

# **HOOGO FM Approved Seismic Sway Bracing System**

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# HOOGO FM Certification

## THE ASEISMIC REQUIREMENTS- FM SPRINKLE SYSTEM DESIGN SPECIFICATION

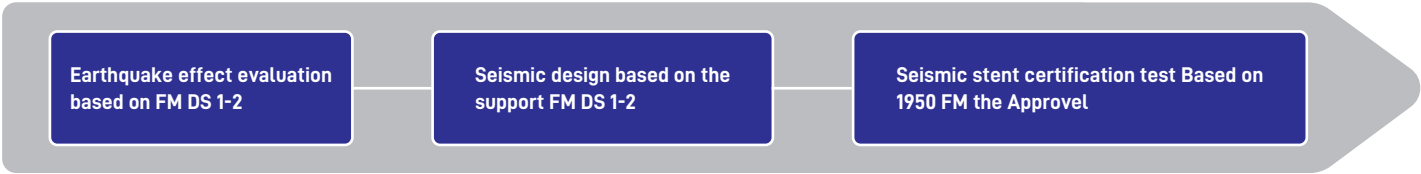
FM is one of the largest industrial and commercial insurance companies in the world. FM Global provides testing and certification services to industrial and commercial products worldwide through its FM Approvals (FM Approvals) organization. FM certification is widely recognized worldwide, and FM Global's insurance customers are also more inclined to use FM certified products, which show consumers that the product or service has passed the highest standards of the United States and international testing. FM certification bodies can also issue CE marking directly to fire protection products.

### FM's testing and certification services include:

Product certification: FM issues certification certificates to manufacturers of fire protection equipment, electronic and electrical equipment, hazardous location facilities, fire field surveys, signal equipment, electronic equipment, building materials and other products;  
Standard testing: FM provides manufacturers with standard testing services for single characteristics of products;  
ISO 9000 registration: FM is an ISO 9000 registration body, which can conduct ISO 9000 system audits for enterprises.

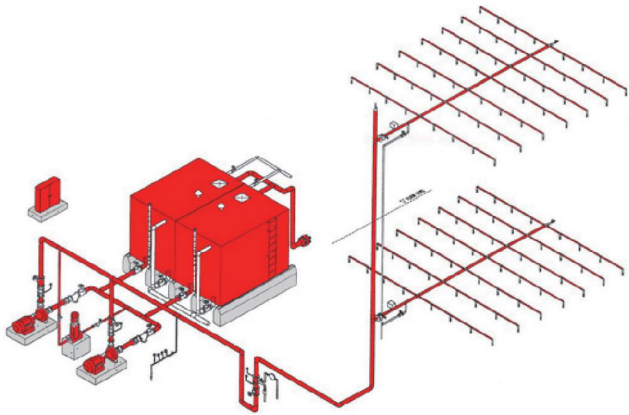


## FM'S SPRINKLER SYSTEM SEISMIC DESIGN EVALUATION PROCESS



## AS AN ELECTROMECHANICAL NON-STRUCTURAL COMPONENT, THE SPRINKLER SYSTEM HAS SPECIFIC SEISMIC REQUIREMENTS

After the earthquake, more than 50% of the building repair costs will be used for the restoration of non-structural components; component, it is basically a consensus that the sprinkler system needs to be designed for earthquake resistance on a global scale, because the sprinkler system is an independent system that must ensure normal operation before, during and after the earthquake, and it plays a key role in reducing disaster losses.



## SEISMIC REQUIREMENTS OF SPRINKLER SYSTEM DESIGN SPECIFICATIONS

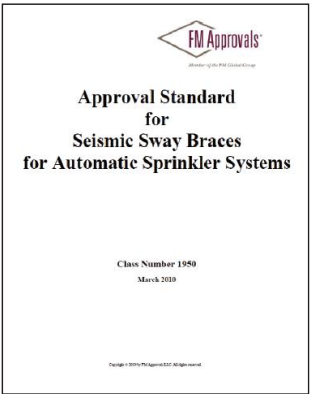
### FM Data Sheets 2-8 is a specification document that guides the design of spray seismic support:

The calculation formula of horizontal seismic force is given;  
FM insurance evaluation acceptable spray shock-proof support forms: lateral, longitudinal and four-way support;  
The layout principles and related requirements of seismic support;  
The scope of the spray pipeline that needs to be made of seismic bracing;  
Related structural requirements;

### The FM Approval 1950 document is a specification document for FM spray seismic support material testing:

Defines the composition of each component of the spray seismic bracing;  
Gives the test form and method of seismic bracing components;  
FM has certification requirements for the material of the spray seismic bracing:  
it needs to pass the product component test according to the test method of FM Approval 1950 document.

