

Technical Standard

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Position Numbering of Equipment and piping

Distribution

Mondi, CZ

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1 GENERAL

The purpose of this document is to describe the numbering procedure (position numbers) for machinery, tanks, pipelines and manual valves or similar components in the piping network.

The numbering procedure for electrical installation and for instrumentation including control valves is described in respective document.

Position numbers shall be used in drawings, flow sheets, reports, equipment lists, descriptions, manuals, etc. and therefore must be known to all personnel related to the engineering as well as project and construction management during the planning and implementation phases of the project and thereafter personnel related to operation and maintenance management of the mill.

All machinery and equipment shall have position number in accordance with the following system.

2 2 POSITION NUMBER OF EQUIPMENT AND VALVES

Position number is formed of department number, equipment group character and running number according to following example:

Example: **2720L0226**

		Running number
		Equipment group character = L
		Department and Area Code

2.1 Department number

Department number in position number is based on that process department in which the equipment belongs. The department numbers are indicated in a separate document.

If the equipment does not belong to processes mentioned in Appendix I, for example service piping and air conditioning, the general numbers of the mill area in question can be used.

2.2 Equipment group character

One letter is used without hyphen between department and running number as an equipment group character.

Equipment group characters are following:

J = Fans

L	=	Equipment in general / all other equipment
M	=	Electric motor
P	=	Pumps, vacuum pumps
Q	=	Valves and corresponding components
T	=	Tanks, towers, chests, basins

2.3 Running number

Running number, 0001-9999, is under each department and equipment group starting from number 0001.

2.4 Pump position number

Pumps position number is formed of:

- Department number
- Pump equipment group character P
- Running number

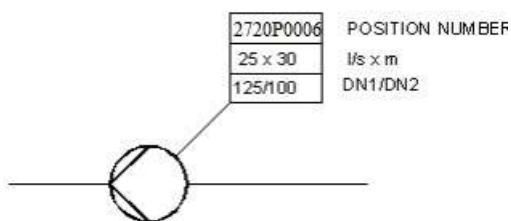
Example: **2720P0226**

		Running number
		Equipment group character for pump = P
	<u>Department and Area Code</u>	

In addition to the pump position number in the flow diagram shall be marked:

- Volume flow, l/s
- Pump head, mlc = meter liquid column
- Nominal suction size, DN1
- Nominal pressure size, DN2

Example - Tank and agitator position number



Tank and agitator position number is formed of:

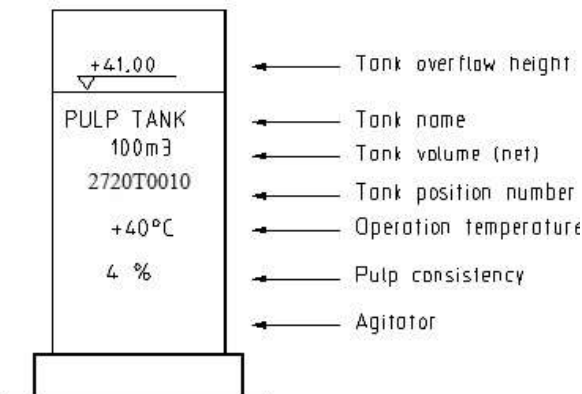
- Department number
- Tank equipment group character = T
- Running number

Example: **2720T0226**

	Running number

In addition to the tank position number in the flow diagram shall be marked:

- Name of the tank
- Net volume of the tank
- Operation temperature
- Properties of the content (process information) – medium / chemical symbol / medium description
- Height of the tank over flow or max. operation pressure of the tank



Realization of title: Sign connected to tank (see standard ST 13.01.04)

2.5 Manual valve position number

The manual valve position number and corresponding components is formed of:

- Department number
- Equipment group character for valve = Q
- Running number of valves in the department (0001-9999)

Example:

100-2720Q0026

		Running number	
		Equipment group character for Valve = Q	
	Department and Area Code		
DN size of a valve			

Realization of title: Sign connected to armature (see standard ST 13.01.04)

