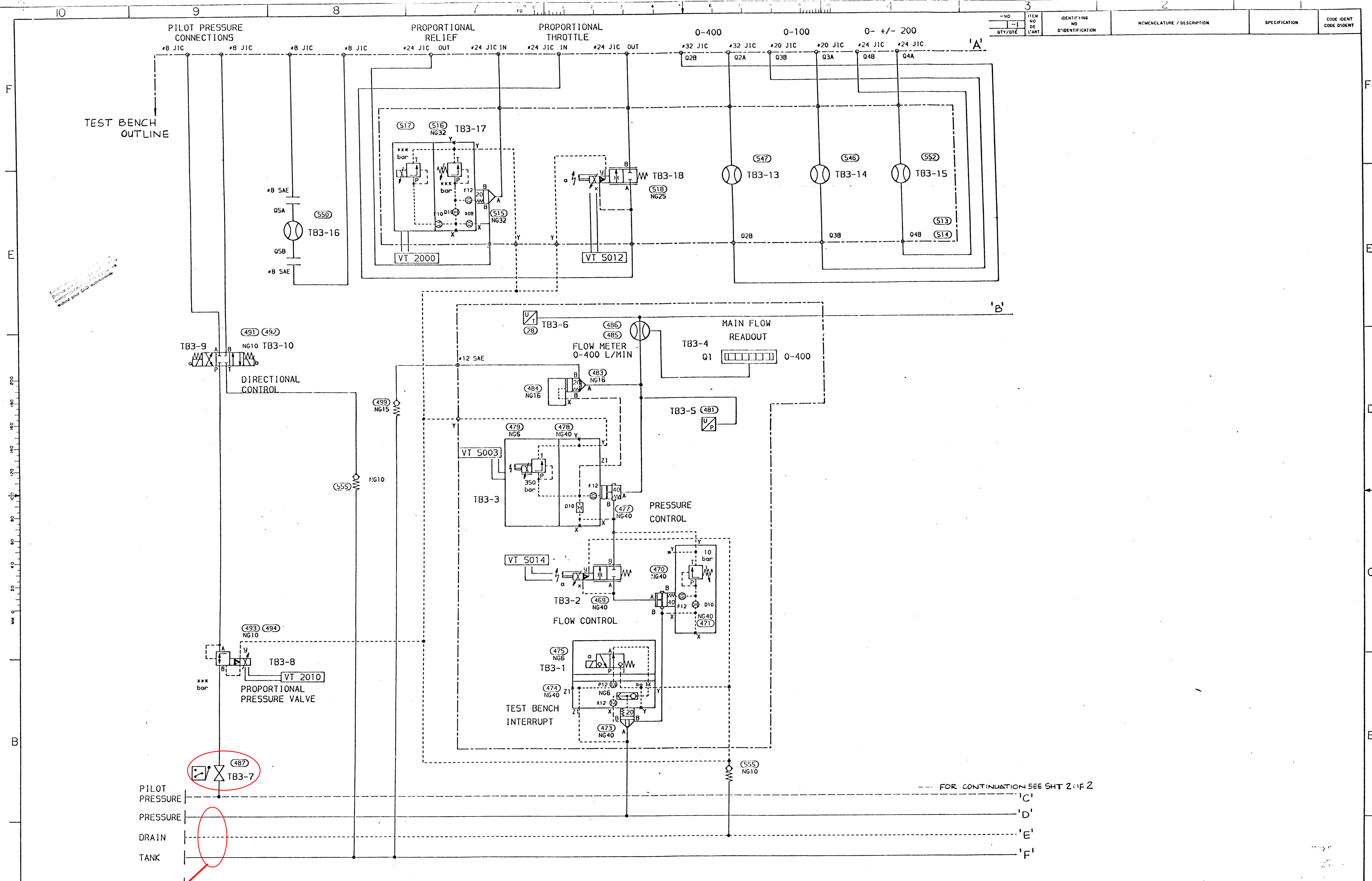


Section 05-A

Isolation Valve Locations on Schematics

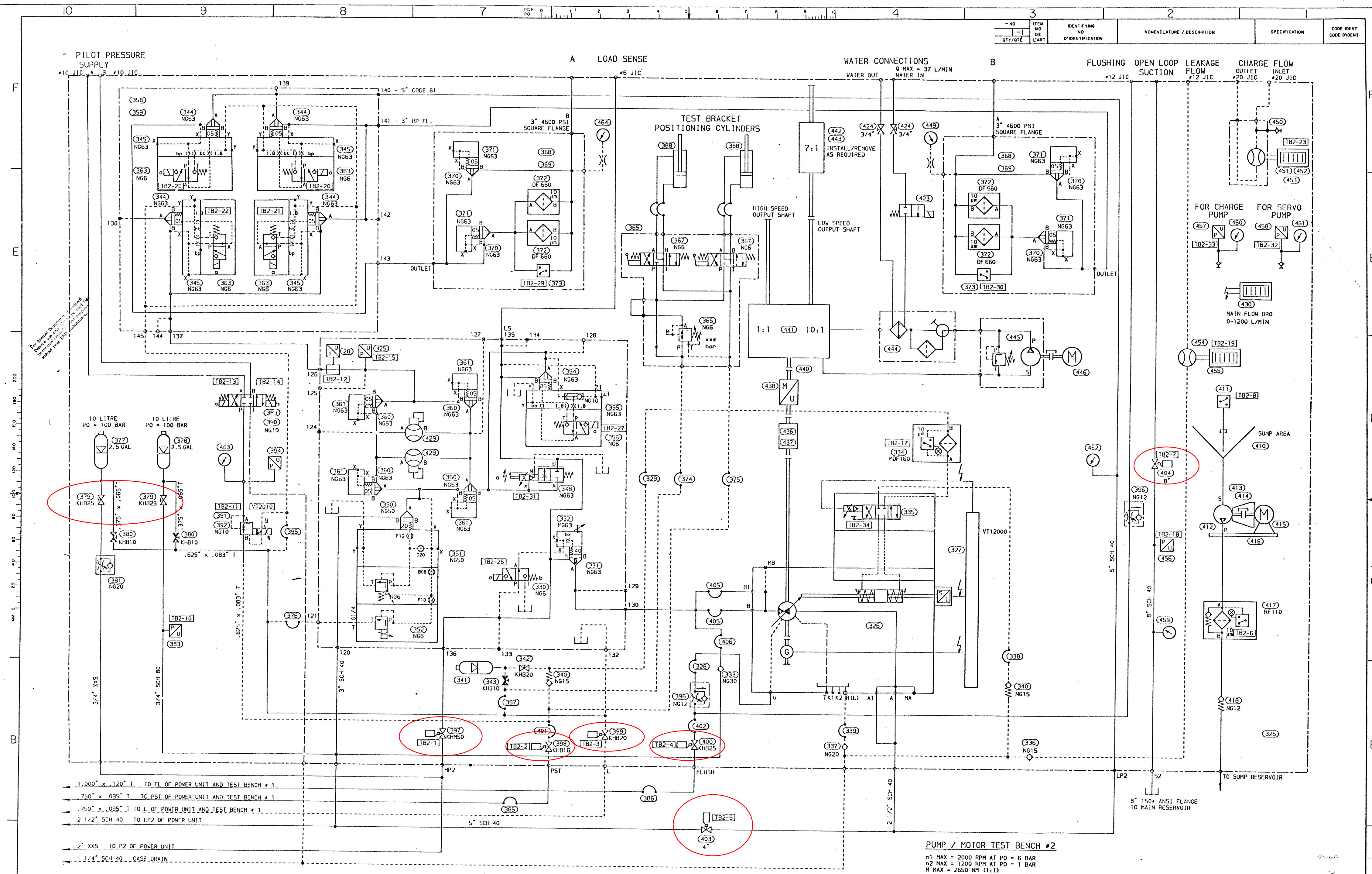


PILOT
PRESSURE
PRESSURE
DRAIN
TANK
SUMP

New isolation valves
required.

NOTE:
1) FOR THE PIPING AND COMPONENT ASSEMBLY
SEE DRAWING 9058863. THIS DENOTES
THE ITEMS ON THE ABOVE ASSEMBLY & SUB-ASSEMBLIES
2) ALL PIPING WITHIN TEST ASSEMBLY TO BE WELDED (DWG 9058863)
3) PIPING OR TUBING FOR LINES OVER 1/2" UTILIZING
REXROTH WBO SYSTEM.

