Electric Drives Lin and Controls As

Linear Motion and Assembly Technologies

Pneumatics

Service Mobile Automation Hydraulics



Hydraulic Safety Interlock Manifold Systems

Hydraulic Safety Interlock Manifold Systems

1/2005 - Bosch Rex

Electric Drives Linear Motion and and Controls

Assembly Technologies

Service Mobile Automation Hydraulics



Hydraulic Safety Interlock Manifold Systems

As the need to apply Hydraulic Safety Interlock Systems to machinery in Australia becomes more prevalent we need to be able to respond quickly to our customers with concise answers and technical information.

Pneumatics

In order to achieve this it is important to understand the requirements of the relevant Australian standards and how we can use our products to allow system integrators to achieve the safety system compliance.

1/2005 - Bosch Rexroth Melbourne, Australia - 2005 Sales Conference Presentation

Assembly Technologies

Service Mobile Automation Hvdraulics



Hydraulic Safety Interlock Manifold Systems

Designers of Safety Systems must comply with local laws and standards

Pneumatics

- In Australia, AS4024.1 Safe Guarding of Machinery is the standard that needs to be adhered to (also currently under review to be updated)
- In Europe, EN954 is the standard that needs to be adhered to AS 4024.1 is based on this standard.
- The question is what information do we need from our customer to proceed with our design and offer a solution?

1/2005 - Bosch Rexroth Melbourne, Australia - 2005 Sales Conference Presentation



Electric Drives and Controls

Linear Motion and Assembly Technologies Service Mobile Automation Hydraulics



Hydraulic Safety Interlock Manifold Systems

The customer must first detail for us the "Determination of Machine Category". This will then allow us to offer the appropriate design

Pneumatics

AS 4024 – Determination of Machine Catergory



1/2005 - Bosch Rexroth Melbourne, Australia - 2005 Sales Conference Presentation

Linear Motion and Assembly Technologies Service Mobile Automation Hydraulics



Hydraulic Safety Interlock Manifold Systems

The determination of the machine category is critical in determining what hydraulic circuit option you can offer. The Australian Standard AS4024.1 is specific. It states "The designer must consider the flow of power in the system and the action of the stored energy. If the flow of power can be reliability blocked and the stored energy dissipated or controlled a machine is considered safe".

Pneumatics

It is not for us to decide the machine category. This is to be done by either a Risk Management Consultant or a System Integrator.

Assembly Technologies

Service Mobile Automation Hydraulics



Hydraulic Safety Interlock Manifold Systems

- Once the Category of the "Safety Required" is determined what does it mean to us?
- What do we have to supply to comply with the rules as detailed in AS4024.1?

Pneumatics

Assembly Technologies

Service Mobile Automation Hvdraulics



Hydraulic Safety Interlock Manifold Systems

- Category 1. Single valve without indication of failure
- Category 2. Two independent valves each with position monitoring must be used to block the flow of power.

Pneumatics

- Category 3. Two independent valves each with position monitoring must be used to block the flow of power. Indication of a failure is required.
- Category 4. Two independent valves each with position monitoring must be used to block the flow of power and the control system must incorporate cross monitoring of the signals.

1/2005 - Bosch Rexroth Melbourne, Australia - 2005 Sales Conference Presentation

Linear Motion and Assembly Technologies

Pneumatics

Service Mobile Automation Hydraulics



Hydraulic Safety Interlock Manifold Systems

- AS4024.1 has 2 charts
 - Interlock Category has 6 levels and the Safety category has 4 levels
 - We should be using the 4 Safety Levels
 - Safety Category 1 would most likely never apply to hydraulics
 - This level 1 needs Interlocks as shown on the chart to categories 1 & 2
 - Safety Category 2 needs two isolating valves in series. No indication is required by Interlock Category 3
 - Safety Category 3 & 4 needs two isolating valves in series with indication is required by Interlock Category 4,5 & 6. There is no difference between the hydraulics of Safety Category 3 & 4 only the electrical control changes.

AS 4024 - Determination of Machine Catergory



Legend

S = Severity of Injury S1= Slight (normally reversible) injury S2= Serious (normally irreversible) injury, incl. Death

P= Possibility of avoiding the hazard P1= Possible under specific conditions P2= Scarcely possible F= Frequency of exposure/ or exposure time F1= Seldom to quite often/exposure time short F2= Frequent to continuous/exposure time long

- Preferred
 - Possible
 - O Over dimensioned

1/2005 - Bosch Rexroth Melbourne, Australia - 2005 Sales Conference Presentation

© All rights reserved by Bosch Rexroth AG, even and especially in cases of proprietary rights applications. We also retain sole power of disposal, including all rights relating to copying, transmission and dissemination. 8

Assembly Technologies

Service Mobile Automation Hvdraulics



Hydraulic Safety Interlock Manifold Systems

Typically most applications using hydraulics will fall into the Category 3 or 4.

Pneumatics

- As we move further through the presentation you will realize that the values we offer can be used in either Category 3 or Category 4. The system integrator can use self monitoring PLC equipment to indicate failure of any of the hydraulic safety valves thus the system meets Category 4.
- We (Bosch Rexroth) are not system integrators we are offering valves & manifolds for use by system integrators. It is important to note the hydraulic valving is only part of the safety system. Controls need to be in place to stop the machine and take the energy source away as well as indicating a fault should a valve indicate a problem during the cycle
- So what questions can we be asked by the customer and how can we best answer them?

1/2005 - Bosch Rexroth Melbourne, Australia - 2005 Sales Conference Presentation



Linear Motion and Assembly Technologies Service Mobile Automation Hydraulics



Hydraulic Safety Interlock Manifold Systems

- Some customers may ask you questions like
 - Q1. Does your Hydraulic Safety Interlock Manifold meet AS4024.1?
 - Q2. Do you have CE Certification?
 - Q3. Have your valves been assessed independently?

Pneumatics

- Q4. What valve options are available
- Q5. Do you meet the Machinery Directive: 98/37/EC EN292-1, EN292-2, EN982, EN954-1 and EN1050 (European Standards)

Assembly Technologies

Mobile Service Automation Hvdraulics



Hydraulic Safety Interlock Manifold Systems

Q1. Does your Hydraulic Safety Interlock Manifold meet AS4024.1?

Pneumatics

Answer – No, our valves have been design and tested and meet particular EN standards. These individual standards have been meet and we have the documentation proving this. It means that our safety interlock values are suitable to be used by a system integrator in an application that is required to meet AS4024.1. We have here a statement/declaration that should be used to give to a customer with every quote to explain exactly specifically what RR Australia has to offer.

