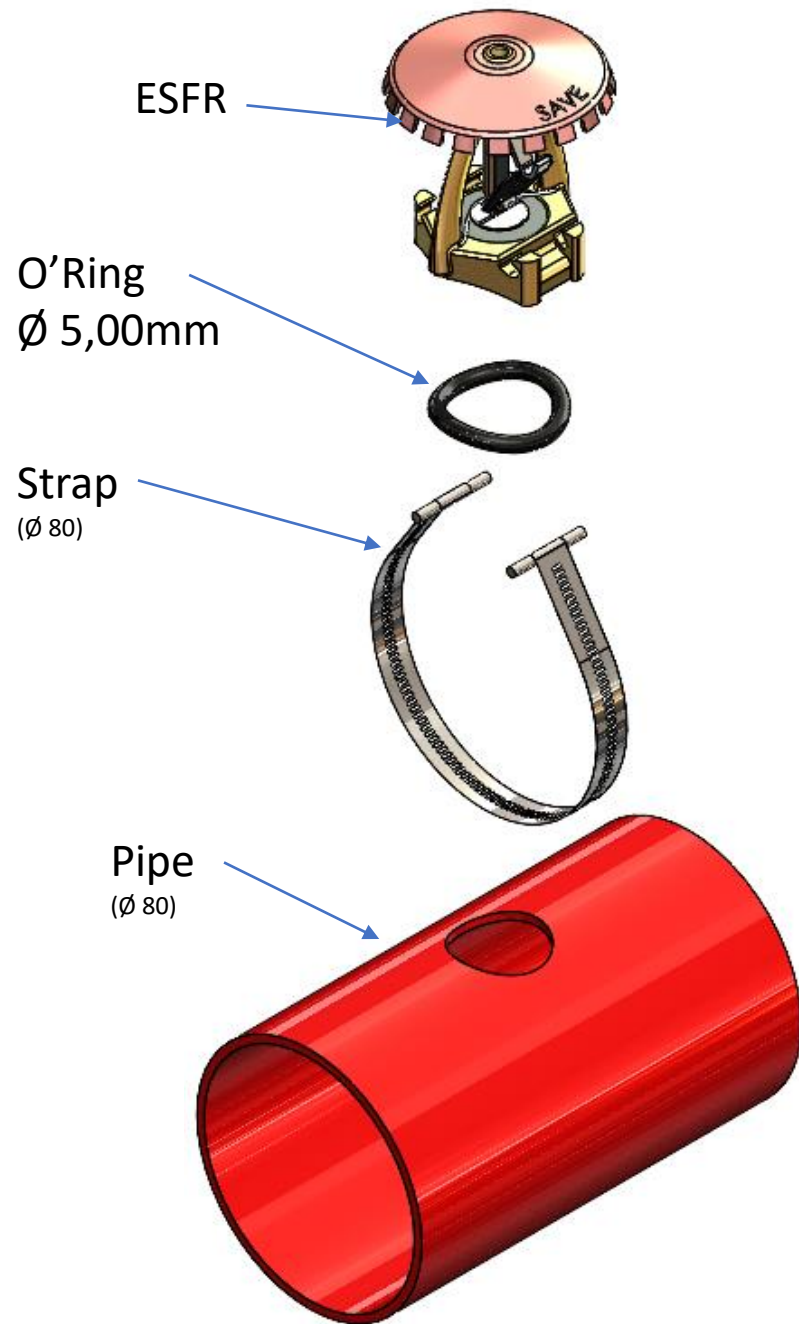
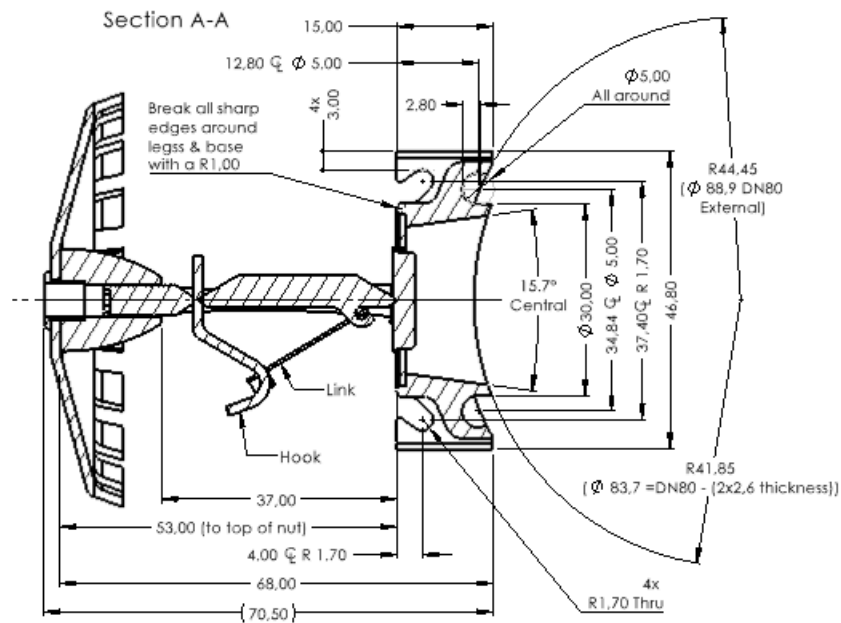
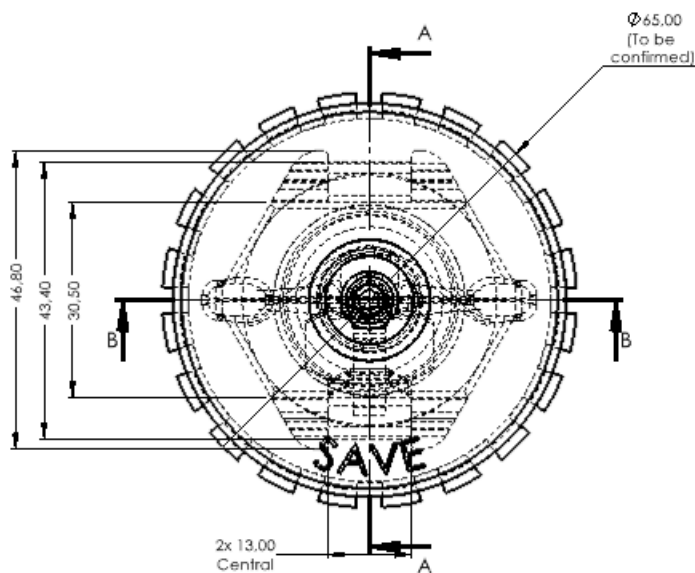
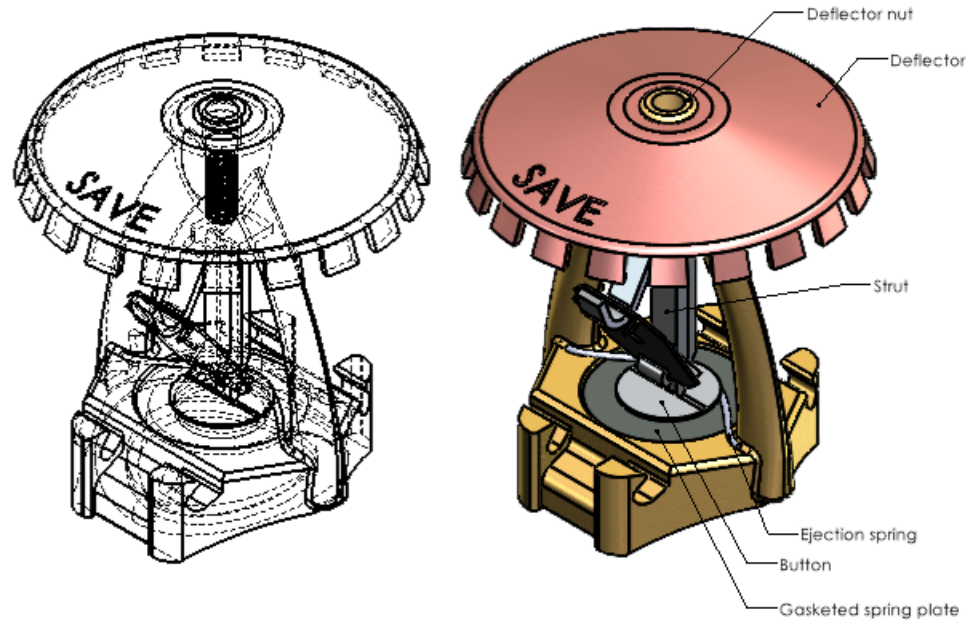
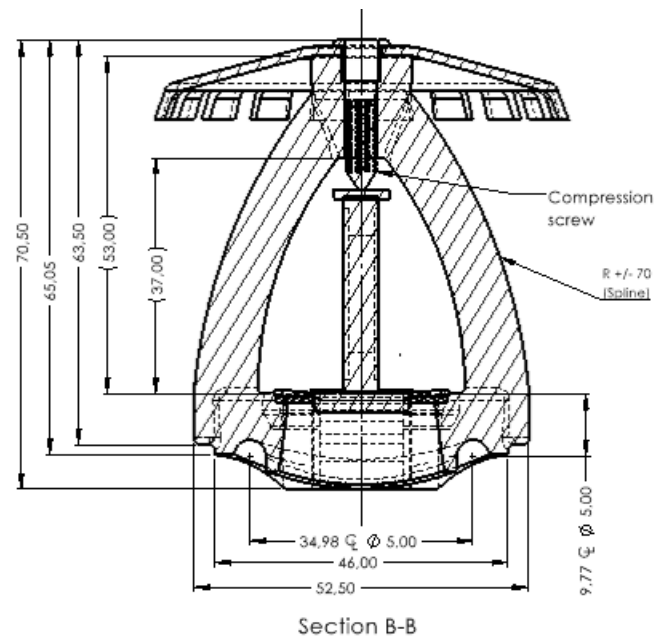
Bottom