Burlington Valley Edmonton, Alberta, Canada VANCOUVER, BRITISH COLUMBIA		BASIC HYDRAULICS	
Description: VALVE TEST STAND HYDRAULIC SCHEMATIC (PART 1)		UNLESS OTHERWISE SPECIFIED/SAUF INDICATION CONTRAINTES: 1. DIMENSIONS ARE IN / DIMENSIONS SONT EN — 2. TOLERANCES FRACTIONS ± DECIMALS XXX ± DECIMALES XX ± 3. ANGLES SURFACE FINISH FINIS DE SURFACES	
DWG No. 9117-A Date: 00.03.29 Rev. 1 Scale: 1:1 Title: VALVE TEST STAND HYDRAULIC SCHEMATIC (PART 1)		APPLICATION/USAGE 9058863 Basic Hydraulics Ltd. DWN/DES: P. THROCK CHK/VER: H. IRVING DESIGN AGENT/CONCEPTION: 37395 INSTR/INSPECT: 36219 DATE D'APPROB: 01.01.11 DRAWDING NO DU DESIN: 9058869 SHEET 1 DE 2	



NOTE:
1) REF. THESE PIPING SIZES TO DWG 8858836
2) DENOTES ITEMS ON DWG 8858836

Scope #4

13

HYDRAULIC SCHEMATIC FOR TEST BENCH 2

8858886

Basic Hydraulics Ltd.

