管道尺寸：NPS、明细表、长度、端部类型(中英文对照)

Pipe Sizes: NPS, Schedule, Length, End Types

导管尺寸：NPS、明细表、长度、端部类型

The key dimensional parameters of steel pipes explained: “NPS”, “Schedule”, “Length” .

钢管的关键尺寸参数解释为：“NPS”、“计划表”、“长度”。

PIPE DIAMETER AND WALL THICKNESS

管径和壁厚

The two key steel pipe sizes are the nominal pipe size (NPS) and wall thickness (WT):

两个关键的导管尺寸是标称导管尺寸（NPS）和壁厚（WT）：

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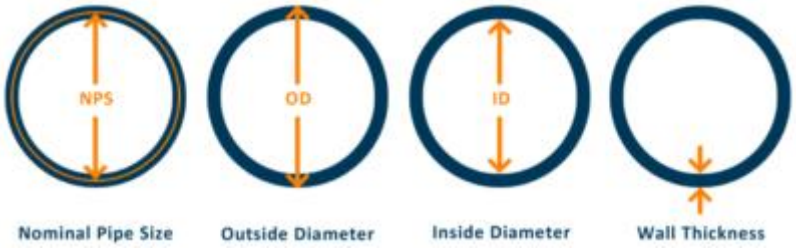
·**WT means “wall thickness”**, i.e. the thickness of the pipe wall expressed in inches or millimeters. The higher the thickness of a pipe at a given NPS, the stronger the resistance of the pipe to the pressure of the fluid and its possible corrosion. The pipe thickness is called also “pipe schedule” (abbreviated, “SCH.”).

For a given NPS and schedule, the thickness of the pipe is fixed and defined in the applicable ASME standard B36.10 for carbon/alloy steel and ASME B36.19 for stainless and nickel alloy pipes)。

即导管壁的稠度，单位为英寸或毫米。在给定的 NPS 下，导管的稠度越高，导管对流体压强的阻力及其可能的腐蚀越强。导管稠度也称为“导管一览表”（缩写为“SCH”）。对于给定的 NPS 和明细表，导管的稠度是固定的，并在适用的 ASME 标准 B36 中定义。10 适用于碳/合金钢和 ASME B36。19 适用于不锈钢和镍合金管）



NPS vs. IPS Pipe System
NPS 与 IPS 导管系统

The term “NPS” replaced the previously used “Iron Pipe Size” (IPS) system, which was similarly used to designate the sizes of steel pipes. The term IPS referred to the approximate inside diameter of a pipe, expressed in inches (so a 4″ inches IPS pipe had an inside diameter of approximately 4 inches). Under the IPS system, pipes were manufactured with one wall thickness only (which was called “standard”, or “STD”): the outside diameter of the pipe resulted from the sum of the inside diameter and the wall thickness. With time, the petrochemical industry led to the introduction of additional wall thicknesses, like the “extra-strong” (XS or XH, i.e. “extra-heavy”), and the double-extra strong (XXS or XXH, i.e. double extra heavy).

术语“NPS”取代了以前使用的“粪能导管尺寸”（IPS）系统，该系统同样用于指定钢管的尺寸。术语 IPS 是指导管的近似内径，单位为英寸（南方涛动 4〃英寸 IPS 导管的内径约为 4 英寸）。在 IPS 系统下，管道仅制造一个壁厚稠度（被叫为“标准”，或“性传播疾病”）：导管的外径由内径和壁厚稠度得出。随着时间的推移，石化行业引入了额外的壁厚，如“超强”（XS 或 XH，即“超重型”）和双超重型（XXS 或 XXH，即双超重型）。

Under the IPS system, and until the year 1927, manufacturers produced pipes in three thicknesses only. In the Thirties, ASME introduced a new system were pipes sizes were designated as we know them today (NPS). The NPS system showed some of the typical thicknesses existing under the IPS (STD, XS/XH, XXS/XXH) and introduced new ones (Sch. 5, 10, 20, 30, 40, 60, 80, 100, 120, 140, 160).
在 IPS 系统下，直到 1927 年，制造商只生产三种厚度的管道。在三十年代，美国机械工程师协会（ASME）引入了一种新的系统，即我们今天所知道的管道尺寸（NPS）。NPS 系统显示了 IPS 下存在的一些典型厚度（性传播疾病、XS/XH、XXS/XXH），并引入了新的厚度（Sch.5、10、20、30、40、60、80、100、120、140、160）。

