POMPE A PISTONI ASSIALI PER CIRCUITO CHIUSO A CILINDRATA VARIABILE

VARIABLE DISPLACEMENT CLOSED CIRCUIT AXIAL PISTON PUMPS

AXIALKOLBENVERSTELLPUMPEN FÜR DEN GESCHLOSSENEN KREISLAUF

HM PZB

398SCP0153A00

HM PZB

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

Le pompe a pistoni assiali e cilindrata variabile serie HM PZB 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 dei mezzi mobili.
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 320 bar di picco.
Le pompe possono essere composte in versione tandem, utilizzando le opportune predisposizioni disponibili a richiesta.

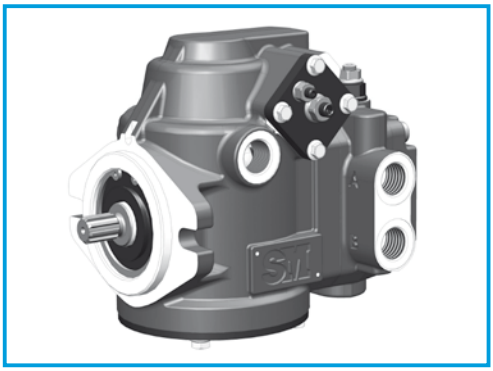
CARATTERISTICHE PRINCIPALI:
- cilindrate da 11 cc a 19 cc
- gruppi rotanti a 9 pistoni per un funzionamento più regolare rispetto ai gruppi a 7 pistoni
- piattello distributore bimetallico
- oscillante su cuscinetti a rullini
- possibilità di pompa integrata di carico che pressurizza il circuito ed evita la cavitazione
- bassa rumorosità

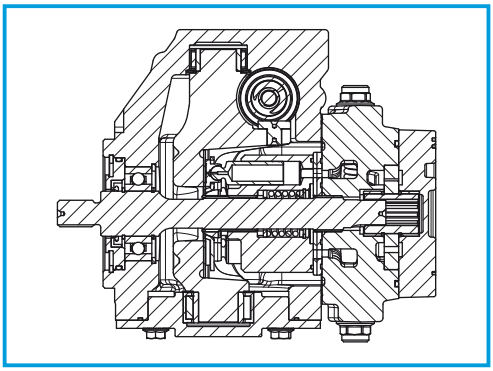
Axial piston pumps with variable displacement series HM PZB have been designed to operate in a closed circuit.
The available control systems make it easy to use these pumps in any application for industrial and mobile fields.
Development of rotating groups, especially designed, united to an accurate study of oil passage sections, allow high speed rotation, like required by modern diesel engines, giving extreme reliability for working peak pressure up to 320 bar.
It is possible to couple tandem versions, by means of coupling flanges optionally available.

MAIN FEATURES:
- *displacement from 11 cc to 19 cc*
- *rotating groups with 9 pistons make a more regular operation than a 7 pistons rotating group*
- *bimetallic distributor plate*
- *swashplate mounted on needle roller bearings*
- *optional of integrated boost pump that pressurizes the circuit and avoids cavitation*
- *low noise*

Die Axialkolbenpumpen der Serie HM PZB 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 320 Bar gewährleistet ist.
Unter Anwendung der auf Anfrage erhältlichen Anbaufl ansche können die Pumpen in der Tandemversion geliefert werden.

DIE WICHTIGSTEN EIGENSCHAFTEN:
- Hubraum von 11cc bis 19 cc
- Rotationsaggregate mit 9 Kolben für einen regelmäßigeren Betrieb als mit 7 Kolben-Rotationsaggregaten
- Bimetall-Verteilerscheibe
- Möglichkeit eines Schwingsystems, das auf Wälzlagern montiert ist
- Möglichkeit einer integrierten Ladepumpe für die Druckbeaufschlagung des Kreislaufs zur Vermeidung des Hohlsogs
- Geräuscharmut





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 PZB	11	0,67	280	4060	300	4350	320	4640	3600	500	13,5	29,8
	12	0,73	280	4060	300	4350	320	4640	3600	500	13,5	29,8
	13	0,80	280	4060	300	4350	320	4640	3600	500	13,5	29,8
	14	0,85	280	4060	300	4350	320	4640	3600	500	13,5	29,8
	16	0,98	280	4060	300	4350	320	4640	3600	500	13,5	29,8
	18	1,10	280	4060	300	4350	320	4640	3600	500	13,5	29,8
	19	1,16	280	4060	300	4350	320	4640	3600	500	13,5	29,8

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)

