

PRODUCT GUIDE 2013

FULLY INTEGRATED SOLUTIONS

HOSES

CONNECTORS

ASSEMBLING MACHINES



www.manuli-hydraulics.com

manuli[®]
HYDRAULICS

PRODUCT GUIDE 2013

FULLY INTEGRATED SOLUTIONS

INTRODUCTION TO MANULI HYDRAULICS

Manuli Hydraulics (established in 1973), part of the Manuli Rubber Industries Group, is active in the design, manufacture and sale of a wide range of hoses, connectors and machines for conveying power in high/very high pressure hydraulic circuits and fluids in refrigeration units.

Manuli Hydraulics offers a complete integrated package of hydraulic hoses and fittings, designed to ensure robust fluid connector solutions for modern hydraulic applications and long lasting performance. From design to delivery, the successful integration of hoses and fittings is essential to producing quality assemblies.

With extensive R&D investment and the expertise of our Application Engineers we can provide both bespoke solutions for OEM applications and distribution products. Our hose range encompasses and exceeds the requirements of ISO, SAE and EN specifications. End terminations include BSP, JIC, DIN, SAE and JIS.

MAIN APPLICATIONS

- Hydraulic systems for industrial machinery
- Hydraulic systems for off-highway vehicles
- Hydraulic systems for open pit and underground mining equipment
- Mobile refrigeration systems and air conditioning systems for off-highway vehicles
- Rotary systems for drilling platforms

PRODUCT OFFER

- Assembling machines
- Hose assemblies and hose kits for mobile refrigeration
- Hose assemblies for high and very high pressure applications in general hydraulics
- Hose assemblies for water cleaning & water blasting applications
- Hose fittings
- Hose protection
- Other fluid connectors
- Quick couplings
- Rotary hose assemblies for drilling rigs
- Staple-lock adaptors and fittings
- Textile braid reinforced rubber hoses
- Wire spiral reinforced rubber hoses
- Wire braid reinforced rubber hoses

Manuli Hydraulics completes its product offer with hose systems for:

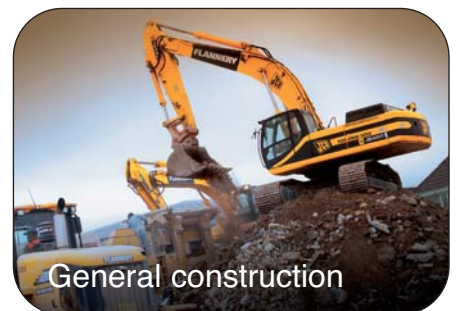
- Off shore oil rigs
- Buoys
- Pipeline terminals
- Ship to shore



Open pit mine



Underground mining



General construction



Oil & gas



Agriculture



Refrigeration

QUALITY

Quality is the driving force for all Group activities.

Manuli Hydraulics, as part of the Manuli Rubber Industries Corporation, was the first European hydraulic components manufacturer to achieve the ISO 9001 certification, in 1992. All manufacturing plants are currently ISO 9001 certified. The Chinese and Italian plants achieved also the API Q1 quality approval.

Manuli Hydraulics' products meet and exceed the highest industry standards, proved by the achievement of many technical approvals issued by third parties and accreditation bodies.

International Technical Approvals

ABS (American Bureau of Shipping), BV (Bureau Veritas), BWB (Germany Army), DNV (Det Norske Veritas), GL (Germanischer Lloyd), INDIA Mod (Ministry of Defence – India), KRS (Korean Register of Shipping), LR (Lloyd's Register of Shipping), MADI-CERT (GOST-R accred.– Russian Fed. & CIS) MED (Marine Equipment Directive), RINA (Italian Bureau of Shipping)

Mining Approvals

FRAS (Fire Resistant and Anti-Static Australian Dept. Mineral Resource), HBL (French mines), LOBA (German Mines), MAKNI (S.M.R.I. Work Safety in Mining Industry – Ukraine), MSHA (Mine Safety and Health Administration – USA), Polish B Safety certification, MA (Chinese Mining Approval)

Oil & Gas Approvals

API (American Petroleum Institute) Monogram License 7K

ENVIRONMENTAL POLICY

The environment is integral to Manuli Hydraulics' mission of providing safe, reliable and efficient solutions for sustainable fluid power. In compliance with ISO 14001 regulation, the Group pursues the goal to develop the offer through the engineering of products and operational methods with low impact on the environment and people's health in their everyday life.



From a manufacturing point of view, the Environmental policy extended and renewed ISO 14001 Certificates for plants in China, Czech Republic, India, Italy, Poland, South Korea and the UK.

ECO-FRIENDLY PRODUCTS

- Wire spiral reinforced hose range for biological and mineral oils compatibility
- Tractor hose range updated with new Chlorine free Fire resistant cover compound for underground Mines
- Ultrastar hose range with HFO1234y, the refrigerant gas designed to reduce the climate impact of air conditioning
- Cr3+ zinc plating treatment

HEALTH & SAFETY POLICY

With a strong commitment to safeguarding the health and safety of its employees. Manuli Hydraulics was the first company in the hydraulic sector to achieve the OHSAS certificate in 2005. The Group has progressively introduced the achievement of this Certificate to its manufacturing plants.



INNOVATION

Manuli Hydraulics' R&D activities are based at the Innovation Centre in Bologna (Italy) which also oversees the R&D centres in France, Poland, China and India.

All research centres are equipped with advanced facilities. Main laboratories feature special rooms that allow researchers to simulate the most extreme environmental conditions: heat, cold, fog, saline environments, vibrations and many others.

Manuli Hydraulics employs a team of highly skilled international engineers to offer integrated solutions to Manuli customers in terms of quality, product range and cost saving.

Furthermore, the Innovation Centre works closely in confidential alliances with Original Equipment Manufacturer customers, to design and develop bespoke product solutions.

This technological cooperation with OEMs helps our engineers to better understand the ever more demanding requirements of fluid conveying applications, enhancing our capability and expertise in providing complete fluid connector solutions.



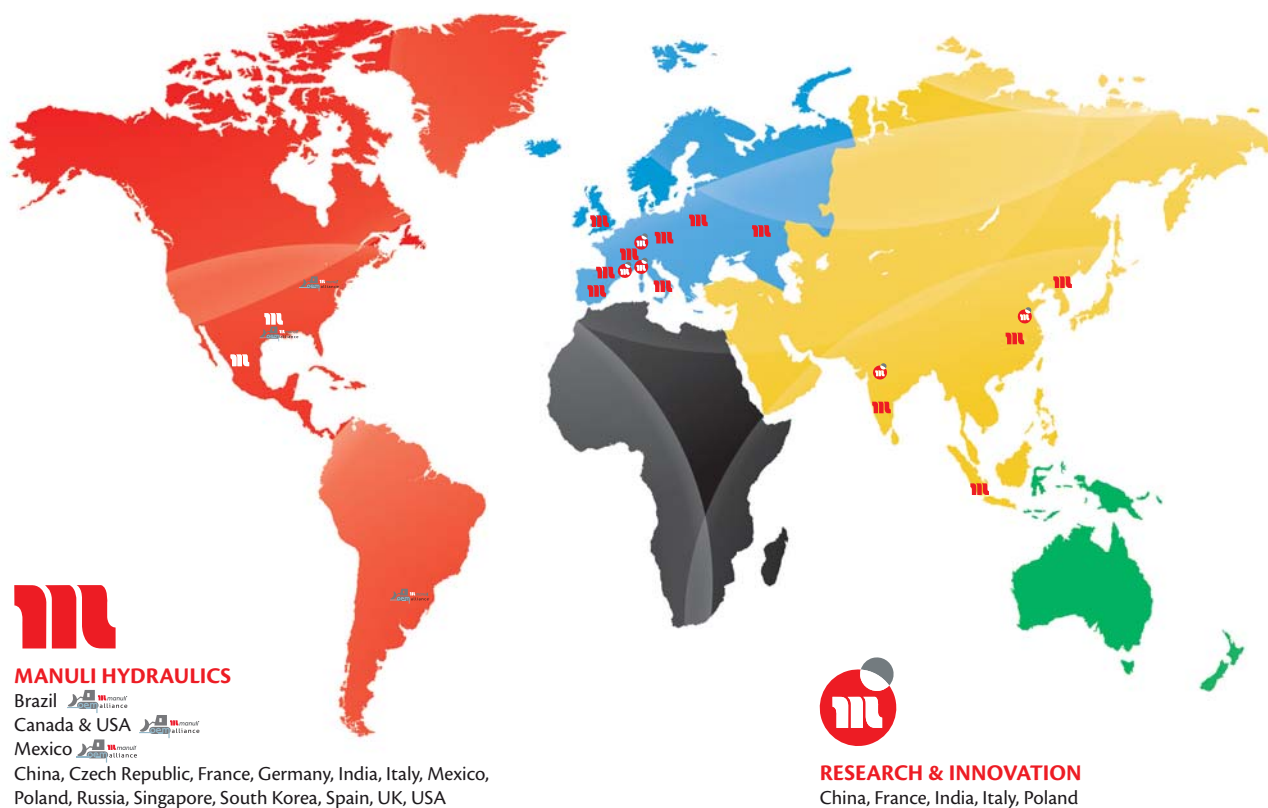
INNOVATION CENTRE - Italy
"Excellence is attainable with the utmost passion"

A GLOBAL SERVICE NETWORK

Manuli Hydraulics provides technical competence and commercial support, always guaranteeing worldwide availability of its products and services.

The sales & service network is organised as follows:

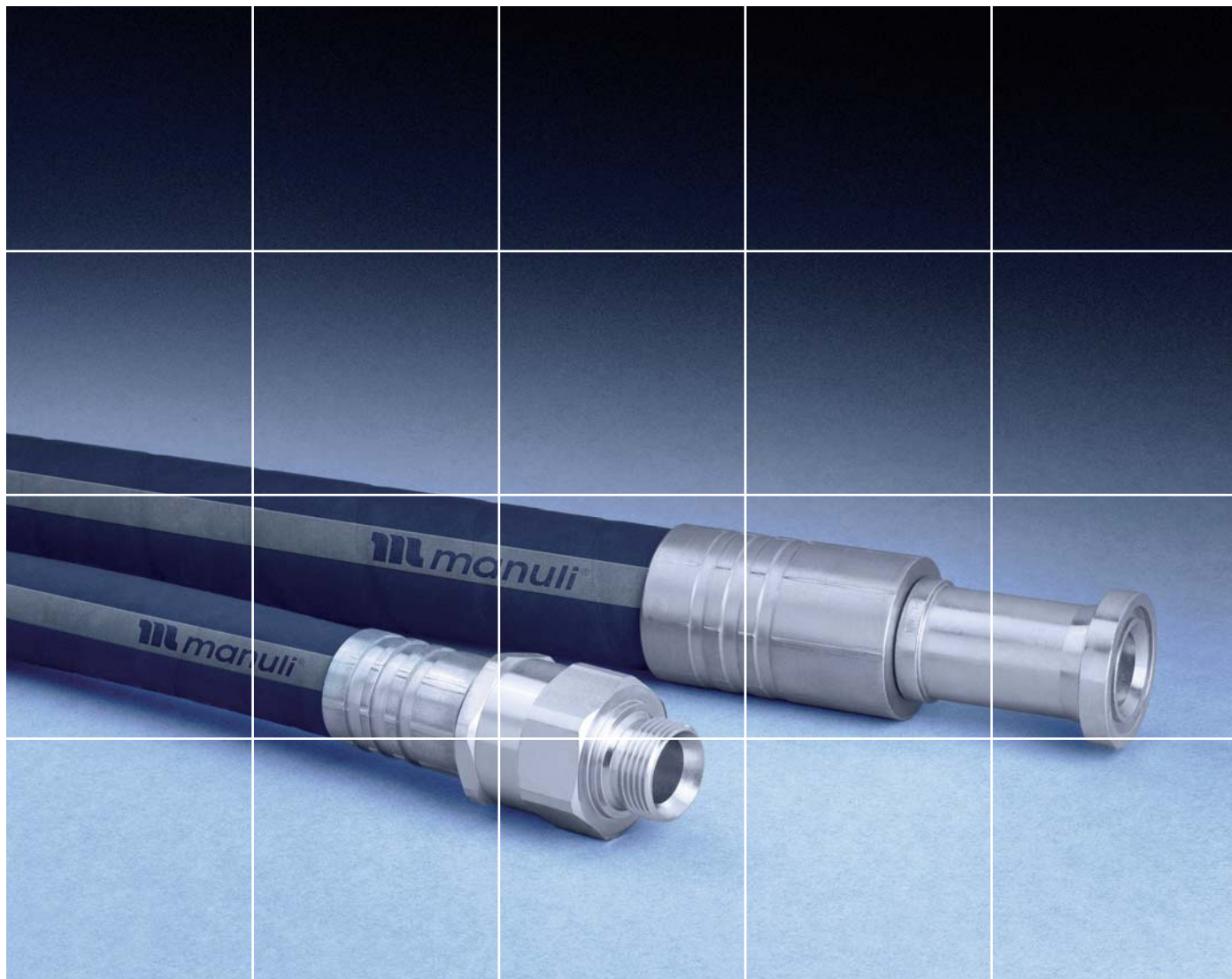
- WHOLESALE FACILITIES in Western & Eastern Europe, Americas, Asia and Oceania;
- Fully owned OEM ASSEMBLING FACILITIES in Europe and East Asia;
- OEM ALLIANCE PARTNER FACILITIES with established providers in strategical markets
- DISTRIBUTOR NETWORK with a widespread presence all over the world



The network is integrated by services delivered through the private area of www.manuli-hydraulics.com.
The online platform offers:

- technical products database and related approvals
- fluid compatibility and a wide offer of e-technical online tools
- on-line store
- order tracking and management
- e-learning platform

HOSES



The Hydraulic hose range is specifically designed for hydraulic systems and equipment in many different sectors, such as construction machines, mining, industrial processes, agriculture, road construction equipment, drilling, forestry machines, material handling and lifting, road transportation, marine and off-shore, and many others.

UNIVERSAL

The Manuli Hydraulics UNIVERSAL hose range meets the ISO, EN, SAE, International Norms while the EXTREME hose range is designed to meet special performance and requirements in the OEM market, often in severe applications.

EXTREME

The EXTREME hose families follow **TRADITIONAL** norms and are designed to guarantee superior performance such as abrasion, weather, ozone resistance and many others. The EXTREME hose range includes also advanced solutions to match performance from the light weight (PILOT) to the high flow rates (XTRAFLOW) (see “key performance” column in the next page).

ISOBARIC hoses offer a user friendly method of hose selection thanks to the constant pressure levels at any size.

APPLICATION ORIENTED

The hose range is completed with the group of **APPLICATION ORIENTED** products which are designed for specific applications.

MANULI HYDRAULICS HOSE RANGE

RANGE	HOSE	HOSE STRUCTURE	MANULI® DESIGN EXCEEDS NORM	KEY PERFORMANCE
UNIVERSAL	GOLDENSPIR®/4SP	Wire spiral	ISO 3862-4SP, EN 856-4SP	Integrated reliable hose assembly
	GOLDENSPIR®/4SH	Wire spiral	ISO 3862-4SH, EN 856-4SH	Integrated reliable hose assembly
	TRACTOR®/1SN	Wire braided	ISO 1436-1SN, EN 853-1SN, SAE J517-100R1AT	Integrated reliable hose assembly
	TRACTOR®/2SN	Wire braided	ISO 1436-2SN, EN 853-2SN, SAE J517-100R2AT	Integrated reliable hose assembly
	TRACTOR®/1SC	Wire braided	ISO 11237-1SC, EN 857-1SC	Integrated reliable hose assembly
	TRACTOR®/2SC	Wire braided	ISO 11237-2SC, EN 857-2SC, SAE J157-100R16	Integrated reliable hose assembly
	HARVESTER®/17	Wire braided	SAE J517-100R17, ISO 11237-R17	Integrated reliable hose assembly
	GOLDENISO/14	Wire braided	ISO 18752/A	Compactness & flexibility
	LYTE-FLEX®	Wire braided	Manuli design	Compact wire braid, integrated reliable hose assembly
	COVER	Wire braided	SAE J517-100 R5	Integrated reliable hose assembly
	SPIRTEX/K	Textile, Helix wire	SAE J517-100 R4	Integrated reliable hose assembly
	MULTITEX	Textile	SAE J517-100 R6, ISO 4079, EN 854-R6/1TE	Integrated reliable hose assembly
	ASTRO/2	Textile	ISO 4079-2TE, EN 854-2TE	Integrated reliable hose assembly
	ASTRO/3	Textile	ISO 4079-3TE, EN 854-3TE	Integrated reliable hose assembly
	HYDROPLAST/ HYDROTWIN	Thermoplastic, Textile	ISO 3949-R7, EN 855-R7, SAE J517-100R7	Integrated reliable hose assembly

RANGE		HOSE	HOSE STRUCTURE	MANULI® DESIGN EXCEEDS NORM	KEY PERFORMANCE
EXTREME	TRADITIONAL	✓ ROCKMASTER/1SN	Wire braided	EN 853, ISO 1436-1SN, SAE J517-100R1AT	Abrasion, weather and heat resistance
		✓ ROCKMASTER/2SN	Wire braided	EN 853, ISO 1436-2SN, SAE J517-100R2AT	Abrasion, weather and heat resistance
		✓ ROCKMASTER/2ST	Wire braided	EN 853, ISO 1436-2ST, SAE J517-100R2AT	Abrasion, weather and heat resistance
		✓ ROCKMASTER/2 PLUS	Wire braided	EN 853, ISO 1436-2SN, SAE J517-100R2AT, perf. BCS174, ISO 6805-4	Abrasion, weather and heat resistance
		✓ ROCKMASTER/1SC	Wire braided	EN 857, ISO 11237-1SC	Abrasion, weather and heat resistance
		✓ ROCKMASTER/2SC	Wire braided	EN 857, ISO 11237-2SC, SAE J517-100R16S	Abrasion, weather and heat resistance
		✓ ROCKMASTER/4SP	Wire spiral	EN 856, ISO 3862-4SP	Abrasion, weather and heat resistance
		✓ ROCKMASTER/4SH	Wire spiral	EN 856, ISO 3862-4SH	Abrasion, weather and heat resistance
		✓ ROCKMASTER/12	Wire spiral	EN 856, ISO 3862-R12, SAE J517-100R12	Abrasion, weather and heat resistance
		✓ ROCKMASTER/13	Wire spiral	EN 856, ISO 3862-R13, SAE J517-100R13	Abrasion, weather and heat resistance
		✓ ROCKMASTER/15	Wire spiral	ISO 3862-R15, SAE J517-100R15	Abrasion, weather and heat resistance
		EQUATOR/1 (Blue & Black)	Wire braided	EN 853, ISO 1436-1SN, SAE J517-100R1AT	Extreme temperature
		EQUATOR/2 (Blue & Black)	Wire braided	EN 853, ISO 1436-2SN, SAE J517-100R2AT	Extreme temperature
		PILOT	Wire braided	-	Extreme Lightness
		NOZONE/2K	NOZONE/2K	EN 857, ISO 11237-2SC	Outstanding ozone resistance
		✓ ETERNITY/2	Wire braided	EN 857, ISO 11237-2SC, SAE J517-100R16	High service life and reliability
		✓ DIAMONDSPIR	Wire spiral	ISO 3862-R15, SAE J517-100R15	Very high pressure
		✓ SHIELDMASTER/2 PLUS MINE	Wire braided	EN 853, ISO 1436-2SN, SAE J517-100R2AT, perf. BCS174, ISO 6805-4	Outstanding abrasion resistance, MSHA approved
		PUSH FIT	Textile	SAE J30 R6	Push-on hose
		✓ XTRAFLOW/2WB	Wire braided	ISO 11237-2SC, EN 857-2SC extension	High flow rates, low pressure drops
		✓ XTRAFLOW/4WS	Wire spiral	ISO 3862 and SAE J517 extension	High flow rates, outstanding abrasion resistance
		✓ XTRAFLOW/HT	Wire braided	Special Manuli design	High temperature suction & return lines

✓ Recommended for open pit and underground mining.

MANULI HYDRAULICS HOSE RANGE

RANGE		HOSE	HOSE STRUCTURE	MANULI® DESIGN EXCEEDS NORM	KEY PERFORMANCE
EXTREME	ISOBARIC	✓ GOLDEN ISO/21 AntiWear	Wire braided	ISO 18752-A, ISO 11237-R17, SAE J517-100R17	Outstanding abrasion resistance
		✓ GOLDEN ISO/28 AntiWear	Wire braided	ISO 18752-A, ISO 11237-R19, SAE J517-100R19	Outstanding abrasion resistance
		✓ GOLDEN ISO/21 Xtraflex	Wire spiral	ISO 18752-C/D; JIS K6349-3	Compactness & flexibility
		✓ GOLDEN ISO/28 Xtraflex	Wire spiral	ISO 18752-C/D; JIS K6349-3	Compactness & flexibility
		✓ GOLDEN ISO/35 Xtraflex	Wire spiral	ISO 18752-C/D; JIS K6349-3	Compactness & flexibility
		✓ GOLDEN ISO/42 Xtraflex	Wire spiral	ISO 18752-C/D	Compactness & flexibility
		✓ GOLDEN ISO/35 Longlife	Wire braided	ISO 18752-C/D	High fatigue resistance
		✓ GOLDEN ISO/38 Longlife	Wire spiral	SAE J517-100R13, ISO 3862-R13, ISO 18752-D extension	High fatigue resistance
		✓ GOLDEN ISO/45 Longlife	Wire spiral	ISO 18752-D extension, ISO 3862-R15, SAE J517-100R15	High fatigue resistance
		SHIELDMASTER/2000	Wire braided	Manuli design: Isobaric line, special multilayer cover	Outstanding abrasion resistance
		SHIELDMASTER/4000	Wire braided and spiral	Manuli design: Isobaric line, special multilayer cover	Outstanding abrasion resistance
		SHIELDMASTER/5000	Wire braided and spiral	Manuli design: Isobaric line, special multilayer cover	Outstanding abrasion resistance
		SHIELDMASTER/6000	Wire braided and spiral	Manuli design: Isobaric line, special multilayer cover	Outstanding abrasion resistance
		✓ SHIELDMASTER/5000 MINE	Wire braided and spiral	Isobaric line, perfor. BCS174, ISO 6805	Outstanding abrasion resistance, MSHA approved
		✓ SHIELDMASTER/6000 MINE	Wire spiral	ISO 3862-R15, SAE J517-100R15, perfor. BCS174, ISO 6805-6	Outstanding abrasion resistance, MSHA approved
		✓ DIAMONDSPIR/14	Wire spiral	ISO 18752-C extension	Very high flow rates, outstanding abrasion resistance
		✓ DIAMONDSPIR/21	Wire spiral	ISO 18752-C extension	Very high hydraulic power transmission
		✓ DIAMONDSPIR/35	Wire spiral	ISO 18752-C extension	Very high hydraulic power transmission
		GOLDENGUARD/3000	Wire spiral	API 16D fire test	Fire resistance & BOP
		GOLDENGUARD/5000	Wire spiral	API 16D fire test	Fire resistance & BOP
		MASTERTEX	Textile braid	ISO 4079 2 EN 854 - R6/1TE, SAE 100 R6	Low pressure high temperature hose

APPLICATION ORIENTED SOLUTIONS	TWINPOWER/4000	Wire braided	ISO 11237-2SC, EN 857-2SC, SAE J517-100R16	Easy installations for OEMs
	TWINPOWER/5000	Wire braided	Exceed ISO 11237-2SC, EN 857-2SC, SAE J517-100R16	Easy installations for OEMs
	TWINPOWER/PLUS	Wire braided	Exceed ISO 11237-2SC, EN 857-2SC, SAE J517-100R16	Easy installations for OEMs
	T°REX	Wire braided	Manuli design	Extreme temperature
	JACKMASTER	Wire braided	IJ-100	Extreme static pressure
	FIREND	Wire braided	EN 853, ISO 1436-1SN, SAE J517-100R1AT EN 853, ISO 1436-1SN,	Fire suppression systems
	CPH/25C	Wire braided		Cable protection hose

✓ Recommended for open pit and underground mining.