Front

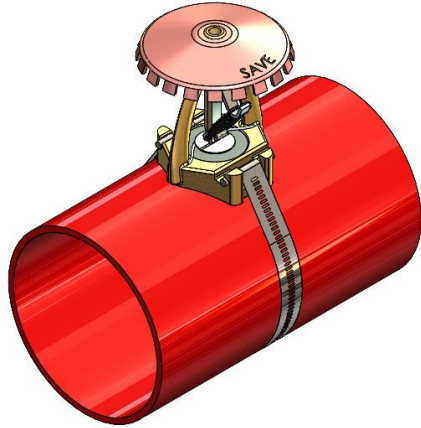


ESFR dimensions (mm) + Exploded view

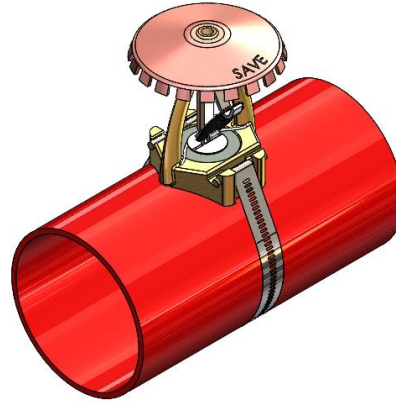


ESFR + O'Ring's placement in transverse side on different pipes Ø

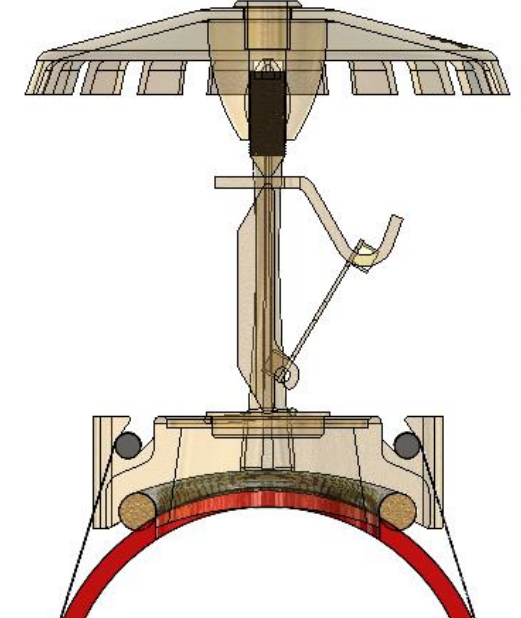
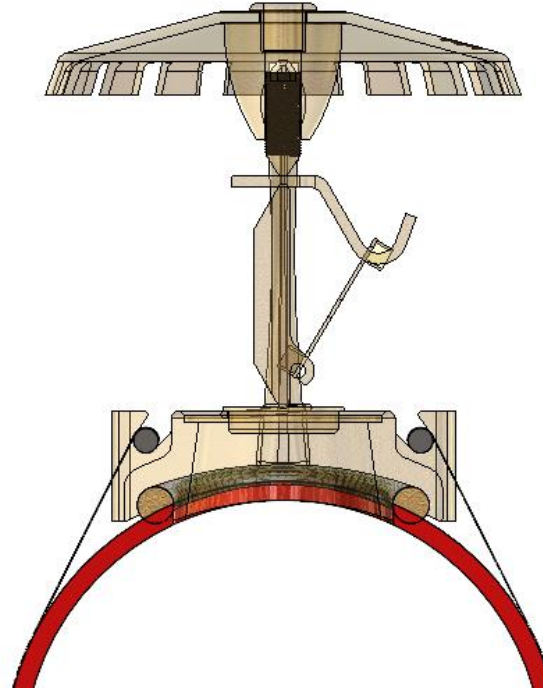
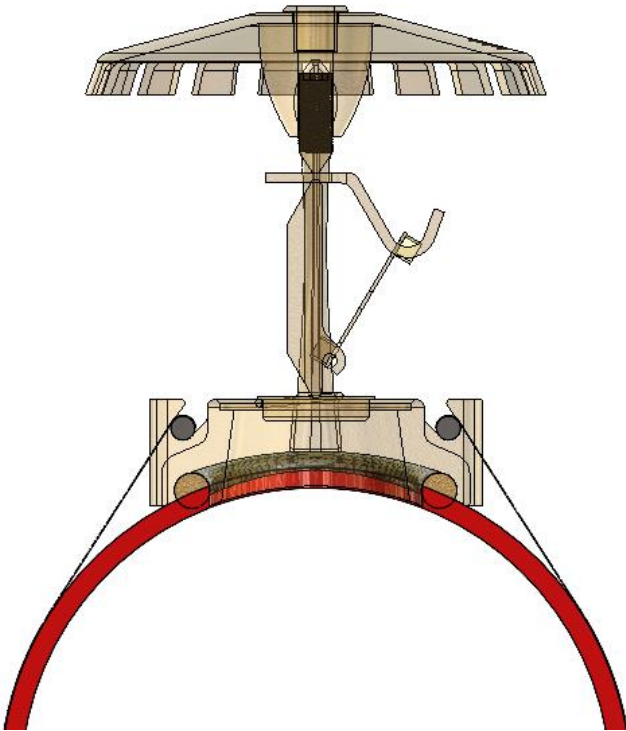
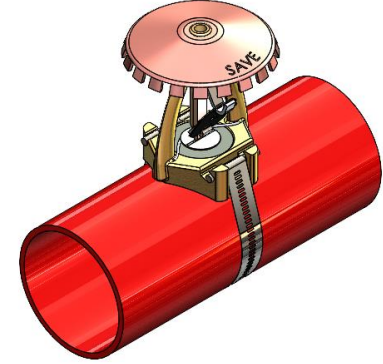
Ø 80



Ø 65

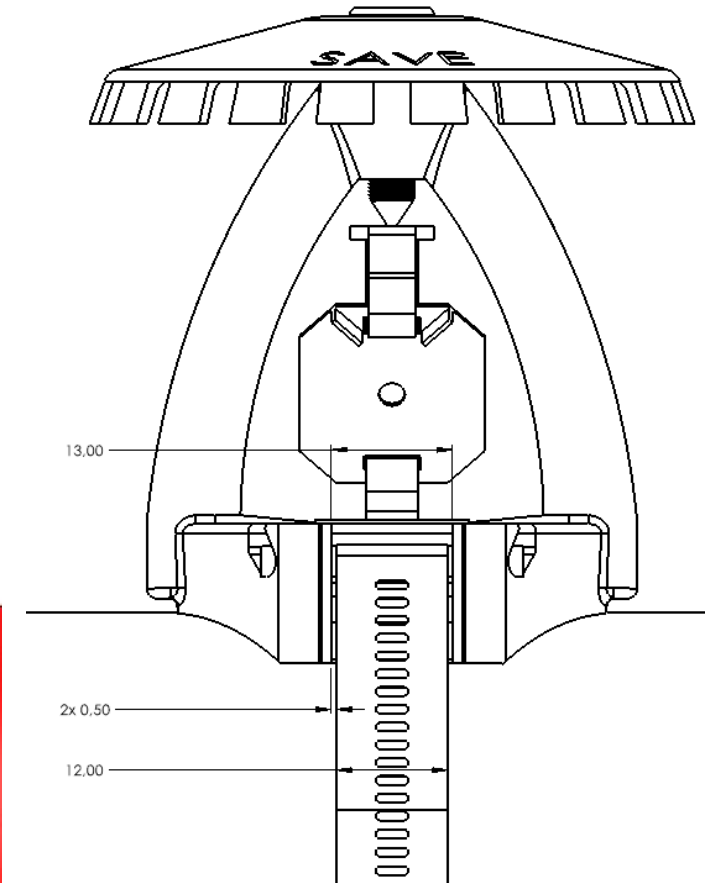
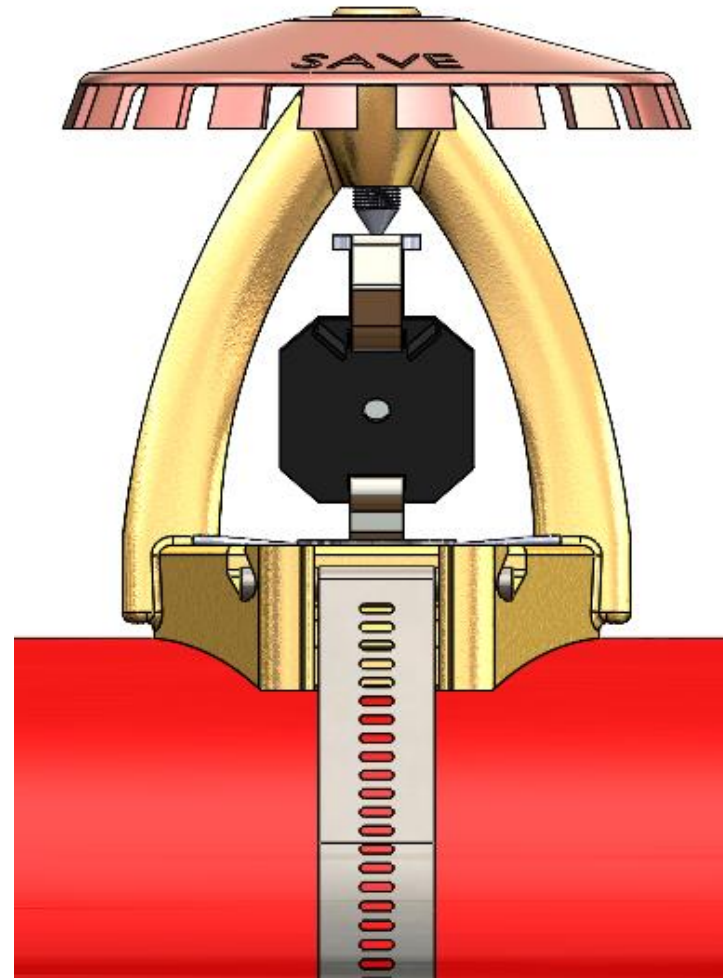
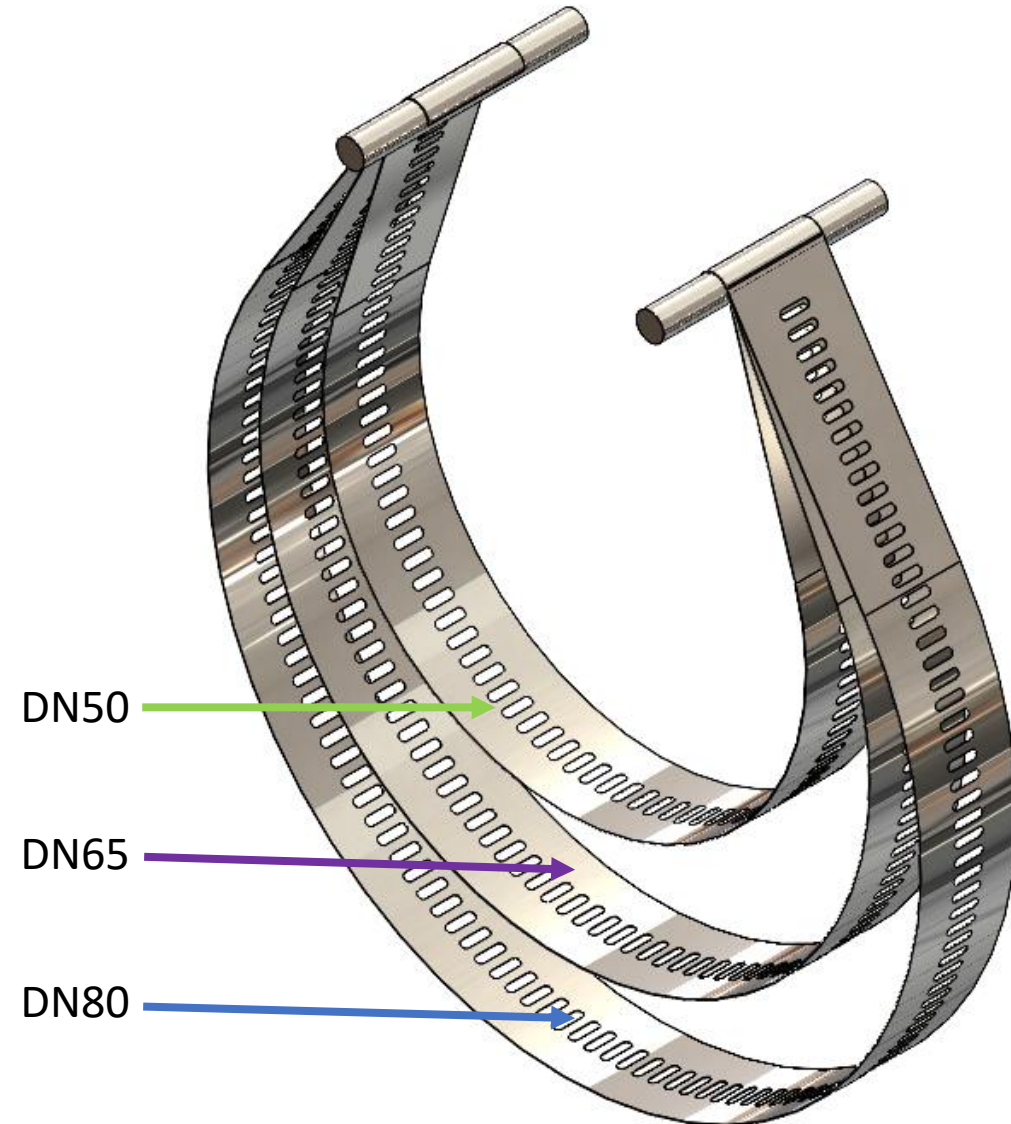


