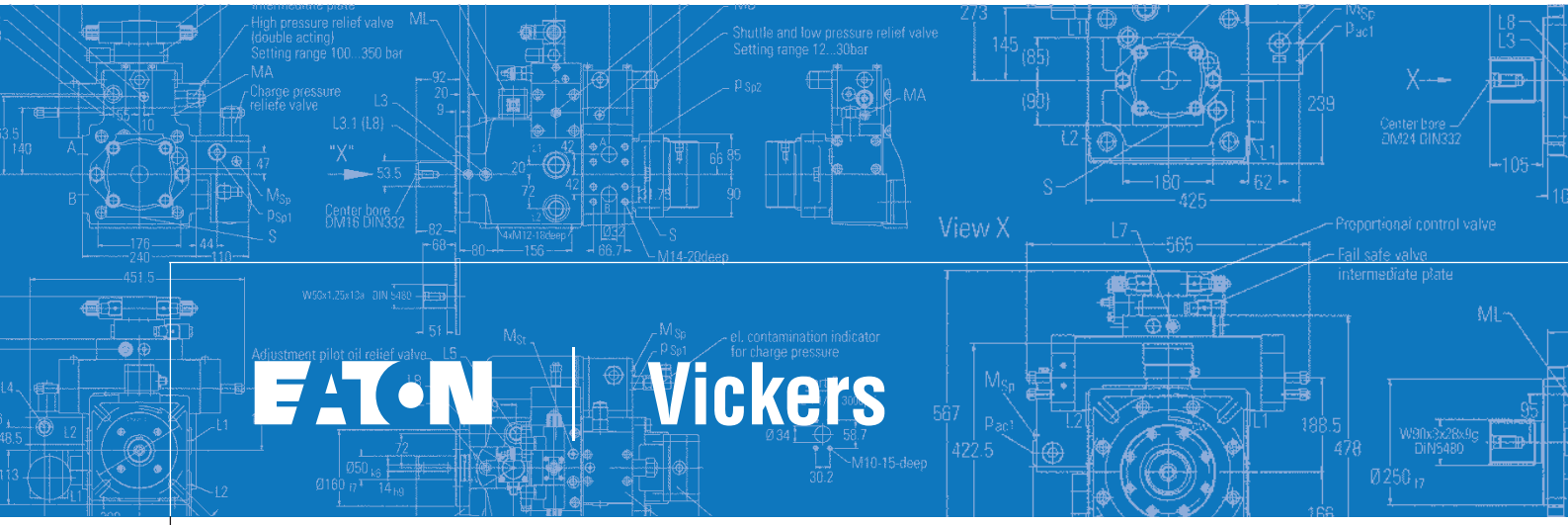
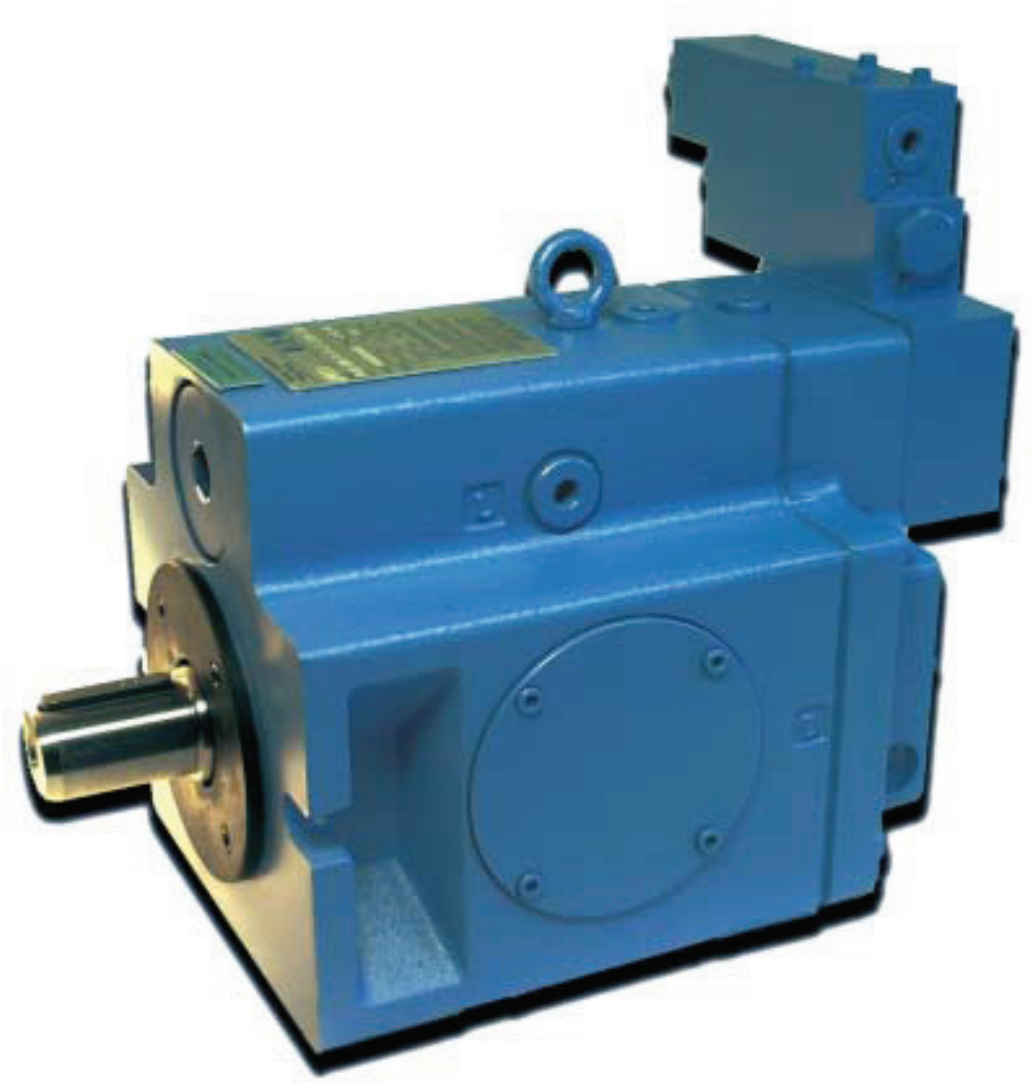