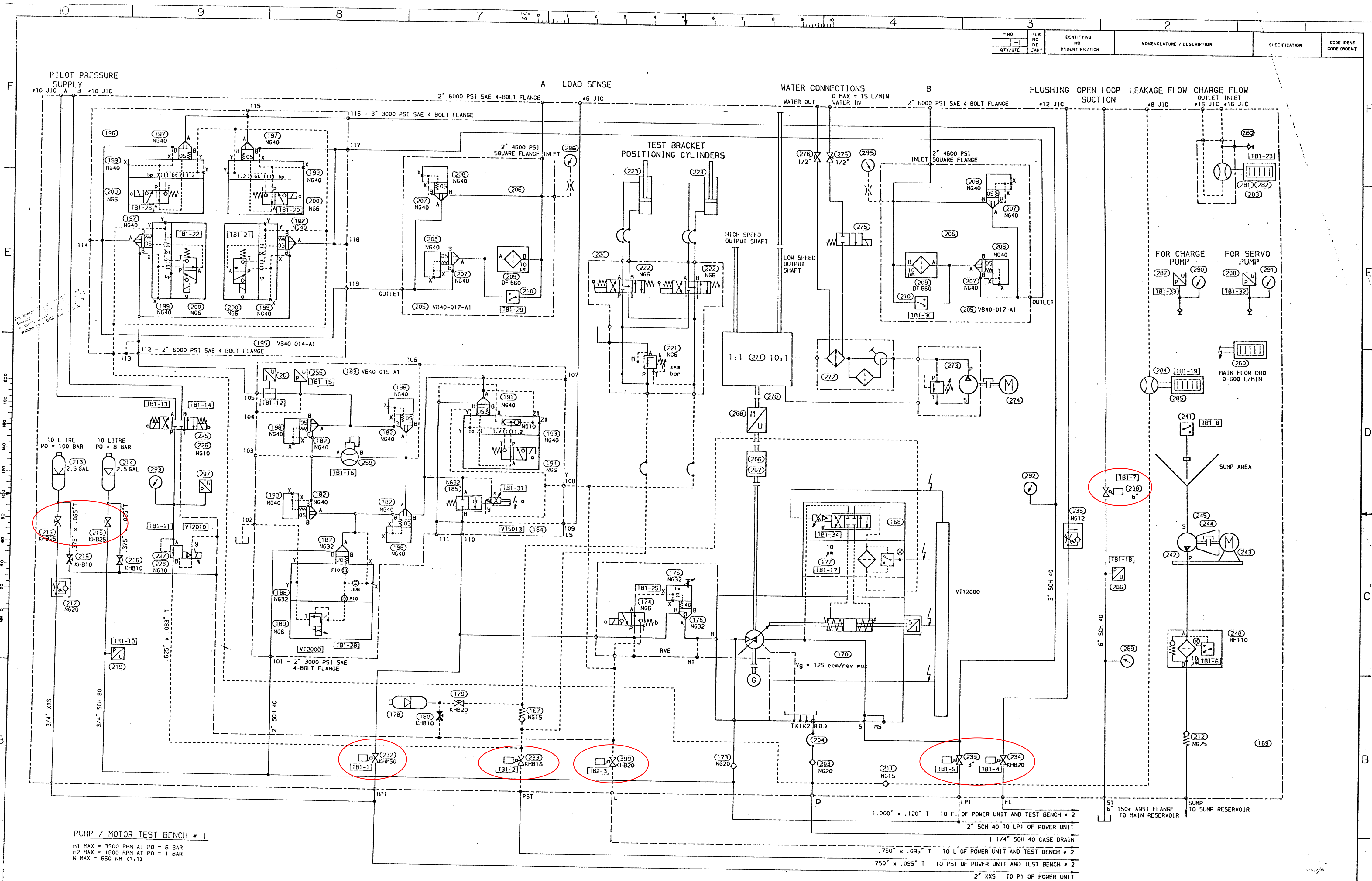
DESIGN AGENT / CONCEPTION M. IRVING

REVISION 36219

DATE 09/01/11

APPL / APP FE 1A0

9058868



BASIC HYDRAULICS		APPLICATION / USAGE		ZONE		LTR		REVISION		DATE		OWN		CKD		APPL	
8858887		9058802		Basic Hydraulics Ltd.		M. IRVING		DPG54-B		03-01-11		AO					
HYDRAULIC SCHEMATIC FOR TEST BENCH # 1		SCALE / LGELLE		TITLE / TITRE		HYDRAULIC SCHEMATIC FOR TEST BENCH # 1		90588867		SHEET		OF		DE			



1

A/

A/

A/

Section 05-B

New Isolation Valve Requirements

Test Bench	New or existing	New Isolation Valves Required					part number*	Work
		Location	Item #	Qty	line size	size		
#1	Existing	LP1 to Item 214 and P1 to Item 213	215	2	3/4" XXS	-12	KHB-25 SAE-1114X-12X-LS	Change Valve
#2	Existing	LP2 to Item 378 and P2 to Item 377	379	2	3/4" XXS	-12	KHB-25 SAE-1114X-12X-LS	Change Valve
#3	New	P3 line to TB#3	New	1	1 1/2" XXS	-24	KHM-40 F6-1114-16X-LS	Conductor mods.
	New	Drain to HPU	New	1	1" -120 wt	-16	KHB-25 F3-1114-11X-LS	Conductor mods.
	New	Return to HPU	New	1	2" Sch 80	-32	KHB-50 F3-1114-16X-LS	Conductor mods.
#4	New	P3 line to TB#4	New	1	1 1/4" XXS	-20	KHM-32 F6-1114-16X-LS	Conductor mods.
	New	Return to HPU	New	1	1 1/2" Sch 40	-24	KHM-40 F3-1114-16X-LS	Conductor mods.
*Hydac brand or equivalent equipped with position switch								

Section 05-C

Sample Isolation Valve Manufacturer's Information

KHB & KHM Series 2-way Ball Valves with SAE & NPT Connections

Section 05-C
Page 2
2011-08-12



KHB Series
Block Housing

KHM Series
Forged Housing

Specifications

- 1/4" - 2" Full Port Design
- NPT or SAE O-Ring connections
- Polyacetal Ball Seals (*standard*)
- FPM (Fluoroelastomer) O-Rings (*standard*)
- Carbon Steel Housing
- Block Housing - Sizes 06 - 25
- Forged Housing - Sizes 32 - 50
- Operating Pressure to 7250 psi Depending on Valve Size and Seal Materials Selected
- Temp Range: 14°F to 176°F with Standard materials (1114) up to max. pressure rating. Extended Temperature range -40°F to 392°F on request with special materials and reduced pressure rating (see page 24).