Electric Drives and Controls

Linear Motion and Assembly Technologies

Pneumatics

Service Mobile Automation Hydraulics



Hydraulic Safety Interlock Manifold Systems



Hydraulic Safety Manifold Declaration Subject :

Bosch Rexroth have independent certification from BG-PRUFZERT in Germany. Attached with this fax is certification from BG-PRUFZERT for the logic elements/directional valves that we have offered in your manifolds that have achieved the Test Certificate Type BM. This certificate indicates that we have been assessed independently by BG-PRUFZERT. We have chosen to use BG-PRUFZERT to assess our valves instead of applying our own assessment and Declaration of Conformity. This has been done in order to give our customers total confidence that the parts we are offering comply with fundamental health and safety requirements in accordance with the EN standards. Should you wish to check this BG-PRUFZERT's web site is http://www.hvbg.de/d/bgp/index.html

"The Drive and Control Company PDF created with pdfFactory trial version www.pdffactory.com

1/2005 - Bosch Rexroth Melbourne, Australia - 2005 Sales Conference Presentation

Electric Drives L and Controls A

Linear Motion and Assembly Technologies Service Automation

Pneumatics

Mobile

Hydraulics



Hydraulic Safety Interlock Manifold Systems

0:					FAX		Re	ixe	'O t	n	
AV NO.				_			Bos	ch (Gro	un	
AX NO:				-			Bosch Rexroth Pty Ltd ACN 003 258 384 AEN 89 009 258 384				
ROM:					SYDNEY	_	MELBOURNE ADELAIDE				
ATE:	January	18, 200	8, 2005	-	Fax: (02) 9831 55 Phone: (02) 9831 77	1 5553 🛃	Fax: Phone	ax: (03) 9580 1733 hone: (03) 9580 3933	1733 🛄 3933	Fax: (08) 8347 1790 Phone: (08) 8347 1400	
AGE:	1	OF	1		PERTH Fax: (08) 924 Phone: (08) 924	94746	BRIS Fax Phone	(07) 3272 (07) 3272	3999 🗆 3656	NEWCAST Fax: (02) 4 Phone: (02) 4	LE 1954 9822 1954 9811
Subj	ect :	Hydraulic	Safety Ma	nifold D	eclaration						
The stand	ard AS4024 AS4024.1.0	irements in 1.de/d/bqp/i 1 is based	accordan ndex.html on EN954	l-1. We	understand that	in Australi	you wish a you ne	to check t	your mac	hine design an	
Bosch Re accordance until the n the provis	the the model of t	anufacture which these rective	declare onized st compone	standar s that t andards nets/su	rd for hydraulic s he componenet s/specifications lo-assimolies are	systems up s/sub-assn The compo to be inco	to catego iblies de nonte/en porated	ivered hav	ve been es must r lectared in	conformity wit	in xd th
Bosch Re accordanc until the n the provis	ce with the m nachine into ions of the di armonized S	anufacture which these rective tandards:	meets the	standar s that t andards nets/su	rd for hydraulic s he componenet s/specifications in assmoles are	systems up s/sub-assn The comp To be inco	to catego Iblies de nontelen porated	ivered hav	ve booe es must r lectared in	not be operate conformity wit	in kd lh
Bosch Te accordance until the n the provis Applied H EN 292-1 EN 292-2 EN 962 (0 EN 2020	e with the machine into ions of the di armonized S (11.1991) (06.1995) (9.1996)	anufacture which these rective tandards:	meets the control st compone Safety Basic Safety	standar s that t andards nets/su of Mac oncept require	rd for hydraulic s the componenet stoppedifications to assimplies are chines ts, general princi sments on fluid p	systems up s/sub-assm The common to be incor iples for der iower instal	to catego iblies de ponte ien porated sign lations ar	ivered have a solution of the	ve been es must r lectared in ents	not be operate conformity wit	in d
Bosch Ne accordance until the n the provis Applied H EN 292-1 EN 292-2 EN 962 (0 EN 60 20-	the mathematical sectors of the diamonized S (11.1991) (06.1995) (9.1996) 4-1 (06.1993) (9.1996) (9.1906) (9.19	which these rective tandards:	safety Safety Safety Safety Safety	standar s that t andards nots/su of Mac concept require of mac	rd for hydraulic s the component specifications ' to assemblies are thines ts, general princi aments on fluid p thinery: electrical sectors to AS 40	systems up s/sub-assm The compo- to be incor to be incor iples for der iower instal I equipment	to catego iblies de porated sign ations ar of mach	ry 4. ivered hay contain nas been d d compone ines	ve boos es must r lectared in ants	venutactured i tot be operate conformity wit	in kd lh
Bosch Re accordance until the n the provision Applied H EN 292-1 EN 292-2 EN 60 204 And thus o In Austral independe	the mean of the me	anufacture which these rective tandards:) uitable for u m must m ocally, this (meets the , declare enized st component Safety Basic Safety Safety se with in eet the s can be arr	standar s that t andards nets/su of Mac concept require of mac seriock s tandard anged a	rd for hydraulic s he component s/specifications i to assembles are blines its, general princi sments on fluid p hinery: electrical systems to AS40 I AS4024.1, hos I an additional c	systems up s/sub-assm The common to be incor- iples for der iower instal l equipment 24.1 wever shou ost.	to catego iblies de porte porated sign lations ar of mach	ivered have nas been d d compon- ines	e boor es must r ectared in ants we our sy	ventilactured i not be operate a conformity wit	in ki lh
Bosch Me accordance until the n the provise Applied H EN 292-1 EN 292-2 EN 982 (0) EN 60 20- And thus of in Austral independe Some of should be and as we EN954-11	the the machine into iterations of the diamonic of the diamoni	anufacture which these rective tandards:) uitable for u m must m ocally, this i ors declare hase are no mman engin povered in A	safety safety safety Basic Safety Safety se with in eet the s can be arr that they at the gov ueers und S402401	standar s that the andards of Mac concept require of mac seriock s tandard anged a conforn erning s erstand	rd for hydraulic s the components specifications is basenbolios are hines is, general princi ments on fluid p hinery: electrical phinery: electrical systems to AS40 i AS4024.1, hos at an additional c a manifold asse	s/sub-assm The common To be incom- to be incom- ples for dei- over instal l equipment 24.1 wever shou cost. 1 and EN1(50 is simply rmbly cannot	to catego iblies de <u>nontere</u> porated sign lations ar of mach id you s you s you s of comply	ivered has ivered has been d d compon- ines vish to ha ference to ard for prin with princ	ve boose es must r lectared in ants ve our sy EN954-1 nciples of r	ventulactured i oto be operate i conformity wit ystem assesses and EN1050 fisk assessmen isk assessmen	in kl ih kl it it t.
Bosch Me accordance until the n the provise Applied H EN 292-1 EN 982 (0 EN 60 20- And thus of in Austral independe Some of should be and as we EN954-1 i If you hav	the the machine into- backine into- cons of the di- ions of the di- ions of the di- ions of the di- ions of the di- tions of	which these which these rective tandards:) uitable for u m must m ocally, this ors declare hese are no mman engin covered in A ons please (set the state of t	standar s that t andards nets/su of Mac concept require of mac serlock s tandard anged a conforn aming s arstand	rd for hydraulic s the components specifications : to assirblies are things ts, general princi systems to AS40 LAS4024.1, hos at an additional c m with EN954-1 a manifoid asse contact the write	s/sub-assm The count to be incor- to be incor- iples for de cover instal l equipment 24.1 wever shou cost. L and EN11 50 is simply rmbly cannot x.	to catego blies de nonte fer porated sign ations ar ations ations ar ations ar ations ations ar ations at	ivered has been d d compon- ines vish to ha ference to ard for prin with princ	ve boost es must r lectared in ants ve our sy EN954-1 iples for r	entraliactured i conformity with rstem assesses and EN1050 fisk assessmen isk assessmen	in ki ki it t.
Bosch Ma accordancy until the n the provis Applied H EN 292-1 EN 982 (0 EN 9	and the management of the second seco	anufacturer which these rective tandards:) uitable for u m must m ocally, this ors declare hese are no man engin overed in A ons please (A declare ments of states component Safety Basic Safety Safety Safety se with im eet the s can be arr that they the govi learn of the solution states the solution the s	standar s that t andards inets/su of Mac concept require of mac seriock s tandard anged a confornerning s erstand itate to	rd for hydraulie s the component seventhations are an astrolies are built and the seventhat systems to AS40 A S40441, hos at an additional of a manifold asse confact the write	systems up s/sub-assn <u>The connec</u> to be incor- to be incor- to be incor- to be incor- to be incor- to be incor- to be simpli- mbly cann- st.	to catego iblies de nontress porated sign attons ar of mach idl you s sol. In re / a stand of comply	ivered has ivered has out the second distribution distribution with to ha ference to ard for prin with princ	ve boost es must r lectared in ants ve our sy EN954-1 ciples of iples for r	eentractured i kot be operate conformity with rstem assesses and EN1050 fisk assessmen isk assessmen	in kl kl kl it t
Bosch Ma accordance until the nr the provis Applied H EN 292-1 EN 992-2 EN 992 (1) EN 60 20- And thus - should be and as we EN954-11 if you hav Regards Stephen h Metbourne Bosch Re The Drive Hydraulic 7 Endeaw Ph - 03 9	by the more with file an actinic nico- icors of the di armonized S (11.1991) (06.1995) 9.1580) 9.1580) 9.1580 9.1580 9.1580 9.1580 0.1593 0.15	vice system anufactures definition anufactures definition tandards:) uitable for u anust m ocally, this ocally, this ocal	meets the , declare mixed at component Basic Safety Safe	standard andards of Macd concept require of mac concept require of mac concept require of mac concept require of mac concept anged a confort anged a standard anged a confort anged a confort confort a confort a confort confor	rd for hydraulic s he component soverphotom: a soverphotom: a soverphotom: a soverphotom s soverphotom s soverphotom s soverphotom s soverphotom s soverphotom s s s s s s s s s s s s s s s s s s s	s/sub-assn fibe count- to be incor to be incor to be incor to be incor to be incor to be cover instat equipment 24.1 waver sho to is simpl mbly came x.	to catego porated porated ign ign idn you n iof mach iof mach iof mach iof mach iof mach iof nach iof	ivered hay ivered hay as been d d compon- ines vish to ha ference to ard for princ with princ	re been es must need and in ants EN954-1 ciptes for r	entilectured tot be operated a conformity with rolom assesse and EN1050 fisk assessmen sk assessmen	in ch kh kt

