POMPE A PISTONI ASSIALI PER CIRCUITO CHIUSO A CILINDRATA VARIABILE

VARIABLE DISPLACEMENT CLOSED CIRCUIT AXIAL PISTON PUMPS

AXIALKOLBENVERSTELLPUMPEN FÜR DEN GESCHLOSSENEN KREISLAUF

HM PX

398SCP0143A00

HM PX

POMPE A PISTONI ASSIALI A CILINDRATA VARIABILE
VARIABLE DISPLACEMENT AXIAL PISTON PUMPS
AXIALKOLBENVERSTELLPUMPEN

Le pompe a pistoni assiali serie HM PX sono state concepite per operare in circuito chiuso.
I vari sistemi di comando disponibili le rendono facilmente adattabili alle esigenze applicative sia per il settore industriale che per quello della movimentazione.
Lo sviluppo di gruppi rotanti appositamente concepiti, unito ad uno studio accurato delle sezioni di passaggio dell'olio, consentono a queste pompe di raggiungere elevate velocità di rotazione, come quelle consentite dai moderni motori diesel, garantendo una elevata affidabilità per pressioni di funzionamento fino a 350 bar di picco.

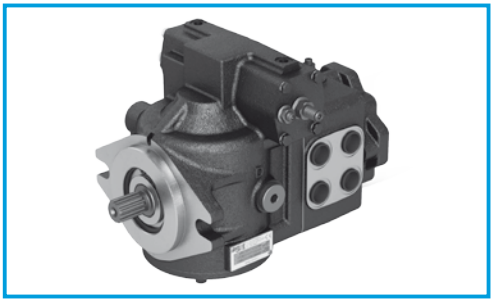
CARATTERISTICHE PRINCIPALI:
- cilindrate da 9+9 cc a 16+16 cc
- flangia SAE B
- piattello distributore bimetallico
- oscillante su cuscinetti a rullini
- pompa integrata di carico che pressurizza il circuito ed evita la cavitazione
- una sola pompa fornisce due portate uguali per alimentare due circuiti separati
- un singolo comando per entrambi i circuiti

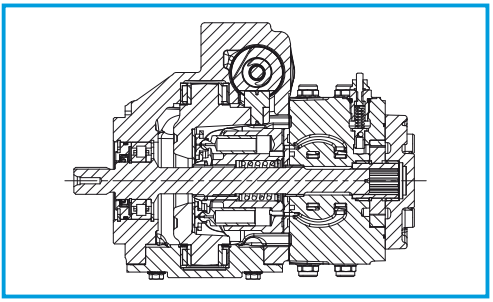
Axial piston pumps series HM PX have been designed to operate in a closed circuit.
The available control systems make it easy to use these pumps in any application for industrial and mobile fields.
Development of rotating groups, especially designed, united to an accurate study of oil passage sections, allow high speed rotation, like required by modern diesel engines, giving extreme reliability for working peak pressure up to 350 bar.

MAIN FEATURES:
- *displacement from 9+9 cc to 16+16 cc*
- *SAE B flange*
- *bimetallic distributor plate*
- *swashplate mounted on needle roller bearings*
- *integrated boost pump that pressurizes the circuit and avoids cavitation*
- *two equal flows from one pump to supply two separate circuits*
- *single control for both circuits*

Die Axialkolbenpumpen der Serie HM PX wurden für den Betrieb im geschlossenen Kreislauf konzipiert.
Die verschiedenen lieferbaren Steuerungssysteme eignen sich sowohl für stationäre als auch für mobile Anwendungen im Allgemeinen.
Speziell entwickelte Zylinderblöcke mit optimalen Saugverhältnissen ermöglichen, wie von modernen Antriebsaggregaten gefordert, den Einsatz bei hohen Pumpendrehzahlen, wobei ein kontinuierlicher Arbeitsdruck mit einem Spitzenwert von 350 Bar gewährleistet ist.

DIE WICHTIGSTEN EIGENSCHAFTEN:
- Hubraum von 9+9 cc bi 16+16 cc
- Flansch SAE B
- Bimetall-Verteilerscheibe
- Möglichkeit eines Schwingsystems, das auf Wälzlagern montiert ist
- Möglichkeit eines Schwingsystems, das auf Bronzeplatten oder Wälzlagern montiert ist
- Nur eine Pumpe liefert zwei gleiche Durchflussraten zum Zuführen von zwei getrennten Kreisläufen
- Mit einem einzigen Befehl auf beide Schaltungen





DATI TECNICI
TECHNICAL DATA
TECHNISCHE MERKMALE

GRUPPO *GROUP* BAUREIHE	CILINDRATA TEORICA *NOMINAL DISPLACEMENT* FÖRDERVOLUMEN		PRESSIONE *PRESSURE* DRUCK						VELOCITÀ *DI ROTAZIONE SPEED* DREHZAHL		MASSA *WEIGHT* GEWICHT	
			CONTINUA *CONTINUOUS* DAUER		INTERMITTENTE *INTERMITTENT* INTERMITTIERENDER		PICCO *PEAK* SPITZEN		MAX	MIN		
	cm^3	in^3	bar	psi	bar	psi	bar	psi	min^{-1}	min^{-1}	kg	lbs
HM PX	9+9	0,55+0,55	280	4060	300	4350	350	4568	3600	500	25,7	56,5
	10+10	0,61+0,61	280	4060	300	4350	350	4568	3600	500	25,7	56,5
	11+11	0,67+,067	280	4060	300	4350	350	4568	3600	500	25,7	56,5
	12+12	0,73+0,73	280	4060	300	4350	350	4568	3600	500	25,7	56,5
	13+13	0,79+0,79	280	4060	300	4350	350	4568	3600	500	25,7	56,5
	14+14	0,85+0,85	280	4060	300	4350	350	4568	3600	500	25,7	56,5
	15+15	0,91+0,91	280	4060	300	4350	350	4568	3600	500	25,7	56,5
	16+16	0,97+0,97	280	4060	300	4350	350	4568	3600	500	25,7	56,5

