FIRST USED ON	FIRST JOB NO.	CAD FILE NAME
		468872

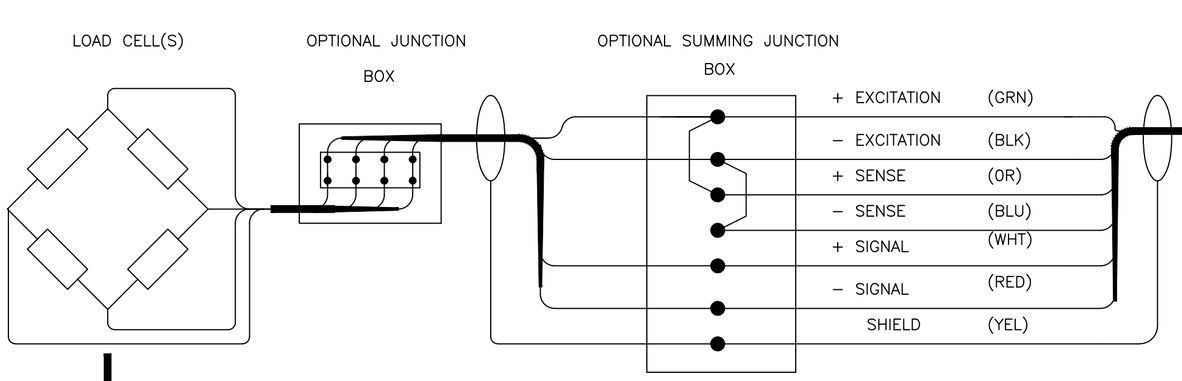
SHEET 1 OF 3 — 468872 –2

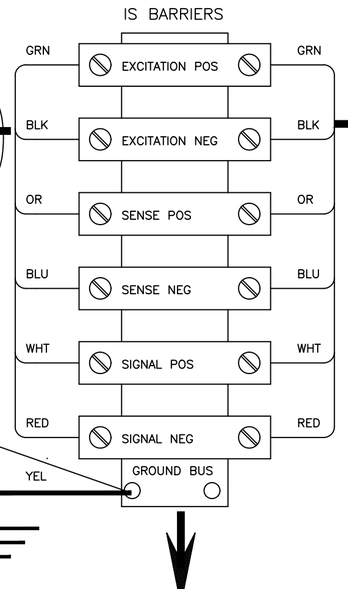
NO.	DWG. NO.	NAME	DESCRIPTION	REQ.

HAZARDOUS LOCATION

CLI, II, III DIV 1&2 GR A–G
CLASS 1, ZONE 0, 1 & 2, GROUP IIC, IIB, IIA

NON HAZARDOUS LOCATION





INSTRUMENT

+ EXCITATION (GRN)
– EXCITATION (BLK)
+ SENSE OR)
– SENSE (BLU)
+ SIGNAL (WHT)
– SIGNAL (RED)
SHIELD (YEL)

APPROVED LOAD CELLS	
KIS–1	T2P1
KIS–2	T2P2
KIS–3	T3P1
KIS–8	T3P2
Z–BLOK	U3G1
KDH–1A	U3G1–H
KDH–3	U3G2
KDH–5	C2G1–H
KDH–1B	C2G2–H
KID	LPT
U3SB	ALPHA
U3SB–A	LBP1
U3SB–B	LBG1
LTT	SBP1
HTA	SBP–1A
C2P1	HTZ
C2P2	EBP–1A
C3P1	ECONOMOUNT
C3P2	PRO–MOUNT
CSR1–D	EZ–MOUNT
GLT	
PLATFORM SCALES	
PHL	
PLB	

APPROVED JUNCTION BOXES
304
304SS
304EX
304–IS–5
304–IS–7

APPROVED SUMMING JUNCTION BOXES	
308A–4–CP	308A–4–CP–IS–2
308A–8–CP	308A–8–CP–IS–3
308A–4–SS	308A–4–SS–IS–2
308A–8–SS	308A–8–SS–IS–3
308A–4–FG	306–4–SS
308A–8–FG	
308A–4–EX	
308A–8–EX	

APPROVED I.S BARRIER SET	
404	404–EX
404A	404A–EX
404A–SS	
405	405–EX
406A	406A–EX
408A	408A–EX
504A	504A–EX
505A	505A–EX
506A	506A–EX
508A	508A–EX

