



Thrust Resisting Joints

Plug-In Joints – The Clever Alternative

Efficient and Safe

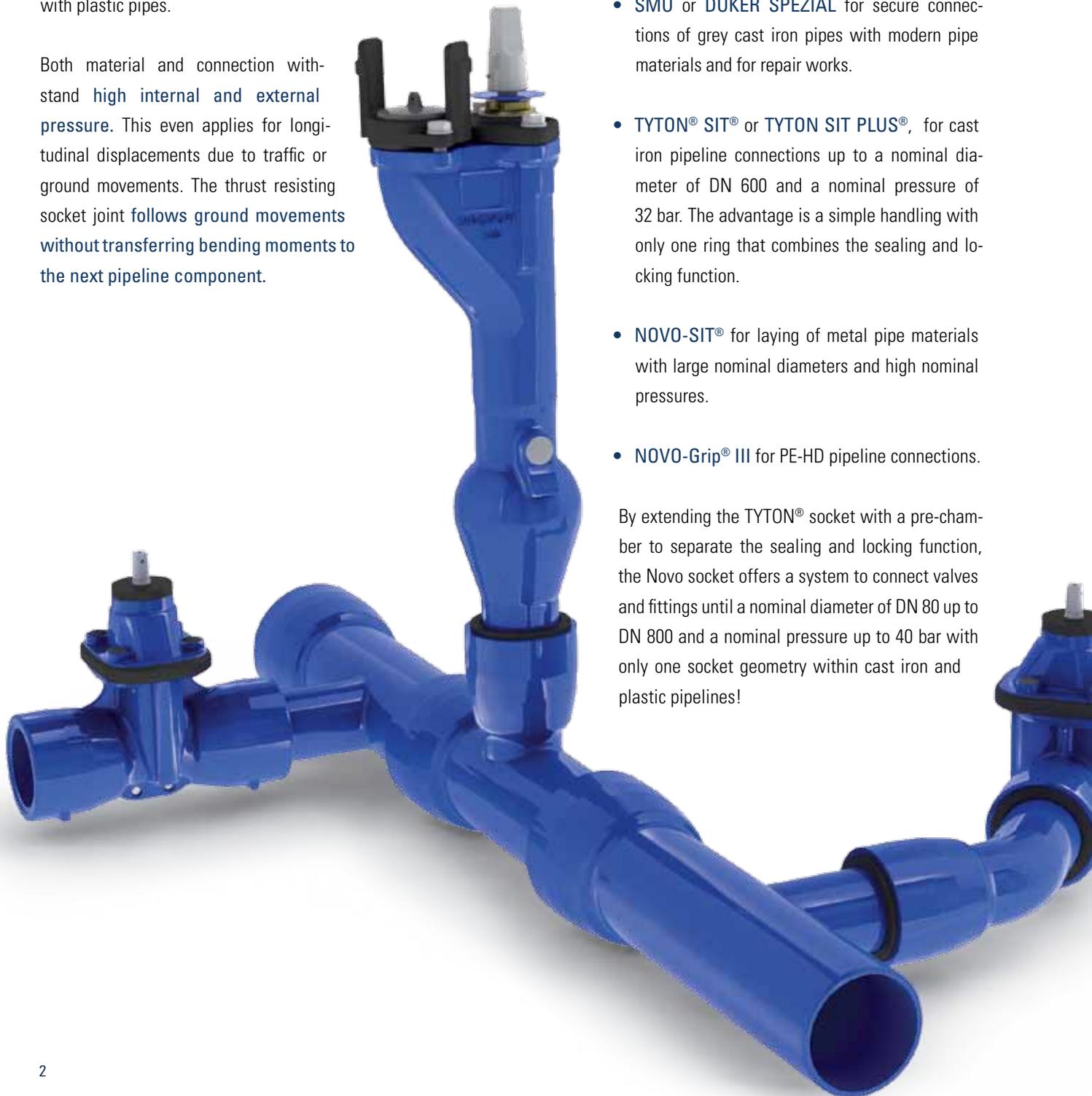
The basis of a constantly further developing technology of connection systems is the non-flanged installation. With flangeless plug-in socket- and thrust-resisting joint systems by Düker, cast iron pipes, fittings and valves are connected safely within all water pipelines – among each other as well as with plastic pipes.