“NPS xx” designates a pipe size, but not an exact inside diameter of the pipe in inches: pipes with NPS under 12, have an outside diameter which is larger than the size designator (for example a pipe NPS 4 has an actual OD of 4 ”, i.e. 114.3 mm); for pipes above 14 inches, the outside diameter and the NPS match (for example, a pipe NPS 14 has an actual OD of 14″, i.e. 355.6 mm).
“NPSxx”表示导管尺寸，但不是导管的精确内径（英寸）：NPS 小于 12 的管道的外径大于尺寸指示符（例如导管 NPS4 的实际光密度为 4”，即 114.3 mm）；对于大于 14 英寸的管道，外径和 NPS 匹配（例如，导管 NPS14 的实际光密度为 14〃，即 355.6 mm）。

Pipes of a certain NPS have a constant outside diameter, but different inside diameters depending on the wall thickness (SCH): an NPS 6 pipe Sch. STD has the same OD of an NPS 6 pipe Sch. XXS, but a larger inside diameter (as the wall is smaller).

某些 NPS 的管道具有恒定的外径，但不同的内径取决于壁厚（SCH）：NPS6 导管 SCH。性传播疾病具有与 NPS6 导管相同的光密度。XXS，但内径较大（因为墙较小）。

PIPE LENGTH
管道长度

·**“SRL”** (“single random length”): means that the pipe has any random size between 5-7 meters; generally, pipes below 2 inches in diameter are manufactured with SRL, i.e. shorter (or half measures) of larger bore pipes（“单个随机长度”）：表示导管的任意尺寸在 5-7 米之间；通常，直径小于 2 英寸的管道采用 SRL 制造，即较短（或一半尺寸）的大口径管道

·**“DRL”** (double random length): meaning that the pipe has any random size between 11-13 meters. Pipes above 2 inches in diameter are available in DRL size（双随机长度）：意味着导管具有 11-13 米之间的任意随机尺寸。直径大于 2 英寸的管道可采用 DRL 尺寸

·**Cut Lengths:** pipes are cut according to project specifications. Custom sizes are used to save welding costs at the installation site.管道根据项目规范进行切。定制尺寸用于节省安装现场的焊接成本。

The term “random” refers to the fact that the pipe mill can control that the pipe length is between a min-max value, but cannot control the exact length of every single pipe (which will be variable, within the given range).

术语“随机”是指导管工厂料袋指挥控制通信与情报系统导管长度在最小-最大价值观之间，但不能指挥控制通信与情报系统每个导管的确切长度（在给定岭内可变）。

A double random length pipe has an expected length twice the length of an SRL pipe.
双随机长度导管的预期长度是 SRL 导管长度的两倍。

PIPE END TYPES
管道末端类型

The term “pipe end” refers to how the pipe is finished at its extremities.
术语“导管末端”是指导管在其末端的完成方式。

The common pipe end types are:
常见的导管末端类型有：

·**Plain ends** (PE): plain ends are generally used for smaller diameters and require slip-on flanges and socket weld fittings. Plain ends are also common for stainless, duplex and nickel-alloy pipes（PE）：平原端通常用于较小直径，需要滑动法兰和承插焊接配件。不锈钢管、双相管和镍合金管的平原端也很常见

·**Beveled ends** (BE): this is the most common pipe end type (beveled end pipes are joined by welding).（BE）：这是最常见的导管端部类型（斜端管道通过焊接连接）。

·**Threaded ends** (TE): threaded ends (which are generally NPT as per ASME B1.20.1 for petrochemical pipes) require threaded fittings and flanges and are used for smaller size pipelines or gas lines（TE）：螺纹端（根据 ASME B1.20.1，石油化工管道通常为 NPT）需要螺纹配件和法兰，用于较小尺寸的管道或输气管线

·**Threaded and coupled ends** (T&C), generally used for gas distribution（睾酮和库[仑]），通常用于天然气概率分布

·**Grooved ends** (example Victaulic pipes): these are pipes that allow a quick connection, used for non-critical applications（例如 Victaulic 管道）：这些管道允许快速联结，用于非关键应用

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