HOSES BY WORKING PRESSURE (psi)

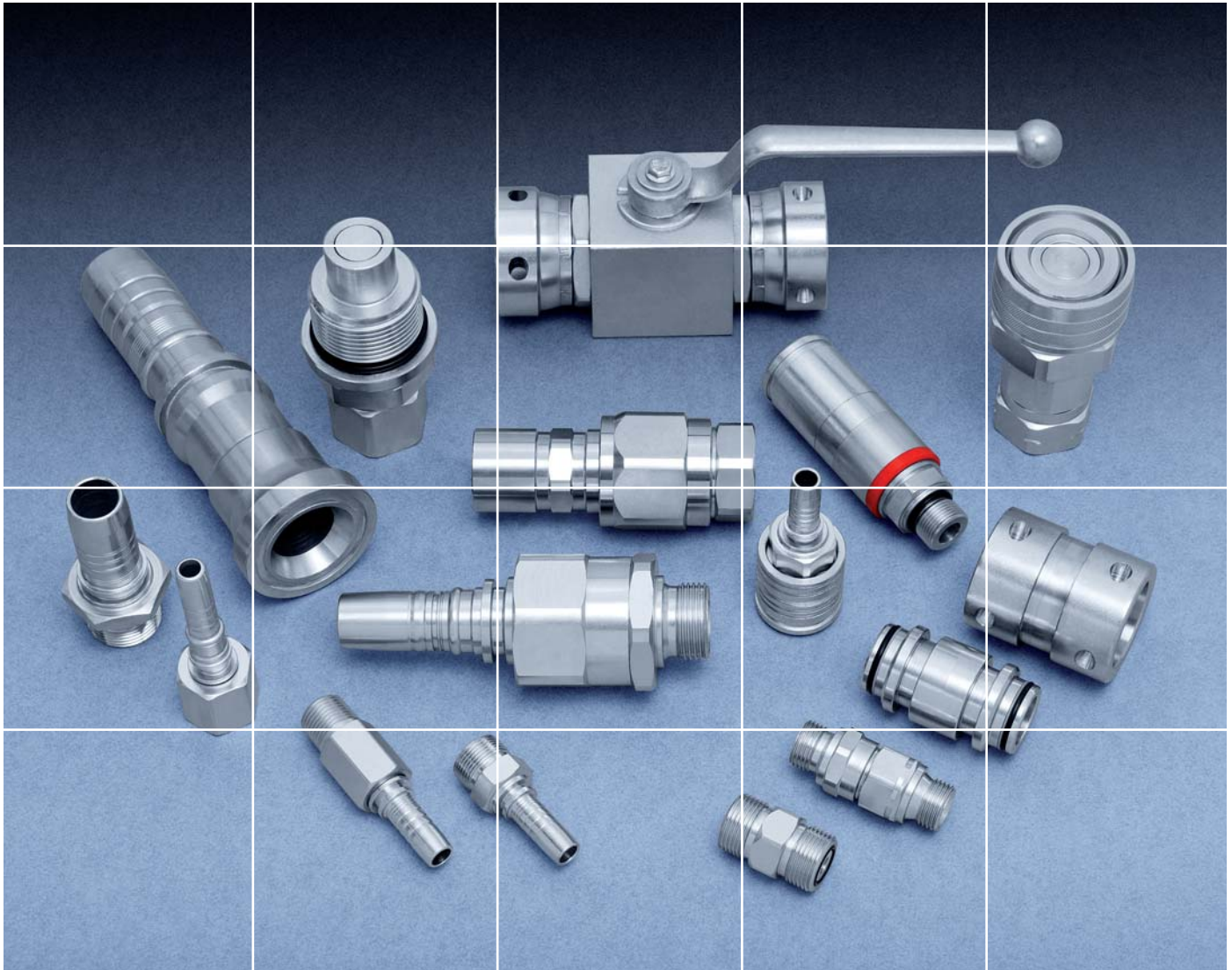
Hose type		Working Pressure (psi)															
DN		5	6	8	10	12	16	19	25	31	38	51	60	63	76	89	102
range	DASH SIZE	-3	-4	-5	-6	-8	-10	-12	-16	-20	-24	-32	-38	-40	-48	-56	-64
UNIVERSAL	GOLDENSPIR/4SP		7030		6520	6090	5510	5510	4640								
	GOLDENSPIR/4SH						6090	5580	5070	4350	3620						
	TRACTOR/1SN	3620	3260	3110	2610	2320	1880	1520	1270								
	TRACTOR/2SN	6010	5800	5070	4780	3980	3620	3110	2390	1810	1300	1160	1300				
	TRACTOR/1SC		3260	3110	2610	2320	1880	1520	1270	910	720	580		720	500		
	TRACTOR/2SC		5800	5070	4780	3980	3620	3110	2390	1810	1450	1300		1010	650		
	HARVESTER/17		3040	3040	3040	3040											
	GOLDENISO/14		2030		2030												
	LYTEFLEX		5070	4300	4060	3550	3040	3040	2030								
	COVER	3040	3040	2270	2030	1760	1520	810	620	500	340						
	SPIRTEX/K						300	300	240	200	140	100		50	50	40	20
	MULTITEX	500	430	430	430	430	430	430									
	ASTRO/2		1080	980	910	840	720	650	580	500							
	ASTRO/3		2100	1880	1590	1340	1160	1010	790	650	580	470					
	HYDROPLAST/HYDROTWIN	3040	2780	2710	2530	2030											
GENERAL HYDRAULIC	TRADITIONAL	ROCKMASTER/1SN ✓	3260	3110	2610	2320	1880	1520	1300	940	720	580	720				
		ROCKMASTER/2SN ✓	5800	5070	5070	5070	3620	3110	2530	2030	1450	1300	1300				
		ROCKMASTER/2ST ✓	6010	5800	5070	5070	3620	3110	2530	2030	1450	1300					
		ROCKMASTER/2PLUS ✓		6520	5800	5250	4930	4490	3480	2530	2110	1880			1010		
		ROCKMASTER/1SC ✓		3770	3620	3260	2750	2170	1590	1080	720	720					
		ROCKMASTER/2SC ✓	6090	5800	5070	4780	3980	3620	3550	3040	2030	1450	1300	1010	650		
		ROCKMASTER/4SP ✓		7030		6520	6090	5510	5510	4640	3040	2680	2530				
		ROCKMASTER/4SH ✓					6520	6090	5580	5070	4350	3620					
		ROCKMASTER/12 ✓			4060	4060	4060	4060	4060	3040	2530	2530					
		ROCKMASTER/13 ✓		10000		10000	8990		5070	5070	5070	5070					
		ROCKMASTER/15 ✓						6090	6090	6090	6090						
		EQUATOR/1 (Blue & Black)		3260	3110	2610	2320	1880	1520	1270	940	720	580		500		
		EQUATOR/2 (Blue & Black)		5800	5070	4780	3980	3620	3110	2530	2170	1450	1300				
		PILOT	2170	2170	1740	1450	1450										
		NOZONE/2K		5800	5070	4780	3980	3620	3110								
		ETERNITY/2 ✓		6520	5800	5290	5070	4350	4350	3260							
		DIAMONDSPIR ✓						8120	8120	7610	6880	6090		5070	3040		
		SHIELDMASTER/2PLUS MINE ✓		6520	5800	5800	5250	4490	3480	2530	2110	1880					
		PUSHFIT		500	500	500	360	360	300	200							
		XTRAFLOW/2WB ✓												1520	1160	500	
		XTRAFLOW/4WS ✓												2030	1520	1160	500
		XTRAFLOW/HT ✓												500	500	500	
	ISOBARIC	GoldenISO/21 AntiWear ✓	3040	3040	3040	3040	3040	3040	3040								
		GoldenISO/28 AntiWear ✓		4060	4060	4060	4060	4060									
		GoldenISO/21 XtraFlex ✓								3040							
		GoldenISO/28 XtraFlex ✓				4060	4060	4060	4060								
		GoldenISO/35 XtraFlex ✓				5070	5070	5070	5070	5070	5070						
		GoldenISO/42 XtraFlex ✓						6090	6090	6090							
		GoldenISO/35 LongLife ✓		5070		5070	5070										
		GoldenISO/38 LongLife ✓						5510	5510	5510							
		GoldenISO/45 LongLife ✓					6670	6670	6670	6520							
		SHIELDMASTER/2000		2030		2030	2030										
		SHIELDMASTER/4000		4000	4000	4000	4000	4000	4000	4000	4000	4000					
		SHIELDMASTER/5000		5000	5000	5000	5000	5000	5000								
		SHIELDMASTER/6000		6090	6090	6090	6090	6090	6090	6090	6090	6090					
		SHIELDMASTER/5000 MINE ✓		5000	5000	5000	5000	5000	5000	5000							
		SHIELDMASTER/6000 MINE ✓								6090	6090	6090					
	APPLICATION ORIENTED SOLUTIONS	DIAMONDSPIR/14 ✓													2030		
		DIAMONDSPIR/21 ✓												3040	3040		
		DIAMONDSPIR/35 ✓												5070	5070		
		GOLDENGUARD/3000						3000	3000								
		GOLDENGUARD/5000				5000	5000	5000	5000	5000	5000	5000					
		MASTERTEX		430		430	430	430									
		TWINPOWER/4000				4060	4060										
		TWINPOWER/5000				5070	5070										
		TWINPOWER/PLUS				4490											
		T*REX								620							
		JACKMASTER		10510		10510											
		FIREND		3260		2610	2320		1520	1270							
		CPH/2SC				-	-		-								

✓ Recommended for open pit and underground mining.

HOSES BY WORKING PRESSURE (Bar)

Hose type		Working Pressure (bar)															
DN		5	6	8	10	12	16	19	25	31	38	51	60	63	76	89	102
range	DASH SIZE	-3	-4	-5	-6	-8	-10	-12	-16	-20	-24	-32	-38	-40	-48	-56	-64
UNIVERSAL	GOLDENSPIR/4SP		485		450	420	380	380	320								
	GOLDENSPIR/4SH							420	385	350	300	250					
	TRACTOR/1SN	250	225	215	180	160	130	105	88	63	50	40	50				
	TRACTOR/2SN	415	400	350	330	275	250	215	165	125	90	80	90				
	TRACTOR/1SC		225	215	180	160	130	105	88	63	50	40		50	35		
	TRACTOR/2SC		400	350	330	275	250	215	165	125	100	90		70	45		
	HARVESTER/17		210	210	210	210											
	GOLDEN ISO/14		140		140												
	LYTEFLEX		350	297	280	245	210	210	140								
	COVER	210	210	157	140	122	105	56	43	35	24						
	SPIRTEX/K						21	21	17	14	10	7		4	4	3	2
	MULTITEX	35	30	30	30	30	30	30									
	ASTRO/2		75	68	63	58	50	45	40	35							
	ASTRO/3		145	130	110	93	80	70	55	45	40	33					
	HYDROPLAST/HYDROTWIN	210	192	187	175	140											
GENERAL HYDRAULIC EXTREME	ROCKMASTER/1SN ✓		225	215	180	160	130	105	90	65	50	40	50				
	ROCKMASTER/2SN ✓		400	350	350	350	250	215	175	140	100	90	90				
	ROCKMASTER/2ST ✓	415	400	350	350	350	250	215	175	140	100	90					
	ROCKMASTER/2PLUS ✓		450		400	362	340	310	240	175	146	130			70		
	ROCKMASTER/1SC ✓		260	250	225	190	150	150	110	75	50	50					
	ROCKMASTER/2SC ✓	420	400	350	330	275	250	245	210	140	100	90		70	45		
	ROCKMASTER/4SP ✓		485		450	420	380	380	320	210	185	174					
	ROCKMASTER/4SH ✓						450	420	385	350	300	250					
	ROCKMASTER/12 ✓				280	280	280	280	210	175	175						
	ROCKMASTER/13 ✓		690		690	620		350	350	350	350	350					
	ROCKMASTER/15 ✓							420	420	420	420						
	EQUATOR/1 (Blue & Black)		225	215	180	160	130	105	88	65	50	40		35			
	EQUATOR/2 (Blue & Black)		400	350	330	275	250	215	175	150	100	90					
	PILOT	150	150	120	100	100											
	NOZONE/2K		400	350	330	275	250	215									
	ETERNITY/2 ✓		450	400	365	350	300	300	225								
	DIAMONDSPIR ✓							560	560	525	475	420					
	SHIELDMASTER/2PLUS MINE ✓		450	400	400	362		310	240	174	146	130					
	PUSHFIT		35	35	35	25	25	21	14								
	XTRAFLOW/2WB ✓													105	80	35	
	XTRAFLOW/4WS ✓													140	105	80	35
	XTRAFLOW/HT ✓													35	35	35	
	GoldenISO/21 AntiWear ✓	210	210	210	210	210	210	210	210								
	GoldenISO/28 AntiWear ✓		280	280	280	280	280	280									
	GoldenISO/21 XtraFlex ✓									210	210	210					
	GoldenISO/28 XtraFlex ✓				280	280	280	280	280	280	280						
	GoldenISO/35 XtraFlex ✓				350	350	350	350	350	350	350						
	GoldenISO/42 XtraFlex ✓							420	420	420							
	GoldenISO/35 LongLife ✓			350	350	350											
	GoldenISO/38 LongLife ✓							380	380	380							
	GoldenISO/45 LongLife ✓						460	460	460	450							
	SHIELDMASTER/2000		140		140	140											
	SHIELDMASTER/4000		276	276	276	276	276	276	276	276	276	276					
	SHIELDMASTER/5000		345	345	345	345	345	345	345								
	SHIELDMASTER/6000		420		420	420	420	420	420	420	420	420					
	SHIELDMASTER/5000 MINE ✓		345	345	345	345	345	345	345								
	SHIELDMASTER/6000 MINE ✓									420	420	420					
	DIAMONDSPIR/14 ✓														140		
	DIAMONDSPIR/21 ✓													210	210		
	DIAMONDSPIR/35 ✓													350	350		
	GOLDENGUARD/3000							207	207								
	GOLDENGUARD/5000				345	345	345	345	345	345	345	345					
	MASTERTEX		30		30	30	30										
APPLICATION ORIENTED SOLUTIONS	TWINPOWER/4000				280	280											
	TWINPOWER/5000				350	350											
	TWINPOWER/PLUS					310											
	T*REX									43							
	JACKMASTER		725		725												
	FIREND		225		180	160		105	88								
	CPH/2SC				-	-		-									

✓ Recommended for open pit and underground mining.









Manuli Hydraulics' Connectors range, composed of 7000 items, represents a best in class fluid transport system. It is designed according to the international standard and specific requirements set by important OEMs, it is fully compatible with our hoses and engineered with a high safety factor and eco-friendly zinc plating treatment.

MARKET REQUIREMENT	MANULI HYDRAULICS' OFFER
Crimped fittings	MF2000 & MF3000
Thread less fittings	EASY FIT & FAST FIT
Swivel fittings	ROTOFIT
Quick release coupling	Q.SAFE
Check valve	MQS-CV - MQS-CVC
Soft rock coal mining fittings, adaptors & ball valves	STAPLE, SUPER & FLUSH-FIT LOCK

CONNECTORS



TWO PIECE TECHNOLOGY



OVERVIEW		
<p>MULTIFIT Braided - Non Skive Spiral - External Skive -03 (3/16") to -64 (4")</p> 	<p>MINIFIT Braided Small Bore -04 (1/4") to -06 (3/8")</p> 	<p>INTERLOCK PLUS Spiral - Internal & External Skive -10 (5/8") to -48 (3")</p> 
<p>INTERLOCK SUPER Braided - Non Skive Spiral - External Skive -48 (3") to -64 (4")</p> 	<p>SPIRALFIT Braided & Spiral Large Bore -12 (3/4") to -32 (2")</p> 	<p>XTRALOCK Spiral - Internal & External Skive -12 (3/4") to -40 (2 1/2")</p> 

ONE PIECE TECHNOLOGY








OVERVIEW	
 <p>OPF Braided - Non Skive -03 (3/16") to -16 (1")</p>	 <p>OPK Braided & Spiral - Non Skive -06 (3/8") to -32 (2")</p>

MF3000 OPF and OPK fittings are manufactured with MF2000 Multifit insert (see related termination ends) and OPF/OPK ferrules pre-crimped on the stem.



MF₂₀₀₀® FOR MULTIFIT TYPE

DN	5	6	8	10	12	16	19	25	31	38	51	60	63	76	89
Inch	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1.1/4"	1.1/2"	2"	2.3/8"	2.1/2"	3"	3.1/2"
Size	-03	-04	-05	-06	-08	-10	-12	-16	-20	-24	-32	-38	-40	-48	-56

M00110/M00120 	SKIVE FERRULE FOR WIRE BRAID HOSES	-03	-04	-05	-06	-08	-10	-12	-16	-20	-24	-32				
M00910/M00920 	SKIVE FERRULE FOR WIRE BRAID AND SPIRAL HOSES	-03	-04	-05	-06	-08	-10	-12	-16	-20	-24	-32				
M03400 	NO-SKIVE FERRULE FOR WIRE BRAID HOSES	-03	-04	-05	-06	-08	-10	-12	-16	-20	-24	-32	-38	-40	-48	-56
M00310 	NO-SKIVE FERRULE FOR TEXTILE BRAID HOSES	-03	-04	-05	-06	-08	-10	-12	-16	-20						
M00820/M00830 	NO-SKIVE FERRULE FOR COMPACT HOSES	-03	-04	-05	-06	-08	-10	-12	-16	-20	-24	-32				

MF₃₀₀₀™ FOR MULTIFIT TYPE


















DN	5	6	8	10	12	16	19	25	31	38	51	60	63	76
Inch	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1.1/4"	1.1/2"	2"	2.3/8"	2.1/2"	3"
Size	-03	-04	-05	-06	-08	-10	-12	-16	-20	-24	-32	-38	-40	-48

OPF STYLE 	NO-SKIVE FLAT CRIMP FERRULE FOR BRAIDED HOSES	-03	-04	-05	-06	-08	-10	-12	-16							
OPK STYLE 	NO-SKIVE FERRULE FOR BRAIDED AND SPIRAL HOSES				-06	-08	-10	-12	-16	-20	-24	-32				

All termination ends of the MF3000 one piece technology are the same as the MF2000 range.


















