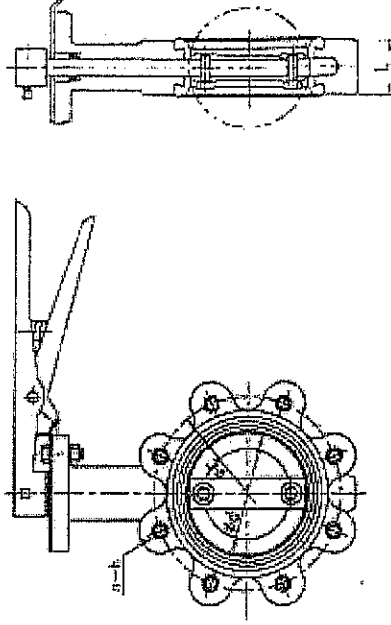


INSPECTION REPORT

(DIN EN 10204 / 3.1B)

Lurgi Contract No.	1.69666-01-GEM		
Project Title	Mega Methanol Plant, Zagros Petrochemical Co., Site Bandar Assaluyeh, Iran		
ITEM	BUTTERFLY VALVE		
MATERIAL	BODY : A536 65-45-12	DISC : B148-C954	SEAT : EPDM
ACCORDANCE	APPROVED DWG ☒ MAKER STANDARD ☐		
CLIENT	Lurgi Oel Gas Chemie GmbH		
VENDOR			
DATE	2003. 06. 02.		
DESCRIPTION	150LB 2"		
Q'TY	8 EA		



TAG NO.	VISUAL	DIMENSION CHECK UNIT (mm)					HYDRAULIC TEST		ASSEMBLY TEST WITH OPERATING	RESULT
		L	Ød	Øc	n-h		BODY	SEAT		
STANDARD (MSS-SP-55)		±1.5 41	±2.0 50	±1.5 120.7	- 4-5/8"		420 PSI	165 PSI		HOLDING TIME BODY : 15SEC SEAT : 15SEC
A201	ACCEPTED	40.5	50.5	121.0	"		GOOD	GOOD	ACCEPTED	GOOD
"	ACCEPTED	40.6	50.5	121.0	"		GOOD	GOOD	ACCEPTED	GOOD
"	ACCEPTED	40.6	50.5	121.0	"		GOOD	GOOD	ACCEPTED	GOOD
"	ACCEPTED	40.6	50.5	121.0	"		GOOD	GOOD	ACCEPTED	GOOD
"	ACCEPTED	40.5	50.5	121.0	"		GOOD	GOOD	ACCEPTED	GOOD
"	ACCEPTED	40.6	50.5	121.0	"		GOOD	GOOD	ACCEPTED	GOOD
"	ACCEPTED	40.6	50.5	121.0	"		GOOD	GOOD	ACCEPTED	GOOD
"	ACCEPTED	40.5	50.5	121.0	"		GOOD	GOOD	ACCEPTED	GOOD
					***	BLANK				

REMARK	
WITNESS BY	ENG'R IN CHARGE

TAG NO.	VISUAL	DIMENSION CHECK UNIT (mm)					
		L	Ød	ØC	n-h		
STANDARD	(MSS-SP-55)	±3.3	±2.0	±1.5	-		
		64	145	241.3	8- $\frac{3}{4}$ "		
A201	ACCEPTED	64.5	145.5	242.0	"		
"	ACCEPTED	64.3	145.5	242.0	"		
"	ACCEPTED	64.5	145.5	242.0	"		
"	ACCEPTED	64.3	145.5	242.0	"		
					***	BLANK	***
REMARK							

WITNESS BY	ENG'R IN CHARGE <i>Dale GJB</i>
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ALL INFORMATION CONTAINED HEREIN IS UNCLASSIFIED EXCEPT WHERE SHOWN OTHERWISE