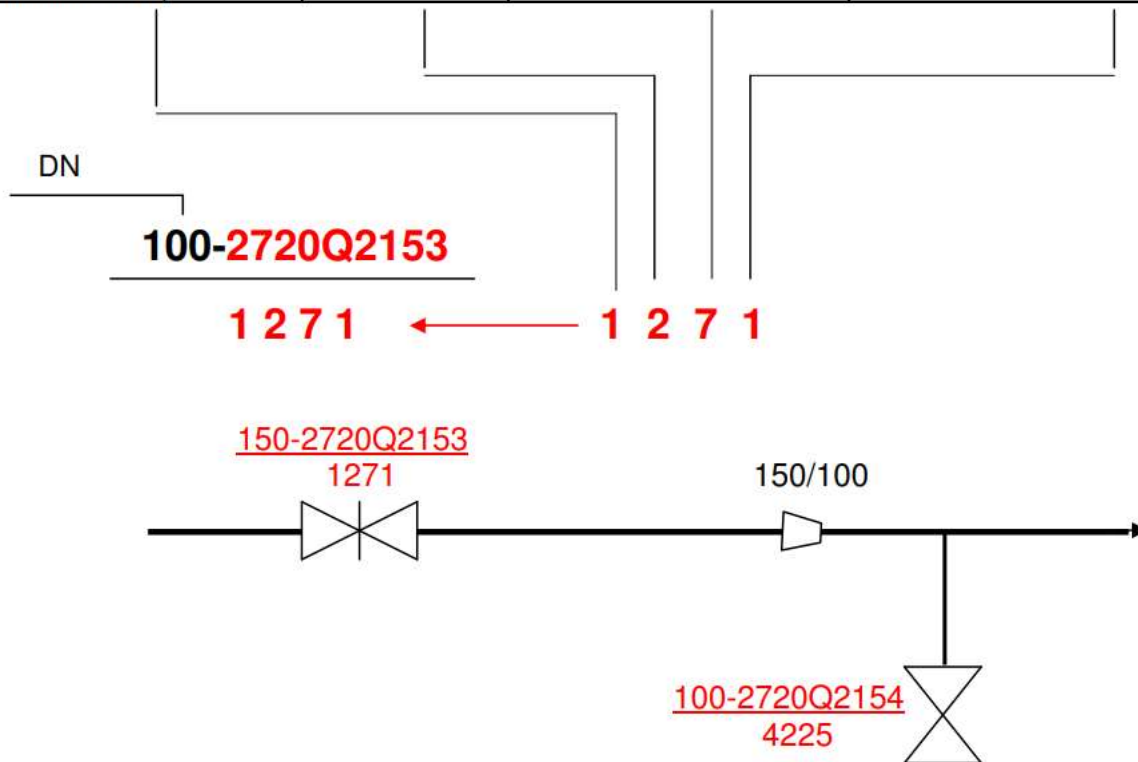
Armature description in flow-sheet:

AR Stainless steel (1.4301)

AS Stainless acid-resisting steel (1.4571)

S Carbon steel
 DN Nominal diameter of piping
 PN Nominal pressure

TYPE	PRESSURE	JOINT	MATERIAL
1 gate	1 PN 6	1 thread / screwed	1 S
2 globe	2 PN 10	2 thread / screwed	2 AR&AS
3 check	3 PN 16	3 flanged	3 S.+ aluminum -polypropylene
4 ball	4 PN 25, PN 32	4 wafer	4 gray cast iron
5 diaphragm	5 PN 40	5 socket weld	5 stainless steel
6 plug	6 PN 63	6 butt weld	6 carbon steel
7 needle	7 PN 100	7 between fl./mech. joint	7 S. + cast iron
8 safety	8 over PN 100	8 solder	8 S. + bronze
9 butterfly		9 wafer lug	9 bronze +copper-cynar piping
0 sample		0 other connection	0 cynar piping
E expansion joint			OA 15NiCuMoNb5 (1.6368)
F foot strainer			OB 15Mo3
H flexible hose			OC 13CrMo44
J ejector			OD 10CrMo910
P pinch			OE cast iron/SS trim/EPDM sleeve
Q quick hose connector			OR rubber
R automatic recirculation			
S strainer			
T condensate trap			



3 PIPELINE NUMBER

Pipeline number is formed of department number and running number.

Example: 2720X4145

	I
	I Running number
Department number	

The pipeline in the flow diagram shall be marked as follows:

- Pipeline number
- Flow media code. The flow media code shall be taken from section 3.3
- Nominal pipe size, DN
- Pipe class. The pipe class shall be determined in accordance with ST13

Example: 150-WCC-2720X4145-10H2A

I	I	I	I	I
I	I	I	I	I Pipe class
I	I	I	I	I Running number of
				pipeline
I	I	I	I	I Department and Area Code
I	I	I	I	I Flow media Code, see section 3.3
<u>13.01.01</u>				
<u>I DN size</u>				

Department number in the pipeline number is defined for process pipelines and for headers of service pipelines according to that department where the pipeline and the flow starts.