PRESSIONE CONTINUA: pressione media del normale range di pressioni di funzionamento
PRESSIONE INTERMITTENTE: pressione che può essere mantenuta per periodi brevi (circa il 10% del ciclo di lavoro)
PRESSIONE DI PICCO: pressione massima permessa regolata dalle valvole di max.(max. 1-2% del ciclo di lavoro)

CONTINUOUS PRESSURE: average pressure of the normal operating pressure range
INTERMITTENT PRESSURE: pressure that can be maintained for short periods (for about 10% of the work cycle)
PEAK PRESSURE: maximum allowable pressure regulated by maximum relief valves (max 1-2% of the work cycle)

KONTINUIERLICHER DRUCK: durchschnittlicher Druck der normalen Betriebsdruckreihe
INTERMITTIERENDER DRUCK: Druck, der für kurze Zeitabschnitte beibehalten werden kann (etwa 10% des Betriebszyklus)
SPITZENDRUCK: zugelassener Höchstdruck, von den Höchstdruckventilen geregelt (max. 1-2% des Betriebszyklus)

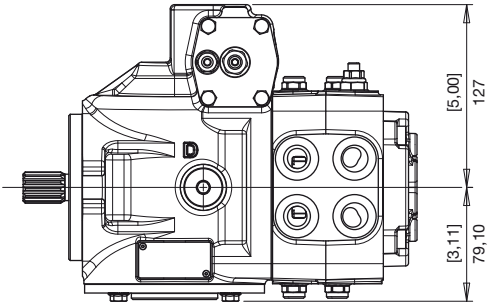
POMPA DI ALIMENTAZIONE
BOOST PUMP
SPEISEPUMPE

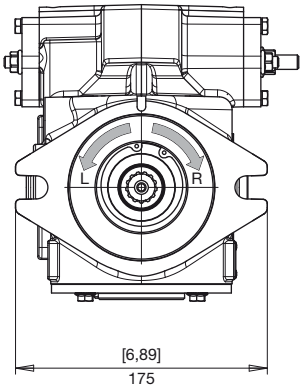
HM PX	CILINDRATA *DISPLACEMENT* FORDERVOLUMEN		PRESSIONE *PRESSURE* DRUCK	
	cm³	in³	bar	psi
POMPA SINGOLA *SINGLE PUMP* PUMPE	10	0.61	20	290