Hydrokraft Open Loop Piston Pumps

Technical Catalog

PVX



VICKERS®

Model Code

Open Loop Pumps

"X" Series - Basic Pump

P	*	X	*	–	*	*	*	M	*	*	*	*	*	*	1	*	*	*	S	V	*	A	#
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

1 Pump
P – Open Loop Pumps

2 Displacement
F – Fixed
V – Variable

3 Pump Series
X – "X" Series (was 20 design)

4 Configuration
S – Single Unit
R – Rear Unit

5 Separator

6 7 8 Displacement cm³/r
066 – 66 cm³/r [4.0 in³/rev]
090 – 90 cm³/r [5.5 in³/rev]
130 – 130 cm³/r [7.9 in³/rev]
180 – 180 cm³/r [11.0 in³/rev]
250 – 250 cm³/r [15.3 in³/rev]
??? – Non-Standard Displacement (PFX Only)

9 Basic Standard
M – Metric

10 11 Mounting Flange
02 – ISO 3019/2-125A2HW
04 – ISO 3019/2-160A2HW
06 – ISO 3019/2-200A2HW
* See Chart Below

12 Rotation Direction
R – Right Hand [CW]
L – Left Hand [CCW]
** See Chart Below

13 Adjustment Stops
0 – No Stop
4 – Mechanical Adjustment Stop Side A (PVX only)
5 – Mechanical Adjustment Stop Side B (PVX only)
6 – Mechanical Adjustment Stops Side A and B (PVX only)

NOTE:

4 is used as max. Adjustment on Side A.

5 is used as min. Adjustment stop side A.

6 is the combination of 4 and 5 together

14 15 Thru-Drive Options
00 – None
0A – SAE A
0B – SAE B
0C – SAE C
0P – Pilot pump (8cm³/r) (PVX only)
*** See Chart Below

16 Main Ports
1 – SAE ports - metric bolts

17 Main Port Orientation
A – Axial (in-line rear)
R – Radial (side ports)

18 19 Main Drive Shaft End
01 – ISO straight key
02 – ISO spline

20 Drive Shaft Seal Configuration
S – Single shaft seal

21 Seal Material
V – Viton**

22 Yoke Position Indicator
0 – No position indicator
V – Visual position indicator
P– Position sensor
M – Sensor w/visual indicator

23 Surface Finish
A – Blue painted

24 Add Control Model Code
Code (characters 24...43) on the following pages

*MOUNTING FLANGE OPTIONS AVAILABLE	066	090	130	180	250
ISO 3019/2-125A2HW	•	•			
ISO 3019/2-160A2HW			•	•	
ISO 3019/2-200A2HW					•

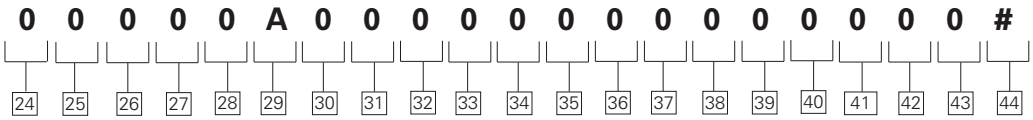
**ROTATION DIRECTION	066	090	130	180	250
Right Hand	•	•	•	•	•
Left Hand	•	•	•	•	

***THRU-DRIVE OPTIONS	066	090	130	180	250
SAE A	•	•	•	•	•
SAE B			•	•	•

Model Code

Open Loop Pumps

"X" Series - No Control



24 25 **Control Type**
00 – No Control
(For PFX only)

26 **Displacement Adjustment Options**
0 – Not Applicable

27 28 **Electronic Controls**
00 – Not Required

29 **Yoke Displacement Zone**
A – Single Side of Center "A"

30 **Extra Functions**
0 – Not Required

31 **Pressure Control Options**
0 – Not Applicable

32 33 34 **Power Control**
000 – Not Applicable)

35 **Pilot Oil Filter**
0 – Not Applicable

36 **Venting Valve**
0 – Not Applicable

37 **No Position Monitoring**
0 – No Position Monitoring

38 **Electric Motor Type**
0 – No Electric Motor

39 **Control Voltage**
0 – Not Applicable

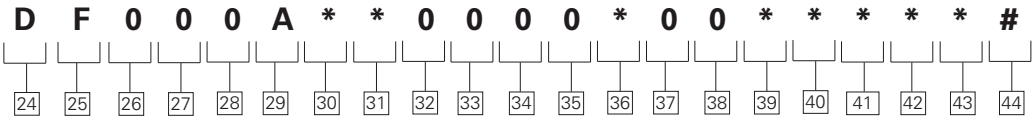
40 41 42 43 **Customer Adjustment Specifications**
0000 – None

44 **Special Features**
Add special feature description (characters 44...46) on page 16 if required.

Model Code

Open Loop Pumps

"X" Series - DF Control



24 25 Control Type
DF – Pressure Compensator

26 Displacement Adjustment Options
0 – Not Applicable

27 28 Electronic Controls
00 – Not Required

29 Yoke Displacement Zone
A – Single Side of Center "A"

30 Extra Functions
0 – Not Required
1 – Load Sensing Extra Function

31 Pressure Control Options
0 – Not Applicable
F – Remote Port Only
K – Electro Proportional Relief Valve- Incl. Electr. Card

32 33 34 Power Control
000 – Not Applicable

35 Pilot Oil Filter
0 – Not Applicable

36 Venting Valve
0 – Not Applicable
1 – With Solenoid Valve

37 Position Monitoring
0 – No Position Monitoring

38 Electric Motor Type
0 – No Electric Motor

39 Control Voltage of Venting Valve
0 – Not Applicable
B – 110 AC 50 HZ/ 120 AC 60 HZ
D – 220 AC 50 HZ/ 240 AC 60 HZ
G – 12 VDC
J – 24 VDC

40 41 42 43 Customer Adjustment Specification
0000 – None
???? – Yes (final number will be assigned by Eaton. Specify on table below)

44 Special Features
Add special feature description (characters 44...46) on page 16 if required.

***CUSTOMER ADJUSTMENT SPECIFICATIONS**

	Unit	Standard Adjustment	Customer Specified Adjustment	Remarks
All Revolution Adjustments below set at ..	rpm	1500		
Mech. Stop Side A (used as max Adjustment Stop Side A)	L/min	Q_{max}		
Mech. Stop Side B (used as min Adjustment Stop Side B)	L/min	Q_{min}		
Pressure Control Main Stage	bar	20		
Pressure Control Pilot Valve	bar	19		
Load Sense p	bar	15		<15 bar not possible