Both material and connection withstand **high internal and external pressure**. This even applies for longitudinal displacements due to traffic or ground movements. The thrust resisting socket joint follows **ground movements without transferring bending moments to the next pipeline component**.

But varying requirements call for measures adapted to their specific needs. Depending on the application field, Düker therefore recommends the **appropriate thrust resisting joint for the intended purpose**:

- **SMU** or **DÜKER SPEZIAL** for secure connections of grey cast iron pipes with modern pipe materials and for repair works.
- **TYTON® SIT®** or **TYTON SIT PLUS®**, for cast iron pipeline connections up to a nominal diameter of DN 600 and a nominal pressure of 32 bar. The advantage is a simple handling with only one ring that combines the sealing and locking function.
- **NOVO-SIT®** for laying of metal pipe materials with large nominal diameters and high nominal pressures.
- **NOVO-Grip® III** for PE-HD pipeline connections.

By extending the TYTON® socket with a pre-chamber to separate the sealing and locking function, the Novo socket offers a system to connect valves and fittings until a nominal diameter of DN 80 up to DN 800 and a nominal pressure up to 40 bar with only one socket geometry within cast iron and plastic pipelines!



Reduced time, cost and material

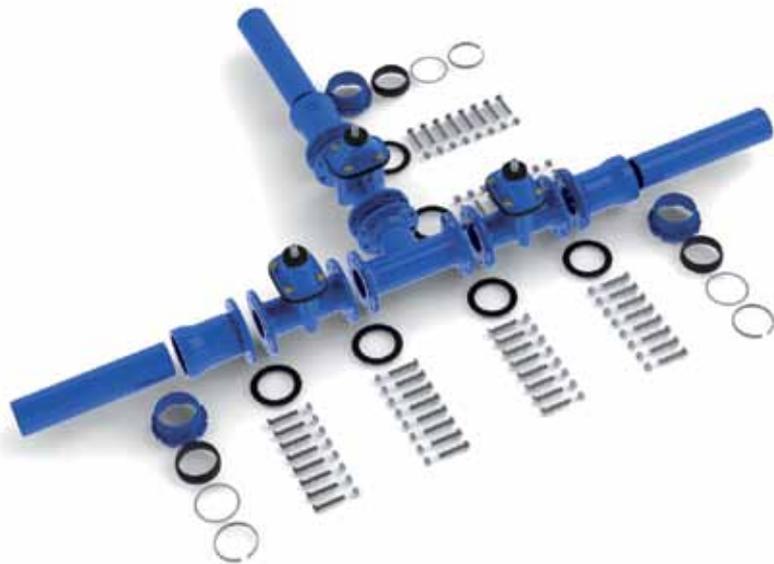
With the positive features of socket connections, such as **reduced mounting time, less material and expenditure** as well as **reduced stock-keeping**, Düker offers secure pipeline connections that save time, cost and material compared to flanged connections. Adequate thrust resisting joints enable **secure, but nevertheless movable connections in various application fields**.

The installation time of Düker plug-in socket joints is **substantially reduced** due to the elimination of concrete blocks, and the pressure test can take place immediately after laying.

Please observe our laying instructions! For further questions please contact our service team.



Installed quick and easy - socket joint with only 19 assembling pieces.



The same construction with flange connections and 124 assembling pieces.

Every thrust resisting joint for cast iron connections made by Düker is completely type-tested according to DVGW worksheet GW 368 and VP 545.