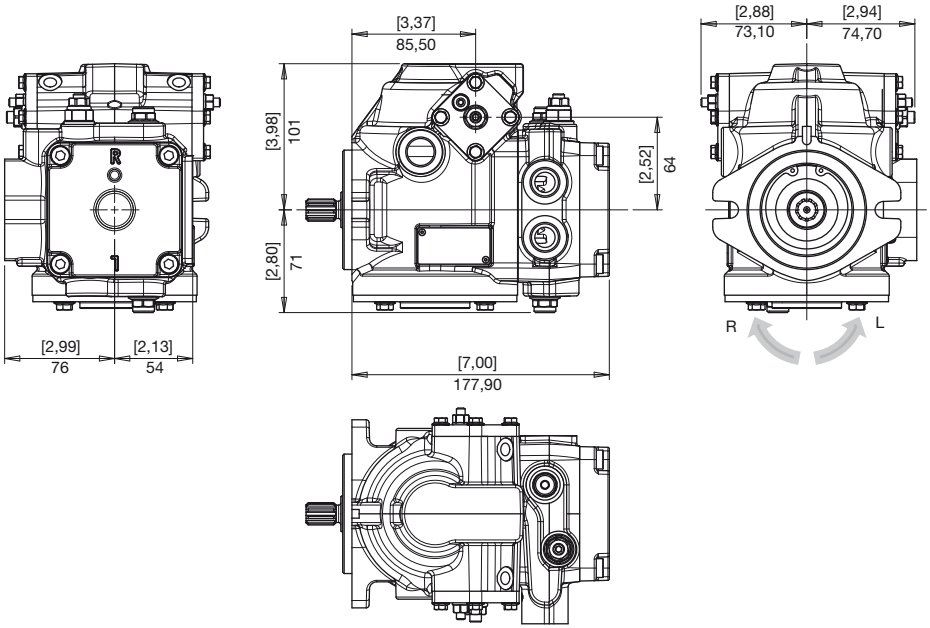
POMPA DI ALIMENTAZIONE
BOOST PUMP
SPEISEPUMPE

HM PZB	CILINDRATA *DISPLACEMENT* FORDERVOLUMEN		PRESSIONE *PRESSURE* DRUCK	
	cm^3	in^3	bar	psi
POMPA SINGOLA *SINGLE PUMP* PUMPE	5	0.30	20	290
POMPE TANDEM (una sovralimentazione) *TANDEM PUMPS (one boost pump)* MEHRFACHPUMPEN (eine Speisepumpe)	8	0.48	20	290
POMPE TANDEM (due sovralimentazioni) *TANDEM PUMPS (two boost pumps)* MEHRFACHPUMPEN (zwei Speisepumpen)	5+5	0.30+0.30	20	290

MOMENTO POLARE DI INERZIA
INERTIAL MASS
TRÄGHEITSMOMENT

approx. 42 x 10^{-4} N·m^2

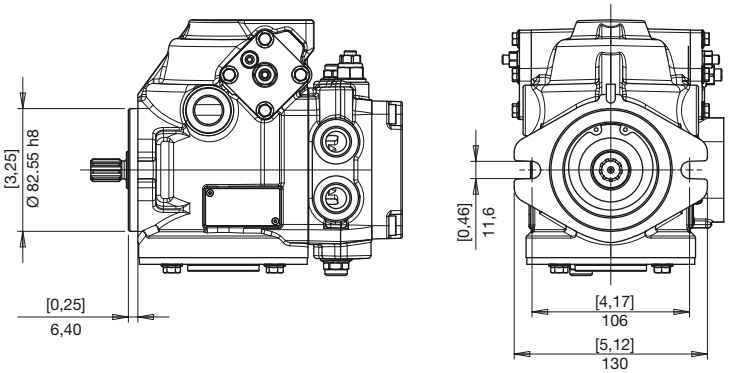
DIMENSIONI
SIZE
ABMESSUNGEN



FLANGE
FLANGES
FLANSCHE

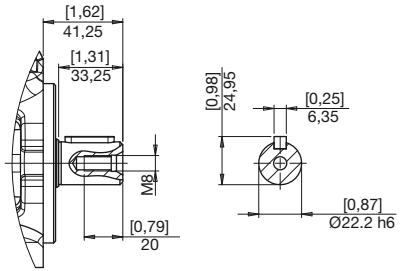
HM PZB

A SAE A
SAE A
SAE A

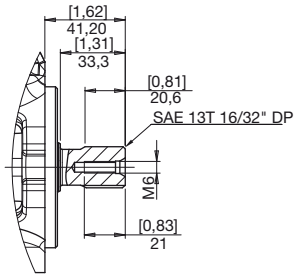


ESTREMITÀ ALBERI
SPLINE SHAFTS
WELLENPROFILE

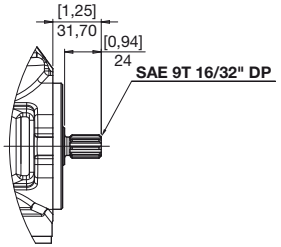
J COPPIA MAX
MAX TORQUE 220 N•m
MAX DREHMOMENT



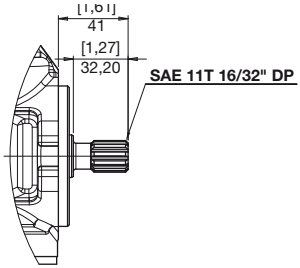
9 COPPIA MAX
MAX TORQUE 220 N•m
MAX DREHMOMENT



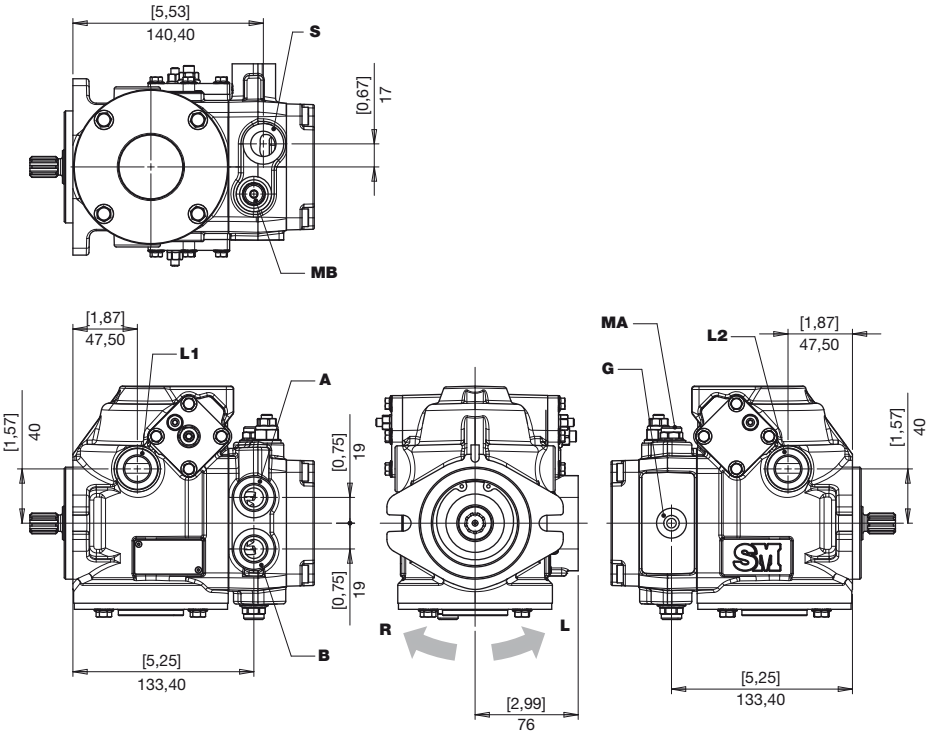
V COPPIA MAX
MAX TORQUE 120 N•m
MAX DREHMOMENT