Model Code

Open Loop Pumps

"X" Series - DQ Control

D	Q	0	0	0	C	0	*	0	0	0	0	*	0	0	*	*	*	*	*	#
24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44

24 25 Control Type
DQ – Mooring Control

26 Displacement Adjustment Options
0 – Not Applicable

27 28 Electronic Controls
00 – Not Required

29 Yoke Displacement Zone
C – Over Center

30 Extra Functions
0 – Not Required

31 Pressure Control Options
0 – Not Applicable
F – Remote Port Only
K – Electro Proportional Relief Valve– Incl. Electr. Card

32 33 34 Power Control
000 – Not Applicable

35 Pilot Oil Filter
0 – Not Applicable

36 Venting Valve
0 – Not Applicable
1 – With Solenoid Valve

37 Position Monitoring
0 – No Position Monitoring

38 Electric Motor Type
0 – No Electric Motor

39 Control Voltage of Venting Valve
0 – Not Applicable
B – 110 AC 50 HZ/ 120 AC 60 HZ
D – 220 AC 50 HZ/ 240 AC 60 HZ
G – 12 VDC
J – 24 VDC

40 41 42 43 Customer Adjustment Specification
0000 – None
???? – Yes (final number will be assigned by Eaton. Specify on table below)

44 Special Features
Add special feature description (characters 44...46) on page 16 if required.

MOORING CONTROL AVAILABLE ON THE FOLLOWING FRAMES

	Available	Not Available
066	*	
090		*
130	*	
180	*	
250		*

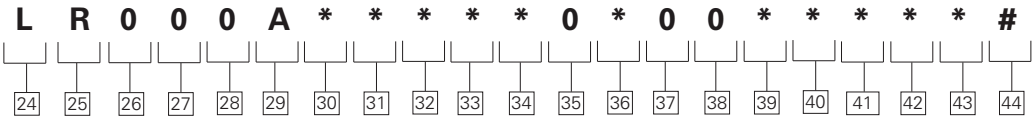
***CUSTOMER ADJUSTMENT SPECIFICATIONS**

	Unit	Standard Adjustment	Customer Specified Adjustment	Remarks
All Revolution Adjustments below set at ..	rpm	1500	_	
Mech. Stop Side A (used as max Adjustment Stop Side A)	L/min	Q_{max}		
Mech. Stop Side B (used as min Adjustment Stop Side B)	L/min	Q_{min}		
Pressure Control Main Stage	bar	20	_	
Pressure Control Pilot Valve	bar	90		

Model Code

Open Loop Pumps

"X" Series - LR Control



24 25 Control Type
LR – Power Control

26 Displacement Adjustment Options
0 – Not Applicable

27 28 Electronic Controls
00 – Not Required

29 Yoke Displacement Zone
A – Single Side of Center "A"

30 Extra Functions
2 – Pressure Limiter Extra Function
3 – Load Sense & Pressure Limiter Extra Function

31 Pressure Contro Options
0 – Not Applicable
F – Remote Port Only
K – Electro Proportional Relief Valve– Incl. Electr. Card

32 33 34 Power Control
??? – KW at 1500 rpm

35 Pilot Oil Filter
0 – Not Applicable

36 Venting Valve
0 – Not Applicable
1 – With Solenoid Valve

37 Position Monitoring
0 – No Position Monitoring

38 Electric Motor Type
0 – No Electric Motor

39 Control Voltage of Venting Valve
0 – Not Applicable
B – 110 AC 50 HZ/ 120 AC 60 HZ
D – 220 AC 50 HZ/ 240 AC 60 HZ
G – 12 VDC
H – 24 VDC

41 42 43 Customer Adjustment Specification
0000 – None
???? – Yes (final number will be assigned by Eaton. Specify on table below)

44 Special Features
Add special feature description (characters 44...46) on page 16 if required.

***CUSTOMER ADJUSTMENT SPECIFICATIONS**

	Unit	Standard Adjustment	Customer Specified Adjustment	Remarks
All Revolution Adjustments below set at ..	rpm	1500		
Mech. Stop Side A (used as max Adjustment Stop Side A)	L/min	Q_{max}		
Mech. Stop Side B (used as min Adjustment Stop Side B)	L/min	Q_{min}		
Pressure Control Main Stage	bar	20		
Pressure Control Pilot Valve	bar	90		
Load Sense p	bar	15		<15 bar not possible

Model Code

Open Loop Pumps

"X" Series - ES Control

E	S	*	0	0	A	0	*	0	0	0	0	0	*	*	0	*	*	*	*	#
24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44

24 25 Control Type

ES – Electric Motor Displacement

26 Displacement Adjustment Options

M – Electric Motor - Fast Response*

N – Electric Motor - Medium Response*

P – Electric Motor - Slow Response*

27 28 Electronic Controls

00 – Not Required

29 Yoke Displacement Zone

A – Single Side of Center "A"

30 Extra Functions

0 – Not Required

31 Pressure Control Options

0 – Not Applicable

32 33 34 Power Control

000 – Not Applicable

35 Pilot Oil Filter

0 – Not Applicable

36 Venting Valve

0 – Not Applicable

37 Position Monitoring

A –4 Limit Switches

B –8 Limit Switches

P –4 Limit Switches w/Sensor

T –8 Limit Switches w/Sensor

38 Electric Motor Type

2 – Motor With Brake (IP-54)

3 – Motor Without Brake (Explosion Proof)

39 Control Voltage of Venting Valve

0 – Not Applicable

40 41 42 43 Customer Adjustment Specification

0000 – None

???? – Yes (final number will be assigned by Eaton. Specify on table below)

44 Special Features

Add special feature description (characters 44...46) on page 16 if required.