The standard AS4024.1 is based on EN954-1. We understand that in Australia you need to base your machine design and rework on AS4024.1. Our system meets the standard for hydraulic systems up to category 4.

"The Drive and Control Company"

1/2005 - Bosch Rexroth Melbourne, Australia - 2005 Sales Conference Presentation

Electric Drives Li and Controls A

Linear Motion and Assembly Technologies Service Mobile Automation Hydraulics



Hydraulic Safety Interlock Manifold Systems

Pneumatics



Bosch Rexroth the manufacturer, declares that the componenets/sub-assmblies delivered have been manufactured in accordance with the stated standards/specifications harmonized The components/sub-assemblies must not be operated machine which until the these into componenets/sub-assmblies are to be incorporated has been declared in conformity with the provisions of the directive

"The Drive and Control Company PDF created with pdfFactory trial version www.pdffactory.com

1/2005 - Bosch Rexroth Melbourne, Australia - 2005 Sales Conference Presentation

Electric Drives and Controls

Linear Motion and Assembly Technologies

Pneumatics

Service Mobile Automation Hydraulics



Hydraulic Safety Interlock Manifold Systems



Bosch Rexroth have independent certification from BG-PRUFZERT in Germany. Attached with this fax is certification from Beck respective the university of the contract of the service zero. The service zero is the set of the set of

The standard AS4024.1 is based on EN954.1. We understand that in Australia you need to base your machine desirin and rework on AS4024.1. Our system meets the standard for hydraulic systems up to category 4.

Bosch Rexroth the manufacturer, declares that the componenets/sub-assmblies delivered have been manufactured in accordance with the stated harmonized standards/s until the machine into which is the provide stated by the stated by the provide standards/s is The components/sub-assemblies must not be operated ared in conformity with

lied Harmonized Standards Safety of Machines Basic concepts, general principles for design Safety requirements on fluid power installations and components Safety of machinery: electrical equipment of machines

e for use with interlock systems to AS4024.1

In Australia the system must meet the standard AS4024.1, howev independently further locally, this can be arranged at an additional cost should you wish to have our system

Some of our competitors declare that they conform with EN954-1 and EN1050. In reference to EN954-1 and EN1050 if should be noted that these are not the governing standards. EN1050 is simply a standard for principles of risk assessment and as we and our German engineers understand a manifold assembly cannot comply with principles for risk assessment. EN554-11 is generally covered in AS402401

If you have any questions please do not hesitate to contact the write

Regards

plied Harmonized Sta 4 292-1 (11.1991) 4 292-2 (06.1995) 4 962 (09.1996) 4 60 204-1 (06.1993)

Stephen Michetti Melbourne Sales & Service Bosch Regroth The Drive & Control Company Hydraulic Applications 7 Endeavour Way, Breaside, Vic, 3195 Ph - 03 9580 3933 Fax - 03 9580 1733 Email - stephen michetti@boschrexroth.com.au **Applied Harmonized Standards:**

EN 292-1 (11.1991) Safety of Machines

EN 292-2 (06.1995) principles for design

Basic concepts, general

EN 982 (09.1996) Safety requirements on fluid power installations and components

EN 60 204-1 (06.1993) Safety of machinery: electrical equipment of machines

And thus considered suitable for use with interlock systems to AS4024.1

"The Drive and Control Company PDF created with pdfFactory trial version www.pdffactory.com

1/2005 - Bosch Rexroth Melbourne, Australia - 2005 Sales Conference Presentation

Electric Drives Li and Controls A

Linear Motion and Assembly Technologies

Pneumatics

Service Mobile Automation Hydraulics



Hydraulic Safety Interlock Manifold Systems



Bosh Rearch have independent calification from BG-PRUFZERT in Germany. Attached with this tak is cartification from BG-PRUFZERT for the topic dements/irrectional valves that we have offered in your manifeds that have addreved the Test calificate Type BM. This cartification includes that we have have assessed independently by BG-PRUFZERT. We have doesn't to use BG-PRUFZERT to assess our valves instead of applying our own assessment and bedration of Conformity. This has been done in order to give our calisiones total value confidence that the gaths were addressed to the administration and safety reguraments in accordance with the EN standards. Should you wish to chock this BG-PRUFZERT web sets as <u>full driven what do obtained that</u>.

The standard AS4024.1 is based on EN954-1. We understand that in Australia you need to base your machine design and rework on AS4024.1. Our system meets the standard for hydraulic systems up to category 4.

Beech Reach the manufacturer, declares that the component/sub-assmbles delivered have been manufactured in accordance with the stated harmonized standardspecifications. The component/sub-assembles must not be operated until the machine into which these components/sub-assmbles are to be incorporated has been declared in conformity with the provisions of the directive

 Applied Hamonized Standards:
 EN 282.1 (11.1961)
 Safety of Machines

 EN 282.2 (16.1965)
 Basic concepts, general principles for design

 EN 802.2 (16.1965)
 Safety rogurannets on haid power installations and components

 EN 802.2 (16.1965)
 Safety rogurannets on haid power installations and components

 EN 802.2 (16.1963)
 Safety rogurannets on haid power installations and components

93) Safety of machinery: electrical equipment of suitable for use with a state of the state

Lo exertise the system must meet the standard AS40241, however should you wish to have out you a assesser interpendently turned roadly, this can be arranged at an additional oost. Same of our corrections declare that they conform with ENROF1 and ENROF0 in reference to ENROF4.1 and ENROF0 about to work of the these areas of the operaneting wateriate. ENROF0 is surply a darkated to formicipe of additional and as we and our Comman engineers understand a manifold assembly cannot comply with penciples for risk assesser and as we and our Comman engineers understand a manifold assembly cannot comply with penciples for risk assesser to the standard yourced in AS402401

If you have a Regards

Stophen Michetti Metocumo Salos & Service Bosch Rearch Bosch Rearch Hydraulic Applications 7 Endeavour Way, Breaside, Vic, 3195 Ph. -03 5600 3933 Fax - 03 9580 1733 Enail - stophen michettligboschrearch.com au In Australia the system must meet the standard AS4024.1, however should you wish to have our system assessed independently further locally, this can be arranged at an additional cost.