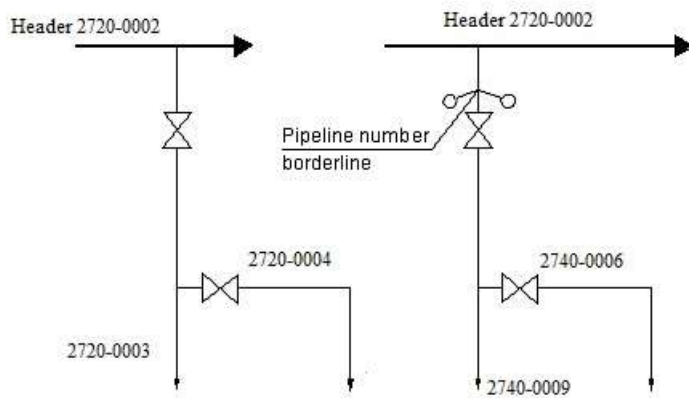
All headers and their branches shall have own line numbers. However, short secondary branches need not to be numbered separately.

Pump suction side nozzle shall have its own line number.

Branching pipe from the header can be considered as a start point of the flow and it shall have that department number where the branch point is located.

Borderline shall be marked in the flow sheet at the place where the department number changes in the pipeline number.

Example:



The example above shows only the principle how to create line numbers for headers and branch pipes using department and running number.

At the left side of the figure, the header and the branch pipe are located in the same department and the department numbers are the same for the header and the branch pipes.

At the right side of the figure, the starting point of the header is in a different department than the branch pipe. The border line at the branching point and the change of the department number in the pipeline numbers are indicated.

3.1 Example for pipeline description in operation



Colour strip indicating:

Description painted on piping / insulation

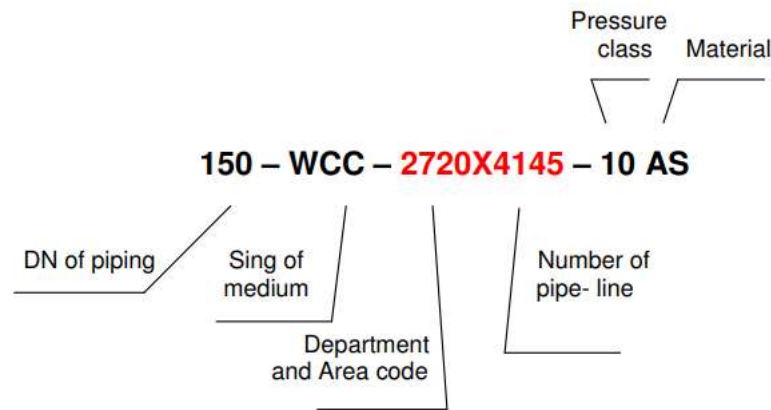
- DN
- Medium mark according to standard
- Department and Area code
- Number of pipe-line
- Arrow showing the flow direction
- Designation of the risk

Mark making on piping:

Circumferential colour strip round the piping, mark on white base in black font in the frame, black arrow

3.2 Example of pipeline description in the scheme

For color code, please check ST 13.01.04, for marking code, please check ST 02.



3.3 Example for pipeline description in operation

3.3.1 Fiber line, Recovery, Operation services and Energy

- A marks - air
- B marks - chemicals - gaseous
- C marks - chemicals – liquid or solid
- D marks - outlet, channel
- E marks - waste, outflow
- F marks - filtrate
- G marks - driving fuel, fuels
- L marks - liquor
- N marks - noncondensable gases
- O marks - oil
- P marks - stock
- S marks - steam
- T marks - additives
- U marks - suspension
- V marks - vacuum, steam and ventilation lines
- W marks - water

AIR

- AD - dry air
- AE - essential air
- AM - mill air
- AP - padding air
- AI - instrument air