Ø 50

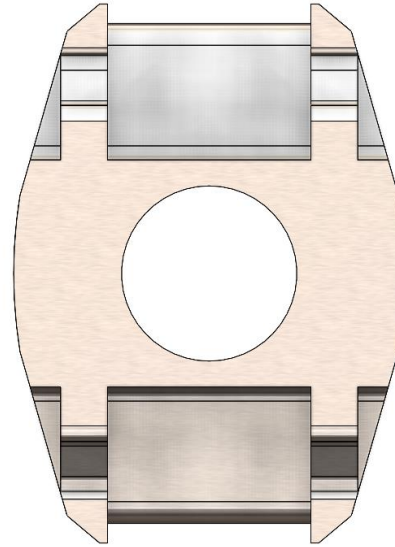
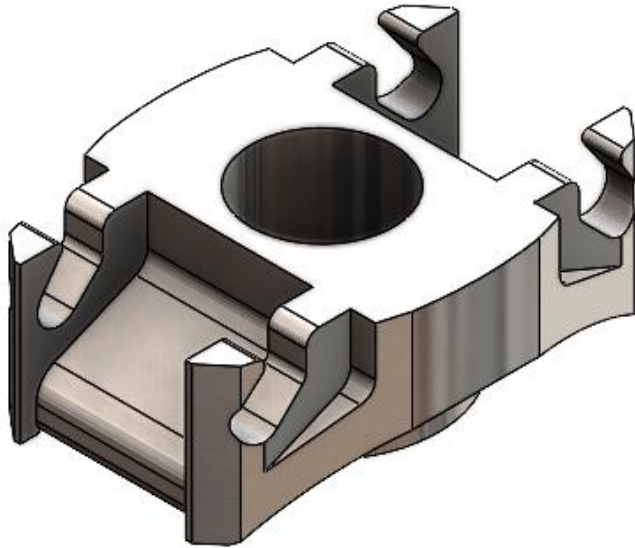


Strap size adaptable

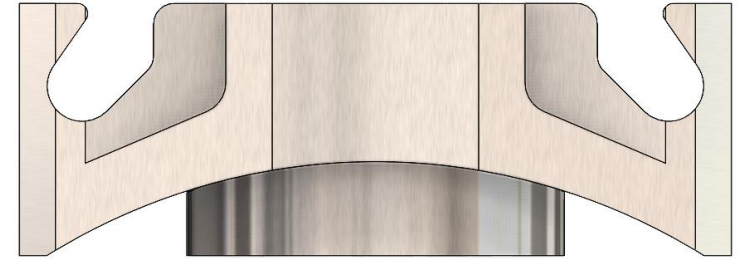
Vision of the ending strap depending of \varnothing .
The initial strap is the same for the 3 différent \varnothing



BASE INSTEAD OF THREAD

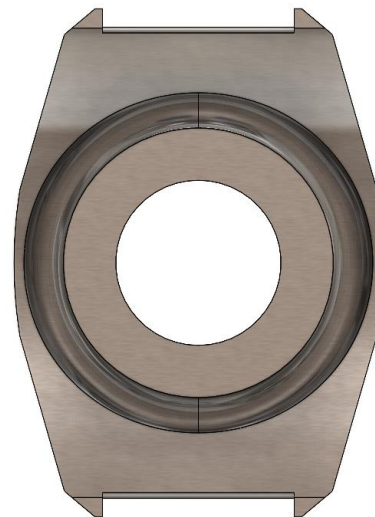
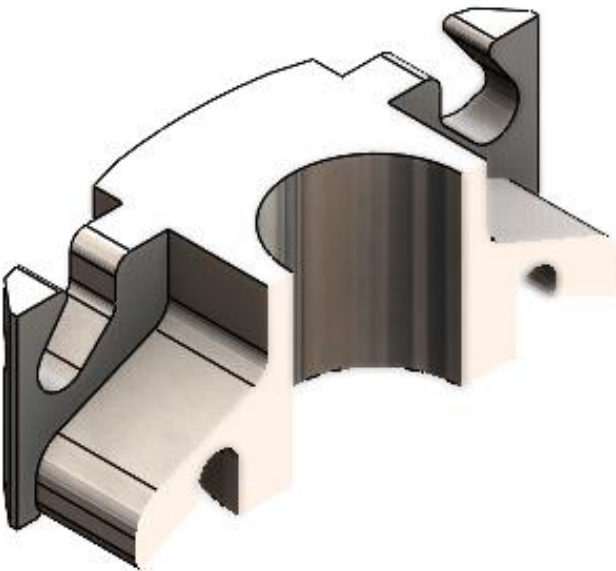


Top

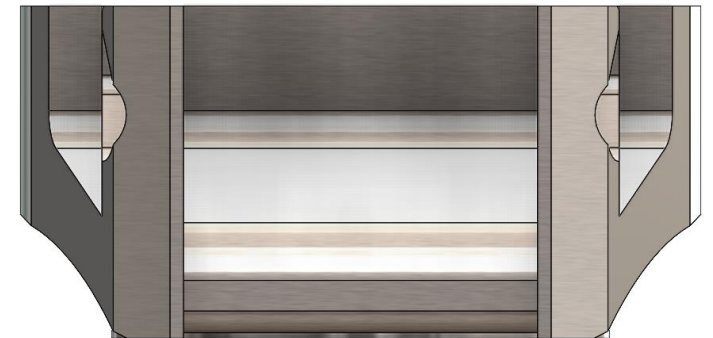


Right

ISO
(Section)