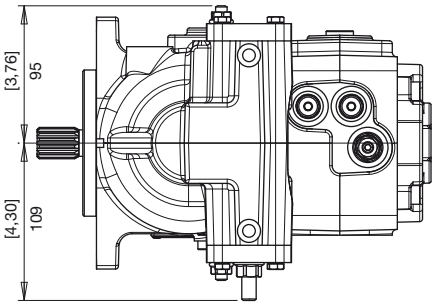
MOMENTO POLARE DI INERZIA
INERTIAL MASS
TRÄGHEITSMOMENT

approx. 13,6 x 10^{-4} Kg m^2

DIMENSIONI
SIZE
ABMESSUNGEN



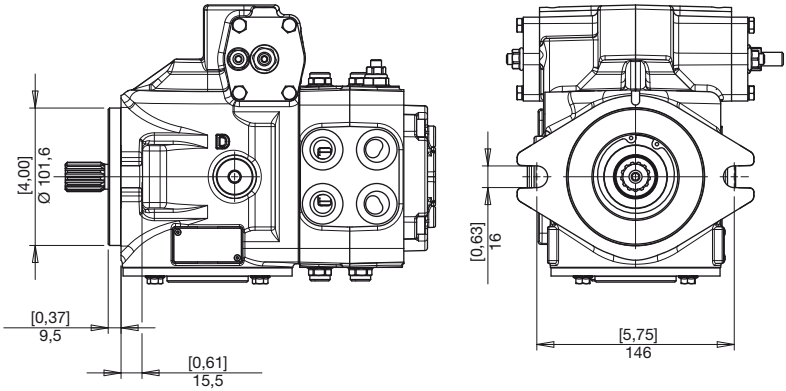




FLANGE
FLANGES
FLANSCHE

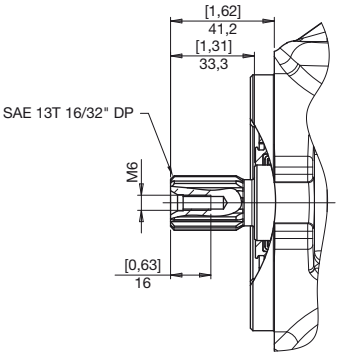
HM PX

B SAE B
SAE B
SAE B

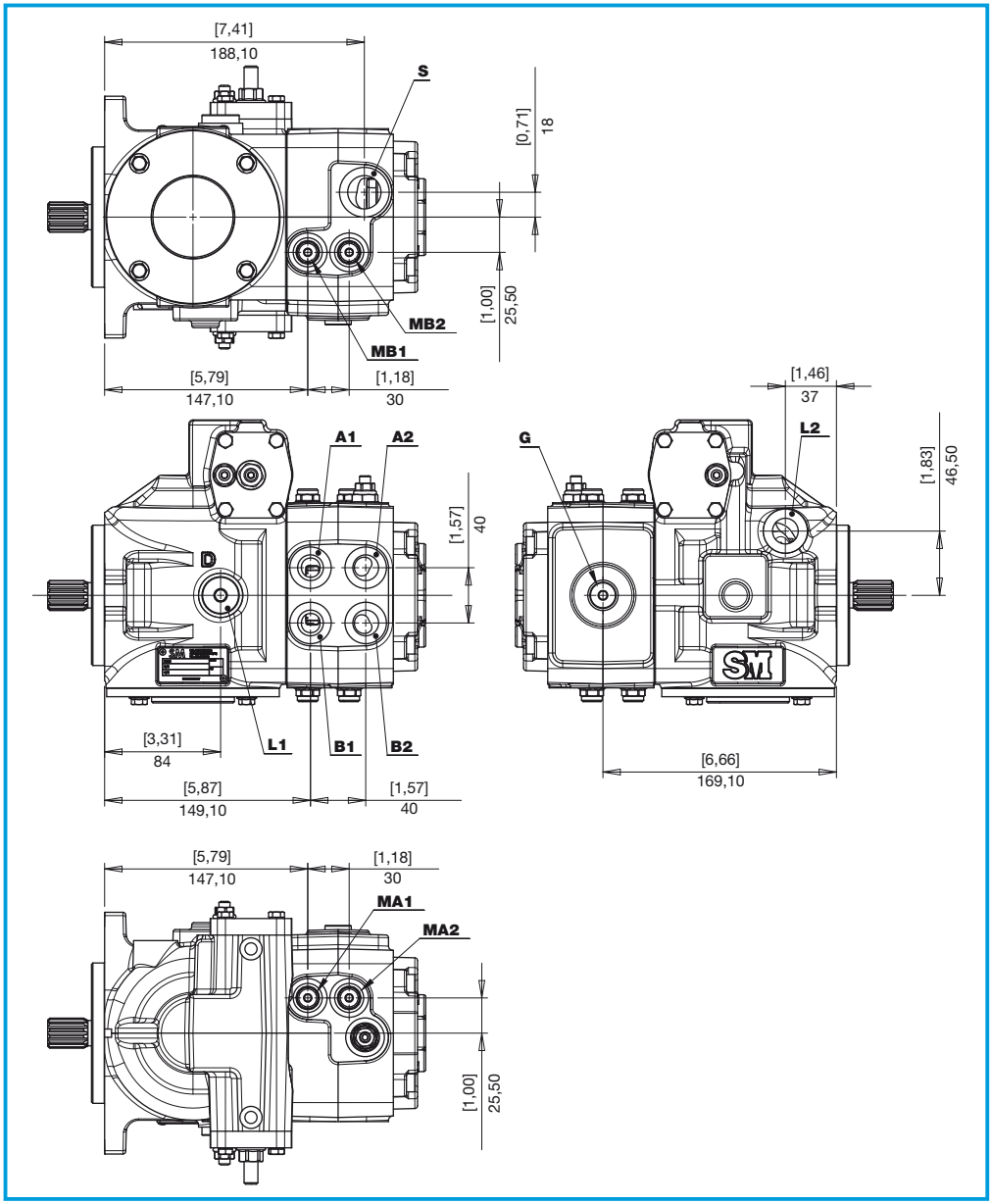


ESTREMITÀ ALBERI
SPLINE SHAFTS
WELLENPROFILE

9 COPPIA MAX
MAX TORQUE **310 N•m**
MAX DREHMOMENT

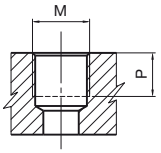


BOCCHE
PORTS
ANSCHLÜSSE

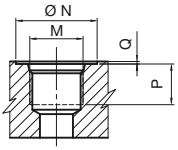


BOCCHE
PORTS
ANSCHLÜSSE

HM PX



TIPO *TYPE* TYP	M		P mm	P in
G1	1/8” GAS BSPP	8	8	0,31
G2	1/4” GAS BSPP	17	9	0,35
G4	1/2” GAS BSPP	70	14,5	0,57
G6	3/4” GAS BSPP	90	19	0,75



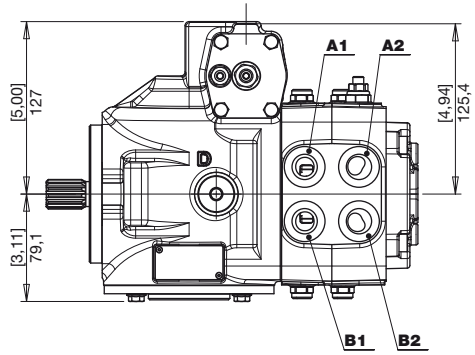
TIPO *TYPE* TYP	DIMENSIONE *SIZE* GROSSE	N mm	N in	P mm	P in	Q mm	Q in	M	M
U2	1/4”	20	0,79	12	0,47	0,3	0,01	7/16-20 UNF	17
U5	5/8”	34	1,34	18	0,71	0,3	0,01	3/4-16 UNF	70
U6	3/4”	41	1,61	20	0,79	0,3	0,01	1-1/16”-12 UNF	90

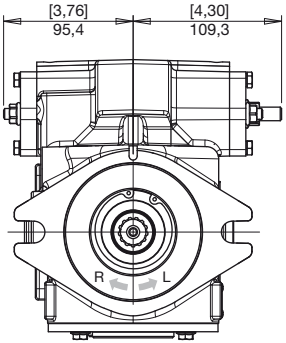
COMBINAZIONI
COMBINATIONS
KOMBINATIONEN

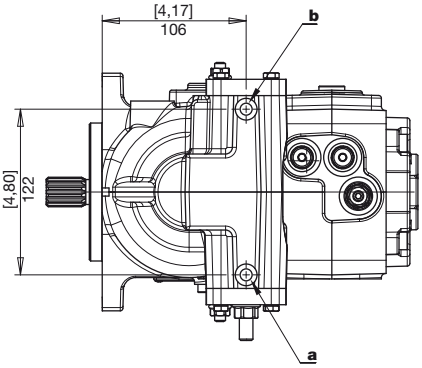
TIPO *TYPE* TYP	S ASPIRAZIONE *INLET* SAUGSEITE	A - B MANDATA *OUTLET* AUSGANG	L1 - L2 DRENAGGI *DRAIN* LECKÖLANSCHLUSS	PRESE PRESSIONE *PRESSURE INTAKE* DRUCKANSCHLÜSSE MA-MB	G
G	G6	G6	G4	G1	G2
U	U6	U6	U5	G1	U2