X COPPIA MAX
MAX TORQUE 170 N•m
MAX DREHMOMENT



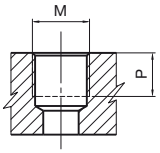
BOCCHE
PORTS
ANSCHLÜSSE



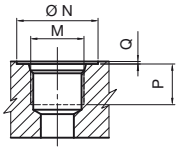
A **B**	Utilizzi *Use* Verbraucher	**G**	Presa bassa pressione *Test port boost pressure* Messanschluß Speisedruck
L1 **L2**	Drenaggi *Drain* Leckölanschluss	**MA** **MB**	Presa alta pressione *Test port high pressure* Messanschluß Hochdruck
S	Aspirazione *Feeding pump inlet* Ansaugöffnung		

BOCCHE
PORTS
ANSCHLÜSSE

HM PZB



TIPO *TYPE* TYP	M		P	
		Nm	mm	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



TIPO *TYPE* TYP	DIMENSIONE *SIZE* GRÖSSE	N		P		Q		M	
		mm	in	mm	in	mm	in		Nm
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

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	G4	G4	G4	G1	G2
U	U5	U5	U5	G1	U2

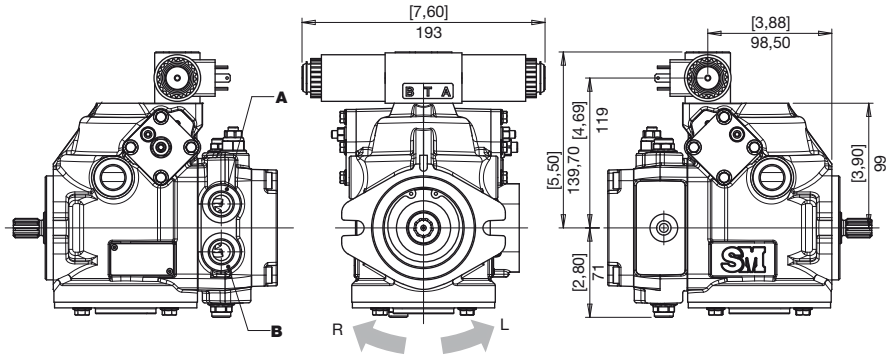
COMANDI
CONTROLS
STEUERUNGEN

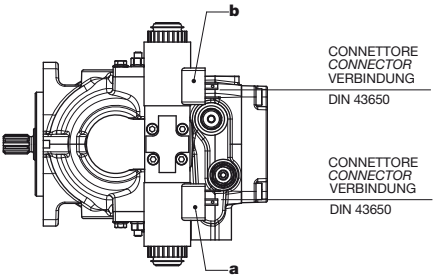
E F 12 V 24 V

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

N Q 12 V 24 V

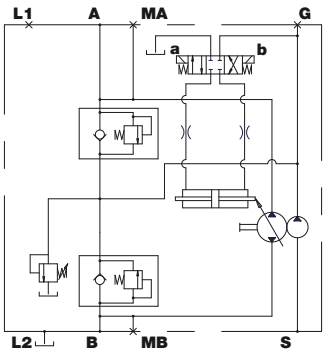
ELETTRICO ON/OFF CENTRO APERTO
ELECTRICAL ON/OFF, OPEN CENTER
ELEKTRISCH ON/OFF, GEÖFFNETES VENTIL



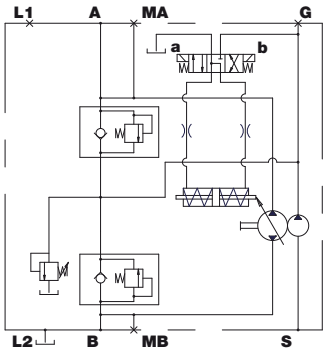


ROTAZIONE *DIRECTION* DREHRICHTUNG	SOLENOIDE IN TENSIONE *EXCITED SOLENOID* SOLENOID UNTER SPANNUNG	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	A
	b	B
SINISTRA *LEFT* LINKS	a	B
	b	A

