

NORSOK STANDARD
SYSTEM REQUIREMENTS
AUTOMATIC OIL SAMPLER

I-SR-100

Rev. 1, January 1995

Please note that whilst every effort has been made to ensure the accuracy of the NORSOK standards neither OLF nor TBL or any of their members will assume liability for any use thereof.

1 FOREWORD

This standard has been developed by the NORSOK standardisation work group and agreed by the Norwegian industry for the widest possible national and international application.

2 SCOPE

The scope of this standard is to establish the system requirements for automatic oil sampling and storage with subsequent lab. analysis for fiscal purposes.

3 NORMATIVE REFERENCES

API MPMS	clause 8.2 Automatic sampling of petroleum and petroleum products.
API MPMS	clause 10.9 (corresponds to IP 386/90)
ASTM-D-4928-89	(corresponds to IP 386/90)
IP 386/90	Water in crude oil by Coulometric Karl Fischer titration.
ISO 3170	Petroleum Liquids - Manual Sampling
ISO 3171	Petroleum Liquids - Automatic pipeline sampling.
I-CR-100	Fiscal measurement systems

4 DEFINITIONS AND ABBREVIATIONS

4.1 Definitions

SAS	Safety and Automation System
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4.2 Abbreviations

API	American Petroleum Institute
ISO	The International Organization of Standardization
ASTM	American Standard Testing Material
MPMS	Manual of Petroleum Measurement Standard
IP	Institute of Petroleum

5 FUNCTIONAL REQUIREMENTS

5.1 General

The system shall collect and store a representative oil sample at line conditions, allowing it to be transported to the laboratory for repeatable analysis. The system shall be mounted close to the pipeline and collect samples over a sample period of a day and a month unattended.

5.2 Products/Services

Not applicable.

5.3 Equipment/schematic

The system shall be designed in accordance with ISO 3171 with amendments and supplements as specified in NORSOK I-CR-100 .

Typical block diagrams/P&IDs (informative) are shown in Fig 1, Fig 2a and 2b.

The sample equipment shall be contained in cabinet(s) except for:

- The probe- or in-line extractor.
- Piping from/to the mainline.
- The back pressure system.
- Static in-line mixer (if applicable).

The cabinet(s) shall be located as close as possible to the sampling point.

The cabinet(s) shall be insulated and heated to keep the temperature stable 5 degrees Celsius above the wax appearance temperature.

5.4 Performance

5.4.1 Capacity

Reference is made to NORSOK I-CR-100 .

5.4.2 Accuracy

Reference is made to NORSOK I-CR-100 .

5.4.3 Lifetime

Project specific.

5.5 Regularity

The regularity for the system shall be 99 %.

5.6 Process/Ambient Conditions

Project specific on data sheets.

5.7 Operationa Requirements

- The control function shall be done from either a dedicated controller, SAS or a metering system.
- There shall be continuous monitoring in the control unit of the sample volume collected and of maximum filling alarm.

5.8 Maintenance Requirements

There shall be easy access in cabinet(s) to all main components and valves.

5.9 Isolation and sectioning:

It shall be possible to isolate the system from the main process.

5.10 Layout Requirements

The sampling system should be located as close as possible to the fiscal metering station.

5.11 Interface Requirements

The system shall be able to communicate with:

- the pacing device.
- controlling device (if metering computer or SAS).
- SAS (if the system has dedicated computer).

5.12 Commissioning Requirements

None.