Model Code

						KHB - 16 NPT - 1 1 1 4 - 11X - L					
Housing Type											
KHB = Block Housing, Carbon Steel - Sizes 06 - 25											
KHM = Forged Housing, Carbon Steel - Sizes 32 - 50											
KHM = Forged Housing, Stainless Steel - Sizes 06 - 50 (see page 12 for details)											
Nominal Sizes											
Nom Size	SAE		NPT								
	Tube Size	Thread Size	Pipe Size	Pipe Size	Pipe øD						
06	-4	7/16-20 UNF	1/4"		0.540"						
10	-6	9/16-18 UNF	3/8"		0.675"						
16	-8	3/4-16 UNF	1/2"		0.840"						
20	-12	1-1/16-12 UN	3/4"		1.050"						
25	-16	1-5/16-12 UN	1"		1.315"						
32	-20	1-5/8-12 UN	1-1/4"		1.660"						
40	-24	1-7/8-12 UN	1-1/2"		1.900"						
50	-32	2-1/2-12 UN	2"		2.375"						
Connection Type											
NPT = ANSI/ASME 1.20.1 Taper Pipe Thread											
SAE = SAEJ1926 Ports with ISO 725 Threads and O-Ring Sealing											
Body Material											
1 = Carbon Steel (<i>phosphate coated</i>)											
3 = Stainless Steel (see page 12 for ordering details)											
Spindle and Ball Material											
1 = Carbon Steel (<i>ball is chrome plated, spindle is zinc plated</i>)											
3 = Stainless Steel											
Ball Seal Material											
1 = Polyacetal (<i>standard</i>)											
3 = PTFE (<i>1500 psi max</i>)											
8 = PEEK											
O-Ring Material											
2 = NBR (<i>Buna</i>)											
3 = PTFE Spindle Seals and FPM (<i>fluoroelastomer</i>) O-Rings (<i>1500 psi max</i>)											
4 = FPM (<i>fluoroelastomer</i>) (<i>standard</i>)											
5 = EPDM											
Handle Codes											
09x = Without Handle (see page 24 to order handle separately)											
11x = Straight Aluminum, Sizes 06-25											
16x = Offset Steel, Sizes 32-50											
Locking Device Option											
L = Locking Device (see page 21 to order locking device separately)											
LS = Locking Device with 5 amp Limit Switch, Available for sizes 20-50 (Not available with PTFE Spindle Seals)											

Model Codes containing selections listed in RED are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability
Not all combinations are available