E F

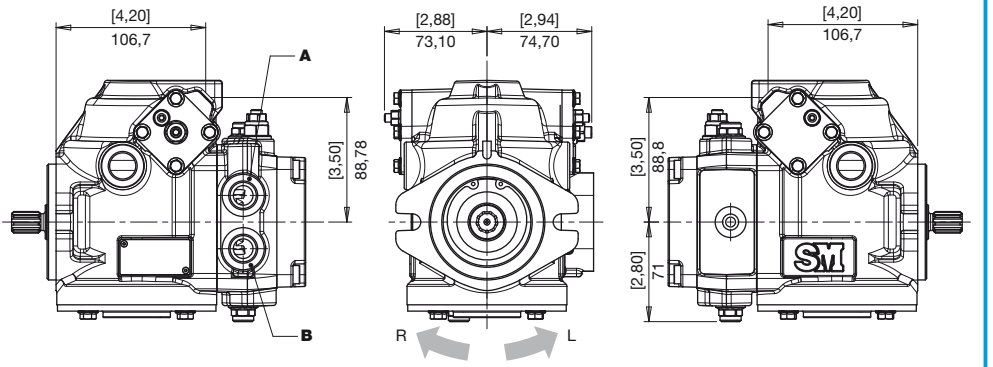


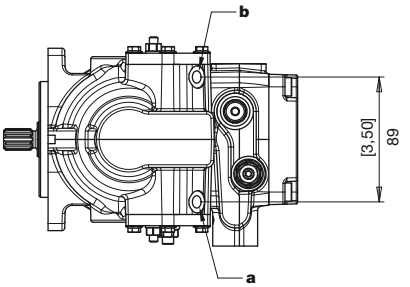
N Q

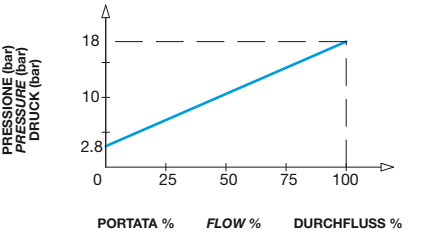


COMANDI
CONTROLS
STEUERUNGEN

K **IDRAULICO A DISTANZA**
REMOTE HYDRAULIC
HYDRAULISCHE FERNSTEUERUNG

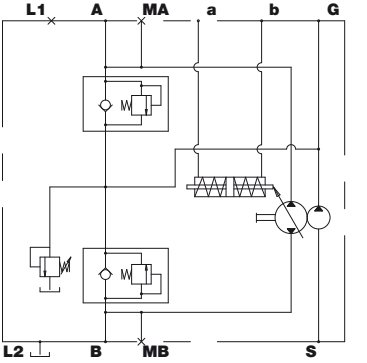






ROTAZIONE *DIRECTION* DREHRICHTUNG	PILOTAGGIO *PILOT PRESSURE* STEVERDRUCK	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	A
	b	B
SINISTRA *LEFT* LINKS	a	B
	b	A

		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	Pilotaggio *Pilot* Pilot	G 1/8" BSPP	8 mm 0.31 in	7/16-20 UNF	12 mm 0.47 in
b					

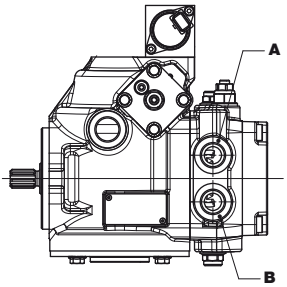


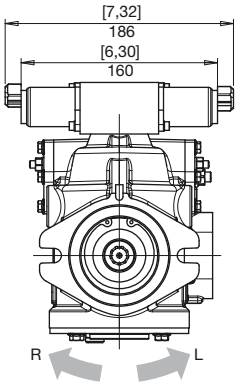
S 12 V

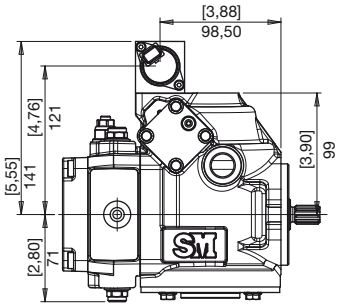
ELETTRICO PROPORZIONALE DIRETTO
ELECTRICAL PROPORTIONAL CONTROL
ELEKTRISCH PROPORTIONALSTEUERUNG

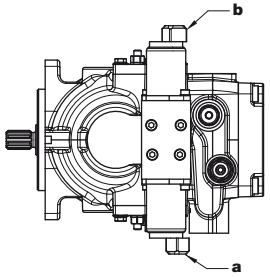
W 24 V

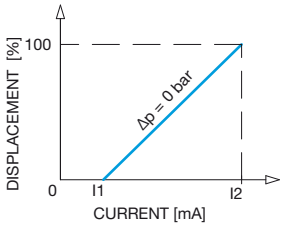
ELETTRICO PROPORZIONALE DIRETTO
ELECTRONIC PROPORTIONAL CONTROL
ELEKTRONISCHE PROPORTIONALSTEUERUNG



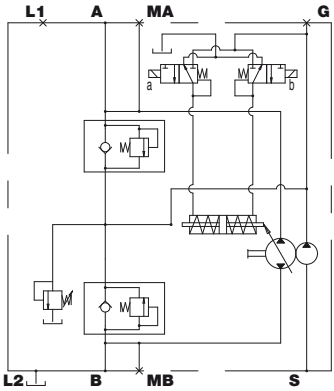








	S	W
Tensione nominale *Rated voltage* Nennspannung	12 V	24 V
Corrente min (I1) *Min. Current* Mindeststrom	450 mA	250 mA
Corrente max (I2) *Max. Current* Maximaler Strom	1100 mA	540 mA
Frequenza PWM *PWM Frequency* Frequenz PWM	100 Hz	



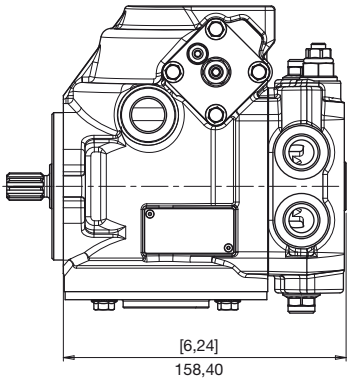
ROTAZIONE *DIRECTION* DREHRICHTUNG	SOLENOIDE IN TENSIONE *EXCITED SOLENOID* SOLENOID UNTER SPANNUNG	MANDATA *OUTPUT* AUSGANG
DESTRA *RIGHT* RECHTS	a	A
	b	B
SINISTRA *LEFT* LINKS	a	B
	b	A