Some of our competitors declare that they conform with EN954-1 and EN1050.

In reference to EN954-1 and EN1050 it should be noted that these are not the governing standards.

EN1050 is simply a standard for principles of risk assessment and as we and our German engineers understand a manifold assembly cannot comply with principles for risk assessment.

EN954-1 is generally covered in AS4024.1

"The Drive and Control Company PDF created with pdfFactory trial version www.pdffactory.com

 1/2005 - Bosch Rexroth Melbourne, Australia - 2005 Sales Conference Presentation
 © All rights reserved by Bosch Rexroth AG, even and especially in cases of proprietary rights applications. We also retain sole power of disposal, including all rights relating to copying, transmission and dissemination.

Assembly Technologies

Service Mobile Automation Hvdraulics



Hydraulic Safety Interlock Manifold Systems

- Q2. Do you have CE Certification?
- Answer Yes, and we also have independent certification from BG-Prufzert in Germany.

Pneumatics

- However, the following points can be made.
 - AS4024.1 does not require that any equipment "must" have the CE marking.
 - AS4024.1 does not state that independent certification of any assemblies including manifold assemblies is required.
 - AS4024.1 places the responsibility squarely on the system integrator to ensure that the total system meets the requirements of the Australian Standard.

1/2005 - Bosch Rexroth Melbourne, Australia - 2005 Sales Conference Presentation

Assembly Technologies

Pneumatics

Service Mobile Automation Hydraulics



Hydraulic Safety Interlock Manifold Systems

CE Marking

RE00 042/11/00 is available and explains the CE mark and it's meaning.

The features of the CE mark:

Does not stand for the compliance with special quality and safety requirements

Usually does not signal testing by a neutral inspectorate

the manufacturer

	RE 00 043/11.00
1E 00 043/11.00	mmannesmann Rexroth
CE marking of products (CE certification)	
Table of contents	
Contents	Page
he CE mark and its meaning	
C Directives	2,3
Overview of specifications	4 – –
ossible consequences of an infringement of EC Directives	5 Conformité Européenne
F Some	The CE mark and its meaning
his documentation shall be applied by Rexroth AG / Busine learnofh Hydraulics. Vithin the Business Unit Rexroth Hydraulics it shall be applie roduct Divisions, Sales Departments Germany, subsidiaries in all suppliers of the Business Unit Rexroth Hydraulics. Steps for CE marking	ess Unit To achieve a high protection level in the field of safety and health European standards are worked out, which put the fundamental re abroad In view of technical harmonization and standardization, a new con- cept was worked out. The essential guidelines can be summarized as follows:
	Directives comprise fundamental safety requirements.
Examination: Which Directive/s is/are relevant for the product at hand?	 Harmonized standards comprise determinations, whose observa- tion is likely to result in the fact that relevant products meet fun- damental requirements.
Examination: Which harmonized	The manufacturer demonstrates the compliance with directives by declaring that he manufacturers his product in accordance with the relevant standards (declaration of conformity).
standards exist for the product?	The CE mark must be affixed visibly, legibly and permanently at the level of the nameplate. It consists of the letters "CE". The minimum
—	height shall be 5 mm.
Verification of required suitability, observation of requirements in development/design and production	height shall be 5 mm. Experience has shown that the market has turned the CE mark, al though singaling a matter of <u>fact, into a symbol</u> of quality, to which every <u>mapuAeture</u> and user attaches great importance
Verification of required suitability, observation of requirements in development/design and production	height shall be 5 mm. Experience has shown that the market has turned the CE mark, al though singaling a matter of <u>fact</u> . Into a symbol of quality, to which every mapufecturer and user attaches great importance. Features of the CE mark:
Verification of required suitability, observation of requirements in development/design and production Compilation of technical documentation (internal / Desenal)	height shall be 5 mm. Experience has shown that the market has turned the CE mark, al though singaling a matter of <u>fact, into a symbol</u> of quality, to which every magu decture and user attaches great importance. Features of the CE mark: • An external sign of the demand for confidence • Signals the compliance with fundamental safety and health re quirements and with harmonized European standards (EN)
Verification of required suitability, observation of requirements in development/design and production Compilation of technical documentation (internal / Texemal)	height shall be 5 mm. Experience has shown that the market has turned the CE mark, al though singaling a matter of fact, into a symbol of quality, to which every macufacturer and user attaches great importance. Features of the CE mark: • An external sign of the demand for confidence • Signals the compliance with fundamental safety and health re quirements and with harmonized European standards (EN) • Guarantees the free exchangeability of working equipment within the European Economic Area (EEA)
Verification of required suitability, observation of requirements in development/design and production Compilation of technical documentation (internal / Desernal) Preparation of user information	height shall be 5 mm. Experience has shown that the market has turned the CE mark, al- though singaling a matter of fact. Into a symbol of quality, to which every masuffecturer and user attaches great importance. Features of the CE mark: • An external sign of the demand for confidence • Signals the compliance with fundamental safety and health re quirements and with harmonized European standards (EN) • Guarantees the free exchangability of working equipment within the European Economic Area (EFA) • Does not stand for the compliance with special quality and safeth requirements

