

ISO 4409:2019-07 (E)

Hydraulic fluid power - Positive-displacement pumps, motors and integral transmissions - Methods of testing and presenting basic steady state performance

Contents		Page
Foreword		iv
Introduction		v
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Symbols and units	1
5	Tests	2
5.1	Requirements	2
5.1.1	General	2
5.1.2	Installation of the unit under test	3
5.1.3	Test fluids	3
5.1.4	Temperatures	3
5.1.5	Casing pressure	4
5.1.6	Steady-state conditions	4
5.1.7	Pump inlet pressure	4
5.2	Pump tests	4
5.2.1	Test circuits	4
5.2.2	Inlet pressure	6
5.2.3	Test measurements	6
5.2.4	Variable capacity	6
5.2.5	Reverse flow	7
5.2.6	Non-integral boost pumps	7
5.2.7	Full-flow, integral boost pump	7
5.2.8	Secondary-flow, integral boost pump	7
5.3	Motor tests	7
5.3.1	Test circuit	7
5.3.2	Outlet pressure	8
5.3.3	Test measurements	8
5.3.4	Variable capacity	8
5.3.5	Reverse rotation	9
5.4	Integral transmission tests	9
5.4.1	Test circuit	9
5.4.2	Test measurements	9
5.4.3	Boost pumps	10
5.4.4	Reverse rotation	10
6	Expression of results	10
6.1	General	10
6.2	Pump tests	10
6.2.1	Pumps tested at one constant, rotational frequency	10
6.2.2	Pumps tested at several different, constant rotational frequencies	11
6.3	Motor tests	11
6.4	Integral transmission tests	12
7	Identification statement	12

Annex A (normative) Errors and classes of measurement accuracy	13
Annex B (informative) Pre-test checklist	15
Annex C (informative) Suggested formatting for reporting test data	17
Bibliography	26