GASEOUS CHEMICALS

- BOZ - ozon
- BOX - oxygen
- BN - nitrogen gas

BFR - freon
BRC - coolant

CHEMICALS – LIQUID OR SOLID

CAA	- anhydrous ammonia
CAB	- spent acid (salt brine)
CAC	- spent acid from production ClO ₂
CBU	- busan 26 – (wire life extender)
CCA	- calcium hypochlorite Ca(ClO) ₂
CAH	- calcium hydroxide Ca(OH) ₂
CCLO	- chlorine dioxide solution ClO ₂
CFC	- felt cleaner
CHCL	- hydrochloric acid HCL
CHNO	- nitric acid (HNO ₃)
CHO	- hydrogen peroxide (H ₂ O ₂)
CHPO	- phosphoric acid N ₃ PO ₄
CHS	- sulphur acid H ₂ SO ₄
CHYD	- hydrazine NH ₂ .NH ₂
CMET	- methanol CH ₃ OH
CMGS	- magnesium sulphate MgSO ₄
CML	- lime milk 7.13 (5%)
CNAB	- sodium chloride NaCl – (Brine)
CNAC	- sodium chlorate NaClO ₃
CNAF	- sodium hydrosulfite NaHSO ₃
CNAO	- sodium silicate (water glass) Na ₂ SiO ₃
CNAS	- sodium sulphite Na ₂ SO ₃
CNH	- NO _x AMIDE
CNHW	- mix of NO _x AMIDE and industrial water
CNSC	- sodium sulphate Na ₂ SO ₄
COH	- caustic (sodium hydroxide) NaOH
CPO	- polymer
CSO	- sulphur dioxide - liquid SO ₂
CSOS	- sulphur dioxide - solution SO ₂
CSOH	- spent caustic (sodium hydroxide)
CSU	- sulphone amide acid NH ₂ SO ₃ H
CZNH	- zinc hydrosulfite Zn(HSO ₃) ₂
CNAP	- sodium triphosphate Na ₅ P ₃ O ₁₀

OUTLET, CHANNEL

DF - floor drain
DR - drain

WASTE WATERS, EXHAUST GAS, SUBSTANCES

EA	- acid effluent
EB	- barker effluent
EC	- caustic effluent
EM	- mill effluent
ES	- sanitary effluent
EST	- storm effluent
EG	- exhaust gas, stack gas
EASH	- exhaust ash

FILTRATE

FBW	- bleach washer filtrate
FBS	- brown stock filtrate
FEM	- mill effluent filtrate
FLM	- lime mud filtrate
FSA	- save-all filtrate

DRIVING FUEL, FUELS

GF	- fuel gas
GHB	- hog fuel blow line
GPO	- propane
GOH	- fuel oil

LIQUOR

BLF	- black liquor - firing
BLH	- black liquor – heavy (~ above 50%)
BLS	- black liquor – hot
BLC	- black liquor – cool
BLG	- black liquor – non-condensable gases
BLW	- black liquor – weak (up to ~ 30%)
BLI	- black liquor – intermediate (~ above 30% and ~ below 50%)
LF	- foam
LGC	- green liquor - clarified
LGU	- green liquor - unclarified
LOH	- causticized liquor
LSK	- slaked liquor
LSP	- soap
LTP	- turpentine
LWH	- white liquor - hot
LWW	- weak wash

NONCONDENSIBLE GASES

CNCG	- noncondensable concentrated gases (CNCG)
DNCG	- noncondensable diluted gases (DNCG)
SOG	- stripping off gases (SOG)

OIL

OD	- diesel oil
OH	- hydraulic oil
OK	- kerosene
OL	- lubrication oil
OS	- stove oil

STOCK

PB	- brown stock
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PBK	- bleached kraft stock
PBR	- broke
PGW	- groundwood stock
PGWB	- groundwood stock -bleached
PHW	- hardwood stock
PHWB	- hardwood stock- bleached
PKN	- knots
PPM	- primary machine stock
PSM	- secondary machine stock
PSW	- softwood stock
PSWB	- softwood stock – bleached

STEAM

S /*/	- steam – saturated (example for 1,3MPa(g) steam: S 1,3)
S /*/X	- steam - superheated (example for 0,4MPa(g) steam: S 0,4 X)
*	- steam pressure shall be specified in all case (nominal in MPa(g))
SSE	- secondary waste steam- steam from black liquor

ADDITIVES AND PROTECTION

TAH	- aluminium hydrate $Al(OH)_3$
TAL	- alum $AlK(SO_4)_2 \cdot 12H_2O$
TAM	- amine
TBX	- borax $NaBO_2$
TCP	- clay powder
TCS	- clay slurry
TDC	- dye - colour
TDW	- dye – blue-white
TFO	- defoamer
TFP	- fire protection water with ingredient (foamer)
TLX	- latex
TNB	- nonoxidated biocid
TOB	- oxidated biocid
TRS	- rosin size
TRP	- rosin paste
TSA	- sodium aluminate $NaAlO_2$
TSIC	- stabilisator and inhibitor of corrosion
TSL	- slimicide
TSP	- starch powder
TSTP	- sodium tripoly phosphate Na_3PO_4
TSY	- starch slurry
TSZ	- starch size
TTD	- titanium oxide TiO_2
TZX	- zeolex
TDP	- decarbonization resources
TFL	- flocculant

SLURRY

UEM	- mill effluent sludge
UGD	- green liquor dregs
ULD	- lime dust slurry
ULM	- lime mud