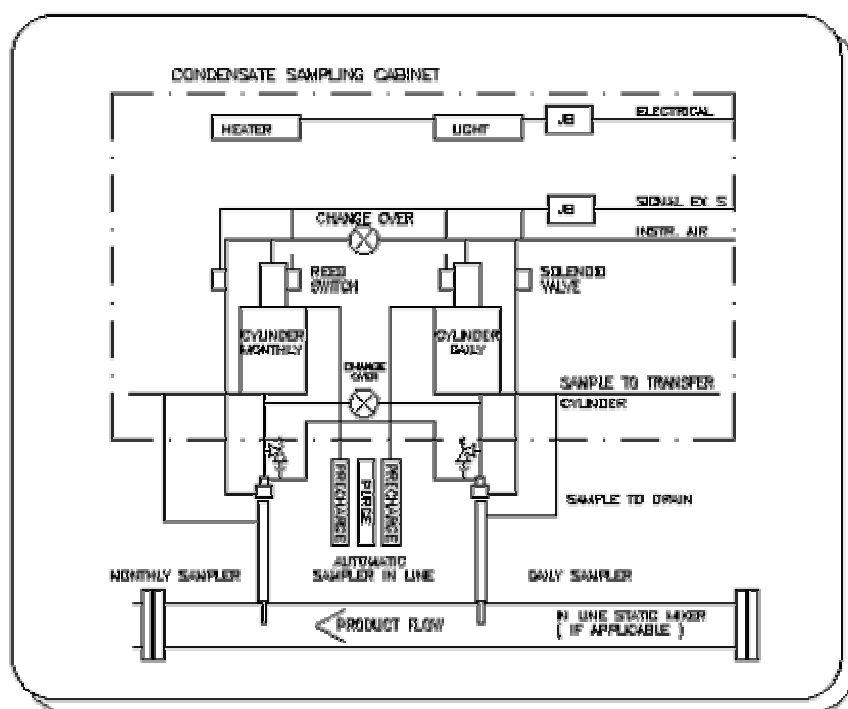


Fig. 1 In line grab system

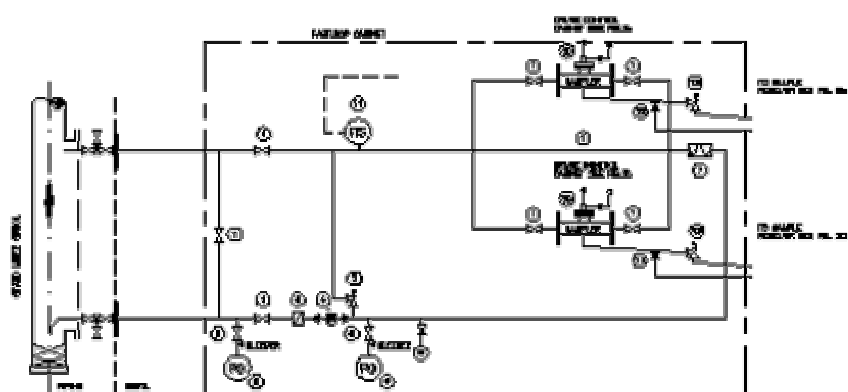


Fig. 2a) By-pass system

Comp. No.	Description		
1	Gate valve	2	Relief valve
3	Strainer	4	Pump/Motor
5	Gauge valve	6	Pressure indicator
7	Static mixer	8	Gate valve
9	Not applicable	10	Separating device
11	Flow indicator	12	Check valve
13	Relief valve	15	Cabinet
16	Pressure indicator		

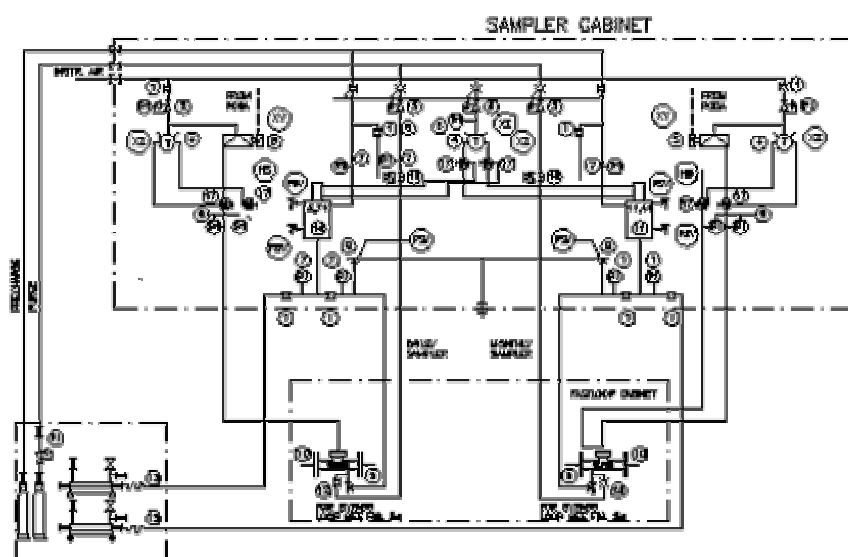


Fig 2b) By-pass system

Comp. No.	Description
1	Ball valve
2	Pressure reducer
3	Pressure reducer
4	Pneumatic timer
5	Solenoid operated control valve
6	Pressure indicator
7	Pressure indicator
8	Not applicable
9	Relief valve
10	Sample pump
11	Sample receiver
12	Check valve
13	Sample cylinder
14	Sample receiver
15	Cabinet
16	Manual operated control valve
17	Rotary valve