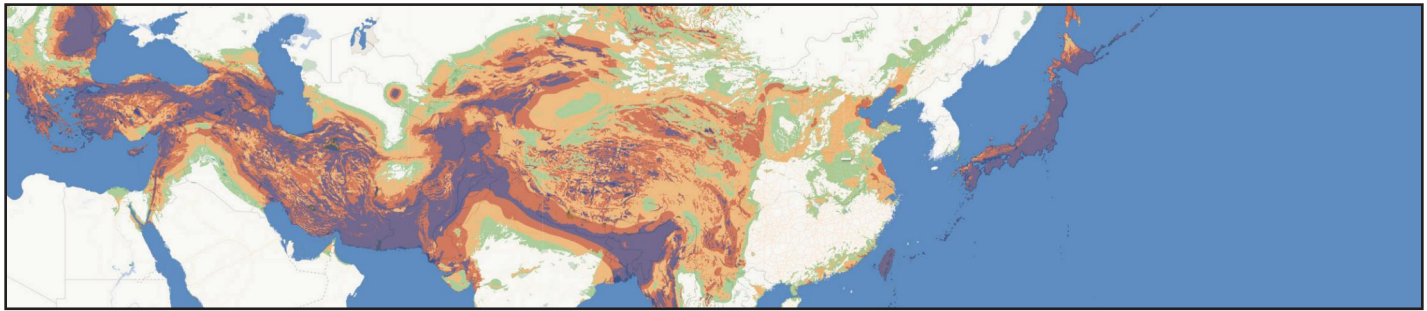
|                                                            |  |
|------------------------------------------------------------|--|
| FM Global<br>Property Loss Prevention Data Sheets          |  |
| 2-8                                                        |  |
| Class 1950                                                 |  |
| Page 1 of 4                                                |  |
| SEISMIC PROTECTION FOR WATER-BASED FIRE PROTECTION SYSTEMS |  |
| Table of Contents                                          |  |
| Page                                                       |  |
| 1.0 SCOPE                                                  |  |
| 1.1 Purpose                                                |  |
| 1.2 Coverage                                               |  |
| 1.3 Exclusions                                             |  |
| 2.0 REFERENCES AND SPECIFICATIONS                          |  |
| 2.1 Standards                                              |  |
| 2.2 Materials                                              |  |
| 2.3 Installation                                           |  |
| 2.4 Maintenance                                            |  |
| 2.5 Testing                                                |  |
| 2.6 Inspection                                             |  |
| 2.7 Training                                               |  |
| 2.8 Documentation                                          |  |
| 2.9 Record Keeping                                         |  |
| 2.10 Reporting                                             |  |
| 2.11 Compliance                                            |  |
| 2.12 Enforcement                                           |  |
| 2.13 Penalties                                             |  |
| 2.14 Remediation                                           |  |
| 2.15 Closure                                               |  |
| 2.16 Follow-up                                             |  |
| 2.17 Review                                                |  |
| 2.18 Evaluation                                            |  |
| 2.19 Improvement                                           |  |
| 2.20 Feedback                                              |  |
| 2.21 Communication                                         |  |
| 2.22 Coordination                                          |  |
| 2.23 Collaboration                                         |  |
| 2.24 Partnership                                           |  |
| 2.25 Alliance                                              |  |
| 2.26 Consortium                                            |  |
| 2.27 Joint Venture                                         |  |
| 2.28 Strategic Alliance                                    |  |
| 2.29 Partnership                                           |  |
| 2.30 Collaboration                                         |  |
| 2.31 Alliance                                              |  |
| 2.32 Consortium                                            |  |
| 2.33 Joint Venture                                         |  |
| 2.34 Strategic Alliance                                    |  |
| 2.35 Partnership                                           |  |
| 2.36 Collaboration                                         |  |
| 2.37 Alliance                                              |  |
| 2.38 Consortium                                            |  |
| 2.39 Joint Venture                                         |  |
| 2.40 Strategic Alliance                                    |  |
| 2.41 Partnership                                           |  |
| 2.42 Collaboration                                         |  |
| 2.43 Alliance                                              |  |
| 2.44 Consortium                                            |  |
| 2.45 Joint Venture                                         |  |
| 2.46 Strategic Alliance                                    |  |
| 2.47 Partnership                                           |  |
| 2.48 Collaboration                                         |  |
| 2.49 Alliance                                              |  |
| 2.50 Consortium                                            |  |
| 2.51 Joint Venture                                         |  |
| 2.52 Strategic Alliance                                    |  |
| 2.53 Partnership                                           |  |
| 2.54 Collaboration                                         |  |
| 2.55 Alliance                                              |  |
| 2.56 Consortium                                            |  |
| 2.57 Joint Venture                                         |  |
| 2.58 Strategic Alliance                                    |  |
| 2.59 Partnership                                           |  |
| 2.60 Collaboration                                         |  |
| 2.61 Alliance                                              |  |
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| 2.64 Strategic Alliance                                    |  |
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| 2.68 Consortium                                            |  |
| 2.69 Joint Venture                                         |  |
| 2.70 Strategic Alliance                                    |  |
| 2.71 Partnership                                           |  |
| 2.72 Collaboration                                         |  |
| 2.73 Alliance                                              |  |
| 2.74 Consortium                                            |  |
| 2.75 Joint Venture                                         |  |
| 2.76 Strategic Alliance                                    |  |
| 2.77 Partnership                                           |  |
| 2.78 Collaboration                                         |  |
| 2.79 Alliance                                              |  |
| 2.80 Consortium                                            |  |
| 2.81 Joint Venture                                         |  |
| 2.82 Strategic Alliance                                    |  |
| 2.83 Partnership                                           |  |
| 2.84 Collaboration                                         |  |
| 2.85 Alliance                                              |  |
| 2.86 Consortium                                            |  |
| 2.87 Joint Venture                                         |  |
| 2.88 Strategic Alliance                                    |  |
| 2.89 Partnership                                           |  |
| 2.90 Collaboration                                         |  |
| 2.91 Alliance                                              |  |
| 2.92 Consortium                                            |  |
| 2.93 Joint Venture                                         |  |
| 2.94 Strategic Alliance                                    |  |
| 2.95 Partnership                                           |  |
| 2.96 Collaboration                                         |  |
| 2.97 Alliance                                              |  |
| 2.98 Consortium                                            |  |
| 2.99 Joint Venture                                         |  |
| 2.100 Strategic Alliance                                   |  |