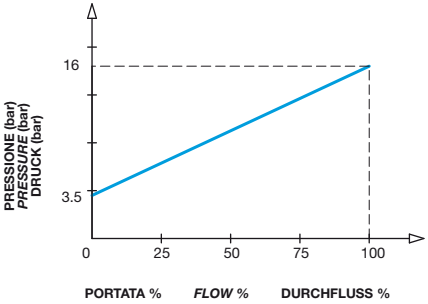
COMANDI
CONTROLS
STEUERUNGEN

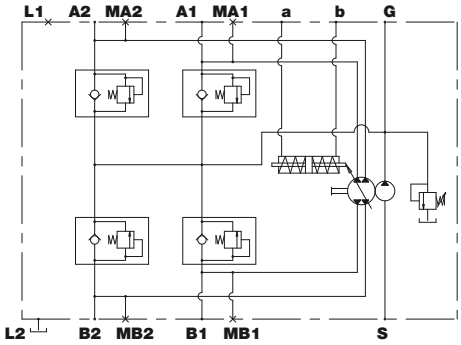
K IDRAULICO A DISTANZA
REMOTE HYDRAULIC
HYDRAULISCHE FERNSTEUERUNG











ROTAZIONE *DIRECTION* DREHRICHTUNG	PILOTAGGIO *PILOT PRESSURE* STEVERDRUCK	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	A1, A2
	b	B1, B2
SINISTRA *LEFT* LINKS	a	B1, B2
	b	A1, A2

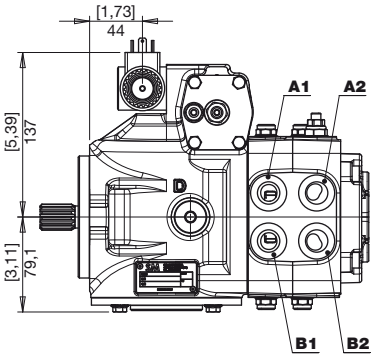
		Versione GAS *GAS version* Version GAS		Versione UNF *UNF version* Version UNF	
		Filettatura *Thread* Gewinde	Profondità *Depth* Tiefe	Filettatura *Thread* Gewinde	Profondità *Depth* Tiefe
A **B**	Pilotaggio *Pilot* Pilot	G 1/8" BSPP	8 mm 0.31 in	7/16-20 UNF	12 mm 0.47 in

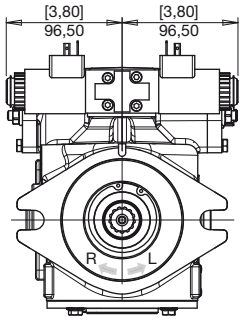
E F — 12 V 24 V

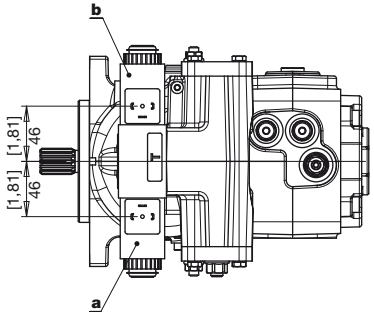
ELETTRICO ON/OFF CENTRO CHIUSO
ELECTRICAL ON/OFF, CLOSED CENTER
ELEKTRISCH ON/OFF, GESCHLOSSENES VENTIL

N Q — 12 V 24 V

ELETTRICO ON/OFF CENTRO APERTO
ELECTRICAL ON/OFF, OPEN CENTER
ELEKTRISCH ON/OFF, GEÖFFNETES VENTIL



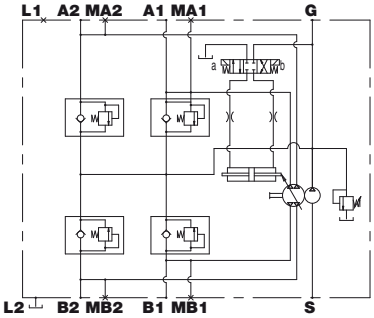




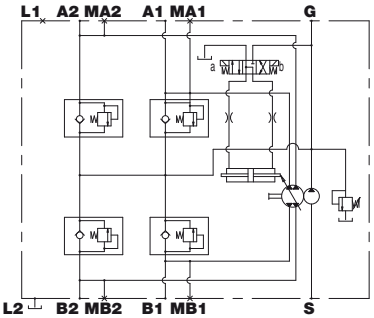
a **b**	Solenoide *Solenoid* Solenoid	Connettori *Connectors* Verbindung	DIN 43650

ROTAZIONE ***DIRECTION*** **DREHRICHTUNG**	**SOLENOIDE IN TENSIONE** ***EXCITED SOLENOID*** **SOLENOID UNTER SPANNUNG**	**MANDATA** ***OUTPUT*** **AUSGANG**
DESTRA *RIGHT* RECHTS	**a**	**A1, A2**
	b	**B1, B2**
SINISTRA *LEFT* LINKS	**a**	**B1, B2**
	b	**A1, A2**