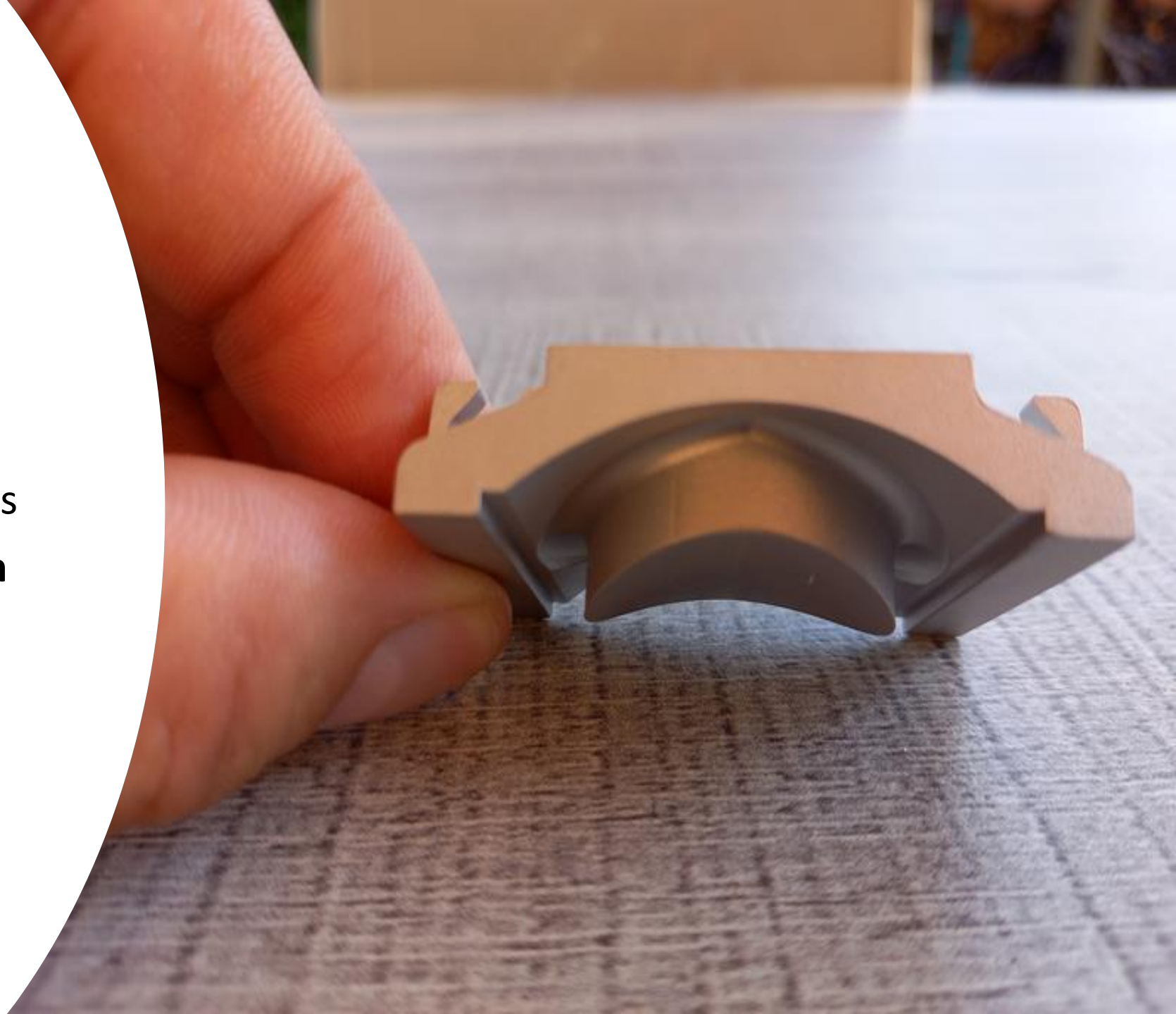
Bottom



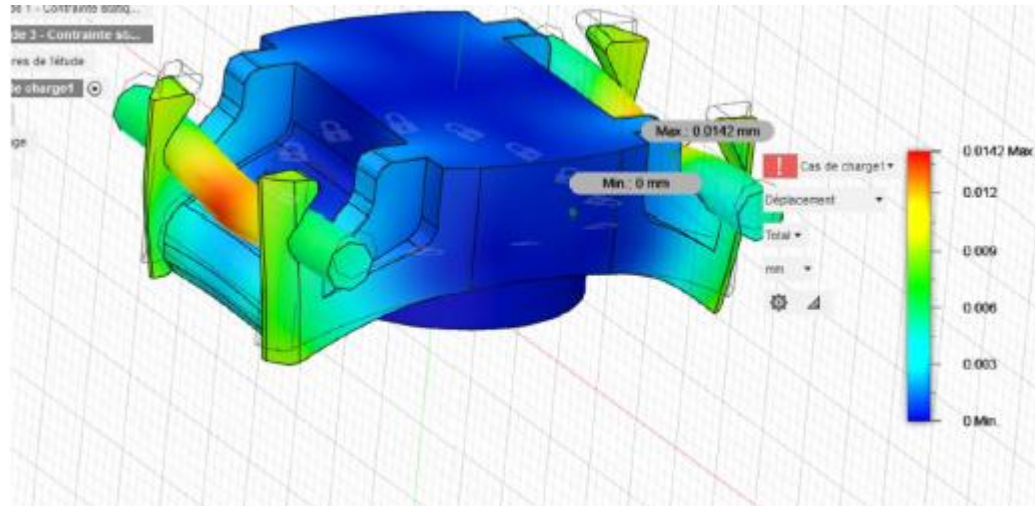
Left

A BASE TO SIMULATE A SPRINKLER

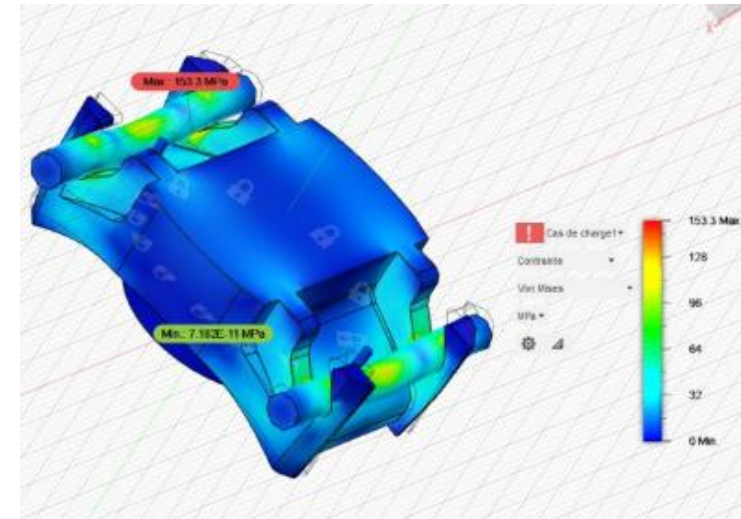
- Adaptable on several diameters
- **Very easy and fast installation**
- **No welding needed**



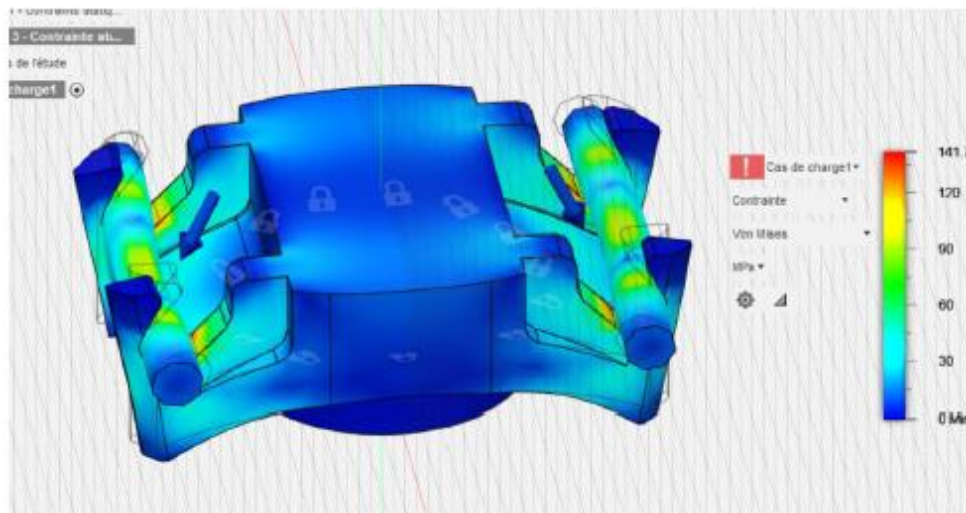
Sprinkler base on $\varnothing 25$ at 45 bars



Sprinkler base on $\varnothing 25$ at 20 bars



Sprinkler base on $\varnothing 50$ at 45 bars



The impact is more important with small diameter

All calculations were made with brass and stainless strap

PRESSURE TEST - EN 12 259

1- CONFIGURATION :

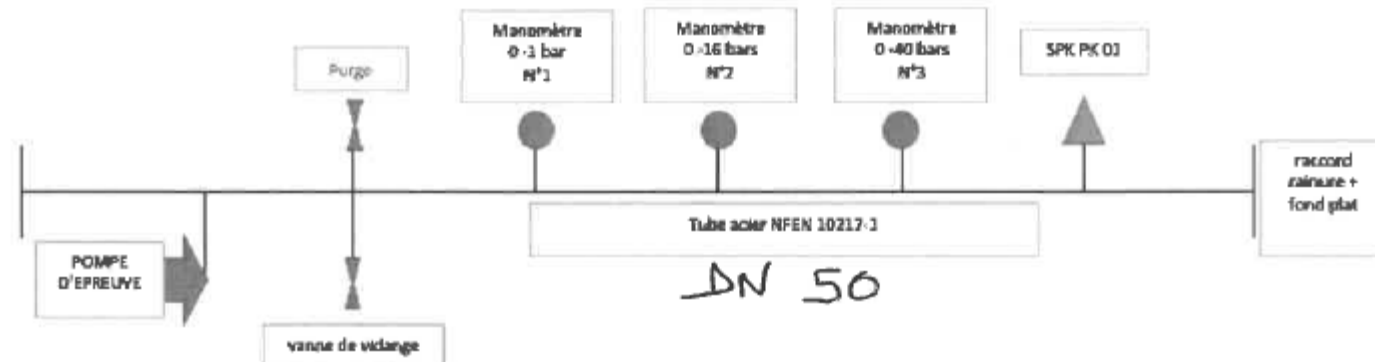
SPK DN XX SUR TUBE ACIER NOIR DN XX NFEN10217-1 ep XXmm)

2- ESSAI D'ETANCHEITE SUIVANT L'ANNEXE H DE LA NORME NFEN 12259

2.1 Exigence de la norme :

Soumettre les sprinklers à une pression d'eau de (30 ± 1) bar à l'entrée. Augmenter la pression de zéro à (30 ± 1) bar à une vitesse ne dépassant pas 1 bar/s et la maintenir à (30 ± 1) bar pendant 3^{+1}_0 min, puis la laisser retomber à 0 bar. Après la chute de la pression à 0 bar, l'élever à $(0,5 \pm 0,1)$ bar en 5 s maximum. Maintenir cette pression pendant 15^{+5}_0 s, puis la porter à $(10 \pm 0,5)$ bar à une vitesse ne dépassant pas 1 bar/s et la maintenir à cette valeur pendant 15^{+5}_0 s. Vérifier que le sprinkleur ne présente pas de signe de fuite au cours de l'essai.