1/2005 - Bosch Rexroth Melbourne, Australia - 2005 Sales Conference Presentation

Electric Drives Linear and Controls Asser

Linear Motion and Assembly Technologies

Pneumatics

Service Mobile Automation Hydraulics

> PZB10 07.02



Hydraulic Safety Interlock Manifold Systems



Typical Current BG Certificate

					Hebezeuge, Hütten- und Walzwerksanlagen Prüf- und Zertifizierungsstelle im BG-PRÜFZERT
					Hauptverband der gewerblichen Benufsgenossenschaften
	Baumu	iste	erprüfbe	escheinigung	Derarogenesseraerianten
					01 024
Name und Anschrift des Bescheinigungsinhabers (Auftraggeber)	Bosch F Zum Eis D - 9781	Rexro engie 3 Loi	o th AG Ber 1 hr am Main		Bescheinigungs-Nummer
Name und Anschrift des Herstellers:	- siehe obe	n -			
Zeichen des Auftraggebers		2	eichen der Prüf	- und Zertifizierungsstelle:	Ausstellungsdatum:
Produktbezeichnung:	Elektri	sch	betätigtes	s Wegeventil mit ir	duktivem Endschalter
			INDAW		
Тур:	4WE	10	J286X/ X84-3X/	CG24K4QM0G24	
	4WE	6	UA6X/	EG24K4QM0G24	
	4WE 4WE	6 6	UA6X/ D6X/	EG24K4QM0G24 EG24K4QMBG24	
	4WE 4WE 5-4WE	6 6 10	UA6X/ D6X/ X102-3X/	EG24K4QM0G24 EG24K4QMBG24 CG24K4QMAG24	
Bestimmungsgemäße Verwendung:	4WE 4WE 5-4WE Zur Ven gemäß	6 6 10 vendu	UA6X/ D6X/ X102-3X/ ung für hydra	EG24K4QM0G24 EG24K4QMBG24 CG24K4QMAG24 aulische Schließsicheru nleitung	ngen in Spritzgießmaschinen
Bestimmungsgemäße Verwendung: Prüfgrundlage:	4WE 4WE 5-4WE Zur Ven gemäß I ° Grunds Ausgal ° EN 201 Sicher	6 6 10 vendu lersti sätze be 07/ :1997 heits:	UA6X/ D6X/ X102-3X/ ung für hydra ellereinbaua für die Prüfu 2002 ""Gummi- un anforderunge	EG24K4QM0G24 EG24K4QMBG24 CG24K4QMAG24 aulische Schließsicheru nleitung ing der Arbeitssicherhei nd Kunststoffmaschinen an"	ngen in Spritzgießmaschinen t von Spritzgießmaschinen, s SPRITZGIEßMASCHINEN
Bestimmungsgemäße Verwendung Pridigrundlage: Bemerkungen:	4WE 4WE 5-4WE 2ur Very gemäß I ° Grunda Ausgal ° EN 201 Sicher Das jeweilig maschinen Das jeweilig maschinen Maschinen	6 10 wendu Hersti atze be 07/ :1997 heitsa ge Ve ' (VBi anfor 1, so tyklus	UA6X/ D6X/ X102-3X/ ung für hydra ellereinbaua für die Prüfu 2002 ",Gummi- un anforderunge mitil ist gemä G 7 ac) bzw. derungen" vi derungen" vi dass auch b s nicht mehr	EG24K4QM0G24 EG24K4QMBG24 CG24K4QMAG24 aulische Schließsicheru nietung mg der Arbeitssicherhei nd Kunststoffmaschinen en" Iß § 1 Abs. 2b der Unfa Kapitel 5 der EN 2011 on der Steuerung der S ei Versagen des Positio eingeleitet werden kan	ngen in Spritzgleßmaschinen t von Spritzgleßmaschinen, SPRITZGIEBMASCHINEN Ilverhåtungsvorschrift "Spritzgieß- 997 "Spritzgießmaschinen- pritzgledmaschine seibstättig zu naschaiters ein erneuter n.
Bestimmungsgemäße Verwendung Prüfgrundlage: Bemerkungen:	4WE 4WE 5-4WE 2ur Ven gemäß 1 ° Grundt Ausgal * EN 201 Sicher Das jeweilig maschinem Sicherheits überwacher Maschinenz Folgebesc	6 6 10 wendu Hersti ätze be 07// :1997 heits: ge Ve (VBi anfor n, so ;yklus heini	UA6X/ D6X/ X102-3X/ ung für hydra ellereinbaua für die Prüfu 2002 ""Gummi- ut anforderunge mtil ist gemä G 7 ac) bzw. derungen" v dass auch b a nicht mehr gung zu de Namona"	EG24K4QM0G24 EG24K4QMAG24 CG24K4QMAG24 aulische Schließsicheru nietung g der Arbeitssicherhei nd Kunststoffmaschiner en" 16 § 1 Abs. 2b der Unfa Kapitel 5 der EN 2011. n der Steuerung der S ei Verageen des Position eingeleitet werden kan r Prüfnummer 01 024	ngen in Spritzgleßmaschinen t von Spritzgleßmaschinen, i SPRITZGIEBMASCHINEN BIV schütungsvorschrift "Spritzgieß- B97 "Spritzgießmaschinen- pritzgießmaschines eibettätig zu naschalters ein erneuter n. Vom 15. März 2001
Bestimmungsgemäße Verwendung: Pröfgrundlage: Bemerkungen: Das gepröfte Baumuster entr	4WE 4WE 5-4WE 2ur Ven gemäß I ° Grundt Ausgal ° EN 201 Sicher Das jeweilig maschinen Sicherheits überwacher Maschinenz Folgebesc (auf Grund pricht den eins	6 6 10 vendu Herstr ätze be 07/ :1997 heits ge Ve i (VBI anfor n, so ryklus heini i der ichlagi	UA6X/ D6X/ X102-3X/ ang für hydra ellereinbaua für die Pröfu 2002 ", Grummi- u für die Pröfu 2002 ", Grummi- u für die Pröfu 2002 ", Grummi- u für die Pröfu dass auch b s nicht mehr gung zu de Namensänc en Beslimmou	EG24K4QM0G24 EG24K4QMAG24 CG24K4QMAG24 aulische Schließsicheru neitung ng der Arbeitssicherhei nd Kunststoffmaschiner n ^{en} M § 1 Abs. 2b der Unfa Kapitel 5 der EN 201:1 on der Steuerung der S ei Versagen des Positie eingeleitet werden kan re Prüfnummer 01 024 derung des Fachausse me der Exbitties 837/56 (M	ngen in Spritzgle&maschinen t von Spritzgle&maschinen, s SPRITZGIE&MASCHINEN liverhötungsvorschrift, Spritzgle&- 997, Spritzgle&maschinen- pritzgle&maschines eibettätig zu nsschalters ein erneuter n. vom 15. März 2001 chussee EM IIURZ in MHW) laschien;)
Bestimmungsgemäße Verwendung: Prüfgrundlage: Bemerkungen: Das geprüfte Baumuster ent Das geprüfte Baumuster ent Diese Bescheinigung wird sp	4WE 4WE 5-4WE 2ur Ven gemäß 1 ° Grund Ausgal ° EN 201 Sicher Das jeweilig maschinen Sicherheits überwacher Maschinen Folgebesc (auf Grund pricht den eins ätestens ungül	6 6 10 vendii lerstu sätze co 07/ :1997 heits: ge Ve (VB anfor 1, so :yklus heinii i der ichlage	UA6X/ D6X/ X102-3X/ ang für hydra ellereinbaua für die Pröfu 2002 ", Gurmmt- un für die Pröfu 2002 ", Gurmmt- un für die Pröfu Gerungen" v. dass auch b s nicht mehr gung zu de Namensänc ere Beslimmung	EG24K4QM0G24 EG24K4QM624 CG24K4QM624 aulische Schließsicheru nietung ng der Arbeitssicherhei nd Kunststoffmaschiner en ¹⁹ Iß § 1 Abs. 2b der Unfa Kapitel 5 der EN 2011: die geleitet worden kan er Pröfinumer 01 024 derung des Fachauss gen der Richtlinie 90/37/EG (M	ngen in Spritzgießmaschinen t von Spritzgießmaschinen, s SPRITZGIEBMASCHINEN liverhötungsvorschrift, Spritzgieß- 997. Spritzgießmaschinen- pritzgießmaschinen seibettätig zu nsschalters ein erneuter n. vom 15. März 2001 chussee EM III/HZ in MHW/ laschinen).
Bestimmungsgemäße Verwendung: Prridgrundlage: Bemerkungen: Das geprüfte Baumuster ents Diese Bescheinigung wird sp	4WE 4WE 5-4WE 2ur Ven gemäß I * Grund Ausgal * En 201 Sicher Das jeweilig maschinen Sicherheits überwacher Maschinen Folgebesc (auf Grund pricht den eins ätestens ungült	6 6 10 wendu Hersti ätze be 07/ 1:1997 heits: ge Ve (VBI anfor n, so ryklus heini I der chlagi tig am	UA6X/ D6X/ X102-3X/ x102-3X/ x102-3X/ ing für hydra ellereinbaua für die Pröfu 2002 ", Gummi- ur anforderunge mtil ist gemä 3 7 ac) bzw. derungen" vi derungen" vi derungen" vi derungen v	EG24K4QM0G24 EG24K4QMBG24 CG24K4QMAG24 aulische Schließsicheru nietung ng der Arbeitssicherheil dir Kunststoffmaschiner en" Bi§ 1 Abs. 2b der Unfa Kapitel 5 der EN 2011 R is § 1 Abs. 2b der Unfa Kapitel 5 der EN 2011 der Versagen des Positic eingeleitet werden kan Pröfinummer 01 024 derung des Fachausso per der Richtine 98/37/EG (M	ngen in Spritzgie&maschinen t von Spritzgie&maschinen, I SPRITZGIE&MASCHINEN Ilverhütungsvorschrift, Spritzgie&- 997. Spritzgie&maschinen- prizgie&maschine selbettätig zu naschalters ein erneuter n. vom 15. März 2001 chusses EM III/HZ in MHW) aschinen).