E F



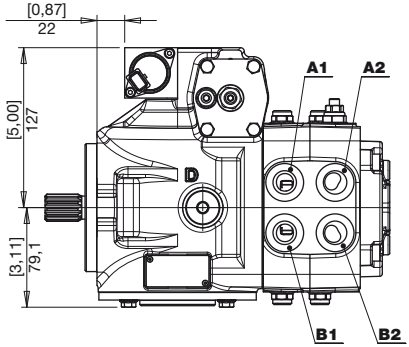
N Q

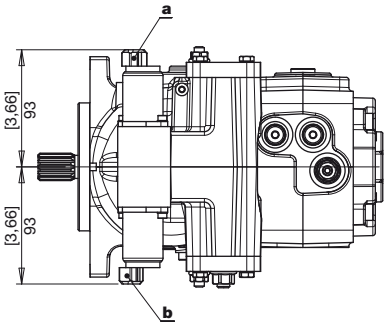


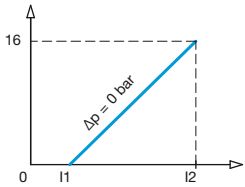
COMANDI
CONTROLS
STEUERUNGEN

S — ELETTRICO PROPORZIONALE DIRETTO
ELECTRICAL PROPORTIONAL CONTROL
ELEKTRISCH PROPORTIONALSTEUERUNG

12 V





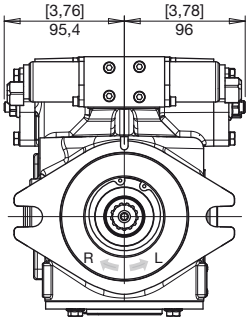


a	Solenoide *Solenoid* Solenoid	Connettori *Connectors* Verbindung	AMP JUNIOR TIMER
b			

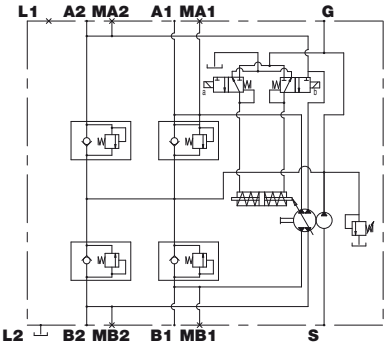
ROTAZIONE *DIRECTION* DREHRICHTUNG	SOLENOIDE IN TENSIONE *EXCITED SOLENOID* SOLENOID UNTER SPANNUNG	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	**a**	**A1, A2**
	b	**B1, B2**
SINISTRA *LEFT* LINKS	**a**	**B1, B2**
	b	**A1, A2**

W — ELETTRICO PROPORZIONALE DIRETTO
ELECTRONIC PROPORTIONAL CONTROL
ELEKTRONISCHE PROPORTIONALSTEUERUNG

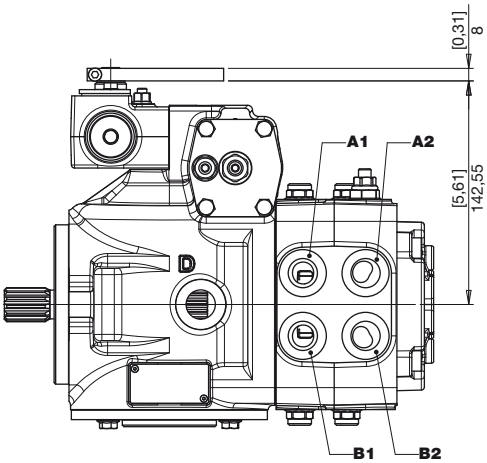
24 V

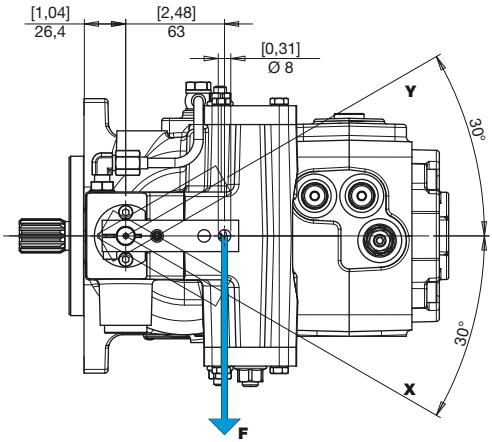


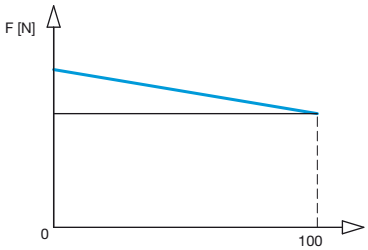
	S	W
Tensione nominale *Rated voltage* Nennspannung	12 V	24 V
Corrente min (I1) *Min. Current* Mindeststrom	600 mA	290 mA
Corrente max (I2) *Max. Current* Maximaler Strom	1000 mA	510 mA
Frequenza PWM *PWM Frequency* Frequenz PWM	100 Hz	