2.2 Description du banc d'essai :



Matériel	Référence	N° de série	Référence PV étalonnage
Manomètre 0 – 1 bar	MG 100VI - 1	2108 CG 000 157	10057 - 131021
Manomètre 0 – 16 bars	MG 100VI - 10	2108 GG 000 158	10058 - 131021
Manomètre 0 – 40 bars	MG 100VI - 40	2108 CG 000 159	10059 - 131021
Chronomètre			



Ø 50



Ø 32



Ø 40

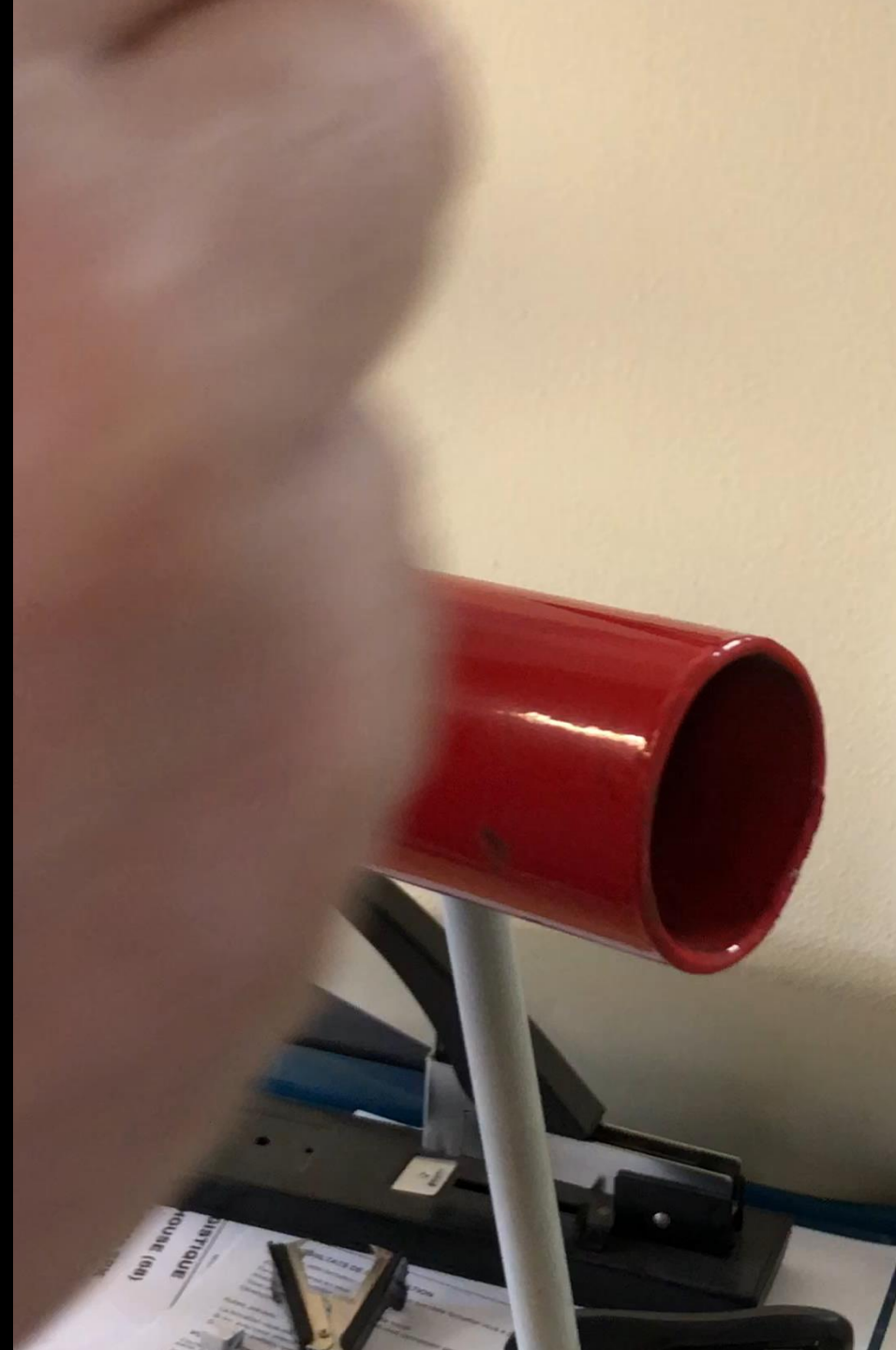


Flexible Adaptable Strap Technique (FAST SPRINKLER)