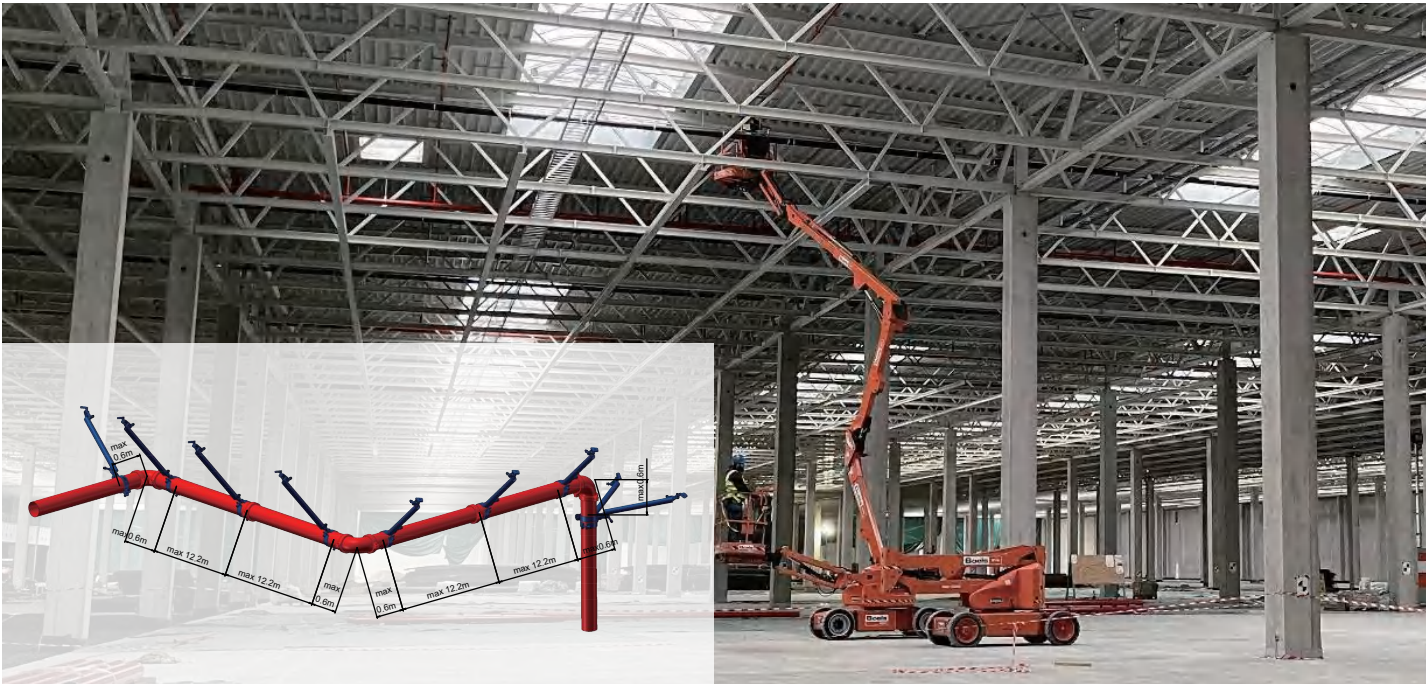
# SEISMIC REQUIREMENTS OF THE DESIGN CODE OF SPRINKLER SYSTEM-FM(DETERMINATION OF SEISMIC INFLUENCE COEFFICIENT)