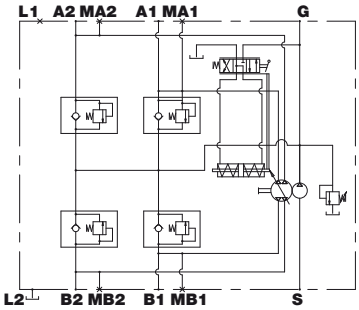


I SERVOCOMANDO A LEVA
LEVER-OPERATED SERVO-CONTROL
HYDRAULISCHE HEBEL-SERVOSTEUERUNG



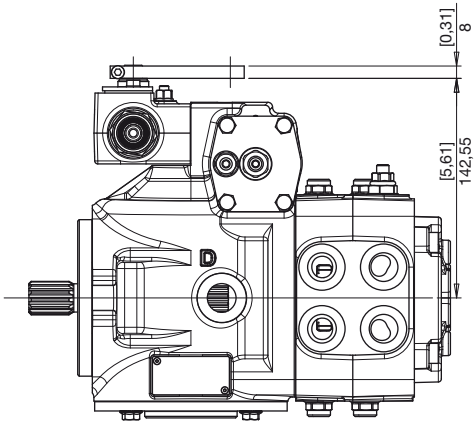


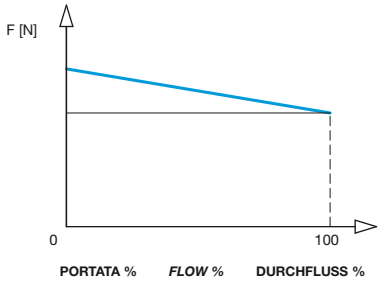


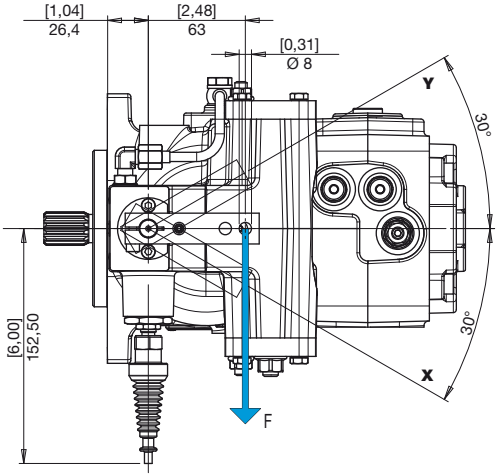


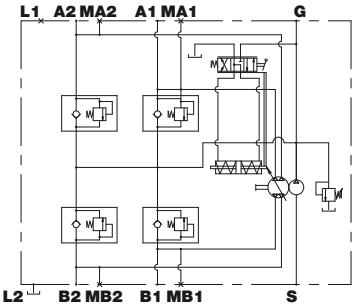
ROTAZIONE *DIRECTION* DREHRICHTUNG	LEVA COMANDO *CONTROL LEVER* STEUERHEBEL	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	Y	B1, B2
	X	A1, A2
SINISTRA *LEFT* LINKS	Y	A1, A2
	X	B1, B2

C SERVOCOMANDO A LEVA CON INTERRUTTORE ELETTRICO
LEVER-OPERATED SERVO-CONTROL WITH ELECTRIC SWITCH
HYDRAULISCHE HEBEL-SERVOSTEUERUNG MIT ELEKTRISCHE SCHALTER









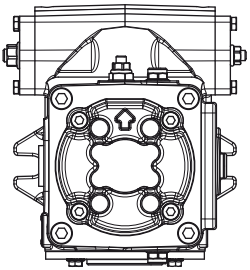
ROTAZIONE *DIRECTION* DREHRICHTUNG	LEVA COMANDO *CONTROL LEVER* STEUERHEBEL	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	Y	B1, B2
	X	A1, A2
SINISTRA *LEFT* LINKS	Y	A1, A2
	X	B1, B2

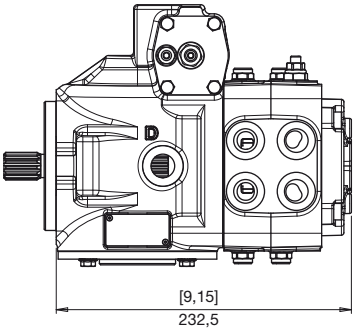
PREDISPOSIZIONI
VERSION
BAUART

HM PX

0 NESSUNA PREDISPOSIZIONE SENZA POMPA SOVRALIMENTAZIONE
NO AUXILIARY MOUNT WITHOUT CHARGE PUMP
OHNE ANSCHLUSSFLANSCH, OHNE SPEISEPUMPE

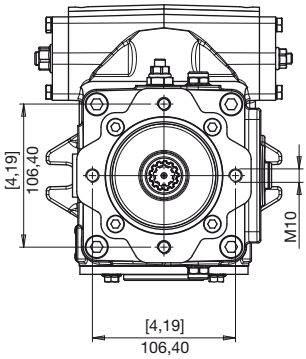
1 NESSUNA PREDISPOSIZIONE CON POMPA SOVRALIMENTAZIONE
NO AUXILIARY MOUNT WITH CHARGE PUMP
OHNE ANSCHLUSSFLANSCH MIT SPEISEPUMPE