BSP STANDARD CONNECTIONS

DN	5	6	8	10	12	16	19	25	31	38	51	60	63	76
Inch	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1.1/4"	1.1/2"	2"	2.3/8"	2.1/2"	3"
Size	-03	-04	-05	-06	-08	-10	-12	-16	-20	-24	-32	-38	-40	-48

M10710 	BSP MALE TAPERED - ISO 7	-03-02 -03-04	-04-02 -04-04 -04-06 -04-08	-05-06 -05-08	-06-06 -06-08	-08-08	-10-08 -10-12	-12-12	-16-16	-20-20	-24-24	-32-32			
M10510 	BSP MALE PARALLEL 60° CONE SEAT BS5200 / ISO 8434-6	-03-02	-04-02 -04-04 -04-06	-05-04 -05-06	-06-06 -06-08	-08-06 -08-08 -08-10 -08-12	-10-10 -10-12	-12-12 -12-16	-16-16 -16-20	-20-20	-24-24	-32-32			
M20512 	BSP FEMALE 60° CONE BS5200 / ISO 12151-6 (THRUST-WIRE NUT)	-03-02	-04-02	-05-04	-06-04 -08-10 -08-12	-10-10 -10-12	-12-12 -12-16	-16-16							
M20513 	BSP FEMALE 60° CONE BS5200 / ISO 12151-6 (SLIP-ON NUT)	-03-04	-04-04 -04-06	-05-06	-06-06 -06-08	-08-08							-40-40		
M20592 	90° BSP FEMALE SWEPT ELBOW 60° CONE BS5200 / ISO 12151-6 (THRUST-WIRE NUT)	-03-02	-04-02	-05-04	-08-10 -08-12	-10-10 -10-12	-12-12 -12-16	-16-16							
M20593 	90° BSP FEMALE SWEPT ELBOW 60° CONE BS5200 / ISO 12151-6 (SLIP-ON NUT)		-04-04 -04-06	-05-06	-06-06 -06-08	-08-08							-40-40		
M20542 	45° BSP FEMALE SWEPT ELBOW 60° CONE BS5200 / ISO 12151-6 (THRUST-WIRE NUT)	-03-02	-04-02	-05-04	-08-12	-10-10 -10-12	-12-12 -12-16	-16-16							
M20543 	45° BSP FEMALE SWEPT ELBOW 60° CONE BS5200 / ISO 12151-6 (SLIP-ON NUT)		-04-04 -04-06		-06-06 -06-08	-08-08									
M20812 	BSP O-RING FEMALE 60° CONE BS5200 / ISO 12151-6 (THRUST-WIRE NUT)				-06-04	-10-10	-12-12	-16-16 -16-20	-20-20 -20-24	-24-24 -24-32	-32-32				
M20813 	BSP O-RING FEMALE 60° CONE BS5200 / ISO 12151-6 (SLIP-ON NUT)		-04-04		-06-06	-08-08									
M20892 	90° BSP O-RING FEMALE SWEPT ELBOW 60° CONE - BS5200 / ISO 12151-6 (THRUST-WIRE NUT)				-06-04	-10-10	-12-12	-16-16 -16-20	-20-20 -20-24	-24-24	-32-32				
M20893 	90° BSP O-RING FEMALE SWEPT ELBOW 60° CONE - BS5200 / ISO 12151-6 (SLIP-ON NUT)		-04-04		-06-06	-08-08									
M20842 	45° BSP O-RING FEMALE SWEPT ELBOW 60° CONE BS5200 / ISO 12151-6 (THRUST-WIRE NUT)					-10-10	-12-12	-16-16	-20-20	-24-24 -24-32	-32-32				
M20843 	45° BSP O-RING FEMALE SWEPT ELBOW 60° CONE BS5200 / ISO 12151-6 (SLIP-ON NUT)		-04-04		-06-06	-08-08									
M20882F 	90° BSP O-RING FEMALE COMPACT ELBOW 60° CONE BS5200 / ISO 12151-6 (THRUST-WIRE NUT)		-04-04		-06-06	-08-08	-10-10	-12-12	-16-16						
M10610 	BSP MALE FLAT SEAT		-04-04		-06-06 -06-08	-08-08	-12-12								
M20612 	BSP FEMALE FLAT SEAT (THRUST-WIRE NUT)					-08-12	-10-10 -10-12	-12-12 -12-16	-16-16	-20-20					

BSP, JIC, ORFS, STANDARD CONNECTIONS

DN	5	6	8	10	12	16	19	25	31	38	51	60	63	76
Inch	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1.1/4"	1.1/2"	2"	2.3/8"	2.1/2"	3"
Size	-03	-04	-05	-06	-08	-10	-12	-16	-20	-24	-32	-38	-40	-48


















M20613 	BSP FEMALE FLAT SEAT (SLIP-ON NUT)		-04-04	05-06	-06-06 -06-08	-08-08								
M12510 	JIC MALE 37° CONE SAE J516 / ISO 12151-5		-04-04 -04-05 -04-06	-05-05 -05-06	-06-06 -06-08 -06-10	-08-08 -08-10 -08-12	-10-10 -10-12	-12-10 -12-12 -12-14 -12-16	-16-12 -16-16 -16-20	-20-20 -20-24	-24-24	-32-32		
M22512 	JIC FEMALE 37° CONE SEAT SAE J516 / ISO 12151-5 (THRUST-WIRE NUT)		-04-04 -04-05	-05-05 -05-06	-06-06 -06-08	-08-08	-10-10	-12-10 -12-12 -12-14 -12-16	-16-12 -16-16 -16-20	-20-20 -20-24	-24-24	-32-32		
M22513 	JIC FEMALE 37° CONE SEAT SAE J516 / ISO 12151-5 (SLIP-ON NUT)	-03-04	-04-06	-05-08	-06-08 -06-10	-08-10 -08-12	-10-12							
M22711-K-KR 	JIC FEMALE 37° CONE SEAT DOUBLE HEXAGON - SAE J516 / ISO 12151-5 (CRIMPED-BACK NUT)	-03-04	-04-04 -04-06		-06-06 -06-08 KR	-08-08 -08-10 KR	-10-10 -10-12 KR	-12-12 -12-14 KR	-16-16	-20-20	-24-24	-32-32		
M22712 	JIC FEMALE 37° CONE SEAT DOUBLE HEXAGON SAE J516 / ISO 12151-5 (THRUST-WIRE NUT)	-03-04	-04-04 -04-05 -04-06	-05-05 -05-06	-06-04 -06-05 -06-06 -06-08 -06-10	-08-06 -08-08 -08-10 -08-12	-10-08 -10-10 -10-12	-12-08 -12-10 -12-12 -12-14 -12-16	-16-12 -16-16 -16-20	-20-20	-24-24	-32-32		
M22592 	90° JIC FEMALE SWEPT ELBOW 37° CONE SEAT - SAE J516 / ISO 12151-5 (THRUST-WIRE NUT)		-04-04 -04-05	-05-05 -05-06	-06-06 -06-08	-08-08	-10-10	-12-10 -12-12 -12-14 -12-16	-16-16 -16-20	-20-20 -20-24	-24-24	-32-32		
M22593 	90° JIC FEMALE SWEPT ELBOW 37° CONE SEAT - SAE J516 / ISO 12151-5 (SLIP-ON NUT)	-03-04	-04-06		-06-08 -06-10	-08-10 -08-12	-10-12							
M22591KR 	45° JIC FEMALE SWEPT ELBOW 37° CONE SEAT - SAE J516 / ISO 12151-5 (CRIMPED BACK NUT)		-04-04		-06-06 -06-08	-08-08	-10-10	-12-12						
M24792 	90° JIC FEMALE LONG DROP ELBOW 37° CONE SEAT - SAE J516 / ISO 12151-5 (THRUST-WIRE NUT)	-04-04	-04-05		-06-06 -06-08	-08-08	-10-10	-12-12	-16-16					
M24793 	90° JIC FEMALE LONG DROP ELBOW 37° CONE SEAT - SAE J516 / ISO 12151-5 (SLIP-ON NUT)		-04-06		-06-08 -06-10	-08-10								
M24791KR 	45° JIC FEMALE SWEPT ELBOW 37° CONE SEAT - SAE J516 / ISO 12151-5 (CRIMPED BACK NUT)		-04-04		-06-06 -06-08	-08-08	-10-10	-12-12						
M22542 	45° JIC FEMALE SWEPT ELBOW 37° CONE SEAT - SAE J516 / ISO 12151-5 (THRUST-WIRE NUT)	-03-04	-04-04 -04-05	-05-06	-06-06 -06-08	-08-08	-10-10	-12-12 -12-14 -12-16	-16-12 -16-16 -16-20	-20-20 -20-24	-24-24	-32-32		
M22543 	45° JIC FEMALE SWEPT ELBOW 37° CONE SEAT - SAE J516 / ISO 12151-5 (SLIP-ON NUT)		-04-04		-06-08 -06-10	-08-10 -08-12	-10-12							
M22582F 	90° JIC FEMALE COMPACT ELBOW 37° CONE SEAT SAE J516 / ISO 12151-5 (THRUST-WIRE NUT)		-04-04 -04-06		-06-06 -06-08	-08-08 -08-10		-12-12	-16-16					
M12410 	ORFS MALE - SAE J516 / ISO 12151-1		-04-04 -04-06	-05-06	-06-06 -06-08	-08-08 -08-10 -08-12	-10-08 -10-10 -10-12	-12-12 -12-16	-16-16 -16-20	-20-20	-24-24			
M22411 	ORFS FEMALE - SAE J516 / ISO 12151-1 PULLBACK TYPE (CRIMPED BACK-NUT)		-04-04 -04-06 -04-08	-05-04 -05-06	-06-04 -06-06 -06-08	-08-06 -08-08 -08-10 -08-12	-10-08 -10-10 -10-12	-12-10 -12-12 -12-16	-16-12 -16-16					

CONNECTORS

MF2000® MULTIFIT


















ORFS, SAE, NPTF

DN	5	6	8	10	12	16	19	25	31	38	51	60	63	76	89	102
Inch	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1.1/4"	1.1/2"	2"	2.3/8"	2.1/2"	3"	3.1/2"	4"
Size	-03	-04	-05	-06	-08	-10	-12	-16	-20	-24	-32	-38	-40	-48	-56	-64

M22412 	ORFS FEMALE - SAE J516 / ISO 12151-1 PULLBACK TYPE (THRUST-WIRE NUT)								-16-20	-20-20 -20-24	-24-24					
M22711 	ORFS FEMALE - SAE J516 / ISO 12151-1 (NO SLIDING BACK-NUT)		-04-04 -04-06	-05-06	-06-06 -06-08	-08-08 -08-10 -08-12	-10-10	-12-12	-16-16							
M22491 	90° ORFS FEMALE SWEPT ELBOW SAE J516 / ISO 12151-1 (CRIMPED BACK-NUT)					-08-06	-10-08	-12-10	-16-12							
M22493 	90° ORFS FEMALE SWEPT ELBOW SAE J516 / ISO 12151-1 (SLIP-ON NUT)		-04-04 -04-06	-05-06	-06-06 -06-08	-08-08 -08-10 -08-12	-10-10 -10-12	-12-12 -12-16	-16-16 -16-20	-20-20	-24-24					
M24493 	90° ORFS FEMALE LONG DROP ELBOW SAE J516 / ISO 12151-1 (SLIP-ON NUT)		-04-04		-06-06 -06-08	-08-08 -08-10	-10-10 -10-12	-12-12	-16-16	-20-20						
M22441 	45° ORFS FEMALE SWEPT ELBOW SAE J516 / ISO 12151-1 (CRIMPED-BACK NUT)					-08-06		-12-10	-16-12							
M22443 	45° ORFS FEMALE SWEPT ELBOW SAE J516 / ISO 12151-1 (SLIP-ON NUT)		-04-04 -04-06	-05-06	-06-06 -06-08	-08-08 -08-10 -08-12	-10-10 -10-12	-12-12 -12-16	-16-16 -16-20	-20-20	-24-24					
M13010 	SAE MALE O-RING BOSS TYPE SAE J516 / ISO 11926		-04-04 -04-06		-06-06 -06-08 -06-10	-08-08 -08-10 -08-12	-10-12	-12-12 -12-16	-16-16	-20-20						
M14310 	SAE SWIVEL MALE O-RING BOSS TYPE SAE J516 / ISO 11926		-04-04 -04-06		-06-06 -06-08	-08-08 -08-10 -08-12	-10-10	-12-12								
M14390 	90° SAE SWIVEL MALE O-RING BOSS TYPE SAE J516 / ISO 11926				-06-06 -06-08	-08-08 -08-10	-10-10	-12-12								
M22612 	SAE FEMALE 45° CONE SEAT SAE J516/J512 (THRUST-WIRE NUT)		04-04	-05-06	-06-06			-12-12								
M22692 	90° SAE FEMALE SWEPT ELBOW 45° CONE SEAT - SAE J516/J512 (THRUST-WIRE NUT)		04-04		-06-06			-12-12								
M12810 	NPTF MALE 60° CONE SEAT SAE J516/J514	-03-02 -03-04	-04-02 -04-04 -04-06 -04-08	-05-04 -05-06	-06-04 -06-06 -06-08	-08-06 -08-08 -08-12	-10-08 -10-12	-12-08 -12-12 -12-16	-16-12 -16-16 -16-20	-20-20	-24-24	-32-32		-40-40	-48-48	
M14110R 	NPTF SWIVEL MALE 60° CONE SEAT SAE J516/J514		-04-02 -04-04 -04-06		-06-04 -06-06 -06-08	-08-06 -08-08		-12-12	-16-16							
M22812 	NPSM FEMALE 60° CONE - SAE J516/J514 (THRUST-WIRE NUT)		-04-04		-06-04 -06-06	-08-08		-12-12	-16-16							
M23311 	ISO/SAE CODE 61 FLANGE SAE J516 / ISO 12151-3					-08-08 -08-12	-10-12	-12-12 -12-16	-16-12 -16-16 -16-20	-20-16 -20-20 -20-24	-24-24 -24-32	-32-32 -32-40	-38-40	-40-32 -40-40 -40-56	-48-48	-56-56 -64-64
M23321 	22,5° ISO/SAE CODE 61 FLANGE SAE J516 / ISO 12151-3					-08-08		-12-12 -12-16	-16-12 -16-16 -16-20	-20-20 -20-24	-24-32	-32-32		-40-64 -40-40	-48-48	

SAE, METRIC

DN	5	6	8	10	12	16	19	25	31	38	51	60	63	76	89	102
Inch	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1.1/4"	1.1/2"	2"	2.3/8"	2.1/2"	3"	3.1/2"	4"
Size	-03	-04	-05	-06	-08	-10	-12	-16	-20	-24	-32	-38	-40	-48	-56	-64


















M23331 	30° ISO/SAE CODE 61 FLANGE SAE J516 / ISO 12151-3					-08-08 -08-12		-12-12 -12-16	-16-16 -16-20	-20-20 -20-24	-24-24 -24-32	-32-32		-40-40 -40-48	-48-48		
M23341 	45° ISO/SAE CODE 61 FLANGE SAE J516 / ISO 12151-3				-06-08	-08-08 -08-12 -08-14	-10-12	-12-12 -12-16	-16-12 -16-16 -16-20	-20-16 -20-20 -20-24	-24-24 -24-32	-32-32 -32-40		-40-32 -40-40 -40-48	-48-48	-56-56 -56-64	
M23361 	60° ISO/SAE CODE 61 FLANGE SAE J516 / ISO 12151-3					-08-08 -08-12		-12-12 -12-16	-16-16 -16-20	-20-20 -20-24	-24-20 -24-24 -24-32	-32-32		-40-40	-48-48		
M23371 	67,5° ISO/SAE CODE 61 FLANGE SAE J516 / ISO 12151-3					-08-08 -08-12 -18-16		-12-12 -12-16	-16-16 -16-20	-20-20 -20-24	-24-24 -24-32	-32-32 -32-40		-40-40 -40-48			
M23391 	90° ISO/SAE CODE 61 FLANGE SAE J516 / ISO 12151-3				-06-08	-08-08 -08-12 -08-16	-10-08 -10-12	-12-12 -12-16 -12-20	-16-16 -16-20 -16-24	-20-16 -20-20 -20-24 -20-32	-24-20 -24-24 -24-32	-32-24 -32-32 -32-40		-40-32 -40-40 -40-48	-48-48 -48-56	-56-56	-64-64
M23391 LONG DROP 	90° LONG DROP ISO/SAE CODE 61 FLANGE SAE J516 / ISO 12151-3								-16-20 -16-24	-20-20 -20-24	-24-24 -24-32	-32-32					
M23301P 	110° ISO/SAE CODE 61 FLANGE SAE J516 / ISO 12151-3					-08-12		-12-12 -12-16	-16-16	-20-20 -20-24	-24-24	-32-32					
M23301S 	125° ISO/SAE CODE 61 FLANGE SAE J516 / ISO 12151-3											-32-32					
M23301T 	135° ISO/SAE CODE 61 FLANGE SAE J516 / ISO 12151-3							-12-12 -12-16	-16-16								
M23611 	ISO/SAE CODE 62 FLANGE SAE J516 / ISO 12151-3					-08-08 -08-12	-10-08 -10-12 -10-16	-12-12 -12-16	-16-16 -16-20	-20-16 -20-20 -20-24	-24-24	-32-32					
M23691 	90° ISO/SAE CODE 62 FLANGE SAE J516 / ISO 12151-3					-08-08 -08-12	-10-08 -10-12 -10-16	-12-12 -12-16	-16-16 -16-20	-20-16 -20-20 -20-24	-24-24	-32-32					
M23641 	45° ISO/SAE CODE 62 FLANGE SAE J516 / ISO 12151-3					-08-08 -08-12	-10-08 -10-12	-12-12 -12-16	-16-12 -16-16 -16-20	-20-20 -20-24	-24-24 -24-32	-32-32					
M22010 	METRIC STANDPIPE LIGHT DUTY DIN 2353 / ISO 8434-1	-03-06	-04-06	-05-10	-06-10 -06-12 -06-15	-08-12 -08-15 -08-18	-10-18 -10-22	-12-22	-16-28	-20-35	-24-42						
M22110 	METRIC STANDPIPE HEAVY DUTY DIN 2353 / ISO 8434-1	-03-08	-04-08 -04-10 -04-12	-05-12	-06-14	-08-14 -08-16	-10-20	-12-20 -12-25	-16-25 -16-30 -16-38	-20-30 -20-38	-24-38						
M22090 	90° METRIC STANDPIPE LIGHT DUTY DIN 2353 / ISO 8434-1	-03-06 -04-06	-04-06	-05-10	-06-10 -06-12	-08-15 -08-16 -08-18	-10-18 -10-22	-12-22	-16-28	-20-35							
M22190 	90° METRIC STANDPIPE HEAVY DUTY DIN 2353 / ISO 8434-1		-04-08 -04-10 -04-12	-05-12	-06-14	-08-14 -08-16	-10-20	-12-20 -12-25	-16-25 -16-30								
M22040 	45° METRIC STANDPIPE LIGHT DUTY DIN 2353 / ISO 8434-1	-03-06	-04-06	-05-10	-06-10 -06-12	-08-15	-10-18	-12-22	-16-28								

CONNECTORS

MF2000® MULTIFIT


















METRIC

DN	5	6	8	10	12	16	19	25	31	38	51	60	63	76
Inch	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1.1/4"	1.1/2"	2"	2.3/8"	2.1/2"	3"
Size	-03	-04	-05	-06	-08	-10	-12	-16	-20	-24	-32	-38	-40	-48

	45° METRIC STANDPIPE HEAVY DUTY DIN 2353 / ISO 8434-1		-04-08 -04-10		-06-14	-08-16	-10-20	-12-25	-16-25					
	METRIC FEMALE 60° CONE DIN 20078/3863						-10-30	-12-30	-16-38	-20-45	-24-52			
	90° METRIC FEMALE SWEPT ELBOW 60° CONE - DIN 20078/3863							-12-30	-16-38	-20-45				
	METRIC FEMALE MULTISEAL DIN 20078/3868 (THRUST-WIRE NUT)		-04-12	-05-14	-06-14 -06-16 -06-18	-08-18	-10-22							
	METRIC FEMALE MULTISEAL DIN 20078/3868 (SLIP-ON NUT)	-03-12	-04-14 -04-16	-05-16 -05-18	-06-18 -06-22	-08-22	-10-26							
	90° METRIC FEMALE SWEPT ELBOW MULTISEAL DIN 20078/3868 (THRUST-WIRE NUT)		-04-12		-06-16			-12-16						
	90° METRIC FEMALE SWEPT ELBOW MULTISEAL DIN 20078/3868 (SLIP-ON NUT)	-03-12	-04-14 -04-16	-05-16 -05-18	-06-18 -06-22	-08-22	-10-26							
	45° METRIC FEMALE SWEPT ELBOW MULTISEAL DIN 20078/3868 (THRUST-WIRE NUT)			-05-14	-06-16	-08-22	-10-26							
	45° METRIC FEMALE SWEPT ELBOW MULTISEAL DIN 20078/3868 (SLIP-ON NUT)		-04-14 -04-16	-05-16	-06-18 -06-22	-08-22	-10-26							
	METRIC MALE 24° CONE SEAT LIGHT DUTY DIN 20066 / ISO 12151-2	-03-12	-04-12 -04-14 -04-16 -04-18	-05-16 -05-18	-06-16 -06-18 -06-22 -06-26	-08-16 -08-18 -08-22 -08-26 -08-18	-10-22 -10-26 -10-30	-12-26 -12-30	-16-36	-20-45	-24-52			
	METRIC O-RING FEMALE 24° CONE LIGHT DUTY - DIN 20066 / ISO 12151-2 (THRUST-WIRE NUT)		-04-12	-05-14	-06-16	-08-18	-10-18 -10-22	-12-26	-16-30	-20-36	-24-45			
	METRIC O-RING FEMALE 24° CONE LIGHT DUTY - DIN 20066 / ISO 12151-2 (SLIP-ON NUT)	-03-12	-04-14 -04-16 -04-18	-05-16 -05-18	-06-18 -06-22	-08-22 -08-26	-10-26	-12-30 -12-36	-16-36	-20-45	-24-52			
	90° METRIC O-RING FEMALE SWEPT ELBOW 24° CONE LIGHT DUTY DIN 20066 ISO 12151-2 (THRUST-WIRE NUT)		-04-12	-05-14	-06-16	-08-18	-10-22	-12-26	-16-30	-20-36	-24-36			
	90° METRIC O-RING FEMALE SWEPT ELBOW 24° CONE LIGHT DUTY DIN 20066 ISO 12151-2 (SLIP-ON NUT)	-03-12	-04-14 -04-16 -04-18	-05-16 -05-18	-06-18 -06-22	-08-22	-10-26 -10-30	-12-30	-16-36	-20-45	-24-52			
	45° METRIC O-RING FEMALE SWEPT ELBOW 24° CONE LIGHT DUTY DIN 20066 ISO 12151-2 (THRUST-WIRE NUT)		-04-12		-06-16	-08-18	-10-12	-12-26		-20-36	-24-36			
	45° METRIC O-RING FEMALE SWEPT ELBOW 24° CONE LIGHT DUTY DIN 20066 ISO 12151-2 (SLIP-ON NUT)		-04-14 -04-16	-05-16 -05-18	-06-18 -06-22	-08-22	-10-26	-12-30	-16-36	-20-45	-24-52			
	METRIC MALE 24° CONE SEAT HEAVY DUTY DIN 20066 / ISO 12151-2		-04-16 -04-18 -04-10	-05-18 -05-20	-06-18 -06-20 -06-22	-08-22 -08-24	-10-30 -10-36	-12-30 -12-36	-16-36 -16-42	-20-52				

NF, JIS, ORIGINAL EQUIPMENT

DN	5	6	8	10	12	16	19	25	31	38	51	60	63	76
Inch	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1.1/4"	1.1/2"	2"	2.3/8"	2.1/2"	3"
Size	-03	-04	-05	-06	-08	-10	-12	-16	-20	-24	-32	-38	-40	-48









M21612 	METRIC O-RING FEMALE 24° CONE HEAVY DUTY DIN 20066 / ISO 12151-2 (THRUST-WIRE NUT)					-08-20 -08-22	-10-24	-12-24 -12-30	-16-30 -16-36					
M21613 	METRIC O-RING FEMALE 24° CONE HEAVY DUTY - DIN 20066 / ISO 12151-2 (SLIP-ON NUT)	-03-16	-04-14 -04-16 -04-18 -04-20	-05-18 -05-20	-06-20 -06-22	-08-24	-10-30	-12-36	-16-42	-20-52	-24-52			
M21692 	90° METRIC O-RING FEMALE SWEPT ELBOW 24° CONE HEAVY DUTY DIN 20066 ISO 12151-2 (THRUST-WIRE NUT)				-06-18	-08-22	-10-24	-12-30	-16-36		-24-52			
M21693 	90° METRIC O-RING FEMALE SWEPT ELBOW 24° CONE HEAVY DUTY DIN 20066 ISO 12151-2 (SLIP-ON NUT)		-04-16 -04-18	-05-20	-06-20 -06-22	-08-24	-10-30	-12-36	-16-42	-20-52				
M21642 	45° METRIC O-RING FEMALE SWEPT ELBOW 24° CONE HEAVY DUTY DIN 20066 ISO 12151-2 (THRUST-WIRE NUT)				-06-18	-08-22		-12-30	-16-36					
M21643 	45° METRIC O-RING FEMALE SWEPT ELBOW 24° CONE HEAVY DUTY DIN 20066 ISO 12151-2 (SLIP-ON NUT)		-04-16 -04-18	-05-20	-06-20 -06-22	-08-24	-10-30	-12-36	-16-42	-20-52				
M11710 	FRENCH METRIC MALE 24° CONE SEAT MILLIMETRIC TYPE						-10-2718 -10-2720	-12-30 -12-33	-16-16					
M21713 	FRENCH METRIC FEMALE MILLIMETRIC TYPE (SLIP-ON NUT)						-10-2718 -10-2720	-12-30 -12-33	-16-36 -16-39					
M11810 	FRENCH METRIC MALE 24° CONE SEAT GAZ TYPE			-05-20	-06-20 -06-24	-08-24	-10-30	-12-36	-16-45					
M21813 	FRENCH METRIC FEMALE GAZ TYPE (SLIP-ON NUT)		-04-20	-05-20	-06-20 -06-24	-08-24 -08-30	-10-30	-12-36	-16-45					
M21893 	90° FRENCH METRIC FEMALE GAZ TYPE (SLIP-ON NUT)			-05-20	-06-20	-08-24	-10-30	-12-36						
M24011 	JIS METRIC FEMALE 60° CONE SEAT (KOMATSU) JIS B 8363 (CRIMPED-BACK NUT)		-04-14	-05-16	-06-14 -06-18	-08-22	-10-24	-12-30	-16-33	-20-36				
M24012 	JIS METRIC FEMALE 60° CONE SEAT (KOMATSU) JIS B 8363 (THRUST-WIRE NUT)									-24-42				
M23811 	JIS BSP FEMALE 60° CONE SEAT (TOYOTA) JIS B 8363 (CRIMPED-BACK NUT)		-04-04		-06-06	-08-08		-12-12	-16-16					
M20711 	JIS BSP FEMALE 60° CONE (NISSAN) JIS B 8363 (CRIMPED-BACK NUT)		-04-04		-06-06	-08-08		-12-12						
M20712 	JIS BSP FEMALE 60° CONE (NISSAN) JIS B 8363 (THRUST-WIRE NUT)						-10-12							
M24111 	STRAIGHT KOMATSU FLANGE					-08-10	-10-10	-12-10						