In FM seismic risk assessment, the seismic impact coefficient assessment of a specific area of the world is strictly determined in accordance with FM Data Sheets 1-2;The seismic horizontal force of the sprinkler system must be calculated with reference to the seismic influence coefficient determined in the sheets.



| MapLegend | FM Global EQ Zone | Mean Return Period of "Damaging Ground Motions" | Relative Risk | G factor |
|-----------|-------------------|-------------------------------------------------|---------------|----------|
|           | 50-year           | Up to 50 years                                  | Severe        | 1.00     |
|           | 100-year          | 51 to 100 years                                 | High          | 0.70     |
|           | 250-year          | 101 to 250 years                                | Moderate      | 0.40     |
|           | 500-year          | 251 to 500 years                                | Moderate      | 0.40     |
|           | >500-year         | > 500 years                                     | Low           | 0.40     |

## HOOGO FM Approved Seismic Sway Bracing System



### WORLD-LEADING MECHANICAL PERFORMANCE

HOOGO FM seismic support leads the world in all aspects including bearing capacity, installation angle, pipe diameter coverage, and service support



**High force value**  
world-leading  
mechanical properties



**Full angles**  
30° - 90°



**Full pipe diameter**  
25mm - 300mm



**Design software**  
Customised services

## LATERAL SWAY BRACE-STEEL STRUCTURE



| Bracket No.  | Item                                   | Pipe Diameter |
|--------------|----------------------------------------|---------------|
| GHS(FM)-25T  | LATERAL SWAY BRACE-STEEL STRUCTURE (T) | DN25          |
| GHS(FM)-32T  | LATERAL SWAY BRACE-STEEL STRUCTURE (T) | DN32          |
| GHS(FM)-40T  | LATERAL SWAY BRACE-STEEL STRUCTURE (T) | DN40          |
| GHS(FM)-50T  | LATERAL SWAY BRACE-STEEL STRUCTURE (T) | DN50          |
| GHS(FM)-65T  | LATERAL SWAY BRACE-STEEL STRUCTURE (T) | DN65          |
| GHS(FM)-80T  | LATERAL SWAY BRACE-STEEL STRUCTURE (T) | DN80          |
| GHS(FM)-100T | LATERAL SWAY BRACE-STEEL STRUCTURE (T) | DN100         |
| GHS(FM)-125T | LATERAL SWAY BRACE-STEEL STRUCTURE (T) | DN125         |
| GHS(FM)-150T | LATERAL SWAY BRACE-STEEL STRUCTURE (T) | DN150         |
| GHS(FM)-200T | LATERAL SWAY BRACE-STEEL STRUCTURE (T) | DN200         |
| GHS(FM)-250T | LATERAL SWAY BRACE-STEEL STRUCTURE (T) | DN250         |
| GHS(FM)-300T | LATERAL SWAY BRACE-STEEL STRUCTURE (T) | DN300         |