Flangeless Socket Systems by Düker at a Glance

Besides the deviation capability and the integral corrosion protection, thrust resisting joints offer convincing technical and economical advantages compared to conventional flanged systems:

SMU/Düker SPEZIAL	TYTON® SIT®	TYTON SIT PLUS®	NOVO-SIT®	NOVO-Grip® III
no additional corrosion problems	fast installation	fast installation	fast installation	fast installation
dismantling possible	dismantling possible	dismantling possible	dismantling possible	dismantling possible
elimination of outside locking devices for pipeline systems up to PN 16	fewer fittings for the same length of line due to a direct connection to the pipe	fewer fittings for the same length of line due to a direct connection to the pipe	fewer fittings for the same length of line due to a direct connection to the pipe	no special fittings or valves required (up to DN 150)
movability of the screwed connection is entirely maintained	post-isolation of better quality realisable due to a more uniform surface	post-isolation of better quality realisable due to a more uniform surface	post-isolation of better quality realisable due to a more uniform surface	post-isolation of better quality realisable due to a more uniform surface
locking ring works also as contact ring	valves and fittings remain strainless because socket joints do not transfer bending stresses	valves and fittings remain strainless because socket joints do not transfer bending stresses	valves and fittings remain strainless because socket joints do not transfer bending stresses	valves and fittings remain strainless because socket joints do not transfer bending stresses
	applicable for narrow ditches as no concrete blocks are needed	applicable for narrow ditches as no concrete blocks are needed	applicable for narrow ditches as no concrete blocks are needed	applicable for narrow ditches as no concrete blocks are needed
			electrical separation possible	installation independent of the weather

The complete program

In addition, Düker offers a complete fitting and valve program with coatings for the application in drinking, raw, industrial and waste water. Our coating program includes cement mortar, epoxy and in particular **enamel – the best surface protection!** Enamel is a compound material, which forms an inseparable chemical bond with the cast iron. With enamelled surfaces, corrosion, incrustation, abrasion and wear have no chance!

For the connection of different pipeline materials (cast iron/PE) or PE-HD spigot ends as well as for the later installation of valves and fittings, Düker offers standard and special fittings with the specification Novo and screwed socket.

For detailed information about our program and coating facilities please look at our website <http://www.dueker.de>. Or contact our service team for expert advice.