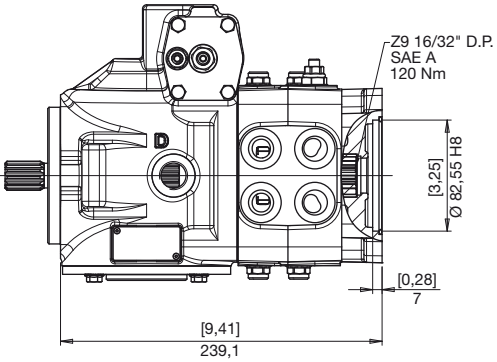




2 SAE A CON POMPA SOVRALIMENTAZIONE
SAE A WITH CHARGE PUMP
SAE A MIT SPEISEPUMPE

5 SAE A SENZA POMPA SOVRALIMENTAZIONE
SAE A WITHOUT CHARGE PUMP
SAE A OHNE SPEISEPUMPE

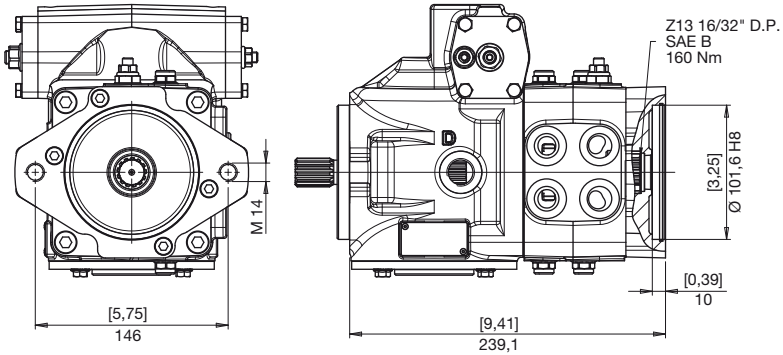




PREDISPOSIZIONI
VERSION
BAUART

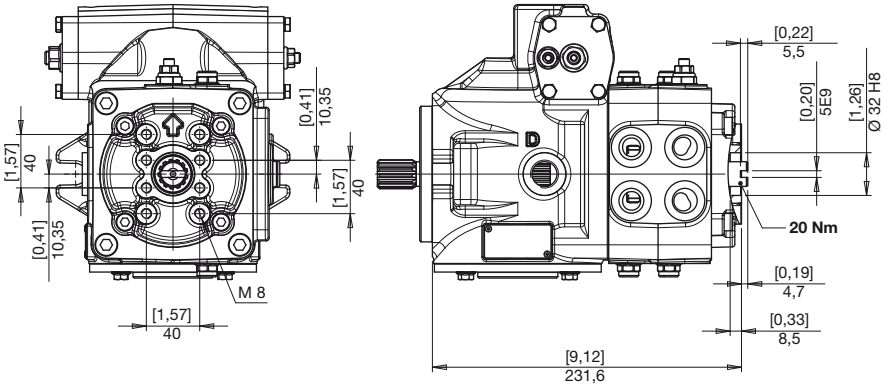
3 SAE B CON POMPA SOVRALIMENTAZIONE
SAE B WITH CHARGE PUMP
SAE B MIT SPEISEPUMPE

6 SAE B SENZA POMPA SOVRALIMENTAZIONE
SAE B WITHOUT CHARGE PUMP
SAE B OHNE SPEISEPUMPE



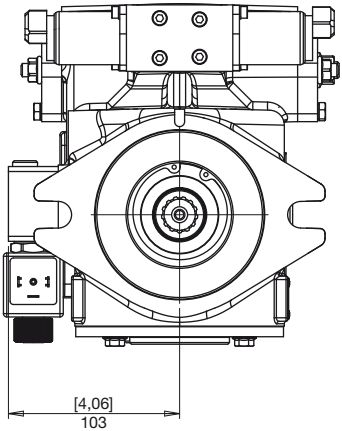
8 POMPA INGRANAGGI GR 1 CON POMPA SOVRALIMENTAZIONE
GR 1 GEAR PUMP WITH CHARGE PUMP
BAUREIHE GR 1 ZAHNRADPUMPE MIT SPEISEPUMPE

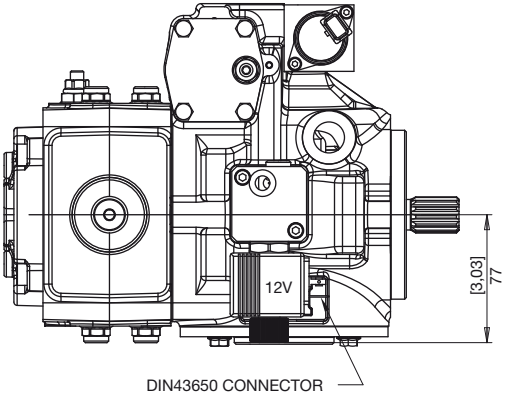
9 POMPA INGRANAGGI GR 1 SENZA POMPA DI SOVRALIMENTAZIONE
GR 1 GEAR PUMP WITHOUT CHARGE PUMP
BAUREIHE GR 1 ZAHNRADPUMPE OHNE SPEISEPUMPE