155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1041 1042 1043 1044 1045 1046 1047 1048 1049 1050 1051 1052 1053 1054 1055 1056 1057 1058 1059 1060 1061 1062 1063 1064 1065 1066 1067 1068 1069 1070 1071 1072 1073 1074 1075 1076 1077 1078 1079 1080 1081 1082 1083 1084 1085 1086 1087 1088 1089 1090 1091 1092 1093 1094 1095 1096 1097 1098 1099 1100 1101 1102 1103 1104 1105 1106 1107 1108 1109 1110 1111 1112 1113 1114 1115 1116 1117 1118 1119 1120 1121 1122 1123 1124 1125 1126 1127 1128 1129 1130 1131 1132 1133 1134 1135 1136 1137 1138 1139 1140 1141 1142

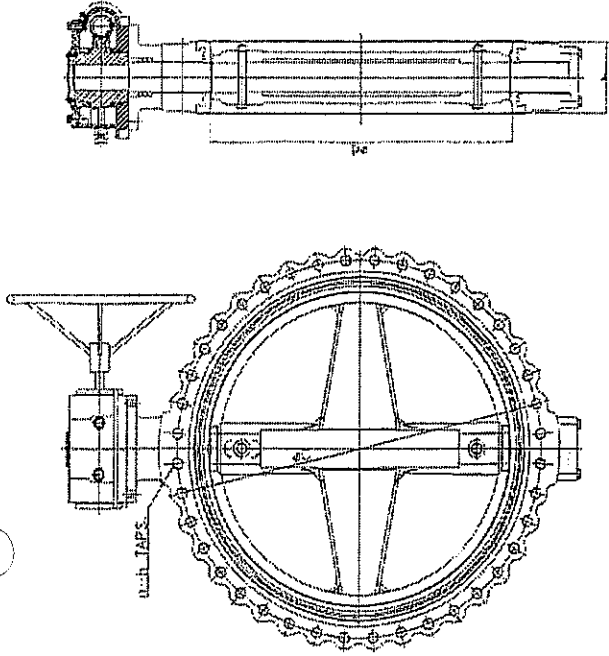
INSPECTION REPORT

(DIN EN 10204 / 3.1B)

Lurgi Contract No.	1.69666-01-GEM		
Project Title	Mega Methanol Plant, Zagros Petrochemical Co., Site Bandar Assaluyeh, Iran		
ITEM	BUTTERFLY VALVE		
MATERIAL	BODY : A536 65-45-12	DISC : B148-C954	SEAT : EPDM
ACCORDANCE	APPROVED DWG ☒ MAKER STANDARD ☐		
CLIENT	Lurgi Oel Gas Chemie GmbH		
VENDOR			
DATE	2003. 06. 02.		
DESCRIPTION	150LB 28"		
Q'TY	4 EA		

TAG NO.	VISUAL	DIMENSION CHECK UNIT (mm)				
		L	Ød	ØC	n-h	
STANDARD (MSS-SP-55)		±3.3 170	±2.0 685	±1.5 795.3	- 40-3/4"	
A201G	ACCEPTED	168.5	685.5	796.0	"	
"	ACCEPTED	168.3	685.5	796.0	"	
"	ACCEPTED	168.4	685.5	796.0	"	
"	ACCEPTED	168.4	685.5	796.0	"	
					***	BLANK ***

REMARK	
WITNESS BY	ENG'R IN CHARGE



HYDRAULIC TEST		ASSEMBLY TEST WITH OPERATING	RESULT
BODY	SEAT		
420 PSI	165 PSI		HOLDING TIME BODY : 300SEC SEAT : 120SEC
GOOD	GOOD	ACCEPTED	GOOD
GOOD	GOOD	ACCEPTED	GOOD
GOOD	GOOD	ACCEPTED	GOOD
GOOD	GOOD	ACCEPTED	GOOD

WON IL FOUNDRY CO., LTD

(CERTIFICATE DIN EN 10204 / 2.2)

HEAD OFFICE & FACTORY : 33-5, HAKYANG-DONG, SA SANG-KU,
PUSAN. KOREA. TEL: (051) 322-8251 FAX: (051) 314-6803

Chemical Analysis and Mechanical Test Certificate of Materials for the Body

PART NAME : B.FLY V/V BODY
Materials : A536 GR 65-45-12
Reported to : KLAUS UNION

P.O No. : 1.69666-01-GEM
Report No. : W0305-016
Date : 2003.05.16.