Bestimmungsgemäße Verwendung: Pritigrundlage: Bemerkungen: Das geprüfte Beumuster ente Diese Bescheinigung wird sp	4WE 4WE 5-4WE 2ur Ven gemäß 1 ° Grundt Ausgal ° Grundt Ausgal ° Ba 201 Sicher Das jeweilig maschinen Sicherheits überwacher Maschinenz Folgebesc (auf Grund pricht den eins stestens ungül	6 6 10 vendi Hersti ätze be 07/ :1997 heits: ge Ve (VBI anfor n, so ryklus heini I der ichlagi tig am	UA6X/ D6X/ X102-3X/ ang für hydra- ellereinbaue für die Prüfu 2002 "Gummi- ur anforderunge ntil ist gemä 67 ac) bzw. derungen" vi derungen" vi derungen derungen" vi derungen" vi derungen derungen" vi derungen" vi derungen derungen" vi derungen" vi derungen d	EG24K4QM0G24 EG24K4QM6G24 CG24K4QMAG24 aulische Schließsicherun ing der Arbeitssicherheil nd Kunststoffmaschiner en" iß § 1 Abs. 2b der Unfa Kapitel 5 der EN 2011 on der Steuerung der S ei Verasgen des Positic eingeleitet werden kan r Prüfnummer 01 024 gerung des Fachausse gen der Richtlinie 98/37/EG (M	ngen in Spritzgießmaschinen t von Spritzgießmaschinen, i SPRITZGIEBMASCHINEN liverhötungsvorschrift "Spritzgieß- 997 "Spritzgießmaschinen- prizgießmaschine seibstätäg zu naschafters ein erneuter hussene Ein Livitz in MHW) laschinen)
Bestimmungsgemäße Verwendung: Pröfgrundlage: Bemerkungen: Das gepröffe Baumuster entr Diese Bescheinigung wird sp Weiteres über die Güßgladt, 1957.	4WE 5-4WE 2ur Ven gemäß I * Grundt Ausgal * EN 201 Sicher Das jeweillig maschinen Sicher Maschinen folgebesc (auf Grund pricht den eins attestens ungül	6 6 10 vendi Hersti ätze be 07/ ::1997 heitsi ge Ve ('(VB) anfor , so cyklus heini I del ichlägi tig am	UA6X/ D6X/ X102-3X/ ang für hydra ellereinbaua für die Prüfu 2002 ",Gummi- u anforderungen" dass auch ba s nicht mehr gung zu de <u>Namensänc</u> en Beslimmun 01.10.2	EG24K4QM0G24 EG24K4QMAG24 CG24K4QMAG24 aulische Schließsicheru neitung ng der Arbeitssicherhei di Kunststoffmaschiner en ^m dis § 1 Abs. 2b der Unfa Kapitel 5 der EN 201:1 on der Steuerung der S ei Versagen des Positio eingeleitet werden kan er Prüfnummer 01 024 derung des Fachauses gen der Richtline 89/37/EG (M 2006	ngen in Spritzgießmaschinen t von Spritzgießmaschinen, is SPRITZGIEßMASCHINEN Werhötungsvorschrift, Spritzgieß- 997, Spritzgießmaschinen- pritzgießmaschinen seibstätäg zu naschalters ein erneuter n. vom 15. März 2001 husses EM III/HZ in MHW) aschinen).
Bestimmungsgemäße Verwendung: Pritigrunstlage: Bemerkungen: Das geprüfte Beumuster entr Diese Bescheinigung wird sp Weteres über die Güttigkeit, 1997.	4WE 5-4WE 5-4WE Zur Ven gemäß 1 * Grundt Ausgal * EN 201 Sicher Das jeweilig maschinen Sicher Maschinen Folgebesc (auf Grund pricht den eins ettestens ungül eine Gütigkets	6 6 10 wendi Hersti aatze be 07/ :1997 heits: ge Ve ' (VBI aanfor ', so : ' (VBI aanfor ', so : ' (VBI danfor ', so : ' (VBI danfor ', so : ' (VBI danfor ' (VBI ' (VBI)'	UA6X/ D6X/ X102-3X/ ang für hydra ellereinbaua für die Prüfu 2002 "Gummi- un anforderungen" dass auch ba nicht mehr gung zu de <u>Namensänc</u> gen Beslimmun 01.10.:	EG24K4QM0G24 EG24K4QMAG24 CG24K4QMAG24 aulische Schließsicheru nietung g der Arbeitssicherhei nm g der Arbeitssicherhei nd Kunststoffmaschinen en" ß § 1 Abs. 2b der Unfa Kapitel 5 der EN 2011. n der Steuerung der S ei Veraagen des Positie eingeleitet werden kan r Prüfnummer 01 024 derung des Pachausso me er Richtime 98/3/265 (M 2006	ngen in Spritzgießmaschinen t von Spritzgießmaschinen, is SPRITZGIEBMASCHINEN liverhötungsvorschrift "Spritzgieß- 987 "Spritzgießmaschinens- prizgießmaschine seibettätäg zu naschäters ein erneuter n. Natz 2001 hussene EM III/HZ in MHW) laschinen) uf- und Zentfläterungsordnung vom Oktober
Bestimmungsgemäße Verwendung: Prritgrundlage: Bemerkungen: Das geprüfte Baumuster ente Diese Bescheinigung wird sp Weiteres über die Güttgleitt, 1997.	4WE 5-4WE 2ur Ven gemäß i Grunds eine 201 Sicher Das jeweilit maschinen Sicherheits überwacher Maschinenz Folgebesc (auf Grund pricht den eise ätestens ungül eine Gütigkeit	6 6 10 vendi lersti ätze be 07/ :1997 heits: ge Ve (VB) anfor ryklus heini i der chlägi tig am:	UA6X/ D6X/ X102-3X/ ang für hydra ellererinbaua für die Prüfu 2002 "Gurmit- u anforderungen ntil ist gemä 3 7 ac) bzw. derungen" v derungen" v derungen" v derungen" v derungen" v derungen	EG24K4QM0G24 EG24K4QM6G24 CG24K4QM6G24 aulische Schließsicheru- Inditung ing der Arbeitssicherheil dir Kunststoffmaschiner en" Bi§ 1 Abs, 2b der Unfa Kapitel 5 der EN 2011 Bi§ 1 Abs, 2b der Unfa Kapitel 5 der EN 2011 der Uversagen des Positic eingeleitet werden kan eingeleitet werden kan Pröffnummer 01 024 derung des Fachausso per der Richtline 98/37/EG (M 2006	ngen in Spritzgießmaschinen t von Spritzgießmaschinen, i SPRITZGIEBMASCHINEN Ilverhåtungsvorschrift, Spritzgieß- Spritzgießmaschinen- prizgiedmaschine seibettätig zu naschaiters ein erneuter Norm 15. März 2001 hussese EM IIIHZ in MHW/ laschinen): al- und Zettfizierungsordnung von Oktober Marchinen Spritzgießmaschinen Statemark auf die Jung Henney Statemark
Bestimmungsgemäße Verwendung: Profgrundlage: Bemerkungen: Das geprüfte Baumuster ent Dass Bescheinigung wird sp Weiteres über die Güttigkeit, 1997.	4WE 4WE 5-4WE 2ur Ven gemäß I 6 Grund Ausgal • EN 201 Sicher Das jeweilig maschinen Sicher Maschinen Sicher Maschinen Bicher Maschinen Bicher Maschinen Bicher Maschinen Bicher Maschinen Bicher Maschinen Bicher Maschinen Bicher Maschinen Bicher Maschinen Bicher Maschinen Bicher Maschinen Bicher B	6 6 10 vendii lersti sätze be 077 heits: ge Ve (VB anfor h, so cyklu heini i der chlagi u der sverlän	UA6X/ D6X/ X102-3X/ ang für hydra ellererinbaua für die Pröfu 2002 "Gurmit- ui anforderunge nitif sit gem Gurnigen", valor dass auch ba a nicht mehr gung zu de <u>Namensän</u> cen Beslimmung on 1.10.:	EG24K4QM0G24 EG24K4QM6G24 CG24K4QM6G24 aulische Schließsicherun Ineitung mg der Arbeitssicherheil di Kunststoffmaschiner en" Bis § 1 Abs. 2b der Umfa Kapitel 5 der EN 2011: eingeleitet werden kann er Pröfinumer 01 024 ferung des Fachauss gen der Richtlinie 90/37/EG (M 2006	ngen in Spritzgießmaschinen t von Spritzgießmaschinen, s SPRITZGIEBMASCHINEN Werhöhungsvorschrift, Spritzgieß- 997, Spritzgießmaschinen- prizgießmaschinens exibettatig zu nsschalters ein erneuter n. vom 15. März 2001 chussese EM III/HZ in MHW/ laschinen) st- und Zertficierungsordnung vom Oktober wirdtin (bei ing Henner schrift (bei ing Henner Ter ein 211/1004 - Ter Wirdting vom