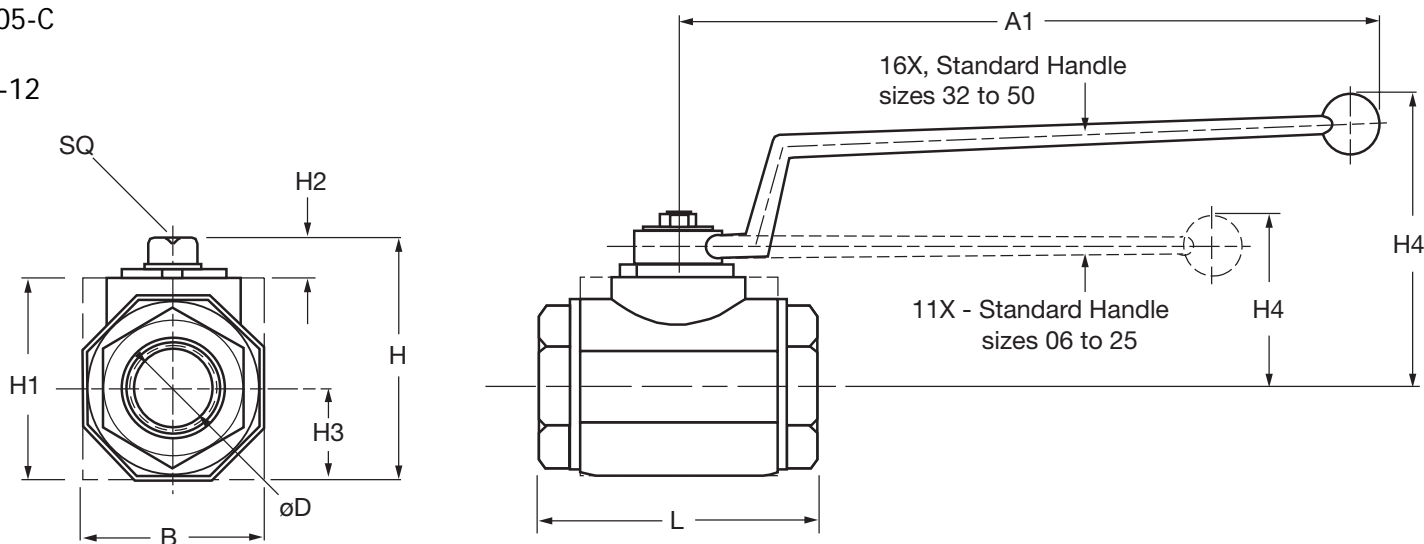
High Pressure Ball Valves **HYDAC**

Dimensions

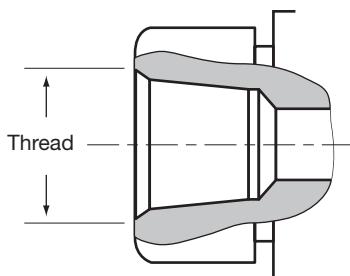
Section 05-C

Page 3

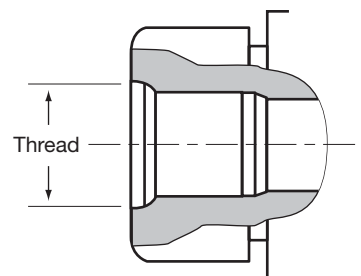
2011-08-12



NPT Port
Internal Thread



SAE Port
Straight Thread
O-Ring Boss



Model	Thread	max. psi*	A1	B	øD	H	H1	H2	H3	H4	L	SQ	Weight
KHB-06SAE	7/16-20UNF (SAE 4)	7250	5.91	0.98	0.24	1.89	1.38	0.28	0.51	1.65	2.72	0.35	0.66
KHB-06NPT	1/4" NPT		(150)	(25)	(6)	(48)	(35)	(7)	(13)	(42)	(69)	(9)	(0.3)
KHB-10SAE	9/16-18UNF (SAE 6)	7250	5.91	1.26	0.39	2.09	1.57	0.33	0.67	1.69	2.83	0.35	1.10
KHB-10NPT	3/8" NPT		(150)	(32)	(10)	(53)	(40)	(8.5)	(17)	(43)	(72)	(9)	(0.5)
KHB-16SAE	3/4-16UNF (SAE 8)	5800	6.88	1.50	0.63	2.48	1.77	0.43	0.75	2.01	3.27	0.47	1.65
KHB-16NPT	1/2" NPT		(175)	(38)	(16)	(63)	(45)	(11)	(19)	(51)	(83)	(12)	(0.75)
KHB-20SAE	1-1/16-12UN (SAE 12)	5000	7.88	1.89	0.79	2.95	2.24	0.43	0.96	2.28	3.74	0.55	2.87
KHB-20NPT	3/4" NPT		(200)	(48)	(20)	(75)	(57)	(11)	(24.5)	(58)	(95)	(14)	(1.3)
KHB-25SAE	1-5/16-12UN (SAE 16)	5000	7.88	2.24	0.98	3.23	2.52	0.43	1.12	2.40	4.45	0.55	4.41
KHB-25NPT	1" NPT		(200)	(57)	(25)	(82)	(64)	(11)	(28.5)	(61)	(113)	(14)	(2.0)
KHM-32SAE	1-5/8-12UN (SAE 20)	5000	12.00	2.95	1.18	4.06	3.35	0.47	1.48	5.94	4.33	0.67	6.84
KHM-32NPT	1-1/4" NPT		(305)	(75)	(30)	(103)	(85)	(12)	(37.5)	(151)	(110)	(17)	(3.1)
KHM-40SAE	1-7/8-12UN (SAE 24)	5000	12.00	3.35	1.50	4.49	3.78	0.47	1.67	6.18	5.12	0.67	9.70
KHM-40NPT	1-1/2" NPT		(305)	(85)	(38)	(114)	(96)	(12)	(42.5)	(157)	(130)	(17)	(4.4)
KHM-50SAE	2-1/2-12UN (SAE 32)	5000	12.00	4.13	1.89	5.18	4.43	0.47	2.07	6.46	5.51	0.67	14.55
KHM-50NPT	2" NPT		(305)	(105)	(48)	(131.5)	(112.5)	(12)	(52.5)	(164)	(140)	(17)	(6.6)

Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.

Dimensions are in inches/(mm) and lbs./(kg.)

*Dependent on valve and seal materials selected.