THIS DRAWING AND OTHER RELATED COMPONENTS MAY NOT BE CHANGED WITHOUT PRIOR WRITTEN APPROVAL FROM FACTORY MUTUAL RESEARCH

SIMILAR TO DWG

REV	DESCRIPTION	NAME	APPD	DATE
F	REVISE PER ECN #45164	SSM	SSM	12/17/99
G	REVISE PER ECN #45280	UAJ	DLC	04/6/00
H	REVISE PER ECO #45589	PAE	DA	1/16/02
J	REVISE PER ECO #45920	PAE		
K	PER DON WEISS	TJS	DW	1/24/05
M	PER MOSTAFA RAZIQ	MR	MR	3/25/05
N	UPDATED # 9001/01–086–390–101 AND CHANGED TO VPG LOGO PER EO2013–032.	CON	B.C.	2/27/13
P	EO2019–005. ADDED KIS–8 & KDH–5.	BWN	BJS	4/23/2019
R	EO2023–013. UPDATED BARRIERS	BJS		

CODE IDENT 03089

Unless Otherwise Specified

millimeter (inch) — Third Angle Projection

DEC. x or Fract.	TOL +/–0.4(0.015)
DEC. xx	TOL +/–0.25(0.010)
DEC. xxx	TOL +/–0.13(0.005)
Break Corners	0.25/(0.010)Max.
Angular TOL.	+/–1/2
Mach. Finish	125

Material

Protective Finish

Drawn	JAKE	11/1/94
CHECKED		
MECH		
ELEC		
MFG		
PROD		
Q.A.		
Scale	####	
SHT 1 OF 3		

BLH NOBEL
A VPG Brand

SYSTEM APPROVAL DWG
LOAD CELLS W/ I.S. BARRIERS
FMRC DIV 1&2 AND ZONE 0&1

468872–2 REV. R

FIRST USED ON	FIRST JOB NO.	CAD FILE NAME
		468872

SHEET 2 OF 3 — 4 6 8 8 7 2 -2

NO.	DWG. NO.	NAME	DESCRIPTION	REQ.

BLH MODELS 404A, 404A-EX, 404A-SS
CLI, II, III DIV 1, 2 GROUPS A-G
CLASS 1, ZONE 0,1 & 2, GROUP IIC, IIB, IIA

CONDUCTOR	STAHL INTRINSIC SAFETY BARRIERS MODEL NUMBER	INPUT VOLTAGE V RATED	INPUT VOLTAGE V MAX	REPLACABLE FUSE RATING	INTERNAL RESISTANCE	OPERATING DATA: NUMBER OF LOAD CELLS IN PARALLEL	OPERATING DATA: VOLTAGE AT LOAD WITH 10V EXCITATION 350 OHMS	OPERATING DATA: VOLTAGE AT LOAD WITH 10V EXCITATION 700 OHMS
+ EXCITATION	9001/01-086-390-101	+6V	+7.2V	160ma	30 OHMS	1	8.53	9.21
– EXCITATION	9001/00-086-390-101	-6V	-7.2V	160ma	30 OHMS	2	7.44	8.53
+ SENSE	9002/77-093-040-001	+/-6V	+/-9.3V	160ma	518 OHMS	3	6.59	7.95
– SENSE		+/-6V	+/-9.3V	160ma	518 OHMS	4	5.93	7.44
+ SIGNAL	9002/77-093-040-001	+/-6V	+/-9.3V	160ma	518 OHMS	6	4.92	6.59
– SIGNAL		+/-6V	+/-9.3V	160ma	518 OHMS	8	4.21	5.93

BLH MODELS 404, 404-EX
CLI, II, III DIV 1, 2 GROUPS A-G
CLASS 1, ZONE 0,1 & 2, GROUP IIC, IIB, IIA

CONDUCTOR	STAHL INTRINSIC SAFETY BARRIERS MODEL NUMBER	INPUT VOLTAGE V RATED	INPUT VOLTAGE V MAX	REPLACABLE FUSE RATING	INTERNAL RESISTANCE	OPERATING DATA: NUMBER OF LOAD CELLS IN PARALLEL	OPERATING DATA: VOLTAGE AT LOAD WITH 10V EXCITATION 350 OHMS	OPERATING DATA: VOLTAGE AT LOAD WITH 10V EXCITATION 700 OHMS
+ EXCITATION	9001/01-086-270-10	+6V	+7.3V	160ma	42 OHMS	1	8.06	8.92
– EXCITATION	9001/00-086-270-10	-6V	-7.3V	160ma	42 OHMS	2	6.75	8.06
+ SENSE	9002/77-093-040-001	+/-6V	+/-9.3V	160ma	518 OHMS	3	5.81	7.35
– SENSE		+/-6V	+/-9.3V	160ma	518 OHMS	4	5.10	6.75
+ SIGNAL	9002/77-093-040-001	+/-6V	+/-9.3V	160ma	518 OHMS	6	4.09	5.81
– SIGNAL		+/-6V	+/-9.3V	160ma	518 OHMS	8	3.42	5.10