## LONGITUDINAL SWAY BRACE-STEEL STRUCTURE



| Bracket No.  | Item                                        | Pipe Diameter |
|--------------|---------------------------------------------|---------------|
| GHS(FM)-25L  | LONGITUDINAL SWAY BRACE-STEEL STRUCTURE (L) | DN25          |
| GHS(FM)-32L  | LONGITUDINAL SWAY BRACE-STEEL STRUCTURE (L) | DN32          |
| GHS(FM)-40L  | LONGITUDINAL SWAY BRACE-STEEL STRUCTURE (L) | DN40          |
| GHS(FM)-50L  | LONGITUDINAL SWAY BRACE-STEEL STRUCTURE (L) | DN50          |
| GHS(FM)-65L  | LONGITUDINAL SWAY BRACE-STEEL STRUCTURE (L) | DN65          |
| GHS(FM)-80L  | LONGITUDINAL SWAY BRACE-STEEL STRUCTURE (L) | DN80          |
| GHS(FM)-100L | LONGITUDINAL SWAY BRACE-STEEL STRUCTURE (L) | DN100         |
| GHS(FM)-125L | LONGITUDINAL SWAY BRACE-STEEL STRUCTURE (L) | DN125         |
| GHS(FM)-150L | LONGITUDINAL SWAY BRACE-STEEL STRUCTURE (L) | DN150         |
| GHS(FM)-200L | LONGITUDINAL SWAY BRACE-STEEL STRUCTURE (L) | DN200         |
| GHS(FM)-250L | LONGITUDINAL SWAY BRACE-STEEL STRUCTURE (L) | DN250         |
| GHS(FM)-300L | LONGITUDINAL SWAY BRACE-STEEL STRUCTURE (L) | DN300         |



## LATERAL SWAY BRACE-CONCRETE STRUCTURE



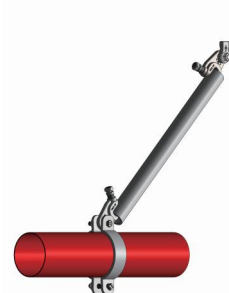
| Bracket No. | Item                                      | Pipe Diameter |
|-------------|-------------------------------------------|---------------|
| HS(FM)-25T  | LATERAL SWAY BRACE-CONCRETE STRUCTURE (T) | DN25          |
| HS(FM)-32T  | LATERAL SWAY BRACE-CONCRETE STRUCTURE (T) | DN32          |
| HS(FM)-40T  | LATERAL SWAY BRACE-CONCRETE STRUCTURE (T) | DN40          |
| HS(FM)-50T  | LATERAL SWAY BRACE-CONCRETE STRUCTURE (T) | DN50          |
| HS(FM)-65T  | LATERAL SWAY BRACE-CONCRETE STRUCTURE (T) | DN65          |
| HS(FM)-80T  | LATERAL SWAY BRACE-CONCRETE STRUCTURE (T) | DN80          |
| HS(FM)-100T | LATERAL SWAY BRACE-CONCRETE STRUCTURE (T) | DN100         |
| HS(FM)-125T | LATERAL SWAY BRACE-CONCRETE STRUCTURE (T) | DN125         |
| HS(FM)-150T | LATERAL SWAY BRACE-CONCRETE STRUCTURE (T) | DN150         |
| HS(FM)-200T | LATERAL SWAY BRACE-CONCRETE STRUCTURE (T) | DN200         |
| HS(FM)-250T | LATERAL SWAY BRACE-CONCRETE STRUCTURE (T) | DN250         |
| HS(FM)-300T | LATERAL SWAY BRACE-CONCRETE STRUCTURE (T) | DN300         |