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

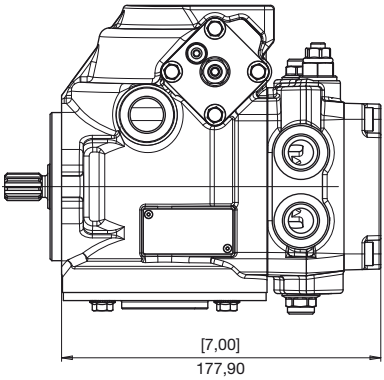
PREDISPOSIZIONI
VERSION
BAUART

HM PZB

0 NESSUNA PREDISPOSIZIONE SENZA POMPA DI ALIMENTAZIONE
NO AUXILIARY MOUNT WITHOUT CHARGE PUMP
OHNE ANSCHLUSSFLANSCH OHNE SPEISEPUMPE

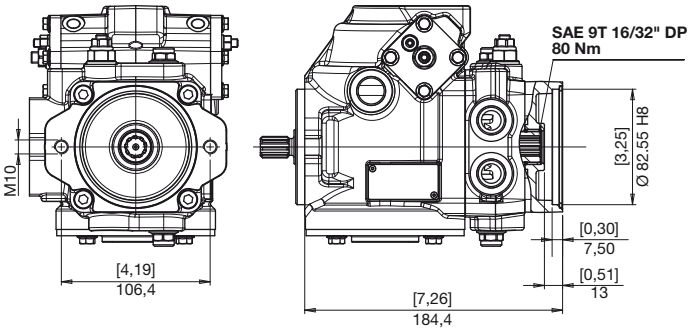


1 NESSUNA PREDISPOSIZIONE CON POMPA DI ALIMENTAZIONE
NO AUXILIARY MOUNT WITH CHARGE PUMP
OHNE ANSCHLUSSFLANSCH MIT SPEISEPUMPE



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

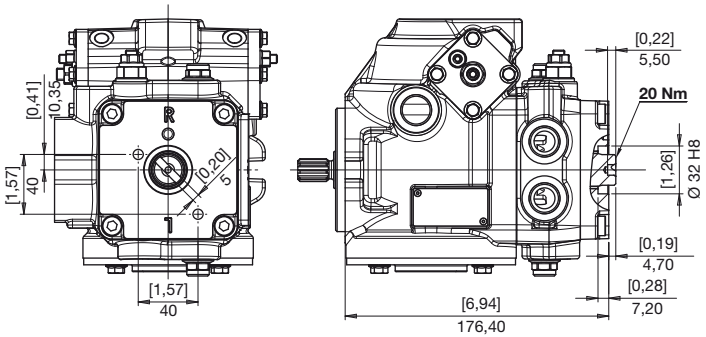
5 SAE A SENZA POMPA SOVRALIMENTAZIONE
SAE A WITHOUT CHARGE PUMP
SAE A OHNE SPEISEPUMPE



PREDISPOSIZIONI
VERSION
BAUART

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

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



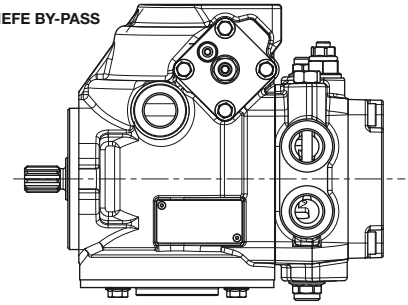
Nella versione sinistra i fori di fissaggio sono ruotati di 180°

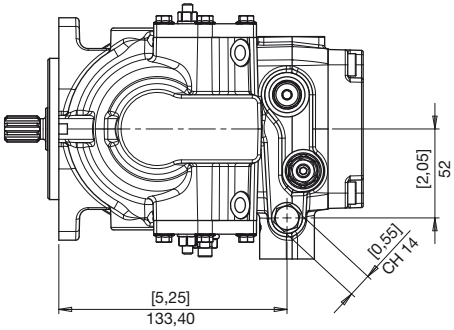
In left pump version the fastening holes are rotated 180° deg