Scope #4

20

KHB & KHM Series 2-way Ball Valves with Split Flange Connections

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KHB Series
Block Housing



KHM Series
Forged Housing

Specifications

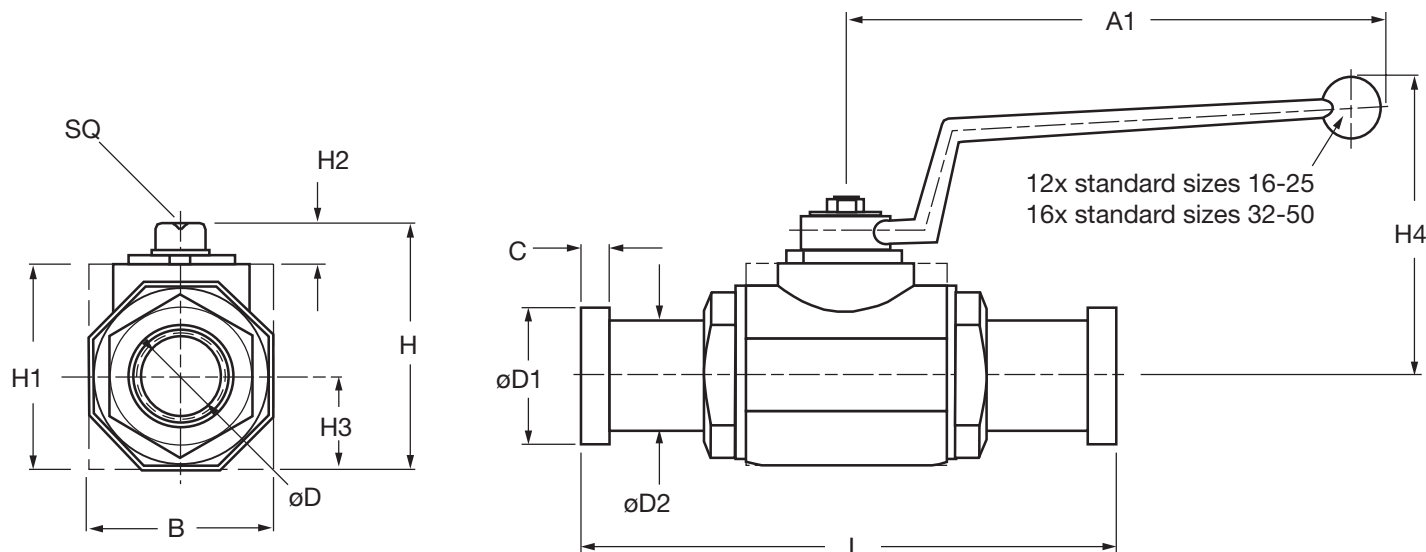
- 1/2" - 2" Full Port Design
- SAE Code 61 and 62 Split Flange Connections
- Carbon Steel Housing
- Block Housing - Sizes 16 - 25
- Forged Housing - Sizes 32 - 50
- Polyacetal Ball Seals (standard)
- FPM (Fluoroelastomer) O-Rings (standard)
- Operating Pressure to 5800 psi Depending on
- Valve Size and Seal Materials Selected
- Temp Range: 14°F to 176°F with Standard materials (1114) up to max. pressure rating. Extended Temperature range -40°F to 392°F on request with special materials and reduced pressure rating (see page 24).

Model Code

			KHB - 20 F3 - 1 1 1 4 X - 12X - L						
Housing Type									
KHB	=	Block Housing, Carbon Steel - Sizes 16-25							
KHM	=	Forged Housing, Carbon Steel - Sizes 32-50							
KHM	=	Forged Housing, Stainless Steel - Sizes 06 - 50 (see page 12 for details)							
Nominal Sizes									
Valve Size	Nominal Flange Size	Flange Dash Size							
16	1/2"	-8							
20	3/4"	-12							
25	1"	-16							
32	1-1/4"	-20							
40	1-1/2"	-24							
50	2"	-32							
Connection Type									
SAE J518 Four bolt split flange type:									
F3	=	Standard Pressure Series, Code 61							
F6	=	High Pressure Series, Code 62							
Body Material									
1	=	Carbon Steel (phosphate coated)							
3	=	Stainless Steel (see page 12 for ordering details)							
Spindle and Ball Material									
1	=	Carbon Steel (ball is chrome plated, spindle is zinc plated)							
3	=	Stainless Steel							
Ball Seal Material									
1	=	Polyacetal (standard)							
3	=	PTFE (1500 psi max)							
8	=	PEEK							
O-Ring Material									
2	=	NBR (Buna N)							
3	=	PTFE Spindle Seals and FPM (fluoroelastomer) O-Rings (1500 psi max)							
4	=	FPM (fluoroelastomer) (standard)							
5	=	EPR							
Split Flange Material									
X	=	Without Split Flanges (order split flanges separately see page 151)							
Handle Codes									
09X	=	Without Handle, Sizes 16-50							
12X	=	Offset Aluminum, Sizes 16-25							
16X	=	Offset Steel, Sizes 32-50							
Locking Device Option									
L	=	Locking Device (see page 21 to order locking device separately)							
LS	=	Locking Device with 5 amp Limit Switch, Available for Sizes 20-50 (Not available with PTFE Spindle Seals)							

Model Codes containing selections listed in RED are non-standard items – Minimum quantities will apply – Contact HYDAC for information and availability
Not all combinations are available

Dimensions



For dimensional information on flanges, see page 151

SAE Code 61 [...F3]