FAST SPRINKLER

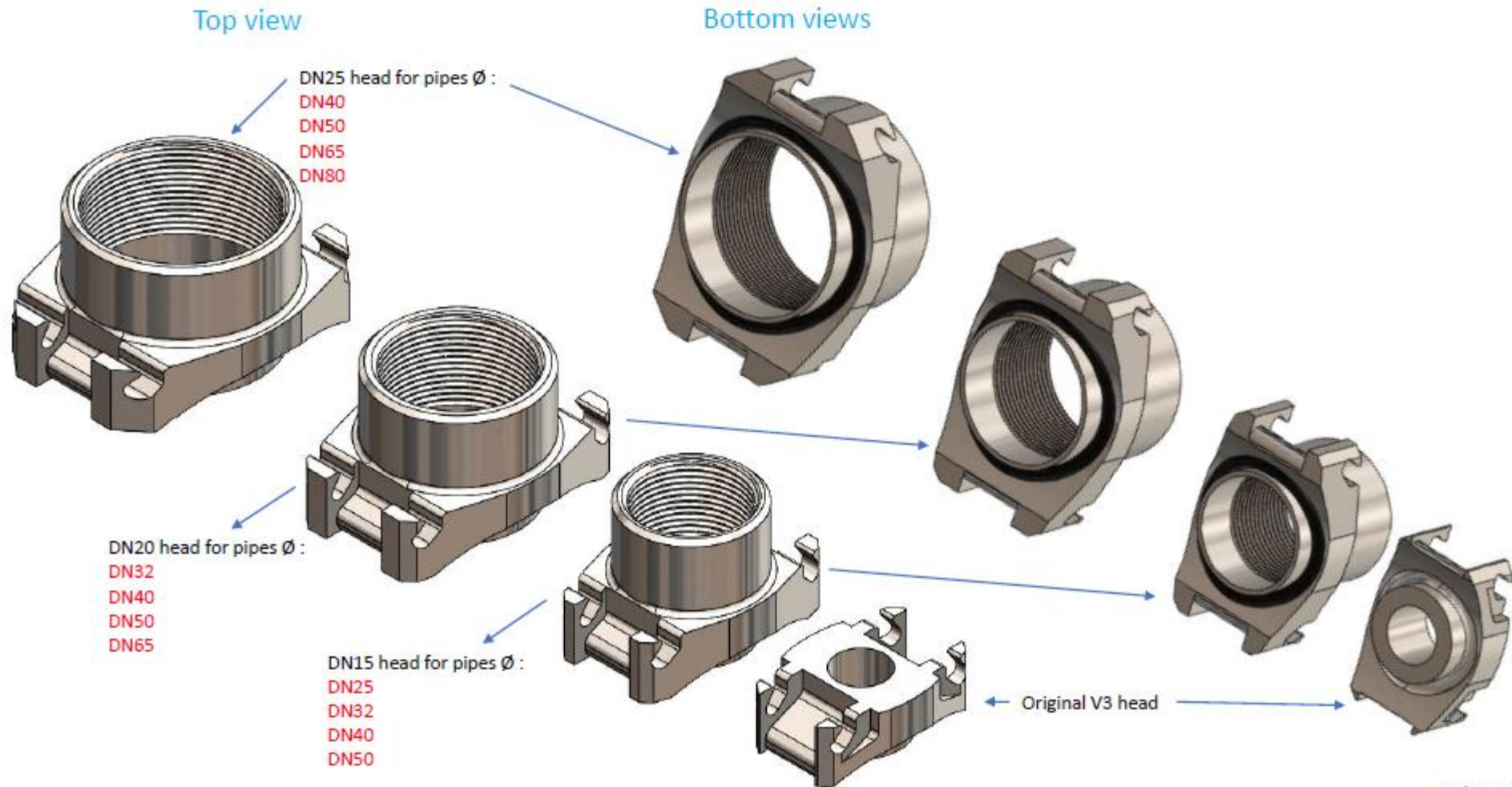
10

seconds installation



Mechanical-T

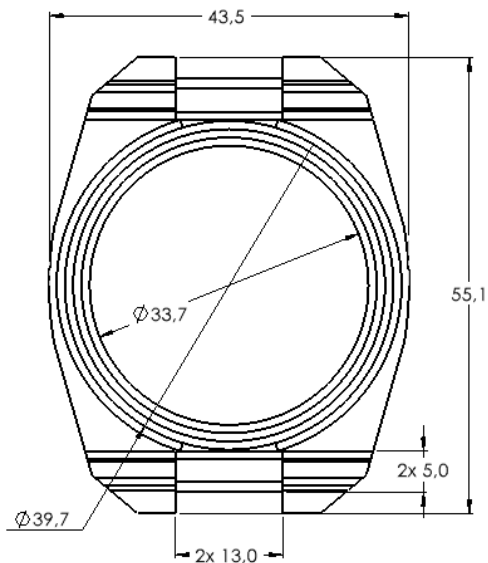
Bases



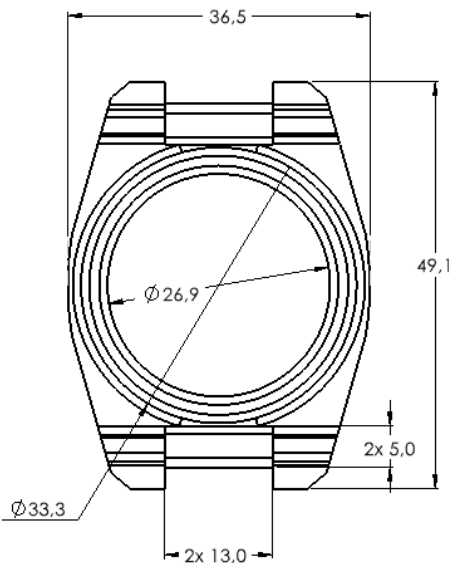
BASES DIMENSIONS

Top view

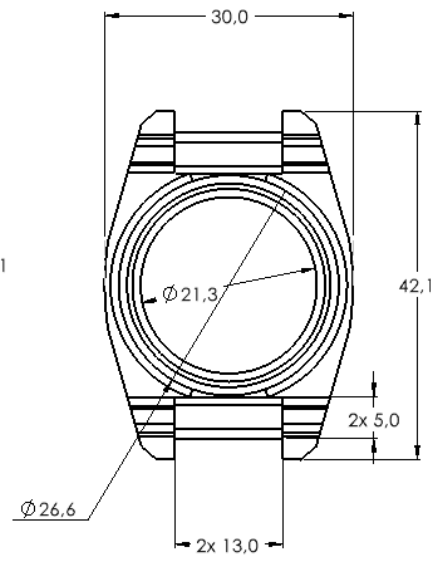
Head DN25 for
DN40-DN50-DN65-DN80



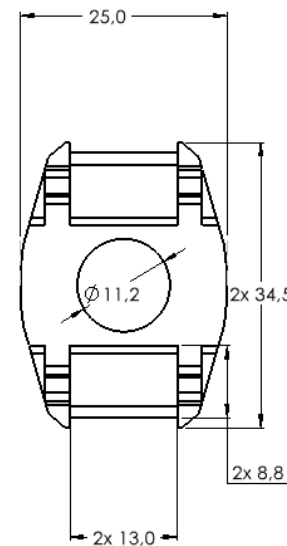
Head DN20 for
DN32-DN40-DN50-DN65



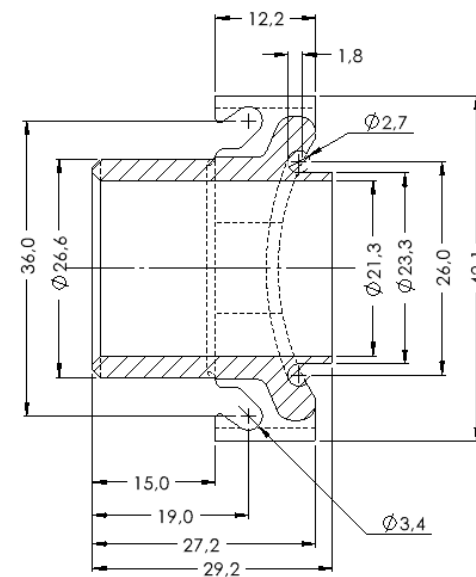
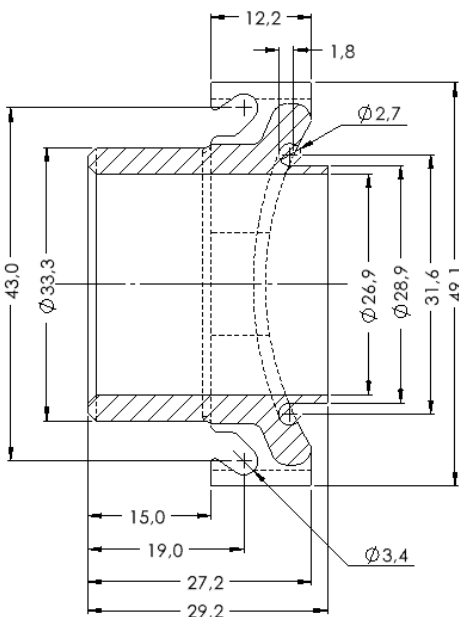
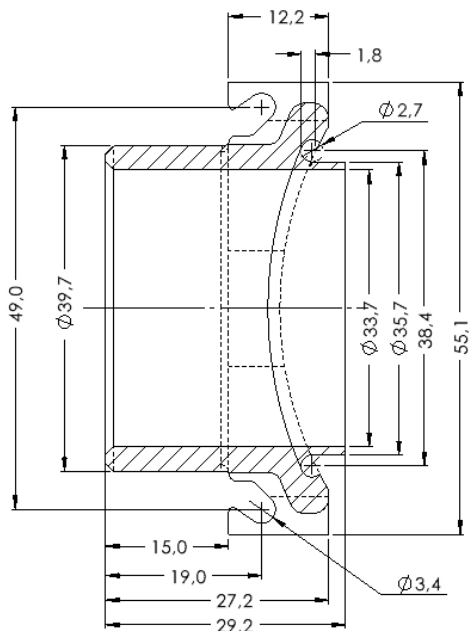
Head DN15 for
DN25-DN32-DN40-DN50



Former V3 base

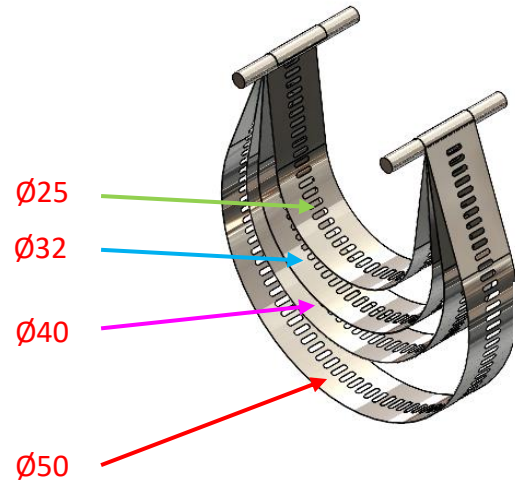


Section views

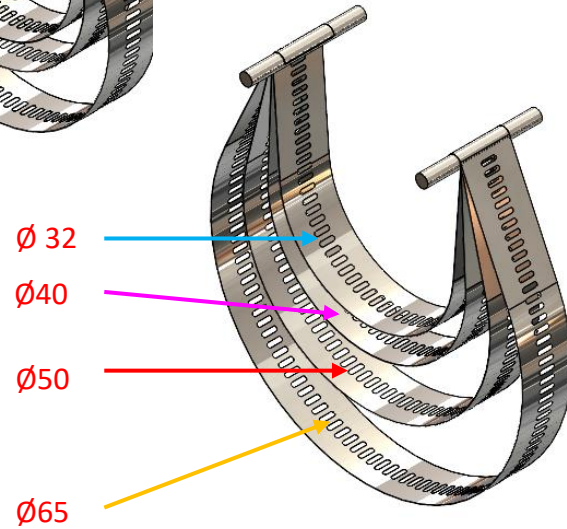


STRAP & CLAMP LOCATION

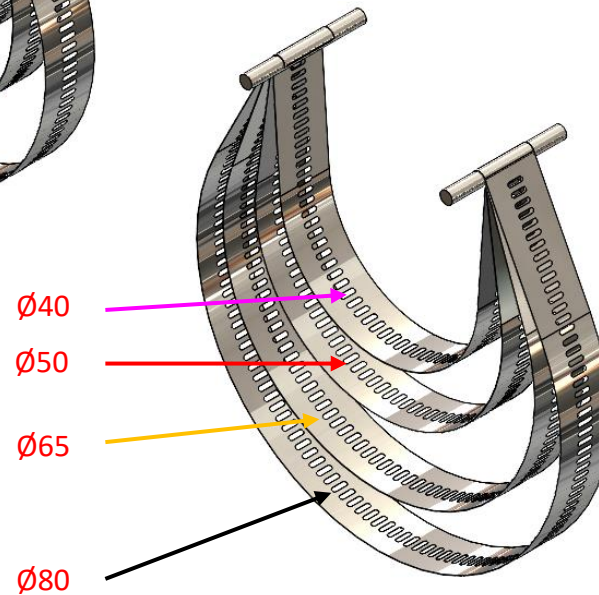
Shows how the strap and its clamp are symetricaly hooked into the clasp.
The initial strap remains the same for all versions, whatever the head or the pipe diameters.



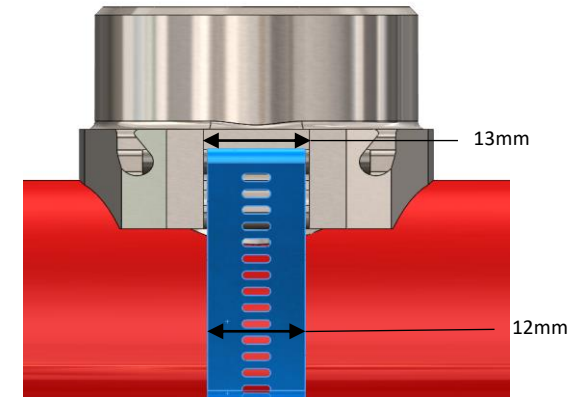
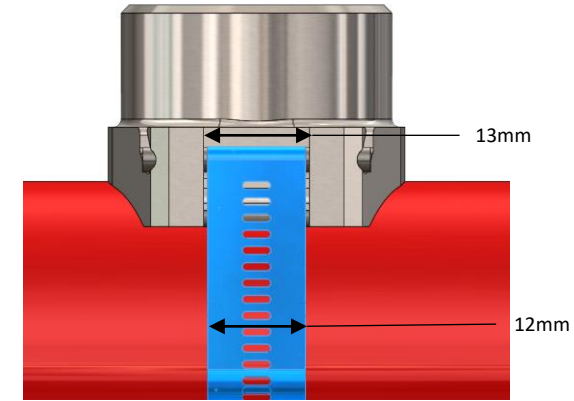
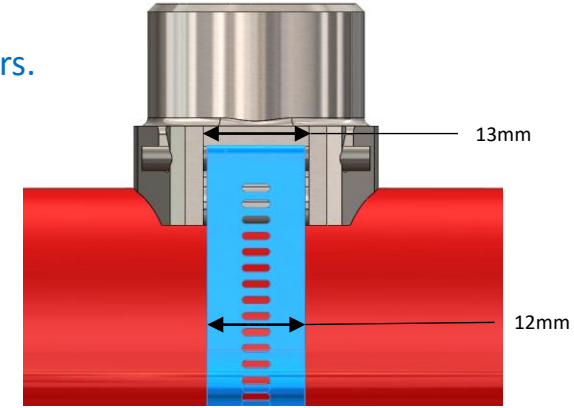
Head DN15



Head DN20



Head DN25



ADVANTAGES OF NEW MECHANICAL T

- By reducing the number of reference, the **production of Mechanical-T will cost less.**
- With less raw material needed for Mechanical-T fabrication, **the cost will decrease**



- It will be much more **easy for maintenance and after sales** on site.