Description		Chemical Composition(%)							Remarks
Heats No.	Weight	C	Si	Mn	P	S	Mg		
		-	-	-	-	-	-		
A201G		3.56	2.63	0.22	0.031	0.003	0.041		
A201		3.68	2.69	0.21	0.038	0.002	0.043		
		B L A N K							

Item of Test Heats No.	SIZE (mm) DIAMETER	Tension Test				Bend Test	Hardness Test H _B H _R H _S	Impact Test C.I U.V kgm	Remarks
		Y.S	T.S	E.L	R/A				
		MPa	MPa	%	%				
		MIN 310	MIN 448	MIN 12					
A201G		333	479	16.8		-	-		
A201		339	492	17.3					
		B L A N K							

Heats No.	Item Name	Q'TY	Remarks
A201G	28"	4 EA	
A201	2" / 6"	8 EA / 4 EA	

Remarks :

This is certify that the article have been manufactured and test accordance with the requirements buyers.

Quality Control Department

Witnessed :

Manager

Reviewed by :

S. Y. Kang

DAE HAN NONFERROUS.

4180-11, DAE JE-2DONG, KANG SE-KU, PUSAN, KOREA.

TEL : (051) 973-6913 FAX : (051) 973-7381

REPORT OF CHEMICAL & MATERIAL TEST

NAME OF ARTICLE(품명) : BUTTERFLY V/V DISC

PO NO.(공사번호) : 1.69666-01-GEM

MATERIAL (재질) : ASTM B148 C95400

REPORT NO.(보고서번호) : DH0305-19-019

CUSTOMER (발주처) : KLAUS UNION

DATE (날짜) : 2003. 05. 19.

Element원소		CHEMICAL COMPOSITION 화학성분 (%)								REMARK 비 고
Spec.(규격)		Cu	Al	Fe	Mn	Ni+CO				
CHARGE No.	MIN.	83.0-	10.0	3.0-						
	MAX.		11.5	5.0	0.50	1.5				
K3CE		83.73	10.64	4.55	0.29	0.69				
DS7		83.78	10.66	4.53	0.24	0.70				
D		83.76	10.65	4.52	0.30	0.68				

PROPERTY 특 성		TENSILE TEST (인 장 시 험)							BEND TEST	HARDNESS	IMPACT	REMARK 비 고
SPEC. 규 격		SIZE OF TEST PIECE 시험편 치수			Y . S (MPa) 내 력	T . S (MPa) 인장강도	E . L (%) 연신율	R/A (%) 단면 수축율	굴곡시험 90 ° 120 ° 120 °	TEST 경도시험 HB*	충격시험 C . I U . V kg-m	
CHARGE NO.	MIN.	DIA(mm) 직 경	GL(mm) 표점거리	S.A(mm ²) 단면적								
	MAX.											
K3CE		12.6	50	126.7	310	620	6.0			190 ^{as}		
DS7					348	700	16.8			193		
D					348	702	16.9			194		
					348	702	16.9			195		

REMARKS 비고 : ※ HARDNESS IS INFORMATION ONLY.