BLH MODELS 406A, 406A-EX, 408A, 408A-EX
CLI, II, III DIV 1, 2 GROUPS A-G
CLASS 1, ZONE 0,1 & 2, GROUP IIC, IIB, IIA

CONDUCTOR	STAHL INTRINSIC SAFETY BARRIERS MODEL NUMBER	INPUT VOLTAGE V RATED	INPUT VOLTAGE V MAX	REPLACABLE FUSE RATING	INTERNAL RESISTANCE	OPERATING DATA: NUMBER OF LOAD CELLS IN PARALLEL	OPERATING DATA: VOLTAGE AT LOAD WITH 10V EXCITATION 350 OHMS	OPERATING DATA: VOLTAGE AT LOAD WITH 10V EXCITATION 700 OHMS
+ EXCITATION	9002/10-187-270-001	+6V	+9.3V	160ma	46 OHMS	1	7.92	8.84
– EXCITATION		-6V	-9.3V	160ma	46 OHMS	2	6.55	7.92
+ SENSE	9002/77-093-040-001	+/-6V	+/-9.3V	160ma	518 OHMS	3	5.59	7.17
– SENSE		+/-6V	+/-9.3V	160ma	518 OHMS	4	4.87	6.55
+ SIGNAL	9002/77-093-040-001	+/-6V	+/-9.3V	160ma	518 OHMS	6	3.88	5.59
– SIGNAL		+/-6V	+/-9.3V	160ma	518 OHMS	8	3.22	4.87

MODELS 406 CONSISTS OF THREE SETS OF BARRIERS IN A SINGLE ENCLOSURE
MODELS 408 CONSISTS OF FOUR SETS OF BARRIERS IN A SINGLE ENCLOSURE

BLH MODELS 504A, 506A, 508A, 504A-EX, 506A-EX, 508A-EX
CLI, II, III DIV 1, 2 GROUPS A-G
CLASS 1, ZONE 0,1 & 2, GROUP IIC, IIB, IIA

CONDUCTOR	MTL INTRINSIC SAFETY BARRIERS MODEL NUMBER	INPUT VOLTAGE V RATED	INPUT VOLTAGE V MAX	NON REPLACABLE FUSE RATING	INTERNAL RESISTANCE	OPERATING DATA: NUMBER OF LOAD CELLS IN PARALLEL	OPERATING DATA: VOLTAGE AT LOAD WITH 10V EXCITATION 350 OHMS	OPERATING DATA: VOLTAGE AT LOAD WITH 10V EXCITATION 700 OHMS
+ EXCITATION	MTL 7766 PAC	+/-9.8	+/-11.3	100ma	93 OHMS	1	6.50	7.90
– EXCITATION		+/-9.8	+/-11.3	100ma	93 OHMS	2	4.80	6.53
+ SENSE	MTL 7761 PAC	+/-7.0	+/-8.1	50ma	384 OHMS	3	3.85	5.56
– SENSE		+/-7.0	+/-8.1	50ma	384 OHMS	4	3.15	4.85
+ SIGNAL	MTL 7761 PAC	+/-7.0	+/-8.1	50ma	384 OHMS	6	2.39	3.86
– SIGNAL		+/-7.0	+/-8.1	50ma	384 OHMS	8	1.90	3.20

MODELS 506A CONSISTS OF THREE SETS OF BARRIERS IN A SINGLE ENCLOSURE
MODELS 508A CONSISTS OF FOUR SETS OF BARRIERS IN A SINGLE ENCLOSURE

SIMILAR TO DWG

REV	DESCRIPTION	NAME	APPD	DATE
F	REVISE PER ECN #45164	UAJ	SSM	12/17/99
G	REVISE PER ECN #45280	UAJ	DLC	
H	REVISE PER ECO #45589	PAE	DA	04/06/00
J	REVISE PER ECO #45920	PAE		1/16/02
K	PER DON WEISS	TJS	DW	
M	PER MOSTAFA RAZIQ	MR	MR	1/24/05
N	UPDATED # 9001/01-086-390-101 AND	CON	B.C.	03/25/05
P	CHANGED TO VPG LOGO PER EO2013-032. EO2019-005. ADDED KIS-8 & KDH-5.	BWN	BJS	1/23/19
R	EO2023-013. UPDATED BARRIERS	BJS		

CODE IDENT 03089

Unless Otherwise Specified

millimeter (inch) — Third Angle Projection

DEC. x or Fract. TOL +/-0.4(0.015)
DEC. xx TOL +/-0.25(0.010)
DEC. xxx TOL +/-0.13(0.005)
Break Corners 0.25/(0.010)Max.
Angular TOL. +/-1/2
Mach. Finish 125

Material: ####

Protective Finish: ####

Drawn	JAKE	10/31/94
CHECKED		
MECH		
ELEC		
MFG		
PROD		
Q.A		

Scale ####

SHT 2 OF 3

BLH NOBEL
A VPG Brand

SYSTEM APPROVAL DWG
LOAD CELLS W/I.S BARRIERS
FMRC DIV 1&2 AND ZONE 0&1

4 6 8 8 7 2 – 2 REV. R

FIRST USED ON	FIRST JOB NO.	CAD FILE NAME
		468872

SHEET 3 OF 3 — 4 6 8 8 7 2 –2

NO.	DWG. NO.	NAME	DESCRIPTION	REQ.