CONNECTORS

MF2000® MULTIFIT


ORIGINAL EQUIPMENT

DN	5	6	8	10	12	16	19	25	31	38	51	60	63	76
Inch	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1.1/4"	1.1/2"	2"	2.3/8"	2.1/2"	3"
Size	-03	-04	-05	-06	-08	-10	-12	-16	-20	-24	-32	-38	-40	-48








M24191 	90° KOMATSU FLANGE							-10-10	-12-10						
M24141 	45° KOMATSU FLANGE							-10-10							
M23911 	STRAIGHT SUPERCAT FLANGE							-12-12	-16-16 -16-20	-20-20	-24-24				
M23991 	90° SUPERCAT FLANGE							-12-12	-16-16 -16-20	-20-20					
M23941 	45° SUPERCAT FLANGE							-12-12	-16-16 -16-20	-20-20					
M..IP 	BRAZING TAIL	-03-06	-04-08	-05-10	-06-12 -06-14	-08-15 -08-16	-10-18	-12-22	-16-28	-20-35	-24-40	-32-50		-40-60	-48-70
M10050 	DOUBLE CONNECTOR	-03-03	-04-04	-05-05	-06-06	-08-08	-10-10	-12-12	-16-16	-20-20	-24-24				
M18110 	MALE GROOVED CONNECTION											-32-32		-40-40	-48-48

FERRULES

DN	5	6	8	10	12	16	19	25	31	38	51	60	63	76
Inch	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1.1/4"	1.1/2"	2"	2.3/8"	2.1/2"	3"
Size	-03	-04	-05	-06	-08	-10	-12	-16	-20	-24	-32	-38	-40	-48




M02400 	NO-SKIVE FERRULE FOR COMPACT HOSES		-04-04		-06-06									
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BSP









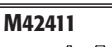

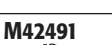


MS0513 	BSP FEMALE 60° CONE (SLIP ON NUT) BS5200/ISO 8434-6		-04-04		-06-06									
MS0543 	45° BSP FEMALE 60° CONE (SLIP ON NUT) BS5200/ISO 8434-7		-04-04		-06-06									
MS0593 	90° BSP FEMALE 60° CONE (SLIP ON NUT) BS5200/ISO 8434-8		-04-04		-06-06									
MS0813 	BSP O-RING FEMALE 60° CONE (SLIP ON NUT) BS5200/ISO 8434-6		-04-04		-06-06									
MS0843 	45° BSP O-RING FEMALE 60° CONE (SLIP ON NUT) BS5200/ISO 8434-7		-04-04		-06-06									
MS0893 	90° BSP O-RING FEMALE 60° CONE (SLIP ON NUT) BS5200/ISO 8434-8		-04-04		-06-06									
MS0882F 	90° BSP O-RING FEMALE COMPACT ELBOW 60° CONE (SLIP ON NUT) BS5200/ISO 8434-8		-04-04		-06-06									

DN	5	6	8	10	12	16	19	25	31	38	51	60	63	76
Inch	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1.1/4"	1.1/2"	2"	2.3/8"	2.1/2"	3"
Size	-03	-04	-05	-06	-08	-10	-12	-16	-20	-24	-32	-38	-40	-48

FERRULES











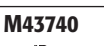

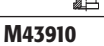


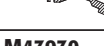

M01500 	DOUBLE SKIVE FERRULE FOR HEAVY DUTY SPIRAL HOSES (4 PLY)						-10	-12	-16	-20	-24	-32		-40	-48
M01600 	DOUBLE SKIVE FERRULE FOR HEAVY DUTY SPIRAL HOSES (6 PLY)									-20		-32		-40	
M01800/1810 	DOUBLE SKIVE FERRULE FOR EXTRA DUTY SPIRAL HOSES (6 PLY)									-20		-32		-40	-48

BSP, NPTF, JIC, ORFS

M30510 	BSP MALE 60°							-12-12 -12-16	-16-16 -16-20	-20-20	-24-24	-32-32			
M40812 	BSP FEMALE 60° O-RING							-12-12 -16-16	-16-16	-20-16 -20-20	-24-20 -24-24	-32-32			
M40892 	BSP FEMALE 90° O-RING							-12-12 -16-16	-16-16 -20-20	-20-20	-24-24	-32-32			
M40842 	BSP FEMALE 45° O-RING							-12-12 -16-16	-16-16 -20-20	-20-20	-24-24	-32-32			
M32810 	NPTF MALE 60° CONE SEAT - SAE J516/J514							-12-12	-16-16	-20-20	-24-24	-32-32			
M42512 	JIC FEMALE 37° CONE SEAT SAE J516 / ISO 12151-5 (THRUST-WIRE NUT)							-12-12 -12-16	-16-16 -16-20	-20-20 -20-24	-24-24	-32-32			
M42592 	90° JIC FEMALE SWEPT ELBOW 37° CONE SEAT - SAE J516 / ISO 12151-5 (THRUST-WIRE NUT)							-12-12 -12-16	-16-16	-20-20	-24-24	-32-32			
M42542 	45° JIC FEMALE SWEPT ELBOW 37° CONE SEAT - SAE J516 / ISO 12151-5 (THRUST-WIRE NUT)							-12-12	-16-16	-20-20	-24-24	-32-32			
M42411 	ORFS FEMALE - SAE J516 / ISO 12151-1 PULLBACK TYPE (CRIMPED BACK-NUT)							-12-12 -12-16	-16-16 -16-12						
M42412 	ORFS FEMALE - SAE J516 / ISO 12151-1 HEAVY TYPE (THRUST-WIRE NUT)							-12-12 -12-16	-16-16 -16-20	-20-20 -20-24	-24-24				
M42491 	90° ORFS FEMALE SWEPT ELBOW SAE J516 / ISO 12151-1 (CRIMPED BACK-NUT)						-10-12	-12-12 -12-16	-16-16						
M42492 	90° ORFS FEMALE SWEPT ELBOW SAE J516 / ISO 12151-1 HEAVY TYPE (THRUST-WIRE-NUT)							-12-12 -12-16	-16-16	-20-20	-24-24				
M42441 	45° ORFS FEMALE SWEPT ELBOW SAE J516 / ISO 12151-1 (CRIMPED BACK-NUT)						-10-12	-12-12 -12-16	-16-16						

ORFS, SAE, ORIGINAL EQUIPMENT

DN	5	6	8	10	12	16	19	25	31	38	51	60	63	76
Inch	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1.1/4"	1.1/2"	2"	2.3/8"	2.1/2"	3"
Size	-03	-04	-05	-06	-08	-10	-12	-16	-20	-24	-32	-38	-40	-48


















M42442 	45° ORFS FEMALE SWEPT ELBOW SAE J516 / ISO 12151-1 HEAVY TYPE (THRUST-WIRE-NUT)							-12-12 -12-16	-16-16 -16-20	-20-20	-24-24				
M43310 	ISO/SAE CODE 61 FLANGE SAE J516 / ISO 12151-3						-10-16	-12-12 -12-16	-16-16 -16-20	-20-20 -20-24	-24-24 -24-32	-32-32			
M43390 	90° ISO/SAE CODE 61 FLANGE SAE J516 / ISO 12151-3							-12-12 -12-16	-16-16 -16-20	-20-20 -20-24	-24-24	-32-32			
M43340 	45° ISO/SAE CODE 61 FLANGE SAE J516 / ISO 12151-3							-12-12 -16	-16-16 -16-20	-20-20 -20-24	-24-24	-32-32			
M43610 	ISO/SAE CODE 62 FLANGE SAE J516 / ISO 12151-3						-12-12 -16-16	-12-12 -12-16	-16-12 -16-16 -16-20	-20-16 -20-20 -20-24	-24-20 -24-24 -24-32	-24 -32-32			
M43690 	90° ISO/SAE CODE 62 FLANGE SAE J516 / ISO 12151-3						-12-12	-12-12 -12-16	-16-12 -16-16 -16-20	-20-16 -20-20 -20-24	-24-20 -24-24 -24-32	-32-32			
M43640 	45° ISO/SAE CODE 62 FLANGE SAE J516 / ISO 12151-3						-12-12	-12-12 -12-16	-16-12 -16-16 -16-20	-20-16 -20-20 -20-24	-24-20 -24-24 -24-32	-32-32			
M43630 	30° ISO/SAE CODE 62 FLANGE SAE J516 / ISO 12151-3							-12-12 -12-16	-16-16	-20-20 -20-24	-24-24	-32-32			
M43660 	60° ISO/SAE CODE 62 FLANGE SAE J516 / ISO 12151-3							-12-12 -12-16	-16-16	-20-20 -20-24	-24-24	-32-32			
M43710 	FLANGE PLUS (SAE J518 CODE 62 ISO 6162-2 PORT COMPATIBLE)						-10-12	-12-12	-16-16	-20-20					
M43740 	45° FLANGE PLUS (SAE J518 CODE 62 ISO 6162-2 PORT COMPATIBLE)						-10-12	-12-12	-16-16	-20-20					
M43790 	90° FLANGE PLUS (SAE J518 CODE 62 ISO 6162-2 PORT COMPATIBLE)						-10-12	-12-12	-16-16	-20-20					
M43910 	STRAIGHT SUPERCAT SERIES FLANGE							-12-12 -12-16	-16-16 -16-20	-20-20 -20-24	-24-24 -24-32	-32-24 -32-32			
M43910...CT 	STRAIGHT SUPERCAT SERIES FLANGE								-16-16	-20-20	-24-24				
M43920 	22,5° SUPERCAT SERIES FLANGE							-12-12 -12-16	-16-16 -16-20	-20-20 -20-24	-24-24				
M43930 	30° SUPERCAT SERIES FLANGE							-12-12 -12-16	-16-16 -16-20	-20-20 -20-24	-24-24 -24-32	-32-32			
M43940 	45° SUPERCAT SERIES FLANGE							-12-12 -12-16	-16-16 -16-20	-20-20 -20-24	-24-24 -24-32	-32-32			

CONNECTORS

MF2000® INTERLOCK PLUS TYPE







ORIGINAL EQUIPMENT, XTRAFLANGE, METRIC

DN	5	6	8	10	12	16	19	25	31	38	51	60	63	76
Inch	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1.1/4"	1.1/2"	2"	2.3/8"	2.1/2"	3"
Size	-03	-04	-05	-06	-08	-10	-12	-16	-20	-24	-32	-38	-40	-48

M43940...CT 	45° SUPERCAT SERIES FLANGE								-16-16	-20-20	-24-24			
M43960 	60° SUPERCAT SERIES FLANGE							-12-12 -12-16	-16-16 -16-16055 -16-20	-20-20 -20-24	-24-24	-32-32 -32-32150		
M43970 	67,5° SUPERCAT SERIES FLANGE							-12-12 -12-16	-16-16 -16-20	-20-20 -20-24	-24-24	-32-32		
M43990 	90° SUPERCAT SERIES FLANGE							-12-12 -12-16	-16-16 -16-20	-20-20 -20-24	-24-24 -24-32	-32-32		
M43990...CT 	90° LONG DROP SUPERCAT SERIES FLANGE								-16-16	-20-20	-24-24			
M43990 LONG DROP 	90° LONG DROP SUPERCAT SERIES FLANGE							-16-16132 -16-16150 -16-20150	-20-20092 -20-20150 -20-24135	-24-24106				
M48410 	XTRAFLANGE 61 (SAE J518 CODE 61 ISO 6162-1 PORT COMPATIBLE)								-16-16	-20-20	-24-24	-32-32		
M48510 	XTRAFLANGE 62 (SAE J518 CODE 62 ISO 6162-2 PORT COMPATIBLE)							-12-12	-16-16	-20-20	-24-24	-32-32		
M48440 	45° XTRAFLANGE 61 (SAE J518 CODE 61 ISO 6162-1 PORT COMPATIBLE)								-16-16	-20-20	-24-24	-32-32		
M48540 	45° XTRAFLANGE 62 (SAE J518 CODE 62 ISO 6162-2 PORT COMPATIBLE)							-12-12	-16-16	-20-20	-24-24	-32-32		
M48490 	90° XTRAFLANGE 61 (SAE J518 CODE 61 ISO 6162-1 PORT COMPATIBLE)								-16-16	-20-20	-24-24	-32-32		
M48590 	90° XTRAFLANGE 61 (SAE J518 CODE 62 ISO 6162-2 PORT COMPATIBLE)							-12-12	-16-16	-20-20	-24-24	-32-32		
M31210 	METRIC MALE 24° CONE SEAT HEAVY DUTY DIN 20066 / ISO 12151-2							-12-36	-16-42	-20-52	-24-52			
M41612 	METRIC O-RING FEMALE 24° CONE HEAVY DUTY - DIN 20066 / ISO 12151-2 (THRUST-WIRE NUT)						-10-24	-12-30	-16-36	-20-42	-24-52			
M41613 	METRIC O-RING FEMALE 24° CONE HEAVY DUTY - DIN 20066 / ISO 12151-2 (SLIP-ON NUT)						-10-30	-12-36 -12-42	-16-42	-20-52				
M41692 	90° METRIC O-RING FEMALE SWEPT ELBOW 24° CONE HEAVY DUTY DIN 20066 / ISO 12151-2 (THRUST-WIRE NUT)							-12-30	-16-36	-20-42	-24-52			
M41693 	90° METRIC O-RING FEMALE SWEPT ELBOW 24° CONE HEAVY DUTY DIN 20066 / ISO 12151-2 (SLIP-ON NUT)						-10-30	-12-30 -12-36	-16-36 -16-42	-20-42 -20-52				

METRIC

DN	5	6	8	10	12	16	19	25	31	38	51	60	63	76
Inch	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1.1/4"	1.1/2"	2"	2.3/8"	2.1/2"	3"
Size	-03	-04	-05	-06	-08	-10	-12	-16	-20	-24	-32	-38	-40	-48


M41642 	45° METRIC O-RING FEMALE SWEPT ELBOW 24° CONE HEAVY DUTY DIN 20066 / ISO 12151-2 (THRUST-WIRE NUT)						12-30	-30	-16-36	-20-42				
M41643 	45° METRIC O-RING FEMALE SWEPT ELBOW 24° CONE HEAVY DUTY DIN 20066 / ISO 12151-2 (SLIP-ON NUT)							-12-36	-16-42	-20-52				
M41293 	90° METRIC O-RING FEMALE MEDIUM/LONG DROP ELBOW 24° CONE HEAVY DUTY DIN 20066 / ISO 12151-2 (SLIP-ON NUT)						-10-30	-12-36	-16-42	-20-52				
M41243 	45° METRIC O-RING FEMALE MEDIUM/LONG DROP ELBOW 24° CONE HEAVY DUTY DIN 20066 / ISO 12151-2 (SLIP-ON NUT)						-10-30	-12-36	-16-42	-20-52				
M30050 	DOUBLE CONNECTOR									-20-20	-24-24	-32-32		
M49510WL 	WELDING TAIL						-10-18WL	-12-22WL	-16-28WL	-20-35WL				

Stainless steel:
CODE IM3...
CODE IM4...




MF2000® INTERLOCK SUPER TYPE

DN	5	6	8	10	12	16	19	25	31	38	51	60	63	76
Inch	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1.1/4"	1.1/2"	2"	2.3/8"	2.1/2"	3"
Size	-03	-04	-05	-06	-08	-10	-12	-16	-20	-24	-32	-38	-40	-48

FERRULES



M02800 	DOUBLE SKIVE FERRULE FOR EXTRA DUTY SPIRAL HOSE (8 PLY)														-48-48
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SAE, NPT, API

















MB3610 	ISO/SAE CODE 62 FLANGE SAE J516/ISO 12151-3														-48-48
MA3410 	API MALE WITH HEXAGONAL BODY (API 5B THREAD)														-48-48 -48-64
MA3510 	NPT MALE														-48-48

FERRULES

DN	8	10	12	16	19	25	31	38	51	60	63	76	89	102
Inch	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1.1/4"	1.1/2"	2"	2.3/8"	2.1/2"	3"	3.1/2"	4"
dash	-05	-06	-08	-10	-12	-16	-20	-24	-32	-38	-40	-48	-56	-64

M05400 	NO SKIVE FERRULE FOR 4WS 2WB HOSES					-12	-16	-20	-24	-32		-40	-48	-56	-64
M05500 	NO SKIVE FERRULE FOR 4-6 WS							-20	-24	-32					

BSP, METRIC, JIC, ORFS




















M80812 	FEMALE BSP 60° CONE BS5200 ISO 8434-6					12-12 12-16	16-12 16-16 16-20	20-16 20-20 20-24	24-20 24-24	32-32					
M80842 	FEMALE 45° BSP 60° CONE BS5200 ISO 8434-6					12-12 12-16	16-12 16-16 16-20	20-16 20-20 20-24	24-24	32-32					
M80892 	FEMALE 90° BSP 60° CONE BS5200 ISO 8434-6					12-12 12-16	16-12 16-16 16-20	20-16 20-20 20-24	24-24	32-32					
M70510 	MALE BSP 60° CONE BS5200 ISO 8434-6					12-12 12-16	16-16 16-20	20-20	24-24	32-32					
M81612 	FEMALE METRIC 24° CONE HEAVY DUTY DIN 3865 ISO 8434-1 S SERIES					12-30 12-36 12-42	16-36 16-42 12-52	20-42 20-52	24-52						
M81642/M81643 	FEMALE 90° METRIC 24° CONE HEAVY DUTY DIN 3865 ISO 8434-1 S SERIES					12-30 12-36	16-36 16-42	20-42	24-52						
M81692/M81693 	FEMALE 90° METRIC 24° CONE HEAVY DUTY DIN 3865 ISO 8434-1 S SERIES					12-30 12-36	16-36 16-42	20-42	24-52						
M71210 	MALE METRIC 24° CONE HEAVY DUTY DIN 3865 ISO 8434-1 S SERIES					12-30 12-36	16-36 16-42	20-42	24-52						
M82712 	FEMALE JIC 37° CONE SAE J514 ISO 8434-2					12-12 12-16	16-16 16-20	20-20 20-24	24-24	32-32					
M82542 	FEMALE 45° JIC 37° CONE SAE J514 ISO 8434-2					12-12	16-16	20-20	24-24	32-32					
M82592 	FEMALE 90° JIC 37° CONE SAE J514 ISO 8434-2					12-12 12-16	16-16	20-20 20-24	24-24	32-32					
M84792 	FEMALE 90° LONG DROP JIC 37° CONE SAE J514 ISO 8434-2					12-12	16-16	20-20	24-24	32-32					
M72510 	MALE JIC 37° CONE SAE J514 ISO 8434-2					12-12	16-16	20-20	24-24	32-32					
M82412 	FEMALE ORFS SAE J1453 ISO 8434-3					12-12	16-16	20-20	24-24						
M82442 	FEMALE 45° ORFS SAE J1453 ISO 8434-3					12-12	16-16	20-20	24-24						
M82492 	FEMALE 90° ORFS SAE J1453 ISO 8434-3					12-12	16-16	20-20	24-24						

CONNECTORS

MF2000® SPIRALFIT









ORFS, NPT, NPFT, API, SAE

DN	8	10	12	16	19	25	31	38	51	60	63	76	89	102
Inch	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1.1/4"	1.1/2"	2"	2.3/8"	2.1/2"	3"	3.1/2"	4"
dash	-05	-06	-08	-10	-12	-16	-20	-24	-32	-38	-40	-48	-56	-64

M72410 	MALE ORFS SAE J1453 ISO 8434-3					12-12	16-16	20-20	24-24					
M73510 	NPT ASME B1.20.1 API 6A								32-32					
M72810 	NPTF ASME B1.20.3 SAE J514					12-12	16-16	20-20	24-24	32-32				
M73410/M7340CS 	API LINE PIPE API 5B LINE PIPE THREAD								32-32					
M73410H00 M73410H00CS 	API LINE PIPE API 5B LINE PIPE THREAD								32-32					
M83311 	ISO/SAE CODE 61 FLANGE SAE J518-1 ISO 6162-1					12-12 12-16	16-12 16-16 16-20	20-20 20-24	24-24 24-32	32-32		40-40	48-48	56-56
M83341 	ISO/SAE CODE 61 FLANGE SAE J518-1 ISO 6162-1					12-12 12-16	16-16 16-20	20-20 20-24	24-24 24-32	32-32		40-40	48-48	56-56
M83391 	ISO/SAE CODE 61 FLANGE SAE J518-1 ISO 6162-1					12-12 12-16	16-16 16-20	20-20 20-24	24-24 24-32	32-32		40-40	48-48	56-56
M83611 	ISO/SAE CODE 62 FLANGE SAE J518-2 ISO 6162-2					12-12 12-16	16-12 16-16 16-20	20-16 20-20 20-24	24-20 24-24 24-32	32-24 32-32				
M83641 	ISO/SAE CODE 62 FLANGE SAE J518-2 ISO 6162-2					12-12	16-12 16-16 16-20	20-16 20-20 20-24	24-20 24-24 24-32	32-32				
M83691 	ISO/SAE CODE 62 FLANGE SAE J518-2 ISO 6162-2					12-12	16-12 16-16 16-20	20-16 20-20 20-24	24-20 24-24 24-32	32-32				
M83631 	ISO/SAE CODE 62 FLANGE SAE J518-2 ISO 6162-2					12-12	16-16	20-20	24-24	32-32				
M83661 	ISO/SAE CODE 62 FLANGE SAE J518-2 ISO 6162-2					12-12 12-16	16-16	20-20 20-24	24-24	32-32				
M88511 	XTRAFRANGE/62 SAE J514-2 ISO 6162-2 PORT COMPATIBLE					12-12	16-16	20-20	24-24	32-32				
M88541 	XTRAFRANGE/62 SAE J514-2 ISO 6162-2 PORT COMPATIBLE					12-12	16-16	20-20	24-24	32-32				
M88591 	XTRAFRANGE/62 SAE J514-2 ISO 6162-2 PORT COMPATIBLE					12-12	16-16	20-20	24-24	32-32				
M83711 	FLANGE PLUS SAE J514-2 ISO 6162-2 PORT COMPATIBLE					12-12	16-16	20-20						
M83741 	FLANGE PLUS SAE J514-2 ISO 6162-2 PORT COMPATIBLE					12-12	16-16	20-20						
M83791 	FLANGE PLUS SAE J514-2 ISO 6162-2 PORT COMPATIBLE					12-12	16-16	20-20						