Screwed joint with Düker SPEZIAL ring

Novo socket with inserted GKS gasket and NOVO-Grip® III ring

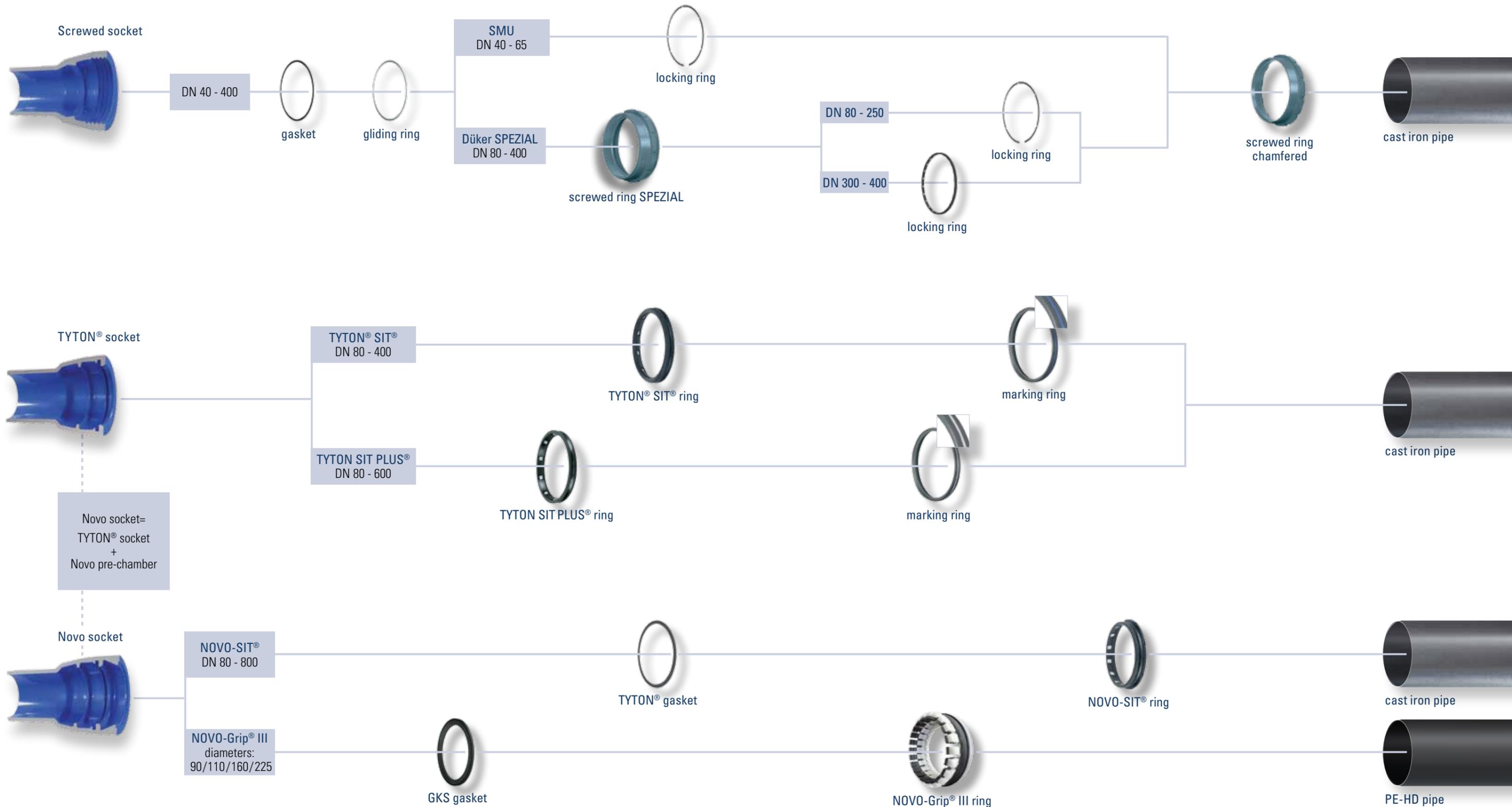
TYTON® socket with inserted TYTON SIT PLUS® ring and marking ring