KEEP IN MIND

Whatever you can do with actual
sprinkler you will be able to do exactly
the same with **FAST SPRINKLER**

... but **FASTER**





Pipes



- **Galvanised pipes :**
 - no more galvanisation after welding
 - gain of mechanical T
- **Stainless steel pipes :**
 - **no more welding** so no more passivation.
 - **avoid rust and leak** when passivation is not well done

Pre-coating pipes

Why using pre-coating inside/outside pipe :

- **Gain of time** no more coating in workshop
- **Reduce the loss of pression** in pipe with a better friction coefficient
- **Reduce some pipe diameter** by reducing loss of pression
- **Avoid rust** by having an inside coating
- **During life installation, increase reliability**
- **Reduce thickness of pipe** as we will not have rust anymore
- **Reduce time of work** on worksite by using lightweight pipe
- **Reduce body injuries** by carrying lightweight pipe
- **Easy to use with new sprinkler concept** as there's no destruction of coating by welding.

Actual average of prefab in our workshop is
12 mn with pre-coating pipe and FAST
SPRINKLER it will be **less than 3 mn**

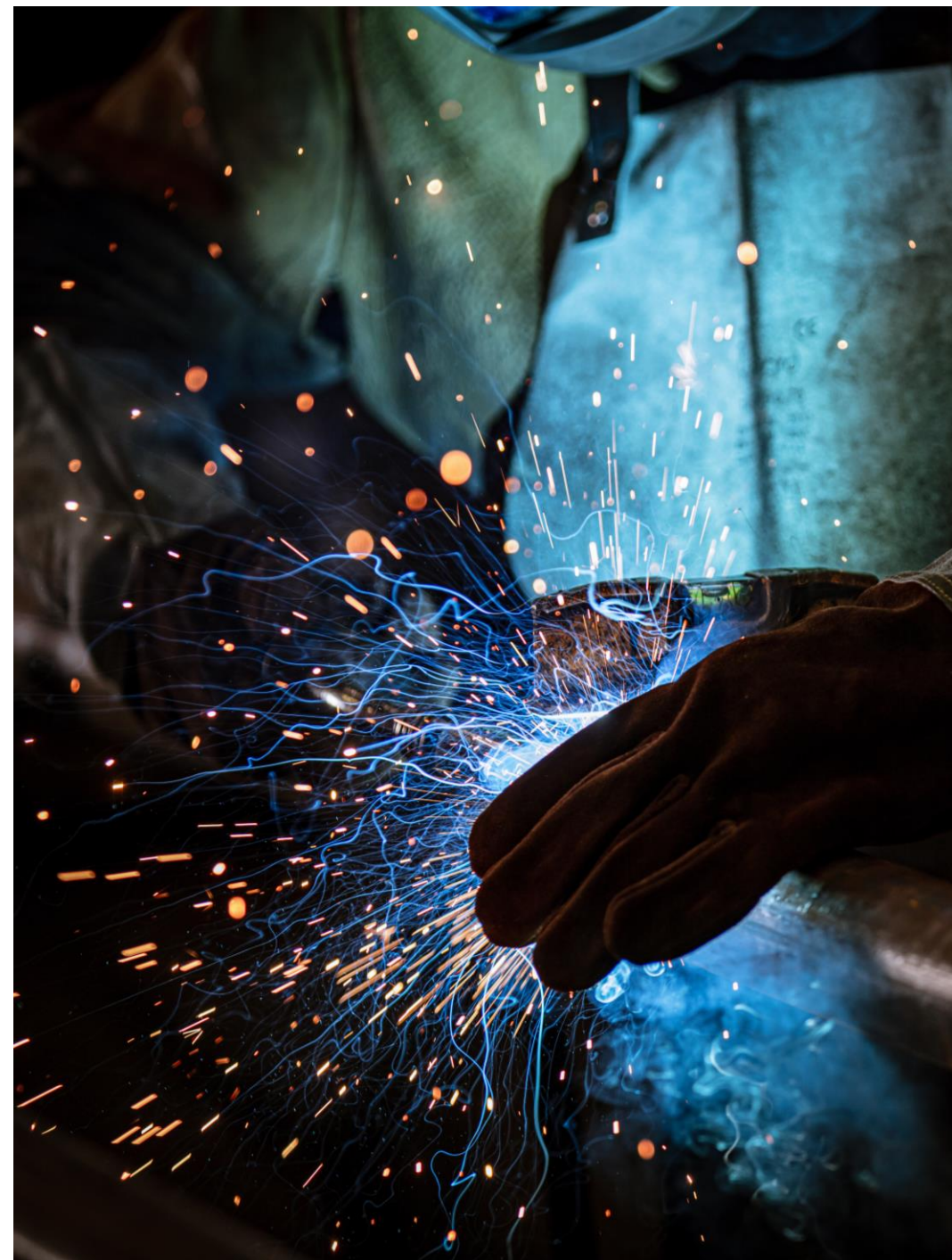
our productivity will be improve by

4



Pre-coating inside/outside pipe are existing worldwide

- Specifics points of vigilance for sprinkler installation :
 - **Coating realibility** during life installation
 - **Coating must not be hurt** during workshop or worksite transformation (groove, cut, ...)

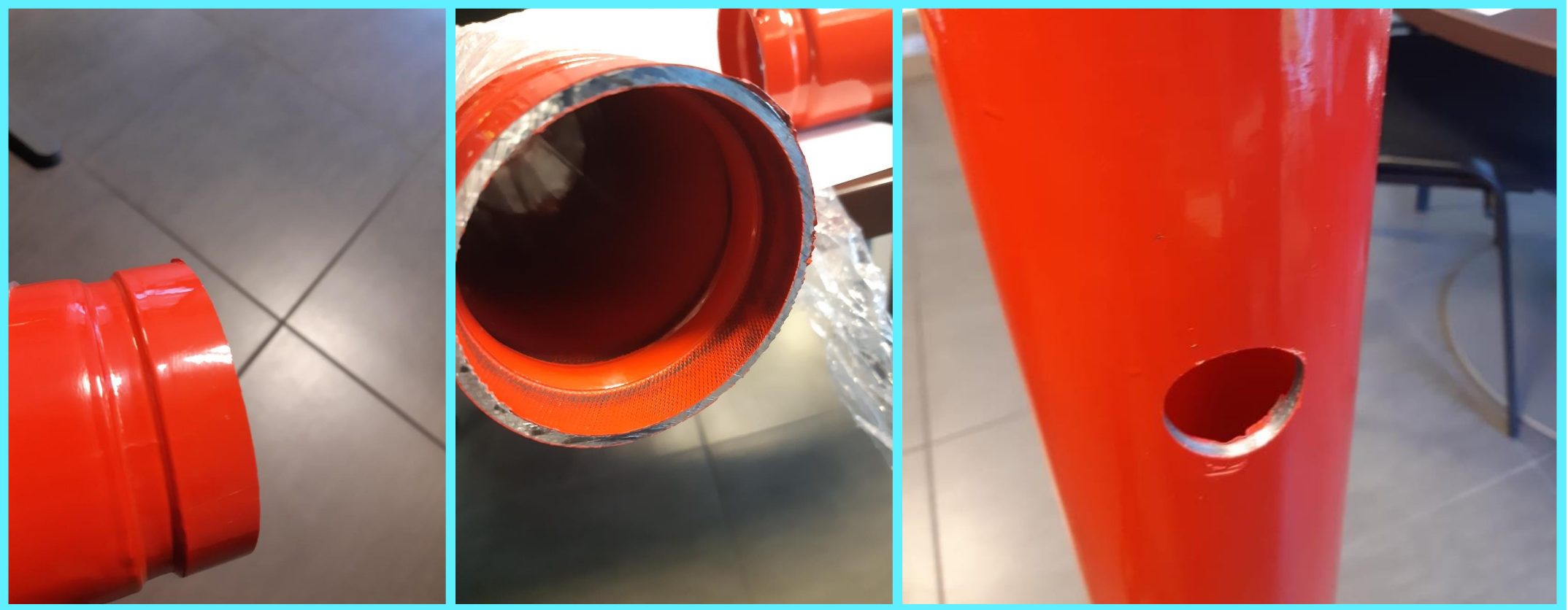


Test done on pre-coating pipe



Some didn't reach our goal...

Test done on pre-coating pipe



...and some did.