SAE

DN	8	10	12	16	19	25	31	38	51	60	63	76	89	102
Inch	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1.1/4"	1.1/2"	2"	2.3/8"	2.1/2"	3"	3.1/2"	4"
dash	-05	-06	-08	-10	-12	-16	-20	-24	-32	-38	-40	-48	-56	-64











M83911 	SUPERCAT FLANGE SAE J514-2 ISO 6162-2 PORT COMPATIBLE					12-12 12-16	16-16 16-20	20-20 20-24	24-24 24-32	32-24 32-32				
M83941 	SUPERCAT FLANGE SAE J514-2 ISO 6162-2 PORT COMPATIBLE					12-12 12-16	16-16 16-20	20-20 20-24	24-24 24-32	32-32				
M83991 	SUPERCAT FLANGE SAE J514-2 ISO 6162-2 PORT COMPATIBLE					12-12 12-16	16-16 16-20	20-20 20-24	24-24 24-32	32-32				
M83921 	SUPERCAT FLANGE SAE J514-2 ISO 6162-2 PORT COMPATIBLE					12-12 12-16	16-16 16-20	20-20 20-24	24-24					
M83931 	SUPERCAT FLANGE SAE J514-2 ISO 6162-2 PORT COMPATIBLE					12-12 12-16	16-16 16-20	20-20 20-24	24-24 24-32	32-32				
M83961 	SUPERCAT FLANGE SAE J514-2 ISO 6162-2 PORT COMPATIBLE					12-12 12-16	16-16 16-20	20-20 20-24	24-24	32-32				
M83971 	SUPERCAT FLANGE SAE J514-2 ISO 6162-2 PORT COMPATIBLE					12-12 12-16	16-16 16-20	20-20 20-24	24-24 24-32	32-32				
M89510WL 	WELDING TAIL					12-22	16-28	20-35						

DN	5	6	8	10	12	16	19	25	31	38	51	60	63	76
Inch	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1.1/4"	1.1/2"	2"	2.3/8"	2.1/2"	3"
Size	-03	-04	-05	-06	-08	-10	-12	-16	-20	-24	-32	-38	-40	-48

FERRULES



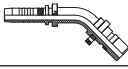





M01750 	DOUBLE SKIVE FERRULE FOR EXTRA DUTY SPIRAL HOSES (4 PLY)							-12						
M01800/1810 	DOUBLE SKIVE FERRULE FOR EXTRA DUTY SPIRAL HOSES (6 PLY)								-16	-20	-24	-32		

NPTF, SAE







M57810 	NPTF MALE 60° CONE SEAT - SAE J516/J514							-12-12	-16-16	-20-20	-24-24	-32-32		-40-40	-48-48
M53510 	NPT MALE											-32-32		-40-40	-48-48
M53410 	API MALE WITH HEXAGONAL BODY (API 5B THREAD)											-32-32		-40-40	-48-48 -48-64
M53410...H00 	API MALE WITH CYLINDRICAL BODY (API 5B THREAD)											-32-32		-40-40	-48-48 -48-64
M68610 	ISO/SAE CODE 62 FLANGE SAE J516 / ISO 12151-3							-12-12	-16-16	-20-20	-24-24	-32-32 -32-40		-40-32 -40-40	-48-48
M68690 	90° ISO/SAE CODE 62 FLANGE SAE J516 / ISO 12151-3							-12-12	-16-16	-20-20	-24-24	-32-32			
M68640 	45° ISO/SAE CODE 62 FLANGE SAE J516 / ISO 12151-3								-16-16	-20-20	-24-24	-32-32			
M68510 	XTRAFRANGE (SAE J518 CODE 62 ISO 6162-2 PORT COMPATIBLE)								-16-16	-20-20 -24-24	-24-24	-32-32		-40-40	
M68590 	90° XTRAFRANGE (SAE J518 CODE 62 ISO 6162-2 PORT COMPATIBLE)								-16-16	-20-20 -24-24	-24-24	-32-32		-40-40	
M68540 	45° XTRAFRANGE (SAE J518 CODE 62 ISO 6162-2 PORT COMPATIBLE)								-16-16	-20-20 -24-24	-24-24	-32-32		-40-40	

EASY FIT

DN	5	6	8	10	12	16	19	25	31	38	51	60	63	76
Inch	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1.1/4"	1.1/2"	2"	2.3/8"	2.1/2"	3"
Size	-03	-04	-05	-06	-08	-10	-12	-16	-20	-24	-32	-38	-40	-48




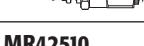

M12H10 	EASY FIT STRAIGHT MALE INSERT		-04-04 -04-06	-05-06	-06-04 -06-06 -06-08	-08-06 -08-08	-10-08 -10-12	-12-12							
M12H90 	EASY FIT 90° ELBOW MALE INSERT		-04-04 -04-06	-05-06	-06-04 -06-06	-08-08	-10-08 -10-12	-12-12							
M12H40 	EASY FIT 45° ELBOW MALE INSERT		-04-04 -04-06	-05-06	-06-04 -06-06	-08-08	-10-08 -10-12	-12-12							
M22H10 	EASY FIT STRAIGHT FEMALE INSERT		-04-04		-06-06	-08-08	-10-08 -10-12	-12-12							
O82H10 	EASY FIT CARTRIDGE		-04		-06	-08	-12								
A52032H 	STRAIGHT ADAPTOR BSP MALE OR BOSS TYPE ISO 1179 EASY FIT FEMALE PORT		-04-04 -04-06		-06-06 -08-06	-08-08	-12-12 -16-12								
A52302H 	STRAIGHT ADAPTOR BSP MALE OR BOSS TYPE ISO 11926 EASY FIT FEMALE PORT		-06-04		-06-06 -08-06	-08-08 -10-08	-10-12 -12-12								
A52192H 	STRAIGHT ADAPTOR METRIC MALE ISO 6149 EASY FIT FEMALE PORT		-14-04 -16-04		-18-06 -22-06	-22-08 -27-08	-27-12 -33-12								

FAST FIT

M13H10 	FAST FIT STRAIGHT MALE INSERT		-04-06		-06-06	-06-08	-12-12	-16-16							
M13H90 	FAST FIT 90° ELBOW MALE INSERT		-04-06		-06-06	-06-08	-12-12	-16-16							
A52013H 	BSP MALE OR BOSS TYPE TO ISO 1179-2		-04-06		-06-06	-06-08	-12-12	-16-16							
A52323H 	SAE MALE OR BOSS TYPE TO ISO J1926-2		-04-06		-06-06	-06-08	-12-12	-16-16							
A52193H 	STRAIGHT ADAPTOR METRIC MALE ISO 6149-2		-14-06		-16-06	-22-08	-27-12	-33-16							
A52283H 	STRAIGHT ADAPTOR NPTF MALE TO ASME B1.20.3		-04-06		-06-06	-06-08	-12-12	-16-16							

BSP, NPTF, ORFS, JIC, SAE

DN	5	6	8	10	12	16	19	25	31	38	51	60	63	76
Inch	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1.1/4"	1.1/2"	2"	2.3/8"	2.1/2"	3"
Size	-03	-04	-05	-06	-08	-10	-12	-16	-20	-24	-32	-38	-40	-48





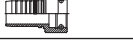

MR10510 	MALE BSP 60° CONE BS5200 ISO 8434-6		04-04		06-06	08-08	10-10	12-12	16-16	20-20				
MR20812 	FEMALE BSP 60° CONE BS5200 ISO 8434-6		04-04		06-06	08-08	10-10	12-12	16-16					
MR12810 	MALE NPTF ASME B1.20.3 SAE J514		04-04		06-06	08-08	10-10	12-12	16-16					
MR13210 	MALE SAE ORB SAE J 1926-2 HEAVY DUTY SERIES				06-06	08-08	10-10	12-12	16-16					
MR11910 	MALE METRIC ISO 6149-2 HEAVY DUTY SERIES				06-18	08-22	10-27	-12-27	-16-33					
MR22411 	FEMALE ORFS SAE J 1453 ISO 8434-3				06-06	08-08	10-10	12-12	16-16					
MR22711 	FEMALE JIC SAE J 514 ISO 8434-2				06-06	08-08	10-10	12-12	16-16					
MR23311 	ISO/SAE CODE 62 FLANGE SAE J 518-1 ISO 6162-1								-20-20		-40-40			
MR30510 	MALE BSP 60° CONE BS5200 ISO 8434-6							12-12	16-16	-20-20				
MR40812 	FEMALE BSP 60° CONE BS5200 ISO 8434-6							12-12	16-16					
MR32810 	MALE NPTF ASME B1.20.3 SAE J 514							12-12	16-16					
MR33210 	MALE SAE ORB SAE J 1926-2 HEAVY DUTY SERIES							12-12	16-16					
MR31910 	MALE METRIC ISO 6149-2 HEAVY DUTY SERIES							-12-27	-16-33					
MR42510 	JIC SAE J 514 ISO 8434-2							-12-12	16-16					
MR42410 	FEMALE ORFS SAE J 1453 ISO 8434-3							-12-12	16-16					

SOFT ROCK MINING CONNECTION

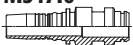



XXL

DN	6	10	12	19	25	31	38	51	63	76	89	102
Inch	1/4"	3/8"	1/2"	3/4"	1"	1.1/4"	1.1/2"	2"	2.1/2"	3"	3.1/2"	4"
dash	-04	-06	-08	-12	-16	-20	-24	-32	-40	-48	-56	-64




MF2000® MULTIFIT TYPE INSERT

 M14810	STAPLE-LOCK MALE SAE J1467		-04-04	-06-06	-08-08	-12-12	-16-16	-20-20	-24-24	-32-32	-40-40	-48-48		
 M14810...BF	STAPLE-LOCK MALE SAE J1467							-20-20	-24-24	-32-32	-40-40	-48-48		
 M14610	SUPER STAPLE-LOCK MALE				-12-12	-16-16	-20-20							
 M15910	LOW PRESSURE FLUSHFIT MALE							-24-24	-32-32	-40-40	-48-48	-56-56		
 M25910	LOW PRESSURE FLUSHFIT FEMALE							-24-24	-32-32	-40-40	-48-48	-56-56		
 M18110	MALE GROOVER CONNECTION							-32-32		-40-40	-48-48			





MF2000® INTERLOCK PLUS TYPE INSERT

 M34710	SUPER STAPLE-LOCK MALE				-12-12	-16-16	-20-20	-24-24	-32-32					
 M34710...BF	SUPER STAPLE-LOCK MALE				-12-12	-16-16	-20-20	-24-24	-32-32					
 M36110	HIGH PRESSURE FLUSHFIT MALE							-24-24	-32-32					
 M46110	HIGH PRESSURE FLUSHFIT FEMALE							-24-24	-32-32					

MF2000® SPIRAL FIT TYPE

 M74710	SUPER STECKO LOCK-MALE				-12-12	-16-16	-20-20	-24-24	-32-32					
 M75910	LOW PRESSURE FLUSH-FIT MALE									-40-40	-48-48	-56-56		
 M85910	LOW PRESSURE FLUSH-FIT FEMALE									-40-40	-48-48	-56-56		

MF2000® XTRALOCK TYPE INSERT

 M54610	SUPER STAPLE-LOCK MALE								-32-32	-40-40				
 M54610...BF	SUPER STAPLE-LOCK MALE								-32-32	-40-40				
 M56110	HIGH PRESSURE FLUSHFIT MALE								-32-32	-40-40				
 M66110	HIGH PRESSURE FLUSHFIT FEMALE								-32-32	-40-40				


















CONNECTORS

SOFT ROCK MINING CONNECTION

XXL

DN	6	10	12	19	25	31	38	51	63	76	89	102
Inch	1/4"	3/8"	1/2"	3/4"	1"	1.1/4"	1.1/2"	2"	2.1/2"	3"	3.1/2"	4"
dash	-04	-06	-08	-12	-16	-20	-24	-32	-40	-48	-56	-64

STAPLE-LOCK ADAPTORS


















ASA01 	STRAIGHT STAPLE-LOCK FEMALE ADAPTOR		-04-04	-06-06	-08-08	-12-12	-16-16	-20-20	-24-22	-32-32	-40-40	-48-48		
ASA02 	90° STAPLE-LOCK FEMALE ADAPTOR		-04-04	-06-06	-08-08	-12-12	-16-16	-20-20	-24-20	-32-32				
ASA03 (*) 	UNION TEE STAPLE-LOCK FEMALE		■	■	■	■	■	■	■					
ASA03Y (*) 	Y ADAPTOR STAPLE-LOCK FEMALE			■	■	■								
ASA04 (*) 	CROSS ADAPTOR STAPLE-LOCK FEMALE		■	■	■	■	■	■						
ASA06 	STAPLE-LOCK FEMALE END CAP		-04-04	-06-06	-08-08	-12-12	-16-16	-20-20	-24-24	-32-32	-40-40	-48-48		
ASA11 	STRAIGHT ADAPTOR SWIVEL STAPLE-LOCK FEMALE		-04-04 -04-06 -04-08	-06-06 -06-08 -06-12	-08-08 -08-10 -08-12	-12-12 -12-16 -12-20	-16-16 -16-20	-20-20						
ASA12 	90° ADAPTOR SWIVEL STAPLE-LOCK FEMALE		-04-04	-06-06	-08-08	-12-12	-16-16	-20-20						
ASA13 (*) 	UNION TEE SWIVEL STAPLE-LOCK FEMALE		■	■	■	■	■	■						
ASA15 	45° ADAPTOR SWIVEL STAPLE-LOCK FEMALE		-04-04	-06-06	-08-08	-12-12	-16-16	-20-20						
ASA16 	SWIVEL STAPLE-LOCK FEMALE - BSP BANJO ADAPTOR		-04-04	-06-06 -06-08	-08-06 -08-08									
ASA21 	STRAIGHT ADAPTOR STAPLE-LOCK MALE		-04-04 -04-06 -04-08	-06-06 -06-10 -06-12	-08-06 -08-12 -08-16 -08-24	-12-12 -12-20 -12-24 -12-32	-16-16 -16-20 -16-24 -16-32	-20-20 -20-24 -20-32	-24-24 -24-32	-32-32				
ASA29 	STAPLE-LOCK MALE END PLUG		-04-04	-06-06	-08-08	-12-12	-16-16	-20-20	-24-24	-32-32	-40-40	-48-48		
ASA31F 	STRAIGHT ADAPTOR STAPLE-LOCK MALE - FEMALE			-06-06	-08-06 -08-12	-12-08	-16-12							
ASA31 	STRAIGHT ADAPTOR STAPLE-LOCK MALE - SWIVEL FEMALE		-04-04 -04-06 -04-08	-06-06 -06-08 -06-12	-08-04 -08-06 -08-08 -08-12	-12-08 -12-12 -12-16 -12-20	-16-06 -16-08 -16-12 -16-20	-20-06 -20-08 -20-12 -20-16						
ASA32F 	90° ADAPTOR STAPLE-LOCK MALE - FEMALE			-06-08	-08-08	-12-12	-16-16	-20-20						
ASA32 	90° ADAPTOR STAPLE-LOCK MALE - SWIVEL FEMALE		-04-04	-06-06	-08-08	-12-12	-16-16	-20-20						

(*) A WIDE RANGE OF COMBINATIONS IS AVAILABLE

■ SIZES AVAILABLE

DN	6	10	12	19	25	31	38	51	63	76	89	102
Inch	1/4"	3/8"	1/2"	3/4"	1"	1.1/4"	1.1/2"	2"	2.1/2"	3"	3.1/2"	4"
dash	-04	-06	-08	-12	-16	-20	-24	-32	-40	-48	-56	-64

STAPLE-LOCK ADAPTORS

ASA33 (*) 	BRANCH TEE STAPLE-LOCK SWIVEL FEMALE - MALE		■	■	■	■						
ASA34F (*) 	RUN TEE STAPLE-LOCK MALE - FEMALE			■	■	■	■					
ASA34 (*) 	RUN TEE STAPLE-LOCK MALE - SWIVEL FEMALE		■	■	■	■	■					
ASA35F 	45° ADAPTOR STAPLE-LOCK MALE - FEMALE			-06-06	-08-08	-12-12						
ASA35 	45° ADAPTOR STAPLE-LOCK MALE - SWIVEL FEMALE		-04-04 -04-06	-06-06	-08-08	-12-12	-16-16	-20-20				
ASA40F 	BSP MALE FLAT FACE FOR BONDED WASHER - STAPLE-LOCK FEMALE ADAPTOR							-24-24	-32-32			
ASA40 	BSP MALE FLAT FACE FOR BONDED WASHER - STAPLE-LOCK SWIVEL FEMALE ADAPTOR		-04-04	-06-04 -06-06 -06-08	-08-06 -08-08 -08-12	-12-08 -12-12 -12-16	-16-08 -16-12 -16-16 -16-20	-20-12 -20-16 -20-20 -24-24	-32-32			
ASA41C 	BSP MALE FRONT SEAL HEX. SOCKET HEAD STAPLE-LOCK SWIVEL FEMALE ADAPTOR					-12-06 -12-08 -12-12						
ASA42 	BSP MALE FLAT FACE DIN 3852-2 FORM A - STAPLE-LOCK SWIVEL FEMALE ADAPTOR		-04-04	-06-04 -06-06 -06-08	-08-06 -08-08 -08-12	-12-08 -12-12 -12-20	-16-08 -16-12 -16-16 -16-20	-20-16 -20-20	-24-20			
ASA44 	90° ADAPTOR BSP FEMALE 60° CONE - STAPLE-LOCK SWIVEL FEMALE		-04-04	-06-06	-08-08							
ASA46 	BSP MALE FLAT FACE FOR BONDED WASHER STAPLE-LOCK MALE ADAPTOR		-04-04 -04-06	-06-04 -06-06 -06-08	-08-06 -08-08	-12-08 -12-12 -12-16	-16-08 -16-12 -16-16 -16-20	-20-20	-24-24	-32-32		
ASA48 	STAPLE-LOCK MALE - BSP FIXED FEMALE ADAPTOR		-04-04	-06-06	-08-06 -08-08							
ASA50F 	NPTF MALE - STAPLE-LOCK FEMALE ADAPTOR							-24-24	-32-32			
ASA50 	NPTF MALE - STAPLE-LOCK SWIVEL FEMALE ADAPTOR		-04-04 -04-06	-06-04 -06-06 -06-08	-08-06 -08-08 -08-10	-12-08 -12-12 -12-16	-16-12 -16-16 -16-20	-20-20				
ASA52F 	90° ADAPTOR NPTF MALE STAPLE-LOCK FEMALE							-24-24	-32-32			
ASA52 	90° ADAPTOR NPTF MALE - STAPLE-LOCK SWIVEL FEMALE		-04-04 -04-06 -04-08	-06-04 -06-06 -06-08	-08-06 -08-08 -08-12	-12-08 -12-12 -12-16	-16-12 -16-16					
ASA55 	45° ADAPTOR NPTF MALE - STAPLE-LOCK SWIVEL FEMALE		-04-04	-06-06	-08-08	-12-12	-16-16	-20-20				

(*) A WIDE RANGE OF COMBINATIONS IS AVAILABLE

■ SIZES AVAILABLE










CONNECTORS

SOFT ROCK MINING CONNECTION








XXL

DN	6	10	12	19	25	31	38	51	63	76	89	102
Inch	1/4"	3/8"	1/2"	3/4"	1"	1.1/4"	1.1/2"	2"	2.1/2"	3"	3.1/2"	4"
dash	-04	-06	-08	-12	-16	-20	-24	-32	-40	-48	-56	-64

STAPLE-LOCK ADAPTORS

ASA56 	NPTF MALE - STAPLE-LOCK MALE ADAPTOR		-04-04 -04-06	-06-04 -06-06 -06-08	-08-06 -08-08 -08-12	-12-08 -12-12 -12-16	-16-12 -16-16	-20-20	-24-24	-32-32			
ASA56L 	NPTF MALE - STAPLE-LOCK MALE ADAPTOR LONG BODY		-04-04 -04-06	-06-06 -06-08	-08-08	-12-12	-16-16						
ASA56XL 	NPTF MALE - STAPLE-LOCK MALE ADAPTOR EXTRA LONG BODY		-04-04	-06-06 -08-08	-12-12	-16-16	-20-20						
ASA60 	SAE MALE O-RING BOSS TYPE - STAPLE-LOCK SWIVEL FEMALE ADAPTOR		-04-04 -04-06	-06-04 -06-06 -06-08	-08-06 -08-08 -08-12	-12-06 -12-08 -12-12	-16-12 -16-16 -16-20	-20-12 -20-20					
ASA62 	90° ADJUSTABLE SAE MALE O-RING BOSS TYPE - STAPLE-LOCK SWIVEL FEMALE ADAPTOR		-04-04 -04-06	-06-04 -06-06 -06-08	-08-06 -08-08	-12-08 -12-12	-16-16	-20-20					
ASA65 	45° ADJUSTABLE SAE MALE O-RING BOSS TYPE - STAPLE-LOCK SWIVEL FEMALE ADAPTOR		-04-04 -04-06	-06-04 -06-06 -06-08	-08-06 -08-08	-12-08 -12-12 -12-16 -12-20							
ASA66 	SAE MALE O-RING BOSS TYPE - STAPLE-LOCK MALE ADAPTOR		-04-04 -04-06	-06-04 -06-06 -06-08	-08-06 -08-08 -08-12	-12-12 -12-16	-16-16 -16-20	-20-20					
ASA66L 	SAE MALE O-RING BOSS TYPE - STAPLE-LOCK MALE ADAPTOR LONG BODY		-04-04 -04-06	-06-06	-08-06 -08-08	-12-12	-16-16	-20-20					
ASA66XL 	SAE MALE O-RING BOSS TYPE - STAPLE-LOCK MALE ADAPTOR EXTRA LONG BODY		-04-04	-06-04 -06-06	-08-06 -08-08	-12-12							