BLH MODELS 505A, 505A–EX
CLI, II, III DIV 1, 2 GROUPS A–G
CLASS 1, ZONE 0,1 & 2, GROUP IIC, IIB, IIA

CONDUCTOR	MTL INTRINSIC SAFETY BARRIERS MODEL NUMBER	INPUT VOLTAGE		NON REPLACABLE FUSE RATING	INTERNAL RESISTANCE	OPERATING DATA		
		V RATED	V MAX			NUMBER OF LOAD CELLS IN PARALLEL	VOLTAGE AT LOAD WITH 10V EXCITATION 350 OHMS	700 OHMS
+ EXCITATION	MTL 7766 PAC	+8.0	+9.2	200ma	42 OHMS	1	8.06	8.92
– EXCITATION	MTL 7766 PAC	–8.0	–9.2	200ma	42 OHMS	2	6.75	8.06
+ SENSE	MTL 7761 PAC	+/–7.0	+/–8.1	50ma	384 OHMS	3	5.81	7.35
– SENSE		+/–7.0	+/–8.1	50ma	384 OHMS	4	5.10	6.75
+ SIGNAL	MTL 7761 PAC	+/–7.0	+/–8.1	50ma	384 OHMS	6	4.09	5.81
– SIGNAL		+/–7.0	+/–8.1	50ma	384 OHMS	8	3.42	5.10

ENTITY PARAMETERS

SUITABLE FOR USE WITH ANY FM APPROVED BARRIER SET HAVING ENTITY PARAMETERS WHICH DO NOT EXCEED THE FOLLOWING VALUES

	CLI, II, III DIV1 GROUPS A–G	
FUNCTION	Vmax	Imax
SIX CONDUCTOR CABLE SUPPLYING SINGLE OR MULTIPLE LOAD CELL SYSTEM	26.8V	800ma

Ci=0 Li=0 FOR ALL APPROVED TRANSDUCERS, SUMMING JUNCTION UNITS & CABLE EXTENSION BOXES

Notes:

1 – No revision to drawing without prior FM Approval.
2 – Control equipment connected to Associated Apparatus must not use or generate more than 250 Vrms or Vdc.
3 - Associated apparatus manufacturer's installation drawing must be followed when installing this equipment.
4 – Resistance between Intrinsically Safe Ground and earth ground must be less than 1.0 Ohm.
5 - Installation should be in accordance with ANSI/ISA RP12.06.01 "Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations" and the National Electrical Code (ANSI/NFPA 70).

SIMILAR TO DWG

REV	DESCRIPTION	NAME	APPD	DATE
F	REVISE PER ECN #45164	SSM	SSM	12/17/99
G	REVISE PER ECN #45280	UAJ	DLC	04/06/00
H	REVISE PER ECO #45589	PAE	DA	1/16/02
J	REVISE PER ECO #45920	PAE		
K	PER DON WEISS	TJS	SW	1/24/05
M	PER MOSTAFA RAZIQ	MR	MR	3/25/05
N	UPDATED # 9001/01–086–390–101 AND CHANGED TO VPG LOGO PER EO2013–032.	CON	B.C.	2/27/13
P	EO2019–005. ADDED KIS–8 & KDH–5.	BWN	BJS	4/23/19
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CODE IDENT 03089

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millimeter (inch) — Third Angle Projection

DEC. x or Fract.	TOL +/–0.4(0.015)
DEC. xx	TOL +/–0.25(0.010)
DEC. xxx	TOL +/–0.13(0.005)
Break Corners	0.25/(0.010)Max.
Angular TOL.	+/–1/2
Mach. Finish	125

Material: ####

Protective Finish: ####

Drawn	JAKE	10/31/94
CHECKED		
MECH		
ELEC		
MFG		
PROD		
Q.A.		

Scale ####

SHT 3 OF 3

BLH NOBEL
A VPG Brand

SYSTEM APPROVAL DWG
LOAD CELLS W/I.S BARRIERS
FMRC DIV 1&2 AND ZONE 0&1

4 6 8 8 7 2 –2 REV. R