Inside/Outside pre-coating pipes



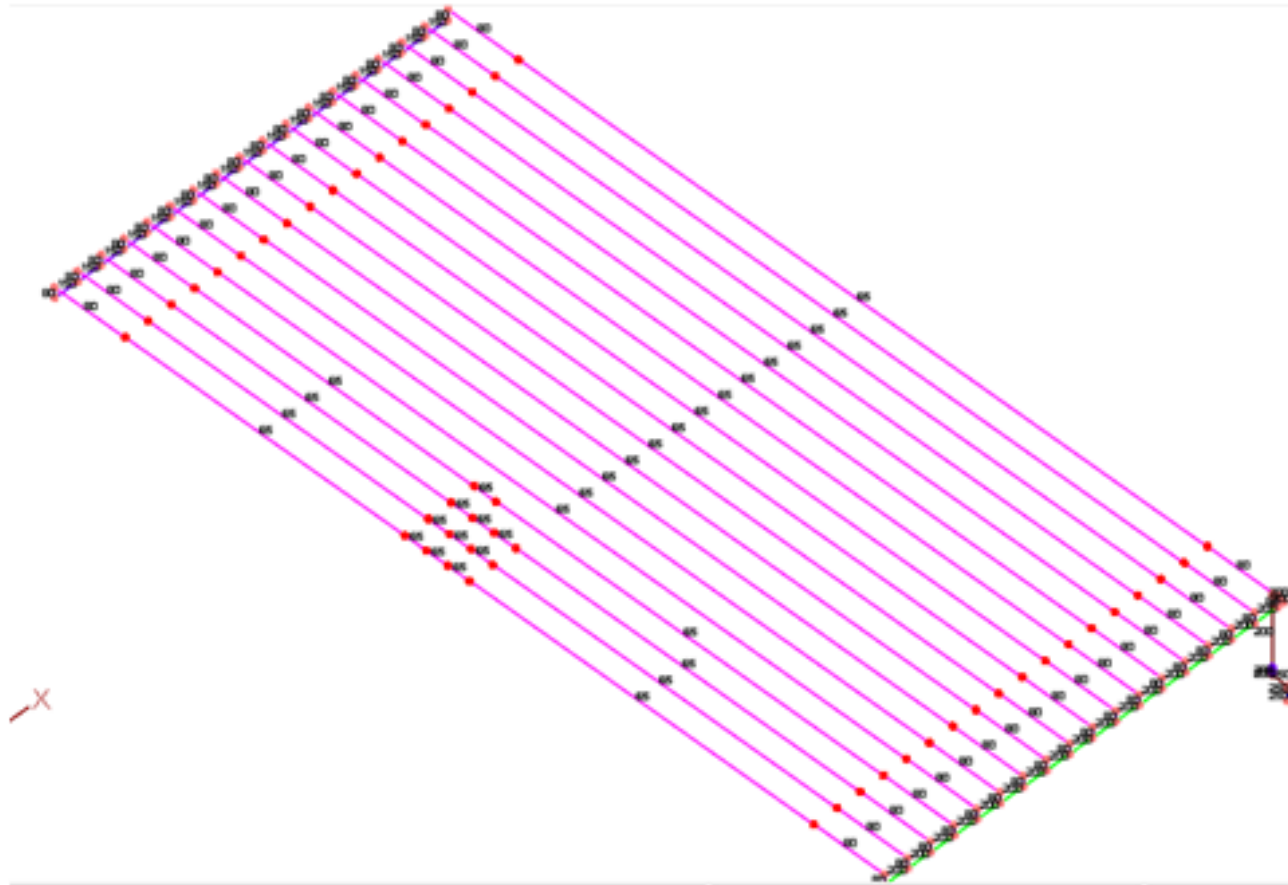
- After many tests we know exactly which kind of coating can be used.
- **Pipes can be used easily with new concept** but all pipes must be tested with the strap to be sure there will no interaction with the coating during installation life .
- It's a new concept and we must be careful by the used which can be done by installator. To be sure of quality of pipe **we must have a certification of pipe and brand pipe.**





What is this concept going to change ?

APSAD CALCULATION ESFR K 363 12+2 spk 2.8bars



With pipe failure APSAD Q 140/sprinkler

Flow : 528 m3/h at 8,30 bars

Nude Main Pipe ND 160 – 12 m

Activ Main Pipe ND 160 – 53 m

Passiv Main Pipe ND 125 – 53 m

Pipe ND 80 - 270 m

Pipe ND 65 – 1064 m

684 spk



IMPACT FOR WORKERS

We have done several calculations on existing plans, **in 100 % we can reduce** at least **one main pipe diameter**.

We will not focus on reducing pump or small pipe, most important is to **reduce weight of heaviest pipe to avoid workers' injuries**

IMPACT FOR WORKERS

Weight of the current system :	12 531 kg	Main collector (6ml)	Activ ND 200 :	143 kg
			Passiv ND 150 :	97 kg
System with inside coated pipes :	11 910 kg	Main collector (6ml)	Activ ND 150 :	97 kg
(same thickness)			Passiv ND 125 :	72 kg
System with inside coated pipes :	10 004 kg	Main collector (6ml)	Activ ND 150 :	71 kg
(thickness reduced)			Passiv ND 125 :	59 kg

On this example the **gain of weight is 3,69 kg/spk**

We are speaking about a steel gain of 20 %

... and half weight for main collector for workers



Max 500 kg

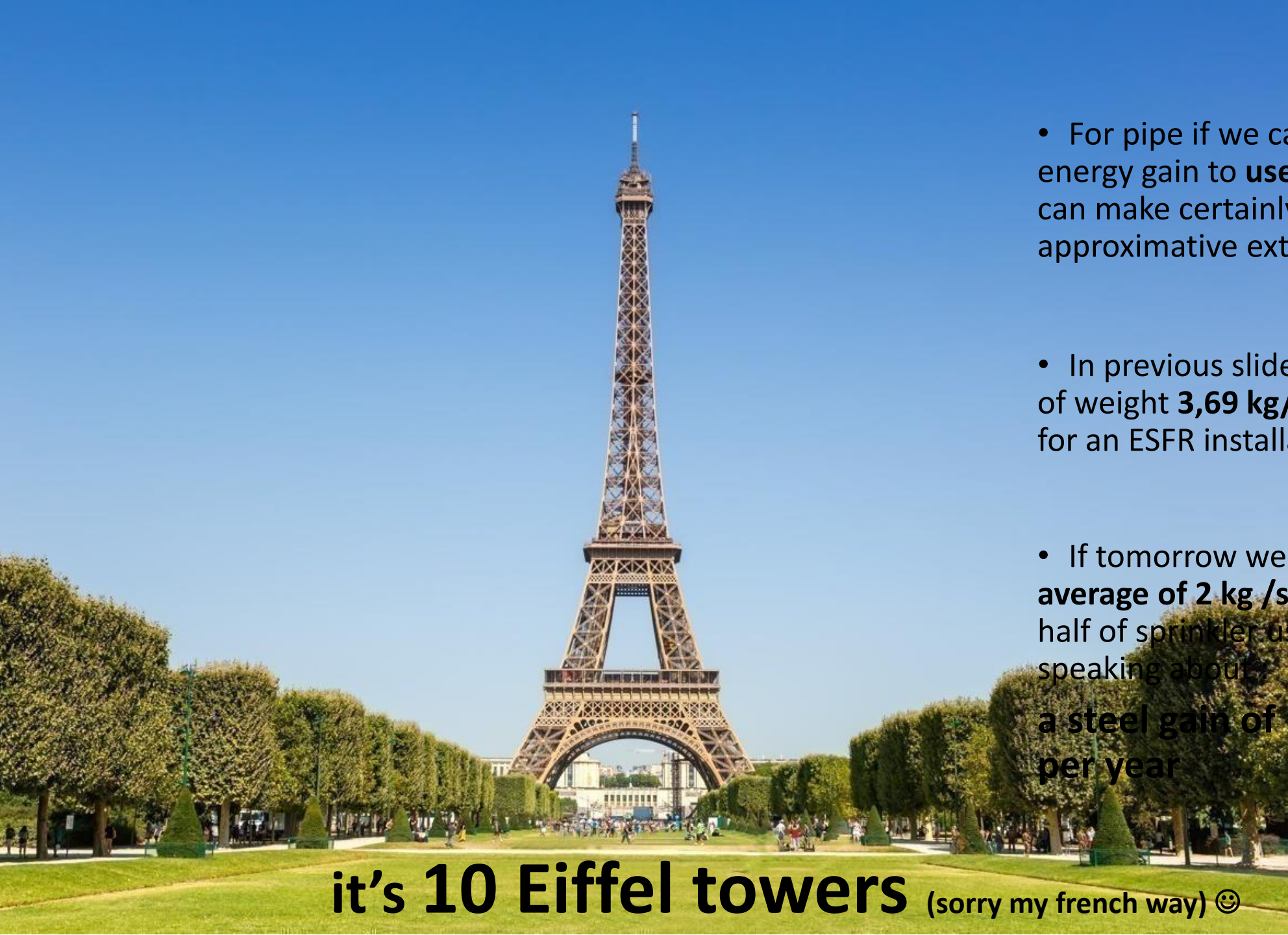


Max 350 kg

A glass globe reflecting a forest scene, resting on moss.

ENVIRONMENTAL IMPACT

- It's very complicated to calculate the environmental impact. Anyway we are knowing we will save energy and raw material:
- **No more energy for welding**
- **Less energy on worksite**
- **Less steel used**
- **Less transport cost**



- For pipe if we can not calculate energy gain to **use less steel**, we can make certainly an approximative extrapolation
- In previous slide we reach a gain of weight **3,69 kg/spk** but it was for an ESFR installation
- If tomorrow we are **just gaining an average of 2 kg /spk** and we apply on half of sprinkler used on planet we are speaking about:
a steel gain of 100 000 tonnes per year

it's 10 Eiffel towers (sorry my french way) 😊

Conclusion / take-aways

- By using new concept sprinkler combine with pre coating pipe we will have :
 - More reliable installation
 - Cost reduction
 - Less bodies injuries for workers
 - Gain of energy, and raw material and it s always good for earth, right ? 😊



An aerial photograph of a city, likely New York City, showing a dense grid of buildings and streets. The image is heavily filtered with a dark blue color, making the buildings appear as a textured, monochromatic pattern. The text 'THANK YOU' is centered in the upper half of the image in a bright cyan color.

THANK YOU

Special thanks to Alan and Youcef for their help