SUPER STAPLE-LOCK ADAPTORS


















ASH01 	STRAIGHT SUPER STAPLE-LOCK FEMALE ADAPTOR					-12-12	-16-16	-20-20	-24-24	-32-32	-40-40			
ASH02 	90° ADAPTOR SUPER STAPLE-LOCK FEMALE						-16-16	-20-20	-24-24	-32-32	-40-40			
ASH03 (*) 	UNION TEE SUPER STAPLE-LOCK FEMALE						■	■	■	■	■			
ASH06 	SUPER STAPLE-LOCK FEMALE END CAP					-12-12	-16-16	-20-20	-24-24	-32-32				
ASH12 	90° ADAPTOR SUPER STAPLE-LOCK SWIVEL FEMALE					-12-12								
ASH13 (*) 	UNION TEE SUPER STAPLE-LOCK SWIVEL FEMALE					■								
ASH13-SA (*) 	BRANCH TEE SUPER STAPLE-LOCK SWIVEL FEMALE - STAPLE-LOCK SWIVEL FEMALE				■									

(*) A WIDE RANGE OF COMBINATIONS IS AVAILABLE

■ SIZES AVAILABLE

SUPER STAPLE-LOCK ADAPTORS

DN	6	10	12	19	25	31	38	51	63	76	89	102
Inch	1/4"	3/8"	1/2"	3/4"	1"	1.1/4"	1.1/2"	2"	2.1/2"	3"	3.1/2"	4"
dash	-04	-06	-08	-12	-16	-20	-24	-32	-40	-48	-56	-64

ASH21 	STRAIGHT ADAPTOR SUPER STAPLE-LOCK MALE					-12-12 -12-16	-16-16 -16-20	-20-20 -20-24	-24-24 -24-32	-32-32 -40-40			
ASH21-SA 	STRAIGHT ADAPTOR STAPLE-LOCK MALE - SUPER STAPLE-LOCK MALE				-08-12	-12-12 -12-16 -12-32	-16-16 -16-20 -16-32	-20-20 -20-24 -20-32					
ASH29 	SUPER STAPLE-LOCK MALE END PLUG					-12-12	-16-16	-20-20	-24-24	-32-32 -40-40			
ASH31F 	STRAIGHT ADAPTOR SUPER STAPLE-LOCK MALE FEMALE								-32-20 -32-24				
ASH31 	STRAIGHT ADAPTOR SUPER STAPLE-LOCK MALE SWIVEL FEMALE					-16-20	-20-12 -20-18	-24-12 -24-16 -24-20					
ASH31-SA 	STRAIGHT ADAPTOR STAPLE-LOCK MALE - SUPER STAPLE-LOCK SWIVEL FEMALE					-16-12 -16-16	-20-12 -20-16	-24-16 -32-16					
ASH31-SA 	STRAIGHT ADAPTOR SUPER STAPLE-LOCK MALE - STAPLE-LOCK SWIVEL FEMALE					-12-08 -12-12	-16-12 -16-16	-20-08 -20-16 -20-20	-24-16 -24-20 -32-20				
ASH32 	90° ADAPTOR SUPER STAPLE-LOCK MALE - SWIVEL FEMALE					-12-12							
ASH32F 	90° ADAPTOR SUPER STAPLE-LOCK MALE - FEMALE					-12-12	-16-16	-20-20	-24-24	-32-32			
ASH35 	45° ADAPTOR SUPER STAPLE-LOCK MALE - SWIVEL FEMALE					-12-12	-16-16 -16-32	-20-20	-24-24	-32-32			
ASH35F 	45° ADAPTOR SUPER STAPLE-LOCK MALE - FEMALE							-20-20	-24-24	-32-32			
ASH40F 	BSP MALE FLAT FACE FOR BONDED WASHER - SUPER STAPLE-LOCK FEMALE ADAPTOR					-12-12	-16-16						
ASH40 	BSP MALE FLAT FACE FOR BONDED WASHER - SUPER STAPLE-LOCK SWIVEL FEMALE ADAPTOR					-12-12	-16-16	-20-20	-24-24	-32-32			
ASH46 	BSP MALE FLAT FACE FOR BONDED WASHER - SUPER STAPLE-LOCK MALE ADAPTOR					-12-12	-16-16	-20-20	-24-24	-32-32			
ASH50F 	STRAIGHT ADAPTOR NPTF MALE - SUPER STAPLE-LOCK FEMALE							-20-20	-24-24	-32-32			
ASH50 	STRAIGHT ADAPTOR NPTF MALE SUPER STAPLE-LOCK SWIVEL FEMALE					-12-12	-16-16						
ASH56 	STRAIGHT ADAPTOR NTPF MALE SUPER STAPLE-LOCK MALE					-12-12	-16-16	-20-20	-24-24	-32-32			










CONNECTORS

SOFT ROCK MINING CONNECTION

XXL

DN	6	10	12	19	25	31	38	51	63	76	89	102
Inch	1/4"	3/8"	1/2"	3/4"	1"	1.1/4"	1.1/2"	2"	2.1/2"	3"	3.1/2"	4"
dash	-04	-06	-08	-12	-16	-20	-24	-32	-40	-48	-56	-64

FLUSHFIT ADAPTORS



ASAF01 	STRAIGHT FLUSHFIT FEMALE ADAPTOR								-24-24	-32-32	-40-40			
ASAF03 (*) 	UNION TEE FLUSHFIT FEMALE													
ASAF21 	STRAIGHT FLUSHFIT MALE ADAPTOR								-24-24	-32-32	-40-40			
ASAF21-SA 	STRAIGHT STAPLE-LOCK MALE - FLUSHFIT MALE ADAPTOR								-24-24	-32-32	-40-40			
ASAF29 	FLUSHFIT MALE END PLUG								-24	-32	-40			
ASAF31F-SA 	STRAIGHT FLUSHFIT MALE - STAPLE-LOCK FEMALE ADAPTOR								-24-24	-32-32	-40-32 -40-40			
ASAF31F-SA 	STRAIGHT STAPLE-LOCK MALE FLUSHFIT FEMALE ADAPTOR								-24-24	-32-32 -32-40	-40-40			
ASAF31F 	STRAIGHT FLUSHFIT MALE FEMALE ADAPTOR								-24-24	-32-32 -32-40	-40-40			
ASAF40F 	BSP MALE FLAT FACE FOR BONDED WASHER - FLUSHFIT FEMALE ADAPTOR								-24-24	-32-32	-40-40			
ASAF46 	BSP MALE FLAT FACE FOR BONDED WASHER - FLUSHFIT MALE ADAPTOR								-24-24	-32-32	-40-40			
ASAF50F 	STRAIGHT NPTF MALE - FLUSHFIT FEMALE ADAPTOR								-24-24	-32-32	-40-40			
ASAF56 	STRAIGHT NPTF MALE - FLUSHFIT MALE ADAPTOR								-24-24	-32-32	-40-40			

(*) A WIDE RANGE OF COMBINATIONS IS AVAILABLE









■ SIZES AVAILABLE

DN	6	10	12	19	25	31	38	51	63	76	89	102
Inch	1/4"	3/8"	1/2"	3/4"	1"	1.1/4"	1.1/2"	2"	2.1/2"	3"	3.1/2"	4"
dash	-04	-06	-08	-12	-16	-20	-24	-32	-40	-48	-56	-64

HP FLUSHFIT ADAPTORS

ASHF01 	STRAIGHT HP FLUSHFIT FEMALE								-24-24	-32-32	-40-40			
ASHF29 	HP FLUSHFIT MALE END PLUG								-24-24	-32-32	40-40			

BALL VALVES (□)

ASAV01-6RD 	STAPLE LOCK CUBIC SHAPED VALVE FIXED FEMALE			-06	-08	-12								
ASAV01 	STAPLE LOCK CUBIC SHAPED VALVE FIXED FEMALE						-16	-20	-24	-32				
ASAV31F 	STAPLE LOCK CUBIC SHAPED VALVE MALE - FIXED FEMALE			-06	-08	-12								
ASAV31F 	STAPLE LOCK CUBIC SHAPED VALVE MALE - FIXED FEMALE						-16	-20	-24	-32				
ASAV31 	STAPLE LOCK CUBIC SHAPED VALVE MALE - SWIVEL FEMALE	-04	-06	-08	-12	-16	-20							
ASAV11 	STAPLE LOCK CUBIC SHAPED VALVE SWIVEL FEMALE	-04	-06	-08	-12	-16	-20							
ASHV01 	SUPER STAPLE LOCK CUBIC SHAPED VALVE FIXED FEMALE				-12	-16	-20	-24	-32					
ASHV31 	SUPER STAPLE LOCK CUBIC SHAPED VALVE MALE - FIXED FEMALE				-12	-16	-20	-24	-32					

(□) ALTERNATIVE HANDLE AVAILABLE











CONNECTORS

ACCESSORIES

HYDRAULICS













HYDRAULICS

















DN	6	8	10	12	16	19	25	31	38	51	63	76	89	102
Inch	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1.1/4"	1.1/2"	2"	2.1/2"	3"	3.1/2"	4"
Size	-04	-05	-06	-08	-10	-12	-16	-20	-24	-32	-40	-48	-56	-64

020310 	BSP BANJO	-04-04 -04-06	-05-04 -05-06	-06-06 -06-08	-08-08	-10-10	-12-12	-16-16							
020910 	METRIC BANJO - DIN 7642	-04-12 -04-14	-05-14	-06-14 -06-16 -06-18	-08-18 -08-22	-10-22	-12-26								
080210 	BSP BOLT	-04		-06	-08	-10	-12	-16							
080810 	METRIC BOLT - DIN 7643	-12	-14	-16	-18	-22	-26								
083308 	CLAMPS CODE 61				-08		-12	-16	-20	-24	-32	-40	-48	-56	-64
083609 	CLAMPS CODE 62				-08		-12	-16	-20	-24	-32				
083607 	ONE PIECE CLAMPS CODE 62						-12	-16	-20	-24	-32	-40	-48		
088407 	ONE PIECE CLAMPS XTRAFLANGE 61							-16	-20	-24	-32				
088507 	ONE PIECE CLAMPS XTRAFLANGE 62						-12	-16	-20	-24	-32	-40			
082040 	ANTI-KINK						-12	-16	-20	-24	-32				

MINING

DN	6	8	10	12	16	19	25	31	38	51	60	63	76	89
Inch	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1.1/4"	1.1/2"	2"	2.3/8"	2.1/2"	3"	3.1/2"
Size	-04	-05	-06	-08	-10	-12	-16	-20	-24	-32	-38	-40	-48	-56



















ASA07 	STANDARD STAPLE ZINC PLATED		-04		-06	-08	-12	-16	-20	-24	-32				
ASA08 	STAINLESS STAPLE		-04		-06	-08	-12	-16	-20	-24	-32	-40	-48		
ASA08D 	STAINLESS "D" STAPLE		-04		-06	-08	-12	-16	-20	-24	-32	-40	-48		
ASA16W 	BSP BONDED WASHER		-04		-06	-08	-12	-16	-20	-24	-32				
ASA18 	STAPLE-LOCK MALE END O-RING		-04		-06	-08	-12	-16	-20	-24	-32	-40	-48		
ASA19 	STAPLE-LOCK MALE END BACK-UP RING		-04		-06	-08	-12	-16	-20	-24	-32				
ASH08 	STAINLESS STEEL SUPER STAPLE						-12	-16	-20	-24	-32				
ASH08D 	STAINLESS STEEL SUPER STAPLE-LOCK FORM "D"				-08		-12	-16	-20	-24	-32		-40		
ASHF08D 	STAINLESS STEEL HP FLUSH-FIT "D" FORM STAPLE									-24	-32		-40		
ASAF08 	STAINLESS STEEL FLUSHFIT STAPLE									-24	-32		-40		
O88107 	CLAMPS FOR MALE GROVED										-32		-40	-48	
ASH18 	SUPER STAPLE-LOCK MALE END O-RING										-32		-40	-48	

	QUICK COUPLINGS SERIES	FEMALE COUPLING	MALE COUPLING	SHUT-OFF SYSTEM	SPECIFICATIONS	SIZE									
						1/8"	1/4"	3/8"	1/2"	5/8"	3/4"	1"	1-1/4"	1-1/2"	2"
Q0 HYDRAULIC QUICK RELEASE COUPLINGS		MQS-A ISO A	Q008	Q002	POPPET VALVE	ISO 7241 series A		■	■	■		■	■	■	■
				Q004	SHIELDED POPPET				■						
			Q009	Q003	BALL VALVE				■						
		MQS-AP ISO A connectable under pressure	Q010	Q006	POPPET VALVE	ISO 7241 series A			■						
		MQS-AM ISO A connectable with male under pressure	Q011	-	POPPET VALVE	ISO 7241 series A			■						
		MQS-AB ISO A connectable with both parts under pressure	Q012	-	POPPET VALVE	ISO 7241 series A			■						
		MQS-B ISO B	Q024	Q021	POPPET VALVE	ISO 7241 series B	■	■	■	■		■	■		
		MQS-BOP ISO B for drilling BOP unit	Q026 F	Q021 F	POPPET VALVE	ISO 7241 series B + flame test res. to API 16D			■			■	■		
		MQS-N standard	Q032	Q029	POPPET VALVE	-		■	■	■		■	■	■	■
			Q033	Q030	BALL VALVE			■	■	■		■	■		
		MQS-NF standard push-pull	Q036		POPPET VALVE			■	■						
		MQS-AF push-pull	Q013	-	POPPET VALVE	ISO 7241 series A			■	■		■			
			Q014		BALL VALVE				■						
		MQS-AFP push-pull connectable under pressure	Q015	-	POPPET VALVE	ISO 7241 series A			■						
		MQS-AFM push-pull, connectable with male under pressure, flexible mounting	Q016	-	POPPET VALVE	ISO 7241 series A			■						
		MQS-AFB push-pull, connectable with both parts under pressure, flexible mounting	Q017	-	POPPET VALVE	ISO 7241 series A			■						
		MQS-ARM push-pull, connectable with male under pressure, rigid mounting	Q018	-	POPPET VALVE	ISO 7241 series A			■						
		MQS-ARB push-pull, connectable with both parts under pressure, rigid mounting	Q019	-	POPPET VALVE	ISO 7241 series A			■						
		MQS-VB braking circuit valve	Q048	Q047	FLAT VALVE	ISO 5676			■						
		MQS-VS agricultural valve	Q050	Q049	FLAT VALVE	-			■						

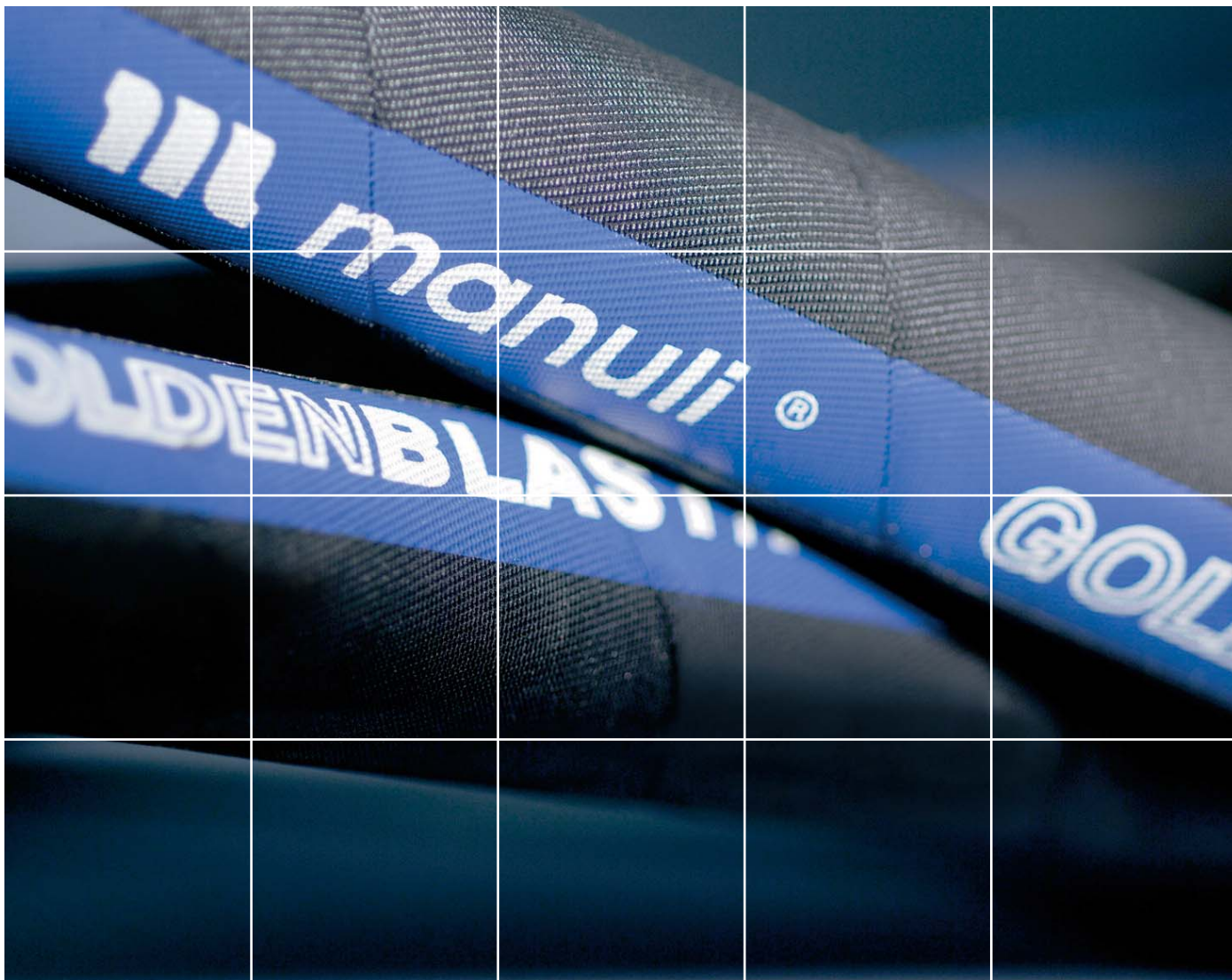
■ SIZES AVAILABLE

WE OFFER A COMPLETE RANGE
OF QUICK COUPLINGS, FULLY
TESTED AND FIELD VALIDATED.

QUICK RELEASE COUPLINGS **Q.Safe**

		QUICK COUPLINGS SERIES	FEMALE COUPLING	MALE COUPLING	SHUT-OFF SYSTEM	SPECIFICATIONS	SIZE									
							1/8"	1/4"	3/8"	1/2"	5/8"	3/4"	1"	1-1/4"	1-1/2"	2"
Q0 HYDRAULIC QUICK RELEASE COUPLINGS		MQS-D diagnostic	-	Q045	FLAT VALVE	ISO 15171-1		■								
		MQS-F flat-face	Q041	Q039	FLAT VALVE	ISO 16028 e HTMA (only 3/8" size)		■	■	■	■	■	■			
		MQS-FH	Q044	Q043	FLAT VALVE	ISO 16028			■	■		■	■			
		MQS-FP flat-face male connectable under pressure	-	Q040	FLAT VALVE	ISO 16028 e HTMA (only 3/8" size)			■	■		■				
		MQS-FS flat-face screw type	Q067	Q066	FLAT VALVE	Manuli standards					■	■	■		■	
		MQS-SG screw	Q052	Q051	POPPET VALVE	German Market interchangeable		■	■	■		■	■			
		MQS-SGR screw heavy duty	Q062	Q061	POPPET VALVE	German Market interchangeable			■	■		■	■		■	
		MQS-SH screw heavy duty	Q054	Q053	POPPET VALVE	French Market interchangeable		■	■	■		■	■	■		
		MQS-SC screw hydraulic cylinders	Q056	Q055	POPPET VALVE & BALL VALVE	-		■	■							
		MQS-ST screw for truck	Q058	Q057	POPPET VALVE	-						■	■			
Q2 CHECK VALVES		MQS-CV check valve	Q2A		VALVE	-		■	■	■		■	■			
		MQS-CVC check valve compact	Q2B		VALVE	-		■	■	■	■	■	■			
Q3 DHI DIRECT HOSE INTEGRATION		MQS-DHI ISO A	Q308	Q302	POPPET VALVE	ISO 7241 serie A				■						
		MQS-DHI push-pull	Q313	-	POPPET VALVE	ISO 7241 serie A				■						
		MQS-DHI flat-face	Q341	Q339	FLAT VALVE	ISO 16028 e HTMA (only 3/8" size)			■	■						
Q1 QUICK COUPLINGS ACCESSORIES AND SPARE PARTS		PLUG & CAPS	ALL RANGE		-	-		■	■	■	■	■	■	■	■	■
		PARKING	Q1A0114N - Q1A0104N		-	-				■						
		SPARE PARTS	ALL RANGE		-	-	■	■	■	■	■	■	■	■	■	■

■ SIZES AVAILABLE



WATER CLEANING

The **water cleaning** hose range is dedicated to hobby and professional water cleaning machines, with cold and hot water (not suitable for vapour steam applications).

It is designed according to safety norm IEC-2 with safety factor burst/working pressure 4:1.



Please note this product is designed for pressure wash applications. Any different use may reduce service life. Please contact Manuli Hydraulics for more information.

WATER BLASTING

The **water blasting** hose range is designed with the criteria of maximum robustness and easy handling in mind, complete with a dedicated fitting solution, to meet the safety and performance criteria connected with blasting applications.

Safety factor burst/working pressure is 2,5:1, it complies with international specifications (AS/NZ 4233.2, RMA-USA, ISO 7751, BFPA-UK, EN1829-2).





RANGE	HOSE	HOSE STRUCTURE	KEY PERFORMANCE
WATER CLEANING	K-JET	Wire braid	Pressure wash
	SUPERJET	Wire braid	Pressure wash
	SUPERJET/PLUS	Wire braid	Pressure wash
	PROJET	Wire braid	Pressure wash
WATER BLASTING	GOLDENBLAST™	Wire spiral	Safe waterblast technology
	GOLDENBLAST™/PLUS	Wire spiral	Safe waterblast technology
	GOLDENBLAST™/SIX	Wire spiral	Safe waterblast technology








GUIDE TO SELECT MANULI® HOSE BY W.P.