no special staff with welding licence necessary

no cooling required

fewer tools

Clear Structure – for any Application Field



Plug-in Joints by Düker – Cost-Efficient, Time

SMU/ Düker SPEZIAL – Thrust resisting joints for screwed connections

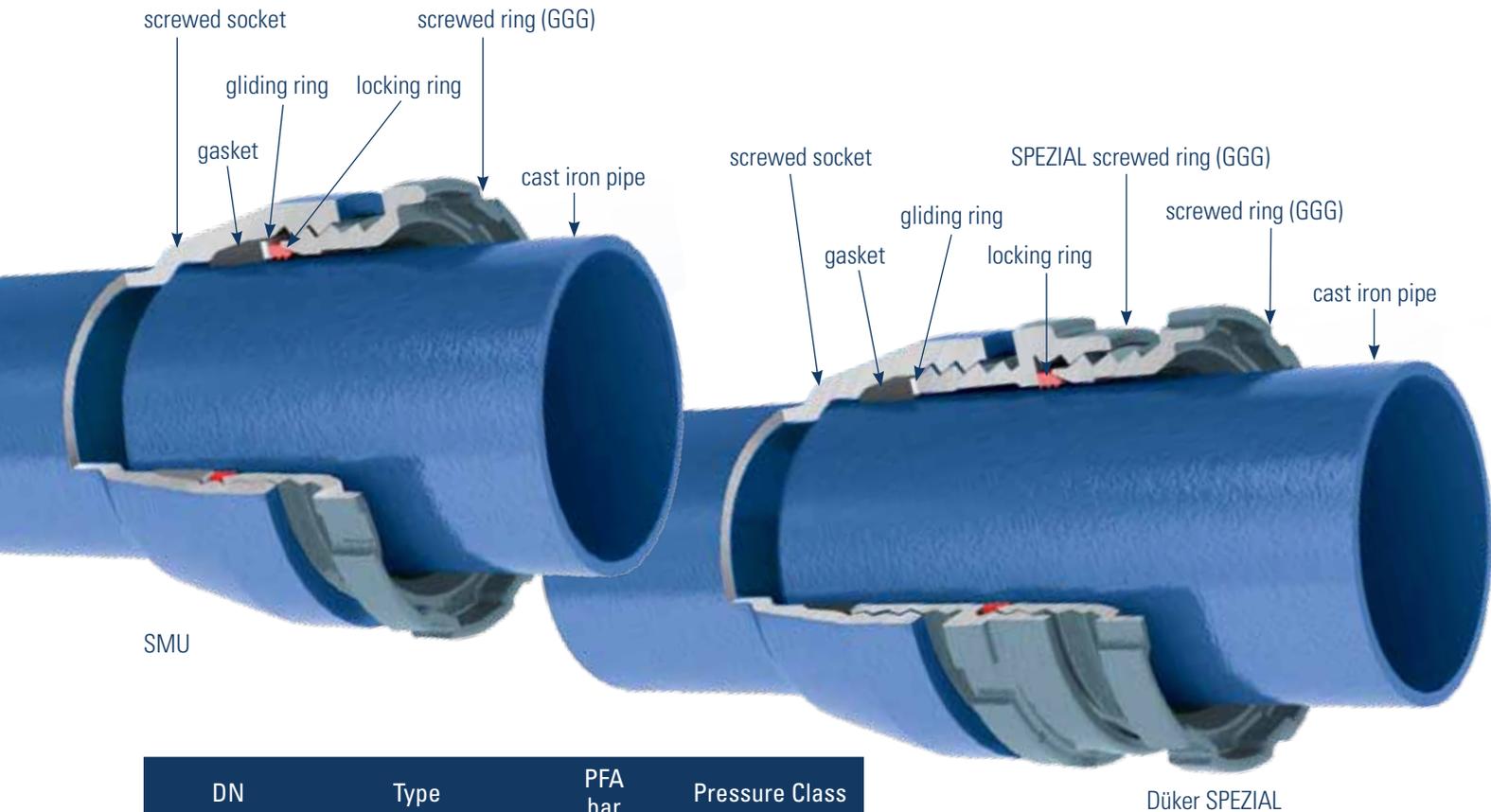
The thrust resisting joints SMU and Düker SPEZIAL for screwed connections are the ideal solution for the connection of grey cast iron with modern pipe materials. In addition, Düker SPEZIAL permits a thrust resisting connection of flanged sockets and collars.

The basis of this system is the locking ring with locking teeth. This locking ring takes up the thrust forces and transmits them from the socket to the pipe.

With the sliding bevel at the screwed ring, a radial force is produced with the locking ring, which results in a secure locking with the spigot end. At the same time, an axial force is transferred through the gliding ring onto the sealing gasket, which ensures the necessary sealing effect.

Düker SMU is available from DN 40 up to DN 65. For screwed connections from DN 80 up to DN 400 Düker offers the thrust resisting joint Düker SPEZIAL.

While laying, please observe our laying instructions!



DN	Type	PFA bar	Pressure Class
40 - 65	Düker SMU	16	C 50
80 - 200	Düker SPEZIAL	16	C 50
250 - 400	Düker SPEZIAL	16	C 40

-Saving and Safe

TYTON® SIT® / TYTON SIT PLUS® – Thrust resisting plug-in socket connection for cast iron pipelines

The systems TYTON® SIT® and TYTON SIT PLUS® secure an economical laying of pipeline systems, particularly for town areas as well as for cross-country pipelines.

With the system TYTON® SIT®, developed by Düker, the non-secured TYTON® joint is converted into a tight, anti-thrust TYTON® joint. A system for secure pipeline constructions up to DN 400.