* K3CE : 28" DISC 4EA

* DS7 : 6" DISC 4EA

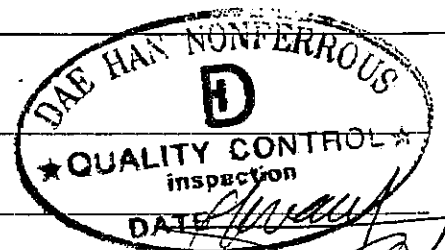
* D : 2" DISC 8EA

TEST LABORATORY

TESTED BY

CHIEF ENGINEER

WITNESSED BY



대한비철공업(주)

Inspection Certificate



P.O. BOX 25, Changwon, Korea
 Telefax : 055-288-8807

CHANGWON SPECIALTY STEEL

Customer : KLAUS UNION

Order No. : P15-06513 (SRR2238FA)

Specification : ASTM-A276-98B

Steel Grade : T-316

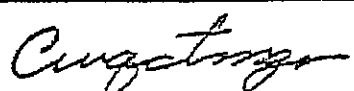
Article : ROUND BAR

Cert No. : 10720-17-20792

Melting Process : E.A.F + V.O.D.

Surface Condition : SMOOTH TURNED

Heat Treatment : SOLUTION TREATED

Bundle No.	Lot No.	Dimensions		Quantity	Mass		Test No.					
		Size	Length		kg	lb						
17-20792	1506513000	14 MM	6.20-6.25M	50	2550	5635	5125-1					
			TOTAL	50	2550	5635						
Heat No.		Chemical Composition (%)										
		C	Si	Mn	P	S	Ni	Cr	Mo	N		
Spec.	min.						10.00	16.00	2.00			
	max.	.080	1.00	2.00	.045	.030	14.00	18.00	3.00	.1000		
S86905		.039	.52	1.33	.025	.018	12.27	16.46	2.14	.0093		
Test No.		Mechanical Properties										
		Yield Strength KSI	Tensile Strength KSI	Elongation %	Reduction of Area %	Hardness Test		Impact Test	Decarburization Test mm	Grain Size Test		
						Body HB	Lab-					
Spec.	min.	30	75	40.0	50.0							
	max.											
5125-1		36	82	56.0	72.0	146						
		Non-Metallic Inclusions Test										
		KS / JIS (%)		A S T M								
		A		TYPE	A	B	C	D				
		B+C		THIN								
		A+B+C		HEAVY								
Hardenability Test (HRC)		Distance()										
		No. 1										
		No. 2										
		Distance()										
		No. 1										
		No. 2										
Additional Remarks :												
ITEM: 2"												
We hereby certify, that the material described above has been tested and complies with the terms of the order contract.												
 _____ Quality Control Team Manager												
JUL 20 '02 Date												

Inspection Certificate



P.O. BOX 25, Changwon, Korea
 Telex: 055-289-8907

CHANGWON SPECIALTY STEEL

Customer : KLAUS UNION
 Order No. : S87-06513 (SRR2238FA)
 Specification : ASTM-A276-98B
 Steel Grade : T-316
 Article : ROUND BAR

Cert No. : 20709-74-24281
 Melting Process : E.A.F + V.O.D.
 Surface Condition : SMOOTH TURNED
 Heat Treatment : SOLUTION TREATED

Bundle No.	Lot No.	Dimensions		Quantity	Mass		Test No.
		Size	Length		kg	lb	
74-24281	6F05694000	19.050 MM	12-14FT	105	965	2127	6940-1
			TOTAL	105	965	2127	

Heat No.		Chemical Composition (%)									
		C	Si	Mn	P	S	Ni	Cr	Mo	N	
Spec.	min.						10.00	16.00	2.00		
	max.	.080	1.00	2.00	.045	.030	14.00	18.00	3.00	.1000	
P71114		.050	.40	1.60	.023	.025	10.16	16.29	2.07	.0317	

Test No.		Mechanical Properties								
		Yield Strength KSI	Tensile Strength KSI	Elongation %	Reduction of Area %	Hardness Test		Impact Test	Decarburization Test mm	Grain Size Test
						Body HB	Lab-			
Spec.	min.	30	75	40.0	50.0					
	max.									
6940-1		35	83	58.0	75.0	145				

		Non-Metallic Inclusions Test						
		KS / JIS (%)		A S T M				
		A		TYPE	A	B	C	D
		B+C		THIN				
		A+B+C		HEAVY				

Hardenability Test (HRC)	Distance()								
	No. 1								
	No. 2								
	Distance()								
	No. 1								
	No. 2								

Additional Remarks :

ITEM : 6"

We hereby certify, that the material described above has been tested and complies with the terms of the order contract.