HOSE SIZE	WORKING PRESSURE (bar)														
	DN	5	6	8	10	12	16	19	25	31	38	51	60	63	76
	DASH	- 3	- 4	- 5	- 6	- 8	- 10	- 12	- 16	- 20	- 24	- 32	- 38	- 40	- 48
K-JET			210	210	210	210				*Safety factor burst/working pressure 4:1 Factor de seguridad presión de rotura/trabajo 4:1 Sicherheitsfaktor Berstdruck/Betriebsdruck 4:1 Fattore di sicurezza pressione di scoppio/di esercizio 4:1					
SUPERJET			280	250											
SUPERJET/PLUS			400	350	330	275									
PROJET			400	400	400	350									
GOLDENBLAST™					750	750				*Safety factor burst/working pressure 2,5:1 Factor de seguridad presión de rotura/trabajo 2,5:1 Sicherheitsfaktor Berstdruck/Betriebsdruck 2,5:1 Fattore di sicurezza pressione di scoppio/di esercizio 2,5:1					
GOLDENBLAST™/PLUS					1250	1100		1000	700						
GOLDENBLAST™/SIX						1450		1350							

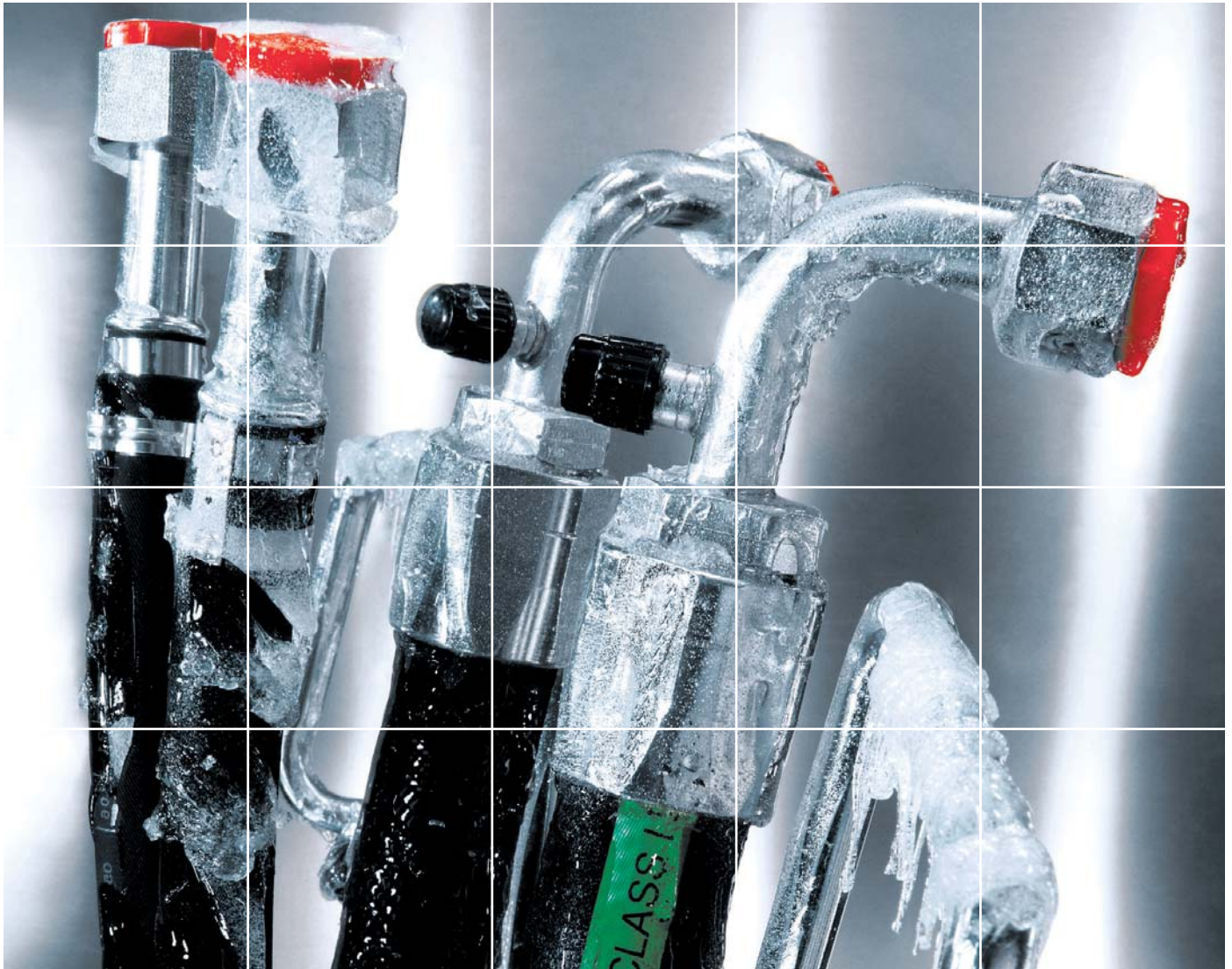
MF2000 FERRULES - WATER

DN	6	8	10	12	16	19	25	31	38	51	60	63	76	89
Inch	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1.1/4"	1.1/2"	2"	2.3/8"	2.1/2"	3"	3.1/2"
Size	-04	-05	-06	-08	-10	-12	-16	-20	-24	-32	-38	-40	-48	-56

M03400 	NO-SKIVE FERRULE W.B. HOSES	-04	-05	-06	-08									
M00120 	SKIVE FERRULE W.B. HOSES	-04	-05											
M00910 	SKIVE FERRULE W.B. & W.S. HOSES			-06	-08									
M00830 	NO-SKIVE FERRULE FOR COMPACT HOSES	-04	-05											

M01500 	DOUBLE SKIVE FERRULE FOR HEAVY DUTY SPIRAL HOSE (4PLY)						-16							
M01700 	DOUBLE SKIVE FERRULE FOR HEAVY DUTY SPIRAL HOSE (4PLY)			-06	-08	-12								
M01800 	DOUBLE SKIVE FERRULE FOR HEAVY DUTY SPIRAL HOSE (6PLY)				-08	-12								
M24913 	WASH CLEANER FEMALE	-04-22	-05-22	-06-22										
M57810 	NPTF MALE 60° CONE SEAT ASME B1.20.3			-06-06	-08-08	-12-12	-16-16							
M66613 	METRIC O-RING FEMALE 24° CONE HEAVY DUTY DIN 3865 ISO 8434-1			-06-22 -06-24	-08-24	-12-36	-16-42							
M65514 	BSP 60° CONE BS5200 ISO8434-6			-06-06	-08-08	-12-12								

Stainless steel:
CODE IM



The Manuli Refrigeration offer consists of reinforced rubber hoses, fittings, hose assemblies and kits. The Refrigeration offer is designed specifically to satisfy the most restricted requirements for:

- bus air conditioning and mobile refrigeration systems for "on-road industrial vehicles"
- air conditioning systems applied on off-highway industrial vehicles such as: agricultural machines, earth-moving machines, forestry machines, etc.

A special "field-attachable" fitting technology allowing a convenient mounting and disassembly operation is part of the product offer, in particular:

- Frigoclic® fitting range technology
- Reusable fitting range technology

Furthermore crimped fitting solutions are completely integrated on all hose lines.



Bus air conditioning



Off highway air conditioning



Mobile refrigeration










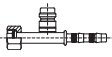
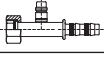
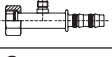

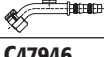





HOSE	KEY PERFORMANCE	INSERT	CLAMP	FERRULE	ONE-PIECE
REFRIMASTER	SAE J2064 TYPE E	FRIGOCLIC (field attachable solution)	C01000	C00700	-
REFRIMASTER PLUS			C01050	C00750	-
REFRISTAR	SAE J2064 TYPE B	STAR-FIT (reusable solution)	-	K00400	-
		STAR-CRIMP (crimped solution)	-	C00300	-
REFRIFAST	SAE J2064 TYPE A	-	-	-	FAST-CRIMP (OPC serie)
ULTRASTAR	SAE J2064 EXCEED TYPE B	STAR-CRIMP (crimped solution)		C00300	
		STAR-FIT (reusable solution)		K00400	

SELECTION GUIDE:

- **RefriMaster** - Universal hose compatible with the most common refrigerants and compressor lubricants; Extremely low permeability to refrigerant fluid; compact dimensions; low weight and high flexibility; Field attachable and crimped solutions available with the same FrigoClic™ insert.
- **RefriMaster Plus** - Extremely low permeability rate with a new reduced bending radius and improved resistance to kinking effect. Improved temperature resistance up to 140°C. Same double assembling solution (field attachable or crimped) with the FrigoClic™ insert
- **RefriStar** - High mechanical strength and high flexibility. Freedom of choice between the field attachable and the crimped assembling solution.
- **RefriFast** - Higher compact dimensions within type A hoses and outside diameter comparable with reduced barrier hoses; Low weight; Easy installation in space constraints; High flexibility and low bend radius;
- **UltraStar** - "A Type B hose with the permeability performance of a Type E". High mechanical strength, reduced bending radius and an extremely low permeation rate with the benefits of an all rubber hose. Same assembling solutions available for the RefriStar hose.




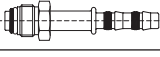



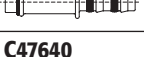








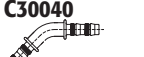


FRIGOCLIC

DN	5	8	10	13	16	22	28	35	51	60
Inch	3/16"	5/16"	13/32"	1/2"	5/8"	7/8"	1.1/8"	1.3/8"	2"	2.3/8"
dash	-04	-06	-08	-10	-12	-16	-20	-24	-32	-38

	REFRIMASTER FERRULE		-06	-08	-10	-12				
	REFRIMASTER PLUS FERRULE				-10	-12	-16			
	REFRIMASTER CLAMP		-06	-08	-10	-12				
	REFRIMASTER PLUS CLAMP				-10	-12	-16			
	45° SAE STRAIGHT FEMALE		-06-04 -06-06	-08-06 -08-08	-10-08 -10-10	-12-10				
	45° SAE FEMALE 45° ELBOW		-06-04 -06-06	-08-08	-10-10 -12-12	-12-10 -12-12				
	45° SAE FEMALE 90° ELBOW		-06-04 -06-06	-08-06 -08-08	-10-08 -10-10	-12-10 -12-12				
	SHORT VERSION 45° SAE FEMALE 90° ELBOW				-10-10					
	STRAIGHT O-RING FEMALE		-06-06 -06-08	-08-06 -08-08 -08-08105 -08-11	-10-08 -10-08103 -10-10 -10-11	-12-10 -12-11 -12-12	-16-12			
	STRAIGHT O-RING FEMALE WITH HIGH PRESSURE VALVE		-06-06	-08-08 -08-11	-10-08	-12-10				
	STRAIGHT O-RING FEMALE WITH LOW PRESSURE VALVE				-10-10 -10-11	-12-10				
	STRAIGHT O-RING FEMALE WITH 1/4" SAE CHARGE VALVE				-10-10					
	O-RING FEMALE 45° ELBOW		-06-06	-08-08 -08-11	-10-08 -10-10 -10-11	-12-10 -12-11 -12-12	-16-10			
	O-RING FEMALE 45° ELBOW WITH HIGH PRESSURE VALVE			-08-08						
	O-RING FEMALE 45° ELBOW WITH LOW PRESSURE VALVE				-10-10	-12-10				
	O-RING FEMALE 90° ELBOW		-06-06 -06-08	-08-06 -08-08 -08-08037 -08-11	-10-08 -10-10 -10-11	-12-10 -12-11 -12-12	-16-10			
	O-RING FEMALE 90° ELBOW WITH HIGH PRESSURE VALVE		-06-06	-08-08	-10-08					
	O-RING FEMALE 90° ELBOW WITH LOW PRESSURE VALVE				-10-10	-12-10				
	O-RING FEMALE 90° ELBOW WITH 1/4" SAE CHARGE VALVE			-08-08	-10-10					

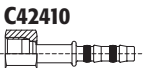

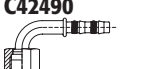
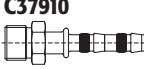

FRIGOCLIC

DN	5	8	10	13	16	22	28	35	51	60
Inch	3/16"	5/16"	13/32"	1/2"	5/8"	7/8"	1.1/8"	1.3/8"	2"	2.3/8"
dash	-04	-06	-08	-10	-12	-16	-20	-24	-32	-38


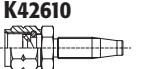
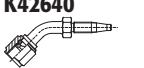

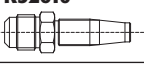
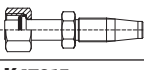

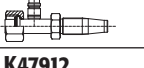

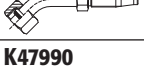
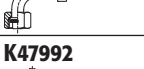

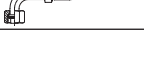
	SHORT VERSION O-RING FEMALE 90° ELBOW			-08-08 -08-11	-10-10 -10-11	-12-10 -12-11				
	SHORT VERSION O-RING FEMALE 90° ELBOW WITH HIGH PRESSURE VALVE			-08-11						
	SHORT VERSION O-RING FEMALE 90° ELBOW WITH LOW PRESSURE VALVE				-10-11	-12-11				
	STRAIGHT O-RING MALE		-06-06	-08-06 -08-08	-10-10	-12-10	-16-10			
	O-RING MALE 45° ELBOW		-06-06	-08-06 -08-08	-10-10	-12-10 -12-12				
	O-RING MALE 90° ELBOW		-06-06	-08-06 -08-08	-10-10	-12-10	-16-10			
	O-RING MALE 90° ELBOW WITH 1/4" SAE CHARGE VALVE		-06-06							
	STRAIGHT FITTING FOR EXPANSION VALVE		-06-06	-08-06	-10-12	-12-12				
	FITTING FOR EXPANSION VALVE 45° ELBOW		-06-06		-10-12	-12-12				
	FITTING FOR EXPANSION VALVE 90° ELBOW		-06-06		-10-10 -10-12	-12-12				
	STRAIGHT CONNECTION FITTING		-06-06	-08-08	-10-10	-12-12	-16-16			
	3 WAYS CONNECTION FITTING		-06-06-06 -06-06-08	-08-08-08 -08-08-10 -08-10-10 -08-10-12	-10-10-10 -10-10-12 -10-12-12	-12-12-12				
	"Y" CONNECTION FITTING			-08-08-08		-12-12-12				
	"H" CONNECTION FITTING		-06-06-10 -06-10-06	-08-08-08 -08-08-06	-10-10-06 -10-10-12 -10-12-10	-12-12-10 -12-12-12				
	STRAIGHT CONNECTION FITTING WITH HIGH PRESSURE VALVE		-06-06	-08-08	-10-10	-12-12				
	STRAIGHT CONNECTION FITTING WITH LOW PRESSURE VALVE				-10-10	-12-12				
	STRAIGHT CONNECTION FITTING WITH 1/4" SAE CHARGE VALVE		-06-06	-08-08	-10-10	-12-12				
	CONNECTION FITTING 45° ELBOW		-06-06	-08-08	-10-10	-12-12				
	CONNECTION FITTING 90° ELBOW		-06-06	-08-08	-10-10	-12-12	-16-16			

FRIGOCLIC

DN	5	8	10	13	16	22	28	35	51	60
Inch	3/16"	5/16"	13/32"	1/2"	5/8"	7/8"	1.1/8"	1.3/8"	2"	2.3/8"
dash	-04	-06	-08	-10	-12	-16	-20	-24	-32	-38




















	STRAIGHT ORS FLAT FEMALE		-06-04 -06-06	-08-08	-10-08 -10-10	-12-12	-16-16				
	ORS FLAT SEAL FEMALE 45° ELBOW		-06-04 -06-06	-08-08	-10-08 -10-10	-12-12					
	ORS FLAT SEAL FEMALE 90° ELBOW		-06-04 -06-06 -06-08	-08-08	-10-08 -10-10	-12-10 -12-12	-16-16				
	STRAIGHT MALE WITH O-RING SEAT		-06-06	-08-10	-10-10						
	MALE WITH O-RING SEAT 90° ELBOW			-08-06	-10-08						

STAR-FIT

	STAR-FIT FERRULE	-04	-06	-08	-10	-12	-16	-20	-24		
	45° SAE STRAIGHT FEMALE	-04-04	-06-06	-08-08	-10-08 -10-10	-12-10 -12-12	-16-12 -16-16H00				
	45° SAE FEMALE 45° ELBOW	-04-04	-06-06	-08-08	-10-10	-12-08 -12-10 -12-12	-16-10 -16-12 -16-16				
	45° SAE FEMALE 90° ELBOW	-04-04	-06-06	-08-06 -08-08	-10-08 -10-10	-12-08 -12-10 -12-12	-16-10 -16-12 -16-16				
	STRAIGHT 45° SAE FLARE MALE	-04-04	-06-06	-08-08	-10-10	-12-12	-16-16				
	STRAIGHT O-RING FEMALE		-06-06	-08-06 -08-08	-10-10	-12-10 -12-12	-16-12				
	STRAIGHT O-RING FEMALE WITH HIGH PRESSURE VALVE			-08-08							
	STRAIGHT O-RING FEMALE WITH LOW PRESSURE VALVE					-12-10	-16-12				
	STRAIGHT O-RING FEMALE WITH 1/4" SAE CHARGE VALVE		-06-06								
	O-RING FEMALE 45° ELBOW		-06-06	-08-08	-10-08 -10-10 -10-11	-12-10 -12-11 -12-12	-16-12				
	O-RING FEMALE 90° ELBOW		-06-06	-08-06 -08-08	-10-10	-12-10 -12-12	-16-10 -16-12	-20-12			
	O-RING FEMALE 90° ELBOW WITH 1/4" SAE CHARGE VALVE						-16-12				
	O-RING FEMALE 90° ELBOW WITH HIGH PRESSURE VALVE			-08-08							



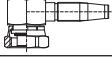



STAR-FIT

DN	5	8	10	13	16	22	28	35	51	60
Inch	3/16"	5/16"	13/32"	1/2"	5/8"	7/8"	1.1/8"	1.3/8"	2"	2.3/8"
dash	-04	-06	-08	-10	-12	-16	-20	-24	-32	-38



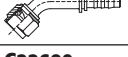


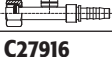
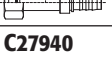





	O-RING FEMALE 90° ELBOW WITH LOW PRESSURE VALVE				-10-10	-12-10	-16-12				
	O-RING FEMALE 45° ELBOW WITH HIGH PRESSURE VALVE			-08-08							
	STRAIGHT O-RING MALE		-06-06	-08-08	-10-10						
	O-RING MALE 45° ELBOW		-06-06	-08-08	-10-10						
	O-RING MALE 90° ELBOW		-06-06	-08-08	-10-10						
	STRAIGHT 24° DIN FLARE O-RING OGIVAL FLANGE					-12-26 -12-30	-16-30 -16-36	-20-36			
	24° DIN FLARE O-RING OGIVAL FEMALE 45° ELBOW					-12-26 -12-30	-16-30 -16-36	-20-36			
	24° DIN FLARE O-RING OGIVAL FEMALE 90° ELBOW			-08-26		-12-26 -12-30	-16-30 -16-36	-20-30 -20-36			
	STRAIGHT FLANGE FITTING						-16-16	-20-16			
	FLANGE FITTING 45° ELBOW						-16-16	-20-16			
	FLANGE FITTING 90° ELBOW						-16-16	-20-16 -20-16097			
	STRAIGHT ORS FLAT SEAL FEMALE	-04-04	-06-06	-08-08	-10-10	-12-12 -12-16 -12-16079	-16-16 -16-20	-20-20	-24-24		
	ORS FLAT SEAL FEMALE 45° ELBOW	-04-04	-06-06	-08-08	-10-10	-12-12	-16-16	-20-20	-24-24		
	ORS FLAT SEAL FEMALE 90° ELBOW	-04-04	-06-06	-08-08	-10-10	-12-12	-16-16	-20-20			
	STRAIGHT CONNECTION FITTING	-04-04	-06-06	-08-08	-10-10	-12-12	-16-16	-20-20			
	STRAIGHT CONNECTION FITTING WITH HIGH PRESSURE VALVE			-08-08	-10-10						
	STRAIGHT CONNECTION FITTING WITH LOW PRESSURE VALVE				-10-10	-12-12					
	JIC 37° STRAIGHT FEMALE FITTING						-16-12 -16-16				
	JIC 37° FEMALE FITTING 45° ELBOW						-16-16				

STAR-FIT

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Inch	3/16"	5/16"	13/32"	1/2"	5/8"	7/8"	1.1/8"	1.3/8"	2"	2.3/8"
dash	-04	-06	-08	-10	-12	-16	-20	-24	-32	-38

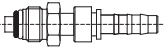
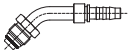



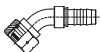




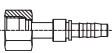
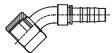


K42590 	JIC 37° FEMALE FITTING 90° ELBOW						-16-16	-20-20			
K31110 	STRAIGHT 24° MALE DIN						16-30				
K47980 	SHORT VERSION O-RING FEMALE 90° ELBOW			-08-11	-10-11	-12-11					
K47982 	SHORT VERSION O-RING FEMALE 90° ELBOW WITH 1/4" SAE CHARGE VALVE				-10-08 -10-11	-12-08	-16-10 -16-11				
K47985 	SHORT VERSION O-RING FEMALE 90° ELBOW WITH HIGH PRESSURE VALVE			-08-11		-12-11					
K47986 	SHORT VERSION O-RING FEMALE 90° ELBOW WITH LOW PRESSURE VALVE					-12-11	-16-11				

STAR-CRIMP

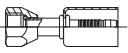
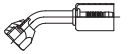

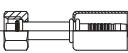
C00300 	STAR-CRIMP FERRULE	-04	-06	-08	-10	-12	-16	-20			
C22610 	45° SAE STRAIGHT FEMALE	-04-04	-06-06	-08-08	-10-10	-12-12					
C22640 	45° SAE FEMALE 45° ELBOW	-04-04	-06-06	-08-08	-10-10	-12-12					
C22690 	45° SAE FEMALE 90° ELBOW	-04-04	-06-06	-08-08	-10-10	-12-12					
C27910 	STRAIGHT O-RING FEMALE		-06-06	-08-08	-10-10	-12-12	-16-12				
C27915 	STRAIGHT O-RING FEMALE WITH HIGH PRESSURE VALVE			-08-08 -08-11		-12-12					
C27916 	STRAIGHT O-RING FEMALE WITH LOW PRESSURE VALVE						-16-12				
C27940 	O-RING FEMALE 45° ELBOW		-06-06	-08-08	-10-10	-12-10 -12-12	-16-12				
C27946 	O-RING FEMALE 45° ELBOW WITH LOW PRESSURE VALVE					-12-10					
C27990 	O-RING FEMALE 90° ELBOW		-06-06 -06-06036 -06-06060	-08-08	-10-10	-12-10 -12-12	-16-10 -16-12				
C27995 	O-RING FEMALE 90° ELBOW WITH HIGH PRESSURE VALVE			-08-08 -08-11							
C27996 	O-RING FEMALE 90° ELBOW WITH LOW PRESSURE VALVE				-10-10						