1/2005 - Bosch Rexroth Melbourne, Australia - 2005 Sales Conference Presentation

Assembly Technologies

Pneumatics

Mobile Service Automation Hvdraulics



Hydraulic Safety Interlock Manifold Systems

- Q3. Have your valves been assessed independently?
- Answer Yes, we have up to date independent certification from BG-Prufzert in Germany for our NG6, NG10, SL Check Valves, LFA...E-7X and LFA...QR10-6X/CA20 & 40D Logic Elements. These certificates are available and are in German. They are not available in English. BG Prufzert (testing and certification system) brings together the 19 test and certification bodies of Germany's statutory accident insurance and prevention institutions. A BG Prufzert Information Sheet is available detailing exactly what this organization does.
- 4WEH, LFA...EWA, EWB & EH2 are not certified by BG Prufzert
- The BG Prufzert mark awarded to certified products holds a higher accreditation that the self assessed CE Marking.

1/2005 - Bosch Rexroth Melbourne, Australia - 2005 Sales Conference Presentation © All rights reserved by Bosch Rexroth AG, even and especially in cases of proprietary rights applications. We also retain sole power of disposal, including all rights relating to copying, transmission and dissemination.

20

Linear Motion and Assembly Technologies

Pneumatics

Service Mobile Automation Hydraulics



Hydraulic Safety Interlock Manifold Systems

- Q4. What valve options are available, what do we stock.
- We stock valves in NG6 and NG10. Monitoring is available on NG16 up NG102 however these are not certified by BG Prufzert. For the larger flows we think using the logic elements is a better option. These are not in MR range.
- For the NG6 & NG10 valves we stock QMA option and QMB option.

Price List 170570 PH 07-1	a Prosta		SOLENOID + LIMIT SW. SIZE 6 & 10	Re	ch Group
			F	RESSU	RE: 315 bar
4WE6D	6x / E G24	TYPE G24			
TYPE	N9K4QMA	K4QMB			
ID NO	10730	10722			
PRICE \$	\$662.	\$662.			
		OPTIONS			
	DE	SCRIPTION	CODE	PRICE \$	ID
V 48 V D	C INPUT + CO	L	G48	\$44	A
0 110 V	DC INPUT + CO	HL	G110	\$44	В
24 V A	CRTO 24 V D	C COIL + LIGHT	W24RL	\$22	C
A 110 V	AC INPUT R TO	96 V DC COIL + LIG	HT W110RL	\$22	D
240 V	AC INPUT R TO	205 V DC COIL + LI	GHT W240RL	\$22	E
LIMIT	SWITCH PLUG	24V DC + 2 METRE (ABLE MODC	\$73	F
INDICA	TOR LIGHTS	N K4 PLUG	L	\$15	G
MTD T	O SUBPLATE	- 1/4 BSP	G341	\$83	H
MTD T	O SUBPLATE	- 3/8 BSP	G342	\$83	1
MTD T	O SUBPLATE	1/2 BSP	G502	\$119	J
4WE10	3×10 624	TYPE C24			
4 WYL TOI	JJX7 C 024	0/24			
TYPE	N9K4QMA	K4QMB			
ID NO	10987	10989			
PRICE \$	\$10.36.	340.36.			
1		OPTIONS	5		
	DE	SCRIPTION	CODE	PRICE \$	ID
48 V D	C INPUT + CO		G48	\$52	A
L 110 V	DC INPUT + CO)IL	G110	\$52	В
T 24 V A	CRT024VD	C COIL + LIGHT	W24RL	\$22	С
G 110 V	AC INPUT R TO	96 V DC COIL + LIG	HT W110RL	\$22	D
E 240 V	AC INPUT R TO	205 V DC COIL + LI	GHT W240RL	\$22	E
LIMIT	SWITCHPLUG	24V DC + 2 METRE (ABLE MODC	\$73	F
INDICA	TOR LIGHTS	N K4 PLUG	L	\$15	G
DATE T	O SUBPLATE	1/2 BSP	G67	161 44	H
WITCH	0 SODI LATE	12 001			

1/2005 - Bosch Rexroth Melbourne, Australia - 2005 Sales Conference Presentation

Electric Drives and Controls

Linear Motion and Assembly Technologies Service Automation Hydraulics

Pneumatics

Mobile



Hydraulic Safety Interlock Manifold Systems



QMB senses the spool when is has completely returned to the deenergized position.

QMA senses when the spool has moved from the fully energized position and is moving back to the rest position. The oil path is not blocked when the switch shows a change of state and is therefore in some applications maybe unsuitable or unsafe

1/2005 - Bosch Rexroth Melbourne, Australia - 2005 Sales Conference Presentation

Linear Motion and Assembly Technologies Service Mobile Automation Hydraulics



Hydraulic Safety Interlock Manifold Systems

Q5. Do you meet the Machinery Directive: 98/37/EC – EN292-1, EN292-2, EN982, EN954-1 and EN1050

Pneumatics

Answer – Yes as detailed on the certificate (next page) that can be supplied for system integrators using our valves and requiring documentation

Electric Drives and Controls

Linear Motion and Assembly Technologies Service Automation

Pneumatics



Hydraulic Safety Interlock Manifold Systems



Industrial Electric Drives Linear Motion and Hydraulics and Controls Assembly Technolog RDEF 00 025/10.01



normes/spécifications harmonisées

qu'il ait été constaté que la machine

conforme aux stipulations de la directive européenne

Sécurité des machines, terminologie

Sécurité des machines principes

techniques et spécifications

d'installations et composants

escriptions de sécurité

fluidigues Pneumatique

EN 60 204-1 (06 1993)

Sécurité des machines.

d'installations et composants

équipement électrique des machines

Prescriptions de sécurité

fluidiques Hydraulique

Norme harmonisée utilisée

EN 292 -1 (11.1991)

de base, méthodologie

EN 292 -2 (06. 1995)

EN 982 (09. 1996)

EN 983 (09. 1996)

utilisées

EG-Herstellererklärung / EC-Declaration by the manufacturer / Déclaration CEE du fabricant

Applied harmonised standards

Basic concepts, general principles for

Safety requirements on fluid power

Safety requirements on fluid power

installations and components

installations and components

electrical equipment of machines

EN 60 204-1 (06 1993)

Safety of machinery,

EN 292 -1 (11 1991)