## LONGITUDINAL SWAY BRACE- CONCRETE STRUCTURE



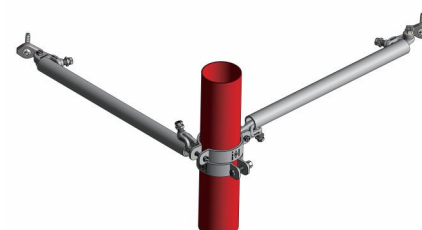
| Bracket No. | Item                                            | Pipe Diameter |
|-------------|-------------------------------------------------|---------------|
| HS(FM)-25L  | LONGITUDINAL SWAY BRACE- CONCRETE STRUCTURE (L) | DN25          |
| HS(FM)-32L  | LONGITUDINAL SWAY BRACE- CONCRETE STRUCTURE (L) | DN32          |
| HS(FM)-40L  | LONGITUDINAL SWAY BRACE- CONCRETE STRUCTURE (L) | DN40          |
| HS(FM)-50L  | LONGITUDINAL SWAY BRACE- CONCRETE STRUCTURE (L) | DN50          |
| HS(FM)-65L  | LONGITUDINAL SWAY BRACE- CONCRETE STRUCTURE (L) | DN65          |
| HS(FM)-80L  | LONGITUDINAL SWAY BRACE- CONCRETE STRUCTURE (L) | DN80          |
| HS(FM)-100L | LONGITUDINAL SWAY BRACE- CONCRETE STRUCTURE (L) | DN100         |
| HS(FM)-125L | LONGITUDINAL SWAY BRACE- CONCRETE STRUCTURE (L) | DN125         |
| HS(FM)-150L | LONGITUDINAL SWAY BRACE- CONCRETE STRUCTURE (L) | DN150         |
| HS(FM)-200L | LONGITUDINAL SWAY BRACE- CONCRETE STRUCTURE (L) | DN200         |
| HS(FM)-250L | LONGITUDINAL SWAY BRACE- CONCRETE STRUCTURE (L) | DN250         |
| HS(FM)-300L | LONGITUDINAL SWAY BRACE- CONCRETE STRUCTURE (L) | DN300         |



## FOUR-WAY SWAY BRACE-CONCRETE STRUCTURE



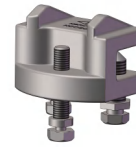
| Bracket No. | Item                                   | Pipe Diameter |
|-------------|----------------------------------------|---------------|
| VS(FM)-25   | FOUR-WAY SWAY BRACE-CONCRETE STRUCTURE | DN25          |
| VS(FM)-32   | FOUR-WAY SWAY BRACE-CONCRETE STRUCTURE | DN32          |
| VS(FM)-40   | FOUR-WAY SWAY BRACE-CONCRETE STRUCTURE | DN40          |
| VS(FM)-50   | FOUR-WAY SWAY BRACE-CONCRETE STRUCTURE | DN50          |
| VS(FM)-65   | FOUR-WAY SWAY BRACE-CONCRETE STRUCTURE | DN65          |
| VS(FM)-80   | FOUR-WAY SWAY BRACE-CONCRETE STRUCTURE | DN80          |
| VS(FM)-100  | FOUR-WAY SWAY BRACE-CONCRETE STRUCTURE | DN100         |
| VS(FM)-125  | FOUR-WAY SWAY BRACE-CONCRETE STRUCTURE | DN125         |
| VS(FM)-150  | FOUR-WAY SWAY BRACE-CONCRETE STRUCTURE | DN150         |
| VS(FM)-200  | FOUR-WAY SWAY BRACE-CONCRETE STRUCTURE | DN200         |
| VS(FM)-250  | FOUR-WAY SWAY BRACE-CONCRETE STRUCTURE | DN250         |
| VS(FM)-300  | FOUR-WAY SWAY BRACE-CONCRETE STRUCTURE | DN300         |



## FM BEAM CLAMP



| Item              | Type    | Surface            | Art. No. |
|-------------------|---------|--------------------|----------|
| FM beam clamp-HDG | HGFM-BT | Hot-dip galvanized | 916203   |



## FM CONNECTOR



| Item             | Type   | Surface            | Art. No. |
|------------------|--------|--------------------|----------|
| FM connector-HDG | HKZ-T5 | Hot-dip galvanized | 916201   |