STAR-CRIMP

DN	5	8	10	13	16	22	28	35	51	60
Inch	3/16"	5/16"	13/32"	1/2"	5/8"	7/8"	1.1/8"	1.3/8"	2"	2.3/8"
dash	-04	-06	-08	-10	-12	-16	-20	-24	-32	-38



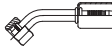
















	STRAIGHT O-RING MALE		-06-06				-16-10			
	O-RING MALE 45° ELBOW		-06-06		-10-10					
	O-RING MALE 90° ELBOW		-06-06 -06-06060		-10-10		-16-10 -16-10072			
	STRAIGHT MALE WITH O-RING SEAT		-06-06			-12-12				
	STRAIGHT 24° DIN FLARE O-RING OGIVAL FLANGE						-16-30 -20-36			
	24° DIN FLARE O-RING OGIVAL FEMALE 45° ELBOW						-16-30 -20-36			
	24° DIN FLARE O-RING OGIVAL FEMALE 90° ELBOW						-16-30 -20-36			
	STRAIGHT FLANGE FITTING						-16-16 -20-16			
	FLANGE FITTING 45° ELBOW						-16-16 -20-16			
	FLANGE FITTING 90° ELBOW						-16-16 -20-16			
	STRAIGHT ORS FLAT SEAL FEMALE				-10-08 -10-10		-16-16 -20-20			
	ORS FLAT SEAL FEMALE 45° ELBOW				-10-10		-16-16 -20-20			
	ORS FLAT SEAL FEMALE 90° ELBOW						-16-16 -20-20			
	CONNECTION FITTING 90° ELBOW		-06-06				-16-16			

FAST-CRIMP

	45° SAE STRAIGHT FEMALE		-06-06	-08-08	-10-10	-12-12				
	45° SAE FEMALE 45° ELBOW		-06-06	-08-08	-10-10					
	45° SAE FEMALE 90° ELBOW		-06-06	-08-08	-10-10					
	STRAIGHT O-RING FEMALE		-06-06	-08-08 -08-11	-10-10 -10-10078 -10-11 -10-11076	-12-10 -12-10079 -12-11 -12-12				





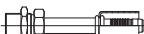


FAST-CRIMP

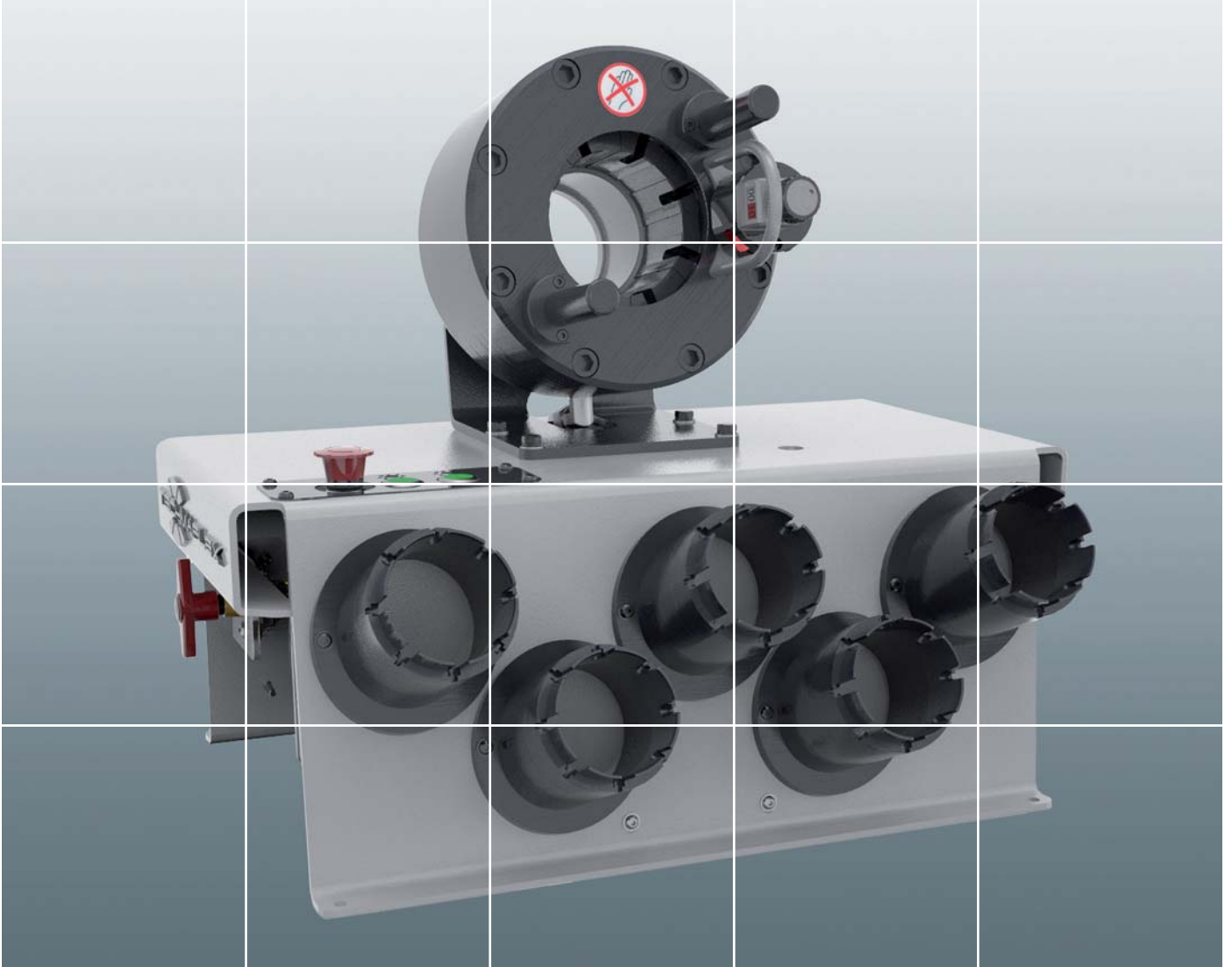
DN	5	8	10	13	16	22	28	35	51	60
Inch	3/16"	5/16"	13/32"	1/2"	5/8"	7/8"	1.1/8"	1.3/8"	2"	2.3/8"
dash	-04	-06	-08	-10	-12	-16	-20	-24	-32	-38

OPC27915 	STRAIGHT O-RING FEMALE WITH HIGH PRESSURE VALVE		-06-06	-08-08 -08-11						
OPC27916 	STRAIGHT O-RING FEMALE WITH LOW PRESSURE VALVE				-10-10 -10-11					
OPC27940 	O-RING FEMALE 45° ELBOW		-06-06	-08-08 -08-11	-10-10 -10-11	-12-10				
OPC27945 	O-RING FEMALE 45° ELBOW WITH HIGH PRESSURE VALVE		-06-06	-08-08 -08-11						
OPC27946 	O-RING FEMALE 45° ELBOW WITH LOW PRESSURE VALVE				-10-10 -10-11					
OPC27990 	O-RING FEMALE 90° ELBOW		-06-06	-08-08 -08-11	-10-10 -10-11	-12-10 -12-11 -12-12				
OPC27995 	O-RING FEMALE 90° ELBOW WITH HIGH PRESSURE VALVE		-06-06	-08-08 -08-11						
OPC27996 	O-RING FEMALE 90° ELBOW WITH LOW PRESSURE VALVE				10-10 -10-11					
OPC27980 	SHORT VERSION O-RING FEMALE 90° ELBOW		-06-06	-08-08 -08-11	-10-10 -10-11	-12-11				
OPC27985 	SHORT VERSION O-RING FEMALE 90° ELBOW WITH HIGH PRESSURE VALVE		-06-06	-08-08 -08-11						
OPC27986 	SHORT VERSION O-RING FEMALE 90° ELBOW WITH LOW PRESSURE VALVE				-10-10 -10-11	-12-11				
OPC18010 	STRAIGHT O-RING MALE		-06-06	-08-08	-10-10	-12-10				
OPC18040 	O-RING MALE 45° ELBOW		-06-06	-08-08	-10-10	-12-10				
OPC18090 	O-RING MALE 90° ELBOW		-06-06	-08-08	-10-10					
OPC27610 	STRAIGHT FITTING FOR EXPANSION VALVE		-06-06		-10-12					
OPC27640 	FITTING FOR EXPANSION VALVE 45° ELBOW		-06-06		-10-12	-12-12				
OPC27690 	FITTING FOR EXPANSION VALVE 90° ELBOW		-06-06		-10-12					
OPC27695 	FITTING FOR EXPANSION VALVE 90° ELBOW WITH HIGH PRESSURE		-06-06							
OPC10090 	CONNECTION FITTING 90° ELBOW		-06-06	-08-08	-10-10					

FAST-CRIMP

DN	5	8	10	13	16	22	28	35	51	60
Inch	3/16"	5/16"	13/32"	1/2"	5/8"	7/8"	1.1/8"	1.3/8"	2"	2.3/8"
dash	-04	-06	-08	-10	-12	-16	-20	-24	-32	-38

OPC10010 	CONNECTION FITTING		-06-06	-08-08						
OPC10015 	CONNECTION FITTING WITH HIGH PRESSURE VALVE		-06-06	-08-08						
OPC10016 	CONNECTION FITTING WITH LOW PRESSURE VALVE				-10-10	-12-12				
OPC17910 	STRAIGHT MALE O-RING SEAT		-06-06		-10-10					
OPC17910...W 	STRAIGHT MALE O-RING SEAT WITH COUNTER NUT			-08-08W25						
OPC17910...W...Q 	STRAIGHT MALE O-RING SEAT WITH COUNTER NUT AND Q-RING		-06-06W24Q		-10-10W29Q					
OPC17990...W...Q 	MALE O-RING SEAT 90° ELBOW WITH COUNTER NUT AND Q-RING		-06-06W24Q		-10-10W30Q					



Manuli Hydraulics' assembling machines are part of the complete product offer and are designed according to high quality standards. The full range is optimised through Manuli's long experience in the hydraulic market and it is recommended for high performance and safe hose assembling procedure. It is also fully tested and validated in our Laboratories as well as in field.

By using Manuli assembling machines you will achieve factory quality assemblies and long service life as well as complying with product liability requirements.

Special machines not included in this selection guide are available upon request, as well as the original spare parts.



Manuli Hydraulics' products have to be assembled strictly in accordance with Manuli instructions and recommendations. The original assembling information chart is the only official guide to selecting the proper hose and fittings combinations and determine crimping compatibility

Don't mix and match: use always Manuli's original components.







CRIMPING MACHINES

MODEL	MACHINE TYPE	APPLICATION SECTOR	INDICATIVE CAPACITY	CRIMP FORCE (TONS)	VOLTAGE	WEIGHT (KG. LBS)
MHP80 	hand pump, portable	on-site repair	2wb: 1" max. 4ws: 1/2" max.	80	-	28 kg (60 lbs)
NEW MVB140 	benchtop, cage dies	on site repair, after market service	2wb: 1-1/4" max. 4ws: 1-1/4" max.	140	110V, 1ph, 60Hz	80kg (176 lbs)
MB137 PLUS 	benchtop	after market service	2wb: 1-1/4" max. 4ws: 1-1/4" max.	137	400V, 3ph 220V, 3ph/1ph	100 kg (220 lbs)
MB240 	benchtop	after market service	2wb: 2" max. 4ws: 2" max. 6ws: 1" max.	240	400V, 3ph 220V, 3ph/1ph	190 kg (418 lbs)
MB350 	benchtop	after market service	2wb: 3" max. Textile and suction hose: 4" max. 4ws: 2" max. 6ws: 2" max.	350	400V, 3ph 220V, 3ph/1ph	280 kg (617 lbs)
MV137 	benchtop	on site repair mobile van	2wb: 1-1/4" max. 4ws: 1-1/4" max.	137	12V dc or 24V dc	75 kg (165 lbs)
MV240 	for mobile van	on site repair mobile van	2wb: 2" max. 4ws: 2" max. 6ws: 1" max.	240	12V dc or 24V dc	125 kg (275 lbs)
NEW MV350 	benchtop	on site repair mobile van	2wb: 3" max. Textile and suction hose: 4" max. 4ws: 2" max. 6ws: 2" max.	350	12V dc or 24V dc 400V, 3ph 220 V, 3ph/1ph	210 kg (463 lbs)
MS140 	stand-type SCS control	assembling production unit	2wb: 1-1/4" max. 4ws: 1-1/4" max.	140	400V, 3ph 220V, 3ph	675 kg (1485 lbs)
MS320 	stand-type SCS control	assembling production unit	2wb: 3" max. 4ws: 2" max. 6ws: 2" max.	320	400V, 3ph 220V, 3ph	1330 kg (2900 lbs)




CRIMPING MACHINES

MODEL	MACHINE TYPE	APPLICATION SECTOR	INDICATIVE CAPACITY	VOLTAGE	WEIGHT (KG. LBS)
 MS480	stand-type SCS control	assembling production unit	2wb: 3" max. 4ws: 3" max. 6ws: 3" max.	400V, 3ph 220V, 3ph	2000 kg (4400 lbs)
 MS800	stand-type SCS control	assembling production unit	4" max. heavy duty hydraulic hoses 8" max. industrial hoses	400V, 3ph 220V, 3ph	3000 kg (6614 lbs) NEW



CUTTING MACHINES

MODEL	MACHINE TYPE	APPLICATION SECTOR	INDICATIVE CAPACITY	VOLTAGE	WEIGHT (KG. LBS)
 M22 CUT PLUS	benchtop	after market service	2wb: 1-1/4" max. 4ws: 1-1/4" max.	400V, 3ph 220V, 3ph/1ph (12V for MV22 CUT VAN)	43 kg (95 lbs)
 M30 CUT & SKIVE	benchtop	after market service	2wb: 2" max. 4ws: 2" max.	400V, 3ph 220V, 3ph	72 kg (158 lbs) NEW
 M30 CUT PLUS	stand-type	after market service smoke absorption integrated	2wb: 2" max. 4ws: 2" max. 6ws: 1-1/4" max.	400V, 3ph 220V, 3ph	220 kg (484 lbs) NEW
 M55 CUT	stand-type	after market service smoke absorption integrated	2wb: 2" max. 4ws: 2" max. 6ws: 2" max.	400V, 3ph 220V, 3ph	240 kg (530 lbs) NEW
 M75 CUT	stand-type	production unit	2wb: 3" max. 4ws: 2" max. 6ws: 2" max.	400V, 3ph 220V, 3ph	215 kg (474 lbs)
 M90 CUT	stand-type	production unit	2wb: 3" max. 4ws: 3" max. 6ws: 3" max.	400V, 3ph 220V, 3ph	260 kg (573 lbs)


SKIVING MACHINES

MODEL	MACHINE TYPE	APPLICATION SECTOR	INDICATIVE CAPACITY	VOLTAGE	WEIGHT (KG. LBS)
MH SKY PLUS 	manual, portable	after market service	2wb: 2" max. 4ws: 2" max.	-	3 kg (6 lbs)
M50 SKY PLUS 	benchtop	after market service	2wb: 2" max. 4ws: 2" max.	400V, 3ph 220V, 3ph	45 kg (100 lbs)
M205 SKY PLUS 	stand-type	production unit	2wb: 2" max. 4ws: 2" max. 6ws: 3" with original tools	400V, 3ph 220V, 3ph	110 kg (242 lbs)



INSERT PUSHING MACHINES

MODEL	MACHINE TYPE	APPLICATION SECTOR	INDICATIVE CAPACITY	POWER	WEIGHT (KG. LBS)
M1500 INS 	benchtop	production unit	2wb: 2" max. 4ws: 2" max. 6ws: 2" max.	air input 7 bar (100 psi)	70 kg (155 lbs)
MDH 205 SKY 	stand-type	large bore	4" max.	electric power (400V, 3ph)	200 kg (440 lbs)

MARKING MACHINES

MODEL	MACHINE TYPE	APPLICATION SECTOR	INDICATIVE CAPACITY	VOLTAGE	WEIGHT (KG. LBS)
M50 MARK 	benchtop	after market service	wide hose range	-	34 kg (75 lbs)

PRESSURE TEST MACHINES

MODEL	MACHINE TYPE	APPLICATION SECTOR	INDICATIVE CAPACITY	AIR INPUT	WEIGHT (KG. LBS)
MTB1500 	stand-type	production unit	wide hose range Max. Pressure: 21755 psi	7 bar (100 psi)	175 kg (385 lbs)
MTB2500 	benchtop	after market service	wide hose range Max. Pressure: 36259 psi	7 bar (100 psi)	175 kg (385 lbs)

FIXED WORKSHOP HOSE ASSEMBLY MODULES

OVERVIEW

MODULE M0 MAINTENANCE: SMALL WORKSHOP SERVICE

CRIMPING MACHINE: MB137 PLUS



SKIVING (INTERNAL AND EXTERNAL)
MH SKY or M50 SKY PLUS



CUTTING: MV22 CUT PLUS 220V/400 V



HOSE CAPACITY: 1-1/4" 4WS – 1-1/4" 2WB

ASSEMBLY PRODUCTIVITY: >20 HOSES/DAY WITH SIZE MIX (FIELD REPAIR, SMALL AFTERMARKET ACTIVITY)

MODULE M1 MAINTENANCE: INTERMITTENT SERVICE WORKSHOP

CRIMPING MACHINE: MB240



CUTTING/ SKIVING M30 CUT & SKIVE (INTERNAL AND EXTERNAL)



HOSE CAPACITY: 2" 4WS – 2WB

ASSEMBLY PRODUCTIVITY: >40 HOSES/DAY WITH SIZE MIX (SMALL MAINTENANCE ACTIVITY, FIELD REPAIR)

MODULE M2 MAINTENANCE: PROFESSIONAL SERVICE WORKSHOP

CRIMPING MACHINE: MB350



CUTTING: M55 CUT



SKIVING INTERNAL AND EXTERNAL:
M205 SKY PLUS



HOSE CAPACITY: 2" 6WS – 2WB

ASSEMBLY PRODUCTIVITY: >60 HOSES/DAY WITH SIZE MIX (MEDIUM MAINTENANCE ACTIVITY, DISTRIBUTION OF ASSEMBLIES)




FIXED WORKSHOP HOSE ASSEMBLY MODULES

OVERVIEW



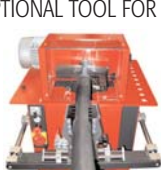
MODULE P0 PRODUCTION: SMALL OEM WORKSHOP, SMALL BORE HOSE SPECIALIZATION

<p>CRIMPING: MS140</p> 	<p>CUTTING: M55 CUT PNEUMATIC</p> <p>NEW</p> 	<p>SKIVING: M205 SKY PLUS</p> 
HOSE CAPACITY: 1-1/4" 4WS HOSE - 1" INTERLOCK - 1-1/4" 2WB HOSE		
ASSEMBLY PRODUCTIVITY: >100 HOSES/DAY WITH SIZE MIX (SMALL & MEDIUM OEMS, LARGE MAINTENANCE)		

MODULE P1 PRODUCTION: OEM + MEDIUM SIZE HOSES SPECIALIZATION

<p>CRIMPING: MS320</p> 	<p>CUTTING: M55 CUT PNEUMATIC</p> <p>NEW</p> 	<p>SKIVING: M205 SKY PLUS + CLAMPING SYSTEM</p> 
HOSE CAPACITY: 2" 6WS - 3" 2WB		
ASSEMBLY PRODUCTIVITY: >100 HOSES/DAY WITH MEDIUM TO LARGE BORE UP TO 2" SIZE MIX (SMALL & MEDIUM OEMS, LARGE MAINTENANCE)		

MODULE P2 PRODUCTION: OEM PRODUCTION, MEDIUM & LARGE BORE HOSES SPECIALIZATION

<p>CRIMPING: MS480</p> 	<p>CUTTING: M75 CUT</p> 	<p>SKIVING: M205 SKY PLUS (+ OPTIONAL TOOL FOR 3" WB)</p> 
HOSE CAPACITY: 2" 6WS - 3" 2WB		
ASSEMBLY PRODUCTIVITY: >100 HOSES/DAY WITH MEDIUM TO LARGE BORE UP TO 3" SIZE MIX (MEDIUM & BIG OEMS, LARGE MAINTENANCE)		

FIXED WORKSHOP HOSE ASSEMBLY MODULES

OVERVIEW

MODULE P3 PRODUCTION: XXL HOSE WORKSHOP

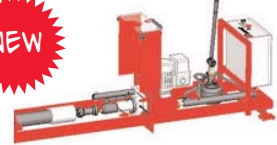
CRIMPING: MS800



CUTTING M90 CUT



SKIVING: MDH205 SKY HOSE SKIVE
AND INSERT PUSHING



HOSE CAPACITY: 3" MULTIWS - 4" 2WB-4WS - 8" INDUSTRIAL HOSE

ASSEMBLY PRODUCTIVITY: >40 HOSES/DAY WITH SIZE MIX (ON SITE MAINTENANCE)

FOR AN INTEGRATED WORKSHOP DEDICATED TO THE COMPLETE SIZE RANGE WE RECOMMEND:

MODULE M1 MAINTENANCE: INTERMITTENT SERVICE WORKSHOP








MODULE P3 PRODUCTION: XXL HOSE WORKSHOP






MOBILE SHOP HOSE ASSEMBLY MODULES

OVERVIEW

MODULE V0: VAN SERVICE		
CRIMPING MACHINE: MV240 12/24V 	CUTTING: MV22 CUT 12/24 V 	SKIVING (INTERNAL AND EXTERNAL) MH SKY PLUS 
HOSE CAPACITY: 1 1/4" 6WS - 1 1/2" 4WS - 2" 2WB		
ASSEMBLY PRODUCTIVITY: >20 HOSES/DAY WITH SIZE MIX (FIELD REPAIR)		

MODULE V1: INTERMITTENT SERVICE CONTAINER SHOP	
CRIMPING MACHINE: MV350 220V /380V 	CUTTING/ SKIVING M30 CUT & SKIVE (INTERNAL AND EXTERNAL) 
HOSE CAPACITY: 2" 4WS - 2WB	
ASSEMBLY PRODUCTIVITY: >40 HOSES/DAY WITH SIZE MIX (FIELD REPAIR)	

MODULE V2: CONTINUOUS SERVICE CONTAINER SHOP		
Crimping: MV350 220V/400V 	CUTTING: M55 CUT (INTERNAL AND EXTERNAL) 	SKIVING: M205 SKY PLUS 
HOSE CAPACITY: 2" 6WS - 3" 2WB		
ASSEMBLY PRODUCTIVITY: >100 HOSES/DAY WITH SIZE MIX (ON SITE MAINTENANCE)		

Manuli Hydraulics provides a wide range of best in class hoses, connectors and machines for conveying power in high/very high pressure hydraulic circuits and fluids in refrigeration units.



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