EN 292 -2 (06.1995)

Safety of machines

EN 982 (09 1996)

EN 983 (09 1996)

design

Hydraulics

Pneumatics

im Sinne der EG-Maschinen-Richtlinie 98/37/EG. Anhang II Abschnitt B as defined by EC-machinery directive 98/37/EC, Annexe II Section B au sens de la directive machines de la CEE 98/37 CEE, Annexe II Section B

Der Hersteller erklärt, dass die gelieferten Bau- The manufacturer declares that the Le fabricant déclare que les telle/Baugruppen in Übereinstimmung mit den components/sub-assemblies delivered composants/sous-ensembles livrés ont angewendeten harmonisierten Normen/Spe have been manufactured in accordance été fabriqués conformément aux with the stated harmonized standards/ zifikationen hergestellt worden sind. Die Inbetriebnahme dieser Bauteile/Baugrup- specifications. pen ist solange untersagt, bis festgestellt wur- The components/sub-assemblies must La mise en service de ces composants/ de, dass die Maschine, in die diese Bauteile/ not be operated until the machine into sous-ensembles est Interdite jusqu'à ce Baugruppen eingebaut werden sollen, den Be- which these components/subassemblies are to be incorporated has dans laquelle ces composants/sousstimmungen der EG-Richtlinie entspricht. been declared in conformity with the ensembles doivent être intégrés est Angewendete harmonisierte Norm: provisions of the directive.

EN 292 -1 (11,1991) Sicherheit von Maschinen

Ersetzt / Replaces / Remplace: 11.00

Mobile

Hydraulics

EN 292 -2 (06.1995) Grundbegriffe, allgemeine Gestaltungsleitsätze

EN 982 (09.1996) Sicherheitstechnische Anforderungen an fluidtechnische Anlagen und Bauteile: Hydraulik

EN 983 (09.1996) Sicherheitstechnische Anforderungen an fluid-technische Anlagen und Bauteile; Pneumatik EN 60 204-1 (06 1003)

Sicherbeit von Maschinen: Elektrische Ausrüstung von Maschinen

Hersteller / Manufacturer / Fabricant. Bosch Revroth AG

Industrial Hydraulics

Postfach D - 97813 Lohr am Main

Bauteil / Baugruppe: Component / Sub-assembly: Component / Sub-assembly: Part Number Composant / Sous-groupes: Part Number

Seriennummer / Auftrags-Nr Serial number / Order Nbr: Numéro de série / Commande No: Serial Number of Valve Nameplate

Baujahr: Date of construction: Date de fabrication: 2003/2004

Stellung im Betrieb: Position:

Position: Appliacable Sales Eng Name

Signature (Datum, Unterschrift) (Date, Signature) (Date, Signature)

1/2005 - Bosch Rexroth Melbourne, Australia - 2005 Sales Conference Presentation

© All rights reserved by Bosch Rexroth AG, even and especially in cases of proprietary rights applications.

We also retain sole power of disposal, including all rights relating to copying, transmission and dissemination.

Electric Drives Linear and Controls Assen

Linear Motion and Assembly Technologies Service Mobile Automation Hydraulics



Hydraulic Safety Interlock Manifold Systems

Typical Circuits we use that meet the requirements. NG6 Cat 3 or 4 Block Only

Pneumatics



1/2005 - Bosch Rexroth Melbourne, Australia - 2005 Sales Conference Presentation

Electric Drives Linear and Controls Assem

Linear Motion and Assembly Technologies Service Mobile Automation Hydraulics



Hydraulic Safety Interlock Manifold Systems

Typical Circuits we use that meet the requirements. NG10 Cat 3 or 4 Block Only

Pneumatics



1/2005 - Bosch Rexroth Melbourne, Australia - 2005 Sales Conference Presentation

Electric Drives Linear and Controls Assem

Linear Motion and Assembly Technologies Service Mobile Automation Hydraulics



Hydraulic Safety Interlock Manifold Systems

Typical Circuits we use that meet the requirements. NG10 Cat 3 or 4 Block and Bleed

Pneumatics



1/2005 - Bosch Rexroth Melbourne, Australia - 2005 Sales Conference Presentation

Electric Drives Linear and Controls Assem

Linear Motion and Assembly Technologies Service Mobile Automation Hydraulics



Hydraulic Safety Interlock Manifold Systems

Typical Circuits we use that meet the requirements.
 Logic Element 3 or 4 Block and Bleed

Pneumatics



1/2005 - Bosch Rexroth Melbourne, Australia - 2005 Sales Conference Presentation

Electric Drives Linear and Controls Asser

Linear Motion and Assembly Technologies

Pneumatics

Service Mobile Automation Hydraulics



Hydraulic Safety Interlock Manifold Systems

Typical Circuits we use that meet the requirements.
 Logic Element with active piston 3 or 4 Block and Bleed



1/2005 - Bosch Rexroth Melbourne, Australia - 2005 Sales Conference Presentation



- 1. What is Dual Flow Path and why do we use it?
- 2. What is a Logic Element with Active Piston and why do we use it?



1/2005 - Bosch Rexroth Melbourne, Australia - 2005 Sales Conference Presentation

Electric Drives and Controls

Linear Motion and Assembly Technologies Service Mobile Automation Hydraulics



Hydraulic Safety Interlock Manifold Systems

What is Dual Flow Path and why do we use it?

Pneumatics

Dual flow path means that we connect the P & A ports together in the manifold and the B & T ports together in the manifold. How this helps us is to allow high flow rates through the DCV without causing unbalanced Bernoulli forces on the spool within the DCV. The data sheet states that single flow path through any DCV will result in significantly less flow capacity than specified on the tables. The data sheet only allows for "Dual Flow paths through the valve"



1/2005 - Bosch Rexroth Melbourne, Australia - 2005 Sales Conference Presentation

Electric Drives and Controls

Linear Motion and Assembly Technologies Service Mobile Automation Hydraulics



Hydraulic Safety Interlock Manifold Systems

What is Dual Flow Path and why do we use it?

Pneumatics

In the de-energized position the valve provides a safe blocked condition. When energized the flow is allowed to pass from P to B and from A to T. The maximum pressures need to be checked to ensure that the tank port pressure as specified by the data sheet is not exceeded. Otherwise this circuit works perfectly well. Using this circuit we can easily pass 60lpm (NG6) and 120lpm (NG10) at no more than 5 bar pressure drop through the valve.



1/2005 - Bosch Rexroth Melbourne, Australia - 2005 Sales Conference Presentation

Electric Drives and Controls

Linear Motion and Assembly Technologies Service Mobile Automation Hydraulics



Hydraulic Safety Interlock Manifold Systems

What is a Logic Element with Active Piston and why do we use it?

Pneumatics

Our logic element with active piston has advantages that can be used to overcome particular circuit problems.

The piston assembly mounted to the top of the logic element has an area much greater than any area on the actual poppet element of the assembly. This offers to distinct advantages



1/2005 - Bosch Rexroth Melbourne, Australia - 2005 Sales Conference Presentation

Electric Drives Linear M and Controls Assemb

Linear Motion and Assembly Technologies Service Mobile Automation Hydraulics



Hydraulic Safety Interlock Manifold Systems

What is a Logic Element with Active Piston and why do we use it?

Pneumatics

- Using the pressure from the inlet side (P port) of the manifold to drive the poppet shut in the deenergized safe position you can always be assured that the poppet will be driven home as the force generated always exceeds ant downstream pressures.
- 2. If the system requires the poppet to be driven open for response of flow rate reasons it can easily be done by connecting the Z1 port to the pilot DCV instead of to tank



^{1/2005 -} Bosch Rexroth Melbourne, Australia - 2005 Sales Conference Presentation