In der linken Version sind die Befestigungslöcher sind um 180° gedreht

B

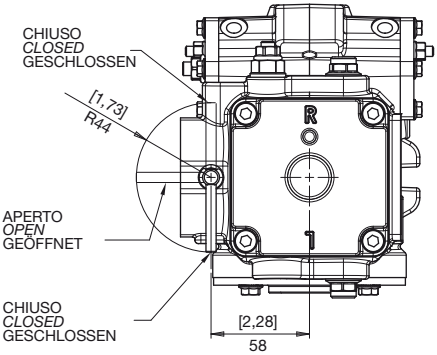
BY-PASS A VITE
MANUAL SCREW BY-PASS
MANUELLE EINSCHRAUBTIEFE BY-PASS

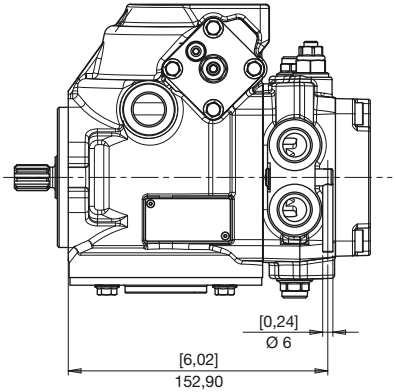




D

BY-PASS A LEVA MANUALE
MANUAL LEVER BY-PASS
BY-PASS-HEBEL MANUELLE



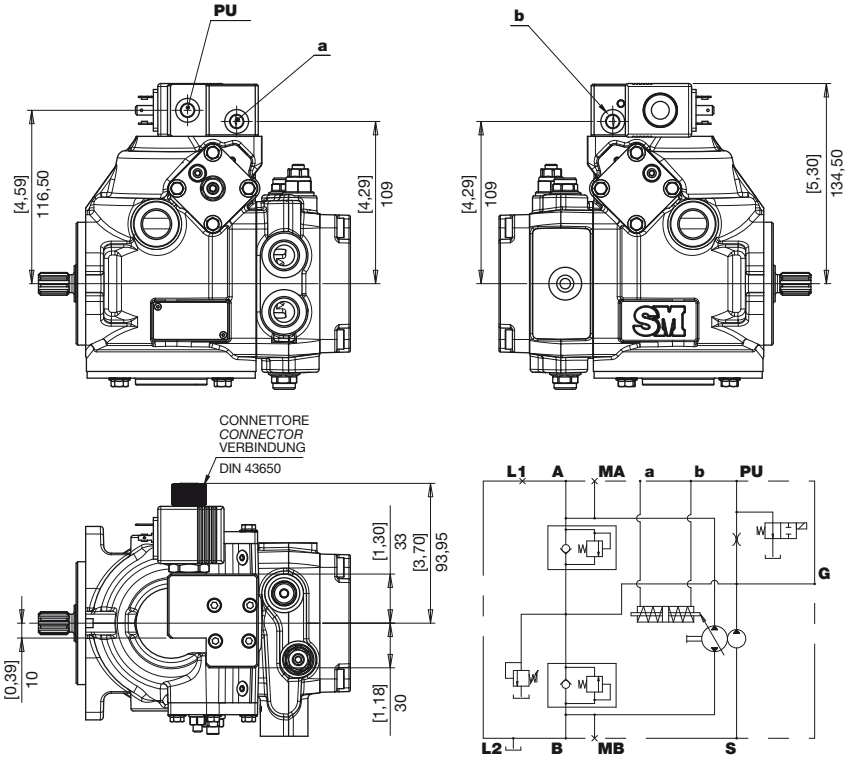


ACCESSORI
ACCESSORIES
ZUBEHÖR

E

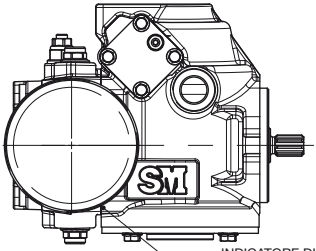
SICUREZZA "OPERATORE ASSENTE"
"NO OPERATOR" SAFETY
SICHERUNG "KEIN BEDIENER"

12 V

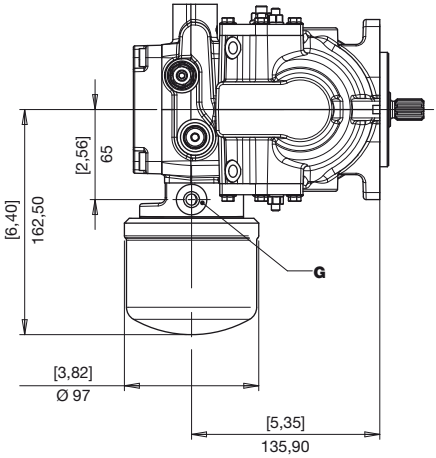


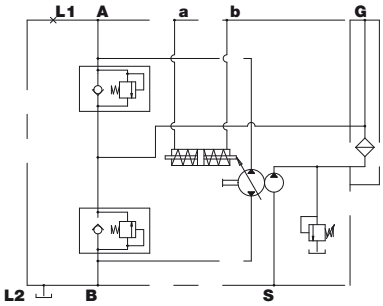
		Versione GAS *GAS version* Version GAS		Versione UNF *UNF version* Versione UNF	
		Filettatura *Thread* Gewinde	Profondità *Depth* Tiefe	Filettatura *Thread* Filettatura	Profondità *Depth* Tiefe
a **b**	Pilotaggio *Pilot* Pilot	G 1/8" BSPP	8 mm 0.31 in	7/16-20 UNF	12 mm 0.47 in
PU	Pilotaggio sblocco freno *Brake opening pressure* Bremse offnung druck	G 1/8" BSPP	8 mm 0.31 in	7/16-20 UNF	12 mm 0.47 in

X FILTRO CON INDICATORE DI INTASAMENTO ELETTRICO
FILTER WITH ELECTRIC CLOGGING INDICATOR
FILTER MIT ELEKTRISCHEM VERSTOPFUNGSANZEIGER



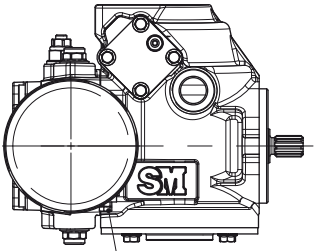
INDICATORE DIFFERENZIALE ELETTRICO
ELECTRICAL DIFFERENTIAL INDICATOR
ELEKTRISCHER DIFFERENZDRUCKANZEIGER
30VDC - 0,2 A max

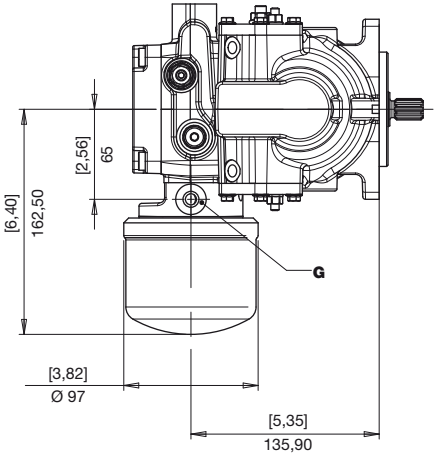


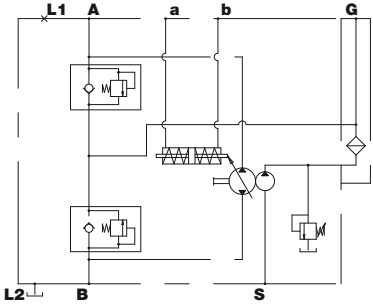


G	Presa olio filtrato *Filtered oil intake* Anschluss filtriertes Öl	G 1/4" BSPP 7/16-20 UNF