Response Time (sec) for Zero to max. Displacement

SIZE	066/090		130/180		250	
Frequency	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz
Fast	7	6	18	15	15	13
Medium	24	20	35	29	30	25
Slow	38	32	54	45	48	40

****CUSTOMER ADJUSTMENT SPECIFICATIONS**

		Unit	Standard Adjustment	Customer Specified Adjustment	Remarks
All Revolution Adjustments below set at ..		rpm	1500		
Mech. Stop Side A (used as max Adjustment Stop Side A)		L/min	Q_{max}		
Mech. Stop Side B (used as min Adjustment Stop Side B)		L/min	Q_{min}		
Displacement Adjusted to…		cm^3/rev.	~50% Q_{max}		
Position Monitoring Switch	1	L/min	0		
	2	L/min	95% of Q_{max}		<95% not possible
	3	L/min			
	4	L/min			
	5	L/min			
	6	L/min			
	7	L/min			
	8	L/min			

Model Code

Open Loop Pumps

"X" Series - HG Control

H	G	0	0	0	A	0	0	0	0	0	0	0	0	0	0	*	*	*	*	#
24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44

24 25 Control Type
HG – Handwheel Displacement Control

26 Displacement Adjustment Options
0 – Not Applicable

27 28 Electronic Controls
00 – Not Required

29 Yoke Displacement Zone
A – Single Side of Center "A"

30 Extra Functions
0 – Not Required

31 Pressure Control Options
0 – Not Applicable

32 33 34 Power Control
000 – Not Applicable

35 Pilot Oil Filter
0 – Not Applicable

36 Venting Valve
0 – Not Applicable

37 Position Monitoring
0 – No Position Monitoring

38 Electric Motor Type
0 – No Electric Motor

39 Control Voltage of Venting Valve
0 – Not Applicable

40 41 42 43 Customer Adjustment Specification
0000 – None
???? – Yes (final number will be assigned by Eaton. Specify on table below)

44 Special Features
Add special feature description (characters 44...46) on page 16 if required.

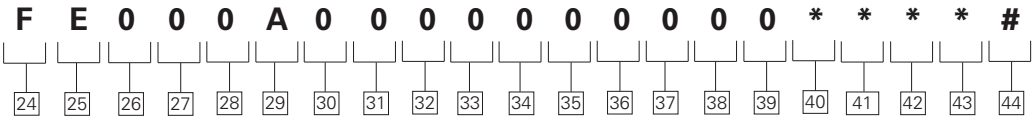
***CUSTOMER ADJUSTMENT SPECIFICATIONS**

	Unit	Standard Adjustment	Customer Specified Adjustment	Remarks
All Revolution Adjustments below set at ..	rpm	1500		
Displacement Adjusted to...	L/min	Q_{max}		

Model Code

Open Loop Pumps

"X" Series - FE Control



24 25 **Control Type**
FE – Screw Adjustment Displacement Control

26 **Displacement Adjustment Options**
0 – Not Applicable

27 28 **Electronic Controls**
00 – Not Required

29 **Yoke Displacement Zone**
A – Single Side of Center "A"

30 **Extra Functions**
0 – Load Sensing Extra Function

31 **Pressure Control Options**
0 – Not Applicable

32 33 34 **Power Control**
000 – Not Applicable

35 **Pilot Oil Filter**
0 – Not Applicable

36 **Venting Valve**
0 – Not Applicable

37 **Position Monitoring**
0 – No Position Monitoring

38 **Electric Motor Type**
0 – No Electric Motor

39 **Control Voltage of Venting Valve**
0 – Not Applicable

41 42 43 **Customer Adjustment Specification**
0000 – None
???? – Yes (final number will be assigned by Eaton. Specify on table below)

44 **Special Features**
Add special feature description (characters 44...46) on page 16 if required.

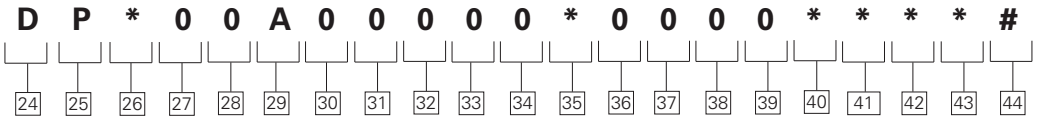
***CUSTOMER ADJUSTMENT SPECIFICATIONS**

	Unit	Standard Adjustment	Customer Specified Adjustment	Remarks
All Revolution Adjustments below set at ..	rpm	1500		
Displacement Adjusted to...	L/min	Q_{max}		

Model Code

Open Loop Pumps

"X" Series - DP Control



24 25 Control Type

DP – Pressure Signal Adjustment Displacement Control

26 Displacement Adjustment Options

G – Mounting Interface CETOP 3 Only
H – Remote Port G 1/4
J – Proportional Relief Inc. Electronics

27 28 Electronic Controls

00 – Not Required

29 Yoke Displacement Zone

A – Single Side of Center "A"

30 Extra Functions

0 – Not Required

31 Pressure Control Options

0 – Not Applicable

32 33 34 Power Control

000 – Not Applicable

35 Pilot Oil Filter

0 – Not Applicable
V – Filter with Visual Indicator
E – Filter with Electrical Indicator

36 Venting Valve

0 – Not Applicable

37 Position Monitoring

0 – No Position Monitoring

38 Electric Motor Type

0 – No Electric Motor

39 Control Voltage of Venting Valve

0 – Not Applicable

40 41 42 43 Customer Adjustment Specification

0000 – None
???? – Yes (final number will be assigned by Eaton. Specify on table below)

44 Special Features

Add special feature description (characters 44...46) on page 16 if required.

***CUSTOMER ADJUSTMENT SPECIFICATIONS**

	Unit	Standard Adjustment	Customer Specified Adjustment	Remarks
All Revolution Adjustments below set at ..	rpm	1500		
Pilot Pressure	bar	60		
Mech. Stop Side A (used as max Adjustment Stop Side A)	L/min	Q_{max}		
Mech. Stop Side B (used as min Adjustment Stop Side B)	L/min	Q_{min}		

Model Code

Open Loop Pumps

"X" Series - SP Control

S	P	*	*	*	A	0	0	0	0	0	*	0	0	0	0	*	*	*	*	#
24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44

24 25 **Control Type**

SP – Proportional Valve Adjustment Displacement Control

26 **Displacement Adjustment Options**

C – With CETOP 3 Prop Valve KDG4V 3

F – With CETOP 5 Prop Valve

27 28 **Electronic Controls**

03 – ER 9.3 - 10 (CETOP 3)

04 – ER 9.4 - 10 (CETOP 5)

29 **Yoke Displacement Zone**

A – Single Side of Center "A"