ULMC - lime mud from white liquor clarifier

VACUUM, VAPOUR, VENT LINES

VAC - vacuum line
VAP - vapour line
VEN - vent line

WATER

WBH - barker water – high pressure
WBD - boiler blow down
WBO - boiler blow off
WCC - clean condensate
WCF - foul condensate
WCT - contaminated water
WD - **deaerated** boiler feed water
WDH - **deaerated** boiler feed water - high pressure
WFP - fire protection water
WFPT - fire protection water with temper (foamer)
WHH - water hot heating
WMC - mill water - cold
WMCB - mill water – cold (boosted) use up to 300 psi
WMCG - cold water with glycol
WMCH - mill water – chilled (almost frozen)
WMCP - mill water – cold (high pressure) - use above 300 psi
WMCT - mill water - cold - treated
WMFH - pulp mill water – filtered hot
WMFW - pulp mill water – filtered warm
WMH - mill water - hot
WMHT - mill water – hot- treated

WMW - mill water - warm
WMWB - mill water – warm (boosted)
WMWT - mill water - warm - treated
WMR - mill water - refrigerated
WP - drinking water
WS - salt water
WTDM - demineralised water
WTF - treated boiler water
WWC - white water - cold
WWH - white water - hot
WWW - white water – warm

3.3.2 Marking of substances flowing through piping PMs

AR - compressed air (ESS. A NON-ESS.)
ASA - ASA sizing agent
BA - biocide aids
BE - bentonit
BW - reinforced sealing water
BRC - coolant
CA - NaOH

CD	- condensate
CE	- cooled water
CN	- cationactive starch
CW	- clear water
DA	- dispersing agent
DY	- dye (1,2,3)
FA	- forced air
FR	- CaCO ₃ , sizing agent
G	- natural gas
HF1	- colour 1
HF2	- colour 2
HR	- retention aids
HSM	- starch for stock (cation- active)
HSO	- surface starch
HWS	- wire washing agent
HWF	- felt washing agent
HOA	- optical brightener
HD	- air ducts I.R. (infra-red) and air lock (VEKA)
HL	- low pressure of hydraulic liquid
HO	- high pressure of hydraulic liquid
HR	- low pressure of hydraulic liquid return
HW	- HP White water
KL	- neutral glue
KS	- cationic starch
LA	- pressurized air
LI	- air for MaR
LB	- blowing air
LO	- lubrication oil
OB	- optical brightener
PB	- stock piping
PCC	- CaCO ₃
PK3	- ORNO ₂ – cleaning agent API
RA	- retention agent
S	- sewage water
SK	- stock piping
STV	- water hardness stabilizer
SM	- steam piping 4 bar (0,4 MPa)
SH	- steam piping 12 bar (1,2 MPa)
SZ	- size press starch
SKR	- surface starch
SZK	- short fiber pulp
SZL	- long fiber pulp
SAG	- couch broke
SPA	- broke from presses
SAV	- broke from handling
SAL	- size press broke
SAT	- drying section broke
SFH	- additional filtration layer
SFF	- stock from filter
SPM	- paper stock
TO	- hot oil
VEN	- air conduit

VAC	- vacuum
VC	- vacuum - deculator
VF	- vacuum – wire section
VP	- vacuum – press section
WSI	- wire water 1
WR	- back water
WAV	- vacuum waste water
WKT	- sedimentary filtrate
WKF	- clear filtrate
WSKF	- superclear filtrate
WF	- operational water
WK	- cooling water
WH	- hot water
WM	- warm water
WT	- waste water
WW	- white water
WMC	- fresh water piping
WW	- white water
WMCB	- sealing water
WM	- hot water
WKL	- flush water
WSI	- under screen water

3.3.3 Marking of substances flowing through piping ČOV

AE	- pressure air	
EST	- sewage water	(from standard sewerage system)
ES	- sink water, rain water	(sink water Hrboltová)
ESTPC	- sewage water	(roughly precleanered water)
ESMT	- sewage water	(mechanistic cleaning water)
ESBT	- sewage water	(biological cleaning water)
ESF	- sewage water	(filtrate from press and the like)
LB	- atmosphere exhaust air	(to atmosphere)
LAB	- waste air	(to filter)
POP	- ash from power boiler KDO	
URS	- non-treated sludge	
UFS	- floating sludge	
UBS	- returned sludge	
USM	- mixed sludge	
USS	- sterilized sludge	
UMD	- mechanistic de-watering sludge	
USE	- excess sludge	
VENF	- fetid gas exhausted to the bio-filter	
WAA	- ammonia water	
WI	- supply water	
WP	- drinking water	
TFL	- flocculent	