Y FILTRO SENZA INDICATORE DI INTASAMENTO
FILTER WITHOUT ELECTRIC CLOGGING INDICATOR
FILTER OHNE ELEKTRISCHEN VERSTOPFUNGSANZEIGER

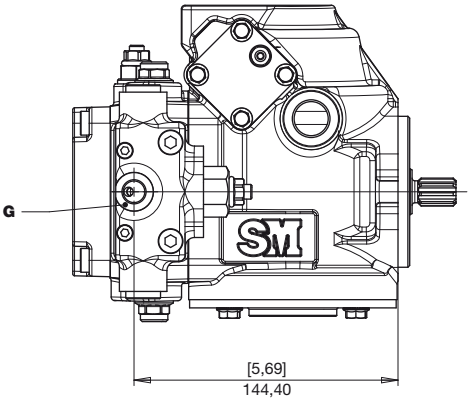


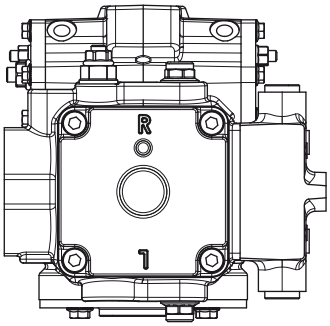


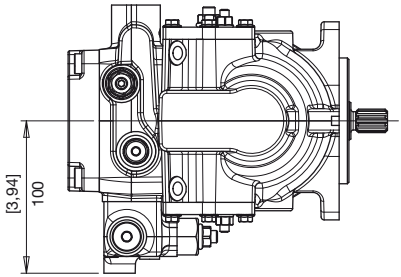


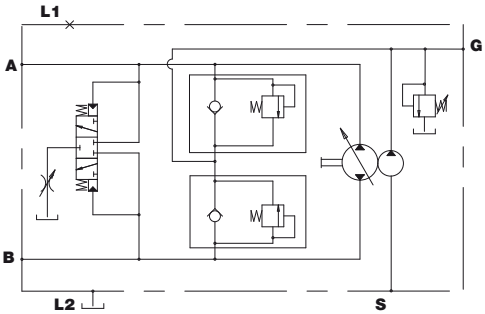
G	Presa olio filtrato *Filtered oil intake* Anschluss filtriertes Öl	G 1/4" BSPP 7/16-20 UNF

M **VALVOLA DI FLUSSAGGIO**
FLUSHING AND BOOST VALVE
SPÜL- UND SPEISEDRUKVENTIL









		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 PZB 19 R S V G K E 1 0 ...

PRODOTTO
PRODUCT
PRODUKT

CILINDRATA
DISPLACEMENT
FÖRDERVOLUMEN

11 = 11 cc **16** = 16 cc
12 = 12 cc **18** = 18 cc
13 = 13 cc **19** = 19 cc
14 = 14 cc

SENSO DI ROTAZIONE
ROTATION
DREHRICHTUNG

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

S - Pompa singola / *Single pump* / Einzelne Pumpe
T - Pompa ant. Tandem / *Tandem front pump* / Vordere Tandem-Pumpe
C - Pompa post. Tandem / *Tandem rear pump* / Hintere Tandem-Pumpe

ESTREMITÀ D'ALBERO
SHAFT PROFILE
WELLENENDE

J - Ø 22,22
V - 9T 16/32" DP
X - SAE 11T 16/32" DP
9 - SAE 13T 16/32" DP
A - 21T REAR TANDEM PUMP

BOCCHE
PORTS
ANSCHLÜSSE

G - Gas
U - UNF

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

K - Idraulico a distanza
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 - *Remote hydraulic*
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 - Hydraulische Fernesteuerung
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)

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

ESECUZIONI SPECIALI
SPECIAL VERSIONS
SONDERBAUARTEN

ACCESSORI ***ACCESSORIES*** **ZUBEHÖR**

0 - nessuna opzione
B - By-pass
D - by-pass manuale leva
E - presenza uomo 12 V
M - Valvola di flussaggio
X - filtro con indicatore di intasamento
Y - filtro senza indicatore di intasamento

0 *- no accessories*
B *- By-pass*
D *- manual lever by-pass*
E *- Deadman safety valve 12 V*
M *- Flushing and boost valve*
X *- filter with electric clogging indicator*
Y *- filter without electric clogging indicator*

0 - ohne Zubehör
B - By-pass
D - By-pass-Hebel manuelle
E - Totmann-Abschaltventil12 V
M - Spül- und speisedrukventil
X - Filter mit Verstopfungsanzeiger
Y - Filter ohne Verstopfungsanzeiger

PREDISPOSIZIONI ***VERSION*** **BAUART**

0 - nessuna, senza pompa di alimentazione
1 - nessuna, con pompa di alimentazione 5cc
A - nessuna, con pompa di alimentazione 8cc
5 - SAE A, senza pompa di alimentazione
2 - SAE A, con pompa di alimentazione 5cc
B - SAE A, con pompa di alimentazione 8cc
9 - GR1, senza pompa di alimentazione
8 - GR1, con pompa di alimentazione 5cc
H - GR1, con pompa di alimentazione 8cc
N - predisp. tandem, senza pompa di alimentazione

0 *- No auxiliary mount without charge pump*
1 *- No auxiliary mount with charge pump 5cc*
A *- No auxiliary mount with charge pump 8cc*
5 *- SAE A mounting without charge pump*
2 *- SAE A mount with charge pump 5cc*
B *- SAE A mount with charge pump 8cc*
9 *- GR1 mount without charge pump*
8 *- GR1 mount with charge pump 5cc*
H *- GR1 mount with charge pump 5cc*
N *- Tandem pump mount without charge pump*