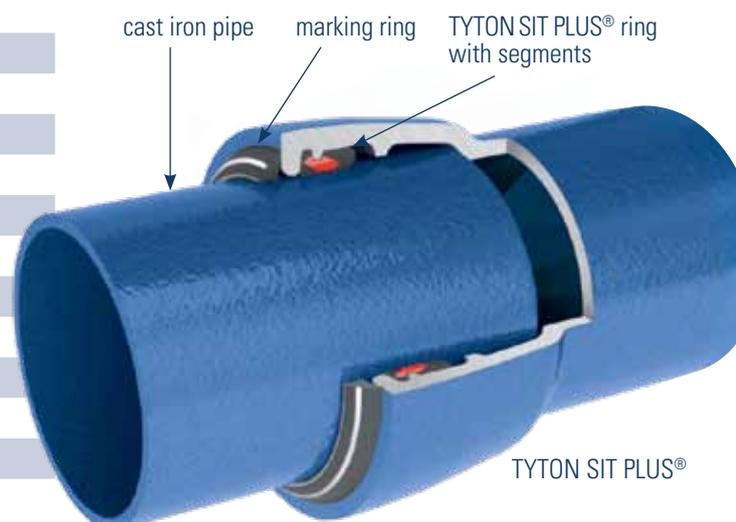
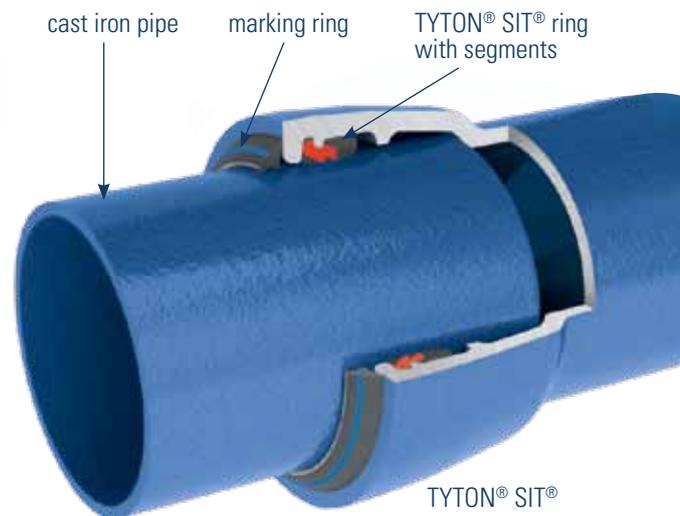
For higher nominal pressures and larger nominal diameters Düker improved this system – TYTON SIT PLUS® for connections up to DN 600.

This thrust-resisting joint is internally equipped with a special gasket armed with corrosion-free chromium steel retaining segments vulcanized into the ring. By using this TYTON SIT PLUS® ring the thrust forces are absorbed inside the joint. The system enables the individual segments to turn around on the inside shoulder of the socket and to adapt themselves to the given pipe tolerances. The wedge-shaped segments lock themselves into the surface of the pipe and transmit the thrust forces into the socket.

Field of application:

DN	Number of segments	PFA bar	Pressure class	PFA bar	Pressure class	Deflection max.
TYTON® SIT®						
80	4	16	C 100			3°
100	5	16	C 100			3°
125	5	16	C 64			3°
150	7	16	C 64			3°
200	10	16	C 64			3°
250	15	10	C 50			3°
300	20	10	C 50			3°
400	30	10	C 40			3°

DN	Number of segments	PFA bar	Pressure class	PFA bar	Pressure class	Deflection max.
TYTON SIT PLUS®						
80	4	32	C 100	16	C 50	3°
100	5	32	C 100	16	C 50	3°
125	5	25	C 100	16	C 50	3°
150	7	25	C 100	16	C 50	3°
200	10	25	C 64	16	C 50	3°
250	15	25	C 64	16	C 50	3°
300	20	25	C 50	16	C 40	3°
350	25	25	C 50			2°
400	28	16	C 50			2°
500	35	16	C 40			2°
600	42	10	C 40			2°



NOVO-SIT® – Thrust resisting joint for metallic pipelines up to DN 800

The patented thrust resisting plug-in socket connection **NOVO-SIT®** is a further development on the world wide installed and proven thrust resisting joint system **TYTON® SIT®/ TYTON SIT PLUS®** to connect cast iron pipelines – for larger nominal dimensions and higher pressures!