30 **Extra Functions**

0 – Not Required

31 **Pressure Control Options**

0 – Not Applicable

32 33 34 **Power Control**

000 – Not Applicable

35 **Pilot Oil Filter**

V –Filter with Visual Indicator

E – Filter with Electrical Indicator

36 **Venting Valve**

0 – Not Applicable

37 **Position Monitoring**

0 – No Position Monitoring

38 **Electric Motor Type**

0 – No Electric Motor

39 **Control Voltage of Venting Valve**

0 – Not Applicable

40 41 42 43 **Customer Adjustment Specification**

0000 – None

???? – Yes (final number will be assigned by Eaton. Specify on table below)

44 **Special Features**

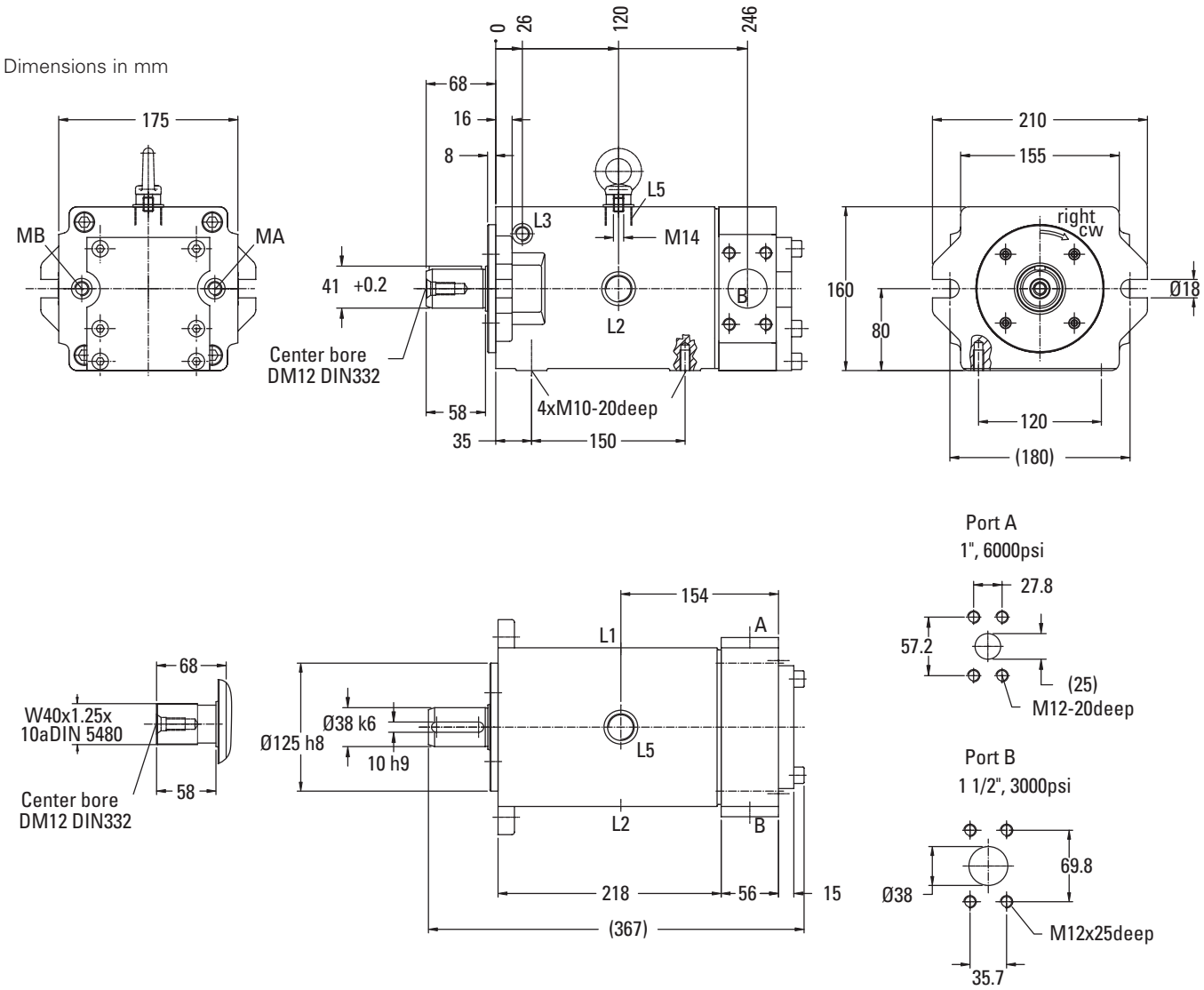
Add special feature description (characters 44...46) on page 16 if required.

***CUSTOMER ADJUSTMENT SPECIFICATIONS**

	Unit	Standard Adjustment	Customer Specified Adjustment	Remarks
All Revolution Adjustments below set at ..	rpm	1500	-	
Pilot Pressure	bar	60	-	
Mech. Stop Side A (used as max Adjustment Stop Side A)	L/min	Q_{max}		
Mech. Stop Side B (used as min Adjustment Stop Side B)	L/min	Q_{min}		
Max. Stop by Control Side A	L/min	95% Q_{max}	EI Card Adjustment done by customer	Refer to EI card Manual
Min. Stop by Control Side A	L/min	0+/-2.5%	EI Card Adjustment done by customer	Refer to EI card Manual
Ramp Time 0→ A For 100% Stroke	sec	0	EI Card Adjustment done by customer	Refer to EI card Manual
Ramp Time A→ 0 For 100% Stroke	sec	0	EI Card Adjustment done by customer	Refer to EI card Manual
Preset Input Signals S1....S4	L/min	-	EI Card Adjustment done by customer	Refer to EI card Manual

Pump Dimensions - PFXS 066

Dimensions in mm



A	System pressure port SAE 1", 415 bar (6000 psi)
B	System pressure port SAE 1 1/2'', 207 bar (3000 psi)
(L1)	Drain port 7/8" – 14 UNF
(L2)	Ventilation port for vertical mounting M26x1.5
(L3)	Ventilation port for vertical mounting G1/4 " (shaft upwards)
(L5)	Oil filling plug M26x1.5
(MA)	Gauge port system pressure G1/4"
(MB)	Gauge port system pressure G1/4"
(…)	Normally plugged

Non-Standard Displacements:

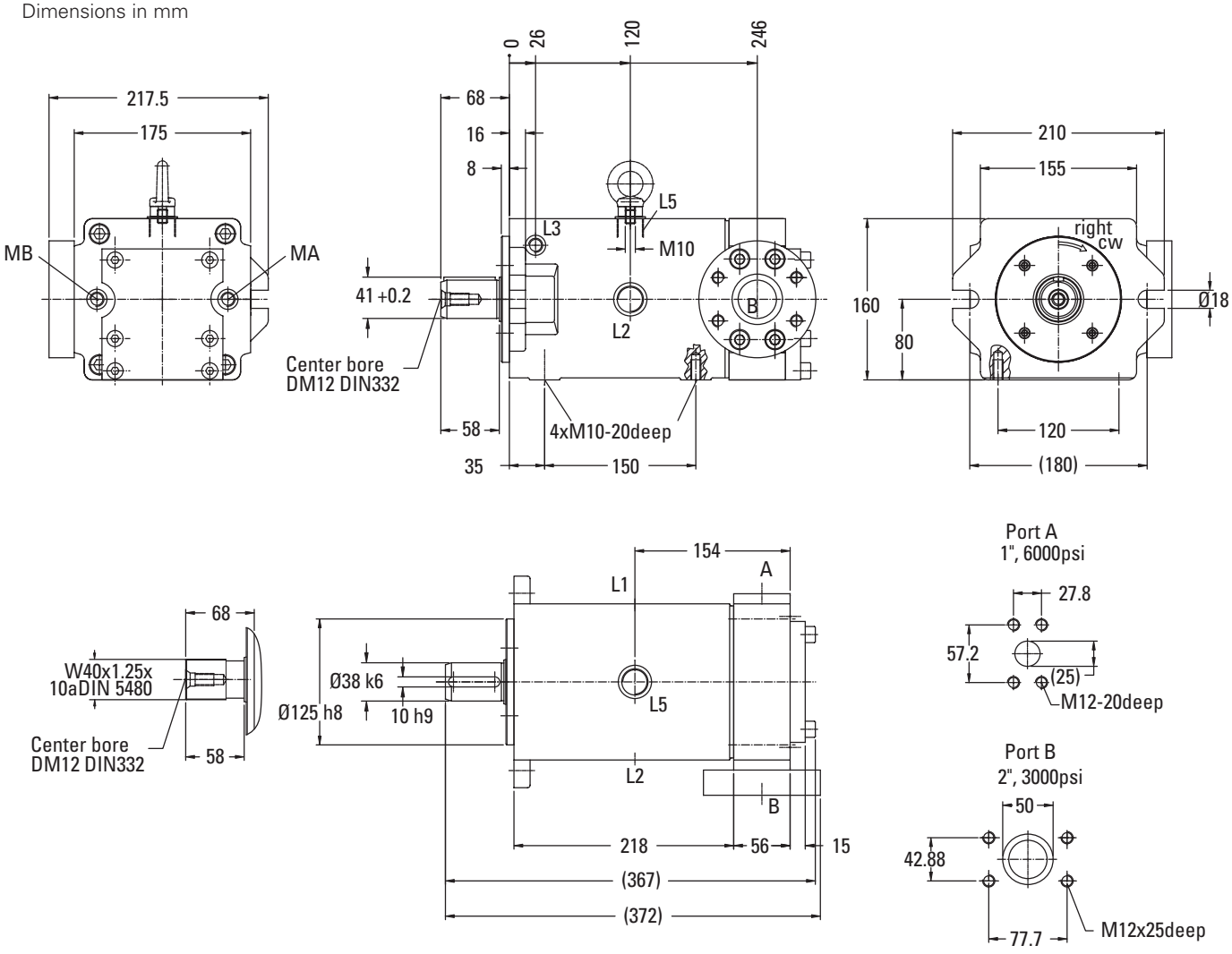
Standard Displacement . . . . . .66 ccm/rev

Reduced Displacement Available . . . . . .55 or 44 ccm/rev

DIRECTION OF ROTATION	INPUT	OUTPUT
Right Hand Rotation	B	A
Left Hand Rotation	A	B

Pump Dimensions - PFXS 090

Dimensions in mm



A	System pressure port SAE 1", 415 bar (6000 psi)
B	System pressure port SAE 2'', 207 bar (3000 psi)
(L1)	Drain port 7/8" – 14 UNF
(L2)	Ventilation port for vertical mounting M26x1.5
(L3)	Ventilation port for vertical mounting G1/4 " (shaft upwards)
(L5)	Oil filling plug M26x1.5
(MA)	Gauge port system pressure G1/4"
(MB)	Gauge port system pressure G1/4"
(…)	Normally plugged

Non-Standard Displacements:

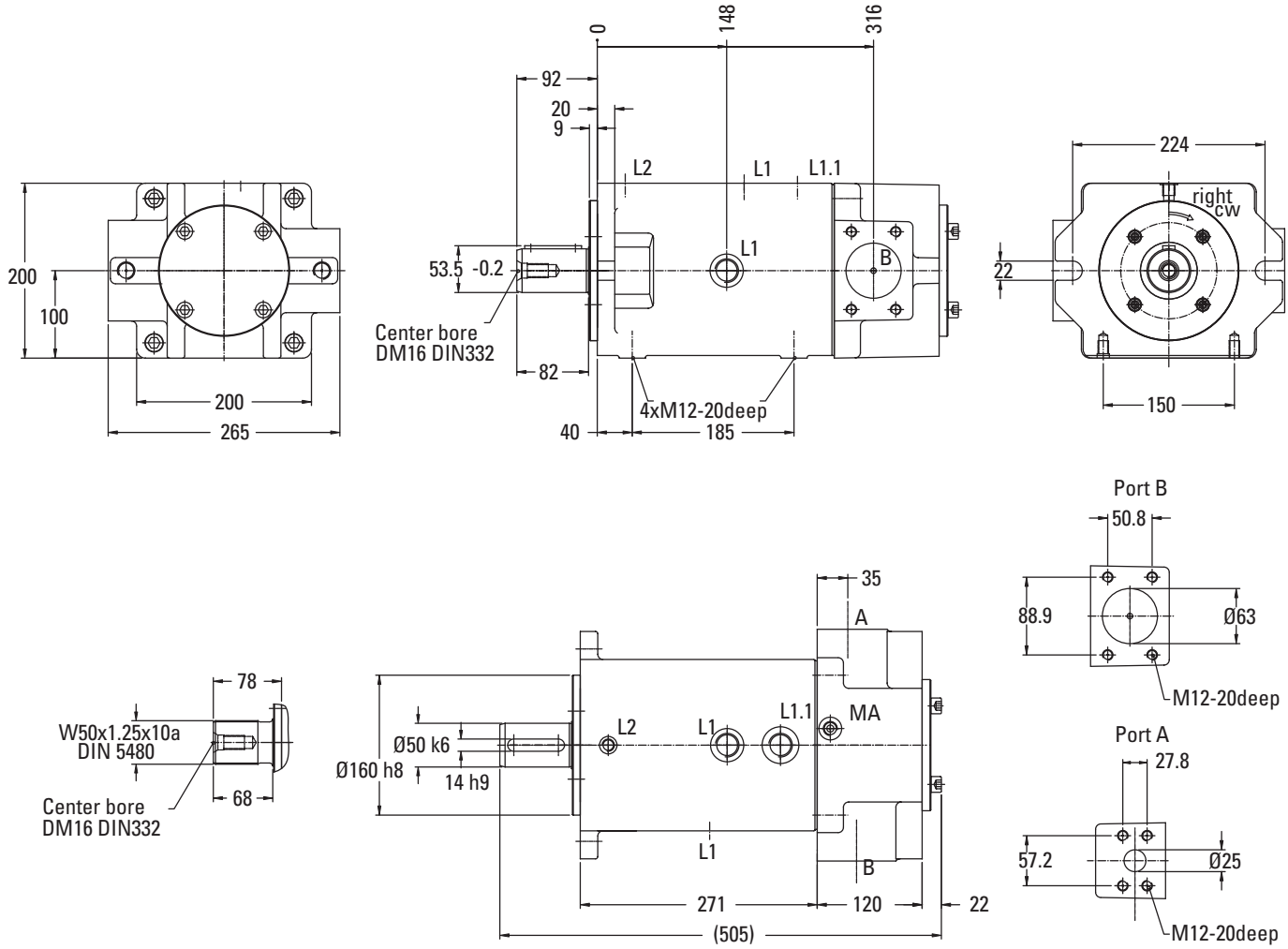
Standard Displacement . . . . . .90 ccm/rev

Reduced Displacement Available . . . . . .75 ccm/rev

DIRECTION OF ROTATION	INPUT	OUTPUT
Right Hand Rotation	B	A
Left Hand Rotation	A	B

Pump Dimensions - PFXS 130

Dimensions in mm



A	System pressure port SAE 1", 415 bar (6000 psi)
B	System pressure port SAE 2 1/2'', 207 bar (3000 psi)
(L1)	Drain port M26x1.5
(L1.1)	Oil filling plug 1 1/16"-12UNF
(L2)	Ventilation port for vertical mounting G1/4"
(MA)	Gauge port system pressure G1/4"
(…)	normally plugged

Non-Standard Displacements:

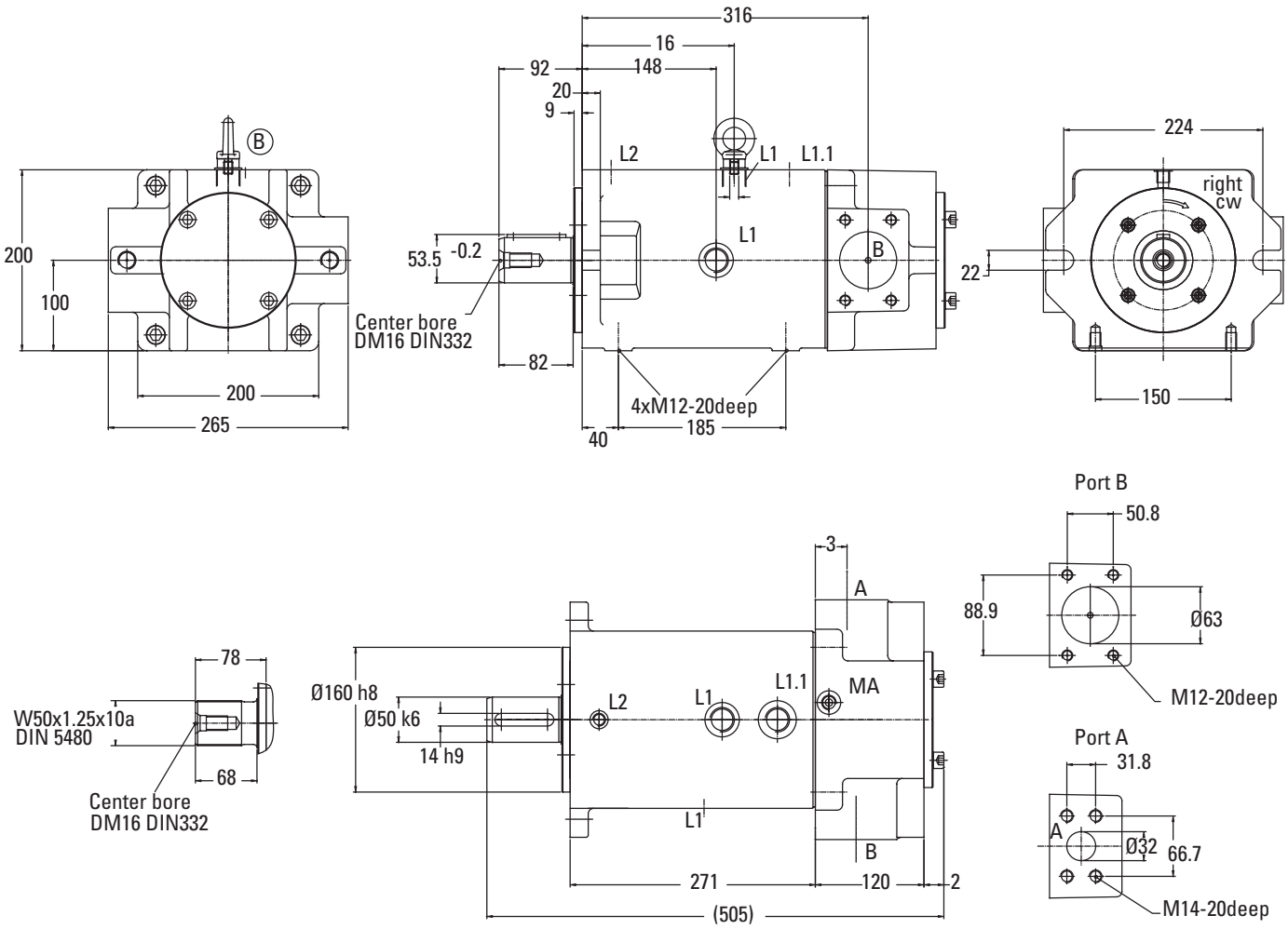
Standard Displacement size 130.....130 ccm/rev