0 - Ohne Anschlussflansch, ohne Speisepumpe
1 - Ohne Anschlussflansch, mit Speisepumpe 5cc
A - Ohne Anschlussflansch, mit Speisepumpe 8cc
5 - SAE A-Anschlussflansch, ohne Speisepumpe
2 - SAE A -Anschlussflansch, mit Speisepumpe 5cc
B - SAE A -Anschlussflansch, mit Speisepumpe 8cc
9 - GR1 ohne Speisepumpe
8 - GR1 mit Speisepumpe 5cc
8 - GR1 mit Speisepumpe 8cc
N - Vorbereitet für Tandempumpe, ohne Speisepumpe

POMPA DOPPIA CON 1 POMPA DI SOVRALIMENTAZIONE
DOUBLE PUMP WITH 1 BOOST PUMP
TANDEMPUMPE MIT 1 SPEISEPUMPE

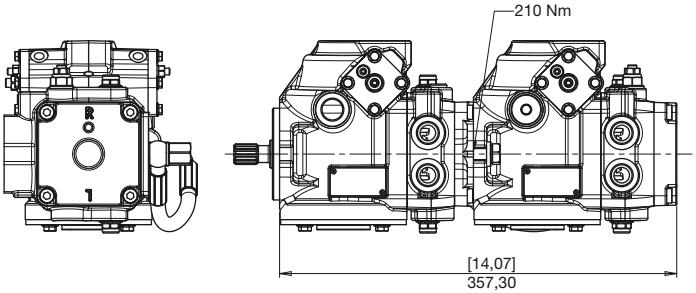
Il codice di ordinazione di una pompa multipla si ottiene sommando, come mostrato in esempio, i codici delle singole pompe (stadi) ricavati seguendo le regole di ordinazione delle pompe singole.

You build the ordering code of a multiple pump by summing the order code of the individual pumps, see our example.

Der Bestellschlüssel einer Mehrfachpumpe ergibt sich durch Summieren der Einzel-Bestellschlüssel, siehe Beispiel

1° STADIO *STAGE* STUFE — **2° STADIO *STAGE* STUFE**

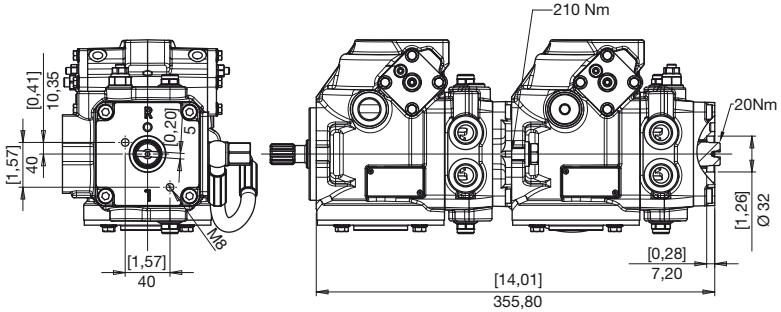
HM	PZB	19	R	T	X	G	K	G	N	0	HM	PZB	19	R	C	A	G	K	G	A	0



1° STADIO *STAGE* STUFE — **2° STADIO *STAGE* STUFE**

HM	PZB	19	R	T	X	G	K	G	N	0	HM	PZB	19	R	C	A	G	K	G	H	0

GR1



Nelle pompe tandem con una pompa di sovralimentazione è obbligatorio installare nell'impianto un tubo di collegamento (non fornito) tra un drenaggio del primo stadio ed un drenaggio del secondo stadio.

- I disegni sono riferiti alla configurazione tandem con una pompa di alimentazione da 8cc che può essere installata solamente nel secondo stadio.
- E' possibile richiedere due pompe di alimentazione da 5cc, una per stadio.

In the tandem pumps with one boost pump it is mandatory to assemble in the plant a connecting pipe (not supplied) between a drain of the first stage and a drain of the second one.

- *The dimensional drawings are referred to a standard tandem pump with one boost pump 8cc that can be installed only in second stage.*
- *It's also available the tandem pump with two charge pumps 5cc, one for each stage.*

Bei den Tandempumpen mit einer Verstärkerpumpe muss in der Anlage ein Verbindungsrohr (nicht beigestellt) zwischen einer Drainage der ersten Stufe und einer Drainage der zweiten Stufe installiert werden.

- Die Zeichnungen sollen in die Konfigurations bezeichnet Tandem mit eine Speisepumpe durch 8cc, die installiert werden können, erst in der zweiten Stufe.
- Und „zwei Pumpen können verlangen, Macht 5 cc, für eine Stufe.

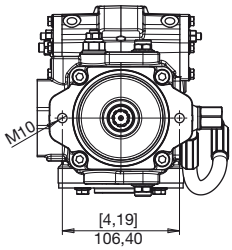
1° STADIO *STAGE* STUFE

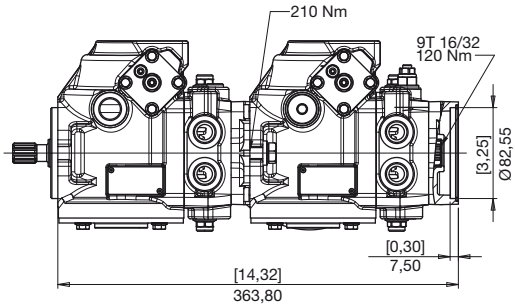
HM	PZB	08	R	T	V	G	K	E	B	P	0

2° STADIO *STAGE* STUFE

HM	PZB	08	R	C	V	G	K	E	B	9	0

SAE A





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