## O PIPE RING



| Item                     | Type               | Surface            | Art. No. |
|--------------------------|--------------------|--------------------|----------|
| O pipe ring DN25-HDG,FM  | TIPP-OT 1", FM     | Hot-dip galvanized | 916205   |
| O pipe ring DN32-HDG,FM  | TIPP-OT 1 1/4", FM | Hot-dip galvanized | 916206   |
| O pipe ring DN40-HDG,FM  | TIPP-OT 1 1/2", FM | Hot-dip galvanized | 916207   |
| O pipe ring DN50-HDG,FM  | TIPP-OT 2", FM     | Hot-dip galvanized | 916208   |
| O pipe ring DN65-HDG,FM  | TIPP-OT 2 1/2", FM | Hot-dip galvanized | 916209   |
| O pipe ring DN80-HDG,FM  | TIPP-OT 3", FM     | Hot-dip galvanized | 916210   |
| O pipe ring DN100-HDG,FM | TIPP-OT 4", FM     | Hot-dip galvanized | 916211   |
| O pipe ring DN125-HDG,FM | TIPP-OT 5", FM     | Hot-dip galvanized | 916212   |
| O pipe ring DN150-HDG,FM | TIPP-OT 6", FM     | Hot-dip galvanized | 916213   |
| O pipe ring DN200-HDG,FM | TIPP-OT 8", FM     | Hot-dip galvanized | 916214   |
| O pipe ring DN250-HDG,FM | TIPP-OT 10", FM    | Hot-dip galvanized | 916215   |
| O pipe ring DN300-HDG,FM | TIPP-OT 12", FM    | Hot-dip galvanized | 916216   |



## GALVANIZED STEEL PIPE



| Item                      | Type | Surface            | Art. No. |
|---------------------------|------|--------------------|----------|
| Galvanized steel pipe-HDG | DN25 | Hot-dip galvanized | 916217   |



## ANCHOR FIXING SYSTEM

| Item                      | Type    | Drill Diameter (mm) | Drill Depth (mm) | Effective Depth (mm) |
|---------------------------|---------|---------------------|------------------|----------------------|
| HRK Undercut bolt anchor  | M12*110 | 18                  | 85               | 80                   |
| HZG Concrete screw anchor | M10*90  | 10                  | 85               | 56                   |

HRK Undercut bolt anchor

HZG Concrete screw anchor



### Design parameters

| Design value/ Concrete strength grade |                           | C25   | C30   | C35   | C40   | C45   | C50   | C55   | C60   |
|---------------------------------------|---------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| HRK Undercut bolt anchor              | Tensile design value (kN) | 26.77 | 29.04 | 31.12 | 33.06 | 34.89 | 37.61 | 38.25 | 39.82 |
|                                       | Shear design value (kN)   | 33.73 | 33.73 | 33.73 | 33.73 | 33.73 | 33.73 | 33.73 | 33.73 |
| HZG Concrete screw anchor             | Tensile design value (kN) | 11.87 | 13.00 | 14.04 | 15.01 | 15.92 | 16.78 | 17.60 | 18.38 |
|                                       | Shear design value (kN)   | 27.95 | 27.95 | 27.95 | 27.95 | 27.95 | 27.95 | 27.95 | 27.95 |

# Companion Design Software



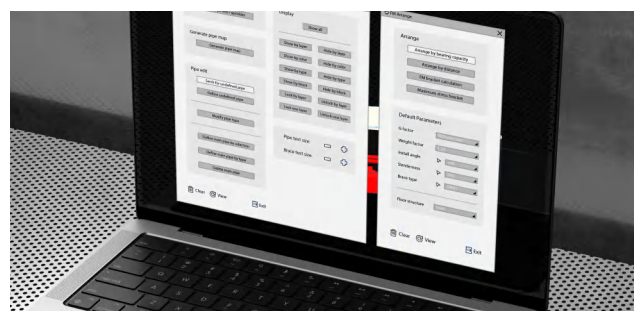
**Fast Layout**  
Batch Processing,  
Intelligent Layout



**Easy Calculation**  
One-click for statistics  
and calculation



**Comprehensive List**  
Generate BOM, calculate book, price list etc.





**Professional service satisfy the customer**  
**High quality leads the future**



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