Reduced Displacement Available Size 130...115 or 94 ccm/rev

DIRECTION OF ROTATION	INPUT	OUTPUT
Right Hand Rotation	B	A
Left Hand Rotation	A	B

Pump Dimensions - PFXS 180

Dimensions in mm



A	System pressure port SAE 1 1/4", 415 bar (6000 psi)
B	System pressure port SAE 2 1/2'', 207 bar (3000 psi)
(L1)	Drain port M26x1.5
(L1.1)	Oil filling plug 1 1/16"-12UNF
(L2)	Ventilation port for vertical mounting G1/4"
(MA)	Gauge port system pressure G1/4"
(…)	Normally plugged

Non-Standard Displacements:

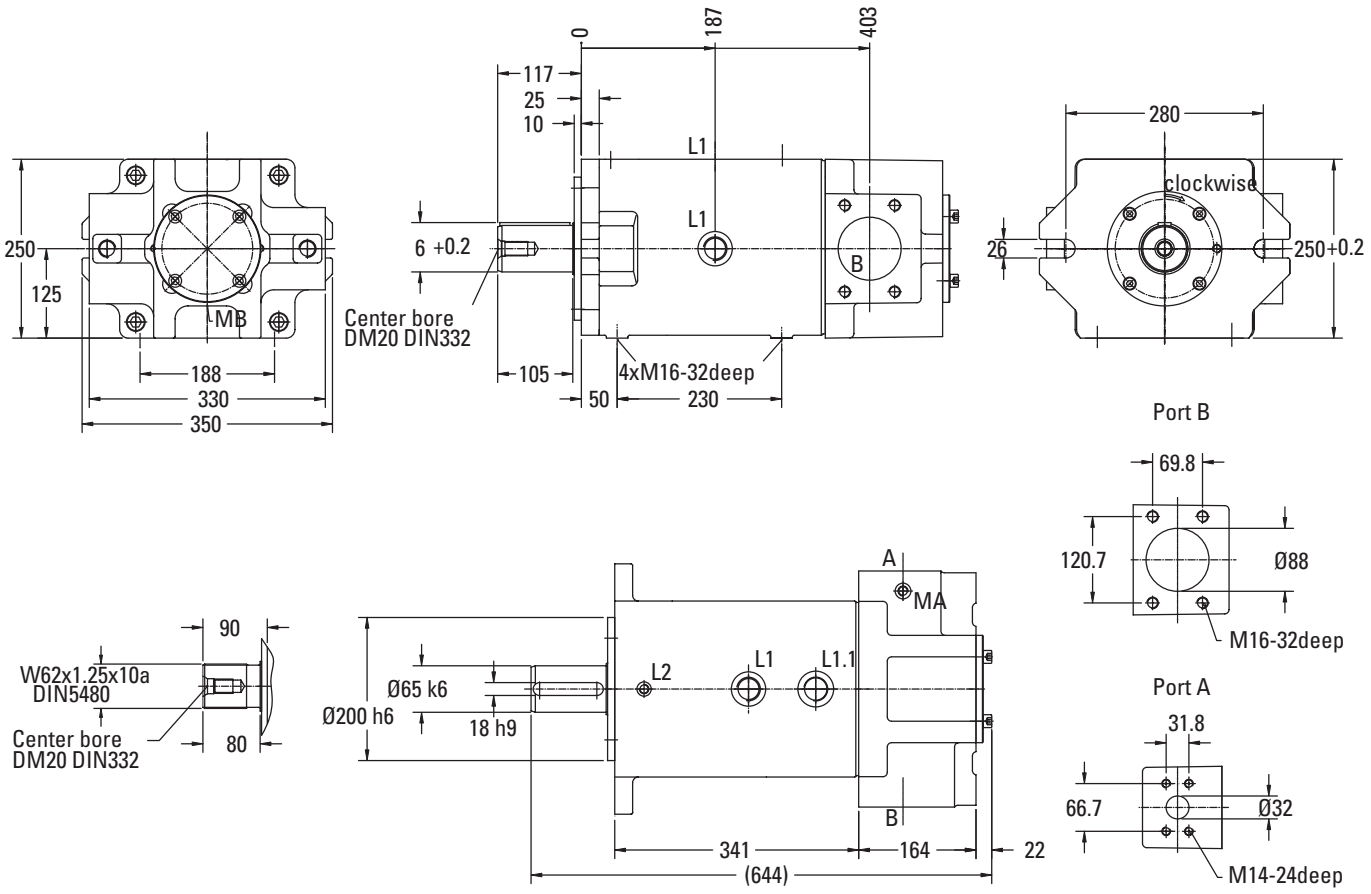
Standard Displacement Size 180 .....180 ccm/rev

Reduced Displacement Available Size 180.....160 ccm/rev

DIRECTION OF ROTATION	INPUT	OUTPUT
Right Hand Rotation	B	A
Left Hand Rotation	A	B

Pump Dimensions - PFXS 250

Dimensions in mm



A	System pressure port SAE 1 1/4", 415 bar (6000 psi)
B	System pressure port SAE 3 1/2'', 35 bar (500 psi)
(L1)	Drain port M26x1.5
(L1.1)	Oil filling plug 1 5/16"-12UN
(L2)	Ventilation port for vertical mounting G1/4"
(MA)	Gauge port system pressure G1/4"
(…)	normally plugged

Non-Standard Displacements:

Standard Displacement .....250 ccm/rev

Reduced Displacement Available.....222, 208 or 194 ccm/rev

DIRECTION OF ROTATION	INPUT	OUTPUT
Right Hand Rotation	B	A
Left Hand Rotation	A	B