The pre-condition for this system is the extension of the **TYTON®** socket with a pre-chamber. By separating the sealing and locking functions, Düker developed a system which is universally applicable. **With only one socket geometry – the Novo socket – connections with different pipeline materials are possible.** This includes both cast iron and plastic pipe connections.

The operating mode is brilliant and easy. The **TYTON®** ring guarantees sealing. The **NOVO-SIT®** ring with vulcanized corrosion-free chromium steel segments secures the anti-thrust function.

Field of application:

DN	Number of Segments	PFA bar	Pressure class	PFA bar	Pressure class	Deflection max.
80	5	40	C 100	25	C 50	3°
100	5	25	C 100	16	C 50	3°
125	7	25	C 100	16	C 50	3°
150	10	25	C 100	16	C 50	3°
200	13	25	C 64	16	C 50	3°
250	18	25	C 64	16	C 50	3°
300	22	25	C 50	16	C 50	3°
350	22	16	C 50			3°
400	25	16	C 50			3°
450	28	16	C 40			2°
500	35	16	C 40			2°
600	45	16	C 40			2°
700	62	10	C 40			2°
800	70	10	C 40			1°

Other pressures on request. Düker fittings with original Novo pre-chamber. Deflection also possible under pressure. For a 6 m pipe, 1° of deflection corresponds to approx. 10 cm of deviation from the neutral pipe axis.

Pressure classes as per
EN 545: 2011-09

Definitions as per EN 805

Allowable operating pressure

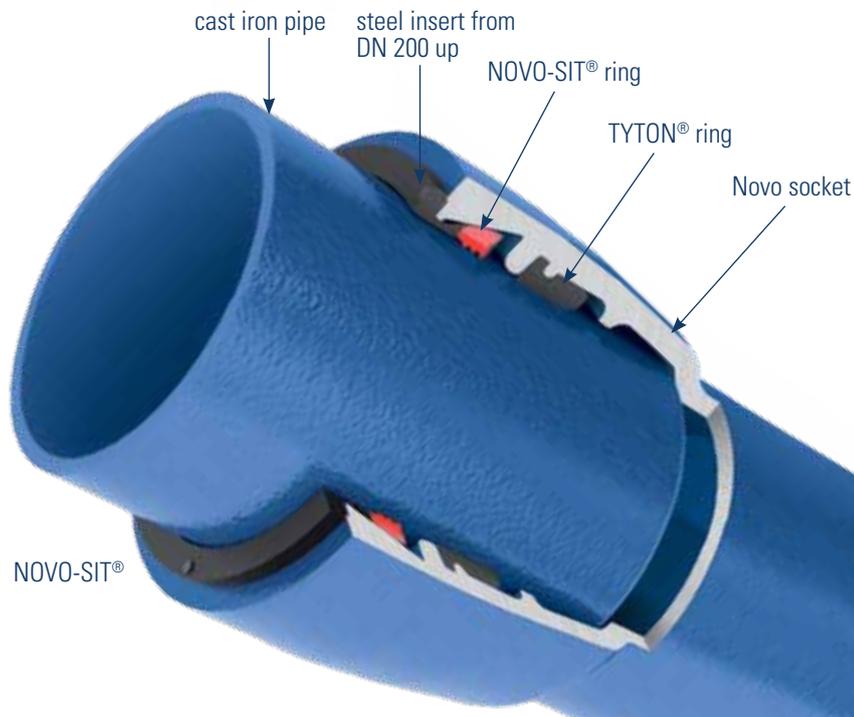
PFA (bar)

Allowable maximum operating

pressure: PMA (bar) = 1.2 x PFA

Allowable site test pressure:

PEA (bar) = 1.2 x PFA + 5



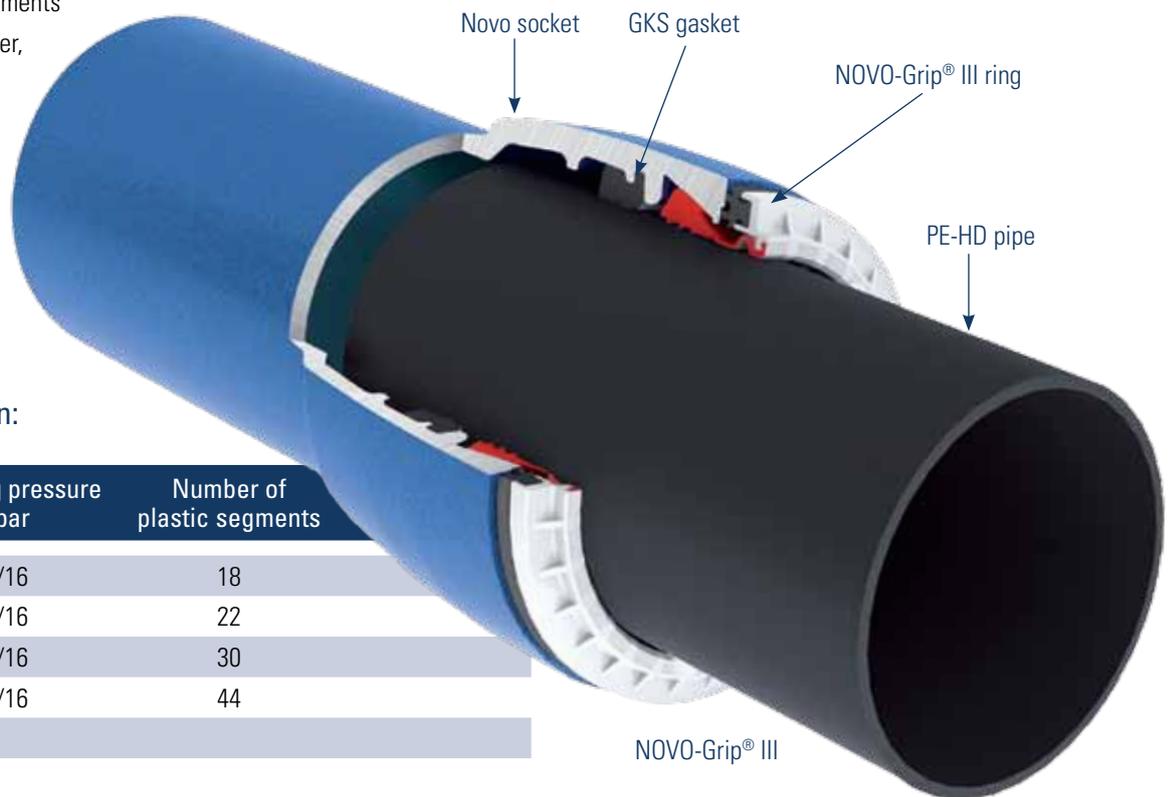
NOVO-Grip® III – Thrust resisting joint for PE-HD pipes

With the same socket technology as **NOVO-SIT®**, which separates the sealing and locking functions by a two-chamber system, an efficient laying of fittings and valves in PE-HD pipelines is possible with the thrust resisting joint **NOVO-Grip® III**.

For laying **NOVO-Grip® III** a special sealing ring (GKS) has to be inserted into the TYTON® chamber to compensate different pipe outside diameters. A specially designed locking ring, made of plastics, has to be inserted into the pre-chamber. This ring consists of plastic segments placed close together,

which grip the outside surface of the PE-HD pipe to produce the anti-thrust effect.

This system compensates the tolerances of the pipe and fitting dimensions in an optimal way and produces an absolutely safe and thrust resisting joint.



Field of application:

Ø in mm	Operating pressure in bar	Number of plastic segments
90	10/16	18
110	10/16	22
160	10/16	30
225	10/16	44

FITTINGS AND VALVES

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ENGINEERING

GLASS LINING TECHNOLOGIES

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