JUL 09 '02
 Date

Quality Control Team Manager



CHANGWON SPECIALTY STEEL

Customer : KLAUS UNION

Order No. : S14-00154 (SRR2B38AA)

Specification : ASTM A275-98B

Steel Grade : T 316

Article : ROUND BAR

Cert No. : 10414-13-25069-3H

Melting Process : E.A.F + V.O.D.

Surface Condition : CENTERLESS GROUND

Heat Treatment : SOLUTION TREATED

Bundle No.	Lot No.	Dimensions		Quantity	Mass		Test No.
		Size	Length		kg	lb	
13-25069	1101052000	65 MM	4.80-5.20M	4	540	1190	0520-1
			TOTAL	4	540	1190	

Heat No.		Chemical Composition (%)									
		C	Si	Mn	P	S	Ni	Cr	Mo	N	
Spec.	min.						10.00	16.00	2.000		
	max.	.080	1.00	2.00	.0450	.0300	14.00	18.00	3.000	.1000	
S82708		.040	.49	1.41	.0312	.0248	10.02	16.20	2.054	.0128	

		Mechanical Properties									
Test No.		Yield Strength	Tensile Strength	Elongation	Reduction of Area	Hardness Test		Impact Test		Decarburization Test mm	Grain Size Test
		KSI	KSI	%	%	Body HB	Lab-				
Spec.	min.	10	75	40.0	50.0						
	max.										
0520-1		33	83	59.0	72.0	146					

		Non-Metallic Inclusions Test							
		KS / JIS (%)		A S T M					
		A		TYPE	A	B	C	D	
		B+C		THIN					
		A+B+C		HEAVY					

Hardenability Test (HRC)	Distance ()								
	No. 1								
	No. 2								
	Distance ()								
	No. 1								
	No. 2								

Additional Remarks :

ITEM : 28"

We hereby certify, that the material described above has been tested and complies with the terms of the order contract.

APR. 14, 02
Date

Quality Control Team Manager

CERTIFICATE OF THE SEAT MATERIAL

(CERTIFICATE : DIN EN 10204 / 2.2)

REPORT NO. : YSSR-030428-05

COMMODITY : RUBBER SEAT

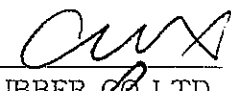
MATERIALS : EPDM

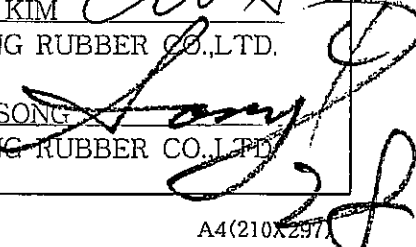
DATE : 2003. 04. 28.

REPORT TO : KLAUS UNION ARMATUREN INTERNATIONAL.

TEST ITEM		SPEC	UNIT	TEST RESULT	TEST RULE
TENSION STRENGTH		50-200	kgf/cm ² (Min)	176	KSM 6613
ELONGATION		100-500	% (Min)	320	
TENSIL		5	% (Max)	4	
HARDNESS		65	Hs (Min)	69	
COMPESSION		7	% (Max)	3	
F A T I G U E T E S T	E.S.B CHANGE	±5	% (Max)	-2	
	E.B CHANGE	4	% (Max)	2.3	
	SPRING HARDNESS TEST	5	Hs (Max)	2	
OZON TEST				None	
			- BLANK -		

WITNESS BY :

TESTED BY : C. W. KIM 
YUSUNG RUBBER CO.,LTD.

APPROVED BY : S. H. SONG 
YUSUNG RUBBER CO.,LTD.