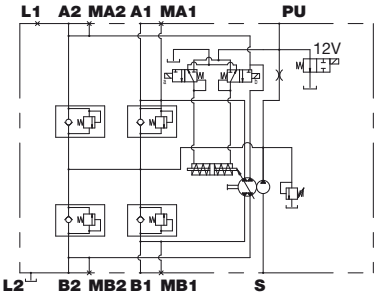


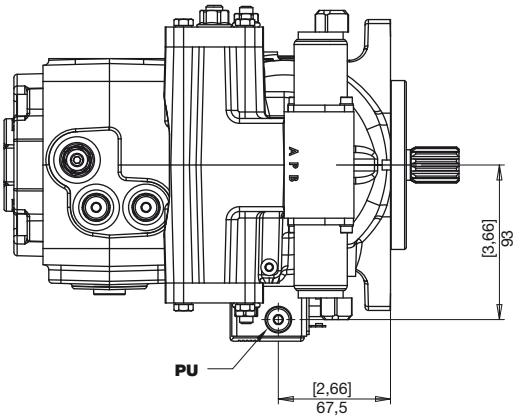
E

SICUREZZA OPERATORE ASSENTE 12V
NO OPERATOR SAFETY 12V
SICHERUNG KEIN BEDIENER 12V



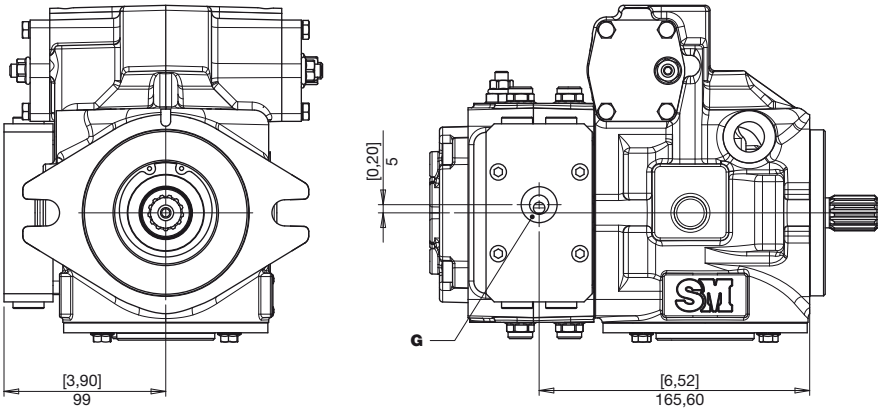


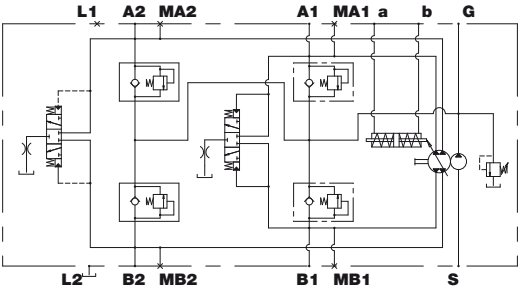




PU	Pilotaggio sblocco freno *Brake opening pressure* Bremse offnung druck	G 1/8” BSPP

U VALVOLA DI SCAMBIO
EXCHANGE VALVE
SPÜLVENTIL





		Versione GAS *GAS version* Version GAS		Versione UNF *UNF version* Version UNF	
		Filettatura *Thread* Gewinde	Profondità *Depth* Tiefe	Filettatura *Thread* Gewinde	Profondità *Depth* Tiefe
G	Presa bassa pressione *Test port boost pressure* Messanschluß Speisedruck	G 1/4" BSPP	9 mm 0.35 in	7/16-20 UNF	12 mm 0.47 in

ISTRUZIONI PER L'ORDINAZIONE
ORDERING INSTRUCTIONS
BESTELLANLEITUNG

HM PX

HM PX 16 R 9 G K E 1 0 ...

PRODOTTO
PRODUCT
PRODUKT

CILINDRATA
DISPLACEMENT
FÖRDERVOLUMEN

09 = 9+9 cc
10 = 10+10 cc
11 = 11+11 cc
12 = 12+12 cc
13 = 13+13 cc
14 = 14+14 cc
15 = 15+15 cc
16 = 16+16 cc

SENSO DI ROTAZIONE
ROTATION
DREHRICHTUNG

R - Destra / *Right* / Rechts
L - Sinistra / *Left* / Links

ESTREMITÀ D'ALBERO
SHAFT PROFILE
WELLENENDE

9 - 13T SAE 16/32" DP

BOCCHE
PORTS
ANSCHLÜSSE

G - Gas
U - UNF

COMANDO ***CONTROL*** **STEUERUNG**

E - Elettrico ON/OFF centro chiuso (12V)
F - Elettrico ON/OFF centro chiuso (24V)
N - Elettrico ON/OFF centro aperto (12V)
Q - Elettrico ON/OFF centro aperto (24V)
S - Elettronico proporzionale (12V)
W- Elettronico proporzionale (24V)
K- Idraulico a distanza
I - Idraulico manuale
C - Idraulico manuale con interruttore elettrico

E- *Electrical on/off, closed center (12V)*
F- *Electrical on/off, closed center (24V)*
N- *Electrical on/off, open center (12V)*
Q- *Electrical on/off, open center (24V)*
S- *Electronical proportional (12V)*
W- *Electronical proportional (24V)*
K- *Remote hydraulic*
I- *Manual hydraulic*
C- *Manual hydraulic with electrical switch*

E- Elektrische Steuerung on/off geshlosseness Ventil (12V)
F- Elektrische Steuerung on/off geshlosseness Ventil (24V)
N- Elektrische Steuerung on/off geöffnetes Ventil (12V)
Q- Elektrische Steuerung on/off geöffnetes Ventil (24V)
S- Elektronische Proportionalsteuerung (12V)
W-Elektronische Proportionalsteuerung (24V)
K- Hydraulische Fernesteuerung
I- Manuell Hydraulische
C- Manuell Hydraulische mit elektrischer Schalter

ESECUZIONI SPECIALI
SPECIAL VERSIONS
SONDERBAUARTEN

ACCESSORI
ACCESSORIES
ZUBEHÖR

0 - Nessuno
E - Sicurezza operatore assente
U - Valvola di scambio fissa

0 - No accessories
E - No operator safety
U - Exchange valve fixed

0 - Ohne Zubehör
E - Sicherung kein arbeiter
U - Spülventil

PREDISPOSIZIONI *VERSION* BAUART

0 - nessuna, senza pompa di alimentazione
1 - nessuna, con pompa di alimentazione
5 - SAE A, senza pompa di alimentazione
2 - SAE A, con pompa di alimentazione
6 - SAE B senza pompa di alimentazione
3 - SAE B con pompa di alimentazione
9 - GR1, senza pompa di alimentazione
8 - GR1, con pompa di alimentazione

0 - *No auxiliary mount without charge pump*
1 - *No auxiliary mount with charge pump*
5 - *SAE A mounting without charge pump*
2 - *SAE A mount with charge pump*
6 - *SAE B mount without charge pump*
3 - *SAE B mount with charge pump*
9 - *GR1 mount without charge pump*
8 - *GR1 mount with charge pump*

0 - Ohne Anschlussflansch, ohne Speisepumpe
1 - Ohne Anschlussflansch, mit Speisepumpe
5 - SAE A-Anschlussflansch, ohne Speisepumpe
2 - SAE A -Anschlussflansch, mit Speisepumpe
6 - SAE B-Anschlussflansch, ohne Speisepumpe
3 - SAE B -Anschlussflansch, mit Speisepumpe
9 - GR1 ohne Speisepumpe
8 - GR1 mit Speisepumpe

TARATURA VALVOLE
VALVE SETTING
VENTILE

B - 150 bar
D - 180 bar
E - 210 bar
H - 230 bar
G - 250 bar
I - 280 bar
L - 300 bar
M- 320 bar
O - 350 bar