Model	max. psi*	Size	A1	B	C	ϕD	$\phi D1$	$\phi D2$	H	H1	H2	H3	H4	L	SQ	Weight
KHB-16 F3	5000	1/2"	6.42 (163)	1.50 (38)	0.27 (6.8)	0.51 (13)	1.19 (30.2)	0.94 (24)	2.44 (62)	1.77 (45)	0.43 (11)	0.75 (19)	3.27 (83)	5.94 (151)	0.47 (12)	2.4 (1.1)
KHB-20 F3	5000	3/4"	7.20 (183)	1.89 (48)	0.27 (6.8)	0.75 (19)	1.50 (38.1)	1.24 (31.5)	2.95 (75)	2.24 (57)	0.43 (11)	0.96 (24.5)	3.62 (92)	6.69 (170)	0.55 (14)	4.0 (1.8)
KHB-25 F3	5000	1"	7.20 (183)	2.24 (57)	0.31 (8)	0.98 (25)	1.75 (44.45)	1.50 (38)	3.23 (82)	2.52 (64)	0.43 (11)	1.12 (28.5)	3.74 (95)	6.95 (176.5)	0.55 (14)	5.1 (2.3)
KHM-32 F3	4000	1-1/4"	12.01 (305)	2.95 (75)	0.31 (8)	1.18 (30)	2.00 (50.8)	1.69 (43)	4.06 (103)	3.35 (85)	0.47 (12)	1.48 (37.5)	5.94 (151)	7.54 (191.4)	0.67 (17)	9.0 (4.1)
KHM-40 F3	3000	1-1/2"	12.01 (305)	3.35 (85)	0.31 (8)	1.50 (38)	2.38 (60.35)	1.97 (50)	4.49 (114)	3.78 (96)	0.47 (12)	1.67 (42.5)	6.18 (157)	9.09 (231)	0.67 (17)	13.1 (5.9)
KHM-50 F3	3000	2"	12.01 (305)	4.13 (105)	0.38 (9.6)	1.89 (48)	2.81 (71.4)	2.44 (62)	5.18 (131.5)	4.43 (112.5)	0.47 (12)	2.07 (52.5)	6.46 (164)	9.21 (234)	0.67 (17)	19.2 (8.7)

SAE Code 62 [...F6]

Model	max. psi*	Size	A1	B	C	ϕD	$\phi D1$	$\phi D2$	H	H1	H2	H3	H4	L	SQ	Weight
KHB-16 F6	5800	1/2"	6.41 (163)	1.50 (38)	0.31 (7.8)	0.51 (13)	1.25 (31.8)	0.94 (24)	2.44 (62)	1.77 (45)	0.43 (11)	0.75 (19)	3.27 (83)	5.94 (151)	0.47 (12)	2.4 (1.1)
KHB-20 F6	5000	3/4"	7.20 (183)	1.89 (48)	0.35 (8.8)	0.75 (19)	1.63 (41.3)	1.26 (32)	2.95 (75)	2.24 (57)	0.43 (11)	0.96 (24.5)	3.62 (92)	6.69 (170)	0.55 (14)	4.0 (1.8)
KHB-25 F6	5000	1"	7.20 (183)	2.24 (57)	0.37 (9.5)	0.98 (25)	1.87 (47.6)	1.50 (38)	3.23 (82)	2.52 (64)	0.43 (11)	1.12 (28.5)	3.72 (95)	7.81 (198.5)	0.55 (14)	5.4 (2.4)
KHM-32 F6	5000	1-1/4"	12.01 (305)	2.95 (75)	0.41 (10.3)	1.18 (30)	2.13 (54)	1.73 (44)	4.06 (103)	3.35 (85)	0.47 (12)	1.48 (37.5)	5.94 (151)	8.80 (223.4)	0.67 (17)	10.6 (4.8)
KHM-40 F6	5000	1-1/2"	12.01 (305)	3.35 (85)	0.50 (12.6)	1.50 (38)	2.50 (63.5)	2.01 (51)	4.49 (114)	3.78 (96)	0.47 (12)	1.67 (42.5)	6.18 (157)	11.06 (281)	0.67 (17)	15.4 (7.0)
KHM-50 F6	5000	2"	12.01 (305)	4.13 (105)	0.50 (12.6)	1.89 (48)	3.13 (79.4)	2.64 (67)	5.18 (131.5)	4.43 (112.5)	0.47 (12)	2.07 (52.5)	6.46 (164)	12.40 (315)	0.67 (17)	22.5 (10.2)

Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.

Dimensions are in inches/(mm) and lbs./ (kg.)

*Dependent on valve and seal materials selected.

Scope #4

END OF SECTION